

# **KIRIBATI ROAD REHABILITATION PROJECT (“KRRP”)**



**SOCIAL BENEFIT SURVEY**  
**Baseline report for South Tarawa**  
**December 2011**

## Table of contents

List of Tables .....	ii
List of Figures .....	ii
List of Acronyms .....	iii
Acknowledgements .....	iv
Executive Summary .....	v
<b>1. Country and Project background.....</b>	<b>1</b>
1.1. Project background .....	1
1.2. Impacts expected by the project .....	2
1.3. Impact evaluation .....	4
<b>2. Social Benefit Survey.....</b>	<b>5</b>
2.1. Introduction .....	5
2.2. Methodology .....	5
2.3. Survey population .....	6
2.4. Data collection and storage .....	7
<b>3. Respondent demographic information .....</b>	<b>8</b>
3.1. Household sizes .....	8
3.2. Household income/expenditure .....	9
<b>4. Road Transport Overview .....</b>	<b>10</b>
4.1. Condition of the road .....	10
4.2. Frequency of travel .....	13
4.3. Travel time and traffic .....	15
4.4. Access roads .....	15
4.5. Road Maintenance .....	16
4.6. Transport vehicles .....	17
4.7. Transport expenditure .....	19
<b>5. Road safety .....</b>	<b>20</b>
5.1. Highest safety concerns .....	20
5.2. Important road safety features .....	22
5.3. Accidents on the main road .....	23

<b>6. Environment</b>	24
6.1. Dust	24
6.2. Water	25
6.3. Rubbish	25
<b>7. Health</b>	26
7.1. Traveling to hospitals/health clinics	26
<b>8. Education</b>	27
8.1. Traveling to schools	27
<b>9. How to integrate results into the KRRP work program: Conclusions and recommendations</b>	28
9.1. Recommendations	28
<b>Appendix A: Household Survey</b>	30
<b>Appendix B: Focus Groups</b>	45
Anraei/Te Kawai Ae Boou Village Focus Group (Bonriki) 30 <sup>th</sup> January 2011	45
Women Focus Group (Bikenibeu) 15 <sup>th</sup> February 2011	47
Catholic Youth Focus Group (Bikenibeu) 20 <sup>th</sup> February 2011	49
Bus drivers Focus Group (Bikenibeu) 20 <sup>th</sup> February 2011	51
Mini store owners Focus Group (Bikenibeu) 26 <sup>th</sup> February 2011	53
Big store owners Focus Group (Nawerewere - Bikenibeu) 26 <sup>th</sup> February 2011	55
<b>Appendix C: Map</b>	57

## List of Tables

<b>Table 1:</b> Breakdown of number of households surveyed and their locations	7
<b>Table 2:</b> Breakdown of average and median income in each village	9
<b>Table 3:</b> Main concerns raised across focus groups	9

## List of Figures

<b>Figure 1:</b> Most Serious Problems affecting the Main Road	11
<b>Figure 2:</b> Number of Times Traveled on the Road per day during the Week during School Term	14
<b>Figure 3:</b> Number of Times Traveled on the Road per day during the Weekend	14
<b>Figure 4:</b> Breakdown of the Main Modes of Transport	18
<b>Figure 5:</b> Major Safety Concerns by total number of respondents	21
<b>Figure 6:</b> Road Safety Features Seen as Needed by Respondents	23

## **List of Acronyms**

ADB	=	Asian Development Bank
GOA	=	Government of Australia
GOK	=	Government of Kiribati
JSS	=	Junior Secondary School
KRRP	=	Kiribati Road Rehabilitation Project
MISA	=	Ministry of Internal and Social Affairs
NZAP	=	New Zealand Aid Program
NGO	=	Non-Government Organization
PAD	=	Project Appraisal Document
PRIF	=	Pacific Region Infrastructure Facility
STP	=	Sustainable Towns Program
UNDP	=	United Nations Development Program

## Acknowledgements

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## **Executive Summary**

This Social Benefit Survey Baseline Report for South Tarawa presents the baseline data and findings of the first round of surveys and focus groups in South Tarawa, Kiribati.

The study is designed to compare the social and economic changes among the survey population caused by the road rehabilitation under the jointly financed World Bank (WB), Asian Development Bank (ADB), Government of Australia (GOA) -- coordinated through the Pacific Region Infrastructure Facility (PRIF) -- and Government of the Republic of Kiribati (GOK); Kiribati Road Rehabilitation Project (KRRP).

This report presents an assessment of the results from a baseline survey conducted in six villages along the main road and three control villages located off the main road in January-February of 2011. The results will be used as the basis of an impact evaluation after the road has been rehabilitated and to improve the design of the road works. The report also provides a summary of six focus groups that were undertaken in South Tarawa. The focus groups targeted a broad range of affected groups to capture the main concerns and problems people have and experience in relation to the main road, along with any suggestions they had for improvement. In as much as possible, these recommendations and concerns have also been integrated into the design of the road rehabilitation.

The main findings of the baseline survey and recommendations are summarized below:

- 100 percent of respondents expressed that the road would benefit from improved street lighting demonstrating that this is an essential feature to be integrated effectively into the design of the road rehabilitation;
- 93 percent of respondents reported that the road is in “very poor” and “poor” condition during the dry season and 94 percent of respondents reported that the road is in “very poor” and ‘poor’ condition when it rains as the road condition deteriorates even further, with large depressions along the road filling with water. Subsequently, there is a need for proper drainage in the designs to successfully withstand changes in weather;
- 82 percent of respondents said that dust on and around the road “is a big problem”, with 91 percent of respondents also reporting that dust on the main road has caused health problems. Measures to mitigate the level of dust on and around the main road need to be considered in the design of the rehabilitated road;
- 91 percent of respondents reported that the general level of traffic on the main road is “heavy” to “very heavy”. An important feature of the road design will therefore be a consideration of traffic flow, as well as safety considerations such as appropriate speed bumps, road signs and police enforcement mechanisms to help manage this;

- A strong emphasis on the use of public transport was expressed throughout the results of the survey. This indicates the need to incorporate features into the designs that will enhance the operation of minibuses, such as bus shelters, bus bays for drop off and pick up of passengers and street lighting;
- 92 percent of respondents reported that traveling the main road by foot is ‘not very safe’. Pedestrian safety considerations in the design of the project will be paramount. Such mechanisms to be integrated throughout the design to address this issue include: pedestrian footpaths, bus bays for pedestrians, painted road lines and road safety signs;
- 85 percent of those surveyed confirmed that they receive road safety information. The source of this information ranges from the police, to school, radio, and the council. This demonstrates the current and potential avenues through which important road safety information can be disseminated in the future, particularly when road safety improvements are made; and
- 56.5 percent of the respondents said they would be willing to contribute financially, with material or with personal labour to improve the condition of the small roads in their village. The potential for community members to contribute in these ways needs to be further explored by the project, such as facilitating micro enterprise work groups during civil construction works.

## 1. Country and Project background<sup>1</sup>

Kiribati (estimated population of 110,000) is a small, remote country comprised of 33 atolls and reef islands, of which 21 are permanently inhabited. The total land area is only 726 km<sup>2</sup> spanning across approximately 3.5 million km<sup>2</sup> of ocean.

Some 44 percent of the population of Kiribati lives in the capital, South Tarawa, a town that has seen population growth of 5.2 percent in recent years. Approximately only 18 percent of the population is in permanent employment, and over half of this number work for the government. The UNDP<sup>2</sup> noted that South Tarawa recorded the highest incidence of basic poverty needs in Kiribati, affecting 18 percent of households and 24 percent of the population.

### 1.1. Project background

The KRRP is a jointly financed World Bank, ADB, Government of Australia --coordinated through PRIF -- and GOK infrastructure project that is designed to improve the condition of South Tarawa’s main road network and to help strengthen road financing and maintenance capacity.

The project encompasses three components:

1. **Component A: Infrastructure Improvements.** This component consists of the main civil works activities to be undertaken on the South Tarawa road infrastructure including: (i) Reconstruction and Rehabilitation of Paved Roads on South Tarawa; (ii) Rehabilitation of Betio Causeway; (iii) Rehabilitation of Paved Roads in Betio; (iv) Sealing of Feeder Roads; (v) Road Safety Improvements; and (vi) Consulting Services;
2. **Component B: Road Sector Reform.** Activities to strengthen the road sector and ultimately lead to more sustainable main road infrastructure in South Tarawa, including: (i) Land Transport Institutional Review Study; (ii) Micro-Enterprises for Routine Road Maintenance; (iii) Road Safety Action Plan; and (iv) Road Emergency Response Plan; and
3. **Component C: Project Support.** Specialist support to the GOK for implementation of the Project. This includes: (i) Establishment of a Project Management Unit to ensure smooth operation of the project; (ii) Project associated incremental operating costs; (iii) A valuation specialist to update the existing compensation rates for trees and other assets that will be affected by the project; (iv) An NGO to monitor implementation of the Resettlement Policy Framework; and (v) Audit of the project accounts.

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<sup>1</sup> **Note:** All monetary references in the report are for Australian dollars

<sup>2</sup> “Kiribati: Analysis of 2006 Household Income and Expenditure Survey”. UNDP, Suva.



The results of the survey indicate the current condition of the main road in South Tarawa has serious economic impacts and social repercussions on the local population. Such impacts range from premature wear to vehicles, impacted operations of bus and taxi services, health and safety impacts resulting from excessive dust, road and pedestrian accidents as a result of the narrow width of the road, and increased traffic and dangerous driving conditions. All these impacts are heightened during the rainy season when the road condition deteriorates even further, with large depressions along the road filling with water. The social repercussions felt by the population are magnified due to the close proximity with which most live to the main road. Such impacts are further exacerbated and felt by the fact that the main road is the only road connecting the population of South Tarawa and is therefore the dominant means of accessing essential services including major villages, shops, education, health services and facilities, churches and government facilities.



## **1.2. Impacts expected by the project**

The KRRP project development objective is to “improve the condition of South Tarawa's main road network and help strengthen road financing and maintenance capacity”.

The main impacts expected by the project include an improvement in the socioeconomic conditions including a reduction in the poverty of the population of South Tarawa given better access to markets, health facilities and schools as a result of more cost efficient road travel. The economic importance of the road was highlighted by the Focus Group with the Big Store Owners in Nowerewere to Bikenibeu, where it was stated that *“the road is an important aspect of [their] business and [they] need the government to fix and maintained (sic) it now and then...at the current state of the road, it is very expensive to deliver goods to our customers because the road is very bad with lots of potholes slowing the truck deliveries to shops...If the road is fixed, it will mean more customers, more money.”* The Focus Group with the Mini Store Owners echoed this sentiment, stating that *“all roads should be tar-sealed because buses like to drive on smooth roads with no potholes. This will increase our customers and it will mean more money for us too.”*

The specific anticipated impacts of the project include:

**Immediate impact** – The immediate impact of a rehabilitated road will be seen through employment of local contractors to the extent that local people are hired for the civil works and the ongoing maintenance of the main road. This will help to create jobs and will also increase the skills of the domestic contractor market. Additionally, this will have a flow on effect of increased income that will potentially be channeled back into the local economy.

**Medium term impact** – In the medium term it is expected that the experience of traveling the main road will be both smoother and faster. This will result in decreased travel time, an increase in the overall quality and reliability of travel and lower operating costs for vehicles. Road-side dust should be decreased as a result of an improved main road and this should contribute to better air quality and cleaner households, businesses and vehicles. Consequently any breathing problems caused by the high levels of dust should be reduced. Proper drainage and safety will contribute to the ability of the main road to cope with changes in weather as well as promoting safer travel on the road.

**Medium to longer term impact** – The medium to longer term impacts will see an increase in the social wellbeing of the population from increased access to services. The anticipated sector reform will lead to a more effective delivery of services and a plan for sustainable financing to ensure the main road is maintained effectively. In the medium and long term, the implementation of a road safety strategy will be of high importance as the ability for vehicles to travel faster could increase road accidents.

Direct beneficiaries of the project are expected to be private car owners, bus and truck operators, freight handlers, retailers and wholesalers, utility providers, public transport users, motorcyclists, cyclists, pedestrians, people living along the road, businesses and the government.



### **1.3. Impact evaluation**

After the road is rehabilitated, a second round of data collection will be conducted in the same villages and interviewing the same households. This will provide comparative data and impacts of the rehabilitated road, both positive and negative, which will be able to be assessed.

The expectations of the improved road are high as it is the only main road connecting villages and services in South Tarawa. High traffic levels on the road combined with persistent heavy rainfall in 2009/10 have caused extensive damage, to the extent that substantial sections have completely lost their surface and reverted to unpaved status. The impact assessment will be prepared when the roads are rehabilitated and the findings and results will be included in a follow up to this report.

## 2. Social Benefit Survey



### 2.1. Introduction

This baseline report provides an analysis of the current situation of the main road in South Tarawa and anticipated social benefits that the rehabilitation of the main road in South Tarawa will have on the local population. A total of 209 households from the sample and control villages in South Tarawa were interviewed and six focus groups were conducted. The social benefit survey is designed to collect information on key aspects of the lives of the sample households that are likely to be impacted by infrastructure improvement conducted under KRRP. The questions were grouped into topics including household information, road transport overview, the environment, traveling on the main road, health, schooling and safety. Sample households are those that are located directly on the main road. Control households are located off the main road and are expected to be, on average, over 50 paces walk from the main road. The final impact assessment will be conducted following completion of the road rehabilitation under KRRP.

### 2.2. Methodology

#### Summary of instruments used

##### Household survey

Formal household surveys used structured questionnaires as the main tool to collect data. The household questionnaire is included in **Appendix A**.

## **Focus groups**

In total there were six focus groups conducted:

1. Anraei/Te Kawai Ae Boou Village Focus group (Bonriki) 30<sup>th</sup> January 2011
2. Women’s Focus group (Bikenibeu) 15<sup>th</sup> February 2011
3. Catholic Youth Focus group (Bikenibeu) 20<sup>th</sup> February 2011
4. Bus Driver Focus group (Bikenibeu) 20<sup>th</sup> February 2011
5. Mini Store Owners (Bikenibeu) 26<sup>th</sup> February 2011
6. Big Store Owners Focus group (Nawerewere to Bikenibeu) 26<sup>th</sup> February 2011

The focus group questions and summaries are included in **Appendix B**.

## **2.3. Survey population**

The sample survey villages of Bikenibeu, Temaiku, Eita, Banraeaba (including Korobu), Teaoraereke and Bairiki included households by the main road, and the control surveys included households from Bonriki, Teaoraereke and Bikenibeu that are located off the main road. A map of Kiribati is included at **Appendix C** and depicts the comparative locations of each of these villages within South Tarawa relative to the infrastructure improvements listed as follows:

- Reconstruction and Rehabilitation of Paved Roads on South Tarawa. The road from St. Anne to the junction with the Ananau Causeway (~19.25 km), the Ananau Causeway to just past the airport terminal (~2.25 km), the road from the Ananau Causeway junction towards Temaiku 1 (~2.75 km), the road from Temaiku 1 to the south of the airport, and then west to the Ananau Causeway (~2.5 km), and the road from Tanaea to Buota island (~2.5 km) will be reconstructed or rehabilitated with requisite safety improvements;
- The works will pay particular attention to drainage since that is a major problem. About 7 km of water main adjacent to the road will be replaced;
- The works will also include safety considerations, such as bus bays, speed humps, solar powered street lighting and footpaths;
- Rehabilitation of Betio Causeway;
- Rehabilitation of Paved Roads in Betio;
- Sealing of Feeder Roads. Up to 8 km of unsealed urban feeder roads with high traffic volumes will be sealed and provided with improved drainage; and
- Road Safety Improvements.

A total of 209 households were surveyed in the following villages;

**Table 1: Breakdown of number of households surveyed and their locations**

<b>Village Name</b>	<b>On-Road/Off-road</b>	<b>Number of Surveys</b>
Bikenibeu	On-Road	14
Nawerewere	On-Road	23
Temaiku	On-Road	24
Eita	On-Road	25
Banraeaba (including Korobu)	On-Road	24
Teaoraereke	On-Road	20
Bairiki	On-Road	21
Bonriki	Off-road	20
Teaoraereke	Off-road	19
Bikenibeu	Off-road	19
<b>TOTAL</b>		<b>209</b>

## **2.4. Data collection and storage**

Data for the household surveys was collected from the sample and control villages by the Beneficiary Impact Survey Team: Ms. Sina Moy, Ms. Ruiti Aretaake Uriano, Ms. Mere Teemaia and Mr. Kaarubea Ntarie.

The data from the household surveys was input into a master spreadsheet designed by the project team. The original hard copies of the data are stored at the Ministry of Interior and Social Affairs (MISA) Urban Management Unit offices.

Data quality checking was done by the Beneficiary Impact Survey Coordinator and the Infrastructure Finance Specialist Consultant for the project. Data input was carried out in Kiribati by the Beneficiary Impact Survey team.



### 3. Respondent demographic information

#### 3.1. Household sizes

The majority of the respondents were either the Head, or the Husband or Wife of the Head, of the household (78 percent). The survey results indicated large household sizes in Kiribati, with almost 30 percent of those surveyed having 6-7 people sleeping in the household on a regular basis, and a further 30 percent having over 8 people sleeping there per night. Some 10 percent of households had over 10 people sleeping in the household on a regular basis.

Over 90 percent of respondents have lived in their homestead for more than a year and approximately 67 percent of the respondents had lived in the homestead for more than 5 years. Given the general longevity of residence in South Tarawa, the majority of the respondents would have a good understanding of the issues and concerns specific to their village, and the experiences of their village in relation to the main road and the general ongoing issues and concerns.

Some 77 percent of respondents have 1 or more Junior Secondary School (JSS) aged-people sleeping in the household on a regular basis, demonstrating the high number of youth in the homesteads in South Tarawa. This is an important consideration in the design of the rehabilitated road when considering the uses and role of the main road in the lives of the youth population of South Tarawa. For example, the Focus Group with the Catholic Youth Group stated that they mainly used the road *“to do their training, play along/near the road and [for] socializing with their peers”* which demonstrates how the social value of an improved road extends far beyond an improvement in travel times and conditions – it is a vehicle for social exchange and leisure time in South Tarawa and so will have impacts far beyond transportation improvements.



### 3.2. Household income/expenditure

The Survey Team found questions regarding household income were difficult to obtain answers for. However, for those that answered, the overall average combined monthly income of the household was \$524.14, with a median of \$300. The main sources of income of the households were salary and selling produce (approximately 66 percent). Eight (8) percent of responses indicated their main source of income was money received from family members not currently living in the household. The average and median combined monthly incomes of the households of the varying villages are shown below:

**Table 2: Breakdown of average and median income in each village**

<b>Village Name</b>	<b>Average Combined Monthly Income of Household</b>	<b>Median Combined Monthly Income of Household</b>
Bikenibeu	\$568	\$600
Nawerewere	\$441	\$300
Temaiku	\$871	\$265
Eita	\$410	\$250
Banraeaba (including Korobu)	\$292	\$200
Teoraereke	\$755	\$230
Bairiki	\$670	\$500
Bonriki (off-road)	\$617	\$550
Teoraereke (Off-road)	\$231	\$225
Bikenibeu (Off-road)	\$449	\$300



## 4. Road Transport Overview

### 4.1. Condition of the road

The clear message from the household survey results was that the main road in South Tarawa is in very poor condition. Over 88 percent of respondents stated that they thought the general condition of the main road in Tarawa was “poor” or “very poor”, with only 0.52 percent responding “good” or “very good”. The responses from the villages of Eita, Temaiku, Teaoraereke and off-road Bonriki were especially concerning, with almost half or more of the respondent’s answering “very poor”, demonstrating that sections of the main road, particularly out of the main townships, are in desperate need of repair and rehabilitation.

The deterioration of the condition of the main road in periods of heavy rainfall causes problems in addition to those seen generally. In periods of rain, the number of people who state that the condition of the main road is “poor” or “very poor” is over 94 percent of respondents. Again, the villages of Temaiku and Eita appeared to have the most problems, with around 92 percent responding that the condition of the main road in the wet season was “very poor.” The three off-road villages of Bonriki, Teaoraereke and Bikenibeu also had high rate of respondents (above 70 percent) selecting “very poor”, indicating that the rain also causes significant for those living in sections off the main road. Whilst these ratings improve in the dry season, where we see a reduction in the number of responses answering “very poor” by almost 50 percent, almost 58 percent of respondents still consider the condition of the main road is “poor” during this season. The general poor condition of the road, which is worsened during periods of rain with large depressions along the road filling with water, highlights the need to specifically address the need for improved drainage along the main road in the road rehabilitation designs.

When asked what the three most serious problems concerning the main road were, the responses with the highest proportion of answers included: “too many potholes”, “too dusty” and “roads are too narrow/should be widened”. Following these three most common concerns, in the villages of Bairiki, Banraeaba, Eita and off-road Bonriki, the fact that the roads do not have enough space for pedestrians, bikes, and animals was seen as an important issue, and dust was expressed as a significant problem in Bikenibeu (both on and off-road). **Figure 1** and **Table 3** detail some of the main concerns affecting the main road from survey respondents and those raised in the focus groups.

Figure 1: Most Serious Problems affecting the Main Road

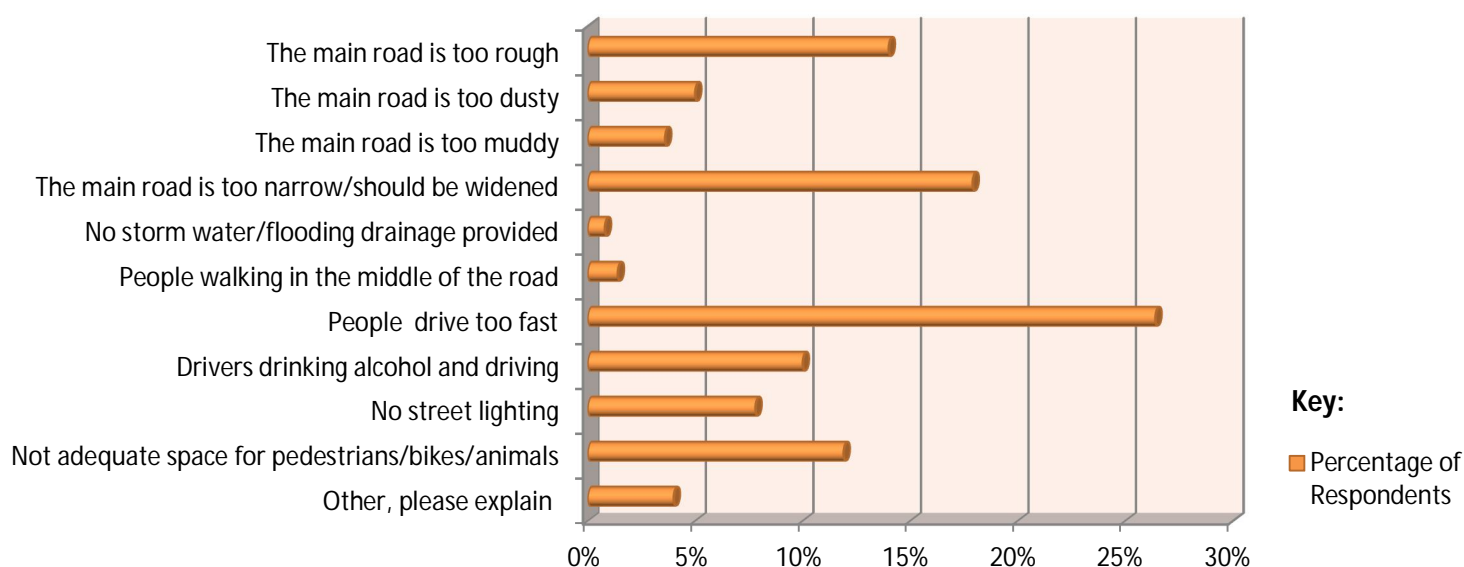


Table 3: Main Concerns Raised across Focus Groups

Focus Group	Main Concerns Raised
Anraei/Te Kawai Ae Boou Village Focus group	<ul style="list-style-type: none"> <li>- Potholes in the road</li> <li>- Road is narrow should be widened like the one in Betio</li> <li>- Dust is a huge problem where it causes a lot of flu/cold/diarrhea</li> <li>- Red eyes/sore eyes</li> </ul>
Mini Store Owners Focus group	<ul style="list-style-type: none"> <li>- Dust is a huge problem causing health problems</li> <li>- Expensive to transport cargoes from port to their office</li> <li>- There are quite a lot of curvy roads that have caused accidents like the Mackenzie road, Dr Airam (Eita), KPC (Eita) and Ionatia (Bikenibeu)</li> <li>- Trees overlaying onto the road should be cut down.</li> </ul>
Big Store Owners Focus group	<ul style="list-style-type: none"> <li>- The road is narrow</li> <li>- Should have a parking space for delivery cars to park</li> <li>- The road where lots of people live or shop should have a traffic sign</li> <li>- No parking space for delivery trucks</li> <li>- Lots of potholes will slow truck to deliver goods from place to place and will consume lots of fuel meaning more expenses</li> </ul>
Women Focus group	<ul style="list-style-type: none"> <li>- Children are not safe because there is no specific space for them to walk or ride their bicycles to school</li> <li>- There is no school bus and no bus stop with shelters to reduce the effect of the sun's heat and if there is rain they risk being wet</li> <li>- Drunk driving and sleep driving causing a lot of accidents</li> <li>- Fast drivers and lots of potholes caused women to miscarry babies and abdominal pain to people</li> <li>- No motorcycle or bicycle lane</li> <li>- Narrow road</li> <li>- No sign on speed bumps or near it to signal for on-coming vehicles</li> <li>- Cars/buses are easily damaged from riding over the potholes</li> </ul>

	<ul style="list-style-type: none"> <li>- There are no street lights and some mischievous kids can throw stones at the bus causing damages and injuring people on the bus</li> </ul>
Catholic Youth Focus group	<ul style="list-style-type: none"> <li>- Too many accidents from curvy roads like Mackenzie and Otintaai Hotel roads</li> <li>- Tanaea and Ananau causeways are too narrow</li> <li>- The road to the KPA is dangerous because there is no wall and is very narrow as well</li> <li>- Where there are a lot of people, pedestrian crossings should be build like one opposite MOEL in Betio and other crowded places like the Bairiki square and many others</li> <li>- Travelling in the night is not safe because the road has lots of potholes and you will have a bumpy ride all the way to your destination</li> <li>- Students mostly travel to school by bus or on foot</li> </ul>
Bus Driver Focus group	<ul style="list-style-type: none"> <li>- There are quite a lot of curvy roads that have caused accidents like the Mackenzie road, Ngaalu Bar (Bikenibeu)</li> <li>- Ananau causeway is very narrow</li> <li>- The damaged road causes a lot of problems to the bus especially the bearing and shock absorbers</li> <li>- More potholes equals more expenses</li> <li>- Proper design of speed bumps because the ones like in Abarao and Eita opposite Moroni High school are bad. The most appropriate speed bump design is like the ones in Betio</li> <li>- Trees along the road are dangerous because they can deter visibility or fall onto any vehicles causing accidents</li> </ul>

It is of particular interest to note that the focus groups raised the specific locations of concern along the main roadway including: the Mackenzie Road, Dr Airam (Eita), KPS (Eita), Ionatia (Bikenibeu), the Ananau and Tanaea Causeways and the Ngaalu Bar (Bikenibeu).



The level of comfort in traveling the main road is seen as an important indicator of the social well-being of the population given the central role that the road plays in their lives. When asked to rate the experience of traveling the main road by motorized vehicle, over 80 percent of respondents answered either “not very comfortable” or “very uncomfortable”, with only just over 17 percent answering “comfortable” or “very comfortable”. The villages with the least favorable answers included Nowerewere and Bairiki, whereas the off-road Teaoraereke reported most favorably. The Bus Driver Focus Group stated that they would *“only drive on tar-sealed roads because it is comfortable to drive on and the bus won’t easily breakdown.”* This highlights the current difficulties experienced by people who live in areas where the road is not sealed as it is impacting their access to public transport. Their comment additionally highlights the attitude of the bus operators whose choice in travel routes is being dictated by the condition of the road. It also emphasizes their awareness of the damage that the condition of the road is causing to their vehicles and the monetary burden that this is placing on their business as a result of frequent vehicle repairs and part replacements.

## **4.2. Frequency of travel**

The frequency of travel on the main road is an important indication of the degree of impact the rehabilitation of the main road could have on the population of South Tarawa. The higher the frequency of travel on the road, the more acute the social and economic impact of the rehabilitation will be. During the school term and during the weekdays almost 58 percent of respondents in the household survey travel more than 5 times per day on the main road in a motorized vehicle or on a motorbike. Refer to **Figure 2** below for a breakdown of travel during the weekdays by village. Over the weekend, this figure drops to 12 percent, however almost 95 percent of respondents still travel at least once on the main road over the weekends. Refer to **Figure 3** below for a breakdown for travel over the weekend by village. Additionally, over half of the total households surveyed travel to town (i.e. Betio, Bikenibeu or Bairiki) more than once a week. This high frequency of travel on the main road demonstrates the central role that it plays as a result of being the only major source connecting the villages to each other and to essential services.



Figure 2: Number of Times Traveled on the Road per day during the Week during School Term

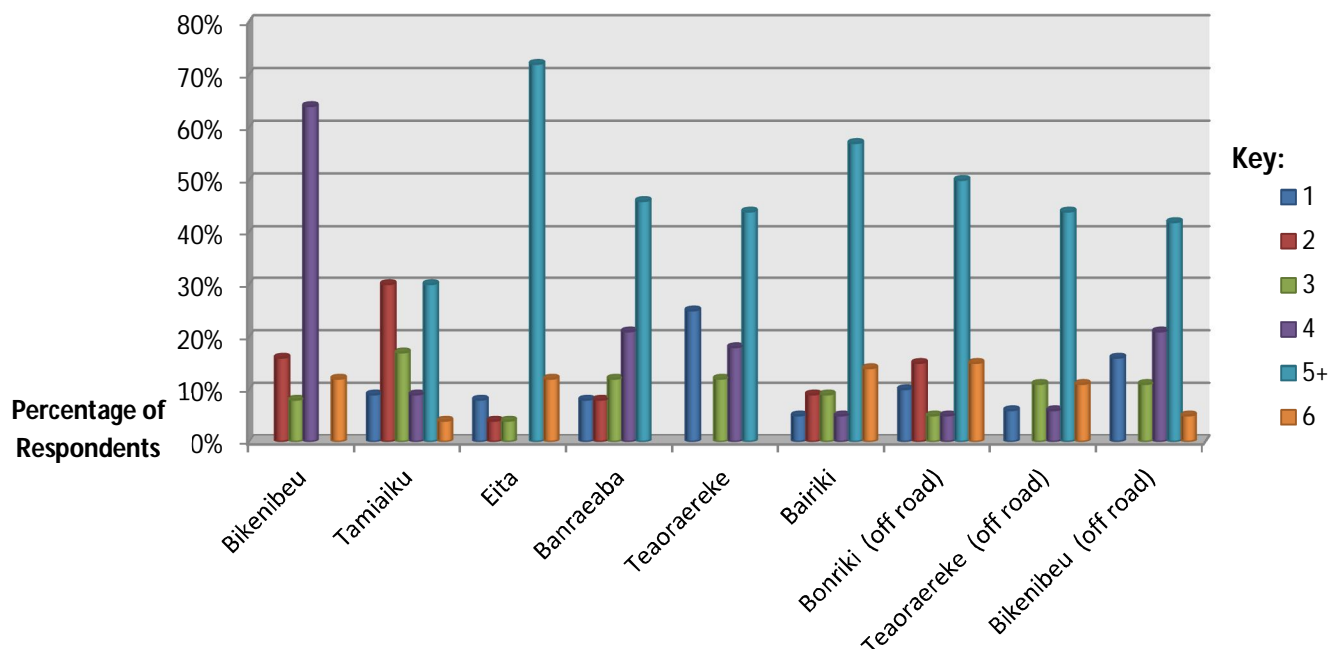
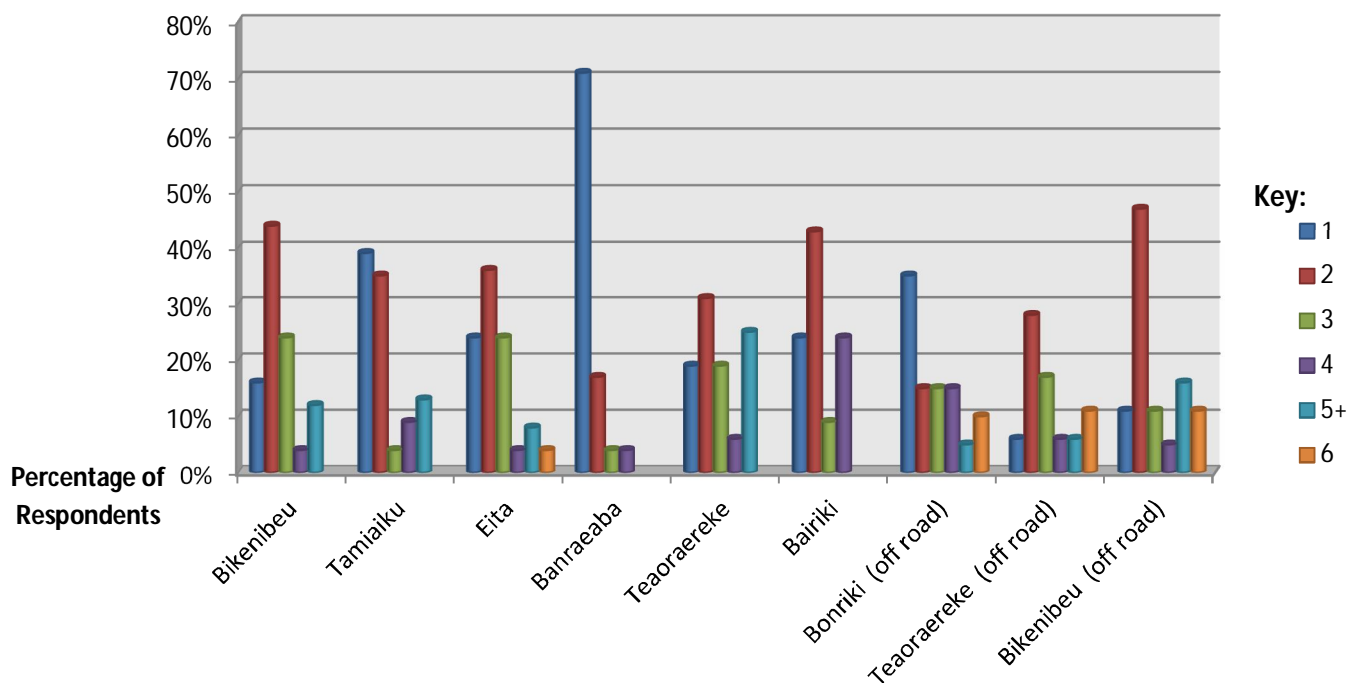


Figure 3: Number of Times Traveled on the Road per day during the Weekend



### **4.3. Travel time and traffic**

Related to this indicator of frequency of travel is the duration of traveling along the main road. This is significant in measuring the social impact of a rehabilitated road as it is expected that with an improved road, travel times will decrease. For example, when asked how an improved main road would affect those surveyed and their household the most, the highest number of responses, almost 35 percent, indicated “faster traveling time”. Forty eight (48) percent of respondents on an average day spend between half an hour and 3 hours traveling on the main road in a motorized vehicle, on a motorbike or bicycle, and 41 percent spend between 5 minutes and half an hour. Only 3 percent of the respondents on an average day spend less than 5 minutes traveling the main road in a motorized vehicle, motorbike or bicycle. The travel times appeared the highest in Bikenibeu, Teoraereke and the three off-road villages where it was common to spend more than half an hour traveling on the main road each day. This may be because all these 6 villages are at the western end of South Tarawa, farthest from Bairiki and Betio where most of the government offices and major shops are located.

During the dry season approximately 45 percent of respondent’s take less than half an hour to travel to work, while during the wet season this drops to 32 percent, demonstrating an increase in travel time associated with the wet conditions and the deteriorated road quality. Again this shows the impact that the weather has on the condition of the main road, and highlights the need for proper drainage and safety considerations and mechanisms in the design of the rehabilitated road in order to contribute to the durability of the main road, particularly to withstand significant changes in weather. This is particularly the case as the highest point in South Tarawa is only 3 meters above sea level, meaning the road is very susceptible to any rise in tides. Thus climate change considerations will also need to be taken into account, in as much as possible, in the design of the road.

Close to 90 percent of respondents stated that they believe the general level of traffic on the main road was either “heavy” or “very heavy”. In Eita, for example, 23 of 25 of respondents said traffic was “very heavy” and the remaining 2 responded “heavy”. While it is generally perceived that an improved main road will reduce travel time and traffic through the reduction of potholes, an improvement in the condition of the road could also increase the number of vehicles on the road, thereby causing further traffic congestion. While the findings of the post-rehabilitation survey will be able to shed light on this, an important feature of the road design under KRRP will be a consideration of traffic flow and mechanisms to help manage this along the main road.

### **4.4. Access roads**

As a part of the KRRP, up to 8 km of unsealed urban feeder roads with high traffic volumes will be sealed and provided with improved drainage. The roads were identified in consultation with the New Zealand Aid Program (“NZAP”) financed Sustainable Towns Program (“STP”). When asked to rate the condition of the access roads in the respondent’s respective village, over 50 percent gave a “poor” rating, while 10 percent rated their access roads as “very poor”. The least favorable results were received in Nowerewere and off-road Teoraereke and Bikenibeu. Banraeaba also rated quite poorly with 22 of 24 respondents answering “poor” condition.



The improvement of the condition of access roads also has an important economic impetus. In the Mini Store Owners Focus Group, a particular point of interest was that those who lived alongside the access/feeder roads said that if their road is tar-sealed, a lot of vehicles can pass their road and so their customers will increase, as well as their business.

In general however, the condition of the access roads did not appear to be a major concern of the respondents, as when those who live off the main road were asked if they experienced any difficulty, they for the most part answered that the access roads were “always passable” (61 percent) with only 12 of 59 respondents answering that the access roads were “impassable some of the year”, “impassable most of the year” or “never passable”.



#### **4.5. Road Maintenance**

The current maintenance levels of roads in Kiribati is currently lacking with the Catholic Youth Focus Group commenting that the current maintenance is *“not a quality one which is not done properly and regularly by the workers.”* Over 57 percent of respondents indicated that they would be willing to contribute financially or with material or personal labor to improve the condition of the small roads in their village, with a further 30 percent answering “maybe”. This considerable number of responses provides support for the proposal outlined in the KRRP Projected Appraisal Document (PAD) of setting up micro-enterprises run by the villages for routine maintenance. This would involve local people being given assistance to form microenterprises which are subsequently trained and contracted to carry out basic maintenance activities aimed at preventing serious damage and slowing down the deterioration of the roads, as well as ensuring continued access. It is anticipated that local village entities or social groups would form the basis of the micro-enterprises. This proposed project component will be undertaken in consultation with communities.

Interestingly, the responses for this question relating to financial or labor contribution to maintain the road varied greatly between villages. For example, in Eita only one respondent answered affirmatively and in off-road Bonriki those surveyed seemed unsure with half responding “maybe” and a further 4 responding “no”, whereas in Banraeaba 100 percent of respondents answered affirmatively and the remaining locations saw the majority respond “yes”. It is not clear why in Eita only one person responded favorably. One potential reason is that since Eita experiences high traffic volumes and poor condition of the road (as described above), it may be that locals do not believe it is only their responsibility to care for the road but that it should be all the road users. Thus it will be important for the project to consider how to deal with community-run maintenance groups particularly in areas that are highly transited and used not only by the community but external users. The Bus Driver Focus Group expressed that they were happy to help in any way when the road project starts, but they would require payment.

#### **4.6. Transport vehicles**

When asked what the household’s main form of transport is “minibus” received the highest proportion of answers (49 percent) followed by “walking” (28 percent) and “drive own car” (11 percent). In Banraeaba no respondents answered “walking” whereas in Eita and off-road Bonriki walking was a popular response. **Figure 4** details the main modes of household transport.

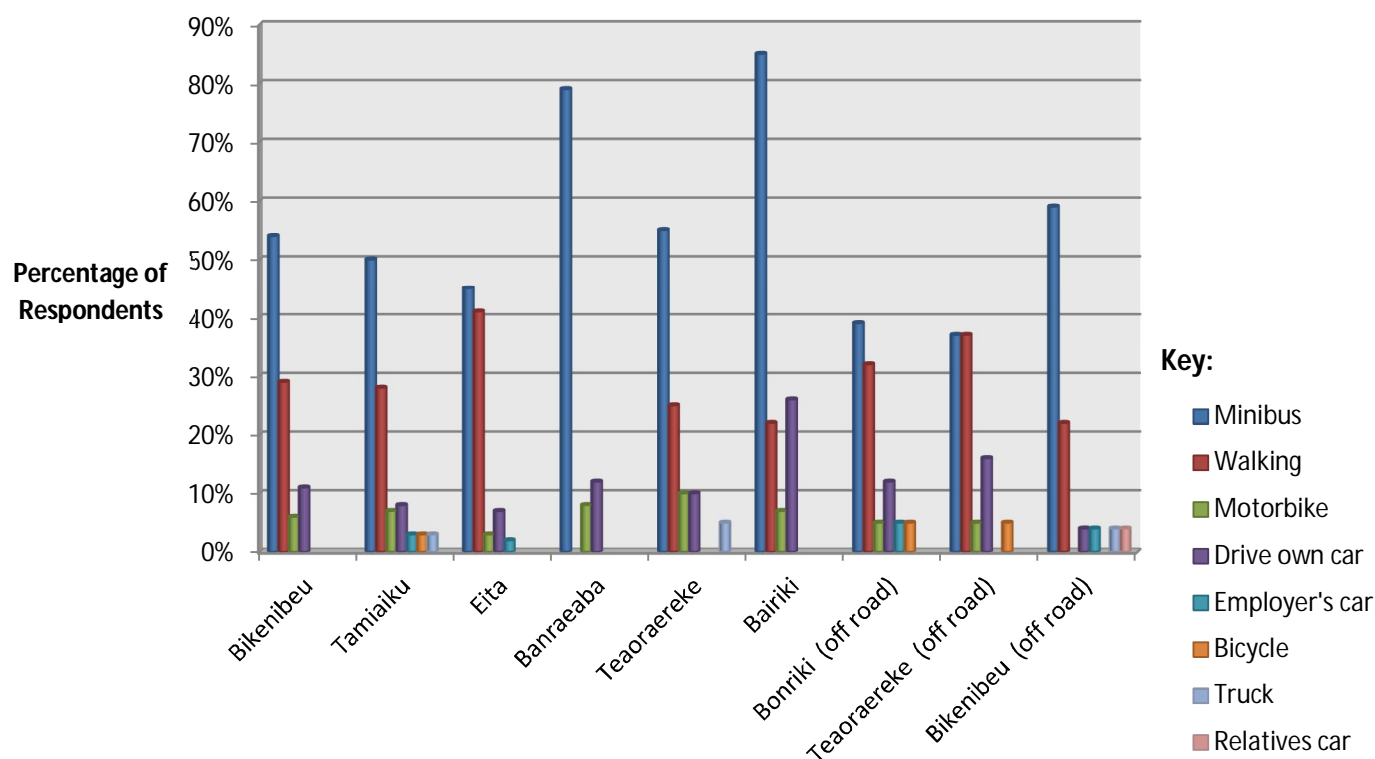
The majority of respondent’s utilize the minibus in traveling to work (25 percent), followed by walking (14.8 percent), using a vehicle provided by their employer (10 percent), or driving their own car (10 percent). It is of interest to note that a number of households reported utilizing more than one mode of transport. Again in Banraeaba, no people answered “walking” as their way of getting to work. Meanwhile in Bairiki the majority of those surveyed drive their own car to work, although a number of those surveyed also walk to work. For those respondents who do not own their own car or motorbike and rely on public forms of transport, a one way trip to work costs on average \$7.66, with the median being \$1.00. As one respondent in Bikenibeu reported a cost of \$150 and one in Nowerewere answered \$280 the median cost might be taken as a more accurate representation. Alternatively, the average cost excluding these two outliers, is \$2.06.

The fact that almost half of those surveyed stated that the minibus is their main source of transport demonstrates once again the importance of supporting effective and efficient public transportation services in South Tarawa, especially given that the population is highly dependent upon it. This highlights the importance of incorporating features into the road design that enhance the operation of minibuses as indicated by survey respondents (such as bus shelters, bays for minibuses to stop in and improved street lighting.) These responses were echoed in the Bus Driver Focus Group where the safety improvements that were stressed as important for the main road included *“speed bumps to be painted, pedestrian crossing and footpaths, widen road, bus stop/shelter, road signs and marking the middle of the road so that drivers drive on the right lane and bus stop should have parking space like the ones in Betio and Bairiki”*.



Rates of car, motorbike and bicycle ownership are low amongst those surveyed. Less than 15 percent of respondents reported having someone in their household who owns a bicycle and only 26 percent of respondents own, or have someone in their homestead who owns, a car or motorbike. When asked if the condition of the main road affects their decision to own a car, motorbike or bicycle, almost 44 percent of respondents answered “yes”, with a further 7.6 percent answering “maybe”. This suggests the implications the condition of the main road has on the choice of transportation vehicles and presents an opportunity to put in place design features that encourage greater mobility amongst the population of South Tarawa.

Figure 4: Breakdown of the Main Modes of Transport



#### **4.7. Transport expenditure**

Transport expenditure and expenditure for vehicle repairs is an important indicator of the impact the condition of the main road is having on the population. This was clearly articulated in the Bus Driver Focus Group with interviewees commenting a main benefit from an improved road would be *“expense will decrease because the buses will hardly be broken”*. Moreover, the Bus Driver Focus Group described how the main maintenance problems they experience as a result of the condition of the main road is mainly from the bearing, brake pads and shock absorbers which are costly, costing from \$200 to \$500 each. These costs get passed along to the consumer in their expenditure on public transport. Given the significant number of respondents using public transport this could have a significant cumulative economic impact if bus drivers reflect their savings on bus ticket prices.

Over three quarters of respondents listed transport as one of the three biggest household expenses each week. Therefore any change in transport prices will therefore have a large impact on households. When asked the average weekly expenditure of the household on transport, over 20 percent responded \$30 or more, with 64 percent responding \$5-30 per week. The average monthly salary of the households is \$524.14, with a median of \$300, which means transport costs represent a substantial percentage of people’s expenditure.

Of those respondents who have a car in their household, the average weekly expenditure on petrol is approximately \$26.30, while the median is \$20. For those who own a car, the average yearly expenditure on car repairs is approximately \$363.33 with the median being \$250. Considering the average combined monthly income is \$524.14, with a median of \$300, this cost is quite substantial, and a number of respondents annually spend more than \$1000 on vehicle repairs. Notably, those who spent more on car repairs generally had higher household incomes. However, given the general high costs of owning a car, an argument could be made for the potential of bicycles as an alternative and effective means of transportation in South Tarawa given the low operational costs and generally flat terrain and short distances between villages.



## **5. Road safety**

Road safety is a significant problem in South Tarawa. An overwhelming 98.5 percent of respondents answered affirmatively to the question of whether they consider safety on the road an issue, demonstrating the importance of addressing such safety concerns in the design of the rehabilitated main road. The predominant safety concerns are related to either the condition of the road (including its width), the manner of driving of the population and the associated need for safety measures such as signs, breath testing and effective speed bumps to counter dangerous driving.

Pedestrian safety, including issues of adequate lighting, safety for women traveling the road at night and pedestrian access for school children is also considered important. When asked to rate the experience of traveling the main road by foot approximately 91 percent of respondents answered “not very safe”. One potential negative impact of the rehabilitated road is the likelihood that vehicle speed will actually increase as a result of the improved surface. Currently the poor condition of the road actually restricts speed levels and in a way minimizes some safety risks as vehicles are required to travel at slower speeds to minimize damage to vehicles. With the potential for higher speeds on the road as a result of general improvement works under KRRP, there is a need for appropriate safety mechanisms in the designs to ensure road accidents do not increase once the road is rehabilitated.

### **5.1. Highest safety concerns**

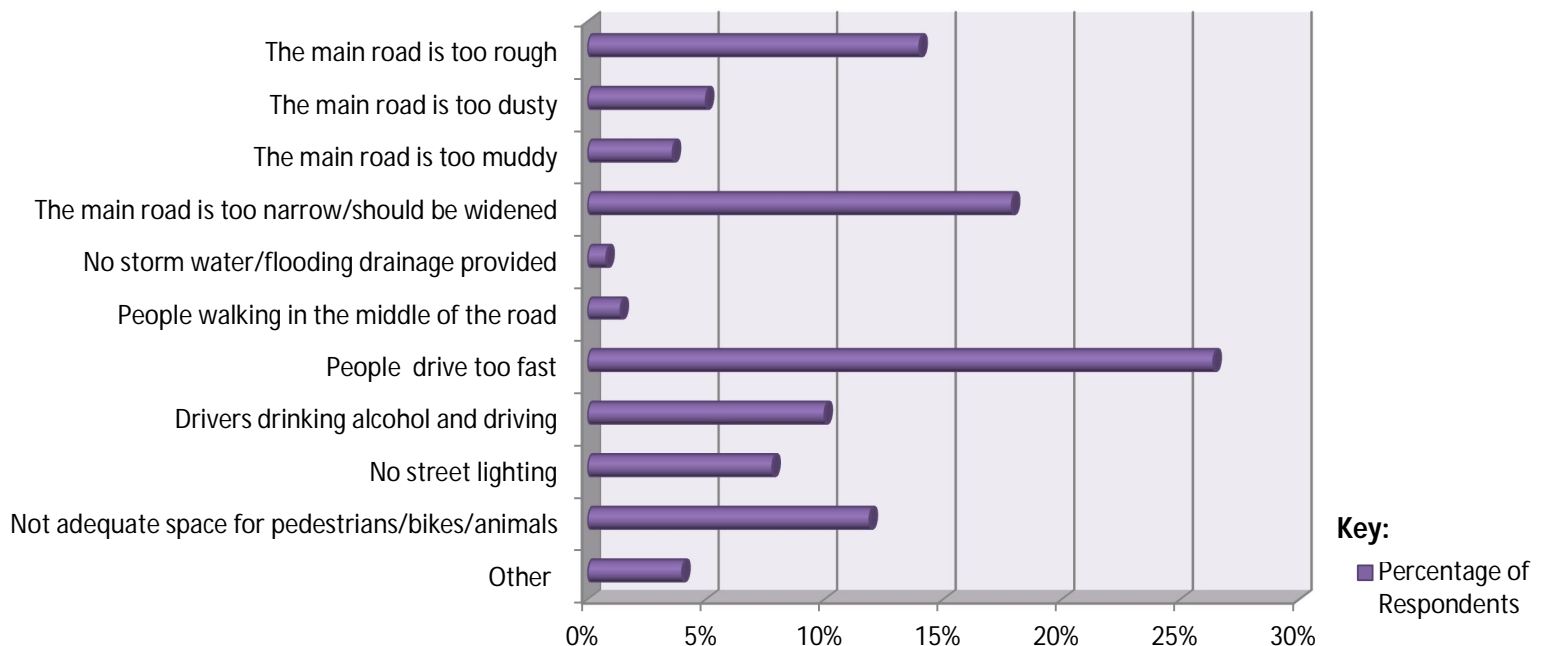
Based on the baseline results a number of significant safety concerns have been highlighted with regards to the main road, as detailed on Figure 1. Given the central role that the main road plays in people’s lives (through proximity of homesteads to the main road, and as the only means facilitating transportation) these safety concerns need to be addressed.

When asked whether they thought the main road would benefit from improved street lighting, an overwhelming 100 percent of interviewees responded affirmatively. This clearly indicates street lighting as a key priority of survey respondents that should be incorporated into the design of the new road. When the respondents were asked to elaborate on how they thought the main road would benefit their household the overwhelming response was there would be an increase in safety on the road. Specific responses included: people feel safe when walking on the road, safe driving, able to see when walking in the night, reduce the number of road accidents, safe to walk for women, light up/brighten the road, and be able to see drunken people, can see potholes in the road and to avoid robberies.

When surveyed on the highest safety concerns, those answers with the most number of responses included: the main road is too rough; the main road is too narrow/should be widened; people drive too fast; drivers drinking alcohol and then drive, and the main road doesn’t have adequate space for pedestrians/bikes/animals (see **Figure 1**). It is also useful to recognize the specific concerns of each village, for example, in most survey locations people driving too fast was a major concern, however in Banraeaba, this was not seen as one of the highest safety concerns, and instead, the road being too narrow and not having enough space for pedestrians was the biggest concern. When given the opportunity to provide an “other” answer, some concerns voiced included people overtaking and road

accidents (for more on accidents see Section 5.3). Refer to **Figure 5** below for a breakdown of major safety concerns by total number of respondents.

**Figure 5: Major Safety Concerns by total number of respondents**



One major safety concern that arose in a number of the Focus Groups was women’s safety. In the Anraei/Te Kawa ae Boou Village Focus Group in Bonriki, a main point raised was that *“their women are not safe because the buses don’t drive through their village so the people have to get off from the airport and walk about 300-500 meters back to their village”*. This same Focus Group listed traffic lights, street lights, bus stop/shelter and drainage as the most important safety improvements that they would like to see on the main road. In this Focus Group it was also stated that an advantage of an improved road would be that *“women won’t have any problems because they won’t be walking a long (sic) distance to get home and won’t have any cases of rape.”*

Women’s and children’s safety was a topic also discussed in the Women’s Focus Group in Bikenibeu. The women’s main concern was the safety of their children and they claimed that *“the road is bad and the police are not doing a good job in patrolling the roads because the kids are still not picked up by buses to go to school and back to their homes”*. The Women’s Focus Group also saw drink driving and sleep driving as causing a lot of accidents.

In the Big Store Owners Focus Group in Nowerewere to Bikenibeu, the main suggested safety improvements included speed bumps, breath testing, street lighting, street signs, more police to patrol the roads, pedestrian crossing/footpaths and drainage system. The Bus Driver Focus Groups identified *“speed bumps to be painted, pedestrian crossing and footpaths, widen road, bus stop/shelter, road signs and marking the middle of the road so that drivers drive on the right lane and bus stops having parking*

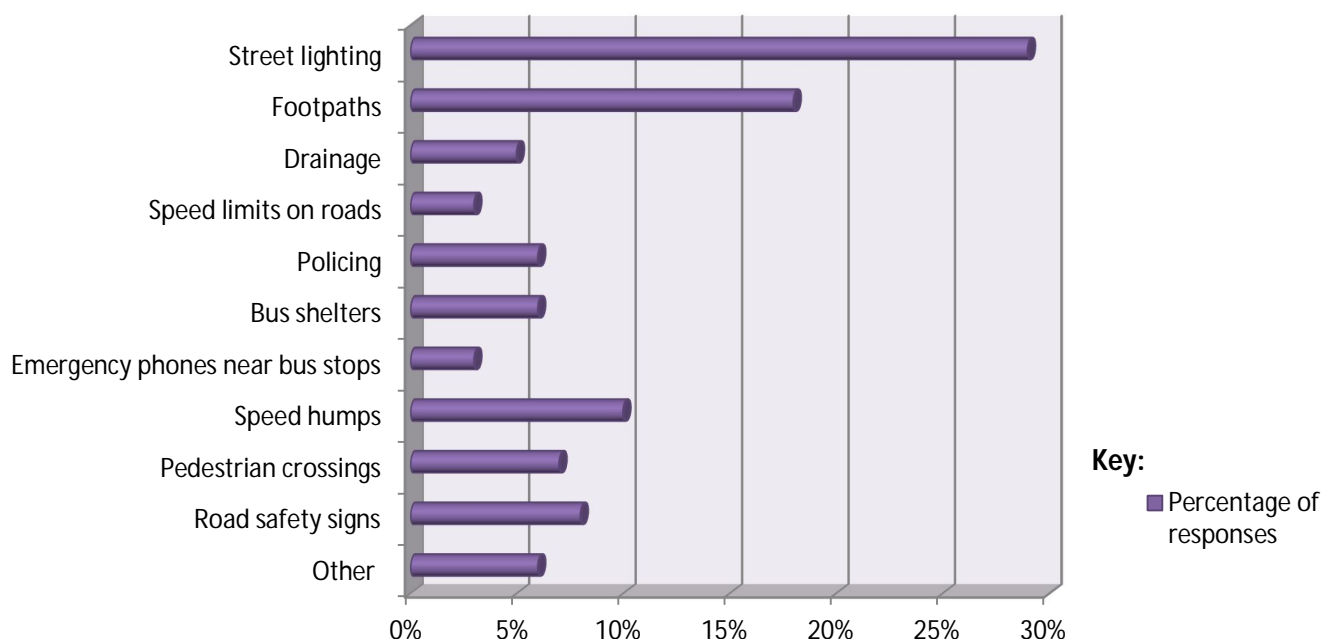
*space like the ones in Betio and Bairiki*” as the major safety improvements required for the main road. The Mini Store Owners Focus Group saw speed bump signs, streetlights, footpaths, drainage and street signs as the most important safety improvements in relation to the main road.



## **5.2. Important road safety features**

Street lighting (27.6 percent) and footpaths (17.5 percent) were the road safety features that were afforded the highest importance to the respondents. However, all remaining survey options (drainage, speed limits on roads, policing, bus shelters, emergency phones near bus stops, speed humps, pedestrian crossings and road safety signs) received approximately 5 percent of responses each, indicating that they are all lacking on the current main road. When given the opportunity to provide an “other” answer not listed in the possible responses, additional concerns included that the road should be widened and that there is a need for pedestrian safety. Speed humps were seen as an especially important feature in Temaiku and Banraeaba. Refer **Figure 6** overleaf.

Figure 6: Road Safety Features Seen as Needed by Respondents



### 5.3. Accidents on the main road

Some 16 percent of respondents have personally been involved in an accident on the main road, with a further 14 percent having had someone in their household involved in an accident on the main road. When respondents were asked what type of road accidents they were involved in the majority were attributed to car, truck, bus, motorbike or pedestrian accidents. Temaiku reported the highest incidence of main road accidents, with a third of respondents experiencing accidents and 25 percent of respondent’s household members experiencing accidents. It is therefore of interest to note the responses from Temaiku regarding the most important road features: street lighting, speed bumps and footpaths. Interestingly, in the Bus Driver Focus Group, the participants claimed that they have never had road accidents even when informed that a lot of people blamed them for a lot of the accidents. They blamed the potholes rather than their speeding and said that the government should make the road the same like the one in Betio with pathways for people to walk on.



## 6. Environment



### 6.1. Dust

The results of the household survey clearly indicate that dust is an extremely significant problem in South Tarawa, and is to be highlighted as a major concern to be addressed during the implementation of the KRRP. Almost 82 percent of respondents answered that “dust is a big problem” when asked to describe the level of dust on and around the main road, with a further 14 percent stating that “dust causes some problems”. When asked if the level of dust on the main road had ever caused the respondent’s health problems, over 91 percent answered in the affirmative. When asked to provide details of the health problems caused by dust, some of the responses included: headaches, the flu, sore eyes, runny noses, coughing, respiratory/lung problems and asthma. Moreover, five percent of responses dealing with safety concerns listed the road being dusty as a problem. When the people surveyed were asked how an improved main road would affect their household the most and an option for an “other” answer was allowed, a reduction in the levels of dust was a common response.

The Anraei/Te Kawa ae Boou Village Focus Group in Bonriki also raised dust as a significant concern explaining that they *“suffer a lot from cold/flu/sore eyes/diarrhea every week because of the dust from the road”*. In the Mini Store Owners Focus Group, all of the store owners complained about the dust and said that *“it is a huge problem because it causes cold/flu sickness to them”*. The Group also complained that the truck delivery caused a lot of dust and that trucks compete with each other for customers and so speed from one shop to another to get lots of customers without caring about safety or stirring up dust.

## **6.2. Water**

The high levels of dust around the main road also appear to be impacting the quality of the water supply of the population. Approximately 82 percent of respondents responded that they have a well for water at their homestead. Of those who have a well, almost 35 percent answered affirmatively to whether their well is affected by the runoff or dust from the road. When asked to provide details of how their well was affected, responses included: drinking water is affected; dirty water; not good for drinking; unsafe to drink; well is close to the road and well is very close to the road; dust and polluted; contaminated; affected if the well is not covered. The areas where the wells were said to be affected most by the dust include Banraeaba, Bairiki and Eita, with a third to a half of those with a well in their homestead in these villages said to be experiencing an impact from the dust. While it is possible that water quality problems have to do with things other than dust (particularly given the current state of the water lens in Kiribati), it is likely that dust is contributing to bad water quality. Moreover, the fact that local people perceive dust to be a contributor to water quality is important.

## **6.3. Rubbish**

Rubbish levels around the road in the respondents’ respective village were rated as “dirty” by over 37 percent, “not bad/medium” by approximately 30 percent and “clean” by approximately 30 percent. These percentages varied from village to village. For example, in Eita 60 percent of respondents rated the general rubbish levels around the road as “clean”, in Banraeaba two thirds rated the levels as “dirty”, and in the off-road responses from Teaoraereke close to 89 percent rated the levels as “not bad/medium”. Only 2 percent of respondents overall rated the general rubbish levels around the road in their village as “very dirty”.

When asked about the regularity of rubbish collection in their village, over 72 percent answered “there is no schedule” or “there is no rubbish collection”, while approximately 18 percent answered “1-2 times per week”. No responses indicated that rubbish was collected as “frequently” as “every day” or “every other day”. The villages with the most frequent and structured rubbish collection included Bairiki and off-road Bikenibeu where over half the respondents state that their rubbish is collected 1-2 times per week.

When rubbish is not collected regularly people site negative consequences including: unpleasant odors come from the rubbish; the neighborhood looks unpleasant, and it is not good for health. In Bikenibeu, Temaiku, Teaoraereke (both on and off-road) another noted concern was that animals were attracted to the rubbish when it is not regularly collected.



## **7. Health**

Facilitating access to essential services is one important role that the main road in South Tarawa provides and it is likely that the poor condition of the road has the potential to hamper the ability of the population to access such key services. Therefore measures such as travel time, cost and ease of access to hospitals and clinics provide baseline data in order to be able to evaluate whether the condition of the main road in South Tarawa is impacting the ability of people to access essential health services. The ability of the population to travel to hospitals and health clinics when required is a highly important indicator of the impact the condition the main road has socially as without quick and easy access, health complications for individuals could be exacerbated, particularly in cases of emergency.

### **7.1. Traveling to hospitals/health clinics**

Some 62 percent of respondents have had to visit a hospital/health clinic in the last 2 months. Of those, some 65 percent found traveling to the hospital/health centre “easy” or “very easy”. The most difficult areas to travel to a hospital/health clinic were from Banraeaba (with 5 of 18 responding “difficult”), Teaoraereke (with 3 of 12 responding “difficult”) and off-road Teaoraereke (with 13 of 14 responding “difficult”). The areas with the least traveling problems were Bikenibeu (where 100 percent responded “easy” or “very easy”), Nowerewere (where 15 or 16 responded “easy” or “very easy”), Bairiki (where 16 of 17 responded “easy” or “very easy”), Eita (where 21 or 25 responded “easy” or “very easy”) and off-road Bikenibeu (where 9 or 13 responded “easy” or “very easy”) with some of these villages being located in close proximity to a hospital/health centre.

When asked how frequently they visited a hospital/health centre over the course of a year, approximately 75 percent of respondents said either every couple of months or more than once a week. The usual purpose of visiting hospital/health centre is “only for emergencies” (40 percent) which stresses the importance of easy travel to the hospital/health centre.

Seventy percent of respondents said that it takes them 5 minutes to half an hour to get to the nearest hospital/health centre, with only 1 percent answering over one hour. This 1 percent was located in Teaoraereke and off-road Bonriki. In off-road Bonriki a further 42 percent said it took them half an hour to one hour to get to the nearest hospital/health centre, while in off-road Teaoraereke one third responded half an hour to one hour. Improvements in road quality may help to reduce travel times to these key health and medical facilities and services.

When respondents were asked what mode of transport they used to travel to the nearest hospital/health centre, most responded the bus (43 percent), followed by walking (31 percent). On average in all the villages, a one way trip to the nearest hospital/health centre in a minibus/taxi costs 62 cents, while the median cost is 70 cents.

## **8. Education**

The relationship between education and the main road is significant as it is important to measure the ability of children to get to schools. Eighty (80) percent of respondents have children in their household who attend school, indicating the high number of school aged children in households in South Tarawa.

### **8.1. Traveling to schools**

The predominant forms of traveling to school include the minibus (45 percent) and walking (39 percent), which is comparable to responses generally about modes of traveling. The cost of a trip to school is on average 56 cents, and the median price is 60 cents.

While for some 70 percent of children it only takes between 5 minutes to a half an hour to travel to school in the dry season, some 20 percent take half an hour to an hour, which is substantial considering the size of South Tarawa. In the wet season this number increases to over 30 percent. For a place as small in size as South Tarawa, these travel times may indicate the impact that the poor quality of the main road is having on the duration of trips. Potholes and poor visibility mean that vehicle speeds are severely reduced and these problems are clearly compounded during rainy periods, where the road deteriorates even further, with large depressions filled with water. Traffic congestion during peak times (such as school start and end times) could also be contributing to an increase in travel time. Additionally, the number of people who take over one hour to travel to school rises from 1 percent to almost 5 percent from the dry to the wet season.

In the Women’s Focus Group in Bikenibeu, the problem of buses not picking up school children was raised, and it was suggested that designated school buses should operate to ensure school children get to school. Further, when children are waiting for the bus, there is no bus shelter to reduce the effect of the sun’s heat or the rain. The Women’s Focus Group also identified the problem of children not being safe as there is no specific space for them to walk on or ride their bicycles to school. This point was further elaborated on in Section 5 on road safety.



## 9. How to integrate results into the KRRP work program: Conclusions and recommendations

### 9.1. Recommendations

The main recommendations for incorporation into the KRRP work program are as follows:

- Safety considerations will be paramount. Consideration should be given to the fact that an improvement in the condition of the road could also increase both the number of vehicles on the road, thereby causing further congestion, and the speed at which vehicles can travel, thereby potentially increasing road accidents. An important feature of the road design will therefore be a consideration of traffic flow, as well as safety considerations such as appropriate speed bumps, lighting, road signs and police enforcement mechanisms to help manage this;
- The fact that street lighting had 100 percent support from the respondents of the household survey demonstrates it is an essential aspect to be integrated effectively into the design of the road rehabilitation;
- Pedestrian safety was another focus of the results of this survey. Whether this issue is addressed through the integration of pedestrian footpaths, bus bays for pedestrians or painted lines and road safety signs, some integration of pedestrian safety aspects are important in the road rehabilitation;
- 85 percent of those surveyed confirmed that they receive road safety information with the source of this information ranging from the police, to school, radio, and the council. This demonstrates potential avenues through which important road safety information can be disseminated in the future, particularly when road safety improvements are made, and require complimentary education campaigns;
- The strong emphasis on public transport that was expressed throughout the results of the household survey indicates a need for the incorporation of features into the road design that enhance the operation of minibuses such as bus shelters, bays for minibuses to stop in and street lighting;
- Consideration of the high number of youth and the associated utilization of the road for socializing and sports activities in South Tarawa. As previously mentioned, the Catholic Youth Group focus group stated that they mainly used the road “to do their training, play along/near the road and [for] socializing with their peers” which is a factor that should be taken into consideration in the design of the rehabilitated road, particularly when considering the small amount of land for recreational activities in South Tarawa;

- Consideration of the impact that the weather and climate change has on the condition of the main road. There is a need for proper drainage and safety considerations in the design of the rehabilitated road in order to contribute to its ability to cope with changes in weather; and
- The potential for community members to contribute financially or with material or personal labor to improve the condition of the small roads in their village needs to be further explored by the project.

## Appendix A: Household Survey

101	Relationship to the head of the household?		
		Head	1
		Wife/husband	2
		Son/daughter of head & spouse	3
		Son/daughter of head	4
		Son/daughter of spouse	5
		Parent/parent-in-law	6
		Brother/sister or brother-in-law/sister-in-law	7
		Niece/Nephew	8
		Grandchild	9
		Other, please explain	10
		_____	
		Non-relative	11
		Don't know	12
		No answer	13
102	Total number of people who sleep here on a regular basis?		
		_____ people	1
		Don't know	2
		No answer	3
103	How many people who are JSS and below who sleep here on a regular basis?		
		_____ people	1
		Don't know	2
		No answer	3
104	Approximate combined monthly income of the household?		
		AUD _____	1
		Don't know	2
		No answer	3
105	Main source of income of the household?		
		Salary	1
		Earnings selling produce	2
		Money sent by family members not living in homestead	3
		Other, please explain	4
		_____	
		Don't know	5
		No answer	6

106	Three biggest weekly household \$ expenses? Approximately how much on each?	Food	1
		Clothing	2
		Power	3
		Transport	4
		Water	5
		Health care	6
		Education	7
		House	8
		Other (please explain)	9
		Don't know	10
		No answer	11
107	Approximately how much does the household spend on transport every week?	Less than \$5	1
		\$5 - \$10	2
		\$10 - \$20	3
		\$20 - \$30	4
		\$30-\$40	5
		More than \$40	6
		Don't know	7
		No answer	8
108	Approximately how long have you lived here?	Less than 1 month	1
		1 month to 6 months	2
		6 months to 1 year	3
		One year to 5 years	4
		More than 5 years	5
		Doesn't live here	6
		Don't know	7
		No answer	8
109	What island are you originally from?	_____	1
		Don't know	2
		No answer	3

<b>Section 2: Road Transport Overview</b>			
<b>No.</b>	<b>Questions</b>	<b>Options</b>	<b>Code</b>
201	Description of the general condition of the main road in Tarawa?	Very poor condition Poor condition Reasonable condition Good condition Very good condition Don't know No answer	1 2 3 4 5 6 7
202	Three most serious problems concerning the main road?	Too many potholes Too rough for driving Too dusty Too muddy Roads are too narrow/should be widened No storm water/flooding drainage provided Roads don't have adequate space for pedestrians/bikes/animals Other, please explain <hr/> Don't know No answer	1 2 3 4 5 6 7 8 9 10
203	Description of the condition of the main road when it rains?	Very poor condition Poor condition Reasonable condition Good condition Very good condition Don't know No answer	1 2 3 4 5 6 7
204	Description of the condition of the main road in the dry season?	Very poor condition Poor condition Reasonable condition Good condition Very good condition Don't know No answer	1 2 3 4 5 6 7

205	During school term, and during the weekdays, how many times per day do you usually travel on the main road in a motorized vehicle or on a motorbike?	1	1
		2	2
		3	3
		4	4
		5+	5
		6	6
		Don't know	7
		No answer	8
206	Over the weekends, how many times per day do you usually travel on the main road in a motorized vehicle or on a motorbike?	1	1
		2	2
		3	3
		4	4
		5+	5
		Never	6
		Don't know	7
		No answer	8
207	On average, how long each day do you spend traveling on the main road - walking, in a motorized vehicle, on a motorbike or bicycle?	Under 5 minutes	1
		5 minutes to 1/2 hour	2
		1/2 hour to 1 hour	3
		1 to 3 hours	4
		More than 3 hours	5
		Don't know	6
		No answer	7
208	Rate the condition of the access (small) roads in your village?	Very poor condition	1
		Poor condition	2
		Reasonable condition	3
		Good condition	4
		Very good condition	5
		Don't know	6
		No answer	7



209	Would you be willing to contribute financially or with material or personal labour to improve the condition of the small roads in your village?	Yes	1
		No	2
		Maybe	3
		Don't know	4
		No answer	5
210	Description of the general level of traffic on the main road?	Little to no traffic	1
		Light traffic	2
		Medium traffic levels	3
		Heavy traffic	4
		Very heavy traffic	5
		Don't know	6
		No answer	7
211	Do you live on the main road?	Yes	1
		No	2
		Don't know	3
		No answer	4
212	Approximately how far do you have to travel on the access road to get to the main road?	Less than 50 paces	1
		50 - 100 paces	2
		Over 100 paces	3
		Don't know	4
		No answer	5
213	What is the access condition of the road during the year?	Always passable	1
		Impassable some of the year	2
		Impassable most of the year	3
		Never passable	4
		Don't know	5
		No answer	6
<b>Section 3: Environment</b>			

No.	Questions	Options	Code
301	Describe the level of dust on and around the main road?	No dust Dust causes some problems Dust is a big problem Don't know No answer	1 2 3 4 5
302	Has the level of dust on the main road ever caused you health problems?	Yes, please provide details _____ No Don't know No answer	1 2 3 4
303	Do you have a well for water at your homestead?	Yes No Don't know No answer	1 2 3 4
304	Is your well affected by the runoff or dust from the road?	Yes, please provide details _____ No Don't know No answer	1 2 3 4
305	How would you rate the general rubbish levels <i>around</i> the road in your village?	Very clean Clean Not bad/medium Dirty Very dirty Don't know No answer	1 2 3 4 5 6 7
306	How often is garbage collected in your village?	Every day Every other day 1-2 times per week Less than once a week Whenever the containers are full There is no schedule	1 2 3 4 5 6

		There is no rubbish collection	7
		Don't know	8
		No answer	9
307	What island are you originally from?		
			1
		Don't know	2
		No answer	3
308	What happens when rubbish is not collected regularly? (Circle 3)		
		Animals are attracted to the rubbish	1
		Unpleasant odours come from the rubbish	2
		Children play in the rubbish	3
		The neighbourhood looks unpleasant	4
		Not good for health	5
		Other, please explain	6
		Nothing	
		Don't know	7
		No answer	8
<b>Section 4: Traveling on the Main Road</b>			
No.	Questions	Options	Code
401	What is your household's main form of transport?		
		Walking	1
		Drive own car	2
		Driven in a friend or relative's car	3
		Bicycle	4
		Motorbike	5
		Drive in vehicle provided by employer	6
		Minibus	7
		Other, please explain	8
		Don't know	9
		No answer	10
402	Do you, or anyone else in your		

homestead, own a bicycle?		Yes	1
		No	2
		Don't know	3
		No answer	4
403	Do you, or anyone else in your homestead, own a car or motorbike?	Yes, please specify _____	1
		No	2
		Don't know	3
		No answer	4
404	How much do you spend on average per week on petrol? (If no travel circle 1 and put A\$0)	AUD:_____	1
		Don't know	2
		No answer	3
405	How much do you spend on average per year on car repairs?	AUD:_____	1
		Don't know	2
		No answer	3
406	Does the condition of the main road affect your decision to have a car/bicycle/motorbike?	Yes	1
		No	2
		Maybe	3
		Don't know	4
		No answer	5
407	What method of transport do you use to get to work?	Walk	1
		Taxi	2
		Drive own car	3
		Someone else's car	4
		Bicycle	5
		Motorbike	6
		Vehicle provided by employer	7
		Minibus	8
		Other, please explain _____	9

		Don't know	10
		No answer	11
408	How long does it take you to get to work in the dry season?	Less than 5 minutes	1
		5 minutes to 1/2 hour	2
		1/2 hour to 1 hour	3
		More than 1 hour	4
		Don't know	5
		No answer	6
409	How long does it take you to get to work in the wet season?	Less than 5 minutes	1
		5 minutes to 1/2 hour	2
		1/2 hour to 1 hour	3
		More than 1 hour	4
		Don't know	5
		No answer	6
410	If you don't own your own car or motorbike, how much does a one way trip to your work cost? (If no travel circle 1 and put A\$0)	AUD: _____	
		Don't know	A
		No answer	B
411	How would you rate the experience of traveling the main road by motorized vehicle?	Very comfortable	1
		Comfortable	2
		Not very comfortable	3
		Very uncomfortable	4
		Don't know	5
		No answer	6
412	How safe would you rate the experience of traveling the main road by foot?	Very safe	1
		Safe	2
		Not very safe	3
		Very safe	4
		Don't know	5
		No answer	6
413	How often do you travel to town i.e. either Betio, Bairiki or Bikenibeu?	More than once a week	1

		Once a week	2
		Several times per month	3
		Less than once a month	4
		Don't know	5
		No answer	6
414	Do you think the main road would benefit from improved street lighting?		
		Yes, please state how	1
		No	2
		Don't know	3
		No answer	4
<b>Section 5: Health</b>			
No.	Questions	Options	Code
501	Have you had to visit a hospital/health clinic in the last 2 months?	Yes	1
		No	2
		Don't know	3
		No answer	4
502	How easy did you find it to travel to the hospital/health centre?	Very easy	1
		Easy	2
		Somewhat difficult	3
		Difficult	4
		Very difficult	5
		Don't know	6
		No answer	7
503	How frequently do you visit a hospital/health centre over the course of a year?	More than once a week	1
		Every couple of months	2
		Every half year	3
		Yearly	4
		Never	5
		Don't know	6
		No answer	7
504	How frequently did you visit a hospital/health centre last year?	More than once a week	1

		Every couple of months	2
		Every half year	3
		Yearly	4
		Never	5
		Don't know	6
		No answer	7
505	For what purpose do you usually visit the hospital/health centre?		
		Baby clinic	1
		Family planning	2
		For check-ups	3
		Only for emergencies	4
		Other, please explain	5
		Don't know	6
		No answer	7
506	How long does it take you to travel to the nearest hospital/health centre?		
		Under 5 minutes	1
		5 minutes to 1/2 hour	2
		1/2 hour to 1 hour	3
		Over 1 hour	4
		Don't know	5
		No answer	6
507	What mode of transport do you use to travel to the nearest hospital/health centre?		
		Walk	1
		Drive own car	2
		Driven in someone else's car	3
		Motorbike	4
		Ambulance	5
		Taxi	6
		Bicycle	7
		Other, please explain	8
		Don't know	9
		No answer	10
508	How much would a one way trip to the nearest hospital/health centre cost in a minibus/taxi? (If no travel circle 1 and put A\$0)	AUD: _____	1
		Don't know	2



		No answer	3
<b>Section 6: Schooling</b>			
No.	Questions	Options	Code
601	Do you have children in the household who attend school?	Yes No Don't know No answer	1 2 3 4
602	How do they travel to school?	Walk Drive in your car Driven in a friend or relative's car Bicycle Drive in the TUC or BTC truck Motorbike Other, please explain _____ Don't know No answer	1 2 3 4 5 6 7 8 9
603	How much does the trip cost?( <i>If no travel circle 1 and put A\$0</i> )	AUD: _____ Don't know No answer	1 2 3
604	Approximately how long does it take them to get to their school in the dry season?	Under 5 minutes 5 minutes to 1/2 hour 1/2 hour to 1 hour Over 1 hour Don't know No answer	1 2 3 4 5 6
605	Approximately how long does it take them to get to their school in the wet season?	Under 5 minutes 5 minutes to 1/2 hour	1 2

		1/2 hour to 1 hour	3
		Over 1 hour	4
		Don't know	5
		No answer	6
606	<b>Note.</b> <i>If there are school aged children in the house who are not attending school, please ask why not (only school aged children - not babies)</i>	Education at school not useful	1
		Too expensive	2
		School too far away	3
		Daughters do not attend as not safe	4
		Other, please explain	5
		Don't know	6
		No answer	7
<b>Section 7: Safety</b>			
No.	Questions	Options	Code
701	Do you consider safety on the road an issue?	Yes	1
		No	2
		Don't know	3
		No answer	4
702	What, in your opinion, causes the most safety concerns on the road? ( <i>three highest concerns</i> )	The main road is too rough	1
		The main road is too dusty	2
		The main road is too muddy	3
		The main road is too narrow/should be widened	4
		No storm water/flooding drainage provided	5
		People walking in the middle of the road	6
		People drive too fast	7
		Drivers drinking alcohol and driving	8
		No street lighting	9

		The main road doesn't have adequate space for pedestrians/bikes/animals	10
		Other, please explain	11
		Don't know	12
		No answer	13
703	Which of the following road features are important to you? ( <i>three most important</i> )		
		Street lighting	1
		Footpaths	2
		Drainage	3
		Speed limits on roads	4
		Policing	5
		Bus shelters	6
		Emergency phones near bus stops	7
		Speed humps	8
		Pedestrian crossings	9
		Road safety signs	10
		Other, please explain	11
		Don't know	12
		No answer	13
704	Have you ever been involved in an accident or been injured on the main road?		
		Yes, please provide details	1
		No	2
		Don't know	3
		No answer	4
705	Has anyone in your household ever been involved in an accident or injured on the main road?		
		Yes, please provide details	1
		No	2
		Don't know	3
		No answer	4
706	Do you ever receive information about		

road safety?		Yes, please ask who from	1
		No	2
		Don't know	3
		No answer	4
707	How would an improved main road affect you and your household the most? <i>(please circle the three most relevant)</i>	Faster traveling time	1
		Decrease in travel costs	2
		New job opportunities	3
		More money	4
		Women able to travel more easily	5
		Better access to services, e.g. health care, shops, schools	6
		Other, please explain	7
		Don't know	8
		No answer	9

## **Appendix B: Focus Groups**

### **Anraei/Te Kawai Ae Boou Village Focus Group (Bonriki) 30<sup>th</sup> January 2011**

#### **FOCUS GROUP QUESTIONS**

#### **SUMMARY OF ISSUES DISCUSSED**

##### ***Summary of all main points***

- We found out that the majority of the people residing here are landowners and only a few were those who came to live because they bought land here. The people being interviewed showed enthusiasm about this project because they said that this road issue has been on their agenda since Teburoro Tito's presidency, at least 10 years ago. They have gone to the council and sought help for their road to be tar-sealed but nothing has happened until now. With this new road project they are hopeful their problems will be solved or reduced. They said that they suffer a lot from cold/flu/sore eyes/diarrhea every week because of the dust from the road. Their women are not safe because the buses don't drive through their village so the people have to get off from the airport and walk about 300-500 meters back to their village.

##### ***The composition of people in the group including employment status (if known), age, number of people, gender, where they live/work etc.***

- There were 22 people in this focus group and 16 are unemployed with the rest as fishermen, contractors, tailor, student and working in the agriculture. There were 12 women and 10 men and their age varies from 20 to 68 years. The majority of them are land owners with only a few people who lived there after buying the land from landowners.

##### ***Safety improvements in relation to the main road***

- Traffic lights
- Street lights
- Bus stop/shelter
- Drainage

##### ***The main concerns and problems from the road***

- Potholes in the road
- Road is narrow should be widened like the one in Betio
- Dust is a huge problem where it causes a lot of flu/cold/diarrhea
- Red eyes/sore eyes

##### ***The main benefits from the improved road***

- It will decrease the dust therefore reduces sickness

- Buses will go to their village
- Women won't have any problems because they won't be walking along distance to get home and won't have any cases of rape

***Any other points of particular interest***

- The village people still claimed that people are still using the bush to do their business (toilet) and they were asking if the government can build them a community toilet or something that at least people can use instead of the bush where the water reserve is or the beach. Most of the people living there do not have any toilet that's why they resolve into using the beach or the bush.
- They asked too if water from PUB can be connected to their household because their water has lost its taste and becoming salty, not good for drinking. Especially now with this dry season, they are experiencing this salty water problem.
- PUB should maintain their meter box because the one situated at their village is open and not locked. This is very dangerous if children decided to go and play with the wires, they will die from shock. Also, this meter box is located near a place where it rains a lot and it will be surrounded with a pool of water.
- They are happy to fix their roads unless the materials are provided.

## **Women Focus Group (Bikenibeu) 15<sup>th</sup> February 2011**

### **SUMMARY OF ISSUES DISCUSSED**

#### ***Summary of all main points***

- These women’s main concern is with their children’s safety. They claimed that the road is bad and that the police are not doing a good job in patrolling the roads because their kids are still not picked up by buses to go to school and back to their homes. They said that the buses are still driving very fast and as a result causes health issues like miscarried in women and abdominal pains to anyone riding on the bus. Also, there are quite a few curvy roads along the island that causes lots of accidents therefore; the government should do something about these roads.

#### ***The composition of people in the group including employment status (if known), age, number of people, gender, where they live/work etc.***

- These 10 women are from the Seventh Adventist Church group and their age starts from 21 to 39 years old. They lived in different places spanning from Eita to Nowerewere. Most of them are housewives with only one teacher and a student amongst them.

#### ***Safety improvements in relation to the main road***

- Speed bumps to be painted to signal on-coming vehicles
- Speed limit sign
- Street lights
- Widen road
- Road committee to police the road
- Police to enforce road regulation
- Big school bus because the current buses don’t pick up school children
- Pedestrian crossing for villages where there is a school
- Police training about the road rules
- Trees to be cut down from near the road because they can cause visibility issues or can drop on any moving vehicle.
- Policemen in every village with their speed limit guns to deter fast driving

#### ***The main benefits from the road***

- Any vehicle won’t get damaged quickly because the road is nice and smooth
- Decrease the number of accidents because there are policemen in every village

#### ***The main concerns and problems from the road***

- Their children are not safe because there is no specific space for them to walk or ride their bicycles to school.



- There is no school bus and no bus stop with shelters to reduce the effect of the sun’s heat and if there is rain they risk being wet.
- Drunk driving and sleep driving causing a lot of accidents
- Fast drivers and lots of potholes caused women to miscarried and abdominal pain to people.
- No motorcycle or bicycle lane
- Narrow road
- No sign on speed bumps or near it to signal on-coming vehicles
- Cars/buses are easily damaged from riding over the potholes
- There are no street lights and some mischievous kids can throw stones at the bus causing damages and injured people on the bus.

***Any other points of particular interest***

- The road should be made like the one in Betio with proper drainage, road signs, speed bumps, traffic lights in populated places like near the MOEL in Betio or in Bairiki. The government should hire experts to fix the road.

## **Catholic Youth Focus Group (Bikenibeu) 20<sup>th</sup> February 2011**

### **SUMMARY OF ISSUES DISCUSSED**

#### ***Summary of all main points***

- The majority of these Youth groups are unemployed with only one student and one working experience as an engineer. Interestingly, these youth group stated that they mainly used the road to do their training, play along/near the road and socializing with their peers.
- They stated too that the condition of the road is not good because the current maintenance is not a quality one which is not done properly and regularly by the workers.

#### ***The composition of people in the group including employment status (if known), age, number of people, gender, where they live/work etc.***

- This Catholic Youth group all lived in Nei Kaue (Bikenibeu). There were 7 men and 6 women with ages from 19 to 27 years old. There was only one student, one working experience as an engineer and the rest are unemployed.

#### ***Safety improvements in relation to the main road***

- Street lights
- Speed bumps
- Speed limits
- Bus stop/shelters
- Footpath
- Parking areas for buses or any vehicle for people to get off

#### ***The main benefits from the improved road***

- It will decrease the road accidents
- Pedestrian crossing/footpath will make a safer environment for children

#### ***The main concerns and problems from the road***

- Too many accidents from curvy roads like Mackenzie and Otintaai Hotel roads.
- Tanaea and Ananau causeways are too narrow
- The road to the KPA is dangerous because there is no wall and is very narrow as well.
- Where there are a lot of people, pedestrian crossings should be build like one opposite MOEL in Betio and other crowded places like the Bairiki square and many others.
- Travelling in the night is not safe because of the road has lots of potholes and you will have a bumpy ride all the way to your destination.
- Students mostly travel to school by bus or on foot

#### ***Any other points of particular interest***

- In some cases buses don't have any lights on them and especially if the bus collector is a man, girls are not safe on the bus.
- Youth requested the government to provide a big bus for school transport as it is more comfortable and safe to travel on.
- These youth claimed that the road can be use by them for fundraising purposes like car wash, etc.
- Bus driver's work together to signal their fellow driver about the police in other villages so that the other driver will slowly run at the usual speed before reaching the village where the policeman is stationed with its speed gun.

## **Bus drivers Focus Group (Bikenibeu) 20<sup>th</sup> February 2011**

### **SUMMARY OF ISSUES DISCUSSED**

#### ***Summary of all main points***

- These bus drivers claimed that they have never had road accidents even when asked that a lot of people blamed them for a lot of the accidents. They said that the accidents were caused from the potholes and not from speeding therefore they requested that the government should make the road the same like the one in Betio with pathways for people to walk on.
- They only drove on tar-sealed roads because it is comfortable to drive on and the bus won't easily breakdown. Their problem is mainly from the bearing, brake pads and shock absorbers. These equipments are costly, costing from \$200 to \$500 for each.
- The cost of trips on these buses is set by the Council and are affordable to the public because they can have about 60-70 passengers for each trip from Betio to Tanaea.

#### ***The composition of people in the group including employment status (if known), age, number of people, gender, where they live/work etc.***

- These bus drivers lived in different villages from Eita to Tanaea. Their ages spans from 21 to 51 years old and all of them are men. These bus drivers worked in different companies. Some worked with Jeff (Coral Ace Company), Tekarawarawa Bus and some with Batoromaio's bus.

#### ***Safety improvements in relation to the main road***

- Speed bumps to be painted
- Pedestrian crossing and footpaths
- Widen road
- Bus stop/shelter
- Road signs and marking the middle of the road so that drivers drive on the right lane.
- Bus stop should have parking space like the ones in Betio and Bairiki.

#### ***The main benefits from the improved road***

- Expense will decrease because the buses will hardly be broken
- Proper design of speed bumps, less damage to the bus
- Maintaining and fixing of road to high standard will decrease bus accidents

#### ***The main concerns and problems from the road***

- There are quite a lot of curvy roads that have caused accidents like the Mackenzie road, Ngaalu Bar (Bikenibeu),
- Ananau causeway is very narrow

- The damage road caused a lot of problems to the bus especially the bearing and shock absorbers
- More potholes equals more expenses
- Proper design of speed bumps because the ones like in Abarao and Eita opposite Moroni High school are bad. The most appropriate speed bump design is like the ones in Betio.
- Trees along the road are dangerous because they can deter visibility or fall onto any vehicles causing accidents.

***Any other points of particular interest***

- They are happy to help in any way when the road project starts but they do need to get paid.
- The workers did not fix their road well and using the cement to cover the potholes is a bad idea because cement is easily damaged and when it does, pieces of cement scattered on the road causing damage to the bus tyres and will cause accident.
- The young drivers are the ones playing around on the road when driving that's why the older ones copy how they drive.

## **Mini store owners Focus Group (Bikenibeu) 26<sup>th</sup> February 2011**

### **SUMMARY OF ISSUES DISCUSSED**

#### ***Summary of all main points***

- All of these store owners complained about the dust. They said that it is a huge problem because it causes cold/flu sickness to them.
- They complained about the truck delivery because they caused a lot of dust. They said that these trucks compete with the other trucks for customers and as a result they speed from one shop to another in order to get lots of customers without caring less about the dust.
- All roads should be tar-sealed because buses like to drive on smooth roads with no potholes. This will increase our customers and it will mean more money for us too.

#### ***The composition of people in the group including employment status (if known), age, number of people, gender, where they live/work etc.***

- Some of these store owners lived on the main road and some on the feeder/access road. There were 5 males and 5 females and their ages begin from mid thirties upwards. All of these people worked in their own shops.

#### ***Safety improvements in relation to the main road***

- Speed bumps signs
- Street lights
- Footpath
- Drainage
- Street signs

#### ***The main benefits from the improved road***

- Decrease the dust, less cold/flu sickness
- If the road is fixed, it will mean more customers, more money
- Fast delivery
- Easy access to shops

#### ***The main concerns and problems from the road***

- Dust is a huge problem to them causing health problems
- Expensive to transport cargoes from port to their office
- There are quite a lot of curvy roads that have caused accidents like the Mackenzie road, Dr Airam (Eita), KPC (Eita) and Ionatia (Bikenibeu)
- Trees overlaying onto the road should be cut down.

#### ***Any other points of particular interest***

- These people as expected only looked at their business welfare because those ones living alongside the access/feeder roads said that if their road is tar-sealed, a lot of vehicles can pass their road now and so their customers will increase as well as their business.
- Big containers should not be near the road because they took up the road space.
- Te Ananau causeway should be widened and have a space for pedestrians



## **Big store owners Focus Group (Nawerewere - Bikenibeu) 26<sup>th</sup> February 2011**

### **SUMMARY OF ISSUES RAISED**

#### ***Summary of all main points***

- The road is an important aspect of their business and they need the government to fix and maintained it every now and then. Road experts should be involved because the current state of the road although the Ministry of Works kept maintaining it, it is very, very poor.
- There should be a delivery space for shops near the roads especially the shops at Nawerewere, there is no space for parking.
- At the current state of the road, it is very expensive to deliver goods to our customers because the road is very bad with lots of potholes slowing the truck deliveries to shops.

#### ***The composition of people in the group including employment status (if known), age, number of people, gender, where they live/work etc.***

- There were 5 men and 5 women and they all lived in different places on Tarawa and most of these people worked in their own shops and some work in government post. Their ages started from mid thirties onwards and their shops are all along the main road.

#### ***Safety improvements in relation to the main road***

- Speed bumps
- Breath testing
- Street lighting
- Street signs
- More police to patrol the road
- Pedestrian crossing/footpaths
- Drainage system

#### ***The main benefits from the road***

- If the road is fixed, it will mean more customers, more money.
- Easy access to shops
- Fast delivery, less fuel cost.
- Less maintenance cost

#### ***The main concerns and problems from the road***

- The road is narrow
- Should have a parking space for delivery cars to park
- The road at where lots of people live or shop should have a traffic sign
- No parking space for delivery trucks

- Lots of potholes will slow truck to deliver goods from place to place and will consume lots of fuel meaning more expenses

***Any other points of particular interest***

- They can help in any other ways to fix the road but only if there is no funding from overseas.
- Rubbish bins should be in every bus stop and every shop otherwise the rubbish will scatter on the road and can block the drainage.

## Appendix C: Map

