Name of Protected Area: Maza Wildlife Management Area

Part 1: Basic information about the protected area

Table 1. Protected area information

Person 1**:** *Name, Organisation, Address, Email, Phone*	Fiona Leverington, SPREP/Protected Area Solutions, Diamantina National Park, via Winton, QLD, Australia, Fiona@protectedareas.com.au.
Person 2: *Name, Organisation, Address, Email, Phone*	Vagi Rei, Conservation and Environment Protection Agency, Boroko, Port Moresby, vrei@dec.gov.pg. (Additional information: In 2014 – Mr Rei worked with the Australian Government and the communities to develop a management plan for dugong and turtles – the Moro Moromo Gamo Management Plan).
Today's Date	24/02/2017
Name (or names) of protected area	Maza Wildlife Management Area
Size of protected area (ha)	184,230
PNG Code or number	26
World Database of Protected Areas site code (these codes can be found on www.unep-wcmc.org/wdpa/)	4202
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	VI
International protected area? e.g. World Heritage or Ramsar?	
Country	Papua New Guinea
Province/s	Western
District/s	South Fly District
Local level governments	Kiwai Rural
Ward/s	14 wards
Nearest big town	Daru
Location of protected area (brief description)	Maza WMA is a marine protected area in the Torres Strait, adjoining the coast to the west of the Fly River estuary. It is less than 12km from the Australian Sabai Island. The villages of Maza WMA are included in the Torres Strait Treaty. The WMA includes two islands: Daru (which is heavily populated) and Bobo/Bristow. The WMA has important areas of seagrass, coral reefs and mangroves. Part of the WMA lies within the Torres Strait Protection Zone.
Map references	9° 17' 33" S, 143° 13' 1" E
When was the protected area gazetted or formally established?	21/12/1978
Reference for gazettal or Memorandum of Understanding (MoU)	
Who owns the protected area? please enter Government Private Community/ customary	Customary landowners.

landowners, private, Other (name) and include **Clan name(s)**	
Number of households living in the protected area	~3500-4000 (there are 5-7 people per household on the mainland and >7 per household in Daru).
Population size within the protected area	~20,000
Who manages the protected area? (e.g. please enter government, customary landowners [**add clan names**] management committee [**how many and what gender**])	Interim management committee (under Torres Strait Treaty; 14 councillors and community chairman); all males.
Total number of staff (this means anyone working on the protected area in **paid jobs** – whether NGOs, community, rangers or customary landowners	0
Temporary paid workers	0
Permanent paid workers	0
Annual budget (US$) **–** excluding staff salary costs	0
Operational (recurrent) funds	0
Project or special funds	There may be special projects (e.g. Dugong and turtle management plan), but these are short term; training program for rangers (this is being trialled); Strongim Pipol Strongim Nesen (SPSN) Program carried out by RRRC (Reef and Rainforest Research Centre - AusAid funded); WASH program (Water and Sanitation Program).
Reason for protected area establishment	The community is not sure why the WMA was established. The CEPA representative indicated that it was mainly to protect dugong and turtles.
What are the main values for which the area is designated (Fill this out after data sheet 2)	Crayfish, reef fish, dugong, turtles, seagrass, mangroves and birds
List the primary protected area management objectives (add lines if needed after the most important objectives): *Management objective 1*	Conserve dugong and turtles through the Moro Momoro Gamo Management Plan.
Management objective 2	
Management objective 3	
Number of people involved in answering the assessment questions	4
Name/organisation/contact details of people participating in the assessment	*Episi Dabu*, Chairman, Wildlife Management Committee, Treaty Inhabitants Council C/- Kiwai Rural LLG, PO Box Dare, cedabu@gmail.com.au, 73955242; *Biza Cuera,* Deputy Chairman, Wildlife Management Committee, Treaty Inhabitants Council C/- Kiwai Rural LLG, PO Box Daru, 79410049; *Daina Budia*, Bata Community Development Foundation, PO BOX 239, Daru, dibudia@gmail.com or d.budia@gmail.com, 73010993; *Daina Gigiba*, Western Province Division of Fisheries, PO Box 16, Daru,gigiba.dainah472@gmail.com, (675)70169712.
Customary landowners/other community; CEPA, Other national government agency; Provincial govt; local level govt; Protected area staff (anyone working on the protected	Customary landowners.

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?

No text inserted.

Table 2. Key values of the protected area

No.	Key values	Brief description	*Note if endangered species or ecosystem (IUCN)*
1	Crayfish all year round	There is an abundance of crayfish all year round. They provide a major income for coastal communities. Crayfish are sold commercially by local people and there are also licensed exporters. The crayfish migrate from Maza to the Great Barrier Reef, Australia. There is a closed season for hookah diving during the migration. There is a lobster management plan (National Fisheries Authority).	
2	Reef fish	Fish provide an important source of food every day for the customary landowners.	
3	Abundance of turtles	Turtles provide meat for ceremonial purposes and we want to continue this tradition for future generations. We are part of the Torres Strait management area that includes agreements concerning turtles with the Torres Strait people.	Some turtles - endangered
4	Dugong	Dugong provide meat for ceremonial purposes and we want to continue this tradition for future generations.	Dugong - endangered
5	Seagrass beds	There are extensive seagrass beds, which bring in many grazing fish, turtles, dugong and beche de mer.	
6	Mangroves	Some very old mangroves (Otta Mabu – stem of the tree). Some mangroves are completely covered by water in the high tide. There are 28 species of mangrove found on Bobo Island (Bristow) and there are also mangrove areas on the coastline.	
7	Birds	There are many birds in the wetlands, including pelicans and migratory species such as the Siberian curlew.	Migratory species

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	The area has rich biodiversity including many fish. The coastal villages have no resources and depend on fish as one of the main components of their diet. This is important for the next generation and is the basis of our livelihood.
2. Presence of rare, threatened, or endangered species (plants and animals)	2	If we do not protect rare, threatened and endangered species now, they will not be there for the children. They will only be heard about in our legends.
3. Ecosystems (e.g. wetlands, grasslands, coral reefs etc) that are rare because they have been cleared or destroyed in other areas	2	Very important ecosystems include seagrass, mangroves and coral reefs.

4. Protecting clean, fresh water	2	
5. Sustaining important species in big enough numbers that they are able to survive here	2	The WMA is especially important for dugong and turtle species.
6. Providing a source of employment for local communities now	2	Employment is gained through fishing within the WMA, but the WMA itself does not provide any employment.
7. Providing resources for local subsistence (food, building materials, medicines etc.)	2	Mangroves are used as a building material.
8. Providing community development opportunities through sustainable resource use	2	There has been some community development provided e.g. health and sanitation.
9. Religious or spiritual significance (e.g. tambu places)	2	The traditional skills for catching dugong and turtle, which include using canoes and harpoons are now gone.
10. Plant species of high social, cultural, or economic importance	2	Mangroves (e.g. Korikik) are vital for building and the seagrass is important for supporting animals.
11. Animal species of high social, cultural, or economic importance	2	Dugong, turtle, crayfish are important for consumption.
12. Attractive scenery	2	Very attractive area.
13. Tourism now	0	There is no tourism.
14. Potential value for tourism in the future	2	Game fishing and scuba diving.
15. Educational and/or scientific value	2	
16. Maintaining culture and tradition on customary land and passing this on to future generations	2	Our culture needs to be respected. It is threatened and not respected by outsiders.

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	
1.1a Population increase in the protected area community	H	People from the Fly River have been displaced as they cannot live there anymore (due to pollution) and many have moved to Daru Island.
1.2 Commercial and industrial areas	L	A wharf for LNG was proposed, but this is not happening at this stage. However, if it did eventuate, this would have major impact on the WMA values.
1.3 Tourism and recreation infrastructure	0	
2.1 Customary land owner and community gardens and small crops	0	
2.1a Drug cultivation	0	
2.1b Commercial plantations	0	
2.2 Wood and pulp plantations	0	
2.3 Livestock farming and grazing	0	
2.4 Marine and freshwater aquaculture	L	There was some barramundi aquaculture but this has been removed.
3.1 Oil and gas drilling	L	Low risk in the future. **Additional information:** A major potential future issue is the approved construction of the LNG terminal in this area.
3.2 Mining and quarrying	0	
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	

Threat type	Score (H,M,L,0)	Notes
4.3 Shipping lanes	M	Shipping is only from Port Moresby to Daru. The ships cannot come through the passage.
4.4 Flight paths	0	
5.1 Hunting, killing and collecting terrestrial animals (including killing of animals as a result of human/wildlife conflict)	0	
5.2 Gathering terrestrial plants or plant products (non-timber)	0	
5.3a Logging and wood harvesting for local/customary use	0	
5.3b Logging and wood harvesting – commercial logging	0	
5.4a Fishing, killing and harvesting aquatic resources for local/customary use	H	There is a big issue relating to overfishing because of the influx of people from the Fly River, where villages have been destroyed by Ok Tedi. Dragging of nets is damaging the reef. **Additional information**: fishing effort increased by 80% between 1995 and 2012/2013, from 151,281 person hours to 272,108 person hours, and that the catch of reef and reef-associated species decreased by 30%, from 197 tons to 137 tons, during the same period. (Busilacchi, Butler et al. 2015). However, a six-fold increase in catches from coastal habitats was estimated, with only a three-fold increase in fishing effort.
5.4b Fishing, killing and harvesting aquatic resources for commercial use	H	There are no big commercial fisheries, but people taking too many fish for sale. Turtles are also taken to Port Moresby for sale. **Additional information:** fishers in Daru caught and sold at the market in Daru an estimated 222 green turtles in 2012/2013, which was lower than the estimated 608 green turtles in 1995 (Busilacchi, Butler et al. 2015).
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	L	Vandalism may become high in the future, e.g. there is potential for attacks on managers in relation to dugong enforcement.
7.1 Fire and fire suppression (including arson)	0	
7.2 Dams, hydrological modification and water management/use	0	
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	0	
8.1a Pest animals	0	Snakehead and climbing perch are problems, but not within the WMA.
8.1b Diseases such as fungus or viruses that make native plants or animals sick	0	
8.2 Introduced genetic material (e.g. genetically modified organisms)	0	

Threat type	Score (H,M,L,0)	Notes
9.1 Household sewage and urban waste water	M	There is household sewage and waste water from Daru island. However, the strong currents carry most waste well away from the WMA.
9.1a Sewage and waste water from protected area facilities	0	
9.2 Industrial, mining and military effluents	H	The impact of mining effluent is very high. Australia is also looking into this now. The effluent is causing health issues. This is as a result of pollution from Ok Tedi mine. The effluent includes arsenic, cadmium and other heavy metals. It is in sediments and the fish and affects human health. **Additional information:** There are concentration of toxins in fish that are believed to result from 200 drums that fell into the Fly River – many people are now getting sick. All young people in the 14 villages have severe problems in their joints – they think it is witchcraft. Health inspectors in Australia were consulted to verify this situation, but they won't release the results.
9.3 Agricultural and forestry effluents (e.g. excess fertilizers or pesticides)	0	
9.4 Garbage and solid waste	M	
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	0	
10.4 Erosion and siltation/ deposition (e.g. shoreline or riverbed changes)	H	The erosion is very high from the Fly River and this causes serious sedimentation of the rivers and also the inshore coral reefs, where the sediment covers the reefs and seagrass.
11.1 Habitat shifting and alteration	H	Changes in sea level are affecting coastal habitat.
11.2 Droughts	0	There are droughts on land, but this is not affecting the WMA.
11.3 Temperature extremes	H	
11.4 Storms and flooding	H	Windy and raining more frequently. The timing of the wind and rains according to the traditional calendar have changed.
11.5 Coral bleaching	H	We notice a change in the colour of the coral, but this may be more related to sedimentation than to climate change.
11.6 Intrusion by saltwater into gardens etc.	M	
11.7 Sea level rise	H	We are observing sea level rise. The king tides go straight through the villages. We have a very flat beach profile and big tides.
Other (please explain)		
12.1 Loss of cultural links, traditional knowledge and/or management practices	H	As a result of modernisation the traditional fishing boundaries are not known, or even the international boundaries (especially with migrants to Daru). Traditionally resource owners all had their traditional boundaries, but now these are not respected. However, villagers still keep the rules e.g. relating to dugong harvesting and we still use harpoons, but outsiders use nets.
12.2 Natural deterioration of important cultural site values	H	Our traditional burial grounds are now covered by sea.
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	Overfishing	5.4a,5.4b	Tonnes of fish, mainly mixed reef fish, are taken every day. The size of the fish is decreasing.
2	Pollution	9.2	Ok Tedi mine has released both heavy metals and sedimentation and this affects the water quality and health of the marine environment and people.
3	Climate change (sea level rise, habitat shifting, temperature extremes, storms and flooding, coral bleaching)	11.1,11.3,11.4,11.5, 11.7	Sea level rise is a serious problem for the coastal communities and villages are inundated with water on the high tides. Temperatures are hotter and there have been changes in the seasonal calendar. Climate change adaptation is important to help reduce the impacts of these diverse changes.
4	Loss of cultural heritage	12.1	The main problem is lack of respect from outsiders.

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 in 1978. Some of the WMA is also within the Torres Strait Protected Zone.	
1b. Legal status			
2a. Protected area regulations	1	Rules are there but they are not applied. Rules have expired. Dugong and Turtle Plan is only in draft form.	A new Management Plan needs to be launched.
2b. Protected area regulations			
3. Law enforcement	0	No capacity to enforce the traditional rules.	Implement the Reef and Rainforest Research Centre's Ranger Program – community appointed rangers. Include surveillance training. Ensure cooperation with Tonda WMA and reduce the impact of the Indonesian poachers. Ensure that the new draft Protected Area Bill is passed by the PNG parliament.
4. Protected area objectives	1	Objectives are agreed - an agreement was made in 1978 but there was no management. In 2011 there was a start to develop a new plan and in 2014 the draft was finished. The plan was very focussed on dugong and turtles, the intention being that other species will be added later.	The Management Plan needs to be launched.
5. Protected area design	2	The design is good but could be better. Habitat areas for dugong and turtles are outside the WMA. Kagaro habitat area is excluded and also the two islands.	It would be good to extend the WMA to Bula – this is the territorial waters of the Tonda communities. Seek the assistance of the Reef and Rainforest Research Centre program to help build capacity across the whole area. Young people from all those villagers could be included.

Issue	Score (0,1,2,3, NA)	Comment	Next steps
6. Protected area boundaries	3	These are mapped, well known and respected.	
7. Management plan	1	Moro Momoro Gamo Management plan is the most important component of the future management plan. This plan deals with dugong, turtles and some fish.	Launch the Moro Momoro Gamo Management plan and develop a more general management plan.
7a. Planning process – input of rights holders	1	There is cooperative planning with all local groups involved.	
7b. Planning process – regular plan review	1	Plan review has just been undertaken and there is the intention to continue this into the future.	
7c. Planning process – monitoring informs planning	1		
8. Regular work plan	0	There is no work plan.	Treaty owners have bilateral meetings and this will inform a work program. A South Fly Fisheries Program is being developed and this will be included in the Fisheries work plan.
9. Resource inventory	3	Maza's resources are known and understood very well and so are the animals.	
10. Protection systems	0	The Plan is completed, but protection systems need to be implemented.	Set up implementation systems including enforcement.
11. Research and monitoring	1	Most of the surveys have already been done; these stopped last year	Revise and revive the monitoring, e.g. the market surveys to check fish and dugong.
12. Resource management	1	Not much needs to be done in terms of resource management, apart from devising and enforcing rules about the taking of fish and dugong.	RRRC, NFA and South Fly need to work together to develop a fish marketing plan.
13a. Staff numbers	0	Currently here is no wildlife officer in the Province. This is a critical position but has recently retired and has not been replaced. Others have been stepping in to assist e.g. a Fisheries officer.	Employ a Provincial Wildlife Officer; RRRC may be able to train rangers who can undertake surveillance activities.
13b. Other people working on the protected area	0		We need paid staff to assist with management.
14. Training and skills	1	Very little capacity. There has been training of community 'rangers' but not in anything related to the management of the WMA.	We need volunteer assistance (e.g. RRRC and other agencies) to train young people: to conduct a training needs assessment; undertake surveillance; scuba diving; boat handling; using a GPS; search and rescue; enforcement; familiarisation with the management plan (e.g. Australian border force).
15. Current budget	0	No money. We have tried to apply for funds; CEPA may start to fund with levies etc.	The District can fund projects through the District Improvement Program funds. Resubmit previous funding proposals and include the management plan and 'PNG Marine Program' (under the Coral Triangle Initiative, Goal number 4).

Issue	Score (0,1,2,3, NA)	Comment	Next steps
16. Security of budget	0	No regular budget (there were some resources up to 2014, from Fisheries).	CEPA may start to fund with levies etc. The District can fund projects through the District Improvement Program funds. Resubmit previous funding proposals and include the management plan and 'PNG Marine Program' (under the Coral Triangle Initiative, Goal number 4).
17. Management of budget	NA		If there was a budget, it would be managed by the Treaty Villages Committee.
18. Equipment	1	The Provincial Fisheries office has a boat. Rangers under the RRRC program have their own equipment issued to them.	We need a maintenance and asset register.
19. Maintenance of equipment	NA	No WMA equipment to maintain.	We need training in the use and maintenance of equipment.
20. Education and awareness	2	Previous projects included awareness programs, but the programs are no longer active, so awareness raising is not a regular occurrence.	All the schools in the treaty villages need to be involved (and have been in the past) in education and awareness raising concerning the WMA and its values.
21. Planning for land use or marine activities	2	There has been some town planning on Daru Island, but only looking only at waste management. Many fisheries plans have been made through the Torres Strait fisheries and these plans respect the Torres Strait Protected Zone and the WMA.	
22. State and commercial neighbours	1	There is cooperation and consultation between Maza and international neighbours to negotiate on the management and take of marine species. Maza villages are part of the Torres Strait Treaty communities. There is little consultation with oil and gas companies who may expand their operations within the area.	
23. Indigenous people/ Customary landowners	2	Resource owners have contributed to the Dugong and Turtle plan and they are good at reporting any illegal activity.	When the plan is launched this will provide additional support to the resource owners.
24a. Impact on communities	1	There have been a lot of campaigns on awareness and efforts to maintain communication.	
24b. Impact on communities	1	Ranger programs (RRRC) are bringing changes to the welfare of the people e.g. fresh water and better maintenance of infrastructure. Commercial fishers are only allowed to be resource users.	Continue and increase and improve the ranger program; and increase the livelihood projects and capacity building.

Issue	Score (0,1,2,3, NA)	Comment	Next steps
24c. Impact on communities	1	When landowners were the only people in the area, there was breathing space for everyone. Now there are boats everywhere and no breathing space. Customary landowners are fully supportive of the WMA as a way to sustain the area in the future.	
25. Economic benefit	2	Several economic benefits from marine resources.	
26. Monitoring and evaluation	1	Monitoring has been done but this is not on a regular basis.	We would like to monitor beche de mer; crayfish (this is migratory); catches of turtle, fish, beche de mer and crayfish. We could do this relatively easily and this would be a good basis for management (Monitoring of catches at the markets was done with CSIRO). We would need funds to instigate regular monitoring and to visit villages.
27. Visitor facilities	NA	There are no visitors to the WMA.	
28. Commercial tourism operators	NA	There are no commercial tourism operations in the protected area.	
29. Fees	NA	There are no fees related to the WMA.	Commercial fishing fees could be directed to the protected area.
30. Condition of values	1	There was unanimous agreement among the participants that this rating could not be higher due to the decline in dugong numbers and the impacts of pollution and sedimentation.	Launch and implement the Moro Moromo Gamo Management Plan.
30a.Condition of values – basis for assessment	1	There has been a lot of research effort in the last three years.	Implement the Management Plan.
30b. Condition of values – threat abatement	1	There are efforts to conserve dugong and turtles.	
30c. Condition of values – active routine management	0	Threat abatement is not yet a routine part of management.	

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
Abundance of crayfish all year round	F	D	Sediments have removed some habitat – rocks and corals are covered by sand; overfishing and harvesting undersize fish and crays, and presence of Hookah divers. Hookahs have been controlled. Need education and enforcement. There are laws about minimum sizes (Fisheries Management Act) so we just need further surveillance and enforcement.
Reef fish	F	S	Some species sizes have decreased, but others have not changed. Overfishing, especially by newcomers to Daru Island (who have no other source of food). We need to control the sizes of nets, implement effective law enforcement, by asking communities to make their own bylaws, and by asking people to take ownership themselves.

Abundance of turtles	G	S	We want turtles for their ceremonial meat and we want this to continue for future generations. Turtle abundance is seasonal and is regarded as stable in recent years. Stopping the sale of turtles in the Port Moresby markets is regarded as an important step.
Dugong	P	D	We want dugongs for their ceremonial meat and we want this to continue for future generations. There has been a serious decline in dugong numbers. When I was small I could stand on the beach and watch my father or brother harpoon a dugong – now there is nothing out there. It is only through luck that you will find them. People are blocking their channels with nets. Improvement depends on law enforcement and implementation of the Dugong and Turtle Plan.
Seagrass beds	G	S	Siltation is having a big impact but this is confined to where the current is fastest.
Mangroves	G	S	There are some problems with people felling mangroves for timber and firewood.
Birds	DK	DK	There is not much knowledge about birds

Table 8. Recommendations and ways forward

1.	2.	3.
Launch and legalise the Moro Moromo Gamo Management Plan.	Bring the Protected Areas Bill into force and establish the Maza Wildlife Management Committee	Funding

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

	Strengths	Challenges
1	**Institutional**: Good organization and support from the WMA Management Committee, local level government and other institutions including Fisheries and Community Development Foundation. Good links and cooperation with CEPA over many years.	**Unsustainable harvesting** of dugong, turtles, crayfish and fish due to pressure from too many people, especially incoming people (non-customary landowners or resource users). Migrants to the area have been forced out of the Fly River due to pollution and have no income, no rights and no respect for the culture or sustainable rules. Dugong are harvested without regard for traditional customs.
2	**High levels of awareness** of the WMA, including good knowledge of the boundaries.	**Pollution and sedimentation** from the Ok Tedi Mine and accidental spillage of toxic waste from drums has led to serious health and environmental impacts (e.g. from arsenic, cadmium and other heavy metals).
3	**Agreed management plans** for several species.	**Lack of sustained budget, equipment or staff** to manage the WMA.
4	**Traditional rules** for harvesting of dugong, and traditional boundaries for fishing and other resource rights.	
5	**Participant in the Torres Strait Treaty** (villages are part of treaty agreements). Through this Treaty and as part of the Torres Strait Protection Zone, the WMA has access to resources and support from the Australian Government. Recent programs training community-based rangers show promise and could be an excellent model for wider application.	
6	Though overall condition of the WMA's values is rated as fair, there are extensive areas of **good seagrass and mangroves.**	

Reference

Busilacchi S, Butler J, Skewes T, Posu J, Shimada T, Rochester W & Milton D. 2015. Characterization of the traditional fisheries in the Treaty communities of Torres Strait (Papua New Guinea), Australian Fisheries Management Authority/ Papua New Guinean National Fisheries Authority/ CSIRO.