



REPUBLIC OF KIRIBATI

## Performance-based Routine Road Maintenance by Microenterprises

# PROCUREMENT MANUAL

This manual is meant for use by the Ministry of Public Works and Utilities in the formation and procurement of road maintenance microenterprises. It explains the benefits of routine road maintenance and how this is best carried out by road maintenance microenterprises. It goes on to explain how these road maintenance microenterprises can be formed and registered, and how they can participate in a bidding process for routine road maintenance contracts.

This Procurement Manual forms part of a set of four manuals that describe the system of performance-based routine road maintenance by microenterprises, providing guidance in its application. The set consists of the following manuals:

1. **Procurement Manual** - to assist the Ministry of Public Works and Utilities in the formation and procurement of routine road maintenance microenterprises.
2. **Inspection Manual** - to assist the Ministry of Public Works and Utilities in the supervision and inspection of the routine road maintenance microenterprises.
3. **Technical Manual** - to assist the routine road maintenance microenterprises in the technical implementation and planning of maintenance activities
4. **Managerial Manual** - to assist the routine road maintenance microenterprises in the internal management of the microenterprises.

This manual was written as part of the Kiribati Road Rehabilitation Project (KRRP). The KRRP project involved the rehabilitation of most of the main and secondary road network on South Tarawa Island in Kiribati. As part of the support to the Government of Kiribati to improve maintenance of the rehabilitated road network and improve its sustainability, the KRRP project provided technical assistance for the development of a routine road maintenance system based on microenterprises and the preparation of this set of manuals.

## Performance-based Routine Road Maintenance by Microenterprises

# Procurement Manual

FIRST DRAFT

NOVEMBER 2014



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Photographs of before and after

**Clause 5 Agreement Variation and Termination**

- 5.1 Both parties should perform the obligations of the agreement. Neither party can vary the agreement by itself.
- 5.2 The agreement will be terminated when the two parties agree on the termination.
- 5.3 The **Ministry** may terminate the agreement under the following conditions:
- i. The **Microenterprise** repeatedly disobeys the **Ministry's** regulations and guidance.
  - ii. The quality of the road maintenance is assessed to be below standard in three consecutive monthly inspections.
- 5.4 When the agreement expires, or the promissory termination condition appears, the agreement will terminate.

**Clause 6 Other Matters**

- 6.1 Other related matters not covered in this agreement will be solved based on negotiations between the two parties.
- 6.2 This agreement will be signed in two copies. The **Ministry** will keep one copy and the **Microenterprise** will keep one copy. The agreement will be effective after the two parties have signed it.

**Ministry**

Date: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Position: \_\_\_\_\_

**Microenterprise**

Date: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Position: \_\_\_\_\_

**Acknowledgements**

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## Microenterprise Formation and Procurement

This manual serves to assist the staff of the Ministry of Public Works and Utilities in the formation of routine road maintenance microenterprises and their subsequent training and procurement.

### Microenterprise formation

The first step to be undertaken in the procurement of routine road maintenance microenterprises, is the formation of the microenterprises. The international contractor under the Kiribati Road Rehabilitation Project will be responsible for the formation of the first microenterprises. However, additional microenterprises may be required if existing ones do not function well or if additional roads are put under routine maintenance. This manual describes the steps to be taken in the formation of the microenterprises, and provides the necessary forms.

### Microenterprise training

As a second step, the newly formed microenterprises will need to be trained in the technical and managerial aspects of routine road maintenance. The training of the initial microenterprises will be carried out by the international contractor and the microenterprise consultant under the Kiribati Road Rehabilitation Project. However, over time microenterprise members may change or new microenterprises may be formed, and the training will need to be repeated for these new members to ensure they have the required skills to successfully implement the maintenance activities. This manual describes the contents of the technical and managerial training for the microenterprise members.

### Microenterprise procurement

The final step is the actual procurement of the microenterprises to carry out the routine road maintenance activities. For the project roads under the Kiribati Road Rehabilitation Project and the existing paved roads in Betio and Bairiki, the international contractor will be responsible for contracting the microenterprises during the first two years of operation. After this period, procurement will be carried out by the Ministry of Public Works and Utilities. This manual describes the steps to be taken and provides the necessary bidding documents.

Performance standard	Deduction	Applied to
Cleaning side drains (U-drains)	50%	specific road segment
Cleaning culverts	50%	specific road segment
Cleaning kerbs	25%	specific road segment
Cleaning weepholes	50%	specific road segment
Clearing bridges/box culverts	50%	specific road segment
Preventing seawall erosion	25%	specific road segment
Sealing revetment cracks	50%	specific road segment
Preventing coastal erosion	25%	specific road segment
Cleaning the roadway	25%	specific road segment
Repairing unpaved roads	25%	specific road segment
Repairing the road pavement	50%	specific road segment
Repairing the road shoulder	25%	specific road segment
Controlling vegetation	10%	specific road segment
Removing garbage	10%	specific road segment
Maintaining signage	10%	specific road segment
Maintaining guardrails	10%	specific road segment
Keeping road open	10%	total monthly payment
Reporting damage	5%	total monthly payment
Submitting Monthly Report	2%	total monthly payment
Using safety equipment	2%	total monthly payment

3.4 Employee contributions to the Kiribati Provident Fund will be withheld from monthly payments and paid directly by the **Ministry** together with the Employer contributions.

3.5 The approved monthly payment after deductions and after withholding the Kiribati Provident Fund payment will be made by bank transfer to the following bank account of the **Microenterprise**.

#### Bank account

#### Clause 4 Responsibilities of the Ministry

4.1 Upon signing the contract, tools and safety equipment will be provided to the **Microenterprise** by the **Ministry**.

4.2 The **Ministry** will obtain accident insurance for all members of the **Microenterprise**.

4.3 The **Ministry** will provide the **Microenterprise** with a transport allowance of A\$ 25 per kilometre of road which will be paid at the start of the contract.

4.4 Any provision of materials and transport to the road from further away will be carried out by the **Ministry**.

14. **Removing garbage.** There are no more than 20 items of garbage within 2 metres from the road edge (excluding private property) in any 100 metre section of road.
15. **Maintaining signs and marker posts.** All signs and marker posts are properly secured and anchored in the ground, are straight, and are clean and legible.
16. **Maintaining guardrails.** Guardrails are well secured to the posts and properly anchored in the ground. All reflectors are in place and are clean.
17. **Keeping the road open.** The road is passable by 4-wheeled vehicles at all times. In case of significant damage to the road, road shoulder or structures making the road impassable or threatening to make it impassable, this has been reported to the Ministry of Public Works and Utilities. Unless damage is severe, the road is made passable within a maximum of 6 hours after the cause of the damage has ended (e.g. accident or king tide).
18. **Reporting damage.** All damage to road elements beyond the responsibility of the microenterprise (e.g. streetlights) and any significant damage to the road pavement or structures has been reported to the Ministry of Public Works and Utilities.
19. **Submitting Monthly Report.** A Monthly Report is submitted to the Ministry of Public Works and Utilities indicating the person-days worked by the microenterprise members and the activities carried out, as well as any damage to the road.
20. **Using safety equipment.** Microenterprise members wear their safety vests at all times and safety cones are in place on both sides of all ongoing works.

### **Clause 3 Remuneration**

- 3.1 The **Ministry** will inspect all road sections under this contract each month and assess whether the condition of the road elements complies with the performance standards.
- 3.2 If all road sections listed under this contract comply with the performance standards, the **Microenterprise** will receive the full monthly payment as indicated below.

#### **Monthly payment amount (A\$)**

- 3.3 If the work carried out by the **Microenterprise** in certain road segments does not comply with the performance standards, a deduction will be made from the monthly payment in line with the deduction rates listed in the following table. Depending on the performance standard, the deduction will either be applied to the payment for the specific road segment that does not comply, or to the full monthly payment.

## **Routine Road Maintenance**

There are nearly 100 kilometres of main, secondary and feeder roads on Tarawa that are managed by the Ministry of Public Works and Utilities. The main road has a total length of 37 kilometres and forms a lifeline running along South Tarawa and connecting Betio, Bairiki, Bikenibeu and Bonriki Airport, as well as Buota Island on North Tarawa. This is complemented by some 20 kilometres of secondary roads that provide additional connections to ports and important populated areas. There are also some 40 kilometres of feeder roads that provide additional access to residential areas. Under the Kiribati Road Rehabilitation Project, over 40 kilometres of roads are planned to be rehabilitated and paved, including a large portion of the main road. This will greatly improve the road conditions on Tarawa, and proper maintenance will be required to ensure that these improvements are sustained and that the road network does not deteriorate unnecessarily.

### **Road deterioration**

Roads deteriorate over time, mainly through the forces of traffic and water (rainwater and seawater), affecting the different elements that make up the road. Drains and culverts may become blocked. Seawalls and causeways may become eroded and collapse. Vegetation may encroach the road. Signs and guardrails may become damaged. And most importantly, the road surface and shoulder may become affected by potholes and cuts, causing damage to vehicles and in severe cases making the road impassable.

#### **Phase A - Slow and isolated deterioration**

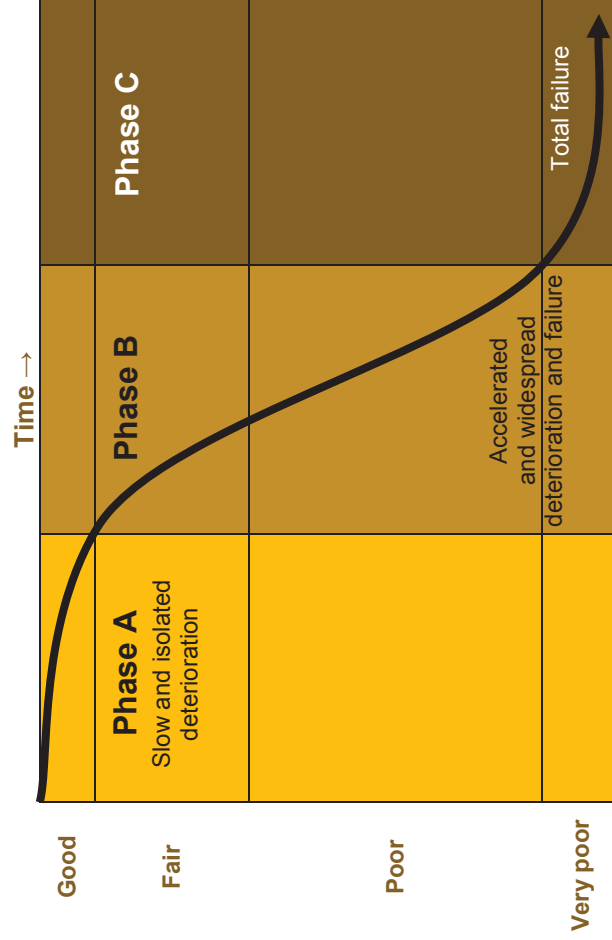
Road deterioration is generally slow at first as road conditions are good just after rehabilitation. The road surface is not deformed and allows water to flow off the road. The drainage system is clean and guides the water away from the road. Seawalls and causeway revetments have been repaired and properly protect the road against the sea. With time, however, isolated damage to the road elements will start to appear, reducing the ability of the different road elements to do their work properly. During this initial deterioration phase, the road still functions quite well and the gradual increase in isolated minor failures may go largely unnoticed.

**Phase B - Accelerated and widespread deterioration and failure**

As these minor failures grow and become more numerous and serious, the deterioration tends to accelerate. Rainwater ponds on the road due to sedimentation, cracks and potholes. Runoff water flows over the road due to blockages in the drainage system. Seawater erodes the road due to damaged seawalls and causeways. Vehicles further aggravate the damage caused by water. Although the damage is more localised at the beginning of this phase, the damage spreads throughout the road, resulting in most of the road being in poor condition towards the end of this phase, causing travel times and vehicle operating costs to increase significantly. Most of the paved road network on Tarawa was at the end of this phase before the start of the Kiribati Road Rehabilitation Project.

**Phase C - Total failure**

When the damage to the road goes unaddressed, the road becomes impassable at a certain moment. The speed of deterioration reduces as there is little left to deteriorate.



**Routine road maintenance activities and performance standards**

- Cleaning side drains (U-drains).** Not more than 10% of the depth of side drains (U-drains) is blocked in any location and water is able to flow freely through the drains. There are no obstacles within 5 metres of the drain outlet.
- Cleaning culverts.** Not more than 10% of the height of the culverts is blocked in any part of the culvert and water is able to flow freely through the culvert. There are no obstacles within 5 metres of the inlet or outlet of the culvert.
- Cleaning kerbs.** There is no sedimentation or vegetation on the pavement around the kerbs and water is able to flow away from the road.
- Cleaning weepholes.** Not more than 10% of the cross section of weepholes is blocked and water is able to flow freely away from the road. There is no ponding of water around weepholes.
- Clearing bridges and box culverts.** There are no obstacles restricting water flow below the bridges and box culverts. Erosion of the structures has been treated with sandbags or sand-cement bags.
- Preventing erosion of seawalls and revetments.** Erosion of seawalls and revetments has been treated with sandbags or sand-cement bags.
- Sealing cracks in seawalls and revetments.** The length of unsealed cracks is less than 2 metres for every 100 metres of seawall or revetment and in no location are unsealed cracks wider than 1 cm.
- Preventing coastal erosion.** Coastal erosion by sea water within 5 metres of the road edge is treated with sandbags or sand-cement bags.
- Clearing the roadway.** The road surface and shoulders as well as any footpaths and bus bays are free of obstacles, vegetation and garbage, and the pavement is free of sand and other sediment.
- Repairing unpaved roads.** There are no more than 10 potholes per kilometre of road and potholes are not more than 30 cm in diameter or 5 cm in depth. There are no rills deeper than 5 cm.
- Repairing the road pavement.** The length of unsealed cracks is less than 2 metres in any 100 metre section of road and there are no unsealed cracks wider than 0.5 cm. There are no more than 5 potholes per kilometre and potholes are not more than 10 cm in diameter or 5 cm in depth.
- Repairing the road shoulder.** The shoulder next to the edge of the pavement is not higher than or more than 5 cm lower than the pavement.
- Controlling vegetation.** Vegetation within 2 metres of the road edge (including shoulders) is not more than 30 cm high (except for trees and hedges). There is no vegetation hanging over the road or shoulders that is lower than 3 metres above the road surface. Landscaped areas at roundabouts and drainage gardens are well maintained.



MINISTRY OF PUBLIC WORKS AND UTILITIES

## Contract Agreement for routine road maintenance

This is an agreement between the Ministry of Public Works and Utilities, hereinafter referred to as the **Ministry**, and the road maintenance microenterprise, hereinafter referred to as the **Microenterprise**. Under this agreement, the **Microenterprise** is contracted by the **Ministry** to carry out the routine maintenance of the following road sections:

Description of road sections	Length of road sections
<b>Total length (km)</b>	

**Clause 1 Term of Agreement**

1.1 The term of the agreement is for one year with the following start date and end date.

Start date	End date

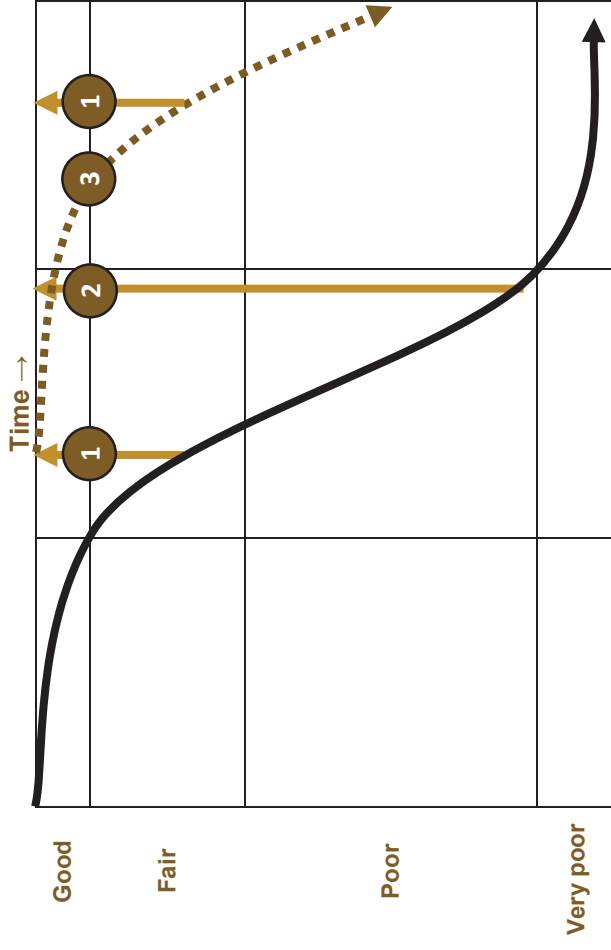
**Clause 2 Scope of Work**

- 2.1 The **Microenterprise** is responsible for carrying out the following routine road maintenance activities. The **Microenterprise** will be responsible for deciding which maintenance activities to carry out and where and when to do so.
- 2.2 The **Microenterprise** will ensure that the condition of the different road elements complies with the performance standards as described below for all road sections included under the contract, unless otherwise indicated by the **Ministry**.

## Road maintenance

To slow down and even halt the deterioration process, road maintenance is carried out. This includes repairs to the road surface, seawalls, causeways and drainage system. As a result of the repairs, travel times and vehicle operating costs are reduced and the deterioration process starts from scratch. The larger the damage is, the more costly the repairs will be. If the road is still in fair condition, repairs may involve simple patching of the pavement and erosion repairs to seawalls and causeways (arrow 1). If the road is more severely deteriorated, the repairs may involve total repaving or rehabilitation of the road and reconstruction of seawalls and causeways as is being carried out under the Kiribati Road Rehabilitation Project (arrow 2).

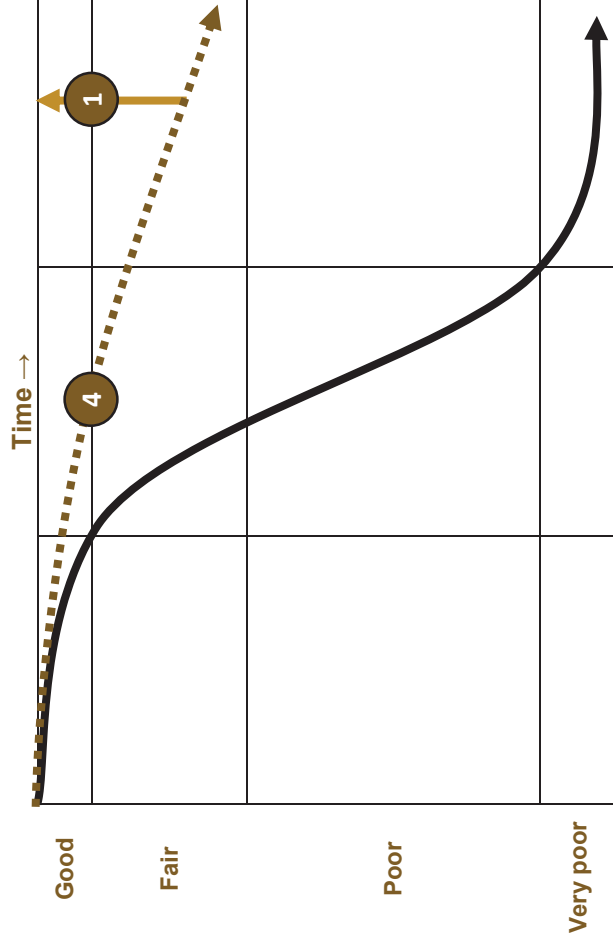
The distance from the black line indicating the road condition, to the desired good condition indicates the amount of work required, and thus the cost of such maintenance. It is clear that simple patching and minor erosion repairs, will be much less costly than rehabilitation and reconstruction. After carrying out the repairs and restoring the road to a good condition, the deterioration process starts again (arrow 3). Repairs will therefore need to be carried out repeatedly to fix damage (arrow 1). Repairs that are carried out when the road is still in fair condition will need to be repeated more frequently, but result in lower overall maintenance costs and better overall road conditions.



## Routine road maintenance

Besides repairing damage that has already occurred, maintenance can also be carried out to prevent the damage from happening, thus slowing down the deterioration process. Such routine maintenance is carried out throughout the year and is aimed at the proper functioning of the different road elements. It includes the cleaning and clearing of the drainage systems to avoid damage by runoff water, minor repairs to seawalls and causeways to prevent damage by seawater, small repairs to the road surface and shoulders to avoid further deterioration, and control of vegetation together with maintenance of road furniture to ensure road safety.

Although the deterioration process is slowed down by routine maintenance (arrow 4), it is not stopped, and repairs will still be required (arrow 1). However, the need for such repairs will be much less frequent, as can be seen by comparing the figure below with the figure on the previous page. As a result of proper routine maintenance, the costs of repairs can be significantly reduced, and overall road maintenance costs for the Ministry of Public Works and Utilities will be lower. In addition, the road will generally be in better condition, reducing travel times and vehicle operating costs.



## MINISTRY OF PUBLIC WORKS AND UTILITIES Bid Submission Form for routine road maintenance

Maintenance contract number:  
[To be entered by Ministry of Public Works and Utilities]

Microenterprise name:

Date of last registration with Ministry of Public Works and Utilities:

Microenterprise members (list):

1. ....	<input type="checkbox"/>	Certified	<input type="checkbox"/>	Not certified	<input type="checkbox"/>
2. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
3. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
4. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
5. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
6. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
7. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
8. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
9. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
10. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
11. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
12. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
13. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
14. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
15. ....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Ongoing road maintenance contract (end date):

Bid price (A\$):

Signed: \_\_\_\_\_ Date: \_\_\_\_\_  
Name: \_\_\_\_\_



Documentary evidence will only be required in as far as qualification cannot be verified on the basis of records regarding microenterprise registration and technical training certification at the Ministry of Public Works and Utilities, and then only upon contract award. Failure to present documentary evidence when requested at the time of contract award will lead to the award being cancelled.

#### **Bid price**

The bidder is required to submit a bid price for carrying out the required services. This bid price should cover all wage costs for carrying out the required maintenance activities in all the road sections to be maintained for the duration of the contract, including the Employee contribution to the Kiribati Provident Fund (7.5% of wage payments - this will be withheld from the payments to the microenterprise and paid directly to the Kiribati Provident Fund).

The Ministry of Public Works and Utilities will provide tools and safety equipment, accident insurance for microenterprise members, a transport allowance of A\$ 25 per kilometre, as well as any materials required to carry out the maintenance activities (where a suitable source is not available near the road).

#### **Bid submission**

The bidder is required to fill in the Bid Submission Form that is attached to this Instruction to Bidders. All fields must be filled in and the form must be signed by the Microenterprise Leader. Where some fields are not filled in or the form is not signed and dated, the bid will be rejected.

The filled in Bid Submission Form must be submitted to the Ministry of Public Works and Utilities before [Enter deadline date for submission].

#### **Bid evaluation**

Bid evaluation and selection will be carried out in such a manner so as to ensure the following:

- Bidders who do not comply with the qualification criteria will be rejected
- Bid prices exceeding the cost estimate by more than 25% will be rejected
- A road maintenance microenterprise is awarded a maximum of one routine road maintenance contract
- The number of routine road maintenance contracts that are successfully awarded is maximized
- The total contract price for the different routine road maintenance contracts to be awarded is minimized

#### **Contract agreement**

Upon successful selection, the Contract Agreement attached to this Instruction to Bidders will be signed between the Ministry of Public Works and Utilities and the selected microenterprise.

## Routine Road Maintenance Activities

Routine maintenance activities are aimed at preventing damage to the road elements and carrying out minor repairs to avoid serious damage. In the case of Tarawa Island in Kiribati, routine road maintenance includes the following activities (further information on these activities can be found in the [Technical Manual](#) and [Inspection Manual](#)).

### Drainage system

The proper working of the drainage system is essential to prevent damage to the road. These activities are aimed at ensuring that the drainage elements work properly and that water can flow freely away from the road.

1. **Cleaning side drains (U-drains).** Any sand, garbage, vegetation or other material is removed from the side drains and outlets to allow water to flow freely away from the road. In case of U-drains, the covers are removed first.
2. **Cleaning culverts.** Any sand, garbage, vegetation or other material is removed from the pipe culverts crossing the road so water can flow freely through them.
3. **Cleaning kerbs.** Any sand, garbage, vegetation or other material along the kerbs is removed so water can flow freely. Holes in the kerbs are cleaned so water can flow through them to the drains.
4. **Cleaning weepholes.** Weepholes in seawalls and causeways are cleaned so water can drain freely and flow away from the road surface and shoulder.
5. **Cleaning bridges and box culverts.** Any driftwood or other material under the bridges is removed so water can flow freely. Erosion of bridge structures is prevented with sandbags or sand-cement bags.

## Seawalls and causeway revetments

Seawalls and revetments protect the road and causeways against damage by the sea. Any damage to these elements needs to be prevented or repaired.

6. **Preventing seawall erosion.** Where seawalls or revetments are being eroded, sandbags or sand-cement bags are placed to provide protection.
7. **Sealing revetment cracks.** Where there are cracks in seawalls or revetments, these are sealed with proper sealant to avoid water seeping through and causing damage.
8. **Preventing coastal erosion.** In locations where there are no seawalls and the sea is causing erosion near the road, sandbags or sand-cement bags are placed to protect the road.

## Road surface and shoulder

The road surface is the most important element of the road. Damage needs to be prevented and any existing damage needs to be quickly repaired to avoid further deterioration and to allow vehicles to pass safely.

9. **Clearing the roadway.** Any sand, garbage, vegetation or other materials are removed from the road surface, the road shoulder, the bus bays and the footpaths to allow vehicles and pedestrians to pass easily.
10. **Repairing gravel roads.** Any rills, potholes or cuts in unpaved roads are filled in with coral gravel and compacted.
11. **Repairing the road pavement.** Any cracks, potholes or broken edges in the road pavement are sealed with sealant or filled with cold mix and compacted.
12. **Repairing the road shoulder.** Any depressions, rills or cuts in the road shoulder are filled with coral gravel and compacted.

## Annex 6 Solicitation documents



MINISTRY OF PUBLIC WORKS AND UTILITIES

### Instruction to Bidders for routine road maintenance

This is an Instruction to Bidders for a one-year routine road maintenance contract.

#### Procuring entity

The procuring entity is the Ministry of Public Works and Utilities located in Betio, Tarawa. Further information about this contract may be obtained from:

[Enter name of person]  
Director Civil Engineering Division  
Ministry of Public Works and Utilities, Betio, Tarawa  
Phone 26143 / 26192

#### Services required

The services required under this contract are described below. Further details are provided in the Contract Agreement that is attached to this Instruction to Bidders.

- **Contract number:** [Enter contract number in format RRM/year/number]
- **Type of services:** Routine road maintenance (cleaning, vegetation control and minor repairs to the drainage system, road pavement, shoulders, seawalls, causeways, signage, guardrails and right of way)
- **Roads to be maintained:** [Enter names, description and lengths of roads to be maintained]
- **Contract start and end date:** [Enter expected start date and end date]

#### Qualification criteria

All bidders must comply with the following qualification criteria.

- The bidder is registered as a routine road maintenance microenterprise with the Ministry of Public Works and Utilities and this registration is up to date
- The microenterprise has at least one member for every 3 kilometres of road to be maintained
- At least half the microenterprise members are certified as having successfully completed the technical training in routine road maintenance
- The microenterprise does not have another road maintenance contract

## Annex 5 Invitation to tender



MINISTRY OF PUBLIC WORKS AND UTILITIES

### Invitation to Tender for routine road maintenance

This is an invitation to tender for a one-year routine road maintenance contract. Participation in these procurement proceedings is permitted without regard to nationality.

#### Procuring entity

Ministry of Public Works and Utilities located in Betio, Tarawa (phone: 26143).

#### Services required

- **Contract number:** [Enter contract number in format RRM/year/number]
- **Type of services:** Routine road maintenance (cleaning, vegetation control and minor repairs to the drainage system, road pavement, shoulders, seawalls, causeways, signage, guardrails and right of way)
- **Roads to be maintained:** [Enter names, description and lengths of roads to be maintained]
- **Contract start and end date:** [Enter expected start date and end date]

#### Qualification criteria

- The bidder is registered as a routine road maintenance microenterprise with the Ministry of Public Works and Utilities and this registration is up to date
- The microenterprise has at least one member for every 3 kilometres of road to be maintained
- At least half the microenterprise members are certified as having successfully completed the technical training in routine road maintenance
- The microenterprise does not have another road maintenance contract

#### Solicitation documents

Solicitation documents can be obtained free of charge from the Civil Engineering Division at the Ministry of Public Works and Utilities in Betio.

#### Bid submission date

The filled in Bid Submission Form must be submitted to the Ministry of Public Works and Utilities before [Enter deadline date for submission].

### Right-of-way and road furniture

The right-of-way and road furniture need to be kept clean to ensure proper drainage and visibility, ensuring that signs and other road safety measures work properly so that accidents can be avoided.

13. **Controlling vegetation.** Vegetation near the road is cut to avoid encroachment and improve drainage and visibility. Low hanging branches are cut to allow vehicles to pass safely.
14. **Removing garbage.** Any garbage along the road is collected and removed.
15. **Maintaining signage.** All signs and marker posts are kept clean and legible and are properly secured to posts and anchored in the ground.
16. **Maintaining guardrails.** Guardrails and their reflectors are kept clean and properly secured to posts and anchored in the ground.

### General

Apart from the maintenance activities related to specific road elements, the maintenance microenterprises will be responsible for general activities related to keeping the road open and implementing their contractual obligations.

17. **Keeping the road open.** In case of storm damage or traffic accidents, basic repairs are carried out to open up the road so vehicles can pass, with support from the Ministry of Public Works and Utilities where necessary.
18. **Reporting damage.** Any damage to the road elements beyond the scope of the above mentioned routine maintenance activities is immediately reported to the Ministry of Public Works and Utilities.
19. **Submitting Monthly Report.** A Monthly Report with information on the number of days worked and the time spent on the different maintenance activities is submitted to the Ministry of Public Works and Utilities each month.
20. **Using safety equipment.** Microenterprise members wear safety vests at all times and safety cones are in place on both sides of ongoing works.

# Annex 4 Certificate for technical training

**MINISTRY OF PUBLIC WORKS AND UTILITIES**  
REPUBLIC OF KIRIBATI

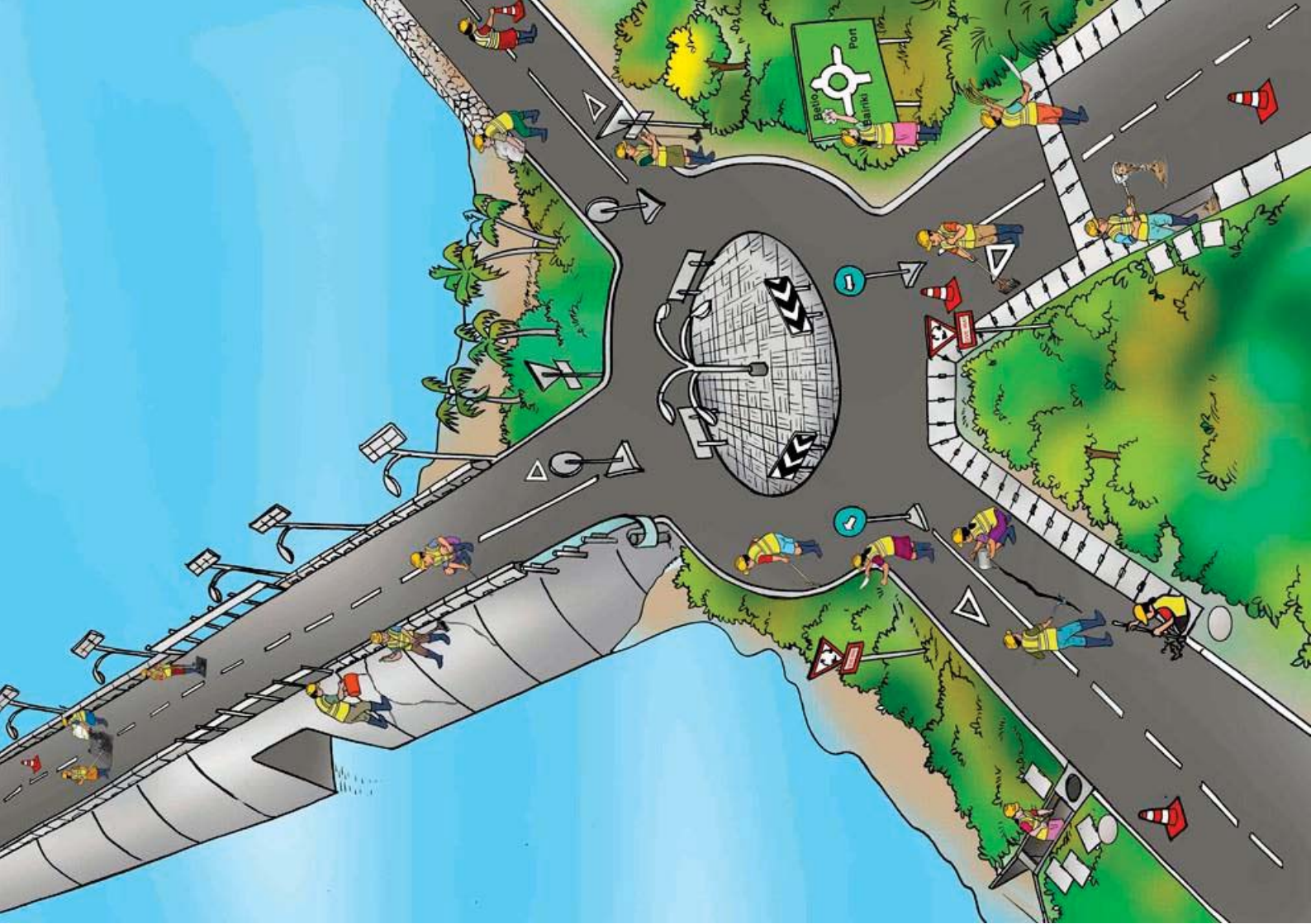


THIS CERTIFIES THAT  
**[NAME]**  
has successfully completed the technical training for  
routine road maintenance microenterprises

Dated this [Day] day of [Date]

\_\_\_\_\_  
Director  
Civil Engineering Division

\_\_\_\_\_  
Trainee



# Annex 3 Registration form



MINISTRY OF PUBLIC WORKS AND UTILITIES

## Registration Form

for a road maintenance microenterprise

This form serves to register a road maintenance microenterprise. It must be signed by all microenterprise members. The name of the road maintenance microenterprises should consist only of the surnames of the different members.

Microenterprise number: ..... (to be filled in by MPWU)  
 Name of microenterprise: .....

Contact address: .....

Contact telephone number: .....

Name	Signature
1. .... (Leader)	.....
2. .... (Treasurer)	.....
3. ....	.....
4. ....	.....
5. ....	.....
6. ....	.....
7. ....	.....
8. ....	.....
9. ....	.....
10. ....	.....
11. ....	.....
12. ....	.....
13. ....	.....
14. ....	.....

Road Maintenance Microenterprise Ministry of Public Works and Utilities

Microenterprise Leader Director Civil Engineering Division  
 Date: Date:

# Formation of Maintenance Microenterprises

Routine road maintenance activities are best carried out on a continuous basis throughout the year. This ensures that maintenance needs are addressed in a timely manner in order to avoid more serious damage from occurring, thus reducing costs and resulting in better road conditions, shorter travel times and lower vehicle operating costs.

The routine road maintenance activities are simple in nature and do not require much equipment, materials or specific skills. This makes these activities very suitable for implementation by members of the communities living along the road. Experiences in other countries has shown that such local maintenance workers are best grouped together, whereby such groups are often referred to as road maintenance microenterprises. The grouping together has significant benefits compared to individual maintenance workers.

- Firstly, contracts are signed with the group as a whole rather than with individual workers, reducing the number of contracts and the related number of inspections and payments. This greatly reduces the contract management burden.
- Secondly, the tools and safety equipment can be shared amongst different workers in a group, reducing the costs involved in procuring these tools while still ensuring high productivity of the maintenance workers. This is especially important for more costly equipment such as wheelbarrows.
- Thirdly, experience has shown that the motivation of the workers increases when working as a group, leading to higher productivity. Productivity is also positively affected by an efficient distribution of activities between group members (e.g. one person loosens the soil, the second shovels the soil into the wheelbarrow, and the third transports the excavated material to a suitable location).
- Lastly, the allocation of longer road sections to a group of maintenance workers allows the workers to focus activities on those road segments requiring the greatest amount of maintenance. It also avoids an unfair distribution of the workload compared to the situation where road segments with high maintenance requirements are allocated to an individual lengthworker, with other workers receiving easier road segments.

Under the Kiribati Road Rehabilitation Project, the international contractor will carry out the formation of the first microenterprises, as he is responsible for contracting the microenterprises for the first two years. The same

microenterprises are likely to continue after the first two years, at which stage they will be contracted by the Ministry of Public Works and Utilities. However, it may be necessary to form additional microenterprises if existing ones do not function well or if additional roads are put under routine maintenance. This section therefore explains the different steps in the formation of microenterprises, including the determination of the required microenterprise size, the selection of microenterprise members and the registration of the microenterprise.

### Microenterprise size

The first step in the formation of a road maintenance microenterprise is to determine the required number of people in the microenterprise. This depends on whether the microenterprise members will be working fulltime or halftime, and on the length of the road to be maintained.

The implementation of the routine road maintenance activities will require at least one person working more or less fulltime for every 3 kilometres of road. It is also possible to allow microenterprise members to work halftime, doubling the number of microenterprise members. This makes it easier to combine the maintenance work with other responsibilities such as fishing or child care, which can be especially important in facilitating the participation of women. However, inputs should not be less than halftime and the length of road per worker should therefore not be less than 1.5 kilometres. Microenterprise members should not work less than halftime. If the number of workers is further increased, this will negatively affect the costs of tools and equipment as well as the motivation and skill development of the microenterprise members as they will be earning very little income and spending very little time on road maintenance.

For example, a road section of 13 kilometres will require a microenterprise with at least 5 members working fulltime and a maximum of 9 members working halftime.

The length of road to be contracted to a microenterprise should be at least 10 kilometres. Shorter road lengths will result in a large number of contracts, increasing the contract management burden. At the same time, the maximum distance between the furthest points of the different roads in a single contract should not exceed 15 kilometres. Longer distances will make it difficult for the microenterprise members to transport themselves and properly look after the road. Where several secondary and feeder roads are located close together, the total road length may reach 25 kilometres without the maximum distance reaching 15 kilometres.

## Annex 2 Application form



MINISTRY OF PUBLIC WORKS AND UTILITIES

### Application Form

to become a member of a road maintenance microenterprise

#### Road sections to be maintained:

[To be entered by Ministry of Public Works and Utilities]

#### Details of candidate:

Full name of candidate:

Contact telephone number:

Age (years):

Residential address:

Gender:

Male

Female

Road works experience (describe):

Leadership experience (describe):

Signature:

## Annex 1 Call for road maintenance workers



MINISTRY OF PUBLIC WORKS AND UTILITIES

### Call for Road Maintenance Workers to become a member of a road maintenance microenterprise

The Ministry of Public Works and Utilities is looking to select [Enter number] men and women to form a road maintenance microenterprise that will be contracted to carry out the maintenance of [Enter name and description of road sections] with a total length of [Enter length] kilometres. Road maintenance activities to be carried out by the microenterprise include:

- Cleaning of the drainage system
- Minor repairs to seawalls and causeways
- Cleaning and small repairs to the road surface and shoulder
- Cutting vegetation and removing garbage from along the road
- Cleaning and minor repairs to signage and guardrails
- Reporting large damage to the Ministry of Public Works and Utilities

Microenterprise members are expected to work [Enter fulltime or halftime]. Interested candidates need to comply with the following criteria. Please note that experience with road maintenance or other road works is not strictly required, but is an advantage.

- All candidates must express their interest in joining the microenterprise
- All candidates must be between 18 and 55 years of age
- All candidates must live within 1 km of the road sections to be maintained
- Preference is given to female candidates
- Preference is given to candidates with experience in road works
- Preference is given to candidates with leadership skills

Interested candidates are requested to apply at [Enter location for application meeting] on the [Enter date and time of application meeting]. Further information will be provided on that date, and interested candidates will be provided with an application form.

This means that the size of a microenterprise may vary from a minimum of 4 members (10 kilometres of road and working fulltime) to a maximum of 17 members (25 kilometres of road and working halftime).

### Selection of microenterprise members

Once the size of the microenterprise has been determined, the second step is to select the microenterprise members from amongst interested candidates. Microenterprise members will be selected from community members living along the road sections to be maintained. In selecting the microenterprise members, the following selection criteria will be applied. It must be noted that the first three criteria are eligibility criteria that all candidates should comply with, while the other three criteria are selection criteria, giving preference to those candidates that comply with them.

- All candidates must express their interest in joining the microenterprise
- All candidates must be between 18 and 55 years of age
- All candidates must live within 1 km of the road sections to be maintained
- Preference is given to female candidates
- Preference is given to candidates with experience in road works
- Preference is given to candidates with leadership skills

The selection process starts with a call for candidates in the area of the road to be maintained in order to inform potential candidates of the employment opportunities. This should provide information on the number of microenterprise members required, the roads to be maintained, the type of maintenance work to be carried out and whether work is fulltime or halftime. It should also explain the different selection criteria that candidates have to comply with and that are used to select the microenterprise members. Lastly, the location as well as the date and time for the application meeting should be indicated, where interested candidates can get more information and apply to join the microenterprise. This call for candidates may be done by radio, through newspapers or using flyers and posters at places that are well frequented by local people. A sample information sheet is provided in **Annex 1**.

On the date and location of the application meeting, more information is provided to the potential candidates regarding the different aspects of road maintenance and maintenance microenterprises. Interested candidates can then fill in an application form, providing their name and contact details as well as any information related to the selection criteria (age, residence, gender, road work experience, leadership experience). A sample application form is provided in **Annex 2**.

After the application meeting, a selection is made from the interested candidates that submitted an application form. Only candidates that comply with all three eligibility criteria are selected, whereby preference is given to female candidates, candidates with experience working in roads, and candidates with leadership experience.

### Microenterprise registration

After the microenterprise members have been selected, the third step in the microenterprise formation is the registration of the microenterprise and its members. The microenterprise will not function as a traditional enterprise aiming to generate a profit, and merely serves to group together the different maintenance workers, allowing them to be contracted, inspected and paid as a group and to work together as a group in order to achieve the benefits described at the start of this section. The registration of the microenterprise therefore merely serves to enable its contracting by the Ministry of Public Works and Utilities and to formally identify its members.

This registration of the road maintenance microenterprise is done with the Ministry of Public Works and Utilities. A template for the registration form is provided in **Annex 3**. This form identifies the microenterprise members who each sign the form, as well as the representatives (Leader and Treasurer) of the microenterprise for purposes of signing the contract document and receiving the monthly payments. The name of the microenterprise should consist of only the surnames of the different members to avoid the need to register a business name with the Ministry of Commerce, Industry and Cooperatives. The registration form needs to be countersigned by the Director of the Civil Engineering Division of the Ministry of Public Works and Utilities.

# Annexes



## Complementary Maintenance Activities

As described earlier, routine maintenance alone will not be able to fully prevent road deterioration, and will need to be complemented by more significant repairs carried out in a periodic manner. Most of these repairs are currently being carried out by the maintenance yard under the Ministry of Public Works and Utilities. This should continue in order to ensure that repair needs beyond the scope of the road maintenance microenterprises are addressed in a timely manner. Larger (bituminous) works will likely require involvement of international contractors.

### Grading and regravelling

Unpaved roads will be affected by corrugation and rut formation as a result of the vehicles using them. Such deformations generally cover large areas of the road surface and are best addressed using equipment such as graders. The gravel surface will also need to be replenished regularly. This type of repairs is currently already being carried out by the maintenance yard for the unpaved sections of the main road.

### Pavement repairs

Where pavement damage exceeds small areas with cracks and potholes that can be repaired by microenterprises, repairs should be carried out by the maintenance yard. Although such repairs have been carried out by the maintenance yard in the past, access to proper materials and equipment has been an issue and this will need to be addressed.

### Resealing

The bituminous pavements of existing roads in Betio and Bairiki as well as the roads to receive bituminous pavement under the Kiribati Road Rehabilitation Project will require resealing every few years. There is currently no resealing capacity in the maintenance yard, and this will need to be addressed through the procurement of simple sealing equipment and the training of staff.

### Seawall (re-)construction and revetment repairs

The Betio-Bairiki causeway revetment as well as many seawalls are currently damaged, and many additional seawalls are needed. To a certain extent this will be addressed through the Kiribati Road Rehabilitation Project, but there will be a continued need for seawall (re-)construction and revetment repairs even after the project has ended. This is currently already being carried out by the maintenance yard using sand-cement bags. However, the maintenance yard will require training to improve the design and quality of the seawall and revetment repair works, as well as the materials to be used.

## Training of the Microenterprises

Before the routine road maintenance microenterprises can start work, the microenterprise members need to be trained. This training is aimed at developing the necessary skills for the technical planning and implementation of the maintenance activities, as well as the managerial skills for the internal management of the microenterprise.

### Technical training

The technical training is aimed at developing the technical skills to properly plan and carry out the routine maintenance activities. This will focus on the proper implementation of the maintenance activities. For instance, it will look at the proper mixing of cement, sand and coral aggregate and the filling of sand-cement bags, as well as the proper placement of those bags. It will also look at the use of proper tools for the job at hand, and the proper use of those tools to ensure quality and productivity. It will furthermore look at the distribution of different tasks amongst the microenterprise members to efficiently and effectively carry out the work.

The technical training will be largely carried out along the road through on-the-job training during the first 6-12 months, indicating the different types of defects and explaining the work to be done to correct these defects. However, it is recommended to also include a specific training session to explain the different causes of road deterioration and how these may be prevented, and to explain in detail the different performance standards that the microenterprises have to comply with. This may be partly carried out along the road, but it is recommended to also include a short classroom session using a PowerPoint with pictures to show the different types of defects and to explain their causes as well as the means of correcting them. A good understanding of the causes of road deterioration will better prepare the microenterprise members for carrying out the road maintenance activities efficiently and effectively. In providing this technical training session, use should be made of the *Technical Manual* that forms part of the current set of manuals.

The technical training will also pay attention to the planning and organisation of maintenance activities throughout the year. For this purpose, a road inventory will be prepared together with the microenterprise for the section(s) of road to be maintained. This road inventory will identify the different types of road elements to be maintained and their location in the road (a sample road inventory can be found in the *Technical Manual*).

Based on the road inventory, the process of preparing monthly plans will be explained. These monthly plans identify the road segments to be maintained and the maintenance activities to be carried out each month (a sample monthly plan can be found in the *Technical Manual*). The explanation of the monthly plans during the training will be followed by on-the-job training during the first 6 months of operation. During the first months, the monthly plan will be prepared by the Inspector in combination with the monthly inspections, with the microenterprise gradually taking over this task as they gain more experience.

The technical training of the first microenterprises will be carried out by the international contractor under the Kiribati Road Rehabilitation Project, who is responsible for contracting the microenterprises for the first two years. However, where additional technical training is required after this two year period for new microenterprises or replacement microenterprise members, such technical training will be carried out by the Ministry of Public Works and Utilities.

### Managerial training

Apart from the technical training, the microenterprises will require managerial training to allow them to function properly as a microenterprise. This will look at internal management, focusing on financial management within the microenterprise and the resolution of conflicts between microenterprise members.

The training will explain in detail the use of a Cashbook to record all payments received by the microenterprise and made to the microenterprise members (a sample Cashbook can be found in the *Managerial Manual*). This aspect of the training will focus on the treasurer who will be responsible for keeping the Cashbook up to date, but will include others as well so they properly understand the contents of the Cashbook.

The managerial training will also look at the system of payments to the microenterprises, explaining how the inspections are carried out, how the results are entered in the Monthly Inspection Form, and how this may lead to deductions to the monthly payments for the microenterprises. The managerial training will also describe how the payments will be made to the Kiribati Provident Fund in the name of the microenterprise members.

The training will furthermore explain the requirement for the microenterprise to submit a Monthly Report at the time of the inspection, and show how the Monthly Report template should be filled in (a sample Monthly Report can be found in the *Managerial Manual*).

## Bid evaluation and contracting

The final step in the procurement process is the bid evaluation, leading to the contract award. The bid evaluation will first verify that the Bid Submission Forms are filled in properly and that no information is missing. Any Bid Submission Forms that are not complete or are not signed and dated, may be rejected. Secondly, compliance with the qualification criteria will be checked (microenterprise registration up to date, minimum number of members and minimum percentage of members certified as having received the technical training). The bid price will also be compared to the estimated price as calculated by the Ministry of Public Works and Utilities. Where the bid price is more than 25% higher than the estimated price, the bid may be rejected.

With respect to the remaining qualified bids, contract award will be to the bidder with the lowest bid price. However, any single microenterprise may only be awarded one contract. The award of different routine road maintenance contracts will therefore have to take account of the possibility of multiple bids for different contracts from a single bidder. Where this is the case, the contract award will aim to minimise the total contract price for the different contracts. In doing so it will aim to ensure that the number of contracts that is successfully awarded is maximized. This means that for contracts where there is only one acceptable bid, the bidder will be awarded that contract, even though the same bidder may have submitted the lowest bid for another contract. As such, a balance will be sought between awarding all the contracts, distributing them over several microenterprises and minimising the total costs of routine road maintenance.

For the example contracts and received bids below, the lowest bids are underlined. However, this implies two contracts for microenterprise C, which is not possible (the microenterprise is not able to carry out 2 contracts at the same time). All three contracts have received bids that are less than 25% higher than the estimate, and it is possible to award all three contracts. The least expensive option is to allocate Contract 1 to Microenterprise A, Contract 2 to Microenterprise B and Contract 3 to Microenterprise C, bringing the total cost to A\$ 39,500. Other combinations where each microenterprise receives only one contract are more expensive.

Contract 1 (10km):	Contract 2 (15 km):	Contract 3 (8 km):
A: A\$ 12,000	A: A\$ 20,000	A: no bid
B: A\$ 13,000	B: A\$ 18,000	B: A\$ 10,000
C: A\$ 11,000	C: A\$ 19,000	C: A\$ 9,500

- The bidder is registered as a routine road maintenance microenterprise with the Ministry of Public Works and Utilities and this registration is up to date
- The microenterprise has at least one member for every 3 kilometres of road to be maintained
- At least half the microenterprise members are certified as having successfully completed the technical training in routine road maintenance
- The microenterprise does not have another road maintenance contract

The Invitation to Tender should also indicate where the solicitation documents for the bidding can be obtained and by which date the bid should be submitted. A sample Invitation to Tender is provided in **Annex 5**. The grey shaded parts need to be filled in by the Ministry of Public Works and Utilities before sending it out. Contract numbering needs to be applied to easily identify each routine road maintenance contract, whereby it is proposed to use a numbering system in the format RRM/year/number of contract (e.g. RRM/2015/03 would indicate the third rural road maintenance contract tendered out in the year 2015).

To facilitate the tendering process and reduce the burden on the Ministry Procurement Review Committee, it is recommended to carry out the procurement of all routine road maintenance contracts at the same time. This will also allow the distribution of contracts between interested microenterprises to be optimized.

### Solicitation documents

As a second step in the procurement process, road maintenance microenterprises interested in carrying out the road maintenance contracts being tendered out can obtain the solicitation documents at the Civil Engineering Division of the Ministry of Public Works and Utilities in Betio. It is recommended to provide these free of charge to ensure sufficient participation.

The solicitation documents consist of an Instruction to Bidders, a Bid Submission Form and a Contract Agreement. The Instruction to Bidders explains the tender process and provides information required by the microenterprises. The Bid Submission Form needs to be filled in by the road maintenance microenterprises wanting to bid for a specific routine road maintenance contract. The Contract Agreement provides further details regarding the routine road maintenance contract, and is later signed with the microenterprise that is awarded the contract. Samples of these three documents are provided in **Annex 6**. This phase ends on the final submission date with the submission of the filled in Bid Submission Forms by the interested microenterprises.

Lastly, the managerial training will explain how bids should be prepared and submitted for the routine maintenance contracts, given that contracting for routine maintenance by the Ministry of Public Works and Utilities will be through open bidding.

The managerial training of the first microenterprises will be carried out by the microenterprise consultant under the Kiribati Road Rehabilitation Project. However, where additional microenterprises are required in the future, the managerial training will be carried out by the Ministry of Public Works and Utilities. In carrying out the managerial training, use should be made of the *Managerial Manual* that forms part of the current set of manuals.

### Certification

The technical and managerial training are important to ensure the proper functioning of the microenterprises and the proper implementation of the routine maintenance activities. The successful completion of the training will therefore be a requirement for the microenterprise to be awarded a routine road maintenance contract. This will avoid that newly formed microenterprises that have not received any training are awarded a contract, and are unable to successfully implement it.

At least half of the microenterprise members should have successfully completed the training. This provides an opportunity for microenterprise members to change over time while still ensuring sufficient trained members. Such a requirement will need the certification of the successful trainees (a sample certificate is provided in **Annex 4**), as well as the recording of all past trainees by the Ministry of Public Works and Utilities. It also means that the training should be repeated regularly to allow new microenterprise members to be certified.

## Tools and Safety Equipment

Once the road maintenance microenterprises have been formed and trained, they need to be provided with tools and safety equipment. The tools and safety equipment are provided to the microenterprise upon being awarded a contract.

The tools and safety equipment remain the property of the Ministry of Public Works and Utilities and should be returned at the end of the contract. Although the microenterprises are responsible for any loss, the Ministry of Public Works and Utilities is responsible for replacing damaged and worn items.

### Tools

The tools to be provided to the microenterprises are listed in the table below, together with the quantities required, the average duration that they are expected to be used and their approximate unit costs. Note that some tools may be used for several years, while others easily need to be replaced sooner.

Item	Quantity	Years of use	Unit cost
Broom	1 per worker	0.5	A\$ 25.00
Shovel	1 per worker	2	A\$ 40.00
Hoe	1 per 3 workers	2	A\$ 30.00
Pickaxe	1 per 5 workers	4	A\$ 30.00
Rake	1 per 5 workers	2	A\$ 40.00
Culvert tool	1 per 5 workers	4	A\$ 50.00
Lifting iron	1 per 5 workers	5	A\$ 65.00
Machete	1 per 3 workers	2	A\$ 20.00
Pruning saw	1 per 5 workers	2	A\$ 20.00
Crack sealing squeegee	1 per 5 workers	5	A\$ 65.00
Hand tamper	1 per 5 workers	5	A\$ 80.00
Watering can	1 per 5 workers	1	A\$ 20.00
Bucket	1 per 5 workers	1	A\$ 10.00
Sealant pouring jug	1 per 3 workers	5	A\$ 20.00
Wheelbarrow	1 per 5 workers	3	A\$ 270.00

The tools only make up a small portion of the total costs compared with the wages of the microenterprise members, and should therefore be provided in sufficient quantity and be of good quality to ensure that the microenterprise members can work productively.

## Procurement

During the first two years, the contracting of road maintenance microenterprises for the maintenance of all project roads and existing paved roads will be carried out by the international contractor under the Kiribati Road Rehabilitation Project. During this period the microenterprise members will be hired directly as workers or subcontracted as microenterprises by the international contractor. After the two year period, the contracting of the road maintenance microenterprises will become the responsibility of the Ministry of Public Works and Utilities. As such, the contract award will be regulated by national procurement legislation, requiring public tendering. This section describes the bidding and procurement process to be applied and provides sample bidding and contracting documents.

### Invitation to Tender

Government procurement in Kiribati is regulated by the Procurement Act 2002. The estimated cost for a one-year routine road maintenance contract involving a total road length of between 10 and 25 kilometres falls between the procurement thresholds of A\$5,000 and A\$50,000, requiring procurement to be carried out through a public tendering process chaired by the Ministry Procurement Review Committee under the Ministry of Public Works and Utilities. As part of a public tendering process, the first step in the procurement of road maintenance microenterprises is therefore the Invitation to Tender.

Subject to the approval by the Permanent Secretary for the Ministry of Public Works and Utilities, restricted tendering may be applied in light of the limited number of suppliers and the low value of the contracts. Under such restricted tendering, the Invitation to Tender would only be sent to the road maintenance microenterprises registered with the Ministry of Public Works and Utilities. Where this is not the case, the Invitation to Tender must be published on the local community board and published in the local press.

The Invitation to Tender explains the type of work to be carried out, the roads to be maintained and the start and end date of the contract. It also provides the qualification criteria that bidders must comply with in order to be eligible to bid. For the routine road maintenance contracts, the qualification criteria to be used are listed below.

Cost item	Cost/km/year
Wage payments	A\$ 1,200
Contributions to Kiribati Provident Fund (employer portion)	A\$ 90
Tools	A\$ 45
Safety equipment	A\$ 35
Transport allowance	A\$ 25
Accident insurance	A\$ 35
Materials	A\$ 150
<b>Total</b>	<b>A\$ 1,580</b>

## Funding

Given that the costs of routine maintenance are more or less fixed (apart from some deductions in case of poor performance by the microenterprises), it is recommended to create a specific earmarked budget for routine road maintenance. Upon completion of the Kiribati Road Rehabilitation Project, there will be approximately 50 kilometres of project roads and existing paved roads that are in sufficiently good condition to warrant routine maintenance. Based on the estimated costs of A\$ 1,600 per kilometre per year, this would require a budget of A\$ 80,000 per year. As more roads are rehabilitated and included under routine road maintenance contracts, this budget may need to be increased.

It is important to note that this only includes routine road maintenance. It does not include the complementary emergency and periodic maintenance activities to be carried out by the maintenance yard under the Ministry of Public Works and Utilities. In order to secure funding for routine road maintenance, thus ensuring that the benefits of reduced overall maintenance costs and improved overall road conditions are achieved as explained at the start of this manual, it is important that the budget for routine road maintenance be earmarked specifically for routine road maintenance. A second complementary road maintenance budget should also be earmarked for emergency and periodic road maintenance by the maintenance yard under the Ministry of Public Works and Utilities.

## Safety equipment

Safety equipment is also provided to the microenterprises to avoid traffic accidents and injuries to the microenterprise members. The safety equipment to be provided to the microenterprises is listed in the table below, together with the quantities required, the average duration that they are expected to be used and their approximate unit costs.

Item	Quantity	Years of use	Unit cost
Safety vest	1 per worker	2	A\$ 20.00
Safety cones	5 per microenterprise	3	A\$ 20.00
Boots	1 pair per worker	2	A\$ 100.00
Gloves	1 pair per worker	1	A\$ 15.00
Hat / Safety helmet	1 per worker	2	A\$ 20.00
First Aid kit	1 per microenterprise	2	A\$ 100.00

## Accident insurance

The microenterprise members are provided with accident insurance for the duration of their contract. This is provided on a group basis with for instance the Kiribati Insurance Corporation at a unit cost of approximately A\$ 100 per microenterprise member per year.

## Transport allowance

To facilitate the transport of microenterprise members along the road, they are provided with a transport allowance of A\$ 25 per kilometre per year. For a person working fulltime and maintaining an average of 3 kilometres of road, this would amount to A\$ 75 per year. This may be spent on the purchase or maintenance of a bicycle, or on the use of public transport. It is not intended to fully cover the costs of transport, but is a subsidy provided to the microenterprise to cover part of the costs of transport.

## Annual Costs and Funding

The annual costs of routine road maintenance consist mainly of the wage costs for the members of the road maintenance microenterprises. Other costs include the costs of tools and safety equipment, accident insurance, transport allowances, and the costs for the materials required to carry out the maintenance activities.

### Microenterprise costs

The wage costs of the microenterprises can easily be calculated based on the average of 3 kilometres of road per fulltime worker. The minimum wage rate set by the Ministry of Labour and Human Resources Development is A\$ 1.70 per hour. For an 8-hour workday this translates into A\$ 13.60 per workday. Assuming an average of 22 workdays per month and 12 months a year, this is equal to nearly A\$ 3,600 per fulltime worker per year. The cost for 1 kilometre per year is then a third of this, or A\$ 1,200 per kilometre per year. The wage costs per kilometre are not affected if microenterprise members work halftime instead of fulltime. The wage costs remain the same, but are distributed among a larger number of microenterprise members (a halftime worker will receive half the amount of a fulltime worker).

### Kiribati Provident Fund

In line with national legislation, the Ministry of Public Works and Utilities needs to pay social security contributions to the Kiribati Provident Fund. The Employer contribution is equal to 7.5% of the wage payments, which in this case amounts to approximately A\$ 90 per kilometre per year (the exact amount will depend on the actual wage payment made each month). An Employee contribution to the Kiribati Provident Fund is also required, but this is made from the wage payments and does not form an additional cost to the Ministry of Public Works and Utilities.

### Tools and safety equipment

Based on an average routine road maintenance contract of 15 kilometres involving a microenterprise with 5 members, and the required numbers of tools and their unit costs that were provided in the previous section, the costs of tools are estimated to be in the order of A\$ 45 per kilometre per year. Similarly, for

the safety equipment the average cost is estimated to be A\$ 35 per kilometre per year, bringing the total costs for tools and safety equipment to approximately A\$ 80 per kilometre per year. The exact costs per kilometre may vary slightly depending on the size of the microenterprise and the road section to be maintained. The cost of tools and safety equipment will be higher in case of microenterprises working halftime as more items will be needed for the same length of road.

### Accident insurance

Based on the average routine road maintenance contract of 15 kilometres involving a microenterprise with 5 members, the costs of accident insurance can be calculated to be A\$ 500 per year for all 5 microenterprise members. This is equivalent to just under A\$ 35 per kilometre per year. The cost of accident insurance will be higher in case of microenterprises working halftime.

### Transport allowance

The cost of the transport allowance is A\$ 25 per kilometre per year. This cost is not dependent on the number of microenterprise members.

### Materials

The type and volume of materials required will depend on the exact road sections included in the contract, and will vary by year. As a first estimation, the costs of the purchase and transport of materials is estimated to be A\$ 150 per kilometre per year. This will need to be verified during the initial years of operation.

### Total costs per kilometre

The total costs of routine road maintenance can thus be estimated to be approximately A\$ 1,600 per kilometre per year. Wage payments to the microenterprise members make up by far the greatest part of this cost (75%). Reductions in quantities or quality of tools, safety equipment and materials will therefore have limited impact on the total costs, but can severely impact the productivity of the microenterprises and the quality of their work.