

Name of Protected Area: Libano-Arisai Wildlife Management Area

Part 1: Basic information about the protected area

Table 1. Protected area information

Name, organisation and contact details for person(s) conducting the assessment Person 1: Name, Organisation, Address, Email, Phone	Vagi Rei, Conservation and Environment Protection Authority, P.O. Box 6601, Boroko, NCD, vrei@dec.gov.pg.
Person 2: Name, Organisation, Address, Email, Phone	Ann Peterson, SPREP/Protected Area Solutions, 283 Madill Road, Tandur, Q4570, Australia, a.peterson@uq.edu.au, 0414300955.
Today's Date	28/02/2017
Name (or names) of protected area	Libano-Arisai
Size of protected area (ha)	3,964
PNG Code or number	
World Database of Protected Areas site code (these codes can be found on www.unep-wcmc.org/wdpa/)	NA
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	NA
International protected area? e.g. World Heritage or Ramsar?	NA
Country	Papua New Guinea
Province/s	Southern Highlands
District/s	Muruma
Local level governments	Mt Bosavi
Ward/s	Rudesia
Nearest big town	Mendi
Location of protected area (brief description)	Libano-Arisai is on the north-western side of Mt Bosavi in the Kikori River Basin/Great Papuan Plateau. Mt Bosavi (2,507m) is a collapsed cone of an extinct volcano; 4km wide; 1km deep. The WMA has large and relatively intact forest and several streams.
Map references	
When was the protected area gazetted or formally established?	7/02/2008
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: 8 clans - Sasan Yalibi, Hebilo Siriki, Sasan Welebiso, Sasan Sifiyesi, Saban Arisai, Walo So, Banafasi and Bifo Hetagie (and many sub-clans).

Number of households living in the protected area	0
Population size within the protected area	0
Who manages the protected area? (e.g. please enter government, customary landowners [add clan names] management committee [how many and what gender])	Libano-Arisai Management Committee (large number), but it is not functioning now.
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 (There has been no money since the WMA was gazetted).
Operational (recurrent) funds	0
Project or special funds	0
Reason for protected area establishment	WWF came to our area and talked about logging in the area and the environmental values and encouraged us to establish a WMA to protect the values.
What are the main values for which the area is designated (Fill this out after data sheet 2)	
List the primary protected area management objectives (add lines if needed after the most important objectives): <i>Management objective 1</i>	To prevent logging in the WMA.
<i>Management objective 2</i>	
<i>Management objective 3</i>	
Number of people involved in answering the assessment questions	4
Name/organisation/contact details of people participating in the assessment	<i>Hotson Sili</i> , Chairman, Libano-Arisai WMA Committee, Konedobo Brothers Ltd, PO Box 746, Mendi, mwaabiya30@gmail.com, 70531990, 79543314; <i>Sugume Obeaiyalo</i> , Member, Libano-Arisai WMA Committee; <i>Martin Kolu</i> , Member, Libano-Arisai WMA Committee, 70133259; <i>Sanex Kopa</i> , Member Libano-Arisai WMA Committee, 70499288.
Customary landowners/other community; CEPA, Other national government agency; Provincial govt; local level govt; Protected area staff (anyone working on the protected area in paid jobs; NGO; Donors; External experts; Others	Customary landowners
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?

There are several rivers coming from Mt Bosavi. Libano-Arisi (LA) is at the head of the rivers. It shares a boundary with Libano-Hose along Hose Creek, which contains very fresh water. This water cures some sicknesses. In the rainy season the Arisai Creek is always clean (it doesn't flood). The water comes from underground (limestone area). It is only a short river - about 2km. If dogs eat the fish in the river it will make them more clever and better hunters in the bush. We have got many things, but the most important things are insects – these are the things that we protect. There are many fish. There are common ones and some special ones that are good for eating as they have a good taste. There are fresh water crocodiles – for killing and selling (meat and skin) and we take crocodile eggs and sell the small crocodiles. There are flying foxes in the rainforest trees (these are the special ones – they are bigger and the meat is very tasty); the forest and trees are important and they are in a natural state - trees with insects give us noise or signs of the time – they tell us the time; butterfly – they are very colourful in the forest and when they are flying around they look colourful and good. When the crocodiles are sleeping on the beach the butterflies try to sit on them. There are also frogs, megapodes, kapul (tree kangaroo), cassowary, cuscus and beetles. It is very beautiful – visual amenity. The He-Gigio River to the south is brown – a different colour, but this is natural. This is straight running water. The Libano River and the other rivers are blue. No people live in the WMA – they live about 5km from the boundary. The area is isolated with no roads.

Table 2. Key values of the protected area

No.	Key values	Brief description	Note if endangered species or ecosystem (IUCN)
1	Forest	To protect the forests from logging. Sago in the swamp forests is an important staple food.	
2	Animals	The people depend largely on the natural world for subsistence and livelihoods – they hunt pigs, cassowaries, wallabies, bandicoots, megapodes, rats, frogs, possums, snakes, bats, crocodiles, lizards and birds. Crocodiles are important as the skin is sometimes sold and the people eat the meat. The fish are also important for eating – we want animals that are easy to catch. Insects are for telling the time. Flying fox are found in the forest and are special animals.	
3	Clean water	For drinking and also for the fish and other species that are in the creeks and rivers.	

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	Biodiversity will support our livelihoods (e.g. crocodiles, birds [wild cockatoo, guria pigeon], fish, and mammals). Additional information: The Kikori region supports more unique animal species than many other parts of PNG – birds of paradise, cassowaries, crocodiles, threatened species e.g. lowlands tree kangaroo, long beaked echidna, New Guinea sheath-tailed bat, Campbell's fairy wren, chestnut forest rail and megapodes. The forest has important trees and the WMA may be important for ecotourism, and there are non-timber forest products such as eaglewood (UNESCO, 2006).
2. Presence of rare, threatened, or endangered species (plants and animals)	2	The palm cockatoo and bird of paradise (raggiana) are rare. Additional information: 2009 expedition discovered >40 previously undescribed species (16 frogs, 3 fish, insects and spiders, bat, giant rat). The region represents three centres of plant diversity, two endemic bird areas, and important segments of the G200 NG Central Range Montane Rainforest and Southern Lowland Rainforest Ecoregions (UNESCO, 2006).

3. Ecosystems (e.g. wetlands, grasslands, coral reefs etc) that are rare because they have been cleared or destroyed in other areas	2	The resources within the WMA are important, e.g. forest is important for many animals including flying foxes and wetlands are where crocodiles lay their eggs.
4. Protecting clean, fresh water	2	
5. Sustaining important species in big enough numbers that they are able to survive here	2	
6. Providing a source of employment for local communities now	0	It is important to look after the WMA but it does not provide any income.
7. Providing resources for local subsistence (food, building materials, medicines etc.)	2	The communities are living subsistence lifestyles and depend on the resources of the WMA.
8. Providing community development opportunities through sustainable resource use	0	
9. Religious or spiritual significance (e.g. tambu places)	0	There are no tambu areas.
10. Plant species of high social, cultural, or economic importance	2	There are some medicinal plants and tall trees and they also have cultural importance. Most of these resources (e.g. timber) are obtained from outside the WMA. The resources are in the WMA but we don't use them.
11. Animal species of high social, cultural, or economic importance	1	Some animals are important for subsistence and cultural purposes. The introduction of western culture has reduced the importance of using animals for customary purposes. Some animals have economic importance (e.g. crocodiles and fish).
12. Attractive scenery	2	There are rivers and insects that are good.
13. Tourism now	2	There are no tourists, but it is important.
14. Potential value for tourism in the future	2	We would like tourists to come in the future and this will bring some benefits to the community.
15. Educational and/or scientific value	2	
16. Maintaining culture and tradition on customary land and passing this on to future generations	2	Before culture was important, but children today are not practising their culture so much. However, some of the traditions are important to maintain a subsistence livelihood (e.g. how to kill crocodiles and grow crops). Longhouses are still constructed and they are an important part of our culture. The transmission of cultural knowledge occurs within cultural spaces or longhouses. People still practice songs and dances as a means of communicating and socialising, mainly on special occasions. The introduction of Christianity has led to the decline in longhouse construction, but the people still continue to practice some of their cultural traditions and rituals.

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	0	There is no housing and settlement in the WMA and the nearest village is about 5km away.
1.1a Population increase in the protected area community	H	Population is increasing in the eight major clans. There are only special times when hunting takes place. Increasing population may cause impacts on the WMA.
1.2 Commercial and industrial areas	0	

Threat type	Score (H,M,L,0)	Notes
1.3 Tourism and recreation infrastructure	0	
2.1 Customary land owner and community gardens and small crops	0	There are no gardens in or near the WMA.
2.1a Drug cultivation	0	
2.1b Commercial plantations	0	There are no oil palm plantations outside the WMA. There is potential for this in the future.
2.2 Wood and pulp plantations	0	
2.3 Livestock farming and grazing	0	
2.4 Marine and freshwater aquaculture	0	
3.1 Oil and gas drilling	L	We rejected oil and gas drilling in our area, but other places have this. There is some exploration on the border with Libano-Hose – the impact is confined to small areas – they fly in and drill in small areas. The community supports the potential development of the oil and gas industry in the WMA.
3.2 Mining and quarrying	0	The people support the possibility of mining on their WMA to provide income for the community. The community needs income to develop services (e.g. roads, clinics, schools).
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	
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	There is hunting at times in the WMA, but it is not a problem. It only occurs for special ceremonies e.g. marriage, church opening and school closure.
5.2 Gathering terrestrial plants or plant products (non-timber)	0	There is no harvesting in the WMA.
5.3a Logging and wood harvesting for local/customary use	0	There is no timber harvesting in the WMA as the village is a long way from the WMA.
5.3b Logging and wood harvesting – commercial logging	0	There was logging outside the WMA, but now there is none.
5.4a Fishing, killing and harvesting aquatic resources for local/customary use	0	Fishing takes place in the WMA mainly by line and diving. We use poison rope in still/stagnant areas and there is no impact.
5.4b Fishing, killing and harvesting aquatic resources for commercial use	0	
6.1 Recreational activities and tourism	0	
6.2 War, civil unrest and military exercises	0	
6.3 Research, education and other work-related activities in protected areas	0	
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)	L	There is potential for fires moving into the area and this would cause damage to the WMA.
7.2 Dams, hydrological modification and water management/use	0	
7.3a Increased fragmentation within protected area	0	

Threat type	Score (H,M,L,0)	Notes
7.3b Isolation from other natural habitat (e.g. deforestation)	0	LA is joined to Libano Hose and they are not isolated.
7.3c Other 'edge effects' on park values	0	Logging has taken place in the past but it is not there.
7.3d Loss of keystone species (e.g. top predators, pollinators etc.)	0	
8.1 Pest plants	L	Piper tree is in the village and it has started to appear on the boundary of the WMA.
8.1a Pest animals	H	There is tilapia and carp in the rivers and this is a threat to the native fish species. We are catching plenty of tilapia and not so many native fish.
8.1b Diseases such as fungus or viruses that make native plants or animals sick	L	We have noticed dead fish and fish with sores. We notice this about once every year. This occurs mainly in the main river, the He-GiGio. There is also a disease that is making the pigs sick.
8.2 Introduced genetic material (e.g. genetically modified organisms)	0	
9.1 Household sewage and urban waste water	0	
9.1a Sewage and waste water from protected area facilities	0	
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	0	
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	M	About three times a year there are earthquakes.
10.3 Avalanches/Landslides	L	Some landslides occur in the wet season.
10.4 Erosion and siltation/ deposition (e.g. shoreline or riverbed changes)	H	There is serious erosion on the rivers and the sago has been impacted by the siltation and this is reducing the size of the sago plant itself (previously there would be 4-5 bags per stand and now there are only 1-2 bags).
11.1 Habitat shifting and alteration	M	There is a change in the habitat due to the change in the seasons and it affects the growing of food and this affects the ability of people to continue living in the area.
11.2 Droughts	H	Dry season is unpredictable and affects the growing of staple foods and also increases the number of insects.
11.3 Temperature extremes	H	It is much hotter now. When it is raining there are hotter temperatures in the morning.
11.4 Storms and flooding	M	There is more frequent lightning and storms and this causes landslides and loss of forest in some areas.
11.5 Coral bleaching	0	
11.6 Intrusion by saltwater into gardens etc.	0	
11.7 Sea level rise	0	
Other (please explain)	0	
12.1 Loss of cultural links, traditional knowledge and/or management practices	H	Culture is starting to be affected by the 'white man's way'. Custom is still practiced for some celebrations. The women don't dress in the traditional way, but the children may do this at school and for special ceremonies. Tok Place is strong.
12.2 Natural deterioration of important cultural site values	0	
12.3 Destruction of cultural heritage buildings, gardens, sites by people	0	
Other (please explain)		

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	Pest animals	8.1a	Tilapia has been introduced and has reduced the number of endemic species.
2	Climate (drought, temperature and storms)	11.2,11.3,11.4	Climate change affects our ability to grow crops.
3	Loss of culture	12.1	We have experienced a loss of some important parts of our culture and it is mainly practiced at special occasions.

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	The WMA is legally gazetted.	
1b. Legal status			
2a. Protected area regulations	1	There are traditional laws in place to control land use. There are rules about fishing (nets are only used for special gatherings) and related fines for people who disobey the rules. The people do not have a copy of the gazettal rules. There is no benefit coming out of the area and so some people will lose interest in conservation in the future.	We need to raise awareness about the WMA. It has been a long time since the WMA was gazetted.
2b. Protected area regulations			
3. Law enforcement	0	There are no people on the ground working to enforce the laws.	The customary landowners should take a greater responsibility to manage their area.
4. Protected area objectives	1	The objectives are part of traditional customs, including no clearing of the forest in the WMA.	We need to create more awareness and understanding so that people appreciate and conserve the area.
5. Protected area design	3	The design is satisfactory.	We would like to expand the boundaries if there are any benefits, but we will reduce the size if there are benefits from mining and oil/gas development.
6. Protected area boundaries	3	Most people know the boundary because they have been taught this by their parents and it is respected by others.	
7. Management plan	0	There is no Management Plan.	The landowners have ideas about management and they would like to develop a Plan with some assistance from government or NGOs.
7a. Planning process	0	There is no input as there is no Plan.	
7b. Planning process	0	There is no regular plan review as there is no plan.	
7c. Planning process	0	There is no monitoring that influences planning.	
8. Regular work plan	0		

Issue	Score (0,1,2,3, NA)	Comment	Next steps
9. Resource inventory	0	There is little information available at the community level.	Resource mapping and land use mapping is needed. This is important to identify the values of the protected area.
10. Protection systems	0		
11. Research and monitoring	1	In 2002 there was some research, but the community are not aware of the results of this research and it has not impacted on their management. Traditional owners understand what is taking place in their WMA e.g. changes in fish species and impacts on fish.	Research is needed to better understand the resources of the WMA and to inform management.
12. Resource management	0		There needs to be engagement and assistance from government and other NGOs. Tilapia is a particular problem that needs to be addressed to better protect the native fish.
13a. Staff numbers	0		
13b. Other people working on the protected area	2	The landowners know their own lands by walking through it and some do talks in the local schools to raise awareness.	
14. Training and skills	1	There has been no training conducted on the WMA since 2005. The customary landowners have traditional knowledge about the WMA and these skills enable them to manage the protected area.	We need training in resource management planning; wildlife management; field-based training; financial administration; office skills.
15. Current budget	0		We need to obtain funding through the LLG, but this is difficult to obtain and also try to develop income generating activities in the villages.
16. Security of budget	0		
17. Management of budget	NA		
18. Equipment	0		All basic equipment is needed including: 2 computers to enable email communication, 2 solar panels and one battery; iron roofs on the proposed research/resource centre in Wasana village; boat and outboard motor.
19. Maintenance of equipment	NA		
20. Education and awareness	0	There was some education and awareness when WWF was here (up to about 2007), but there is nothing now.	We would like a tutor school that would teach children about the environment and information systems. We would like to pay for transport for two men and one woman from Wasana to have international exposure to strengthen environmental scientific education.
21. Planning for land use or marine activities	0		
22. State and commercial neighbours	0		Now that the evaluation workshop has taken place, the members of the Committee know some CEPA staff and will continue to have contact with them.

Issue	Score (0,1,2,3, NA)	Comment	Next steps
23. Indigenous people/ Customary landowners	2	The customary landowners discuss a range of issues in relation to the WMA. There are also conversations between Libano-Arisai and Libano-Hose.	Now that Libano-Arisai and Libano-Hose have been working together at the workshop, we will continue this communication.
24a. Impact on communities	1		
24b. Impact on communities	0		
24c. Impact on communities	0	70% in the community do not support the WMA. They don't see any benefits coming from the WMA. There is some comment that outsiders who do not live in the community give false information and can make decisions that are against the wishes of those who live in the community.	It may be useful to investigate the development of an Incorporated Land Group for the eight clans to improve decision making in relation to the WMA.
25. Economic benefit	0		
26. Monitoring and evaluation	0		
27. Visitor facilities	0		
28. Commercial tourism operators	0		
29. Fees	NA	When locals are engaged with the researchers they pay a small fee, but there is no formal fee structure.	
30. Condition of values	2	The overall condition is relatively good. The main problem lies with the introduction of tilapia into the waterways.	
30a. Condition of values	1	This is based on traditional knowledge.	
30b. Condition of values	0	There are no specific threat abatement plans, especially for tilapia.	Assistance is need to prevent the spread and impact of tilapia on the natural waterways.
30c. Condition of values	0	There are no regular activities to maintain the key biodiversity values.	

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
Forest	VG	S	The condition of the forest is very good with few impacts. This has remained stable for a long time.
Animals	G	D	There is diversity in animal species. The main threat is to the native fish from the introduction of tilapia. Assistance is needed to remove the fish and also to undertake fish surveys.
Clean water	VG	S	The condition of the water remain very good, with few threats.

Table 8. Recommendations and ways forward

1.	2.	3.
We need a resource centre and communication system, and equipment e.g. boat with an outboard motor.	We need to receive some benefits from the WMA. This may be from tourism or other income generation activities (e.g. selling fish and other resources). However, tourism is dependent on improved transport facilities (e.g. air transport or roads).	We need a tutor school to improve education and awareness among the community members, especially the children.

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

	Strengths	Challenges
1	The WMA is remote and no people live within in, thus reducing the threats and negative impacts on the WMA. The resources of the WMA are extracted mainly for special occasions and not for subsistence purposes.	Keeping the customary landowners interested in conservation when they have received no support and little or no benefits from their WMA.
2	The condition of the WMA is generally good.	Protecting the WMA values in the face of future mining and oil/gas development in the area.
3	The WMA is legally gazetted.	Improving awareness and skills in the face of limited funds.
4	The WMA is located in the Kikori region that supports high levels of biodiversity and endemism and thus has global importance for conservation.	Stemming the impact of tilapia in the waterways

Reference

UNESCO 2006. Kikori River Basin/Great Papual Plateau. Available at: <http://whc.unesco.org/en/tentativelists/5060/>.