



GOVERNMENT OF KIRIBATI

MINISTRY OF ENVIRONMENT, LANDS AND AGRICULTURAL DEVELOPMENT

KIRIBATI ADAPTATION PROGRAM PHASE III (KAP III)

Governance and Land Management Advisor to the Government of Kiribati
Buota and Bonriki Water Reserves Task Force

FINAL BASELINE SITUATION ASSESSMENT REPORT



1 September 2014

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REPORT**

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LIST OF ACRONYMS

AU\$	Australian Dollar	MPWU	Ministry of Public Works and Utilities
BSA	Baseline Situation Assessment	O&M	Operation and maintenance
ETC	Eutan Tarawa Council	OP	Operating Policy (of the World Bank)
GLMA	Governance and Land Management Advisor to the Government of Kiribati Buota and Bonriki Water Reserves Task Force	PUB	Public Utilities Board
GOK	Government of Kiribati	RAP	Resettlement Action Plan
KAP	Kiribati Adaptation Program	SG	Solicitor General
LMD	Land Management Division	SWRO	Seawater reverse osmosis
MELAD	Ministry of Environment, Lands and Agricultural Development	TUC	Teinainano Urban Council

Cover photograph: Unauthorised household settlement on the Bonriki water reserve (19 June 2014).

1. Introduction

The Kiribati Adaptation Program III (KAP III) initiated a procurement process and contract negotiations with myself (Jon Metcalfe) for provision of services as the Governance and Land Management Advisor (GLMA) to the Government of Kiribati Buota and Bonriki Water Reserves Task Force on 17 May and the contract was signed on 7 June. My first visit to Tarawa, Kiribati was 16 to 26 June 2014.

The Governance and Land Management Advisor's Tasks are to:

- A. Produce an Inception Report, Quarterly Progress Reports and Final Exit Report;
- B. Carry out a Rapid Baseline Situation Assessment;
- C. Develop a Governance Roadmap containing:
 - 1. Immediate Actions Plan to assist the Task Force to: i) manage involuntary resettlement, ii) manage cessation of illegal activities and iii) establish a cut-off date.
 - 2. Develop Sustainable Management Plan to assist the Task force to: i) determine future sustainable uses of land, and ii) identify the scope of and prepare a costed program of incentive systems to safeguard the future of the water reserves.
- D. Assist the Task Force to: i) implement the Immediate Actions Plans, and ii) establish operationally and supervise a Task Force Technical Unit that will implement the Sustainable Management Plan.

The 1st Progress Report and Inception Report have been delivered on 30 June 2014. The Inception Report contains my proposed work plan which includes four further (after the 1st visit) visits to Tarawa in October/November 2014, February, June and November 2015. Each visit will include a workshop, and meetings with the Water Reserves Task Force and the Buota and Bonriki communities. Each of these visits will be preceded by the submission of – first draft, then final - reports and plans described above which will be the subject of discussion and agreement at the workshops that follow. At the end of each visit I will prepare a Cabinet Information Note, in consultation with and for submission through the Secretary Ministry of Environment, Land and Agricultural Development (MELAD), to ensure that the executive branch of the government is kept fully informed.

I report to the Secretary, MELAD; work closely in support of the Buota and Bonriki Water Reserves Task Force and report on contractual matters to the KAP III Program Manager.

The Outline Baseline Situation Assessment was carried out by myself, with excellent support of the KAP III Assistant Program Manager, during a 1st visit to Tarawa, 16 to 26 June and submitted (soft copy) on 1 July 2014. Details of the visit (persons met, documents received, etc.) are contained in my Inception Report, which is submitted at the same time as this report, and are not repeated here. There are a large number of previous reports and studies (see Annex 3, Inception Report), particularly covering the water resource and supply aspects and to a slightly lesser degree the community and management aspects. I have included here relevant sections with general but not specific attribution of source documents in each case. In the substantive majority of cases these

are all Government of Kiribati documents. Apart from documents, the most useful information was from interviews held (see Inception Report) during the 1st visit.

Comments on the Outline Baseline Situation Assessment Report were received on 24 August and these were incorporated in the Final Baseline Situation Assessment Report which was submitted (soft copy) on 2 September 2014.

Sections 2 to 5 inclusive (34 pages) contain the Rapid Baseline Situation Assessment. This is presented in four parts: Demography, health and water resources, the institutional framework, the organisational framework, and water reserves management: key issues.

Section 6 (9 pages) contains tentative suggestions for immediate actions and sustainable management of the two water reserves - based the assessments in Sections 2 to 5. The section provides a link between the Baseline Situation Assessment and the two outputs that follow – the Immediate Action and the Sustainable Management Plans. It enables a tentative putting forward and exploration of the road map” for the water reserves.

Section 7 contains annexes that provide: a notes on meetings with Buota and Bonriki councillors; Land Management Division inventories of unauthorised settlers on the water reserves; a draft census questionnaire; and various maps of the two water reserves.

Notes:

1. **Errors and gaps in the outline assessment:** Considering the speed with which this baseline assessment has been produced and the complexity of some of the issues involved, I expect that there will be some errors of fact and also of judgement in the assessment. I apologise for these in advance and will rectify any errors made, when brought to my attention, in the amendment of this outline assessment report and production of the final report. I hope that some of the, possibly unguarded observations and comments made, will encourage new ideas and contribute to solutions to the problems faced.
2. **Institutions and organisations:** Institutions govern individual and collective behaviour. They may be formal - legal systems, property rights, enforcement mechanisms; or informal – customs, traditions. They are often also referred to as "**the rules of the game**". The most widely used definition of Institutions is that: they "...consist of formal rules, informal constraints - norms of behaviour, conventions, and self-imposed codes of conduct - and their enforcement characteristics" The rules of the game shape the incentives that drive behaviour and performance, and expectations about rights and obligations.

Organisations are groups who come together for a common purpose or to achieve specific objectives. For example the Local Government Act No. 2 of 1984 is part of the "institutional" framework for local government in Kiribati that creates councils and determines their purpose and functions. They adapt their tactics and organisation according to externally defined rules and regulations - the rules of the game. They are "**the players of the game**" – according to the rules set by the institutional framework. Organisations encompass political parties or parliaments; urban or island councils; economic bodies, such as firms or businesses; and social bodies, such as churches and schools. They usually have discrete boundaries, a budget, and a structure.

2. Assessment: Demography, Health and Water Resources¹

2.1 DEMOGRAPHY

The current (2010 census) population of South Tarawa is 50,402 or 48% of the national population, up from 43.5% in 2005. South Tarawa's main urban areas of Bairiki, Betio and Bikenibeu have a combined population of 24,171 (49%) - Bikenibeu (5,941 / 12%), Bairiki (3,281 / 7%) and Betio (15,646 / 31%). Rapid urbanization has resulted in an annual average population growth rate of 4.4% since 2005 with a longer-term underlying growth rate of 3.87%. In the same period the national population grew at a recorded rate of 2.26% per annum. The average population density in South Tarawa is 4,150 /km², and in Betio as high as 10,610/km².

The growth is concentrated in the eastern, central and western areas of South Tarawa; the central and western areas have grown at roughly the same high rate with the eastern areas growing quickly but at a slower rate. Bairiki and Betio have similar rates of growth between 2005 and 2010 and are slightly higher than the average for South Tarawa as a whole. Bikenibeu has a slower rate of average annual population growth.

Currently in-migration into South Tarawa accounts for about one third of the overall population growth rate. Migrants to South Tarawa are attracted by formal employment opportunities in the large public sector and state owned (public) enterprises as well as the informal trading and service industry sector opportunities. Factors "pulling" people to South Tarawa – from North Tarawa and other islands, include the health and education facilities available, for example, the junior secondary schools, the Kiribati Institute of Technology and the Marine Training Centre. South Tarawa, as the commercial, political and administrative centre of Kiribati, attracts international firms, entrepreneurs, financial and governmental organisations interested to do business, contribute to development or carry out intergovernmental transactions. As South Tarawa is the hub of central government administration and of the commercial sector and will be the focus of major infrastructure projects over the next few years, it is economically rational that new migrants will continue to want to move to the urban areas especially in search of better employment opportunities and higher incomes for themselves and their families. Explicitly attempting to slow or reverse this trend is not likely to be successful and would not be economically rational, given the important contribution to the national economic growth that is made by South Tarawa.

¹ This section has been drawn, in some cases verbatim, from the Water and Sanitation Road Map 2011 to 2030. GOK/Asian Development Bank Fraser Thomas Partners. December 2011

Table 1. South Tarawa Population Forecast, High Growth Scenario²

Area	2010	2015	2020	2025	2030
Eastern South Tarawa	13,994	16,919	20,574	25,779	37,227
Central South Tarawa	16,446	19,883	24,044	29,076	35,156
Western South Tarawa	19,962	24,134	29,102	34,276	35,336
Total – High growth scenario	52,402	60,936	73,720	89,131	107,719
Total – Low growth scenario	50,402	60,936	68,131	75,440	82,058

Table 2. Extracts from 2010 Census - Buota & Bonriki Population

Description	Total	Age							
		<1	1	2-5	6-14	15-17	18-49	50-69	70+
Buota									
Total	1,469	49	36	139	280	91	694	149	31
%		3%	2%	9%	19%	6%	47%	10%	2%
Male	730	21	23	83	138	52	331	69	13
Female	739	28	13	56	142	39	363	80	18
%		57%	36%	40%	51%	43%	52%	54%	58%
Bonriki									
Total	2,355	76	73	266	459	136	1,089	216	40
%		3%	3%	11%	19%	6%	46%	9%	2%
Male	1,157	41	39	146	216	74	530	100	11
Female	1,198	35	34	120	243	62	559	116	29
%		46%	47%	45%	53%	46%	51%	54%	73%

Table 3. Extracts from 2010 Census - Buota & Bonriki Population & Land Area

Description	Population 2010	Land Area Hectares	Persons per Hectare	Persons per sq. km
Buota	1,469	88.2	16.6	1,660
Bonriki Total	2,355	209.1	11.3	1,130
Bonriki water reserve	339	114.2	3.0	300
Airport	0	24.8	0	0
Bonriki village	2016	70.1	28.8	2,880
Betio	15,755	167.3	94.2	9,420
Bikenibeu	6,568	180.7	36.3	3,630
Hong Kong	7,219,700	110,100	65.6	6,560

² Source: The Water and Sanitation Roadmap (December 2011)

2.2 HEALTH

Kiribati has an extremely high incidence of water-borne diseases with an infant mortality rate amongst the highest in the Pacific³ at 46 per 1,000 live births. This is attributed mainly to infantile diarrhoea. In 2010, in South Tarawa almost one person in four was affected by diarrhoea or dysentery to a degree that required a visit to a health clinic. For the crowded area of Betio the percentage increased to 54% visiting a clinic. Infants are particularly vulnerable; a reported four infants/children die of diarrhoea every month in South Tarawa.

This high incidence of dysentery and diarrhoea is a gross indicator of potentially more serious water-borne diseases such as typhoid and cholera resulting from the pollution of the water lenses from human and animal wastes. The 2005 Census reported the existence of 13,184 pigs on South Tarawa adding to the human waste stream with each pig being equivalent to 2 additional people.

The medical services in South Tarawa have been described as being overburdened with dysentery and diarrhoea¹⁰ with high incidences of non-pneumonia (21,686) and pneumonia (1,485) during 2010 (Betio 10,184 and 415 respectively); acute temperature without rash 7,260 (Betio 3,307) and increasing incidents of leprosy, all diseases symptomatic of overcrowded living conditions.

2.3 WATER

2.3.1 Water Resources and Supply

Currently, about 4,500 of South Tarawa's approximately 6,700 households use reticulated water supplied by the Public Utilities Board (PUB). This water is sourced from the groundwater lenses under the declared water reserves at Bonriki and Buota. These reserves are supposed to be kept free of all activities that would pollute the water. This, combined with chlorination, should ensure that the water is of potable quality.

Water resources yields: The sustainable yield from the Bonriki and Buota water reserves are 1,660 thousand litres a day (80% of PUB's supply) and 350 thousand litres a day (20% of supply) respectively. However losses in the distribution network are high, although this is currently being addressed by the PUB, with support from KAP III. Due to lack of available water, PUB water is only available to communities about every 2 days, for about 2 hours at a time. An estimated 65 percent of households in South Tarawa either supplement or primarily draw their drinking water from local shallow wells. The current sustainable yield from the groundwater reserves for South Tarawa of Bonriki and Buota (when reconnected) is estimated at 2,010 m³ per day (2009).

Protection of groundwater in the main reserve at Bonriki is not strictly enforced resulting in human encroachment, illegal sand and gravel mining, construction of latrines, digging of open wells, and active use of cemeteries. The groundwater is already contaminated

³ Source: WHO 2005

and a report on the treatment plant and disinfection process highlights the difficulty of retaining the Bonriki water reserve as a fresh water resource for South Tarawa into the future. Without urgent action to protect the reserve, the resource is at extreme risk of being lost as a resource.

Tests in 2011 showed acceptable results in the PUB water at the treatment plant in Bonriki and in the transmission main and the service reservoirs. Beyond the service reservoirs the water quality dropped off. The following table shows the 2010 census data on source of main drinking water for South Tarawa Households.

Table 4. Main Source of Drinking Water for Households (2010 Census)

Location	Total	Rainwater Tank	Piped System PUB	Well		Bottled water, other, missing
				Open	Protected	
Bonriki	381	9	103	177	88	1
Temaiku	489	47	22	253	162	3
Bikenibeu	1,087	70	839	55	116	7
Abarao	414	36	315	44	16	3
Eita	293	19	133	78	61	2
Taboria	186	31	132	16	7	0
Ambo	332	42	225	11	49	5
Antebuka	533	40	330	50	111	2
Taeoraereka	484	70	296	73	42	3
Nanikai	119	2	115	0	1	1
Bairiki	404	36	353	6	1	8
Betio	1,979	226	1,619	42	75	17
Total	6,701	628	4,482	805	729	52
Percentage	100%	9%	67%	12%	11%	1%

PUB customers indicate that PUB water is rated as less safe than rain water and marginally better than well water as consumers don't fully trust PUB's disinfection of the piped supply. If PUB water is disinfected and can be delivered to customers in acceptable quantities, pressure and quality with residual chlorination, the time and cost to households will be reduced. In the scale of acceptability and reliability the piped water supply should be the potable water of choice.

Use of Wells: During tests carried out in 2011 of the wells on South Tarawa by South Tarawa Sanitation Improvement Sector Project, households were surveyed to establish average water use, from the wells. This exercise confirmed an average of 45 L/pers/day for all uses, including bucket flushing of toilets and some potable use, although the respondents were reluctant to admit this. The potable supplies from PUB's piped network are presently delivering an average of around 14 L/pers/day to the consumer, after losses. The World Health Organisation (WHO, 2006) assessment of the public health risks

for various levels of service and per capita daily availability of water is that; where the availability of a safe freshwater supply is low such as the present value of 14 L/pers/day there is an extremely high public health risk associated with this low quantity, and an unequivocal high priority for intervention. The condition of the freshwater lenses and their over exploitation, coupled with the poor piped supplies confirms the urgent priority for the development of a safe water supply for South Tarawa to augment present supplies. The Tarawa Water Master Plan provides an estimate of disaggregated demand in South Tarawa for potable and non-potable water.

Table 5. Estimated Per Capita Demand for Water, South Tarawa

Demand for water for:	Demand (L/pers/day)	Comments
Household demand (excluding toilet flushing)	42	From safe sources & treated
Institutional, commercial & industrial.	6	10% of per capita demand
Irrigation, livestock, domestic animals	0	From wells or recycled grey water
Increase due to climate change.	2	Allow for rise in temperature after 2012
Total	50	Provided from safe sources only
Toilet flushing. Non potable	30	From seawater for piped & well water for pour flush

The following two tables project water demand and supply for South Tarawa assuming a 40 litre per day supply per capita are extracted from the Water and Sanitation Road Map 2011 to 2030 (December 2011)

Table 6. Estimated Water Balance for South Tarawa – 40L/pers/day

Description		2011	2015	2020	2025	2030
High population growth	nos.	50,402	60,936	73,720	89,131	107,719
Water Loss	%	67%	25%	20%	20%	15%
High growth demand	households	3,367	3,047	3,539	4,278	4,955
Safe yield (Note 1)	Kl per day	1,660	2,010	2,010	2,010	2,010
Increased production (Note 2)	Kl per day	0	500	500	500	500
Climate change impact (Note 3)	Kl per day			-166	-333	-500
Total available, Bonriki / Buota	Kl per day	1660	2,510	2,344	2,177	2,010
Water distributed (Note 4)	Kl per day	705	1,878	1,872	1,738	1,705
Deficit (high demand, distribution)	Kl per day	-2,662	-1,169	-1,667	-2,540	-3,250

Notes:

1. Safe yield initially from Bonriki with Buota coming into production in 2012	3. Loss of 20% of groundwater capacity by 2030
2. Bonriki clearing palms and infill of borrow pits	4. Distribution after allowing for losses

The Water and Sanitation Roadmap states that: “For the survival of the communities as they exist now, and their orderly growth the government and the communities will need to work cooperatively to preserve all existing freshwater sources, and to secure new

sources to provide potable water to the communities. Water resources for South Tarawa for the foreseeable future will therefore consist of the combination of Bonriki and Buota Water Lenses (lifeline), Rainwater Harvesting (lifeline) and the new water source to be established. Protection and refurbishment of the water lenses in South Tarawa needs to be pursued with urgency, where possible in combination with alternative land uses compatible with water resource conservation. This also means being prepared to contribute equitably to the cost of providing and maintaining the water supply systems. Anything less means the breakdown of society as it presently exist, an increase in water borne diseases, and in all probability failure of society as people combat failing systems and compete for dwindling resources.”

Water losses: A major problem in meeting current water needs in South Tarawa is the estimated 67% losses of water from the piped system, particularly from the household domestic systems. Reducing this excessive leakage and addressing the underlying causes is the first priority. The Tarawa Water Master Plan notes that there is little point in introducing new water sources into South Tarawa if leakage rates are not reduced. The roadmap accepts this view and identifies leak detection as a first priority.

2.3.2 Alternative sources of potable water

Rainwater harvesting: Although an important source of freshwater, rainwater harvesting cannot be relied on as a continuous source of water because of the frequent, severe ENSO (El Nino Southern Oscillation) related droughts in Tarawa, the limited roof catchment areas and rain tank volumes available and the large average number of people per household. There is the potential to increase rainwater harvesting, especially from large public buildings but this requires a communal system of management and will not meet water supply needs during prolonged droughts. In 2005 43% of households in South Tarawa were reported to use rainwater, mostly for drinking and cooking. But the 2010 Census return reveals only 628 or 9% of the households on South Tarawa were using rainwater tanks as their main source of drinking water. With few exceptions the testing of rainwater tanks shows poor and unacceptable bacteriological results.

Wells: Over 35 years ago, it was recommended that the use of local household wells on South Tarawa be abandoned because of the threat of contamination from dense urban settlements. Some 1,534 households, 23% of the population makes use of shallow wells (open and protected) as their main source for drinking water, with most groups relying heavily on this source for daily non-potable water needs. Groundwater in South Tarawa is contaminated and unsafe. It has been confirmed as a source of water-borne diseases.

South Tarawa Groundwater: The sustainable yield of the combined groundwater sources of Bonriki and Buota water reserves is currently 2,010 m³/day. There is the potential to increase this by 500 m³/day by removing coconut and pandanus palms from the centre of Bonriki and by infilling brackish saline ponds at the western end. With this increase, the supply will still not meet the current needs of South Tarawa and would be inadequate to meet the needs of the increasing population and the impacts of climate change.

North Tarawa Groundwater: The water resources of rural North Tarawa have been assessed. It is estimated that the sustainable yield of all major freshwater lenses in North Tarawa is around 3,650m³/day. When distribution losses are allowed for and when combined with the groundwater sources in South Tarawa this is sufficient to meet the

needs of Tarawa until 2020 and will support planned urbanisation on a moderate scale. Exploitation of groundwater sources in North Tarawa for transmission to South Tarawa, however, will require the installation of a power station, treatment plants and reservoirs and around 30 km of main transmission line including a 16.5km long cross-lagoon section to supply water to South Tarawa and additional reticulation to service the North Tarawa communities. This will change the character of North Tarawa and from the lessons learned during the extensive consultation under KAP II is likely to be unacceptable to communities there, particularly as indications were given when the lenses were being assessed, that the water would not be diverted to South Tarawa. The development of groundwater sources in North Tarawa for freshwater supplies to South Tarawa will therefore require a strong resolve on the part of the Government, extensive negotiations with landowners, compensation payments and expensive, continuing land rental payments. The option also has high capital and annual costs, and high social costs.

Other Freshwater Sources: Other freshwater sources identified by the Tarawa Water Master Plan included: bottled water; recycling of “grey” and “black” water, bulk importation of water by ship; constructed rainwater catchments; a constructed island for groundwater harvesting; solar stills and seawater reverse osmosis (SWRO) desalination. A cost analysis was carried out for groundwater and other options for meeting water needs. SWRO desalination was judged to be the most attractive provided its economic operating lifetime is at least 10 years.

Seawater Desalination: The advantages of SWRO desalination are that it can be installed and started quickly, removes pathogens from water, requires only a small land area with minimal land rental and compensation payments (or none if Government land is used), will involve minimal negotiations with landowners, requires no new legislation, can be supplied in containerised modules, allowing units to be located in areas of highest demand with direct connection into existing water supply pipelines, Energy recovery systems and maintenance and training contracts are available. Their disadvantages are a poor track record of SWRO in Kiribati, the requirement for well-trained operators, the need for regular maintenance and monitoring, energy use, and the fact that they are seen as a technological fix.

The condition of the existing urban area groundwater lenses in South Tarawa require an alternative source of water that can be established quickly, at an affordable capital cost, and with the ability to be expanded as the population increases.

2.3.3 Options for Increasing the Production Water Capacity of the Bonriki Reserve

Tree Removal Bonriki: Deep rooted trees transpire about 150 L/day of shallow groundwater from the water reserves. Removal of about 1,700 deep rooted coconuts from the central portion of Bonriki will increase the sustainable yield of Bonriki by 250m³/day. Only minor modification of the existing infrastructure is required. The advantages and disadvantages of this option identified by Tarawa Water Mater Plan and indicative capital costs are summarised in following table.

Infilling Ponds, Western end of Bonriki: During construction of the airport runway at Bonriki, borrow pits were excavated at the western, lagoon end of Bonriki. These become brackish during drier periods and contribute salinity to the freshwater lens. If the bottom of these ponds were cleaned of organic matter and the ponds infilled with clean, dredged

sand, the area and sustainable yield of Bonriki reserve could be increased by a further 250 m³/day. This option may also require negotiations with landowners and the Bonriki community who use the ponds for soaking pandanus fronds for thatching, the installation of three new galleries in the reclaimed area and may involve increased land rental payments. The advantages and disadvantages of this option together with indicative capital costs are also summarised in the following Table.

Table 7. Options for Increasing Tarawa Water Supply⁴

Option	Description	Production (kL/day, 2011)	Assumption as to % losses	Unit Production Costs (\$/kl, 2011)	Total Estimated Cost AU\$
	Current Bonriki & Buota water reserves	2,101	25%	3.37	-
			67%	7.66	
1	Bonriki tree removal	250	25%	3.97	272,000
			50%	5.95	
2	Bonriki ponds infilled & galleries constructed	250	25%	7.65	2,500,000
			50%	11.48	
3	Ground water production Abatao & Tabiteuea	220	25%	20.10	4,952,560
			50%	15.15	
4	Ground water production Buariki & Taratai	1,530	25%	9.58	21,125,000+
			50%	14.38	
5	Desalination (SWRO)	2,200	0%	3.88	8,483,800
			25%	5.17	

2.3.4 Conclusions:

- The importance of the Bonriki and Buota water reserves and the freshwater lenses they protect are critical to the economic, social and environmental existence of South Tarawa; the capital of Kiribati, the economic and political hub and the home of about half the population.
- Effective protection and conservation of the water reserves has been inadequate in the past 37 years – since they were established in 1977 and it is a high priority to put in place the institutional and organizational frameworks that will guarantee effective protection and conservation.
- Although the most likely additional source of potable water is salt water desalination, and this will be needed to added to the water supply in the immediate future, it does not detract from the importance of the Buota and Bonriki water reserves as a long term sustainable source of water for a substantial number of Kiribati's people, for its economy and its environmental sustainability.

⁴ Source: The Water and Sanitation Roadmap, Table 21, page 60 (December 2011)

3. Assessment: Institutional Framework

3.1 EXECUTIVE

The Government of Kiribati's Cabinet approved the establishment (in 2012) of a high level, inter-Ministerial Water Reserves Task Force, chaired by MELAD. The Governance and Land Management Advisor will prepare for submission to Cabinet through the Secretary, MELAD, and a number of draft Cabinet Information Notices:

- a. On Scope of Sustainable Management Plan (C2i) (October 2014),
- b. On Immediate Action Plan (October 2014)
- c. On progress of Immediate Action Plan (February 2015)
- d. On progress of Immediate Action Plan and detailed Sustainable Management Plan (June 2015)
- e. On progress of Immediate Action Plan and detailed Sustainable Management Plan (November 2015)

The importance of the Buota and Bonriki water reserves to the economic, social and environmental future of Kiribati and I-Kiribati people is well understood. For this reason it is important that the country's executive authority is kept briefed as to progress in securing the future of the water reserves, given advanced warning of key events that impact of people's feelings and livelihoods and are briefed clearly as to executive decisions that may be required during the processes proposed.

Note: The GMLA is asked to prepare draft Cabinet Information Notes on four occasions (following the 4 workshops). I am advised that there are two types of Cabinet memoranda, Information Notes and Decision Notes. Both have pre-determined formats.

3.2 POLICY

For water resources, water supply and sanitation, national policies have been developed in the last 10 years, with implementation plans (2008) – both nationally and specifically for South Tarawa (2010). The South Tarawa Sanitation Improvement Sector Project developed a Water and Sanitation Roadmap 2011 to 2030 (2011) which built on and incorporated much of the Tarawa Master Plan (2010).

In 2009 and 2010, the Cabinet endorsed the country's national water resource and sanitation policies, with sector goals and objectives and their complementary 10-year implementation plans. Policy objectives include sustainable water supplies to enhance the welfare and livelihood of I-Kiribati, the protection and conservation of freshwater sources for public water supplies, the efficient and effective delivery of freshwater, the provision of effective, acceptable, and appropriate sanitation, sanitation systems and practices that protect freshwater sources, lagoon waters and the environment, and reduced waterborne illness.

The National Water and Sanitation Coordinating Committee, chaired by MPWU, is a multi-agency body with representatives from the ministries of health, public works, finance, environment, and internal affairs and nongovernment organizations. It provides a forum for discussing water- and sanitation-related policies, strategies, programs and issues and meets when need arises.

A weakness is the lack of integration between policies for water resources, land management, planning, local government and community development. It is expected the GMLA will assist the Water Reserves Task Force to develop a coherent and workable policy framework to support other institutional (law, regulation, behaviour change) and organisational measures. This weakness is identified in the Water and Sanitation Roadmap (2011) summary of priority actions for water supply that refers to the need for:

- a. “enactment of water and sanitation law and regulation to clarify roles, responsibilities and powers of sector agencies”; and
- b. “protection of Bonriki and Buota water reserves, legislation, regulation and enforcement, community engagements as part of the solution.”

3.3 LAW, REGULATION & OPERATING POLICIES

3.3.1 Public Utilities Ordinance

The law relating to the two water reserves is reasonably clear – with one exception. It is clear that the two water reserves were established under the **Public Utilities Ordinance**, Chapter 83 of 1977. Cap 83 of 1977:

- Is an Ordinance to provide for the establishment of a corporate body to be known as the Public Utilities Board, for the performance by that body of functions relating to the supply of electricity and water, the disposal of sewage and for purposes incidental thereto or connected therewith;
- Defines a “water supply area” means a water supply area so declared under section 5;
- Section 5 states that: The Minister may by notice declare any island or part of an island to be an electricity supply area or a water supply area;
- Section 8.(2)(f) states that: subject to section 9 (3), whenever it appears necessary to the Board for the protection or conservation of any water catchment area or otherwise to secure adequate and pure supplies of water to any area, with the approval of the Minister to declare by order any area to be a water reserve and to require by notice the owner or occupier of any land in such a water reserve to remove any structure or fill in any pit upon or in his land whether or not lawfully erected or excavated, within such reasonable time as may be specified and if such person fails to do so to carry out the work itself;
- Section 9.(3) states that: In exercise of the powers given by paragraph (f) of section 8 (2) the Board shall make full compensation to any person interested for all loss or damage sustained by him in consequence of the exercise of such powers. In the event of disagreement the amount of such compensation may be determined in a court in an action for damages to be brought by the claimant against the Board:
 - Provided that no compensation shall be payable in respect of any structure or pit erected or excavated in breach of the provisions of this Ordinance:
 - And provided further that, where the owner of any land affected desires the land to be acquired and a court is of the opinion that such owner has been substantially deprived of the normal use of the land the land shall be so acquired.
- Section 11. States that: Any officer, servant or agent of the Board may, at all reasonable times, and at any time in case of emergency, enter any land for the purpose of conducting a survey, where it is likely that the Board will wish to exercise any of its powers under section 8 (2)(f).
- The Public Utilities Board has powers to: a) fine and imprison persons who carry out dangerous and dishonest tampering, damage apparatus, demand compensation where

damage occurs, prohibit felling of trees and other offences and; b) make regulations to “give effect to the provisions of the Ordinance.

- Finally, subsidiary legislation, areas declared to be water reserves under section 8(2)(f) include:
 - Under L.N.58/69, the area situated at Bonriki and bounded as described in Diagram A on plan No. 5/26 dated 28th May 1969; and
 - Declaration re. Buota to be identified and inserted⁵.

Notes:

The Buota and Bonriki water reserves were not “acquired” as state land in terms of the State Acquisition of Lands Act 95B of (revised) 1979 – as was the case for the Betio, Bairiki and Bikenibeu acquisitions prior to independence. Although the existing landowners in Buota and Bonriki held leases over demarcated strips of land (lagoon to ocean) they did not, at the time of the water reserves declaration, have all their land converted to State land, only the designated water reserve area was created, and they did not enter into the same lease payment arrangements as occurred in the case of acquisitions under Cap 95B. They did receive “one-off” compensation.

It is understood (LMD) that, subsequently, the Buota and Bonriki landowners pressed a case for additional compensation and access to the water reserves that resulted, in the late 1990’s in an executive decision (raised in Parliament, approved by Cabinet) that the landowners being treated as lessors and being paid annual “lease” payments (under the category of “commercial”) in the same way as lessors created under the State Acquisition of Lands Act. This practice continues. In addition, the right to occupy the ocean and lagoon fronts for a depth of up to 50 metres was established. The road was constructed around the perimeter to mark the 50 meter boundary and survey beacons (concrete markers with steel peg) to mark this boundary.

As is the case with the those “state land” acquisitions in South Tarawa, the Bonriki and Buota landowners regard themselves as holding the absolute title to the land while the government has acquired temporary or lesser rights. This perception results in beliefs that the land can be accessed and the produce thereof (water from wells, coconuts from trees, etc.) gathered as the “land belongs to them”. In these circumstances, it is likely that measures will be required either as incentives or disincentives to cooperation in the future management of the reserves.

3.3.2 Squatters (Recovery of Land) Act 2005

The Act enables civil proceedings in the circumstances where any person who claims possession of land which he or she alleges is occupied by a person, who entered into or remained in occupation without his or her licence or consent, or that of any predecessor in title, may make application to the Court to recover possession of the land. Upon receipt of an application under section 3 the Court shall forthwith issue a notice commanding the respondent to appear and show cause on the date specified in the notice why the

⁵ It is understood that Buota was declared a water reserve at a later date than the Bonriki reserve.

application should not be granted. An order for possession made under this Act may be enforced under the Rules of Court, save that the leave of the Court need not be obtained prior to the issue of a writ of possession. On the execution of a writ of possession to enforce an order for possession made under this Act it shall be lawful for the Sheriff to seize and remove any chattels and structures (not being fixtures) found on the land.

3.3.3 Other legislation

The Land Planning Ordinance (Cap. 48, 1977) and **Land Planning (Amendment) Act 2000** provide for the designation of areas and establishment of land planning boards in local government – in addition to the Central Land Planning Board. The whole of South Tarawa was designated as a planning area under LN 4/79. As a result the area of South Tarawa from Bairiki to and including Bonriki falls under the Teinainano Urban Council's local planning board. Physical and spatial planning for Buota falls under the authority of the Central Planning Board.

The **Environment Act No. 9 of 1999** (Incorporating amendments contained in the **Environment (Amendment) Act 2007**): establishes integrated systems of development control, environmental impact assessment and pollution control;

- to prevent, control and monitor pollution; to reduce risks to human health and prevent the degradation of the environment by all practical means, including:
 - regulating the discharge of pollutants to the air, water or land;
 - regulating the transport, collection, treatment, storage and disposal of wastes;
 - promoting recycling, reuse, reduction, composting and recovery of materials in an economically viable manner; and
 - protecting and conserving the natural resources threatened by human activities, particularly those resources of national and ecological significance as may be classified under the categories of terrestrial vegetation, coral, fish and marine life;
- to comply with and give effect to regional and international conventions and obligations relating to the environment; provide for the protection, conservation and use of the environment; promote sustainable development; control, manage and regulate hazardous substances; promote the conservation and sustainable use of biological diversity; and protect, conserve and promote heritage.

Local Government act 1984 establishes local councils, including island, town and urban councils. Bonriki falls within the jurisdiction of the Teinainano Urban Council and elects 2 councillors. Buota falls within the jurisdiction of the North Tarawa Island Council and elects 2 councillors and 1 Member of Parliament. Local Councils have a broad range of functions including power to regulate: agriculture, livestock and fisheries; buildings and town planning; education; trees; land maintenance and reclamation (including establishment of parks); relief of famine and drought; markets; public health; public order, peace and safety; communications and public utilities; and trade and industry.

Local councils have a duty to maintain order and good government, discharge their functions conferred by law and prevent the commission of criminal offences in their local area. They also have a duty to levy rates and may charge fees for any service, licence or permit.

3.3.4 World Bank Operational Policies

The World Bank's OP 4.12 Involuntary Resettlement (December 2001, revised April 2013) is applicable to the displacement of unauthorised occupants of the Buota and Bonriki water reserves. The overall objectives of the World Bank's policy on involuntary resettlement are:

- Involuntary resettlement should be avoided where feasible, or minimized,
- Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be meaningfully consulted.
- Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels.

The World Bank's policy applies to economic and social impacts that result from projects using World Bank funds where there is:

- the involuntary taking of land resulting in relocation or loss of shelter; loss of assets or access to assets; or loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or
- involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.

To address the impacts of resettlement on project affected persons it is necessary that:

- a. A **resettlement plan** is prepared containing measures to ensure displaced persons are informed of their options and rights, are consulted and offered choices and are provided with adequate compensation for loss of assets;
- b. If the impacts include physical relocation measures should be provided to ensure project affected persons provided assistance during relocation and provided with equivalent sites.
- c. Where necessary measures should provide support after displacement for a transition period and assistance such as land preparation, credit facilities, training or job opportunities.
- d. Particular attention is paid to vulnerable groups (elderly, women, children, etc.).

If involuntary resettlement is identified as arising in a project, the government:

- will carry out a census to identify the persons who will be affected by the project to determine who will be eligible for assistance, and to discourage inflow of people ineligible for assistance; and
- the criteria by which displaced persons will be deemed eligible for compensation and other assistance, including, including provisions for meaningful consultations with affected persons and communities, local authorities and specify grievance mechanisms.

Displaced persons may be classified in one of the following three groups:

- a. those who have formal legal rights to land (including customary and traditional rights recognized under the laws of the country);
- b. those who do not have formal legal rights to land at the time the census begins but have a claim to such land or assets,-and
- c. those who have no recognizable legal right or claim to the land they are occupying.

It is believed, but to be clearly ascertained in the census that the unauthorized households on the two water reserves fall under c. above. Persons covered under paragraph 15(c) are provided resettlement assistance in lieu of compensation for the land they occupy, and other assistance, as necessary, to achieve the objectives set out in OP 4.12. Persons who encroach on the area after the cut-off date are not entitled to compensation or any other form of resettlement assistance. All persons included in paragraph 15(a), (b), or (c) are provided compensation for loss of assets other than land.

3.4 NORMS OF BEHAVIOUR

Norms of behaviour are included as part of the institutional framework where they influence individual and collective behaviour – they are part of the “rules of the game”. There are identified norms of behaviour in Kiribati relating generally to relationships between traditional and governmental authorities as well as between landowners and the government. Many reports refer to the distrust and suspicion that characterises these relationships at points where conflicts arise. For instance at that point when actual or perceived “public interest” conflicts with family, village or traditional authority interests.

There is a long history of distrust and at times antagonism between the residents of Buota and Bonriki and the government authorities responsible for land (and lease payments), Public Utilities Board and other governmental authorities. To a significant extent this conflict arises where the demands of a densely populated urbanizing South Tarawa come into conflict with a more village and traditionally orientated community. There is a distrust of government officials and intentions, a lingering grievance around the feeling that the local communities have paid a high price and received too little benefit and, at times, a feeling that their rights to the land and the fruit of the land they own have been unjustly removed⁶. This has led in to instances of vandalism of water supply equipment in the reserves. It is necessary that this fact is taken into account in addressing the future sustainable management of the reserves.

See Annex 1. Notes on meetings with the Bonriki and Buota councillors for further information of some of the factors influencing attitudes and behaviour of Buota and Bonriki residents.

⁶ Traditionally, resources under and on land owned, such as water and coconut trees, are owned by the landowner as part of the land. This customary ownership can be conflict with the approach taken in states governed by laws that reserve certain natural resources below and above ground to the state, or head of state (monarch or president).

4. Assessment: Organisational Framework

4.1 KEY STAKEHOLDERS

Kiribati has relied upon the development partner community to fund major infrastructure investments. Comprehensive recommendations have been presented by South Tarawa Sanitation Improvement Project (2011-2019) for the institutional strengthening and capacity building of PUB to bring commercial attitudes and performance to its activities. KAP III (2011-16) and the South Tarawa Sanitation Improvement Sector Project propose embedded TA assistance to PUB for financial, operations and asset management and leak detection as key areas of assistance.

Overall the sector stakeholders and institutions include:

- a. The **South Tarawa communities**;
- b. **The Ministry for Health and Medical Services** – health inspectorate services, water quality monitoring and environmental health;
- c. **Ministry for the Environment, Lands and Agricultural Development** – environment and conservation; policies and regulations for waste and pollution management; land planning and urban growth management. Responsible for land management (lease payments to land owners, identification of and valuation of any compensation payments to unauthorised occupation (land management) or uses (planning regulation) on the water reserves;
- d. **Non-government groups**: the Kiribati Women’s Federation, the Kiribati Association of Non-Government Organisations, the Kiribati Chamber of Commerce and Industry and the Kiribati Council of Churches;
- e. **Urban and Island Councils**: The two Urban Councils in South Tarawa, The Betio Town Council and Teinainano Urban Council with responsibility for urban planning and management and the issue of building, plumbing and drainage permissions and the Eutan Tarawa Council whose jurisdiction includes the Buota water reserve;
- f. **National Water and Sanitation Coordination Committee**⁷ chaired by MPWU, an inter-ministerial and civil society forum agreeing and coordinating water and sanitation policies, strategies, planning and programs;
- g. **Water Quality Management Committee** is a coordination body for the monitoring and reporting of the nation freshwater and marine water quality’. MPWU is leading agency for Committee and bears Secretariat & Coordination roles. MoH (Environmental Health & Laboratory Services), ECD, MFRMD (Fisheries and Minerals Unit), PUB, TUC and BTC are members.

⁷ Comment from the ECD of MELAD: “Does the committee exist and who coordinates it?”

- h. **The Government's Water Sanitation and Solid Waste Task Force** with a mandate for coordinating Government and development partner sector programs and initiatives;
- i. **Drought Committee.** This is being formed, subject to Cabinet approval. Committee members receive monthly summaries of water reserves. The Committee has not met, because of lack of funding;
- j. **National Disaster Council.** This is activated at times of national emergency.
- k. **The Buota and Bonriki Water Reserves Task Force.** Government of Kiribati's Cabinet approved the establishment in 2012 of a high level, inter-Ministerial Water Reserves Task Force, chaired by MELAD. The primary immediate task of the Task Force has been to identify and give notice of Government's intent to move all unauthorized dwellings that are located within the boundary of the Government leased lands of the water reserves

4.2 WATER RESOURCES & SUPPLY

Ministry for Public Works and Utilities, MPWU is responsible for the policies and regulations for the sector. However the Ministry is largely focused on service delivery to the outer islands and little or no staff effort is presently allocated to policy development, review, implementation or monitoring, with the exception of monitoring national water reserves – source: Water and Sanitation Roadmap 2011 to 2030. The MPWU carries out that responsibility through the Water Engineering Unit, which is responsible for monitoring and assessing the nation's water resources and for supplying water in rural communities in North Tarawa and outer island communities (except Kiritimati which is the responsibility of the Public Works Division within the Ministry of Line and Phoenix Development). The Water Engineering Unit monitors periodically the salinity and thickness of the freshwater lenses in Bonriki and Buota water reserves as well as potential new water source areas in North Tarawa at Abatao and Tabiteuea.

The PUB is a statutory authority within MPWU whose responsibility is the supply of water, sanitation and electricity services in South Tarawa and water and electricity in parts of North Tarawa⁹. The protection and security of the water reserves is the responsibility of the PUB under the Public Utilities Ordinance, 1977. PUB staff at the Bonriki water treatment plant carry out routine monitoring of the volume of groundwater and its electrical conductivity (a measure of salinity) pumped from the Bonriki and Buota water reserves and the residual chlorine concentration after treatment in the combined production stream. They also monitor daily rain at Bonriki and the electrical conductivity of water produced from the individual pump stations at Bonriki and Buota.

The Ministry of Health and Medical Services, MHMS, through its Environmental Health Unit, EHU, is responsible for monitoring the microbiological quality of the public water supply in South Tarawa. Because of problems in processing samples, this monitoring is normally episodic, conducted after disease outbreaks.

Despite these responsibilities there appears to be no coordinated and cooperative responsibility for the protection of the water reserves. The head offices of the management agencies are remote from the reserves, with the PUB and MPWU offices in Betio 30 km away. Landowners and the local communities are not involved in the

management of water reserves despite recommendations that this was essential (White *et al.*, 1999, Jones, 2002). In general, there is reluctance within some government agencies to form partnerships with local communities to assist in the management and protection of water resources.

4.3 SOLICITOR GENERAL

The Solicitor General is responsible for the administration of the law in Kiribati. The Attorney General is the Government's legal advisor and holds a position similar to a Minister (executive arm of government) with the Solicitor General being more similar to a Secretary (administrative head).

The administration of the law in the case of unauthorised settlement on the two water reserves is different from the usual case applied in South Tarawa (and Kiritimati) where prosecutions are made for trespass on State Land. In this case the trespass is on a water reserve designated as such under the Public Utilities Ordinance, Chapter 83 of 1977. There is less experience in the Solicitor General's office in this case, although practically the situation has some similarities to the State Land. The Solicitor General described the position as follows:

- The land was compulsorily acquired (See Public Utilities Ordinance above). There was an arrangement made with the (Buota and Bonriki) landowners affected at that time. Later the arrangement was changed with the result that the landowners were treated as leases - as if compulsory acquisition had taken place under the State Lands Act – although leases were not created for this purpose, to the state (as “lessee”) to lease the land from the landlords (as “lessors”).
- The Solicitor General has in the past served notices of eviction on the unauthorised occupants of the two water reserves. Some have left; most have stayed or new settlers have arrived. The Solicitor General has a list of unauthorised households on the two water reserves and has opened files for these.
- In order to proceed further, bearing in mind that if the notice of eviction is followed through fully it will involve court bailiffs, possibly supported by police, in physical on-site evictions and is likely to result in a case or cases being raised in court⁸, the SG wants before proceeding further to:
 - Examine the historical background so as to identify clearly the legal interests of all affected parties;
 - Identify, on the ground the boundaries of the water reserve and clearly establish the location of landowners in relation to the water reserve and the location of the unauthorised settlers;

⁸ The SG has received a letter, as a result of earlier eviction notices, from a lawyer representing some Bonriki settlers that while they accept the eviction they wish to claim more time to move and compensation

- Contributing to the SG's desire to examine the historical background is his knowledge that there have been changes in land ownership, transfers of rights and possibly subdivision of rights that may affect his decisions.
- As a result, the SG wishes the Land Management Division of MELAD to:
 - Clearly identify the boundaries of both water reserves. I understand from the Director LMD that both water reserves have boundaries marked by survey beacons (geodetic reference points), but these may be difficult to see or have been removed. In addition, I understand that the Bonriki boundary is wholly marked by the surrounding perimeter road. This is only partially the case for Buota, where the road weaves at times in and out of the reserve boundary.
 - Provide additional information relating to the relationship between the unauthorised settlers and landowners – are they part of landowner families, what rights do they claim; if any to land ownership in Kiribati; do they receive any lease payments; are any of these settlers also landowners; where are they from; how and when did they come to settle on the water reserves?

The first request of the SG can, I understand be fairly easily and quickly addressed - at what cost? Involving how much time? The second request can partly be answered by the LMD inventories of squatters, but in the main requires a more detailed survey of the settler households. This can be fairly easily accommodated in the census or socio economic survey that is, in any case required as an early action in implementing a Resettlement Action Plan as part of the World Bank's OP 4.12. Preparation of a draft survey questionnaire is therefore an immediate priority for the GMLA – a draft is attached in Annex 3.

Although the Solicitor General's area of responsibility and action is restricted to application of the law, the SG recognises that it will be helpful, almost certainly necessary to accompany involuntary eviction with "facilitation" of the process of resettlement. The options are limited:

1. In the past Kiritimati Island has offered possibilities for state assisted relocation.
2. In the past (Sustainable Towns Program) there were (unsuccessful) plans to develop the Temaiku wetlands as a settlement area and move part of the Bairiki and Betio village communities there.
3. The possibility of changing the 50 meter perimeter rule for authorised settlement to create additional land for settlement, in specific particular locations where impact on the water reserve is minimal or of an acceptable level

While this is not the functional responsibility of the SG, it is recognized that GOK needs to address the issue of land demand and will probably need to do so in this case if the evictions are to be successful.

In the opinion of the SG, recognition of the land owner's rights is important – despite the "lease" recognition they are still the (residual) landowners. They should have some right of access for instance. In some cases the files relating to unauthorised occupants of the water reserves contain lease documents entered into in the 1950s. The Director Land Management Division acknowledged that there were a small number of cases where leases were granted, over small pieces of land, prior to the creation of the water reserves.

The SG stated that, his office will need some administrative support during the process – preparation of notices, etc.

4.4 LOCAL GOVERNMENT

Local government is provided for under the Local Government Act No. 2 of 1984 and the Local Government (Amendment) Act No. 6 of 2006. The Local Government Act establishes councils, their composition, management arrangements and functions. Councils have the power to hold elections, pass bye-laws, establish budgets and raise revenues including property rates or taxes. A town council' means a council established in respect of an area described as a town in the warrant establishing the council – Betio is governed by a town council. An urban council' means a council established in respect of an area described as an urban area in the warrant establishing the council – the area of South Tarawa from Bairiki to Bonriki inclusive falls under the authority of the Teinainano Urban Council. Buota falls under the authority of the Eutan Tarawa Island Council (ETC) whose jurisdiction extends over north Tarawa from Buota to Buariki at the northern end. One of the key differences between Bonriki and Buota is that Bonriki falls under the authority of a TUC Local Planning Board in terms of development control, planning regulation, approval of land use, building permits, etc. The area of South Tarawa has been designated as a planning area, with the establishment of a Local Planning Board by the Land Planning Ordinance 1977 and the subsequent LN 4/79. Buota for planning purposes lies outside the designated planning area and falls under the planning authority of the Central Planning Board.

Buota is represented on the ETC by two councillors, one of whom is currently the Vice Mayor. The Buota councillors have a fairly substantial influence on the ETC because the Buota community forms a fairly high proportion of the ETC electorate. Bonriki is represented by one councillor (see Annex 1 that describes interviews with all three councillors) and because the Bonriki community forms a relatively small part of the whole TUC electorate, Bonriki does not have such a great influence on the TUC as the Buota community have on ETC.

The existing of local government regulatory powers, through bye-laws and planning regulations means that it is likely that proposals for sustainable management of the two water reserve areas will involve application of these ETC and TUC powers.

All three councillors interviewed conveyed similar messages:

- The boundaries of the water reserves and restrictions on settlements and access are known and the reasons understood;
- In both case, but to a greater extent in Bonriki, the potential to harvest coconuts, toddy and babwai on the reserves has completely or mostly disappeared over time.
- There is a strong feeling that the (residual) rights of the landowners entitle them to compensation commensurate with the value of the water resource and that lease payments are of diminishing benefit as families grow.
- In both cases the council and the communities, including landowners, would welcome increased collaboration in the protection of the water reserves if for example this is linked to provision of services (water supply, etc.) or income.

4.5 ENVIRONMENT AND CONSERVATION

The Ministry of Environment, Lands and Agricultural Development, MELAD, carries out conservation and pollution control through its Environment and Conservation Division. Also within MELAD, the Land Management Division is responsible for mapping both the legal water reserves as well as property boundaries. It also is responsible for the payment of annual commercial rent to landowners for the leasing of water reserves and registration of real property rights. The payment of the nearly \$1 million in lease fees by the government carries with it no obligations on the landowners to ensure that the rented land is in good condition and appears to be in the absence of lease agreements.

4.6 KIRIBATI ADAPTATION PROGRAM III

The project development objective is to *improve the resilience of Kiribati to the impacts of climate change on freshwater supply and coastal infrastructure*. The project will achieve this objective by strengthening the government capacity and improving the management and governance of water resources and infrastructure. Component C.1. Improve water resource use and management (US\$4.4 million) is focused on four outputs:

- **Groundwater Abstraction Systems.** Expand the installation of groundwater abstraction systems in North Tarawa;
- **Water Reticulation Management (Leakage detection and repair of real losses).** Reducing leakage is a key priority for the Government of Kiribati;
- **Roof Rainwater Harvesting.** Expand the program of installing rainwater harvesting systems on public buildings for community use that was started under KAP II; and
- **Improved Water Management Governance.** Improve the legislative and regulatory framework and governance model for water resources management with a focus on improved management and protection of the water reserves in Bonriki and Buota.

KAP III recognises that:

- The long-term sustainability of the project benefits will depend in very large degree on the amount of government effort and commitment to implement complex and politically difficult policies such as protecting water reserves from illegal settlements, land use and population growth. The project supports community engagement, public education and targeted behaviour change activities.
- Economic benefits associated with the reduction of vulnerability of water resources include improved supply of clean water for human consumption and related reduction of public health costs; and reduction of water shortages for agriculture and economic activities and related loss of productivity.
- The KAP III activities relating to protection of the Buota and Bonriki water reserves trigger the World Bank's OP 4.12 on Involuntary Resettlement, as a small amount of land or assets acquisition may be necessary, to protect the water reserves. Assets. See the description of OP 4.12 in section 4.3.4. A GOK Land Acquisition and Resettlement Policy Framework, is in place to cover any of these impacts.

- One key lesson of KAP II is the importance of continuous consultations throughout the project life. KAP III recognises the importance of continuous community engagement and involvement of women throughout the consultation process.

The KAP III Project Appraisal Document states, in reference to the Buota and Bonriki water reserves: “Loss of these reserves as the primary source of potable water would constitute a national disaster.”

4.7 SOUTH TARAWA SANITATION IMPROVEMENT SECTOR PROJECT

The South Tarawa Sanitation Improvement Sector Project supports improvements to the health of communities in South Tarawa through: a) enhanced community engagement in, and public awareness of, hygiene and sanitation; b) rehabilitation and upgrading of sanitation infrastructure; c) capacity development to improve sector planning, and operation and maintenance of urban water supply and sanitation services; and d) the creation of a sanitation maintenance fund to ensure adequate financing for sanitation infrastructure maintenance. Program management was put in place in late 2011, a four-year implementation period commenced in late 2012 and the project continues until 2019.

Apart from the Water and Sanitation Roadmap 2011-2030 the South Tarawa Sanitation Improvement Sector Project through its long-term community awareness program provides the scope and opportunity for the embedding of behavioural changes that recognise the importance of water supplies to South Tarawa and the need for concerted resource management, and the control of excessive and wasteful demand. As KAP III also addresses issues of community awareness, processes will be put in place to harmonise the community engagement/mobilisation aspects of the two initiatives.

4.8 URBAN DEVELOPMENT PROGRAM

The New Zealand government funded Urban Development Programme has fairly limited interface with the protection of the Buota and Bonriki reserves. Main activities are:

- Urban renewal, mainly focused on Kiribati Housing Association housing;
- Support to LMD to develop a National Development Strategy;
- Support for water and sanitation in South Tarawa including rainwater harvesting and PUB support; and
- Solid waste management covering collection and disposal.

New Zealand has and continues to be interested in proposals to:

- Remove coconut and pandanus trees from the Buota and Bonriki water reserves;
- Empty of water and infill the borrow pits at the north west end of the runway; and fund commissioning of a solar powered desalination plant, together with 10 year maintenance and supply of water tankers for distribution.

4.9 BUOTA AND BONRIKI WATER RESERVES MANAGEMENT

A combined community and governmental Committee for the Management of Buota and Bonriki Water Reserves was set up in 2002 to improve management and protection of the

Bonriki and Buota water reserves. It appears to have met once in February 2002 and is now defunct.

It is understood that PUB employs 2 or 3 staff at each water reserve, mainly to operate and maintain systems and not to patrol or police the reserves. The Land Management Division has one land management enforcement officer for South Tarawa. The TUC development control is fairly ineffective.

The Tarawa Master Plan (2010) states that: “The current water reserves in South Tarawa were declared over land that was privately owned. This has been highly controversial and has generated long standing disputes between authorities and land holders and their communities. Although the PUB regulations allow the compulsory purchase of land for water reserves, this has never been used by the GOK because of the fundamental importance of land ownership in Kiribati. Instead, the GOK currently pays impacted landowners a land rental of AU\$ 5,000/ha. For the existing Bonriki and Buota water reserves the total annual payment is AU\$ 575,550⁹.

Numerous reports recommend that a specific management arrangement for the two water reserves be established and that this involve community participation:

- “Maintaining the water reserves at Bonriki and Buota will require commitment by government and the involvement of local communities.” *Tarawa Water Master Plan 2010 – 2030 (December 2010)*.
- Another strategy proposed to improve the management and protection of the water reserves and involve local landowners in the process was, instead of paying lease fees to the local landowners, paying the landowners to be custodians and managers of the water reserves with the lease payments being linked to performance criteria such as the absence of settlers, houses and animals, gravel and sand mining, and of crop planting, the infilling of wells, babwai pits and mining pits, the removal of dwellings and other domestic infrastructure and the absence of new burials on the water reserves. The proposal, which is politically sensitive, has never been considered. *Groundwater recharge in low coral islands Bonriki, South Tarawa: Issues, traditions and conflicts in groundwater use and management. White et al. International Hydrological Programme. Pacific Islands Applied GeoScience Commission. 1999*
- In order to address the encroachment of settlers onto the Bonriki and Buota Water Reserves and to include local landowners in the process, a community-government *Committee for the Management of Water Reserves in Bonriki and Buota* was proposed in 2000 as a lead-in to the SAPHE project. This Committee was planned to have representatives from the water reserve villages, from the *Unimwane* (traditional elders) of Tarawa and from the lead government agencies and was to be facilitated by the then Ministry of Home Affairs and Rural Development with secretariat provided by the Land Management Division within the Ministry. The Committee met in February 2002 to discuss Terms of Reference (Jones 2002) but appears not to have met since and is certainly now defunct. Some government agencies are still uncomfortable with the notion of community

⁹ It is understood that the current total annual payment to Buota and Bonriki landowners is around AU\$ 1 million.

participation. The reactivation of this Committee is seen as essential. *Tarawa Water Master Plan 2010 – 2030 (December 2010)*

- The *KAP II Buota Consultations: (16th-17th December, 2010)* states, with reference to community involvement in protection of the water reserves:
 - “There used to be a committee making sure that people do not build houses on the reserve but it has not been active for at least 10 years now. The members of the committee were from Buota and Bonriki. This group could be revived.”
 - “According to the Unimwane, the community is willing to support the reconnection of the water supply to South Tarawa and are ready to assist any government decision. The Unimwane strongly encourage the government to involve all the Unimwane of Buota on any decision making to prevent future damage to the infiltration galleries and the water reserve. They mentioned that the community would be more accepting if the Unimwane were involved as they have a lot of influence in the community and are working closely with the local counsellor.”
- The *KAP II Report on the Protection and Management of Water Reserves, South Tarawa (August 2008)* describes the historical and legal position:
 - The *Directions Assigning Ministerial Responsibility*, dated 5 August 2003, assigned the following responsibilities:
 - Minister for Public Works and Utilities – water management; sewerage systems
 - Minister for the Environment, Lands and Agricultural Development – environment and conservation; waste and pollution management
 - Minister for Health and Medical Services – health inspectorate services and environmental health.

5. Water Reserves Management: Key Issues

5.1 LEGAL STANDING

Buota & Bonriki landowners: The Laws of the Gilbert Islands, 1977 declared water reserves on South Tarawa in Betio, Tearoraereke, Nowerewere to the east of Bikenibeu and Bonriki for the purpose of public water supply from the groundwater lenses in these islands. Buota, in North Tarawa, was subsequently declared a water reserve.

The Public Utilities Ordinance, 1977, under the Public Utilities Board Act, 1978, prohibit settlement on water reserves and allow eviction of existing dwellers and land owners from the declared reserves by the PUB. This regulation is contentious, since land is the principal form of wealth, sustenance and identity in Kiribati, and is a continuing source of tension and disputes between affected land owners and the Government, which sometimes leads to vandalism of infrastructure. The regulations under the PUB Act allow for the compulsory purchase of land on water reserves.

5.2 EXISTING LEASES & TENURE STATUS OF RESIDENTS – ON THE PERIMETER AREA

Although compensation was paid to landowners at the time the Buota and Bonriki water reserves were declared, there was mounting pressure from landowners, (on the grounds the original compensation was insufficient, compared, for instance, with lease payments to land owners on South Tarawa subject to acquisition of land for state purpose) to be paid additional compensation for the surrender of their rights. In 1995, following a change of government, Parliament debated whether the original compensation had been too meagre and an executive decision that additional payment was made. Because it was decided at the time that the additional compensation would be paid annually and on the same basis as the annual payments made to (commercial) land owners who received 99 year leases in South Tarawa (Betio, Bairiki and Bikenibeu) under the State Acquisition of Lands Act 1979, the annual payments to the Buota and Bonriki landowners are regarded as and usually referred to as “lease” or “land” payments. In fact they are not, they are compensation for loss of land rights on the creation of water reserves – no leases were created or granted¹⁰, no “lease term” was attached to the payment. Nonetheless, it is now the cases that the Buota and Bonriki landowners regard the annual payments as being payments for the “giving up” of their land, recognise that occupation of the water reserve area is “unauthorised” and compare their annual payments to those landowners whose land was expropriated under the State Lands Act

Some years later (1998/99), in response to the same pressures, the landowners were granted rights, outside the original Buota and Bonriki villages (which had never been included in the original water reserve) to occupy the sea and lagoon front perimeters to a

¹⁰ The SG has leases on the files of those listed as being unauthorised occupants of the water reserves. The Land Management Division confirmed that these leases exist but are few in number and relate to small pieces of land for which leases were issued before the declaration as water reserves in the 1960s & 70s.

depth of 50 meters. Survey and beaconing of the water reserves perimeter was carried out at this time. Around the same time regulations were introduced describing those activities for which purpose it was authorised to enter the water reserve. These included picking coconuts, etc.

The possibility of offering formal leases to the land owners would provide an opportunity to: a) recognize the “de facto” situation and b) introduce “responsibilities” on the part of the lessees for contributing to water reserve protection, conservation and management. It is possible that the landowners may reject leases, as they see themselves as the “owners of the land”.

5.3 ATTITUDES OF BONRIKI RESIDENTS TO THE WATER RESERVE¹¹

In the late 1990s (see 6.2 above) consultations took place with landowners¹². It was reported that: from the formal meetings in the *maneaba*, and informal group discussions with Bonriki residents and elders in their homes, it became apparent that some residents felt that they had not received sufficient compensation for the use of their land as a water reserve. They complained that they had not been made sufficiently aware of the impact that the reserve and the airport would have on their lives. Apart from the loss of the area for housing and gardens, their coconut trees and *babwai* (taro) pits had become virtually non-productive due, they assumed, to excessive water extraction, and they had lost their livelihood and independence. It was reported that the village was previously self-sufficient with food and sold copra but since land had been lost to the reserve and the airport, they had to buy coconuts and depend on money from the government and other sources to live. They also complained that the water in their wells had become saline from over pumping. After the second *maneaba* presentation by the Sanitation, Public Health and Environment Improvement Project team that explained the goals and findings of the Recharge Study, one of the residents commented that none of the villagers had believed any of the data offered and regarded the presentation to be a government ploy to avoid further compensation. When it was pointed out that the height or salinity of lens had not changed since the introduction of the water reserve, the villagers were sceptical and responded that food trees on the periphery of the reserve were also “looking bad” due to the reduction in size of the lens.

One-to-one discussions were held with residents who did not seem to be involved in the push for compensation. Further information and a different point of view emerged. They suggested that perhaps the fronds of the coconut trees had yellowed and the nuts had become small and scarce because the trees were old and untended, no new trees were being planted, and the nuts and fronds were regularly scavenged by trespassers from the rest of South Tarawa. The *babwai* had deteriorated throughout Tarawa from attacks by the *babwai* beetle during the last ten years, and wells may have been saline from recent flooding from the lagoon. The vegetation on the reserve may have suffered from fires lit

¹¹ See also Annex 1, meeting with the two Buota Councillors in June, 2014.

¹² Source: Bonriki – Temaiku Consultations. South Tarawa Sanitation Improvement Sector Project Quarterly Report No. 1. January 2013. Snowy Mountains Engineering Corporation.

by teenagers. It seemed that some of the discontent had arisen because the village had become seriously overcrowded by influx of relatives from the outer islands (a pressure being experienced by all of South Tarawa) and the majority of these people were unemployed. Consequently space/land was in very high demand and the available cash from the compensation or lease payments was not sufficient for, or available to, the expanded population. It was suggested that this discontent had been exploited to some extent during the recent elections and senior politicians were covertly encouraging resentment against the current government in regard to the Bonriki reserve.

Since the new government had been elected the landowners had been paid \$200 an acre per year (government representatives said the payment is \$300 an acre per year). The residents of Bonriki also received free supply of reticulated water. They reported that there had been a tap to every house but these were not maintained so now there were three tap stands for the whole village. They also used house wells consistently because the reticulated supply is intermittent. When the reticulated water was available they allowed the taps to run continuously. The residents did not consider it an advantage to not pay for reticulated water as "the water belongs to Bonriki anyway" and they knew of many people in other parts of South Tarawa who have not received water bills for over a year.

From discussions with the wider community of South Tarawa it emerged that the people of Bonriki were resented because they were perceived as receiving unwarranted special treatment for loss of their land. Many landowners in South Tarawa were suffering the stress of overcrowding, dislocation and increasing demand to accommodate and support relatives from the outer islands (Tebano 1996). It was observed that the Bonriki people still had plenty of breadfruit trees and could easily fish in the lagoon and collect food off the reef as their shoreline was less polluted and degraded than the more populated areas of South Tarawa. There was also some anxiety that the discontented Bonriki residents were 'poisoning' the reticulated water and blackmailing the government to obtain more compensation. From these members of the wider community there was pressure on the government not to listen to the Bonriki residents, and to force the squatters off the reserve.

5.4 ATTITUDES OF BUOTA RESIDENTS TO THE WATER RESERVE¹³

In consultation with the Buota community in December 2010 it was reported that:

- The community attitude towards the reserve and the transportation of water to South Tarawa is very different today compared to 15-20 years ago. Back then, the damage to the system was a deliberate decision made by the community of Buota (the Unimwane) to protest against the transportation of water to South Tarawa. Today the Unimwane and the community understand the need for clean water in South Tarawa and they accept the water system because landowners are receiving

¹³ Source: Buota Consultations: 16th-17th December, 2010 Interview Results. GOK, KAP II. January 2011. GWP Consultants LLP (United Kingdom)

land leasing payments. There is no communal resistance to the water system and the water reserves anymore and none of the interviewees thought that anyone was deliberately damaging the system to protest against transportation of water to South Tarawa.

- Recent damage to the water infiltration galleries could be traced back to individuals or small groups of young and adult men residing in Buota who inflicted the damage for a variety of reasons:
 - Usefulness and value of materials in the infiltration galleries,
 - Restlessness due to a high rate of unemployment,
 - Irrational behaviour due to drunkenness, and
 - Unaware and playing children.
- Despite the community acceptance of the water transported to South Tarawa, the interviewees were still concerned with a number of issues related to the water reserve:
 - Land owners are worried about the future land leasing rates;
 - There is no more living space for the growing population in Buota, and many families feel they have no choice but to move into the reserve;
 - The community is experiencing the reserve as increasingly becoming a dry and drying land and community subsistence possibilities are restricted;
 - There is a need for fresh water in Buota, especially on the peninsula on the north east of Buota where the well water is constantly saline and about 100 to 200 people are struggling to get drinkable water;
 - Landowners outside the system believe the compensation system is unfair as they perceive that the water under their land is also affected by transportation of water from the island.
 - The interviewees were concerned that it was no longer possible to maintain the boundaries of the reserve. A suggestion was to reduce the area of the reserve to allow more houses and living space for the increasing population by from the current 50m to 100m from the shore.

There were 1373 people living in Buota at the time of the 2005 census. During 2010 the following land leasing data was available:

Table 8. Buota Land Leasing data, 2005 Census

Leasing rate	AU\$ 2,024 per acre, per year
Total area leased	108.2 acres
Number of land plots	76
Number of landowners	447 (names on the public landowners list)
Total government lease paid	AU\$ 219,076
Leasing payments range	AU\$ 11 to AU\$ 9,404 per land owner/ year depending on the size of the plot and if the land is divided among several people.

5.5 EXTENT OF UNAUTHORISED SETTLEMENT AND LAND USE

The Land Management Department of MELAD, as “the custodian of the land” has been given the responsibility of making and maintaining an inventory of unauthorised households and dwelling on the two water reserves (see Annex 2). The inventory was provided to the Solicitor General in mid-2013 and, in April 2014 was most recently updated¹⁴. There are 72 households on the list, about 59 on the Bonriki reserve and 20 on the Buota reserve. Details included in the inventory: head of household, relationship to landowners, reason for unauthorised settlement, no. /type of structures. Some are related to land owners (relatives, expanding family, etc.) and significant proportion are not related but originate from either South or North Tarawa or other islands and came there to find a place to stay and to access the opportunities (paid employment, etc.) that South Tarawa offers.

Ponds excavated during airport construction: The ponds on the western, lagoon side of the Bonriki reserve were excavated to provide fill for the Bonriki runway. These ponds which are normally brackish contribute salinity to the groundwater. After cleaning of organic matter from the base of the ponds they could be in filled with clean sand dredged from the lagoon.

Buffer zone or strip: At the time (late 1990s), the suggestion to allow settlement in a 50 m buffer strip along the ocean-side perimeter of water reserves (Falkland, 1992), seemed a just and equitable solution to *baki-aba*. At Bonriki, however, this settlement has accelerated encroachment on the water reserve. Some of the houses on the water reserve are substantial.

The Bonriki Airport control tower, constructed under a European Union funded project in 2004, was cited on the northern edge of the airport runway within the Bonriki water reserve because of line of site requirements and space availability. A government steering committee for the project included the lead water and environment ministries who approved the plans despite it clearly contravening the water reserve regulations and public health bye-laws. The septic tank toilet for the control tower is located directly over one of the two infiltration gallery arms leading to Bonriki pump station.

Bonriki Airport: It is understood that there are current proposal, soon to be implemented for rehabilitation of the airport runway, construction of a new terminal building and of a fence around the whole airport area. I have not seen details of the proposed works. The development of the fence will impede access between the Bonriki villages on the ocean side with South Tarawa and vice versa. It is understood that actions are included in the airport development project to address this aspect. The development will form a further, fairly limited, barrier to access to the Bonriki water reserve.

The main characteristics of the unauthorised settler households can be illustrated by the LMD survey data from 2012 in the following Table.

¹⁴ At the time of presenting this outline of the Baseline Situation Assessment (30 June 2013) I am awaiting the details of the April 2014 update which is being prepared by the Land Management Division. This update and any comments on the details it contains will be incorporated in the final Baseline Situation Assessment Report.

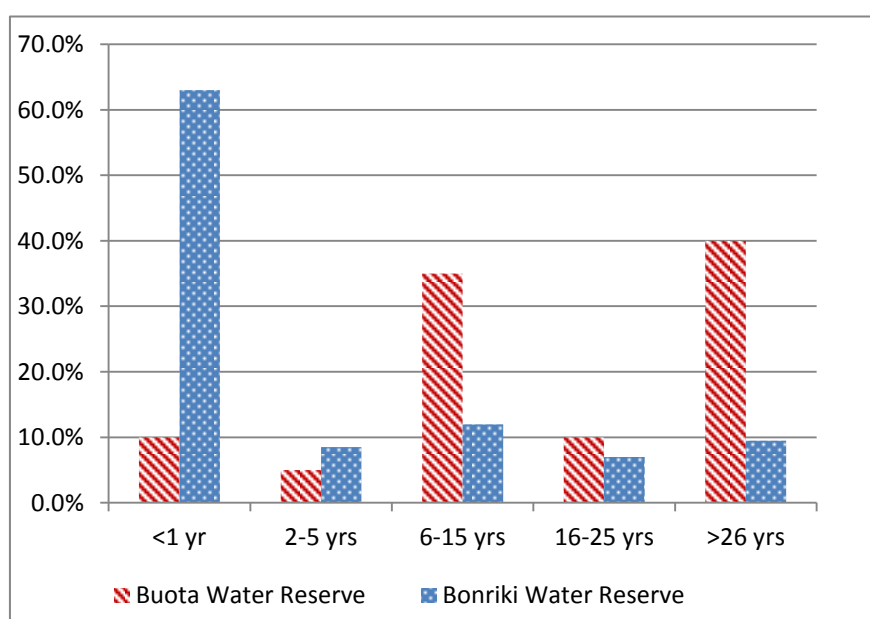
Table 9. Buota & Bonriki Water Reserve Squatters Inventory; Nov. 2012

	No. of unauthorised households	Total household nos.	Average household size	Average years Occupation
Buota Water Reserve	20	114	7.0	17.6
Bonriki Water Reserve	59	339	5.7	6.71
Totals	79	453	6.06	9.47

Average household size in Buota is higher than in Bonriki with 4 households containing 12, 15, 16 and 17 members and the remaining 16 households (80%) being substantially smaller – an average of 5 members. 6 Bonriki households contain 10, 3x12, 13 and 20 members with the remainder (90%) being substantially smaller – an average of 4.9 members. There is also a significant difference in average years of occupation with Buota settlers having been on the water reserve for almost 3 times as many years – 17.6 years in Buota compared to 6.7 years in Bonriki.

Table 10. Percentage of Households by Years of Occupation

	1 year or less	2 years to 5 years	6 years to 15 years	16 years to 25 years	26 years and more
Buota Water Reserve	10%	5%	35%	10%	40%
Bonriki Water Reserve	63%	8.5%	12%	7%	9.5

Figure 1. Percentage of Unauthorised Households by Years of Occupation

Analysis of the percentage of households that fall within a range of periods of occupation of the water reserve from less than 1 year, through 2-5 yrs., 6-15 yrs., 16-25 years and more than 26 years is striking. While 63% of Bonriki households had, in 2012, been there 1 year or less, only 10% of Buota

residents fell in this category. At the other end of the length of occupation, 40% of Buota residents had been on the reserve for 26 years or more, 50% for more than 16 years and 35% for 6 to 15 years. It is clear that Buota and Bonriki have very different patterns of

settlement with Bonriki showing a much higher level of short stay transitional (From where? To where?) households and Buota a more settled pattern of long term occupation. This characteristic is further illustrated in the above Figure.

It is also notable that, as shown in Figures 4 and 6 in Annex 3, the unauthorised residents in Buota are settled wholly along the (inside of) the 50 meter perimeter while in Bonriki they are scattered in clumps in the middle of the reserve.

LMD has carried out inventories of the unauthorised settlers on the Bonriki water reserve in 2005, 2006, September 2007, March 2008, July 2009, April 2011 and July 2012 (see Annex 2. The overall movement of squatters in and out of the reserve supports the observation made earlier that Bonriki has a high turnover (roughly 30% each year) of settlers.

Table 11. Summary of LMD Census of Illegal Households in Bonriki

Year	Total	Old	New	Move out	Total on site	Net movement	% increase
2005	24	24				-	
2006	34	34			34	+10	29%
2007	52	22	18	12	40	+6	15%
2008	46	17	29	0	46	+6	13%
2009	62	16	37	8	54	+8	15%
2011	85	38	22	25	60	+6	10%
2012	99	51	13	35	69	+9	13%

Although the net increase in each year has dropped from the high of 29% from 2005 to 2006 it has been a fairly consistent 13-15% since then with slight drops 2009-11 at 10%. The number of households moving out each year fluctuates but is quite high on average at around 30%. It seems very unlikely that Buota, given the length of occupation of most unauthorised residents, has a similar characteristic.

5.6 DRIVERS OF UNAUTHORISED SETTLEMENT AND LAND USE

In consultations held with the Bonriki community in 1996-97 it was reported that the government was obliged to compensate for losses associated with the use of the land but not for anything below ground level, including the water. Hence the focus by landowners on the effect of extraction on vegetation, and consequent loss of livelihood or subsistence (Shalev 1994). In addition to the agitation for redress, the villagers were taking practical steps to alleviate their difficulties. Bonriki residents were moving onto the reserve, building houses and growing vegetables. It was implied that in some cases plots had been sold or rented to them by the landowners. In other cases, the landowners could not refuse their relatives due to the custom of bubiti even though they had been compensated by the government for non-use of their land. There were also the children of the landowners who had recently married, and needed their own home and gardens. In addition, space was required to bury the dead.

Because the water reserves are perceived as “government land”, they are often raided for their resources. Settlers at the Bonriki end of South Tarawa have little opportunities for

generating income. Sand and gravel are currently in very short supply in Tarawa. Sand and gravel mining, although illegal, therefore provides settlers and particularly squatters with an opportunity to earn some income and to many the Bonriki water reserve appears to be an ideal source for materials.

The impacts of sand and gravel mining can be seen in aerial photos¹⁵ and is endemic across the reserve. Mining has significant impacts on the water reserve:

- Destruction of vegetation,
- Increases vulnerability of groundwater to pollution as less soil overlies the water table,
- Increases direct evaporation losses from the water table,
- Threatens to undermine pumping stations,
- Has completely destroyed salinity monitoring boreholes,

On repeated inspections of the reserve, the impacts of mining have been found to progressively worsen and constitute a significant threat to South Tarawa's reticulated water supply.

Increased settlement on the Bonriki water reserve also leads to other inappropriate land uses:

- **Digging of open wells.** These expose the groundwater to direct contamination and lead to algal blooms in the water.
- **Active graveyards.** There are several active graveyards on the Bonriki water reserve which expose the shallow groundwater to the risk of pollution.
- **Raising of pigs.** There are estimated to be about 2.4 pigs per household in Kiribati. The faecal contaminant load from pigs on the reserve poses a significant threat to water quality.
- **Growing crops.** This is particularly prevalent on the western, lagoon side of the water reserve where the soils are fine textured. The use of fertilisers and animal excrement to provide nutrients to the crop poses a significant groundwater pollution threat.
- **Growing *babwai*.** Cultivation of *babwai* (swamp taro) has commenced on the western side of the Bonriki water reserve near PS 14 and PS 13. Babwai pits are excavated directly into the water table and fertiliser and animal wastes are added directly to the groundwater. This poses a major threat to groundwater quality and increases evaporative losses.
- **Direct pollution.** The terminal wells of gallery pump stations can be opened and these have been used as rubbish dumps and as toilets. The risk to Tarawa's water supply from this is immense.

¹⁵ A photographic record of unauthorised settlement on and uses in the Bonriki water reserve was made on June 22 during a site visit. This record is available.

- **Vandalism of infrastructure.** Vandalism is a continuing problem in the water reserves. Pumps have been burnt and salinity monitoring boreholes, essential for tracking the impacts of pumping are regularly destroyed. This points to significant problems in the management of the water reserves.

Interview with Buota Councillors: In the interviews with ETC councillors for Buota on 19 June, it was stated that the main drivers of unauthorised settlement was the “need for more land” – on the part of growing resident families, retired civil servants with family links to Buota, etc. It was said that most unauthorised settlers were relatives of landowners or landowners themselves. In regard to uses of the reserve, the Councillors stated that there was some harvesting of plants for traditional medicines and collection of pandanus for thatching, mats, etc. The councillors stated that it was well known that settlement on and use of the reserve is prohibited.

Interview with Bonriki Councillor: In an interview with the Bonriki councillor it was stated that the main drivers of unauthorised settlement were:

- Landowner families who were living in the area at the time the water reserves were declared, i.e., the result of the extended family, growth of families and resulting need for land.
- Some of settlers on the reserve come from other places; they may be related to landowners. Many are living in the reserve on the north east ocean side.
- Others just come from South Tarawa to take gravel and cultivate gardens.
- There is one group living there for about 5 years, from the Southern Islands.
- The people who live behind the control tower are new settlers

5.7 ALTERNATIVES FOR RELOCATION OF UNAUTHORISED SETTLEMENT

Discussions with LMD officials, the Solicitor General and Councillors representing both communities had similar opinions about alternatives for relocation of unauthorised settlement:

- a. The majority of unauthorised settler households can return to the land where they were previously legal residents, because they are:
 - i. related to landowners or part of extended family that is resident legally in the perimeter area of the Buota and Bonriki islands. Some are landowners or related to land owners who are themselves retired civil servants (Buota). They can re-join their villages in the permissible area for settlement.
 - ii. from outer islands or South Tarawa who have settled in the Buota or Bonriki reserves because they seek either “living space” (South Tarawa residents) or economic opportunities (Outer Island settlers) or both.
- b. Some unauthorised settlers are long term residents who have occupied the land for 30 years or more, in some cases from before the date that they were declared water reserves.
- c. 4 of the 59 Bonriki reserve settlers are described in the LMD 2012 census as having received their land from or been authorised by the registered land owner.

- d. There are a range of opportunistic uses made of the land that do not necessarily result in structures or permanent occupation. These include gardens, gravel and sand mining, etc.

5.8 ALTERNATIVES FOR USE OF THE WATER RESERVES TO SUPPORT LIVELIHOODS

See Section 6.2.7 that follows.

6. Immediate Actions and Sustainable Management

This Baseline Situation Assessment Report is intended to bring together the different elements relating to protection and conservation of the Buota and Bonriki water reserves. The Baseline Situation Assessment includes information on key issues (Section 6) including:

- The legal standing of the reserves and details of the Government's existing leases;
- The extent of unauthorized settlement and land uses;
- Socio-economic and tenure data on the residents living in the vicinity (perimeters) and on the reserves themselves;
- An understanding of the economic and social drivers of unauthorized settlement and land use;
- The incentives and processes underlying the informal settlement and use of land contrary to the provisions of Government's leases; and
- What alternatives the people living on and using the water reserves have regarding living and livelihood arrangements.

The Baseline Situation Assessment provides a foundation for development of:

- **Immediate Actions Plan** to assist the Water Reserves Task Force to: a) manage the involuntary resettlement of unauthorized residents from the reserves; b) manage the involuntary cessation of other illegal activities occurring on the reserves; and c) to publically establish a cut-off date and prevent any further unauthorized settlement and use of land; and
- **A Sustainable Management Plan** to assist the Water Reserves Task Force to: a) determine future sustainable uses of land for the reserves; and b) identify the scope of and prepare an 'order-of' costed program of a range of appropriate incentive systems to safeguard the long-term future of the reserves.

The following two sections (2.1 and 2.2) make a first attempt to provide an outline for these two Plans.

6.1 IMMEDIATE ACTIONS – FOR REMOVAL OF UNAUTHORISED SETTLERS

Discussions with the Solicitor General and Director and Land Management Division, MELAD indicate that:

1. The Solicitor General has received the list of households to be evicted from the Bonriki and Buota water reserves (2012, updated 1st half 2014¹⁶). The exercise of

¹⁶ At the time of presenting this outline Baseline Situation Assessment Report I am awaiting details from LMD of: a) the list of land owners in Buota and Bonriki receiving lease payments; and b) the 2014 updated list of unauthorised households on the water reserves. The final Baseline Situation Assessment Report will contain these. Clearly these may

giving notice of eviction has been carried out in the past, and a few households have moved as a response. In order to be prepared should the matter go to court – as there are signs it may – the SG requires:

- i. That the boundaries of the water reserve are clearly indicated so that it can be visually and clearly established which the unauthorised settlers are.
 - ii. Time is given for analysis of the historical background as there are indications that property rights may be affected and it is necessary to identify these clearly in each case. This analysis would be supported by a survey that obtained information as to the historical background to each case of unauthorised settlement.
 - iii. Some assistance with the administrative task of preparing, issuing and enforcing notices of eviction.
2. The Director Lands Management Division states that:
- i. The boundaries of the water reserves are identifiable and can be marked more clearly.
 - ii. The most recent list of unauthorised households was carried out in 2012 (checked/updated 1st half 2014). Although the data contained is more comprehensive than in previous surveys, it does not provide the information required – household nos., vulnerable groups, assets, income source and amount and distance from key services, required to meet World Bank Operational Policy (OP) 4.12 requirements.

The Government of Kiribati's Land Acquisition and Resettlement Policy Framework, KAP III, August 2005¹⁷ applies to eviction of the unauthorised settlers on the water reserve because this action involves involuntary taking of land resulting in relocation or loss of shelter, potential loss of assets, income sources and livelihoods. The 2012 census listed 79 households containing 453 household members. The figures are almost certainly now higher. The step by step actions required under OP 4.12 are as follows:

- a. Consult with key parties involved (Cabinet, LMD, SG, MELAD, PUB and both communities) to advise them of course of action being followed, result expected and reasons for the action.
- b. Carry out a census to identify the persons affected,
- c. Determine who will be eligible for assistance,

affect the assessment, particularly related to the information on unauthorised households required to develop Resettlement Action Plans and, therefore, the Census questionnaire (see Annexes 2 and 3).

17 Land Acquisition and Resttlement Policy Framework provides a framework for land acquisition and resettlement under the KAP III that integrates the laws of Kiribati with the World Bank's OP 4.12 Involuntary Resettlement (December 2001). I have used the World Bank's OP 4.12 updated April 2013 – produced more recently than the LARPF - as a reference

- d. Determine a cut-off date after which no further persons will be eligible for assistance. **Note:** As stated in the LARPF, it is proposed that the “date of the census will be the cut-off date for eligibility for benefits under the resettlement plan.
- e. Determine the criteria for eligibility for assistance:
 - i. Those who have legal rights. Note: (it is not expected that any of the households have any legal rights to occupation of the water reserve, but the SG wants to establish this fact clearly);
 - ii. Those who do not have formal legal rights to land but may claim rights to land or assets that are recognized in law;
 - iii. Those who have no recognizable legal right or claim to the land they occupy. Note: It is expected that all or at least the substantial majority will fall into this category.
- f. Prepare a Resettlement Action Plan (RAP), with reference to the Land Acquisition and Resettlement Policy Framework prepared for KAP II in 2005. The objective of the RAP is to assist displaced persons so that they are no worse off, or are better off, than before displacement. The RAP will require:
 - i. Packages of assistance that are designed for cases e.i and ii and for e.iii, above. The packages will identify the criteria for eligibility for provision of assistance relating to: compensation for loss of land or assets, replacement of assets, relocation, displacement (livelihoods). Note: In the case of e.iii above, as is expected to be the position in the majority of cases, with possibly a few exceptions, households are eligible for resettlement assistance in lieu of compensation for land occupied;
 - ii. That particular attention is paid to assistance to vulnerable groups; and
 - iii. Negotiations to take place with each household to agree the package of assistance based on the eligibility criteria for each package.
 - iv. The RAP will then be implemented with application of the packages of assistance and the resettlement of households.

Three aspects seem likely to pose particular difficulties:

1. The task of clarifying the land occupation status of each household. This will be addressed by the census which will gather data on this subject and combined with SG’s analysis of the existing files.
2. Where to relocate households. It is expected that the majority will have no legal land rights, but some claim legal or historic rights and even those who claim no land rights will need some place to live. The options are:
 - a. Provide no relocation site. Require households to find a place to resettle themselves – probably where they have claim to or can negotiate living space or with relatives in the Bonriki/Buota villages, in South Tarawa or in Outer Islands.
 - b. Provide land for relocation, where evidence is provided that the household has some legal right or claim to the land occupied:

- In Kiritimati Island,
 - By increasing the 50 metre perimeter of the water reserve, in whole or in part. Note: There are many cases, in Buota and Bonriki, where relocation could be wholly avoided by this means because the households occupy the water reserve on or close to the 50 metre perimeter. Clearly this course of action would provide a potentially dangerous precedent.
 - By purchasing land in Bonriki/Buota that is (legally) developable, not yet developed and owned by a land owner (some case are thought to exist).
3. Building consensus as to the roadmap and implementing it with support, or at least without active opposition of: a) the communities involved, b) the political executive and c) the various administrative arms of government.

To address these three issues it is advised that:

1. The census, scrutiny of SG's files and establishment of the cut-off date proceed as quickly as possible – after an initial round of consensus building and agreement – scheduled for October this year;
2. Before, during and after the October workshop meetings take place of the Buota and Bonriki Water Reserves Task Force, and b) there are substantive meetings with both unauthorised households and local land owners in Buota and Bonriki as well as elders, councillors and MPs representing the communities; and
3. Cabinet Information Notes are prepared after each workshop and are submitted to and considered by Cabinet (possibly accompanied by a brief presentation).

6.2 SUSTAINABLE MANAGEMENT PLAN

6.2.1 Models for Management of Natural Resources

There are a wide range of tried and tested approaches for the management of natural resources internationally. Many of these successfully accommodate traditional or customary approaches to ownership and management of common property resources with those involving state ownership and management. For example:

1. **State ownership and management:** The state (government) owns the resource – in this case a water source – and manages the resource through state organisations and the application of law and regulation.
2. **State ownership and contracted out management:** The state (government) owns the resource and contracts out management to another, usually private firm, in the form of a concession, joint venture or lease arrangement. The state uses law and regulation as the institutional framework for the arrangement.
3. **State ownership & Community Involvement:** The state (government) owns the resource and manages the resource through state organisations or contracting out and includes in the management arrangements mechanisms for community involvement: advisory, in making certain decisions, in receiving some benefits (financial or in kind). The aim is to get community support in managing the resource or in making key decisions (tariffs, etc.) or in receiving benefits that will incentivize them to protect and conserve the resource.

4. **Community ownership:** Ownership of the resource is transferred to the community, provided the community achieves set criteria (establish a trust, management systems, including financial, etc.) and manages the resource, receiving the benefits (financial and other) therefrom – within a set of law and regulation established by the state.
5. **Community & State Ownership:** A combination of 1, 2 and 4 above.

6.2.2 Actions to Increase the Water Resource

Two possibilities are described in the Water and Sanitation Roadmap (see Table 6, Section 2.3.3):

1. Removal of 1,700 deep rooted coconuts from the central portion of Bonriki will increase the sustainable yield of Bonriki by 250m³/day. Under this option, negotiations with landowners over tree removal and compensation payments will be required as they have retained right of access to the trees; however it is understood that they are no longer a reliable source of coconut, copra or toddy. Estimated cost (2011) is AU\$ 272,000 and it is understood that NZAP is considering funding. Note: the removal of pandanus was also recommended in the Water and Sanitation Roadmap, but it is understood that pandanus does not have the same high impact on the water lens as coconut.
2. During construction of the airport runway, borrow pits were excavated at the western, lagoon end of Bonriki. These become brackish during drier periods and contribute salinity to the freshwater lens. If the bottom of these ponds were cleaned of organic matter and the ponds infilled with clean, dredged sand, the area and sustainable yield of Bonriki reserve could be increased by a further 250 m³/day. This option may also require negotiations with landowners and the Bonriki community who use the ponds for soaking pandanus fronds for thatching. The remedial works would enable the installation of three new galleries in the reclaimed area and may involve increased land rental payments. Estimated cost (2011) is AU\$ 2,500,000 and it is understood that NZAP is considering funding.

6.2.3 Remedial Actions to Protect the Water Lens

The aim is to reduce the potential for contamination or pollution of the lens and put in place as far as possible a normal ground cover above the lens by:

- Filling in any existing pits more than 1 metre in depth. These exist for a wide variety of reasons mainly as a result of excavation for borrow, sand, aggregates and rocks, but also as wells and pit latrines.
- Remove block making.
- Dig up existing tracks and roads. Make unpassable. Select limited access – to water treatment works, etc.

6.2.4 Actions to Create Barriers for Access to the Water Reserves

Types of physical barriers that may be considered are: a) perimeter barriers and b) interior ground cover barriers.

Perimeter barriers. Cost is a factor, as is longevity - resilience in the face of human ingenuity - and maintenance. An additional factor is whether perimeter barrier construction and maintenance can be part of community engagement and result in financial or other benefits to the community.

Walls and fences are likely to be too costly, difficult to maintain and involve little community engagement or benefit while providing opportunities for income that result in disintegration of the barrier. The principle usually adopted is to provide multiple barriers. Choices suggested:

- a. Initially mark the boundary – remove dead/old coconuts on the reserve, cut into 2 metre lengths, sink 100 metre apart along the perimeter in 1 metre holes, whitewash the exposed metre.
- b. Plant two rows of vegetation. Something that will grow densely, preferably spiky or thorny. One row could be spiky/thorny and one fruit producing (to benefit the community). Provide a 1 metre x 1 metre ditch to prevent vehicle access, behind or in front of the row of “defensive” vegetation. Pay the surrounding Bonriki/Buota communities per 100 metres planted. Environment and Conservation Division to supervise.
- c. On the water reserve boundary, opposite the Buota and Bonriki villages and housing, angled corrugated galvanised iron rain water harvesting panels (say 2-3 metres) by 100 metre or more lengths.

Interior Ground Cover Barriers: Three options have been suggested:

1. Remove all plant cover down to low level grass and very small shrubs. This will make it much easier to police and see intruders and unauthorised access (from a few watch towers?). Pay the surrounding community to slash/remove the vegetation once or twice a year.
2. Plant extensively, where other permitted uses are not affected, with a dense, low growing plant or bush that will prevent human access and access by larger animals.
3. Plant useful shrubs or trees that will not draw much from the lens or attract human access but provide a useful product (medicinal plants, fruits or productive plants (castor oil) that can be commercially managed. (suggestions?).

6.2.5 Actions to Prevent Vandalism

- Select (through council, church groups, Unimwane?) members of the Buota and Bonriki community to report vandalism, unauthorised land use (sand mining, settlement, gardens) – being paid for reporting name(s) of miscreant(s).
- CCTV on masts.
- Notices around the reserve warning of penalties
- Engagement of youth with recreational facilities.

6.2.6 Land Uses Not Permitted within the Water Reserve

It is recommended that only very limited human contact with the water reserves is permitted and contact is not permitted in any circumstances involving:

1. The potential for humans to contaminate the water resource with liquid or solid wastes – for example if uses were permitted for recreational purposes that might involve large groups: football fields, picnicking, etc.,
2. Introduction any kind of toxic or contaminating liquid or solid that may percolate through the soil into the water lens –for example:
 - a. gardening or planting of trees that might involve application of fertilizers, pesticides;
 - b. access or dumping of vehicles that might introduce battery acids, toxic metals, vehicle oils, etc.
 - c. pit latrines or septic tanks.
3. Any form of hole or digging that reduces the ground cover over the lens – for example babwai pits, sand, aggregates and rock mining, pit latrines or toilets, wells, etc.
4. Any areas of extensive hard standing (that place a barrier between rain and lens, workshops or any use that involves removal of soils over the lens – for example buildings, asphalted or concreted surfaces, parking areas, etc.

Note: Access is required for operation and maintenance of the water galleries, water treatment works, and for any policing of the site and maintenance of site protection works.

Table 12. Potential Prohibited Uses

Uses	Disadvantages & comments	Local Benefits
Strategic Infrastructure		
Solid waste	Landfill, incineration, recycling, composting, etc.	Positive
Liquid waste disposal	Septic tanks, sludge ponds, waste water treatment, waste water reticulation	Positive
Residential, Commercial, Industrial		
Industrial uses	Involving toxics, anything more than very small numbers of people. No septic tanks	Positive
	All sand, gravel and rock mining – currently a significant level of activity.	Possible loss of income
Residential	No. septic tanks, domestic animals, human waste.	Positive
Commercial	Generally no: introduction of humans, toxics and septic tanks, and hard standing	Positive

6.2.7 Permitted Uses

Potential uses are briefly reviewed in the following table.

Table 13. Potential Permitted Uses on the Water Reserve

Uses	Advantages, Disadvantages & Comments	Local Benefits
Strategic Infrastructure		
Solar / Photovoltaic Panels	Low impact, low nos. of humans doing with O&M. Relatively small areas occupied. Minimal hard standing	No
Solar powered desalination plant	Low impact, low level of human attraction. Low nos. of humans doing O&M. Possible toxic wastes (?) or lubricants. Minimal hard standing	No
Industrial uses	Frees land in South Tarawa for housing. Uses with minimal people on site. Dependent on use. No toxic liquids or substances. No oils, etc. Minimal hard standing.	Employment
Telecommunications masts.	Low impact, low nos. of humans doing with O&M. Relatively small areas occupied. Minimal hard standing	No
Electricity substations	Low impact, low nos. of humans doing with O&M. Relatively small areas occupied.	No
Recreational uses:		
Football fields	Attractive to local communities. Occupy unemployed youth. Locate on perimeter with restricted access to field only & toilets provided	Yes
Volleyball, basketball, etc.		Yes
Agriculture/Horticulture/Fisheries/Industrial:		
Medicinal plants & herbs	Used by whole of South Tarawa, but could be tended by local community Low impact as long as no fertilizers or	Yes employment
Roof thatch & matting	Access for pandanus leaves collection. Strictly limited to women and local residents. I	
Commercial	Possible, limited warehousing that involves minimal human presence and no septic tank, etc. Minimal hard standing	
Existing Uses		
Water treatment works	Existing	No.
Cemeteries	Too difficult to move and of relatively little negative impact. Dedicated access to be provided.	Yes

Note: In an interview with the Buota councillors, they suggested that priorities for development on the part of Buota residents and landowners were: a) Sanitation – it would also reduce risk of people going into the reserve. Mr. Tiita Nubono said he had a composting toilet and was quite satisfied with it; and b) the road.

6.2.8 Perimeter Use and Inner Reserve Use

Is it technically feasible, in terms of sustaining the water resource, to consider a perimeter area, say 50metres in width, in which some limited uses may be permitted, which will: a) generate revenues, and b) provide a barrier to access the main inner area above the lens. In the perimeter area limited, non-contaminating uses could be considered such as: warehousing, doctors surgeries and clinics, recreational facilities, places of worship, police stations, banks, post offices, magistrates courts, craft market, etc.

In this scenario, the inner use may occupy say 80% of the land over the reserve and use is limited mainly to open space, vegetation and uses that are extremely limited and involve very little human or animal contact.

6.2.9 Communication: Awareness Raising, Public Relations, Behaviour Change

It is suggested that a comprehensive Communication Plan be prepared and implemented. The Communication Plan would combine elements of awareness raising, public relations, behaviour change and regulatory warning signs. The regulatory warning signs would provide information to the public, on-site and off-site, of the laws (regulations, by-laws, etc.) and associated penalties that result from contravention of the laws.

The development of a Communication Plan, as part of the Sustainable Management Plan would incorporate the following approach:

1. The Communication Process, incorporating a “Forum” approach
2. The Background and Situation Analysis: What is happening now? Where is management of the water reserves now? Where does it want to be in 1, 5 and 10 years? How does it get there?
3. Objectives – Overall messages and emerging themes.
4. Publics, Audiences and Stakeholders (PAS). Who are Buota and Bonriki Water Reserves PAS taking into account the sustainable management policies, laws, regulations, procedures and operating processes?
5. Goals, Strategies and Actions – Messages to key audiences (What do we want PAS to know and remember? What are the goals of the Sustainable Management Plan? How are they measured? How are GOK and the community planning on reaching its goals?)
6. Implementation.
7. Budget.
8. Performance Targets, Measurement and Evaluation.

7. Annexes

7.1 ANNEX 1. NOTES ON MEETINGS WITH BUOTA AND BONRIKI COUNCILLORS

7.1.1 Councillors for Buota on the Eutan Tarawa Council

Meeting of Tierere Kauriri (Vice Mayor ETC), Tiita Nubono (councillor ETC - Buota), Mimitong Kirata (KAP III Assistant Program Manager), Jon Metcalfe (KAP III GLM Advisor). Morning of Thursday 19 June. Mr. Tierere Kauriri's residence.

Mimitong Kirata gave a brief introduction. Jon Metcalfe introduced himself and described:

- The intention to move unauthorised households off the Buota water reserve and implement a plan for the future protection of the water reserve;
- That this process would take place over the next 18 months, include consultations with the councillors and community, and workshops roughly 4 months apart at which decisions would be taken, after discussion and with all involved parties present.
- The purpose of these proposed actions is to ensure a clean water supply for the future population of South Tarawa.

Questions and comments were invited.

- The Vice Mayor noted that the population in Buota is growing rapidly. Yes there were 20 families on the water reserve but it is growing because there is nowhere to settle. This is the first problem – need for more land.
- The councillors inform new settlers that they should move and not stay on the reserve.

JM – who are the settlers? Response: government retirees (Buota landowners or relatives of landowners) and some outer islanders, also landowners or related to landowners.

JM – What can they use the reserve for? Response: As a water reserve it is not permitted. Most of the babwai pits are filled. It is forbidden to harvest the coconuts, but there is some gathering for toddy. Most of the coconuts are old now. There are some cemeteries – not since it was declared a water reserve but from before. Yes there is some gravel mining, a fairly small amount, for business/income. PUB and the community had a campaign against gravel & sand mining in the past, but not now. There is awareness that it is forbidden. There is some harvesting of plants for traditional medicines. Women have sufficient (plenty) of plant materials – pandanus for thatching, mats, etc.

JM – Do the residents know the boundary of the reserve? Response: Yes. In some cases the road is within the 50 metre perimeter strip and this might result in some encroachment.

JM – what is the feelings about the lease payment? It is too small. The problem is with big families. Maybe it is ok for those with small families but for the big families it is increasingly insufficient.

JM – What is the position about PUB piped water supply? It was provided in the south (east) Buota village some years ago and then discontinued. It is proposed now to provide supply to the south Buota village, but not the north Buota village (where Mr. Tiita Nubono lives). Both councillors were aware there was a new proposal to extend the piped water supply to the north village.

JM – what are their priorities for development for the community in Buota? Response: 1) Sanitation – it would also reduce risk of people going into the reserve. What type? Mr. Tiita Nubono said he had a composting toilet and was quite satisfied with it. 2) Fix the road – only accessible by 4 wheel drive when we visited – very wet, large deep pools, more pools than road. Maintenance is done every 5 years.

JM – Are there income generating activities in Buota. Response: very little. Some women make mats. A few small shops.

Final comments/observations:

- Life was better than in South Tarawa in the old days but not now – no coconuts, no babwai pits.
- During droughts the wells get more salty. Recently there was a very high tide and the sea water came right across the island from the ocean to the lagoon. Otherwise the wells in the villages are good – if the rainfall is good. The wells in north Buota are more salty.

7.1.2 Councillor for Bonriki on the Teinainano Urban Council

Timotee Tokarake, councillor (Bonriki), Mimitong Kirata (KAP III Assistant Program Manager), Jon Metcalfe (KAP III GLM Advisor). Afternoon of Thursday 19 June. TUC offices. Similar introductions and opening description as for the earlier ETC meeting.

JM – who are the settlers on the water reserve? Response:

- Before it became a water reserve, from among families living there – landowners – one family hasn't received lease payment. This is the result of the extended family – i.e., to determine who among a family is the land owner.
- Some of settlers on the reserve come from other places, they may be related to landowners. Many are living in the reserve on the north east ocean side.
- Others just come from South Tarawa to take gravel and cultivate gardens.
- There is one group living there for about 5 years, from the Southern Islands.
- The people who live behind the control tower are new settlers
- Many people living on the reserve, have a place in Bonriki village; they have a place to go, they can move, but one particular man is very strong and has convinced many to stay – he has seen a lawyer (this confirms the comment made by the Solicitor General that he had been approached by a lawyer representing some of the unauthorised occupants of the reserve with the argument that, although they did not dispute the eviction notices, they wanted more time to move and more compensation).

JM - how can we help the squatters to move? Response: If GOK can discuss and give causes of why we want them to move, it would help.

JM – Do the residents know the boundary of the reserve? Yes people are aware. The boundary is clearly marked by the road.

JM – What activities/uses of plants and materials is the reserves? There are no productive coconuts. There were 20 years ago (when I was a boy) but not now. It is because of the water being extracted. The breadfruit is still ok and they can get medicinal plants. There are some village cemeteries in the reserve. Babwai pits were always muddy 20 years ago, now they are completely dry and unused. There are many coming to get gravel and sand – especially in the area of the reserve near the airstrip between the control tower and the ocean. Enforcement is poor and this is one of the main sources of income.

JM – what is the feelings about the lease payment? It is very small. The land lease payment was increased to about AU\$ 2,000 per acre but it is still not sufficient. It sounds like a big amount but when shared among all the relatives, each person get only about AU\$ 60 each. They should get a special rate to reflect the importance of water reserves and the fact that their water is being taken by others. They were planning a meeting of landowners earlier this year but they delayed it because the agenda items were i) to increase the rent, and ii) to cut off the water. They want a water payment, not a lease payment.

Note: Bonriki has 1 councillor, and a population of 5,000 to 6,000. 5 MPs live in Bonriki, all from outer islands.

7.2 ANNEX 2. LMD INVENTORIES OF UNAUTHORISED HOUSEHOLDS

Table 14. Buota Water Reserve Illegal Occupants by Household, November 2012

No.	Name	Surname	Registered Land Owner	Land/Plot	No. per house hold	Type of structure	Occupation	
							Date of:	Years of:
1	Manibwebwe	Kanebo	Ruaiti Nabatiku	Teabanimate	8	Houses	1980's	28
2	Itiniburaieta	Ruati	"	"	4	Houses	1980's	28
3	Atauea	Kabwere	"	"	3	Houses	2011	1
4	Kitiona	Tikutaake	"	"	3	Houses	2011	1
5	Kaitaba	Ioane	Tioraitaki	Tawana	4	Houses	2003	9
6	Ioabo	Taubukinteba	Tione Katokauea	Tawana	5	Houses	2010	2
7	Inatio	Tanentoa	Inatio	Temannaba	15	Houses	2000	12
8	Tetaake	Bataua	Tekaie Beroi	Temannaba	6	Houses	1980's	28
9	Taom	Mikata	Mikata Kaono	Temannaba	16	Houses	1993	19
10	Bauro	Ioane	Mikata Kaono	Temannaba	12	Houses	1980's	28
11	Tuurua	Mikaio	Mikata Kaono	Temannaba	9	Houses	1980's	28
12	Kabuati	Maurintetaake	Maurintetaake	Taburao	6	Houses	1980's	28
13	Tutu	Tekanene	Tierata Tekanene	Taburao	6	Houses	1980's	28
14	Katutu	Maurintetaake	Tokataane M	Taburao	17	Houses	1970's	38
15	Tebwebwe	Tekira	Kamumuna	Taburao	7	Houses	2002	10
16	Teakin	Marii	Ruti Tebuto	Temannaba	2	Houses	1999	13
17	Kabora	Tebuto	"	"	4	Houses	1996	16
18	Kaotirake	Kobae	Taobwe	Temannaba	5	Houses	2003	9
19	Teata	Tebuto	Ruti Tebuto	Temannaba	6	Houses	1999	13
20	Takiri	Merari			2	Houses	1999	13
Totals					140		Average	17.6

= 7 pph

Table 15. Bonriki Water Reserve Illegal Occupants by Household, November 2012

No	Name	Surname	Registered Land Owner	Land Name	No. per House hold	Type of structure	Occupation	
							Date of:	Years of:
1	Baraoi	Toromon	Toromon	Kabwebwere	6	Mixed	2012	1
2	Tanaua	Toromon	Toromon	Kabwebwere	6	Houses	1998	14
3	Bwarateba	Tiinga	Tangitang	Kabwebwere	6	Houses	2012	1
4	Teikake	Tuune	Temaioi	Tabontawana	6	Houses	1993	19
5	Taai	Keketi		Tabontawana	8	Houses	1980's	28
6	Kateti	Taie		Tabontawana	3	Houses	1980's	28
7	Tekeketi	Tawita	Mariamene	Tabontawana	6	Houses	1980's	28

No	Name	Surname	Registered Land Owner	Land Name	No. per House hold	Type of structure	Occupation	
							Date of:	Years of:
8	Ruta	Tuune	Taara	Tabontawana	5	Houses	from land owners 1990's	18
9	Bwere	Baraniko	Teroron	Bareakita	7	Houses	1970's	38
10	Beneti	Tabuaki	Brian Taki	Bareakita	12	Houses	From land owners 2008	4
11	Nabuaka	Moataake				Houses		1
12	Marinati	Taura			20	Semi-permanent	from land owners 1990's	20
13	Kaokoro	Teenana			6	Houses	1990's	20
14	Terubea	Kakumea	Kanoan Kakumea	Kabwebwere	2	Houses		1
15	Tetera	Kakumea	"	Kabwebwere	4	Houses	mid 2000	7
16	N.Ree	Nabooti	Tewera	Tabontawana	4	Houses	2011	1
17	Uriam	Tinaua	Tewera	Tabontawana	13	Mixed	2006	6
18	Taareti	Tiota	Tekaau	Tabontawana	4	Houses	2008	4
19	Teriba	Riwata	Tekaau	Tabontawana	5	Houses	2008	4
20	Temata	Tuune	Temoai	Tabontawana	4	Houses	2008	4
21	Taarita	Mitiana		Bareakita	4	Mixed	2005	7
22	Toaea	Takirua	Raetiri	Bwebwe	7	Mixed	2002	10
23	Iafeta	Fanoanoa	Karainano	Bwebwe	12	Houses	before 1977	38
24	Teatau	Tekaie	Rateiti	Bwebwe		Mixed	early 2000s	8
25	Kinta	Tekaie	Rateiti	Bwebwe	6	Houses	before 1977	38
26	Teatau	Tekaie	Rateiti	Bwebwe	5	Houses	"	1
27	Tetiria	Manuera	Rateiti	Bwebwe	3	Houses	"	1
28	Teaitoki	Teiaa	Tioba Tekea	Teabanimate	8	Mixed	"	1
29	Aarau	Teiaa	"	"	3	Houses	"	1
30	Ribine	Teiaa	"	"	6	Mixed	"	1
31	Raoti	Teiaa	"	"	7	Houses	"	1
32	Tentau	Ioakima	"	"	12	Mixed	"	1
33	Kabuati	Baniata	Tetawa	Bwebwe	3	Houses	2008	4
34	Tikieru	Ioteba	Tetawa	Bwebwe	8	Houses	since 2000	12
35	Tetawa	Betero	Tetawa	Bwebwe	2	Houses	"	1
36	Tewita	Tebunang	N.Tio	Tekatau	3	Mixed		1
37	Ioteba	Terati	"	Tekatau	7	Houses		1
38	Tebawi	Kautabea	"	Tekatau	4	Houses		1
39	Teuea	Kautabea	"	Tekatau	4	Houses		1
40	Ronite	Tiitera	"	Tekatau	9	Mixed		1
41	Anterea	Burerua	"	Tekatau	2	Houses		1

No	Name	Surname	Registered Land Owner	Land Name	No. per House hold	Type of structure	Occupation	
							Date of:	Years of:
42	Terokati	Timon	"	Tekatau	3	Houses		1
43	Tiaonna	Beretitara	Te aba n utu	Tekatau	2	Houses		1
44	Atanimon	Maria		Tekatau	6	Houses		1
45	Nawaia	Ruaia	Ruaia	Tebukinimata	6	Houses		1
46	Viane	Berenato		Temuritongo	10	Mixed	early 2012	1
47	Kapaute	Tembeti		Tekatau	5	Houses		1
48	Nariki	Tominiko	Kakiaba	Tekatau	7	Houses		1
49	Mamaia	Teaoatei	Kakiaba	Tekatau	6	Houses		1
50	Mauri	Bwebwe		Tebukinimata	4	Houses		1
51	Teangariki	Kauriri	Ioanna Tarantekai		5	Houses	permitted by land owner	1
52	Ritiata	Koura			4	Houses		1
53	Rubenteiti	Timon			6	Houses		1
54	Maria	Arebonto			8	Houses		1
55	Mikaere	Batee			6	Houses	2012	1
56	Tangitang	Kauea			4	Houses	2012	1
57	Tebeto	Raeti			4	Houses	2012	1
58	Rari	Teatau			6	Houses	2012	1
59	Tabwena	Burentarawa			5	Houses	2012	1
	Total				339		Average	6.71

= 5.7 pph

Table 16. Bonriki Water Reserve Squatters 2005to 2012

2005

No.	Names	Occupation Date
1	Momon Toromon	2004
2	Tuune Eeru	late 80's
3	Teburenga Binau	2004
4	Meeri Been	1980
5	Tebuto Korina	1992
6	Tonganibeia Robin	1993
7	Bauro Teroron	2005
8	Tetere Kakumea	2005
9	Kaitintaake Rui	2004
10	Ribine Teia	early 80's
11	Tentau Ioakina	"
12	Teiwaki Ioane	1988
13	Iafeta Fanoanoa	early 90's
14	Moantewa	early 90's
15	Bwenaua Kaino	1990
16	Ata Burerua	late 90's
17	Arebonto Kabuati	early 90's
18	Kabotau Bakatete	1991
19	Mauri Tebwebwe	1990
20	Ioteba Terati	1990
21	Keangibo Kautabea	early 2000
22	Marite Kautabea	2000
23	Ritiata Koura	1987
24	Teiwaki Tauare	2000

2006

No.	Names	Surname
1	Teaoaki	
2	Kiaieta	Tata
3	Tune	N.Moti(wife)
4	Teia	Teaitoki
5	Maria	Berumwa
6	Ruuta	Beia
7	Iafeta	Fanoanoa
8	Taubuki	Taniera
9	Tebuto	Korio
10	Mauri	Bweebwee
11	Kabotau	Bakateke
12	Terawanna	Tata
13	Kimaua	Tokirakeia
14	Ekeniman	Kakiata
15	Tio	Tibaina
16	Baberoti	Burerua
17	Taake	Aata
18	Ronite	Titera
19	Tukem	Buerua
20	Tiare	Tonana
21	Tewita	Marebu
22	Teaitoki	Teia
23	Tekiau	Kakiawi
24	Kaboo	Kakumea
25	Tanaua	Moomon
26	Teburenga	Binau
27	Meri	Been
28	Tabuki	Taeuea
29	Bauro	Teroron
30	Ritiata	Koura
31	Keikei	Arebonto
32	Kiangibo	Kautabea
33	Nabuaka	Moataake
34	N.Tetera	Kakumea

September 2007

No.	Name	Surname	Old/ New
1	Teaoaki		old
2	Kiaieta	Tata	old
3	Tune	N.Moti(wife)	old
4	Teia	Teaitoki	old
5	Maria	Berumwa	old
6	Ruuta	Beia	old
7	Iafeta	Fanoanoa	old
8	Taubuki	Taniera	old
9	Tebuto	Korio	old
10	Mauri	Bweebwee	old
11	Kabotau	Bakatete	old
12	Terawanna	Tata	old
13	Kimaua	Tokirakeia	old
14	Ekeniman	Kakiata	old
15	Tio	Tibaina	old
16	Baberoti	Burerua	old
17	Taake	Aata	old
18	Ronite	Titera	old
19	Tukem	Buerua	old
20	Tiare	Tonana	old
21	Tewita	Marebu	old
22	Teaitoki	Teia	old
23	Tekiau	Kakiawi	old
24	Kaboo	Kakumea	old
25	Tanaua	Moomon	old
26	Teburenga	Binau	old
27	Meri	Been	old
28	Tabuki	Taeuea - Pig Pens	old
29	Bauro	Teroron	old
30	Ritiata	Koura	old
31	Keikei	Arebonto	old
32	Kiangibo	Kautabea	old
33	Nabuaka	Moataake	old
34	N.Tetera	Kakumea	old
35	Bakatete	Karakaua	new
36	Rubenteiti	Timon	new
37	Ioane	Antonio	new
38	Teeruka	Koria	new

March 2008

#	Name	Surname	Old/ New
1	Tanaua	Momon	new
2	Tune	N.Moti(Wife)	old
3	Teburenga	Binau	old
4	Tetika	Maria(wife)	new
5	Meri	Been	old
6	Tonganibeia	Raobin	new
7	Aoniba	Tamwera	new
8	Bauro	Teroron	old
9	Tateinang	Ioane	new
10	Eritabeta	Teroron	new
11	Iafeta	Karainano	old
12	Mataua	Iafeta	new
13	Taubuki	Iafeta	new
14	Been	Tooua	new
15	Turanga	Ilererimo	new
16	Tentau	Iaokimwa	new
17	Teia	Teaitoki	old
18	Teaitoki	Teia	old
19	Ribine	Teia	new
20	Tewita	Tebunang	old
21	Ronite	Titera	old
22	Taake	Aata	old
23	Tukem	Burerua	old
24	Nariki	Eema(wife)	new
25	Tiare	Tonana	old
26	Kimaua	Tokirakeia	old
27	Mauri	Tebwebwe	old
28	Ritiata	Koura	old
29	Ioanna	Tarantekai	new
30	Taoniti	Berenato	new
31	Keikei	Arebonto	old
32	Kiangibo	Kautabea	old
33	Bakatete	Karakaua	new
34	Rubenteiti	Timon	new
35	Kaibeti	Teiwaki	new
36	Ioane	Antonio	new
37	Teeruka	Korio	new
38	Viane	Berenato	new

No.	Name	Surname	Old/ New
39	Viane	Berenato	new
40	Boraia	Bangao	new
41	Benaia	Betan	new
42	Taaia	Nikora	new
43	Moreti	Maria	new
44	Kautabea	Kamoi	new
45	Tentau	laokimwa	new
46	Ribine	Teia	new
47	Turanga	Ilerimo	new
48	Kaibeti	Teiwaki	new
49	Mataua	Iafeta	new
50	Aonibwa	Tamera	new
51	Ioanna	Tarantekai	new
52	Tata	Kauongo	new

#	Name	Surname	Old/ New
39	Boraia	Bangao	new
40	Benaia	Betan	new
41	Taaia	Nikora	new
42	Moreti	Maria(wife)	new
43	Kautabea	Kamoi	new
44	Tekirati	Betero	new
45	N.Tata	Kauongo	new
46	Uriam	Kaierua	new

July 2009

#	Name	surname	House	others
1	Terubea	Kakumea	2	
2	Tanaua	Momon	3	
3	Tune	Reeru	3	1 well
4	Teburenga	Binau	2	
5	Tetika	Maria(wife)	1	
6	Meri	Been	4	1 well
7	Tekeketi	Tavita	1	
8	Uriam	Tinaua	1	
9	Teriba	Reita (wife)	1	
10	Temata	Airam	1	1 well
11	Arobati 3 Maneaba	(Catholic Grp)	1 maneaba	
12	Tonganibeia	Raobin	4	toilet
13	Aoniba	Tamwera	6	toilet
14	Bauro	Teroron	3	1 well
15	Ikauea	Koria	2	
16	Brion	(Tirebu)	3	
17	Tateinang	Ioane	2	
18	Eritabeta	Teroron	1	
19	Iafeta	Karainano	2	toilet
20	Taubuki	Iafeta	1	

April 2011

#	Name	Surname
1	Nabuaka	Uataake
2	Terubea	Kakumea
3	Tanaua	Momon
4	Kauae	Teubei
5	Baburiti	Reeru
6	Teburenga	Binau
7	Tetika	Maria(wife)
8	Meri	Been
9	Tekeketi	Tavita
10	Tarita	Eri
11	Amon	Kamaeu
12	Taitai	Matangare
13	Uriam	Tinaua
14	Tareti	Meeti
15	Teriba	Reita (wife)
16	Temata	Airam
17	Arobati 3 Maneaba	(Catholic Grp)
18	Tonganibeia	Raobin
19	Tune	Reeru
20	Aoniba	Tamwera

#	Name	surname	House	others		#	Name	Surname
21	Been	Tooua	1	1 well		21	Bauro	Teroron
22	Turanga	Ilererimo	2	toilet		22	Tekaunta	Tamuera
23	Kaibeti	Teiwaki	1			23	Kabiriera	Tenuuka
24	Tentau	Iaokimwa	2			24	Ikauea	Koria
25	Teia	Teaitoki	1			25	Brion	(Tirebu)
26	Teaitoki	Teia	2			26	Tateinang	Ioane
27	Ribine	Teia				27	Eritabeta	Teroron
28	Ietawa	Betero	2	toilet		28	Iafeta	Karainano
29	Mataua	Iafeta	2			29	Taubuki	Iafeta
30	Tewita	Tebunang	1	1well		30	Been	Tooua
31	Ioteba	Teerati	1			31	Turanga	Ilererimo
32	Ronite	Titera	5			32	Kaibeti	Teiwaki
33	Taake	Aata	2			33	Tentau	Iaokimwa
34	Tukem	Burerua	1			34	Teia	Teaitoki
35	Nariki	Eema(wife)	1			35	Teaitoki	Teia
36	Tiare	Tonana	1			36	Aarau	Teia
37	Keikei	Arebonto	1			37	Teruti	Teia
38	Kimaua	Tokirakeia	2	1 well		38	Raoti	Toakibu
39	Mauri	Tebwebwe	2			39	Tekimarawa	Takito
40	Ritiata	Koura	1			40	Kinta	Toakibu
41	Ioanna	Tarantekai	2			41	Ilererimo	
42	Taoniti	Berenato	1	1well		42	Tiria	Tiroo
43	Kiangibo	Kautabea	1			43	Ribine	Teia
44	Tekaibao	Tione	1			44	Ietawa	Betero
45	Bakatete	Karakaua	1			45	Terabwena	Ruti
46	Rubenteiti	Timon	1			46	Mamaia	Kabaewa
47	Ioane	Antonio	1			47	Timon	Terikoiti
48	Teeruka	Boboia/Korio	1			48	Baberoti	Burerua
49	Viane	Berenato	1			49	Mataua	Iafeta
50	Boraia	Bangao	1			50	Tevita	Tebunang
51	Teangariki		1			51	Ioteba	Teerati
52	Benaia	Betan	1			52	Ronite	Titera
53	Taaia	Nikora	1			53	Taake	Aata
54	Moreti	Maria(wife)	1			54	Tukem	Burerua
55	Taakee	Kimaua	1			55	Nariki	Eema(wife)
56	Temariti	Kautoa	1			56	Tiare	Tonana
57	Kautabea	Kamoi	1			57	Keikei	Arebonto
58	Tekirati	Betero	2	1well		58	Kimaua	Tokirakeia
60	Kimaere	(N.Tara)				59	Mauri	Tebwebwe
61	N.Tata	Kauongo	1			60	Ritiata	Koura

#	Name	surname	House	others		#	Name	Surname
62	Uriam	Kaierua				61	Ioanna	Tarantekai
						62	Taoniti	Berenato
						63	Kiangibo	Kautabea
						64	Tekaibao	Tione
						65	Bakatete	Karakaua
						66	Maria	Arebonto
						67	Rubenteiti	Timon
						68	Ioane	Antonio
						69	Teeruka	Boboia/Korio
						70	Viane	Berenato
						71	Boraia	Bangao
						72	Biniati	-
						73	Teangariki	Kauriri
						74	Benaia	Betan
						75	Taaia	Nikora
						76	Moreti	Maria(wife)
						77	Taakee	Kimaau
						78	Temarita	Kautoa
						79	Kautabea	Kamoi
						80	Tekirati	Betero
						81	Kimaere	(N.Tara)
						82	Tio	Tibaina
						83	Kabotau	Bakatete
						84	N.Tata	Kauongo
						85	Uriam	Kaierua

July 2012

No.	Names	Surnames	Status
1	Nabuaka	Uataake	Old
2	Taunari		Old
3	Terubea	Kakumea	Old
4	Tanaua	Momon	Old
5	Kauae	Teubei	Moved out
6	Baburiti	Reeru	Moved out
7	Teburenga	Binau	Moved out
8	Tetika	Maria(wife)	Moved out
9	Meri	Been	Old
10	Tekeketi	Tavita	Old

11	Tarita	Eri	Old
12	Amon	Kamaeu	Old
13	Taitai	Matangare	Old
14	Uriam	Tinaua	Old
15	Tareti	Meeti	Old
16	Teriba	Reita (wife)	Moved out
17	Temata	Airam	Old
18	Arobati 3 Maneaba	(Catholic Grp)	Old
19	Tonganibeia	Raobin	Old
20	Tune	Reeru	Old
21	Aoniba	Tamwera	Moved out
22	Baure	Teroron	Moved out
23	Tekaunta	Tamuera	Old
24	Kabiriera	Tenuuka	Moved out
25	Ikauea	Koria	Moved out
26	Brion	(Tirebu)	Old
27	Tateinang	Ioane	Moved out
28	Eritabeta	Teroron	Moved out
29	Iafeta	Karainano	Old
30	Taubuki	Iafeta	Old
31	Been	Tooua	Old
32	Turanga	Iererimo	Old
33	Kaibeti	Teiwaki	Old
34	Tentau	Iaokimwa	Old
35	Teia	Teaitoki	Old
36	Teaitoki	Teia	Old
37	Aarau	Teia	Old
38	Terati	Teia	Old
39	Raoti	Toakibu	Old
40	Tekimarawa	Takite	Moved out
41	Kinta	Toakibu	Old
42	Iererimo		Old
43	Tiria	Tiroo	Old
44	Ribine	Teia	Old
45	Ietawa	Betero	Old
46	Terabwena	Ruti	Old
47	Mamaia	Kabaewa	Old

48	Timon	Terikoiti	Old
49	Baberoti	Burerua	Old
50	Mataua	Iafeta	Moved out
51	Tevita	Tebunang	Old
52	Ioteba	Teerati	Old
53	Ronite	Titera	Old
54	Taake	Aata	Old
55	Tukem	Burerua	Moved out
56	Nariki	Eema(wife)	Old
57	Tiare	Tonana	Moved out
58	Kekei	Arebonto	Moved out
59	Kimaua	Tokirakeia	Moved out
60	Mauri	Tebwebwe	Old
61	Ritiata	Koura	Old
62	Ioanna	Tarantekai	Moved out
63	Taoniti	Berenato	Moved out
64	Kiangibo	Kautabea	Old
65	Tekaibao	Tione	Moved out
66	Bakatete	Karakaua	Moved out
67	Maria	Arebonto	Old
68	Rubenteiti	Timon	Old
69	Ioane	Antonio	Moved out
70	Teeruka	Boboia/Korio	Old
71	Viane	Berenato	Old
72	Boraia	Bangao	Moved out
73	Biniati	-	Old
74	Teangariki	Kauriri	Old
75	Benaia	Betan	Moved out
76	Taiaia	Nikora	Moved out
77	Moreti	Maria(wife)	Old
78	Taakee	Kimaua	Moved out
79	Temarita	Kautoa	Old
80	Kautabea	Kamoi	Old
81	Tekirati	Betero	Moved out
82	Kimaere	(N.Tara)	Moved out
83	Tio	Tibaina	Old
84	Kabotau	Bakatete	Old

85	N.Tata	Kauongo	Moved out
86	Uriam	Kaierua	Moved out
87	N.Tangitang	Kaiuea	New
88	Tebaraoi	Momon	New
89	Towawea	Takirua	New
90	Kabuati	Maretina	New
91	Rari	Teatau	New
92	Tebeto	Raeti	New
93	Rubeaua	Tioniman	New
94	Kabunare	Teatu/Taubuki	New
95	Teatau	Tekaie	New
96	Nawaia	Ruaia	New
97	Tabwena	Burentarawa	New
98	Mikaere	Batee	New
99	Kabaoateata	Io	New

Table 17. Buota Squatters 2012, Updated 2014 with land lease payments made

No.	Name	Surname	Registered Land Owner	Land/Plot	People per household	Type of Development	Date of Occupation	Land lease rate 2014 AUD
1	Manibwebwe	Kanebo	Ruaiti Nabatiku	Teabanimate"	8	Local Houses	1980's	8,080
2	Itiniburaieta	Ruati			4	Local Houses	1980's	as above
3	Atauea	Kabwere			3	Local Houses	2011	as above
4	Kitiona	Tikutaake			3	Local Houses	2011	as above
5	Kaitaba	Ioane	Tioraitaki	Tawana	4	Local Houses	2003	
6	Ioabo	Taubukinteba	Tione Katokauea	Tawana	5	Local Houses	2010	
7	Inatio	Tanentoa	Inatio	Temannaba	15	Local Houses	2000	
8	Tetaake	Bataua	Tekaie Beroi	Temannaba	6	Local Houses	1980's	291.25
9	Taom	Mikata	Mikata Kaono	Temannaba	16	Local Houses	1993	256.67
10	Bauro	Ioane	Mikata Kaono	Temannaba	12	Local Houses	1980's	as above
11	Tuurua	Mikaio	Mikata Kaono	Temannaba	9	Local Houses	1980's	as above
12	Kabuati	Maurintetaake	Maurintetaake	Taburao	6	Local Houses	1980's	216.25
13	Tutu	Tekanene	Tierata Tekanene	Taburao	6	Local Houses	1980's	5,769.95
14	Katutu	Maurintetaake	Tokataane M	Taburao	17	Local Houses	1970's	as above
15	Tebwebwe	Tekira	Kamumuna	Taburao	7	Local Houses	2002	as above
16	Teakin	Marii	Ruti Tebutu	Temannaba	2	Local Houses	1999	2,003.75
17	Kabora	Tebuto			4	Local Houses	1996	as above
18	Kaotirake	Kobae	Taobwe	Temannaba	5	Local Houses	2003	98.10

19	Teata	Tebuto	Ruti Tebuto	Temannaba	6	Local Houses	1999	2,003.75
20	Takiri	Merari			2	Local Houses	1999	
					140	Land lease rent		16/20 = 80%

Table 18. Bonriki Squatters 2012, Updated 2014 with land lease payments made

No	Name	Surname	Registered Land Owner	Land Name	#of people per household	Type of Development	Date of Occupation	Land lease rate 2014 AUD
1	Baraoi	Toromon	Toromon	Kabwebwere	6	Mixed	2012	\$1,602
2	Tanaua	Toromon	Toromon	Kabwebwere	6	Local Houses	1998	as above
3	Bwarateba	Tiinga	Tangitang	Kabwebwere	6	Local Houses	2012	as above
4	Teikake	Tuune	Temaioi	Tabontawana	6	Local Houses	1993	3,750.00
5	Taai	Keketi		Tabontawana	8	Local Houses	1980's	as above
6	Kateti	Taie		Tabontawana	3	Local Houses	1980's	as above
7	Tekeketi	Tawita	Mariamene	Tabontawana	6	Local Houses	1980's	as above
8	Ruta	Tuune	Taara	Tabontawana	5	Local Houses	through l/owners 1990's	as above
9	Bwere	Baraniko	Teroron	Bareakita	7	Local Houses	1970's	
10	Beneti	Tabuaki	Brian Taki	Bareakita	12	Local Houses	through l/owners 1990's	
11	Nabuaka	Moataake				Local Houses		
12	Marinati	Taura			20	Semi-permanent	through l/owners 1990's	
13	Kaokoro	Teenana			6	Local Houses	1990's	
14	Terubea	Kakumea	Kanoan	Kabwebwere	2	Local Houses		9.10
15	Tetera	Kakumea	Kakumea	Kabwebwere	4	Local Houses	mid 2000	
16	N.Ree	Nabooti	Tewera	Tabontawana	4	Local Houses	2011	335.60
17	Uriam	Tinaua	Tewera	Tabontawana	13	Mixed	2006	
18	Taareti	Tiota	Tekaau	Tabontawana	4	Local Houses	2008	335.60
19	Teriba	Riwata	Tekaau	Tabontawana	5	Local Houses	2008	
20	Temata	Tuune	Temoai	Tabontawana	4	Local Houses	2008	1,121.25
21	Taarita	Mitiana		Bareakita	4	Mixed	2005	
22	Toaea	Takirua	Raetiri	Bwebwe	7	Mixed	2002	107.98
23	Iafeta	Fanoanoa	Karainano	Bwebwe	12	Local Houses	before declaration as w/r	36.91
24	Teatau	Tekaie	Rateiti	Bwebwe		Mixed	early 2000s	
25	Kinta	Tekaie	Rateiti	Bwebwe	6	Local Houses	before declaration as w/r	51.65
26	Teatau	Tekaie	Rateiti	Bwebwe	5	Local Houses		
27	Tetiria	Manuera	Rateiti	Bwebwe	3	Local Houses		
28	Teaitoki	Teiaa	Tioba Tekea"	Teabanimate	8	Mixed		204.50
29	Aarau	Teiaa			3	Local Houses		
30	Ribine	Teiaa			6	Mixed		
31	Raoti	Teiaa			7	Local Houses		
32	Tentau	Ioakima			12	Mixed		
33	Kabuati	Baniata	Tetawa	Bwebwe	3	Local Houses	2008	
34	Tikieru	Ioteba	Tetawa	Bwebwe	8	Local Houses	since 2000	
35	Tetawa	Betero	Tetawa	Bwebwe	2	Local Houses		

No	Name	Surname	Registered Land Owner	Land Name	#of people per household	Type of Development	Date of Occupation	Land lease rate 2014 AUD
36	Tewita	Tebunang	N.Tio	Tekatau	3	Mixed		2,862.00
37	Ioteba	Terati		Tekatau	7	Local Houses		as above
38	Tebawi	Kautabea		Tekatau	4	Local Houses		as above
39	Teuea	Kautabea		Tekatau	4	Local Houses		as above
40	Ronite	Tiitera	N.Tio	Tekatau	9	Mixed		as above
41	Anterea	Burerua		Tekatau	2	Local Houses		as above
42	Terokati	Timon		Tekatau	3	Local Houses		as above
43	Tiaonna	Beretitara	Te aba n utu	Tekatau	2	Local Houses		as above
44	Atanimon	Maria		Tekatau	6	Local Houses		as above
45	Nawaia	Ruaia	Ruaia	Tebukinimata	6	Local Houses		
46	Viane	Berento		Temuritongo	10	Mixed	early 2012	
47	Kapaute	Tembeti		Tekatau	5	Local Houses		
48	Nariki	Tominiko	Kakiaba	Tekatau	7	Local Houses		1,431.20
49	Mamaia	Teaoatei	Kakiaba	Tekatau	6	Local Houses		
50	Mauri	Bwebwe		Tebukinimata	4	Local Houses		
51	Teangariki	Kauriri	Ioanna Tarantekai		5	Local Houses	permitted by l/owner	5,622.50
52	Ritiata	Koura			4	Local Houses		
53	Rubenteiti	Timon			6	Local Houses		
54	Maria	Arebonto			8	Local Houses		
55	Mikaere	Batee			6	Local Houses	2012	
56	Tangitang	Kauea			4	Local Houses	2012	
57	Tebeto	Raeti			4	Local Houses	2012	
58	Rari	Teatau			6	Local Houses	2012	
59	Tabwena	Burentarawa			5	Local Houses	2012	

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Land lease rent

27/59 = 46%

7.3 ANNEX 3. DRAFT CENSUS FORM FOR UNAUTHORISED SETTLEMENT

7.3.1 Draft Census & Socio-Economic Survey Questionnaire

Survey of every household occupying the water reserves.

Household Members & Land Occupation Status

1	Bonriki Water Reserve		or	Buota Water Reserve	
2.	Serial No.		3.	ID. No.	
4.	Name of Head of Household				
5.	Names of other Household Members			Male/ Female	Age:
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
6.	Land occupation status				
The land on which this house (or structure) is built:			Evidence provided (written/verbal/ name of land owner)		
Is owned by a Buota / Bonriki Land owner who is living here					
Is owned by a Buota / Bonriki Land owner who is not living here and who has permitted the household to live here – in writing					
Is owned by a Buota / Bonriki Land owner who is not living here and who has permitted the household to live here – verbally					
Was purchased from Buota / Bonriki land owner					
Is leased from Buota / Bonriki land owner					
Is occupied by a land owner in South Tarawa, not in Bonriki or Buota					

Is occupied by a relative of Buota / Bonriki landowner	
or	Indicate answer
No evidence is provided to justify occupation	
AND	
Do you receive lease payments annually (all/in part)	
Other (describe)	

Relocation

Does the household own or have access to land in South or North Tarawa or any other place in Kiribati if it must move from this water reserve?		
1	Yes	I can make a place to live with relatives in Bonriki / Buota
2	Yes	I can make a place to live with friends/other household in Bonriki/Buota
3	Yes	I can make a place to live with relatives in South Tarawa
4	Yes	I can make a place to live with friends/other household in South Tarawa
5	Yes	I can make a place to live with relatives in North Tarawa
6	Yes	I can make a place to live with friends/other household in North Tarawa
7	Yes	I can make a place to live with relatives in other islands
8	Yes	I can make a place to live with relatives in islands
9	No	I am prepared to move/live at Kiritimati
5	No	I have no land or place to live except here and do not want to live at Kiritimati

Assets Held on Site

7.1	Assets – Land. Land area occupied metres x metres (paced)			
1				
7.2	Assets – immovable - residential, commercial or industrial buildings			
	Description	Type (Permanent, Semi Permanent, Temporary, Traditional)	Area sq.,M	Condition (god/ Fair/ Poor
1				
2				
3				

4				
5				
7.3	Assets – immovable other buildings – pig pens, chicken coops, drying racks, shelters, etc.			
	Description	Type (Permanent, Semi Permanent, Temporary, Traditional)	Area sq.,M	Condition (god/ Fair/ Poor
1				
2				
3				
4				
5				
7.4	Assets – immovable fruit trees, crops, vegetables, pandanus, breadfruit, coconut, other			
	Description.	No.	Condition (god/ Fair/ Poor	
1				
2				
3				
4				
5				

Type 1: permanent dwelling (e.g. concrete block, corrugated iron roof),

Type 2: semi-permanent (e.g. concrete block, thatched roof)

Type 3: temporary dwelling (e.g. wooden frame, plastic/metal roof)

Type 4: Traditional dwelling (e.g. wooden frame, thatched roof)

Economic Status of Household Members & Income Earned

8.	Economically Active		Level of Education	Income Generating Skills	Type of Employment	Est. Income AU\$ pm
	Full time	Part time				
1 HoH						
2						
3						
4						
5						
6						
7						
8						
9						
10						

11						
12						
13						
14						
15						
Totals						

Level of education legend: L = literate, I = illiterate, N = less than 2 years formal schooling,

P = primary school, M = middle school, H = high school, G = graduate

Distance to Key Facilities

9.				
to Drinking Water metres	to School kilometres	to Health Facility kilometres	to Transport kilometres	to Work kilometres

Common Area Activities

10.				
Activity	Daily	Weekly	Monthly	Never
Fishing – ocean				
Fishing – lagoon				
Gathering – ocean reef				
Gathering – lagoon reef				
Gathering – fruits: coconut, pandanus				
Gathering – toddy				
Gathering – medicinal herbs, wild plants				
Gathering – thatch, matting materials				
Gathering – sand, gravel, coral, etc.				
Gathering - other				

7.3.2 Draft Bonriki & Buota Villages Questionnaire

Survey of a sample of key informants and representatives the community, of women, of youth, of the elderly and political representatives of Bonriki and Buota village communities to ascertain existing and potential loss of rights of access to the water reserves and resulting social and economic impacts.

Household Members & Land Occupation Status

1	Bonriki Water Reserve		or	Buota Water Reserve	
2.	Serial No.		3.	ID. No.	
4.	Name of Key Informant			Male/ Female	Age:
5	Representing				

6. Give examples or evidence that access to the water reserve is important to your village community

Example: List examples such as access to cross from one side of Bonriki to the other (shop, visit relatives, friends, fish, etc) or access to get resources, water, coconut, sand, pandanus, other plants, etc.)	Benefit		
	Who benefits	What benefit	Financial benefit
	numbers, male, female, old men/ women, youth		

1

2

3

4

5

6

6. Give examples or evidence that access to the water reserve is important to you personally

Example: List examples such as access to cross from one side of Bonriki to the other (shop, visit relatives, friends, fish, etc) or access to get resources, water, coconut, sand, pandanus, other plants, etc.)	Benefit		
	Who benefits	What benefit	Financial benefit
	numbers, male, female, old men/ women, youth		

1

2

3

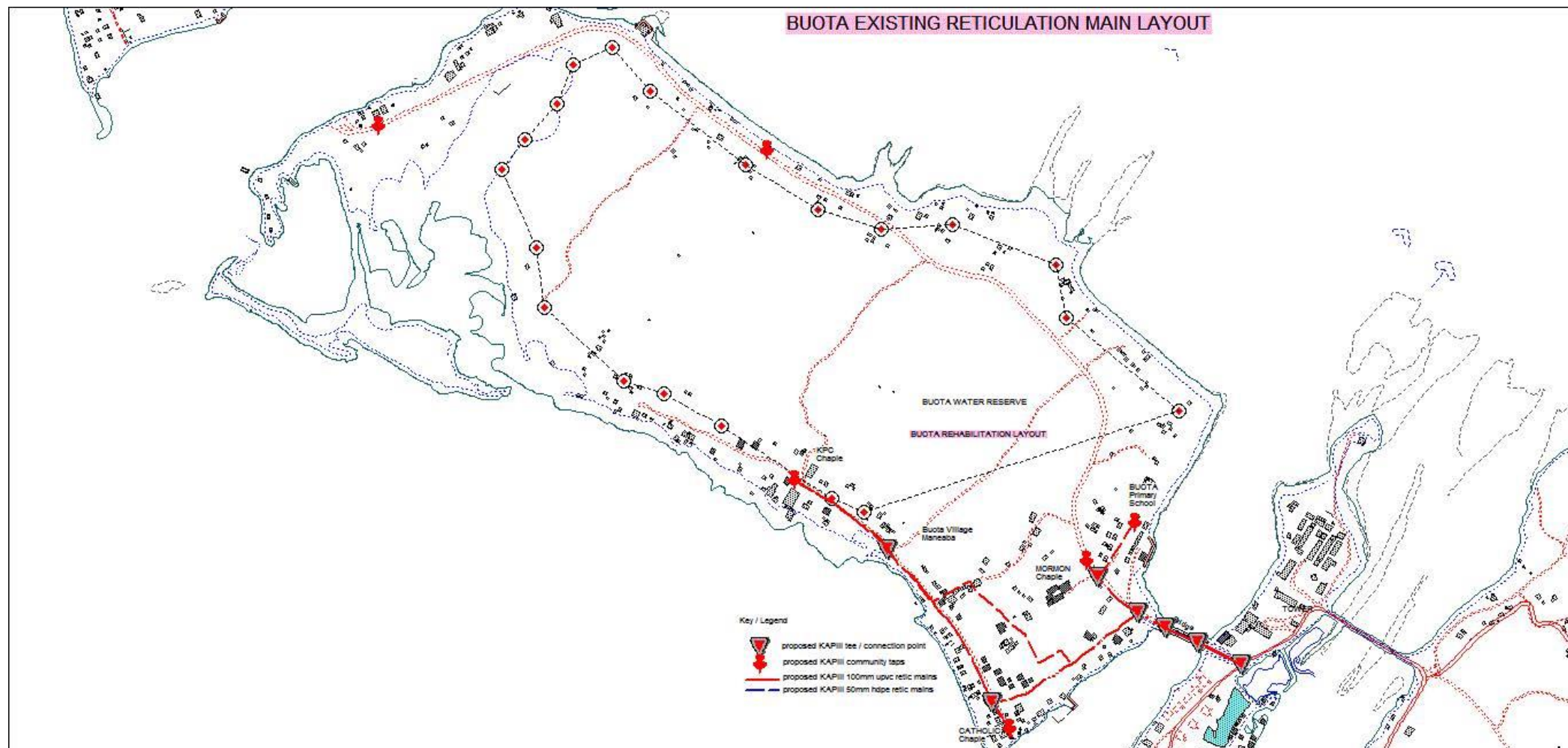
4

5

6

7.4 ANNEX 4. MAPS OF THE BUOTA AND BONRIKI WATER RESERVES

Figure 2. Map of Water Supply System for Buota Water Reserve Area (2014)



Annex 'A'

OCEAN SIDE

LAGOON SIDE

BUOTA WATER RESERVE

Key:

Buota Water Reserve

The map shows a large area labeled 'Annex 'A'' with a hatched pattern indicating the 'Buota Water Reserve'. The area is divided into numerous small plots, many of which are labeled with numbers and letters (e.g., 5481, 548m, 548n, 548o, 548p, 548q, 548r, 548s, 548t, 548u, 548v, 548w, 548x, 548y, 548z, 549a, 549b, 549c, 549d, 549e, 549f, 549g, 549h, 549i, 549j, 549k, 549l, 549m, 549n, 549o, 549p, 549q, 549r, 549s, 549t, 549u, 549v, 549w, 549x, 549y, 549z, 550a, 550b, 550c, 550d, 550e, 550f, 550g, 550h, 550i, 550j, 550k, 550l, 550m, 550n, 550o, 550p, 550q, 550r, 550s, 550t, 550u, 550v, 550w, 550x, 550y, 550z, 551a, 551b, 551c, 551d, 551e, 551f, 551g, 551h, 551i, 551j, 551k, 551l, 551m, 551n, 551o, 551p, 551q, 551r, 551s, 551t, 551u, 551v, 551w, 551x, 551y, 551z, 552a, 552b, 552c, 552d, 552e, 552f, 552g, 552h, 552i, 552j, 552k, 552l, 552m, 552n, 552o, 552p, 552q, 552r, 552s, 552t, 552u, 552v, 552w, 552x, 552y, 552z, 553a, 553b, 553c, 553d, 553e, 553f, 553g, 553h, 553i, 553j, 553k, 553l, 553m, 553n, 553o, 553p, 553q, 553r, 553s, 553t, 553u, 553v, 553w, 553x, 553y, 553z, 554a, 554b, 554c, 554d, 554e, 554f, 554g, 554h, 554i, 554j, 554k, 554l, 554m, 554n, 554o, 554p, 554q, 554r, 554s, 554t, 554u, 554v, 554w, 554x, 554y, 554z, 555a, 555b, 555c, 555d, 555e, 555f, 555g, 555h, 555i, 555j, 555k, 555l, 555m, 555n, 555o, 555p, 555q, 555r, 555s, 555t, 555u, 555v, 555w, 555x, 555y, 555z, 556a, 556b, 556c, 556d, 556e, 556f, 556g, 556h, 556i, 556j, 556k, 556l, 556m, 556n, 556o, 556p, 556q, 556r, 556s, 556t, 556u, 556v, 556w, 556x, 556y, 556z, 557a, 557b, 557c, 557d, 557e, 557f, 557g, 557h, 557i, 557j, 557k, 557l, 557m, 557n, 557o, 557p, 557q, 557r, 557s, 557t, 557u, 557v, 557w, 557x, 557y, 557z, 558a, 558b, 558c, 558d, 558e, 558f, 558g, 558h, 558i, 558j, 558k, 558l, 558m, 558n, 558o, 558p, 558q, 558r, 558s, 558t, 558u, 558v, 558w, 558x, 558y, 558z, 559a, 559b, 559c, 559d, 559e, 559f, 559g, 559h, 559i, 559j, 559k, 559l, 559m, 559n, 559o, 559p, 559q, 559r, 559s, 559t, 559u, 559v, 559w, 559x, 559y, 559z, 560a, 560b, 560c, 560d, 560e, 560f, 560g, 560h, 560i, 560j, 560k, 560l, 560m, 560n, 560o, 560p, 560q, 560r, 560s, 560t, 560u, 560v, 560w, 560x, 560y, 560z, 561a, 561b, 561c, 561d, 561e, 561f, 561g, 561h, 561i, 561j, 561k, 561l, 561m, 561n, 561o, 561p, 561q, 561r, 561s, 561t, 561u, 561v, 561w, 561x, 561y, 561z, 562a, 562b, 562c, 562d, 562e, 562f, 562g, 562h, 562i, 562j, 562k, 562l, 562m, 562n, 562o, 562p, 562q, 562r, 562s, 562t, 562u, 562v, 562w, 562x, 562y, 562z, 563a, 563b, 563c, 563d, 563e, 563f, 563g, 563h, 563i, 563j, 563k, 563l, 563m, 563n, 563o, 563p, 563q, 563r, 563s, 563t, 563u, 563v, 563w, 563x, 563y, 563z, 564a, 564b, 564c, 564d, 564e, 564f, 564g, 564h, 564i, 564j, 564k, 564l, 564m, 564n, 564o, 564p, 564q, 564r, 564s, 564t, 564u, 564v, 564w, 564x, 564y, 564z, 565a, 565b, 565c, 565d, 565e, 565f, 565g, 565h, 565i, 565j, 565k, 565l, 565m, 565n, 565o, 565p, 565q, 565r, 565s, 565t, 565u, 565v, 565w, 565x, 565y, 565z, 566a, 566b, 566c, 566d, 566e, 566f, 566g, 566h, 566i, 566j, 566k, 566l, 566m, 566n, 566o, 566p, 566q, 566r, 566s, 566t, 566u, 566v, 566w, 566x, 566y, 566z, 567a, 567b, 567c, 567d, 567e, 567f, 567g, 567h, 567i, 567j, 567k, 567l, 567m, 567n, 567o, 567p, 567q, 567r, 567s, 567t, 567u, 567v, 567w, 567x, 567y, 567z, 568a, 568b, 568c, 568d, 568e, 568f, 568g, 568h, 568i, 568j, 568k, 568l, 568m, 568n, 568o, 568p, 568q, 568r, 568s, 568t, 568u, 568v, 568w, 568x, 568y, 568z, 569a, 569b, 569c, 569d, 569e, 569f, 569g, 569h, 569i, 569j, 569k, 569l, 569m, 569n, 569o, 569p, 569q, 569r, 569s, 569t, 569u, 569v, 569w, 569x, 569y, 569z, 570a, 570b, 570c, 570d, 570e, 570f, 570g, 570h, 570i, 570j, 570k, 570l, 570m, 570n, 570o, 570p, 570q, 570r, 570s, 570t, 570u, 570v, 570w, 570x, 570y, 570z, 571a, 571b, 571c, 571d, 571e, 571f, 571g, 571h, 571i, 571j, 571k, 571l, 571m, 571n, 571o, 571p, 571q, 571r, 571s, 571t, 571u, 571v, 571w, 571x, 571y, 571z, 572a, 572b, 572c, 572d, 572e, 572f, 572g, 572h, 572i, 572j, 572k, 572l, 572m, 572n, 572o, 572p, 572q, 572r, 572s, 572t, 572u, 572v, 572w, 572x, 572y, 572z, 573a, 573b, 573c, 573d, 573e, 573f, 573g, 573h, 573i, 573j, 573k, 573l, 573m, 573n, 573o, 573p, 573q, 573r, 573s, 573t, 573u

Figure 4. Buota Water Reserve – Location of Squatters

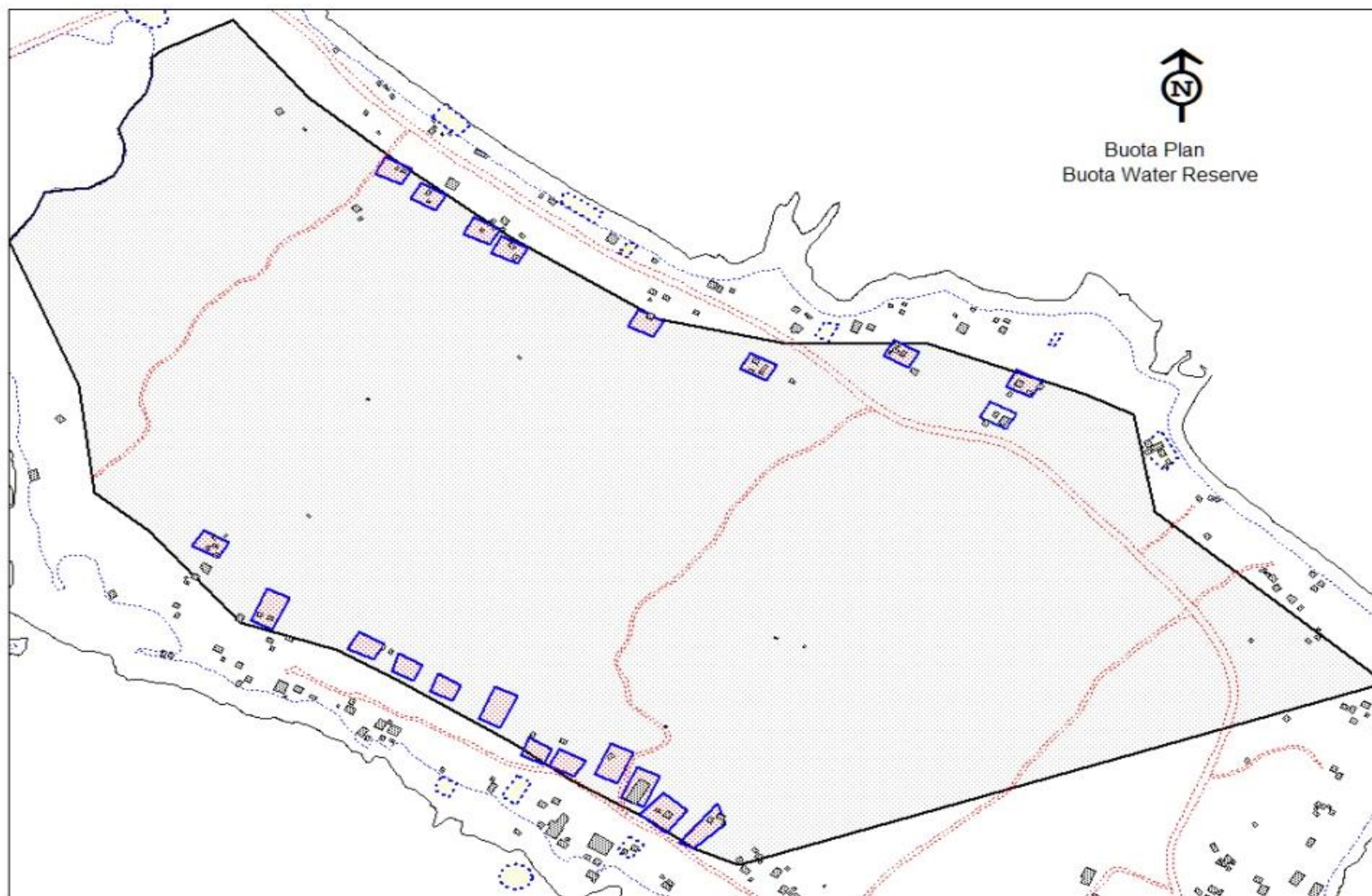


Figure 5. Map of Bonriki Water Reserve Area

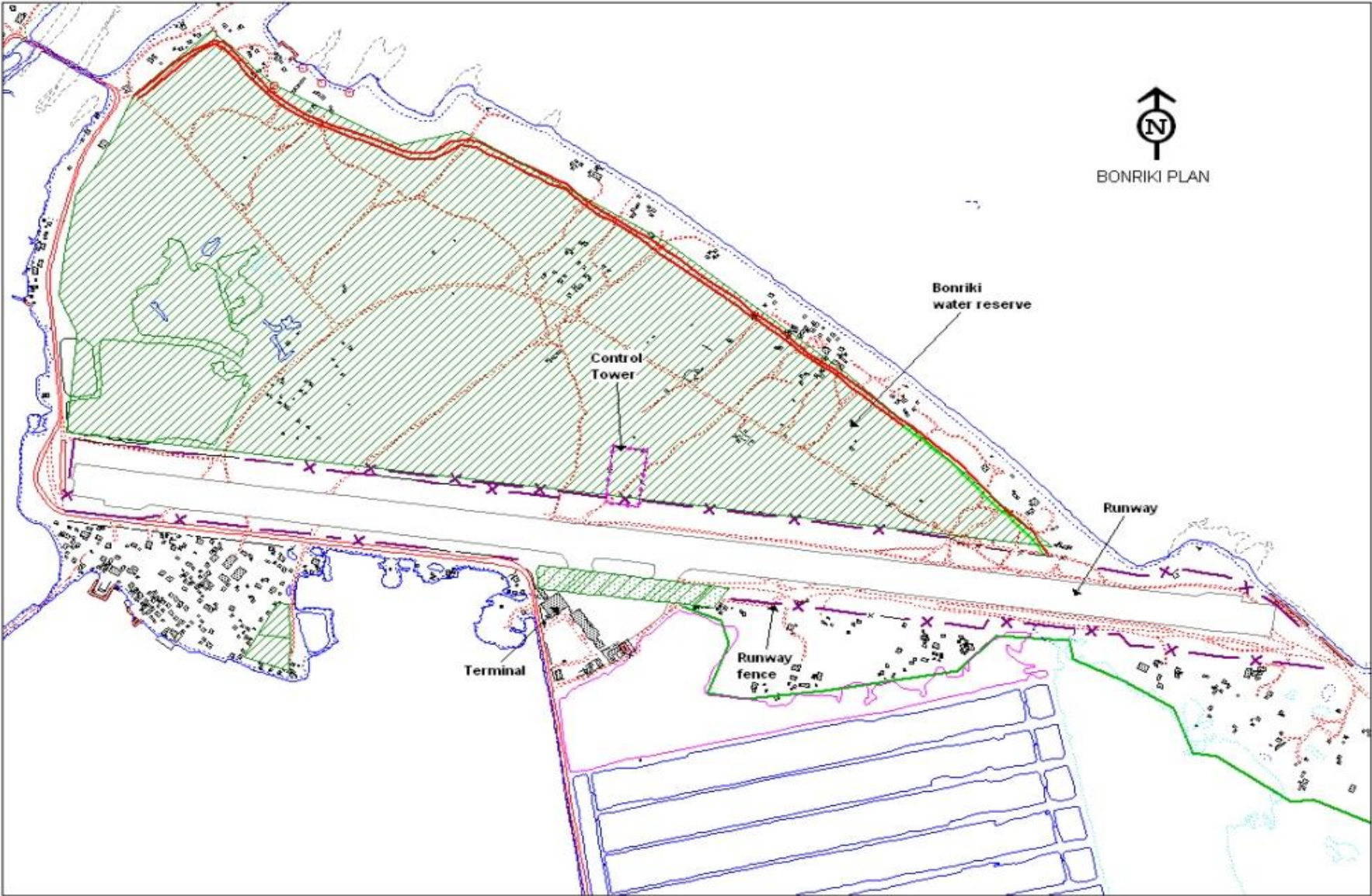


Figure 6. Bonriki Water Reserve – Location of Squatters

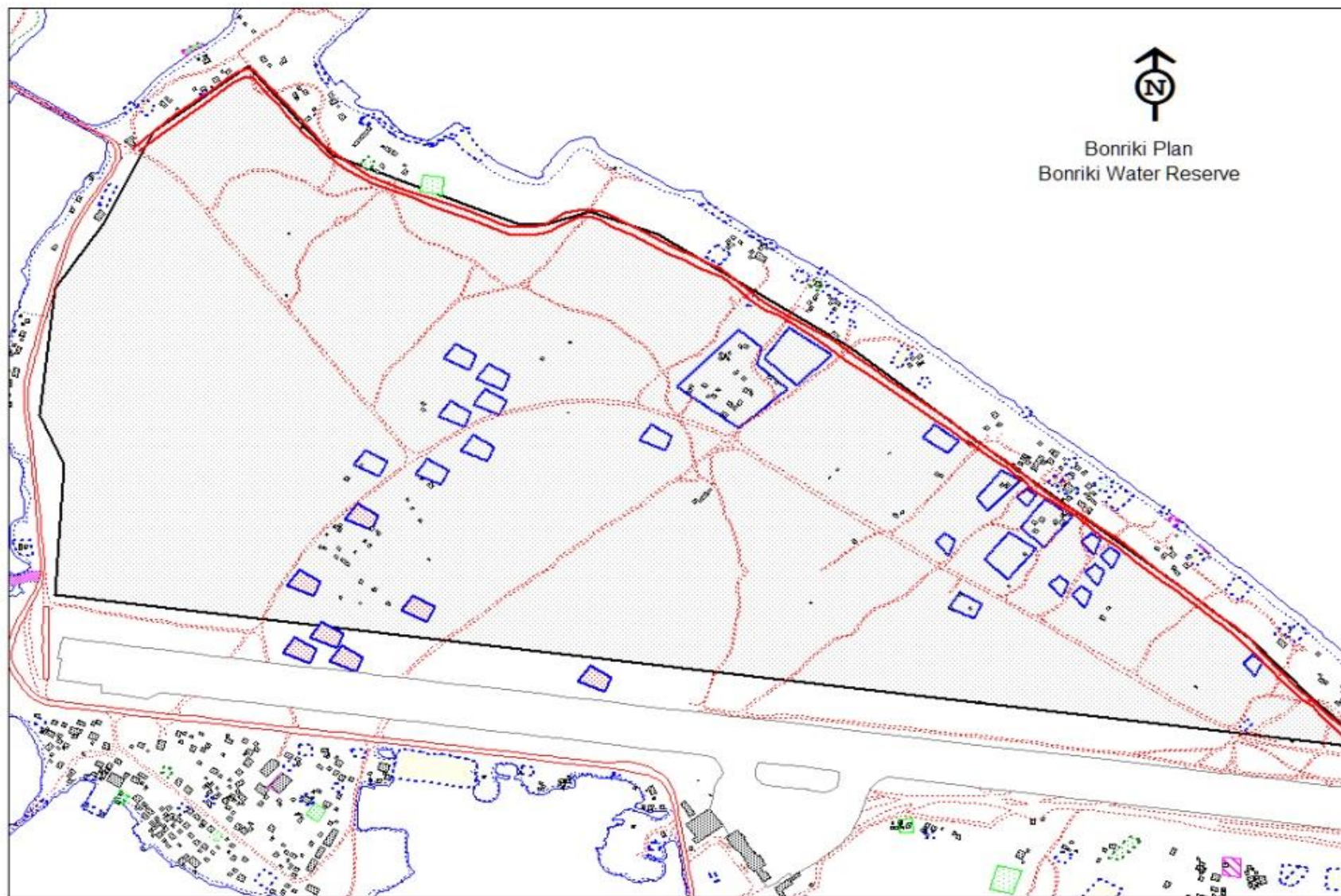


Figure 7. Proposed Location of Photovoltaic Plant, Bonriki

