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## ***1. Member List of the Study Team***



## 1. Member List of the Study Team

### (1) Site Survey

Name	Assignment	Position
Mr.Akihiko Hoshino	Leader of the Survey Team	Senior Representative, JICA Malawi Office
Mr.Yuji Une	Technical Adviser	JICA Senior Advisor (Groundwater Development)
Mr.Takeharu Kojima	Survey Coordinator	Water Resources Management Division2, Grobal Environment Department, JICA
Mr.Hiromi Yamagai	Leader of the Consultant Team/Rural Water Supply	Eight-Japan Engineering Consultants Inc.
Mr.Kazumi Matsuda	Sub Leader of the Consultant Team/Water Supply Facilities I	Eight-Japan Engineering Consultants Inc.
Mr.Koji Takahashi	Borehole Survey	Eight-Japan Engineering Consultants Inc.
Mr.Mitsuhiro Hosooka	Hydrogeology/Well Construction	Eight-Japan Engineering Consultants Inc.
Mr.Ken Yoshikawa	Water Supply Facilities II/ Water Quality	Eight-Japan Engineering Consultants Inc.
Mr.Jun Totsukawa	Social Survey/ Operation and Maintenance	Eight-Japan Engineering Consultants Inc.
Mr.Yasunori Ishida	Procurement and Construction/ Cost Estimation	Eight-Japan Engineering Consultants Inc.
Mr.Hitoshi Okada	Coordinator/Borehole Survey Assistant	Eight-Japan Engineering Consultants Inc.

### (2) Additional Site Survey

Name	Assignment	Position
Mr.Hiromi Yamagai	Leader of the Consultant Team/ Rural Water Supply	Eight-Japan Engineering Consultants Inc.
Mr.Mitsuhiro Hosooka	Hydrogeology/ Well Construction	Eight-Japan Engineering Consultants Inc.
Mr.Haruaki Ishiguro	Borehole Survey II	Eight-Japan Engineering Consultants Inc.
Mr.Ken Yoshikawa	Water Supply Facilities II/ Water Quality	Eight-Japan Engineering Consultants Inc.

(3) Draft Final Report Explanation

Name	Assignment	Position
Mr.Akihiko Hoshino	Leader of the Survey Team	Senior Representative, JICA Malawi Office
Mr.Yuji Une	Technical Adviser	JICA Senior Advisor (Groundwater Development)
Ms.Kana Fukuda	Survey Coordinator	Africa Division 3 (Southern Africa Region), Africa Department, JICA
Mr.Hiromi Yamagai	Leader of the Consultant Team/Rural Water Supply	Eight-Japan Engineering Consultants Inc.
Mr.Kazumi Matsuda	Sub Leader of the Consultant Team/Water Supply Facilities I	Eight-Japan Engineering Consultants Inc.

## ***2. Study Schedule***





## 2. Study Schedule

### Basic Design Survey

2010		Leader of the Survey Team/Technical Adviser Survey Coordinator (JICA)	Leader of the Consultant Team/Rural Water Supply	Sub Leader of the Consultant Team/Water Supply Facilities I	Borehole Survey	Hydrogeology/Well Construction	Water Supply Facilities II/Water Quality	Social Survey/Operation and Maintenance	Procurement and Construction/Cost Estimation	Coordinator/Borehole Survey Assistant	
No.	Date		Mr.Hiromi Yamagai	Mr.Kazumi Matsuda	Mr.Koji Takahashi	Mr.Mitsuhiro Hosooka	Mr.Ken Yoshikawa	Mr.Jun Totsukawa	Mr.Yasunori Ishida	Mr.Hitoshi Okada	
1	29-Aug	S	TYO→LLW	TYO→HKG→JNB→LLW							TYO→HKG→JNB→LLW
2	30-Aug	M	Visit JICA,EOJ MoIWD	Visit JICA,EOJ							Visit JICA,EOJ
3	31-Aug	T		Visit MoIWD,CRWB Explanation of Inception report							
4	1-Sep	W	Site Survey	Site Survey			Preparation of site survey and geo survey			Site coordination and assistant for borehole survey	
5	2-Sep	T									
6	3-Sep	F	Discussion of M/D	Discussion of M/D							
7	4-Sep	S	Site Survey	Site Survey							
8	5-Sep	S	Data Arrangement	Meeting, Data Arrangement							
9	6-Sep	M	Sign of M/D Report to JICA	Sign of M/D Report to JICA			Site Survey	TYO→HKG→			
10	7-Sep	T	LLW→TYO	<ul style="list-style-type: none"> <li>• Explanation and discussion of Inception report</li> <li>• Confirmation of project background and contents</li> <li>• Survey for other Donor, similar project</li> <li>• Consideration of meaning, scope and basic plan for Grand Aid project</li> <li>• Planning for draft design and implementann plan</li> <li>• Draft cost estimation for project and Planning of O&amp;M plan</li> <li>• Suggestion for cost estimate of O&amp;M in target facilities</li> <li>• Suggestion for implementation of items requested by Malawi Government</li> <li>• Evaluation of effectiveness on Grand Aid project</li> <li>• Survey for other issues</li> </ul>	Survey for facilities procurement plan	Site Survey (Borehole Survey)	(Natural Condition)	Site Survey (Natural Condition) (Existing facilities)			
11	8-Sep	W			Survey for implementation plan		(Electrical Prospecting)				
12	9-Sep	T			Planning for draft design and implementann plan		(Drilling Supervisor)				
13	10-Sep	F									
14	11-Sep	S									
15	12-Sep	S									
16	13-Sep	M									
17	14-Sep	T			Data Arrangement						
18	15-Sep	W									
19	16-Sep	T									
20	17-Sep	F		LLW→JNB→HKG→TYO				TYO→HKG→JNB→LLW			
21	18-Sep	S									
22	19-Sep	S									
23	20-Sep	M									
24	21-Sep	T									
25	22-Sep	W									
26	23-Sep	T									
27	24-Sep	F									
28	25-Sep	S									
29	26-Sep	S									
30	27-Sep	M									
31	28-Sep	T									
32	29-Sep	W									
33	30-Sep	T									
34	1-Oct	F									
35	2-Oct	S									
36	3-Oct	S									
37	4-Oct	M									
38	5-Oct	T									
39	6-Oct	W									
40	7-Oct	T									
41	8-Oct	F									
42	9-Oct	S									
43	10-Oct	S									
44	11-Oct	M									
45	12-Oct	T									
46	13-Oct	W									
47	14-Oct	T									
48	15-Oct	F									
49	16-Oct	S									
50	17-Oct	S									
51	18-Oct	M									
52	19-Oct	T									
53	20-Oct	W									
54	21-Oct	T									
55	22-Oct	F									
56	23-Oct	S									
57	24-Oct	S									
58	25-Oct	M		Explanation and discussion with Malawi side							
59	26-Oct	T									
60	27-Oct	W		LLW→JNB→HKG→TYO							
61	28-Oct	T									
62	29-Oct	F									
63	30-Oct	S									
64	31-Oct	S									
65	1-Nov	M									
66	2-Nov	T									

TYO: Tokyo

HKG Hong Kong

JNB: Johannesburg

LLW: Lilongwe

Additional Survey

2011			Leader of the Consultant Team/Rural Water Supply	Borehole Survey II	Hydrogeology/Well Construction	Water Supply Facilities II/Water Quality	
No.	Date		Mr.Hiromi Yamagai	Mr.Ishiguro Haruhiko	Mr.Mitsuhiro Hosooka	Mr.Ken Yoshikawa	
1	17-Apr	S	TYO→HKG→JNB→LLW				
2	18-Apr	M					
3	19-Apr	T	Meeting with JICA MoAWD				
4	20-Apr	W	[Large grey box]				
5	21-Apr	T					
6	22-Apr	F					
7	23-Apr	S					
8	24-Apr	S					
9	25-Apr	M			TYO→HKG→JNB→LLW		
10	26-Apr	T			[Large grey box]		
11	27-Apr	W					
12	28-Apr	T					
13	29-Apr	F					
14	30-Apr	S					
15	1-May	S					
16	2-May	M		TYO→HKG→JNB→LLW			
17	3-May	T		• Site Survey(Pumping test)		[Large grey box]	
18	4-May	W					
19	5-May	T	• Preparation for subcontract				
20	6-May	F		• Supervision for test drilling, pumping test			
21	7-May	S					
22	8-May	S	• Supervision for test drilling, pumping test				
23	9-May	M		• Supervision for topographic and geo-technical survey(Mkanda)			
24	10-May	T					
25	11-May	W	• Supervision for borehole survey				
26	12-May	T					
27	13-May	F					
28	14-May	S	• Supervision for topographic and geo-technical survey(Mkanda)				
29	15-May	S					
30	16-May	M			TYO→HKG→JNB→LLW		
31	17-May	T			[Large grey box]		
32	18-May	W					
33	19-May	T					
34	20-May	F					
35	21-May	S					
36	22-May	S					
37	23-May	M		LLW→JNB→HKG→TYO			
38	24-May	T					
39	25-May	W					
40	26-May	T					
41	27-May	F					
42	28-May	S					
43	29-May	S					
44	30-May	M		LLW→JNB→HKG→TYO			
45	31-May	T					
46	1-Jun	W					
47	2-Jun	T					
48	3-Jun	F					
49	4-Jun	S	• Supervision for test drilling, pumping test				
50	5-Jun	S					
51	6-Jun	M					
52	7-Jun	T	• Supervision for borehole survey				
53	8-Jun	W					
54	9-Jun	T					
55	10-Jun	F	• Supervision for topographic and geo-technical survey(Mkanda)				
56	11-Jun	S					
57	12-Jun	S					
58	13-Jun	M					
59	14-Jun	T	[At consaltant's expense]		LLW→JNB→HKG→TYO		
60	15-Jun	W					
61	16-Jun	T					
62	17-Jun	F					
63	18-Jun	S					
64	19-Jun	S					
65	20-Jun	M					
66	21-Jun	T	LLW→JNB→HKG→TYO				
67	22-Jun	W					

TYO: Tokyo  
HKG: Hong Kong  
JNB: Johannesburg  
LLW: Lilongwe

## Explanation of Draft Report

2011		Leader of the Survey Team	Technical Adviser	Survey Coordinator	Leader of the Consultant Team/Rural Water Supply	Sub Leader of the Consultant Team/Water Supply Facilities I
No.	Date	Akihiko Hoshino	Yuji Une	Kana Fukuda	YAMAGAI Hiromi	MATSUDA Kazumi
1	16-Oct	S	TYO→HKG→ JNB→LLW			FNA→NBO→ LLW
2	17-Oct	M				
3	18-Oct	T	Meeting with JICA, MoAIWD, CRWB(explanation of draft report)			
4	19-Oct	W	Meeting with Mchinji District(explanation of draft report)			
5	20-Oct	T	Meeting with MoAIWD, CRWB(M/D)			
6	21-Oct	F	Sign of M/D, Report to JICA, EOJ			
7	22-Oct	S	LLW→NBO→DXB→TYO		Additional data collection	
8	23-Oct	S			LLW→JNB→ HKG→TYO	
9	24-Oct	M				
10	25-Oct	M				

17-Oct: Mother's Holiday(Malawi)

TYO: Tokyo

NBO: Nairobi

HKG: Hong Kong

DXB: Dubai

JNB: Johannesburg

FNA: Freetown

LLW: Lilongwe



### ***3. List of Parties Concerned in the Recipient Country***



### 3.List of Parties Concerned in the Recipient Country

#### Ministry of Agriculture Irrigation and Water Development

Mr. Sandram C.Y. MAWERU Secretary for Irrigation and Water Development

#### Department of Water Resources

Mrs. M.B.KANJAYE Director of Water Resources  
Mr. Prince MLETA Deputy Director (Groundwater)  
Mr. Misford W. MIKUWA Deputy Director (Surface Water)  
Mr. Mavuto CHINTENGO Groundwater Development Officer  
Mr. Ganizani D.C. MATIKI Principal Hydro-geologist  
Mr. Patrick CHINTENGO Principal Driller  
Mr. Ronald CHIWAULA Drilling Officer  
Mr. Dwight KAMBUKU Hydrogeological Research Officer/Civil Engineer  
Mr. Sidney KANTUKULE Senior Hydrologist, Water Resources Management Board  
Mr. Rex KANJEDZA Principal Water Resources Board Officer  
Mr. Peter BANDA Water Resources Board Officer  
Mr. K .W. MSONDA Hydro-geological Research Officer  
Ms Twaiwale SUMANI Groundwater Development Officer  
Mr. Piyasi KAUNDA Assistant Hydrological Officer  
Mr. Mphanje Assistant Hydrological Officer

#### Department of Water Supply and Sanitation

Mr. Boniface GONDWE Director of Water Supply  
Mr. Lewis MKWETA Senior Water Engineer  
Mr. John KUMWENDA Chief Civil Engineer  
Mr. T. SITOLO Chief Community Water Supply and Sanitation Officer

#### Department of Planning

Mr. Gomezani NGWIRA Economist

#### Department of Administration and Finance

Mrs. Emma Mary MBALAME Director of Administration and Finance

#### Central Water Laboratory

Mr. Deziderio SITIMA Senior Water Chemist  
Mr. Limbikani Chitsundi BANDA Water Chemist

#### Regional Water Development Office ( C )

Mr. Andrew A. JOLOZA Regional Water Development Officer (RWDO (C))  
Mr. Sunduzwayo MASHUNGA Community Water Supply Officer  
Mr. Henry NAMWIRI District Water Officer, Mchinji  
Mrs. Tamandani TEMBO District Water Officer, Kasungu  
Mr. MWASI District Water Officer, Dedza  
Mr. H.K. MUNTHALI District Community -Water Supply Officer (Mchinji)

National Water Development Programme (II)

Mr. Hudgeson MUHEZUWA	WASH Coordinator
Mr. Lazarus PHIRI	Senior Water Engineer, WASH
Ms Prinsca Joan KUTENGULE	Community Participation Specialist

Central Region Water Board (CRWB)

Mr. Patrick D. MAKONYOLA	Chief Executive Officer
Mr. Gift SAGEME	Director of Technical Services
Mr. John P. MAKWENDA	Planning Engineer
Mr. Bankun MALUNGA	Civil Engineer

Mchinji District Council

Mr. Emmanuel SOHAYA	Director of Planning and Development
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Traditional Authorities

Mr. K. F. SANTHE	Chief Santhe, Kasungu
Mr. Mken MKANDA	Chief Mkanda, Mchinji



#### ***4. Minutes of Discussions***



#### 4.Minutes of Discussions

[Preparatory Survey]

**MINUTES OF DISCUSSIONS  
ON  
THE PREPARATORY SURVEY  
ON  
"THE PROJECT FOR WATER SUPPLY SYSTEMS FOR SANTHE, MKANDA AND  
NAMITETE/CHILEKA MARKET CENTRES IN CENTRAL REGION"  
AND  
"THE PROJECT FOR REHABILITATION OF BOREHOLES IN MCHINJI"  
IN  
THE REPUBLIC OF MALAWI**

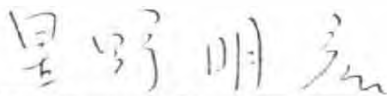
In response to a request from the Government of the Republic of Malawi (hereinafter referred to as "Malawi"), the Government of Japan (hereinafter referred to as "GOJ") decided to conduct a Preparatory Survey on "the Project for Water Supply Systems for Santhe, Mkanda and Namitete/Chileka Market Centres in Central Region"(hereinafter referred to as "the Market Centre Project") and "the Project for Rehabilitation of Boreholes in Mchinji" (hereinafter referred to as "the Mchinji Project") and entrusted the Survey to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Malawi the Preparatory Survey Team (hereinafter referred to as "the Team"), which is headed by Mr. Akihiko HOSHINO, Deputy Representative, JICA Malawi, and is scheduled to stay in the country from 30<sup>th</sup> August 2010 to 7<sup>th</sup> September 2010.

The Team held a series of discussions with the officials concerned of the Government of Malawi and conducted a field survey in the Project area.

In the course of discussions and field survey, both parties have confirmed the main items described in the attached sheets. The Team will proceed to work and prepare the Preparatory Survey Report.

Malawi, 6<sup>th</sup> September 2010



**Mr. Akihiko HOSHINO**  
Leader  
Preparatory Survey Team  
Japan International Cooperation Agency



**Mr. Sandram C.Y. MAWERU**  
Secretary for Irrigation and Water Development  
Ministry of Irrigation and Water Development  
The Republic of Malawi



**Mr. P.K. SIMBANI**  
Director for Debt and Aid  
Ministry of Finance  
The Republic of Malawi



**Mr. Patrick D. MAKONYOLA**  
Chief Executive Officer  
Central Region Water Board  
The Republic of Malawi

## ATTACHMENT

### 1. Objective of the Projects

The objective of the Projects is to improve water supply conditions in the project sites through the construction and rehabilitation of water supply facilities.

### 2. Project sites

The candidate sites of the Projects are as below shown in Annex 1. Exact sites will be determined in the course of the survey.

2-1. The Market Centre Project : Santhe, Mkanda and Namitete/Chileka Market Centres

2-2. The Mchinji Project : Boreholes sites and villages of the Mchinji Groundwater Development Project conducted by Japan's Grant Aid from 1993 to 1995

### 3. Responsible and Implementing Organization

3-1. The responsible organization is Ministry of Irrigation and Water Development (hereinafter referred to as "MOIWD").

3-2. The implementing organization is as below.

3-2-1. The Market Centre Project : Central Region Water Board (hereinafter referred to as "CRWB").

3-2-2. The Mchinji Project : MOIWD

3-3. The organization chart of MOIWD and CRWB is shown in Annex-2.

### 4. Items requested by the Government of Malawi

4-1. After discussions with the Team, the items described in Annex 3-1 and 3-2 were finally requested by the Government of Malawi. The Team will convey the request to GOJ.

4-2. The Team will assess the appropriateness of the request and will recommend to the GOJ for approval.

### 5. Japan's Grant Aid Scheme

5-1. The Malawi Side understood the Japan's Grant Aid Scheme explained by the Team as described in Annex 4.

5-2. The Malawi Side will take necessary measures as described in Annex 5 for smooth implementation of the Projects, as a condition for the Japan's Grant Aid to be implemented.

5-3. The Team will report to the Malawi Side if there are any other undertakings based on the result of this survey.

5-4. The Team explained that implementation of the preparatory survey is not a commitment of the approval of the Projects.

### 6. Schedule of the Survey

6-1. Consultant members in the Team will proceed to undertake further studies in Malawi until

end of October 2010.

- 6-2. The Team will prepare the draft report of the Survey in English and dispatch a mission to Malawi in order to explain its contents around the beginning of March 2011.
- 6-3. In case the contents of the draft report are accepted in principle by the Government of Malawi, The Team will complete the final report and send it to the Government of Malawi around June 2011.

## 7. Other relevant issues

- 7-1. Both Sides confirmed that target year for the projection of target population would be set around three to five years after the completion of each Project.
- 7-2. The final number and location of the Project Sites will be determined after further examination in Japan and consultation with Malawi Side. The Team explained that the scope of the Projects is likely to be changed because of its fiscal constraints.

7-3. For each Project

### 7-3-1 The Market Centre Project.

- (1) Water Source : The Team will assess the water source options. If the requested surface water sources are unsuitable in terms of water quality and quantity, as well as necessary technical and budgetary capacities for operation and maintenance, the Team will look into possibilities of developing boreholes.
- (2) Test Drilling : The Team will conduct maximum of nine test-drillings, three in each market centres. The Team will consult the Malawi Side on the location and details of the test drilling sites. The capacities and yield of developed boreholes may determine the size of the water supply facilities.
- (3) Operation and Maintenance : The Team is concerned about the operation and maintenance of the water supply facilities. The role of MOIWD, CRWB, District Councils and Water User's Association will be assessed. Each stakeholder will commit to operate and maintain the water supply facilities.
- (4) Distribution Facilities : Appropriateness of communal water points and/or house connections should be discussed from the viewpoints of Malawi standards, efficiency, water quantity and capacity of the water source. JICA Side envisaged the possibility of mixed distribution facilities such as house connections in central areas, communal water points in surrounding areas and handpumps in the vicinity.
- (5) Demarcation of distribution facilities : For the distribution facilities, only the distribution pipes and communal water points will be provided in the Japanese Grant Aid. House connections should be facilitated by CRWB.
- (6) Connection to National Electricity Grid : Connection to the national grid in each area should be undertaken by Malawi Side before the commencement of the Project.
- (7) Acquisition of land : Acquisition of land for both in the Survey and the Project should be undertaken by Malawi Side without delay.
- (8) The conceptual flowchart of the above is as attached in Annex 6.

### 7-3-2. The Mchinji Project

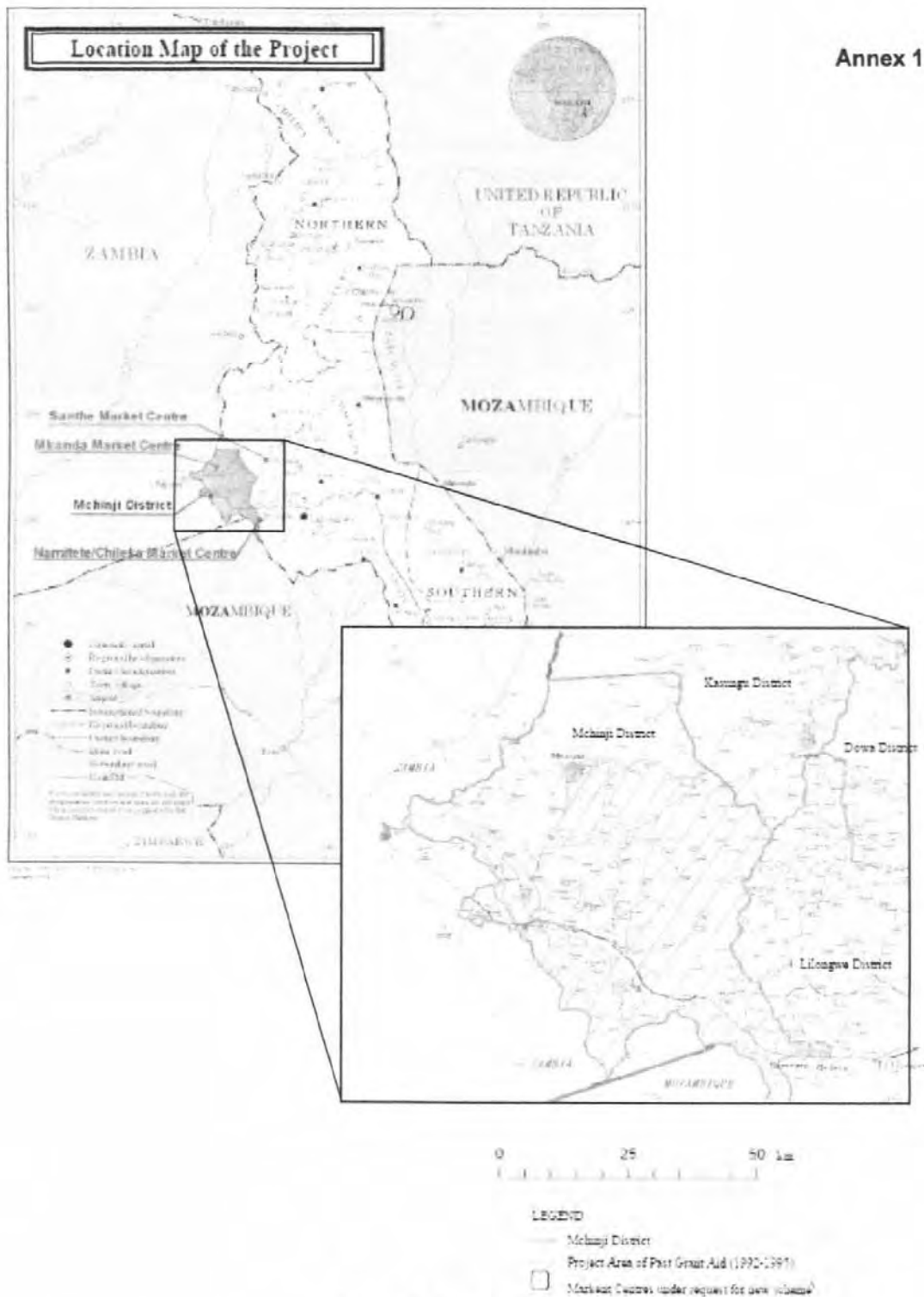
Handwritten signatures and initials in blue ink, including a large stylized 'W' and a smaller signature.

- (1) JICA Side explained that the Mchinji Project is quite exceptional because operation and maintenance of water supply facilities is the promised undertakings of the Malawi Side. During the course of the Survey, Malawi counterparts should work with the Japanese consultants to obtain necessary techniques for examination and rehabilitation of boreholes.
  - (2) Both Sides confirmed that the Project will basically focus on rehabilitation and construction of boreholes and handpump facilities.
  - (3) The villages/boreholes to be considered in the Mchinji Project will be villages/boreholes covered by the Mchinji Groundwater Development Project conducted by Japan's Grant Aid. Other boreholes constructed by other development partners will not be rehabilitated.
  - (4) Major rehabilitations of boreholes will be considered but minor difficulties shall be repaired by the Malawi Side. Construction of new boreholes will be considered if 1) the original borehole is seriously damaged and rehabilitation is not rational, 2) additional borehole is necessary due to increase of population. Rehabilitation of some malfunctional boreholes may not be included in the Mchinji Project if proper operation and maintenance cannot be expected in the village.
  - (5) The conceptual selection flowchart of the rehabilitation/construction of boreholes is as attached in Annex 7.
  - (6) Any lessons learnt about the facilities and operation and maintenance system in Mchinji, will be shared among both Sides.
- 7-4. Malawi Side confirmed that there will be no duplication among development partners in conducting both Projects. Malawi Side will play a main role in coordinating among development partners. Any relevant information concerning activities of MOIWD and development partners will be provided to JICA.

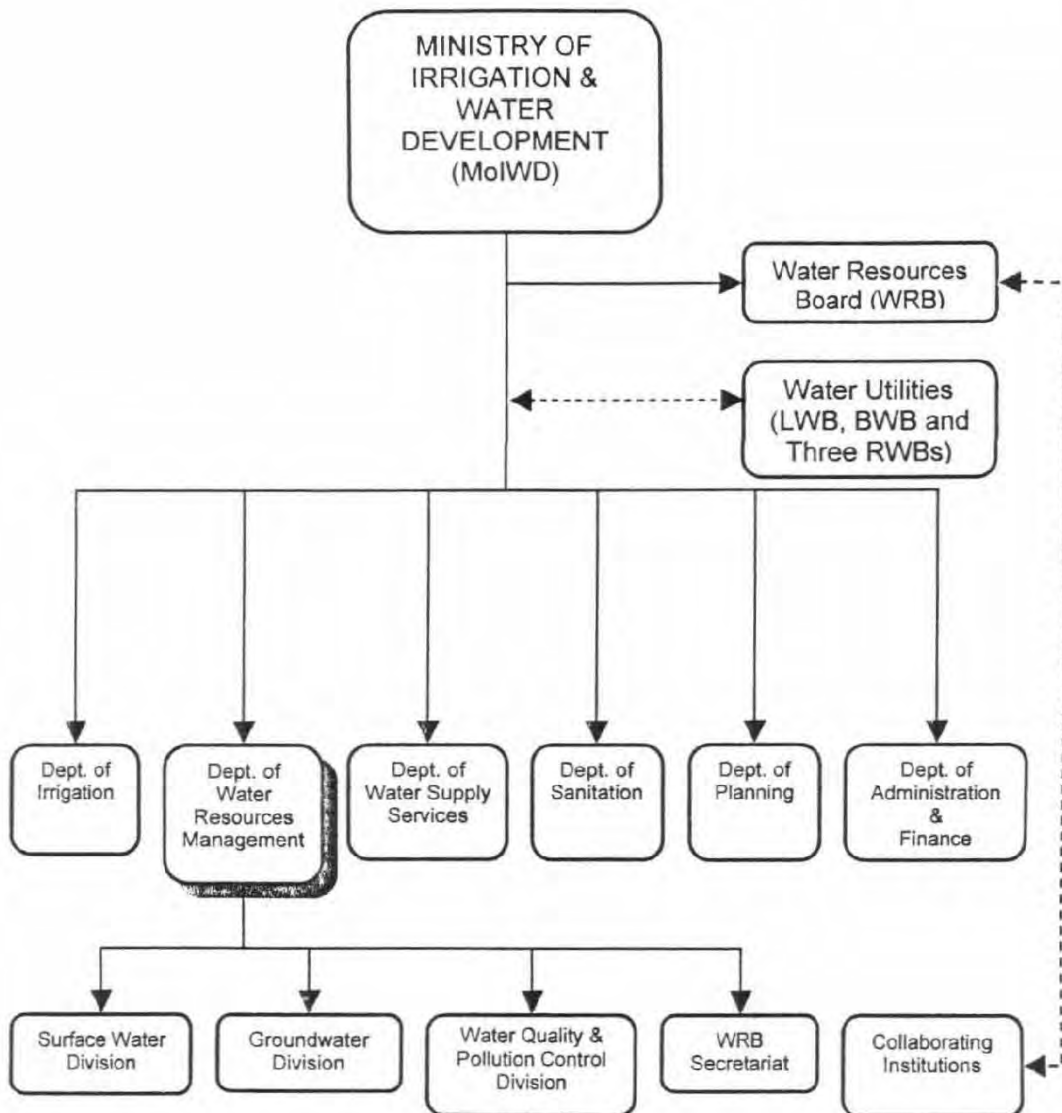
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#### Annexes

1. Project Area Map
2. Organization Charts
3. Items requested by the Government of Malawi
4. Japan's Grant Aid
5. Major Undertakings to be taken by Each Government
6. Conceptual Flowcharts of the Market Centre Project (tentative)
7. Conceptual Flowchart of Selection of Boreholes in the Mchinji Project (tentative)

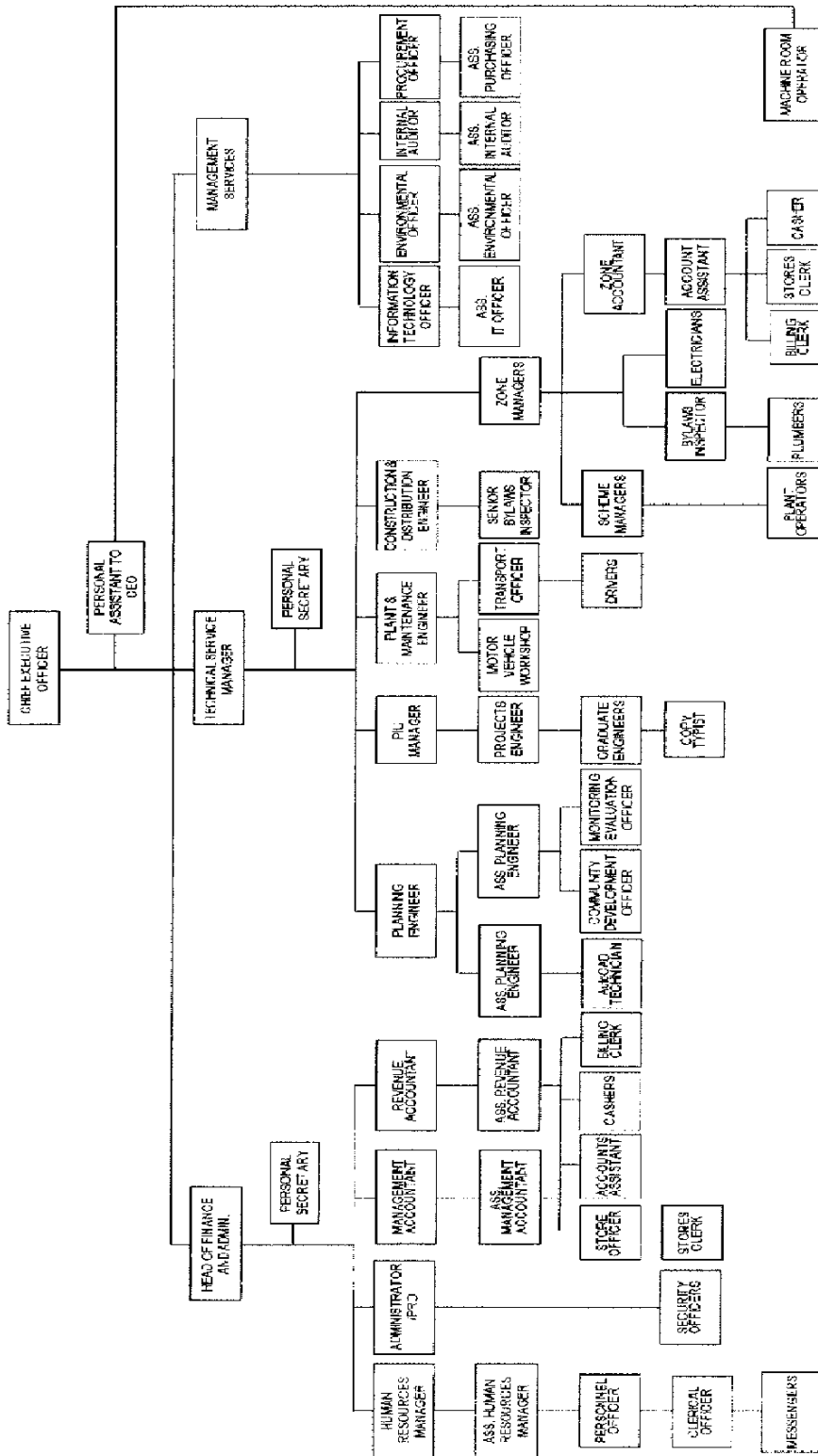


Annex 1 Project Area



Annex 2-1 Organization Chart of MOIWD





Annex 2-1 Organization Chart of CRWB

## Annex 3-1 Items requested by the Government of Malawi

## Requested Components for the Market Centre Project

Location	Namitete/Chileka M/C, Lilongwe District	Mkanda M/C, Mchinji District	Santhe M/C, Kasungu District
Water source	Namitete River (Intake: upper stream from M12 crossing)	Liwelezi River (Intake: convenient location)	Three (3) Boreholes with submersible pumps, minimum 5 L/sec of yield in total.
Intake	Raw water chamber, screen, raw water sump, raw water pumps and raw water supply line to treatment plant	Weir, raw water chamber, screen, raw water sump, raw water pumps and raw water transmission line to a water treatment plant.	Collection header up to water sump. Water sump (50m <sup>3</sup> ), lifting pumping station to lift water to a service tank at the highest point at the centre
Treatment plant and other facilities	Water treatment plant (capacity=1,500m <sup>3</sup> /day), with clarifiers, filters and chlorine dosing facilities. Clear water tank(100m <sup>3</sup> ), clearwater lifting pump station	Water treatment plant (1,000m <sup>3</sup> /day), consists of clarifiers, filters and chlorine dosing facilities. Clear water tank (100m <sup>3</sup> ), clear water lifting pump station.	Chlorine dosing facilities
Transmission	Rising main pipe (DN150mm, L=5km) from the clear water tank to service reservoirs with bulbs and bulk water meters with bulk water meters	Rising main (DN150mm L=5km) from the clear water tank to the service tank. Bulk water meters	Rising main (DN150mm L=2.5km, DI) from the water sump to the service tank with bulk water meter.
Distribution Network	Two service tanks (250 m <sup>3</sup> each) at Chileka and Namitete Market water supply zones. Distribution main pipe (DN160mm, L=5km, DN110mm L=10km and DN63mm L=5km of uPVC pipe) including district bulk water meters.	A service water tank (300m <sup>3</sup> ). Distribution main (DN160mm, L=4km, DN110mm, L=6km and DN63mm, L=3km of uPVC pipe) with district bulk water meters.	A service water tank (150 m <sup>3</sup> ) at the Trading Centre, Distribution main (DN160mm, L=3km, DN110mm, L=6km and DN63mm, L=3km of uPVC pipe) district bulk water meters.
Auxiliary Works	Office for operation and maintenance. Power supply from ESCOM for pumping and illumination.	Office for operation and maintenance. Power supply for pumping and illumination. Connection to the National Grid System.	Office for operation and maintenance. Power supply for pumping and illumination.

Note: Wiring with transformer & leading-in pole shall be provided by the Recipient Country under Japan's Grant Aid Scheme.

**Annex 3-2 Items requested by the Government of Malawi**

## Requested Components for the Mchinji Project

No.	Component	Specification
<b>1</b>	<b>Rehabilitation or Construction of 400 boreholes, construction of apron, drain and washing slab.</b>	
(1)	Boreholes and apron, drain and washing slab	
(2)	water supply facilities	
<b>2</b>	<b>Procurement of equipment and materials</b>	
(1)	A set of drilling rig mounted on 4x4 truck	1 unit
(2)	A set of development and pumping test unit 4x4	1 unit
(3)	Pick-up type Light Vehicles single cab 4x4	2 units
(4)	Pick-up type Light Vehicles double cab 4x4	2 units
(5)	Global Positioning System	3 units
(6)	A set of Geophysical Survey Machine	1 unit
(7)	Hand Pump, Afridev Type	1 lot
(8)	Well casing and Screen Pipe	1 lot
(9)	Spare parts for the above equipment	1 lot
(10)	Spare parts for the drilling rigs	1 lot
<b>3</b>	<b>Soft Component</b>	
	➤ CBM training of water supply committees	
	➤ Training of extension workers	

## JAPAN'S GRANT AID

The Government of Japan (hereinafter referred to as "the GOJ") is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on this law and the decision of the GOJ, JICA has become the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

### 1. Grant Aid Procedures

The Japanese Grant Aid is supplied through following procedures :

- Preparatory Survey
  - The Survey conducted by JICA
- Appraisal & Approval
  - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
  - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
  - Agreement concluded between JICA and a recipient country
- Implementation
  - Implementation of the Project on the basis of the G/A

### 2. Preparatory Survey

#### (1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of a outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Outline Design of the Project is confirmed based on the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such

measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

### 3. Japan's Grant Aid Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes(hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex 5.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant Aid, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

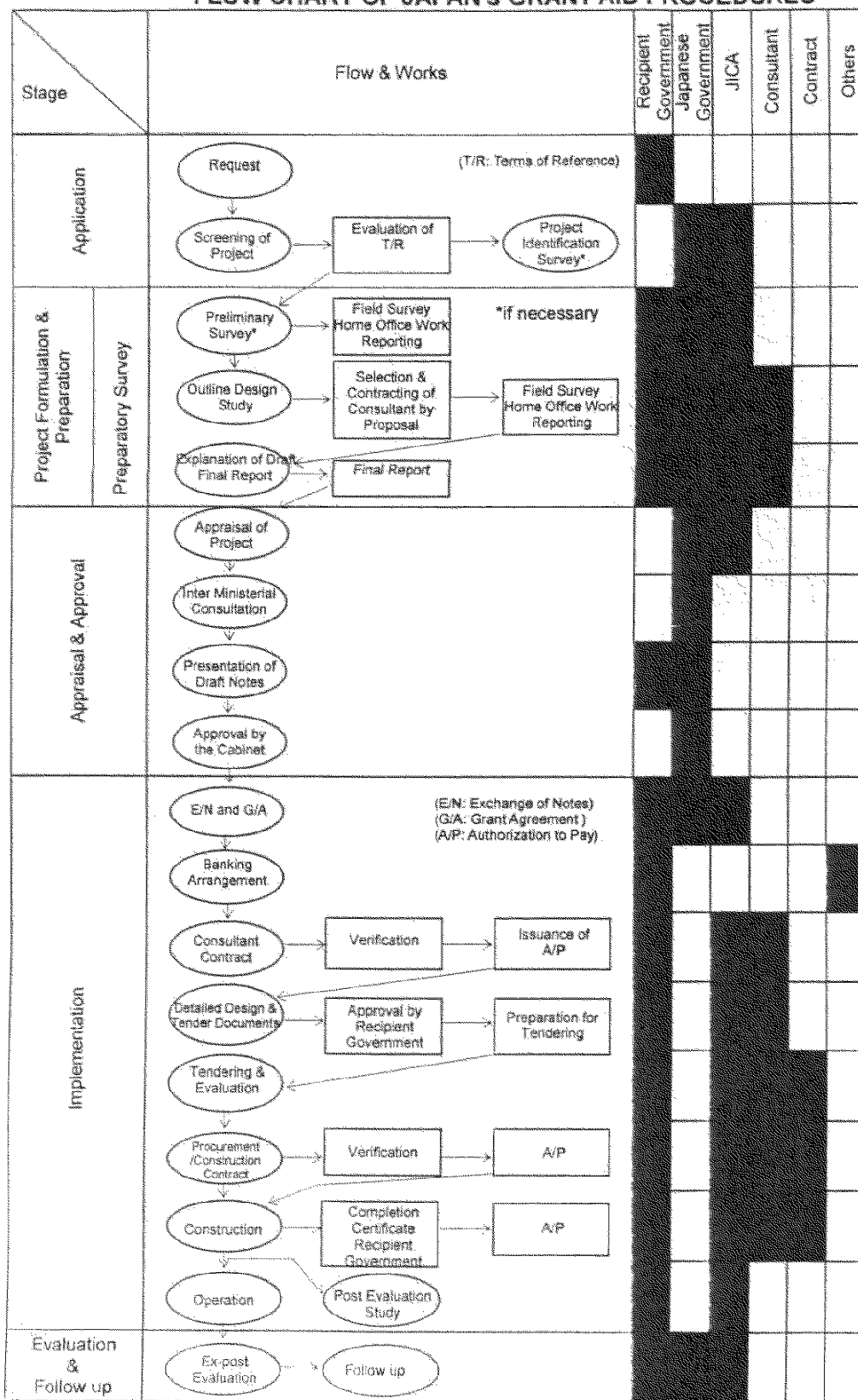
(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Social and Environmental Considerations

A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.

### FLOW CHART OF JAPAN'S GRANT AID PROCEDURES



## Major Undertakings to be taken by Each Government

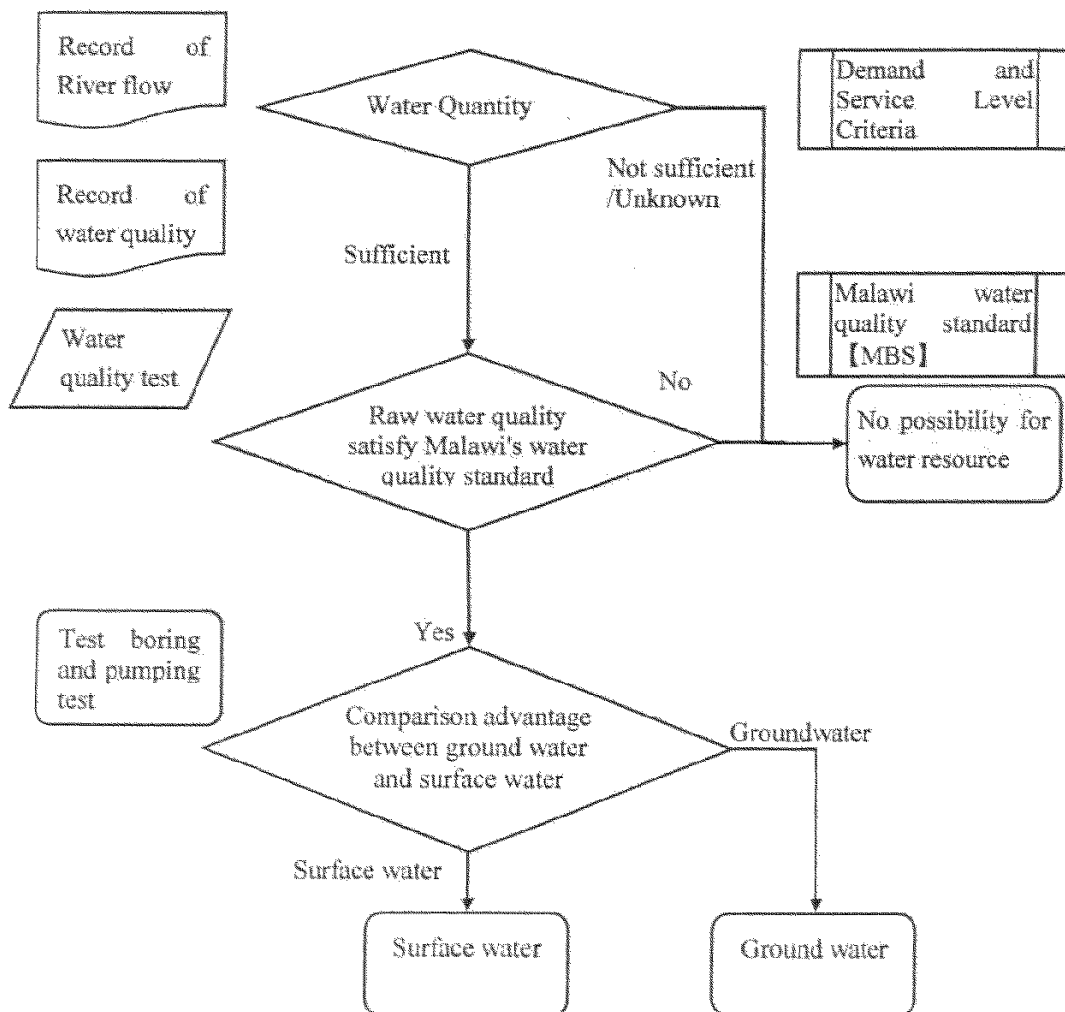
No	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To secure [a lot] / [lots] of land necessary for the implementation of the Project and to clear the [site] / [sites];		•
2	To ensure prompt unloading and customs clearance of the products at ports of disembarkation and to assist internal transportation of the products		
	1) Marine (Air) transportation of the Products from Japan to the recipient country	•	
	2) Tax exemption and custom clearance of the Products at the port of disembarkation		•
	3) Internal transportation from the port of disembarkation to the project site	(•)	(•)
3	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services [be exempted] / [be borne by the Authority without using the Grant]		•
4	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		•
5	To ensure that [the Facilities and the products] / [the Facilities] / [the products] be maintained and used properly and effectively for the implementation of the Project		•
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project		•
	To bear the following commissions paid to the Japanese bank for banking services based upon the B/A		
7	1) Advising commission of A/P		•
	2) Payment commission		•
8	To give due environmental and social consideration in the implementation of the Project		•

(B/A : Banking Agreement, A/P : Authorization to Pay)



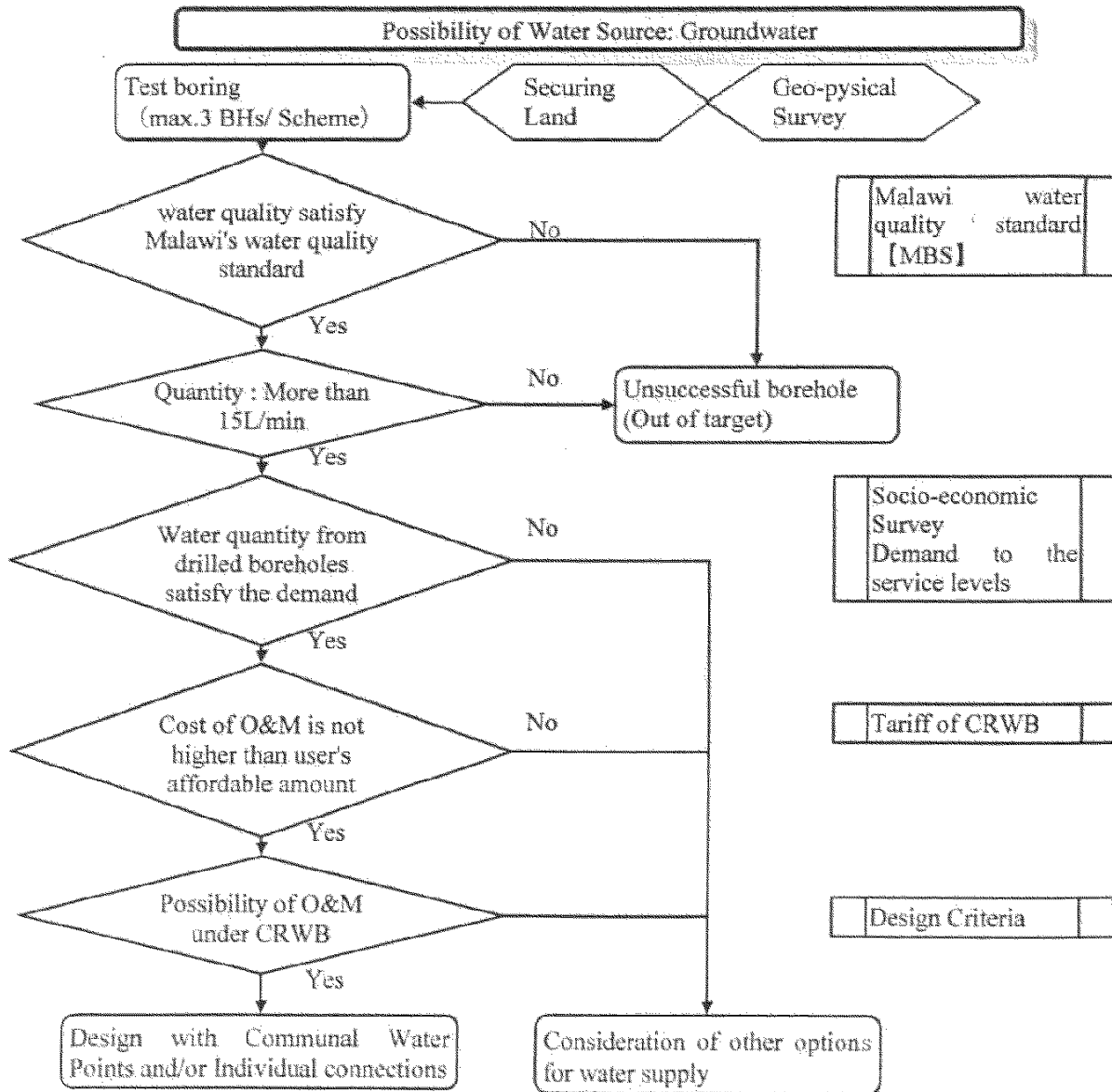
- ◆ Precondition
- 1) Capacity and Ability of Operation and Maintenance  
(Human resources, Water Business management skills, Sustainable facilities, Good examples etc.)
  - 2) Water Resource  
(Sufficient quality and quantity by simple water treatment facilities: Groundwater is preferable)
  - 3) Water supply service level  
(Water charge is affordable to the uses. Type of distribution, such as communal water point and individual connection, shall be set up upon the willingness to pay from sufficient number of expected users to sustainable operation and maintenance. Facilities for each individual connection may not be included in the construction under Japan's Grant Aid . )
  - 4) Prior Construction by Malawi Government  
(Power supply line to the pump station, the treatment plant and management offices, etc)

Possibility of Water Source: Surface Water  
Target: Mkanda (Liwiledzi river), Namitete/Chileka (Namitete river)



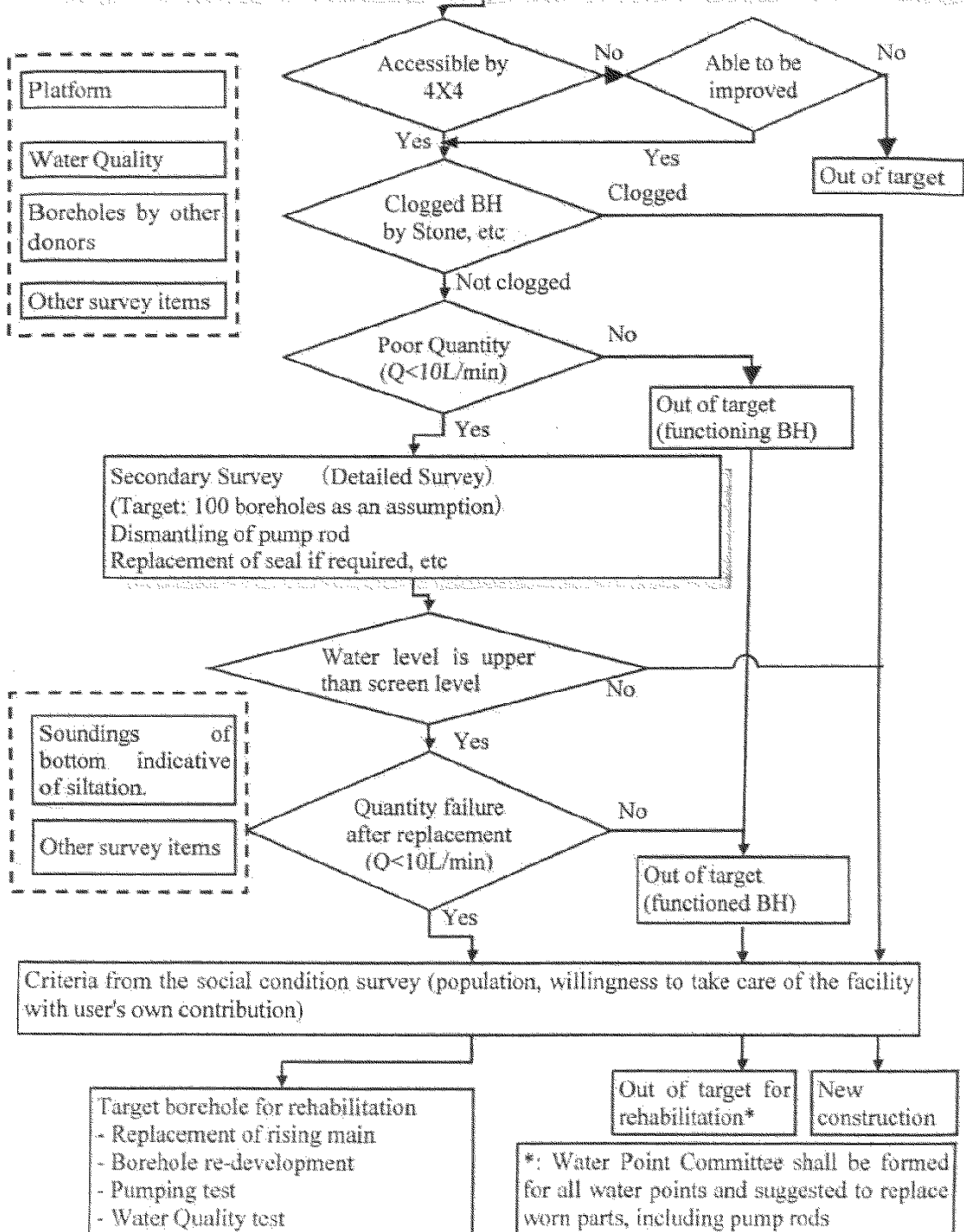
Annex 6-1 Conceptual Flowchart of the Market Centre Project (tentative)

- ◆ Precondition
- 1) Capacity and Ability of Operation and Maintenance  
(Human resources, Water Business management skills, Sustainable facilities, Good examples etc.)
  - 2) Water Resource  
(Sufficient quality and quantity by simple water treatment facilities: Groundwater is preferable)
  - 3) Water supply service level  
(Water charge is affordable to the users. Type of distribution, such as communal water point and individual connection, shall be set up upon the willingness to pay from sufficient number of expected users to sustainable operation and maintenance. Facilities for each individual connection may not be included in the construction under Japan's Grant Aid . )
  - 4) Prior Construction by Malawi Government  
(Power supply line to the pump station, the treatment plant and management offices, etc)



Annex 6-2 Conceptual Flowchart of the Market Centre Project (tentative)

First Survey (Preliminary Survey)  
Target : 300 Boreholes which were drilled under Japan's Grant in 1992-1995



Annex 7 Conceptual Flowchart  
for Selection of Boreholes in the Mchinji Project (tentative)



[Explanation of Draft Outline Design]

**MINUTES OF DISCUSSIONS  
ON  
THE PREPARATORY SURVEY  
ON  
"THE PROJECT FOR WATER SUPPLY SYSTEMS FOR SANTHE, MKANDA AND  
NAMITETE/CHILEKA MARKET CENTRES IN CENTRAL REGION"  
AND  
"THE PROJECT FOR REHABILITATION OF BOREHOLES IN MCHINJI"  
IN  
THE REPUBLIC OF MALAWI  
(Explanation of Draft Outline Design)**

In September 2010, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team on "the Project for Water Supply Schemes for Santhe, Mkanda and Namitete/Chileka Market Centres in Central Region" (hereinafter referred to as "the Market Centre Project") and "the Project for Rehabilitation of Boreholes in Mchinji" (hereinafter referred to as "the Mchinji Project") to the Republic of Malawi (hereinafter referred to as "Malawi") with supplemental field survey in April to June 2011, and through discussion, field survey, and technical examination of the results of the survey in Japan, JICA prepared a Draft Outline Design of the Survey.

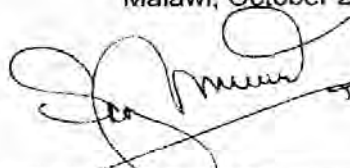
In order to explain and to consult with the Government of Malawi on the components of the Draft Outline Design, JICA sent to Malawi the Draft Outline Design Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Akihiko HOSHINO, Deputy Resident Representative, JICA Malawi, from October 17 to October 22, 2011.

As a result of discussions, both sides confirmed the main items described on the attached sheets.

Malawi, October 21, 2011



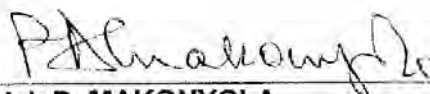
**Mr. Akihiko HOSHINO**  
Leader  
Preparatory Survey Team  
Japan International Cooperation  
Agency



**Mr. Sandram C.Y. MAWERU**  
Secretary for Irrigation and Water  
Development  
Ministry of Agriculture, Irrigation and Water  
Development  
The Republic of Malawi



**Mr. Peter K. SIMBANI**  
Director for Debt and Aid  
Ministry of Finance and Development  
Planning  
The Republic of Malawi



**Mr. Patrick D. MAKONYOLA**  
Chief Executive Officer  
Central Region Water Board  
The Republic of Malawi

## ATTACHMENT

### 1. Components of the Draft Final Report

The Malawi side agreed and accepted in principle the components of the Draft Outline Design explained by the Team.

### 2. Japan's Grant Aid Scheme

2-1. The Malawi side understood the Japan's Grant Aid Scheme and agreed to take the necessary measures and allocate necessary budget properly for smooth implementation of the Project, as a condition for the Japan's Grant Aid to be implemented. The Grant Aid Scheme and necessary measures are shown in Annex-1 and Annex-2.

2-2. Both sides confirmed that the dispatch of the Team is not necessarily a commitment of the Project to be implemented and that the scope of the Project would be examined further by the Government of Japan for its approval as a Grant Aid.

### 3. Responsible and Implementing Agency

3-1. The responsible organisation is Ministry of Agriculture, Irrigation and Water Development (hereinafter referred to as "MoAIWD").

3-2. The implementing organisation is as below.

3-2-1. The Market Centre Project : Central Region Water Board (hereinafter referred to as "CRWB").



3-2-2. The Mchinji Project : Department of Water Resources, MoAIWD

3-3. The organisational structure of MoAIWD and CRWB is shown in Annex-3.

3-4. The Malawi side confirmed that function of above-mentioned responsible and implementing agency regarding the Project is not changed, regardless of the reorganisation of Ministry of Irrigation and Water Development into MoAIWD in September, 2011.

### 4. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Government of Malawi by the end of February 2012.

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## 5. Project Cost Estimation

The Team explained to the Malawi side the estimated project cost as attached in Annex-4. Both sides confirmed that this estimated cost was provisional and would be examined further by the Government of Japan for its final approval.

The Malawi side reconfirmed to secure necessary counterpart budget for the project timely and adequately to cover the required amount of the cost, as mentioned in Annex-4 and as promised in the previous minutes signed on 6<sup>th</sup> September 2010.

Furthermore, both sides confirmed that this estimated project cost is strictly confidential, and should never be duplicated or released to other parties until completion of signing of all the Contracts for the Project between Government of Malawi and Japanese Contractors. This embargo is for securing fairness of tender procedure.

## 6. Other Relevant Issues

### 6-1. Title of the Project

Both sides confirmed that the title of the Project would be changed to "The Project for Selected Market Centres and Rural Water Supply in Mchinji and Kasungu District", as an integrated project of two sub-projects. The Team will consult the Government of Japan on the official procedure to change the title and inform Malawi side of the result through JICA Malawi Office.

### 6-2. Components of the Project

The Malawi side agreed on the detailed components of the Project as shown in Annex-5.

### 6-3. The Market Centre Project

- (1) Project Site: Both sides agreed that the project site would be Mkanda (Mchinji District) and Santhe (Kasungu District) Market Centres and that Namitete/Chileka Market Centre would be out of the scope due to limited available budget which is aggravated by the fact that Namitete/Chileka will require more investment which may not be accommodated in the current available budget. Both sides agreed the necessity of considering Namitete/Chileka in other projects in the future.
- (2) Demarcation of distribution facilities: For the distribution facilities, only the distribution pipes and communal taps (14) will be constructed in the Japanese Grant Aid. House connections should be facilitated by CRWB.
- (3) Target Service Population and Water Supply Connections: The Team explained that it is necessary to construct the calculated number of connections (taps) as shown in Annex-6 by the Malawi side in order to achieve the target of

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service population by 2020. The Malawi side understood and expressed that they would promote house connections more than proposed in Annex-6, taking into account of the financial sustainability of CRWB. The Malawi side also stressed to conduct necessary activities such as sensitization to the residents and also confirmed to report the progress to JICA Malawi Office periodically.

- (4) The Team requested the Malawi side to submit a road map or a plan (including schedule) for achieving the target service population and water supply connections. The Malawi side agreed and confirmed to submit the plan by March 2012 to JICA Malawi Office.

#### 6-4 The Mchinji Project

(1) The Team explained that the Mchinji Project is quite exceptional in terms of dealing with rehabilitation of existing water supply facilities because operation and maintenance of water supply facilities is the promised undertakings of the Malawi Side. During the course of the implementation of the Project, Malawi counterparts should work with the Japanese consultants and contractor to obtain necessary techniques for examination and rehabilitation of boreholes. Also, both sides agreed that close coordination and cooperation between the Project and the on-going technical cooperation "Enhancement of Operation and Maintenance for Rural Water Supply" will have positive impact on the effectiveness of both projects.

(2) Both Sides confirmed that the Project basically focus on rehabilitation and construction of boreholes and handpump facilities.

#### (3) Number of Substitute Boreholes in Mchinji Project

Maximum 15 substitute boreholes would be constructed in sites where rehabilitation of existing boreholes are deemed difficult. However, for 4 boreholes out of the 15, possibilities of rehabilitating them would be further examined through some trials such as collection of fallen objects inside of them in the course of the Detailed Design Survey. If the trials become successful on some of the 4 boreholes, they are deducted from the number of substitute boreholes.

(4) The target villages/boreholes of the Mchinji Project shall be limited to the 276 villages/300 boreholes covered by the Project for Mchinji Groundwater Development Project conducted by Japan's Grant Aid (1993 – 1995).

The list of candidate sites of the Project is also shown in Annex-7.

#### 6-5. Information of the Status of the Project

The Malawi side requested to be informed of the status of the Project by March 2012 due to Malawian Fiscal Year.

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#### 6-6. Undertakings of the Malawi side

In addition to the undertakings shown in Annex-2, the Team requested the Malawi side to carry out the followings. The Malawi side agreed to take necessary measures.

- a) Abide by major undertakings of the Government of Malawi regarding Japan's general grant aid scheme.
- b) Arrange for counterpart personnel.
- c) Improve / maintain access roads to construction sites.
- d) Power connection works to the national grid in each area for the Market Centre Project before the commencement of the construction work of the Project.
- e) Preservation of the test boreholes constructed under the Preparatory Survey until the commencement of construction work for utilisation as productive boreholes.
- f) Taking required procedures related to environmental and social consideration for the Market Centre Project.
- g) Implementation of CBM programme consists of sensitisation, education and training related to the self-reliant maintenance of the water supply facilities by local residents for the Mchinji Project.
- h) Bearing of following expenses not included in Japan's Grant Aid but necessary for the implementation of the Project as shown in Annex-4;
  - Project management cost of the MoAIWD
  - Project management cost of CRWB
  - Operation and maintenance for Water Supply Facilities in Mkanda and Santhe
  - Personnel cost of staff members of the MoAIWD participating in the initial operational guidance (OJT) on the equipment procured under the Mchinji Project

#### 6-7. Climate change

Both sides confirmed that the Project is expected to contribute to adaptation to climate change.

#### 6-8. Fuel Supply

Malawi side understood and promised to take necessary measures as much as possible to keep the required amount of fuel for the implementation of the Project as required.

End

Annex-1 : Japan's Grant Aid

Annex-2 : Major Undertakings to be taken by Each Government



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Annex-3 : The Organisational Structure of MoAIWD and CRWB

Annex-4 : Project Cost Estimation

Annex-5 : Components of the Project

Annex-6 : Categorized Population in Target Year and Calculated Number of  
Connections

Annex-7 : List of Candidate Sites of the Project (The Mchinji Project)

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## JAPAN'S GRANT AID

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  - Implementation of the Project on the basis of the G/A





### 2. Preparatory Survey

#### (1) Contents of the Survey

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- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
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JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

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For smooth implementation of the Survey, JICA employs (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

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(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex-2.

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(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant Aid, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Social and Environmental Considerations

A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.

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## FLOW CHART OF JAPAN'S GRANT AID PROCEDURES

Stage	Flow & Works	Recipient Government	Japanese Government	JICA	Consultant	Contract	Others
Application	<p style="text-align: right;">(T/R: Terms of Reference)</p>						
Project Formulation & Preparation	<p style="text-align: right;">*if necessary</p>						
Appraisal & Approval							
Implementation	<p style="text-align: right;">(E/N: Exchange of Notes) (G/A: Grant Agreement) (A/P: Authorization to Pay)</p>						
Evaluation & Follow up							

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## Major Undertakings to be taken by Each Government

No	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To secure [a lot] /[lots] of land necessary for the implementation of the Project and to clear the [site]/[sites]:		•
2	To ensure prompt unloading and customs clearance of the products at ports of disembarkation and to assist internal transportation of the products		
	1) Marine (Air) transportation of the Products from Japan to the recipient country	•	
	2) Tax exemption and custom clearance of the Products at the port of disembarkation		•
	3) Internal transportation from the port of disembarkation to the project site	(•)	(•)
3	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services [be exempted] / [be borne by the Authority without using the Grant]		•
4	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		•
5	To ensure that [the Facilities and the products]/[the Facilities]/ [the products] be maintained and used properly and effectively for the implementation of the Project		•
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project		•
7	To bear the following commissions paid to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		•
	2) Payment commission		•
8	To give due environmental and social consideration in the implementation of the Project		•

(B/A: Banking Agreement, A/P: Authorization to Pay)

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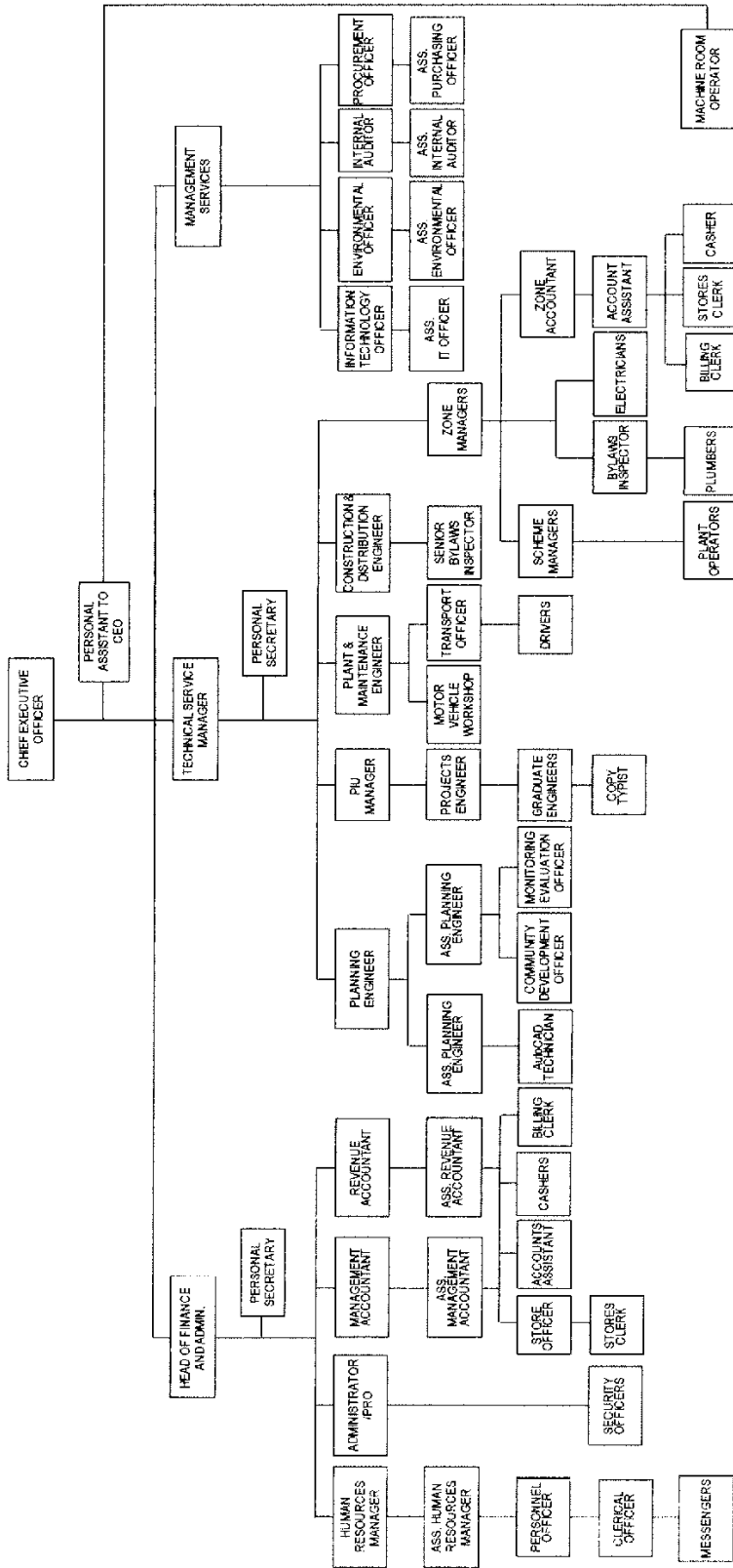
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**(2) The Organisational Structure of CRWB**



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## The Components of the Project

## (1) The Market Centre Project

Items	Mkanda Market Centre	Santhe Market Centre
Target Year	2020	- ditto -
Service Population	7,051	7,485
Planned Water Supply Amount	544 m <sup>3</sup> /day	712 m <sup>3</sup> /day
Water Source	Two of three boreholes constructed through the Preparatory Survey, which have the capacity 8.0 L/sec (= 691m <sup>3</sup> /day) each. One of two boreholes is normally standby.	Six boreholes constructed through the Preparatory Survey, which have the maximum capacity 8.26 L/sec (= 714 m <sup>3</sup> /day) in total.
Treatment Process	Water Quality has no problem as a source of water supply according to the water quality test for borehole water. Chlorination will be done by dosing hypo-chlorite (HTH).	- ditto -
Layout of Facilities	Intake Well: 2 boreholes Transmission Pipe: 0.4km Elevated Tank: 1 unit Control House: 1 building Management Office: 1 building Distribution Pipe: 11.3km Communal Tap: 6 sites	Intake Well: 6 boreholes Transmission Pipe: 2.5km Service Reservoir (Ground Type): 1 unit Control House: 1 building Management Office: 1 building Distribution Pipe: 16.1km Communal Tap: 8 sites
Operation and Maintenance Organisation	CRWB dispatches his staff and manage O & M of the facilities, and undertake the service.	CRWB dispatches his staff and manage O & M of the facilities, and undertake the service.

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(2) The Mchinji Project

Work Item	Target Boreholes	Outline of Work		Quantities	
Rehabilitation of Borehole	The boreholes which are able to be rehabilitated and/or extended its lifetime by replacing pump parts and dredging.	Dredging of Boreholes Replacement of the pump part or renewal of pump		280 sites	
Construction of Borehole	The irreparable boreholes	Substitute Borehole	Construction of boreholes and ancillary structures	Max. 15	Max.54 sites in total
	The borehole in the village which population has increased and their water usage is overload to the borehole (approx. 450 persons/borehole or more).	Additional Borehole		39	
Exclusion	<p>The following boreholes are excluded from the target sites after a careful evaluation.</p> <ul style="list-style-type: none"> <li>- Its surrounding groundwater is contaminated with Faecal Coliform or Faecal Streptococci: 2sites</li> <li>- The borehole abandoned and not desired to be rehabilitated by the users: 1 site</li> <li>- The boreholes located in the planed service area of water supply system for Mkanda Market Centre: 2sites</li> </ul>			5 sites	

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(3) Procurement of Equipment

No.	Items	Quantities
1	Truck with crane	1 unit
2	Air compressor	1 unit
3	Generator	1 unit
4	Electric winch	1 unit
5	Submersible motor pump (with standard accessories)	1 unit
6	Tools for development (for bailer and air lift)	1 unit
7	Portable water quality meter	1 lot
8	Supporting vehicle (pick-up truck single cabin)	1 unit
9	Tools for pumping test	1 lot

(4) Soft Component

Technical assistance for the implementation of CBM programme consists of sensitisation, education and training related to the self-reliant maintenance of the water supply facilities by local residents under the Mchinji Project.

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## Categorised Population in Target Year and Calculated Number of Connections

Area Classification	Type of Tap	Mkanda Market Centre				Santhe Market Centre					
		Service Population		Number of Connection (taps) *		Service Population		Number of Connection (taps) *			
		2008	2020	2008	2020	2008	2020	2008	2020		
Traditional dwelling area	Communal Tap	3,173	68%*2	4,795	0	24 (6)*3	1,631	30%*2	2,246	0	12 (8)*3
High density area	Yard Tap	746	16%	1,128	0	56	2,338	43%	3,218	0	161
Medium density area	Full Plumbing	653	14%	987	0	165	1,087	20%	1,497	0	250
Low density area	Full Plumbing	93	2%	141	0	24	381	7%	524	0	87
Total		4,666	100%	7,051	0	245	5,437	100%	7,485	0	498

\* Note 1: Each "Number of Connection" is calculated according to the Served Persons per Tap in the following table based upon the water supply criteria of the CRWB.

Table: Categorised Water Consumption (Domestic Water)

Category of Area	Type of Tap	Per Capita Consumption (litre/person/day)	Served Persons per Tap
Traditional Housing Area	Communal Tap	36	200
High Density Housing Area	Yard Tap	50	20
Medium Density Housing Area	Full Plumbing	80	6
Low Density Housing Area	Full Plumbing	125	6

\* Note 2: The proportion of population by housing type is based upon the following sources;

Mkanda Market Centre: Detailed Design for New Urban and Rural Gravity Fed Water Scheme Project, December 1998.

Santhe Market Centre: New Water Supply Schemes Feasibility Study Report, July 1998.

\* Note 3: ( ) – The number in the bracket means the number of communal taps that might be constructed by the Japanese side.

**List of Candidate Sites of the Project (The Mchinji Project)****Rehabilitation Plan:**

- A: Rehabilitation with air lifting and pump renewal,  
 B: Construction of substitute borehole unless successful trial rehabilitation,  
 C: Construction of substitute borehole,  
 D: Construction of additional borehole against increased population,  
 E: Exclusion from rehabilitation plan

S/N	Borehole No.	Village Name	Plan		S/N	Borehole No.	Village Name	Plan	
1	1-001	Chidambo	C	D	41	1-041	Kunjawa	A	
2	1-002	Chiute	A		42	1-042	Msukwala	A	
3	1-003	Tsamphale	A		43	1-043	Mtukwa	A	
4	1-004	Chamveka	A	D	44	1-044	Mtukwa	A	
5	1-005	Maliwane	A	D	45	1-045	Mwenyeanthu	A	
6	1-006	Maliwane	A		46	1-046	Dambo	A	
7	1-007	Mionjeni	A	D	47	1-047	Mwanzika	A	
8	1-008	Zunguze	A		48	1-048	Chiganizo	A	
9	1-009	Mkangeni	A		49	1-049	Chimkoka	A	
10	1-010	Maganga	A		50	1-050	Gambatula	A	
11	1-011	Chiwaula	A		51	1-051	Misale T. C.	A	
12	1-012	Chabwela	A		52	1-052	John	A	
13	1-013	Mbeza	A	D	53	1-053	Mselela	A	
14	1-014	Chaonongeka	A		54	1-054	Mselela	A	
15	1-015	Mgwende	A		55	1-055	Ngalule	A	
16	1-016	MWandawala	A	D	56	1-056	Masitala	A	
17	1-017	Kadzakumanja	A		57	1-057	Mzingo	A	
18	1-018	Milonga	A		58	1-058	Nathyola	A	
19	1-019	Mzikaota II	A		59	1-059	Kachere	A	
20	1-020	Mkhala	A	D	60	1-060	Simoko	A	
21	1-021	Chibonyola(B)	A		61	1-061	Bua T-C	A	
22	1-022	Mwanayumo	A		62	1-062	Nkhuzu	A	
23	1-023	Mphindu	A		63	1-063	Kazule	A	
24	1-024	Chibonyola (A)	A		64	1-064	Kaole II	A	
25	1-025	Chibonyola (A)	A		65	1-065	Kaole I	A	
26	1-026	Thukuta	A		66	1-066	Kamphemwu	A	
27	1-027	Kapita	A		67	1-067	Kamphemwu	C	
28	1-028	Maganga	A	D	68	1-068	Katsenga A	A	
29	1-029	Alfred	A		69	1-069	Mlamba	A	D
30	1-030	Pembere	A		70	1-070	Nyongani	A	
31	1-031	Mtsiliza	A		71	1-071	Mtonya	A	
32	1-032	Mkonda	A		72	1-072	Walirangi	A	
33	1-033	Katsenga	A	D	73	1-073	Likungwi	A	
34	1-034	Luka-Luciano	A		74	1-074	Mnamizana	C	
35	1-035	Chimeteka	A		75	1-075	Kankhande	A	
36	1-036	Chaluma, Kalombo	A		76	1-076	Kankhande	A	
37	1-037	Mkwezendumba	A		77	1-077	Mkusa	A	
38	1-038	Galawe	A		78	1-078	Kajiwa	A	
39	1-039	Chikaza	A	D	79	1-079	Mnamizana	A	
40	1-040	Kunjawa	A		80	1-080	Kanyindula	A	

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S/N	Borehole No.	Village Name	Plan		S/N	Borehole No.	Village Name	Plan	
81	2-001	Kambard-zuwa	A		126	2-046	Kadzombe	A	
82	2-002	Pinda	A	D	127	2-047	Chimbala-me	A	
83	2-003	Lupenga-Ndulama	A		128	2-048	Chiyese-lana	A	
84	2-004	Chikuta	A		129	2-049	Chamani	A	
85	2-005	Chikuta	A		130	2-050	Chamani	A	
86	2-006	Kamgwanga	A		131	2-051	Kabuthu	A	
87	2-007	Nkhumba	A		132	2-052	Kabuthu-Chifuca	A	
88	2-008	Makanda	A		133	2-053	Mphonde	A	
89	2-009	Makanda	A		134	2-054	Nkhompho-la	A	
90	2-010	Wisikoti	A		135	2-055	Manyengo	A	
91	2-011	Manthalu	A		136	2-056	Kamilika	A	
92	2-012	Manthalu	C		137	2-057	Mjolomobe	A	
93	2-013	Chamosola	C		138	2-058	Mmanja	B	
94	2-014	Kafunsa-Chalimba	A		139	2-059	Gomani 1	A	D
95	2-015	Mwerera	A		140	2-060	Jusi	A	
96	2-016	Kamwaza	A		141	2-061	Mailosi	A	
97	2-017	Papa	A		142	2-062	Mamad-zongo	A	
98	2-018	Guwende	A		143	2-063	Nwandawa-ra	A	
99	2-019	Kamilika	A		144	2-064	Kachokam-komero	A	
100	2-020	Tankhule	A		145	2-065	Mkumba	A	
101	2-021	Welesani	A		146	2-066	Jamu	A	
102	2-022	Temanim-wendo	B		147	2-067	Chimpanba	A	
103	2-023	Temanim-wendo	A		148	2-068	Chiwoko	A	
104	2-024	Nkhono	A		149	2-069	Chiwoko	A	
105	2-025	Geni	A		150	2-070	Mazawa	A	D
106	2-026	Sinunbe	A		151	2-071	Mbachunda	A	
107	2-027	Sinunbe	A		152	2-072	Mbachundu	A	
108	2-028	Chikwan-bani	A		153	2-073	Chintanda	B	D
109	2-029	Mweso	A		154	2-074	Kachikon-do	A	D
110	2-030	Njiwa	A		155	2-075	Chiphala	C	
111	2-031	Chitumba	C		156	2-076	Mhawira	A	
112	2-032	Chinyata	A		157	2-077	Dzidza	A	
113	2-033	Lanadi	A		158	2-078	Chalema	A	
114	2-034	Lumelo	A		159	2-079	Kalilang-we	A	
115	2-035	Lumelo	A		160	2-080	Msemwe	A	D
116	2-036	Silombe	A		161	2-081	Msemwe	A	
117	2-037	Silombe	A		162	2-082	Mando	A	
118	2-038	Chinyata	A		163	2-083	Gereta	A	
119	2-039	Nkokeza	A		164	2-084	Matimba	A	D
120	2-040	Mkonkha	A		165	2-085	Matimba	A	
121	2-041	Mkonkha T.C.	A		166	2-086	Jenjewa	A	
122	2-042	Mabvere	C		167	2-087	Kanjeleng	A	
123	2-043	Chinkota	A		168	2-088	Kamndaya	A	
124	2-044	Mumba	A		169	2-089	Mzati	A	
125	2-045	Kadzombe	A		170	2-090	Zefalino	A	

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S/N	Borehole No.	Village Name	Plan		S/N	Borehole No.	Village Name	Plan	
171	2-091	Chipha-la A	A		216	3-026	Mkangala	A	
172	2-092	Chamveka	A		217	3-027	Mng'ona	A	
173	2-093	Kamwendo T. C.	A		218	3-028	Lezani	A	
174	2-094	Kamwendo T. C.	A		219	3-029	Goseni	A	
175	2-095	Chidewa	A		220	3-030	Timoti	A	
176	2-096	Chikomani	A		221	3-031	Sigereta	A	
177	2-097	Mdawa	A		222	3-032	Chisamba	A	
178	2-098	Kwachau-name	B		223	3-033	Maole	A	
179	2-099	Mando	A		224	3-034	Saidi	A	D
180	2-100	Chikoyi-Jombo	A		225	3-035	Mikuwa ii	A	
181	2-101	Chimiteka	A		226	3-036	Sundwe	A	
182	2-102	Chelamba-la	A		227	3-037	Mphomwe	A	D
183	2-103	Chiwenkha	A	D	228	3-038	Laisi	A	
184	2-104	Mphanga	A		229	3-039	Kabungwe-Drawo	A	
185	2-105	Duirira	A		230	3-040	Machakulo	A	
186	2-106	Mphanga	A		231	3-041	Kapiri	A	
187	2-107	Butawo	A		232	3-042	Mithema T.C.	A	
188	2-108	Mndunga	A		233	3-043	Chalunda T.C.	E	
189	2-109	Kaligwen-je	A		234	3-044	Kasanda	A	D
190	2-110	Kolona	A		235	3-045	Mielankhope	A	
191	3-001	Kachaje	A		236	3-046	Katonda Sch	A	
192	3-002	Mchambo-Gunda	A		237	3-047	Kamera	A	
193	3-003	Geresono	A		238	3-048	Chisenga	A	
194	3-004	Mchambo	A	D	239	3-049	Kamphanbale	A	
195	3-005	Chikoloka	A		240	3-050	Kabvuta	A	
196	3-006	Tika	A		241	3-051	Nkhunmbu	A	
197	3-007	Chimwere	A		242	3-052	Mphonda-Masinja	A	
198	3-008	Kathyuka	A		243	3-053	Kampando	A	
199	3-009	Chiwete	A		244	3-054	Marten	A	
200	3-010	Changata	A		245	3-055	Kanzimbi	A	D
201	3-011	Langwani	A		246	3-056	Gandali	A	
202	3-012	Sinosi	A		247	3-057	Chinkolokota	A	
203	3-013	Kanyimbo	A		248	3-058	Elesani	A	
204	3-014	Machilika	A		249	3-059	Kapiri Hosp. Miss.	E	D
205	3-015	Chikwekwe	A		250	3-060	Japana	A	
206	3-016	Kanyenda	C	D	251	3-061	Gong' ontha	A	
207	3-017	Mberere	A		252	3-062	Kavunguti School	A	D
208	3-018	Mkundi T.C.	C	D	253	3-063	Kachere	A	
209	3-019	Kalombo Sch	A		254	3-064	Kakunga	A	
210	3-020	Tongole	A		255	3-065	Kamenya	A	D
211	3-021	Kalinde	A		256	3-066	Nthema T.C.	A	D
212	3-022	Jasi	A		257	3-067	Lubani	A	
213	3-023	Chipuntiko-Chimutu	A		258	3-068	Chinkhali	A	
214	3-024	Kadiso	A		259	3-069	Chang' amba	A	
215	3-025	Makumbi	A		260	3-070	Kuthethe	A	D

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S/N	Borehole No.	Village Name	Plan	
261	3-071	Dina	A	
262	3-072	Thengo	A	
263	3-073	Lameki	A	D
264	3-074	Kaledza	A	D
265	3-075	Malungo	A	
266	3-076	Mphunda	A	D
267	3-077	Kadewe-Mbewa	A	
268	3-078	Kangulu	A	D
269	3-079	Mkanda	E	
270	3-080	Mkanda	E	
271	3-081	Mazombwe	A	
272	3-082	Chimkolokota	A	D
273	3-083	Masiwa	A	D
274	3-084	kambandekha	A	
275	3-085	Jimu	A	
276	3-086	Lupiya	A	
277	3-087	Chisauka	A	
278	3-088	Kawere	A	
279	3-089	Msanda	A	
280	3-090	Zandana	C	
281	3-091	Khwere	A	
282	3-092	Khwere T.C.	A	D
283	3-093	Mkumbi	A	
284	3-094	Kambuwe	A	
285	3-095	Kambuwe	A	
286	3-096	Kankhwende	A	
287	3-097	Mndaka	A	
288	3-098	Jowelo	A	
289	3-099	Mtulira	A	D
290	3-100	Kalonga	A	
291	3-101	Diti	A	
292	3-102	Chitonde	E	
293	3-103	Kalulu Sch	A	
294	3-104	Kalulu T.C.	A	
295	3-105	Katsompho	A	
296	3-106	Msalaryama	A	
297	3-107	Mchonkwe	A	
298	3-108	Chiti	A	
299	3-109	Chiti	A	
300	3-110	Mphako	A	

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## ***5. Soft Component (Technical Assistance) Plan***



# The Project for Rehabilitation of Boreholes In Mchinji

## Soft Component Plan

November 2011

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Attachment-1 Location of Target Borehole by Type of Planed Rehabilitation Work

Attachment-2 Borehole Rehabilitation Plan and CBM Training Course

## 1. Background for Planning Soft Component

### 1.1 Outline of the Project under Japan's Grant Aid

The Project aims at providing sustainable safe water to the Project Area and consists of following two sub-projects;

- 1) Construction of piped water supply facilities for Mkanda in Mchinji District and Santhe in Kasungu District
- 2) Rehabilitation of boreholes in Mchinji including construction of substitute and additional boreholes

This soft component plan is for the second sub-project.

### 1.2 Historical background on O & M of rural water supply at community level

The Malawian government has adapted the VLOM (Village Level Operation and Maintenance) concept in 1980's, and has started to standardise the hand pump as Afridev Pump, which was developed on the VLOM concept, for the boreholes in rural area in the middle of 1990's. In 1995, the government also established the Community Based Management (CBM) Programme in rural water supplies with the Guidelines for Introduction of CBM of Groundwater Rural Water Supplies in Malawi, which aimed at promoting for rural communities to operate and maintain boreholes by community based organisations, including management of maintenance fund and hygienic water usage.

The CBM programme, introducing a participatory approach, formulated training manuals for extension workers as well as community people under the National Water Development Programme by the World Bank. In this manual, a team of extension worker is designated to be consisted of a HSA<sup>1</sup> of Ministry of Health, a CDA<sup>2</sup> of Ministry of Community Development and a WMA<sup>3</sup> of Ministry of Agriculture, Irrigation & Water Development. The CBM training has enhanced community people's participation from the planning phase of water supply facility with budgetary contribution (by provision of basic materials and labours), and has promoted ownership mind while establishing Water Point Committee (WPC) for each water point facility. The training set the goal for WPC to contract with replacing spare parts and basic repair of pumps. In addition to establishment of WPC, Village Health Committee (VHCs) which has been formed in a village by the Ministry of Health was re-organised as a Village Health and Water Committee (VHWC) which has additional rolls of planning water supply and promoting hygienic water use and sanitation facilities in the village. And a representative of WPC shall be a member of VHWC.

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<sup>1</sup> HSA: Health Surveillance Assistant

<sup>2</sup> CDA: Community Development Assistant

<sup>3</sup> WMA: Water Monitoring Assistant

In parallel with promotion of participatory approach, Regional Water Development Offices and District Water Offices of MoAIWD<sup>4</sup> have kept their own direct involvement for repairs in the case of major breakdown, which are obviously beyond community people's technical capacity. However, along with increase of boreholes, the Ministry has now faced difficulties to deal with all the boreholes in the same manner as before they did with free of charge with the limited number of technical staffs and budget. The difficulties sometimes resulted in boreholes which have been left as out-of-order for a long time.

Meanwhile, managerial responsibility of social infrastructure including water supply has transferred from the central government to local (district) government under the decentralisation policy since 2001. Although the transfer has gradually proceeded, due to limitation of the number of staffs who have technical experiences of water supply as well as budget in district level, the pace of devolution has been slower than initially expected.

For a national development project for social infrastructure including water supply, a district council forms a District Coordination Team, DCT, by team members of related water, health and community development sections with a Director of Planning and Development, DPD or Director of Public Works, DPW as a head of DCT. This district staffs are currently transferred in most cases from the line ministries, such as Ministry of Local Government (for DPD), Ministry of Public Works and Transportation (for DPW), MoH<sup>5</sup>, MoGCCD<sup>6</sup>, and MoAIWD.

Recurrent budget of district is disbursed from Ministry of Local government. The budget on water supply sector is severely limited in general. In the case of Mchinji District, the Water office receives about MK. 55,000 (equivalent to USD340) for 3 staffs, which affords only to run the office and repair for motorbikes, indicating that the office cannot conduct monitoring activities fully with sufficient fuel and daily allowance.

From 2007, UNICEF appointed districts directly as implementing agencies for their Water Supply and Hygiene (WASH) programme.

### 1.3 Condition of operation and maintenance of Boreholes in the Project Area

#### (1) Present condition of O & M of Boreholes in Mchinji District

Responding to the request from the Malawian government to rehabilitate boreholes, the Project sets the target onto 300 boreholes and communities located therein, which were constructed under the Japan's Grant Aid assistance from 1992 to 1994.

At the time of implementation period of the grant aid project, the CBM programme was just started to introduce the communities as one of trials to see its effectiveness. A NGO, Save the

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<sup>4</sup> MoAIWD: Ministry of Agriculture, Irrigation and Water Development

<sup>5</sup> MoH: Ministry of Health

<sup>6</sup> Ministry of Gender, Child and Community Development



Children Fund (UK), conducted the programme, and formulated WPC as well as provided technical trainings on operation and maintenance of facility.

However, most of the communities had no chances to receive further systematic trainings on borehole operation and maintenance since the programme was conducted by the NGO. They have been operating their boreholes somehow with trials and errors with a key player, WPC.

As to technical aspect, there are now a plenty of examples that the technical capacity of pump care takers has been lower in the courses of ;

- Reducing WPC members due to death or move out, or disappearance of WPC
- Not to make proper technical transfer within WPC, or no transfers made.
- Deviated way of maintenance from the original instruction of the CBM. Money collection, for example, is implemented on necessary basis, not regular basis as monthly or seasonal collection as the CBM instructed so.

(\*It is understandable that the way of money collection has to be reflected with their culture and economic situation of community, but, if WPC could have established O & M plan with monetary forecasts properly in advance, communities would avoid breakdown of pumps in many cases. )

From these present situations on WPC, who had no chances to refresh their skills and knowledge on O & M of boreholes for more than 10 years, it is quite important to provide trainings for WPC. The training can reinforce the sustainability of the targeted boreholes which would be rehabilitated/newly constructed in the Project.

## (2) Change of O & M System on Afridev Handpump

Malawi Government has started to apply the O & M system for hand pumps based on VL0M concept as a pioneer, though the following changes are appeared in a past decade.

Afridev Pump was developed aiming at enabling long term operation only with the periodical easy maintenance and the replacement of consumables at village level. On the other hand, the government diffused the Afridev Pump as a standardised pump type under the principle that the government engineers would repair the major breakdowns, such as leaking from rising main pipe which is irreparable at village level. This was a two tier maintenance system which consisted of the user inhabitants and the government, and this system was different from a three tier system to be generally applied to non-VL0M pump in other countries, such as India Mark II needing the private repair craftsmen who undertakes mainly repair. However, as Afridev Pump spread rapidly, the capacity of the government for repair became insufficient against the demands, and the necessity of the maintenance system of three tier structure came to be recognized for Afridev Pump also because it was difficult to train the pump care-takers to repair major breakdowns in village level.

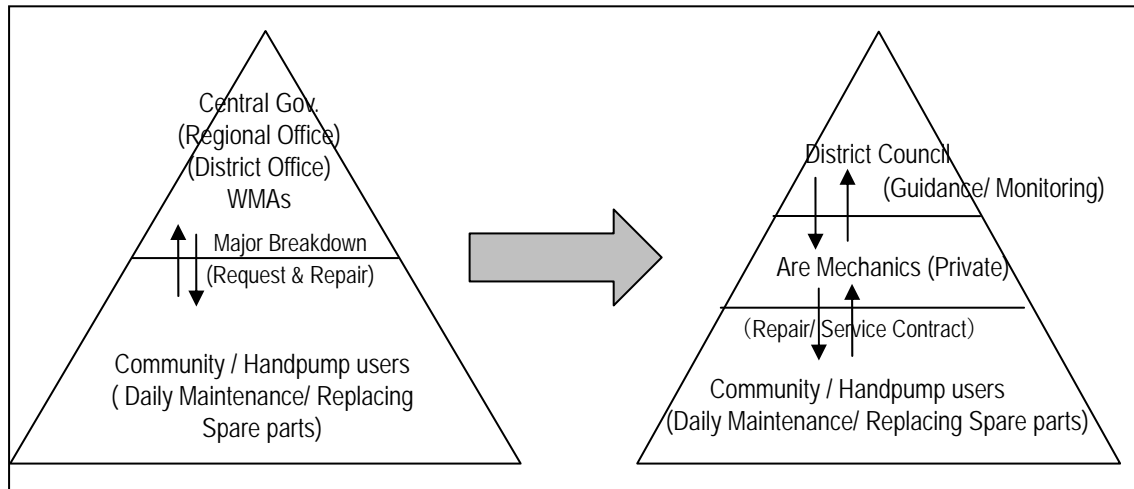


Figure A5-1 Change of O & M System in Mchinji District

### (3) Assistancess for O & M System by Other Agencies

Mchinji district has now 19 Area Mechanics (AMs), who were trained as local mechanics for borehole maintenance and repair under the support of UNICEF in 2007. InterAide, the NGO working for Maintenance System Project in Central Region, has been supporting the AMs from 2008 through the following activities;

- Provision of a bicycle, special Afridev tools, a plastic file containing pens and Afridev Document, such as the Installation and Maintenance Manual for Afridev Pump in a short version, to each AM.
- Provision of a map specifying their area with location of water points.
- Provision of technical support through the Maintenance Assistant including advertisement for them.
- Setting up AM's duties; covering their area regularly to offer their services, attending monthly meeting with the Maintenance Assistant and undertaking a minimum number of repair or maintenance contract per year.

### (4) Necessity of Improvement of O& M

It is important that user inhabitants perform regular maintenance properly, and, even in the area where this kind of technical supporting system for such maintenance / repair is established in private sector, the sensitisation to the pump users is also required to utilise the supporting system effectively.

It is, however, also necessary to point out that the top tier, governmental technical support, is still facing challenges of limited manpower and budget. In order for all the three tiers to function fully, reinforcement of manpower, and improvement of transportation modes with

corresponding budget is required.

#### 1.4 Necessity of Soft Component for the Project

It is important to reinforce the capacity of Water Point Committee of boreholes which will be rehabilitated or constructed under this Project in order to enhance the sustainability of the targeted boreholes. And it is necessary to support the activities carried out by the Government on the following points;

- To apply the existing CBM programme, this has been developed mainly for newly constructed boreholes, to the activities for the communities which will receive a rehabilitation project.
- To plan of the sensitising activities that makes WPCs to utilise the Area Mechanics who are working in the area.
- To develop the adequate sensitising activities upon the various level of WPC's capacity and to train the extension workers for these activities.
- To evaluate the performance of activities and to improve it.
- To coordinate with the JICA's Technical Cooperation Project<sup>7</sup>.
- To evaluate the capacity of WPCs to be trained

#### 2. Goal of Soft component

Capacity of WPC on operation and maintenance of boreholes, which are either rehabilitated or newly constructed by the Project, is strengthened.

#### 3. Expected Outputs of the Soft component

##### Output 1.

Capacity of WPC on operation and maintenance of rehabilitated boreholes is strengthened.

##### Output 2.

Capacity of newly established WPC for constructed boreholes is enlightened as well as strengthened regarding its operation and maintenance.

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<sup>7</sup> Technical Cooperation Project "Enhancement of Operation and Maintenance for Rural Water Supply" has started from July 2011. The Project, which implementing agency is Ministry of Agriculture, Irrigation and Water Development, is aiming at reinforcement of O & M for rural water supply through the practical trial in Mchinji District.

#### 4. Measures to confirm the achievement of outputs

Output	Measures to confirm
1. Capacity of WPC on operation and maintenance of rehabilitated boreholes is strengthened	1. WPC sets O&M plan for borehole 2. Documentation related to the management of WPC (such as minutes of meetings and records of water charge collection) is well kept. 3. Water charge for maintenance and operation of water supply facility is properly collected. 4. WPC has information on the contact address or mobile numbers of WMA <sup>8</sup> and Area Mechanics <sup>9</sup> . * all the measures will be checked in the self evaluation Workshop.
2. Capacity of newly established WPC for constructed boreholes is enlightened as well as strengthened regarding its operation and maintenance	1. The 1 <sup>st</sup> meeting of WPC is held by the residents themselves. 2. WPC sets O&M plan for borehole 3. Documentation related to the management of WPC (such as minutes of meetings and records of water charge collection) is well kept. 4. Water charge for maintenance and operation of water supply facility is properly collected. 5. WPC has information on the contact address or mobile numbers of WMA and area mechanics. * all the measures will be checked in the self evaluation Workshop

#### 5. Soft Component Activities (Input Plan)

##### 5.1 Contents of enlightenment Activity

Activities of the soft component are to provide trainings for WPC on the basis of CBM programme. Since the capacity of WPCs is at different level regarding operation and maintenance of the targeted boreholes, it is necessary to provide several varieties of the trainings in order to meet their capacity level. In this line, all the targeted WPC are categorized as shown in the Table 5-1.

<sup>8</sup> Water Monitoring Assistant (refer to 1.2)

<sup>9</sup> Area Mechanic is a local technician for repair and maintenance of hand pumps appointed from private sector (refer to 1.3 (2) and (3))

The categorisation was made as follows: if a borehole is fallen onto either one of three cases: 1) not to function continuously, 2) to function but less water volume, 3) not to have WPC (=their maintenance situation is improper), they are evaluated as “lower capacity” group and need to receive “Full course” training (83 WPCs will be targeted). Also, if boreholes are 1) to function continuously, or 2) to have experiences of successful repair, they are categorised as “higher capacity group” and their training courses are “Advanced course” training (199 WPC will be targeted).

Moreover, WPC whose boreholes are blocked by stones or others and newly established WPC need “Full course” training as well (20 WPC).

Table A5-1 Grouping of Trainings for WPC

Output	Targeted WPC	Current situation (BH: Borehole)	Group characteristics	Course	Number of WPC
Output 1 : WPCs who will receive rehabilitated borehole.	Existing WPC (includes re-organised WPC for defunct one)	1) BH has not been functioning long time, 2) BH is functioning but less water volume 3) WPC doesn't exist (substitute borehole will be constructed for irreparable one, and the WPCs will be targeted in Output 2)	> Low capacity at present. > Necessary to receive a series of trainings from the basic matters. (the boreholes which are not functioning or have less water volume include ones which are functioning after the running repairs by the Team)	Full course  Basic and Advanced contents	83
		1) BH is functioning constantly 2) BH has been repaired by WPC	> Moderate or high level capacity > Necessary to receive trainings for secured sustainable use of boreholes	Advanced course  Advanced contents only	199
Output 2: WPCs who will receive newly constructed borehole	Existing WPC	1) BH is irreparable due to blocking with stones etc. A substitute BH will be constructed	> Low capacity at present. > Necessary to receive a series of trainings from the basic matters.	Full course Basic and Advanced contents	15
	New WPC For new BH	1) Existing BH is overloaded with increased population. Additional BH will be constructed	> Necessary to receive a series of trainings from the basic matters, as establishment of new WPC		39

\* One borehole which abandoned by users and two boreholes in the water supply area for Market Centre Project are excluded from this soft component plan.

Contents of training are shown in Table 5-2. Reflecting the uniqueness of the training as “refresh” training, it is necessary to determine what points would be stressed more among a variety of CBM contents, although the primary points are already confirmed. The discussion is held in the occasion of TOT training for extension workers.

Table A5-2 Contents of Activities

Item	Contents (on the basis of CBM programme)	Total period (for each)	Target
TOT Training	Activity 1 & 2: ToT Training for Extension Workers	Prep. 2 days Training 3 days	E.W. 18 persons
Announcement	Activity 3: Courtesy to T.A., Announcement to all communities, Understanding on outline of villages and topics	13 days	All villages (276)
Full course Training to new WPCs	Activity 4: Establishment of WPC (mobilisation): 1 day Activity 5: Content “Planning Phase”: 1 day Activity 6: Content “O & M Phase-Refresh”: 1.5 days Activity 7: Community Work Shop : 0.5 day (same occasion of Activity 6) Activity 8: Technical Training for Care Takers <sup>10</sup> : 1 day	5 days/ WPC	New WPCs (39)
Full course Training to existing WPC	As same as Activities 5 to 8 above (*)	4 days/ WPC	Existing WPC (98)
Advanced course to existing WPC	Activity 9: Content “O & M Phase-Refresh”: 1 day	1 day / WPC	Existing WPC (199)
Common contents	Activity 10: Self evaluation Work Shop : 1 day	1 day / WPC	336 WPCs

\* In case that re-organisation is required, mobilisation of WPC will be included in Activities 3 and 5.

Soft component activities include training for extension workers as TOT in order for all of them to be at the same understanding and knowledge in the same direction before starting activities. The expected training targets, extension workers supposedly from Mchinji, Lilongwe, Dowa and Kasungu, have recently accumulated experiences to conduct CBM programmes. Therefore, it is regarded they have already had a certain level of capacity to conduct soft component activities.

Since Mchinji has only 3 Water Monitoring Assistants (WMA), additional manpower inputs on WMA are required (as mentioned before, expectedly from Lilongwe, Kasungu, and Dowa).

<sup>10</sup> Pump Care Takers: a part of WPC members in charge of routine maintenance work

## 5.2 Activities of Japanese Consultant

The Japanese consultant will be in charge of following services under this Soft Component;

- Planning and supervision of Soft Component
- Technical support to Training of Trainers (ToT: Activity 1&2) and to compiling text materials
- Monitoring, advising, guidance and feedback to CBM activities
- Communication to MoAIWD, related NGO and Japanese institutions

The actual activities are planned as in Table 5-3.

Table A5-3 Activities of Japanese Consultant

Dispatch	Timing	Days of dispatch	Contents of Activity	Duration
1 st	Beginning of Detailed Design Study	45 days	transport	2 days
			Preparation (outline survey: 6 days, confirmation of equipment: 1 day) Planning of implementation of entire Soft Component (1 day) Courtesy call and explanation to T.A.(1day)	10 days
			Supporting to planning CBM activity (2 days)	3 days
			Planning ToT Contents and compiling text materials (2 days), Kick-off meeting, advising to ToT (3 days)	7 days
			Accompanying and advising to announcement to villages and mobilisation	13 days
			Monitoring WPC mobilisation (3 days at beginning), preparing report (1day)	5 days
			Reporting to MoAIWD, JICA office	1 day
			transport	2 days
			2 nd	Beginning of WPC Training
Accompanying to WPC training and supervision (about for 20 WPCs)	20 days			
Discussion on improvement and future activity, reporting to related organisation	6 days			
transport	2 days			
3 rd	Closing activities	45	transport	2 days
			Monitoring WPC self evaluation workshops (attending to about 40 WPCs)	27 days
			Preparation of compression report on the basis of WPC training report, records of meeting at work shop. Reporting	14 days
			transport	2 days
Total		120		

### 5.3 Attentions for Smooth Implementation

There are several points that Japanese side pay attention for smooth implementation:

#### (1) Logistics aspect

- Mchinji and other collaborative districts may keep on implementing other projects such as WASH project and AfDB project. It is necessary to manage the allocation of extension workers with other projects' schedule.
- Since motorbikes are insufficient for extension workers, it is necessary to procure additional bikes or to secure them by rental system.
- Efficiency of implementation of training has to be considered all the time because the programme requires many places to visit during the limited period. Advanced course in particular has only one day at each community; therefore, it is important to ask communities to prepare necessary arrangements such as to make village agreement document prior to implementation of the training. For this purpose, the occasions for extension workers to visit communities in advance during the “prior notice” period should be fully utilized.

#### (2) Contents aspect

- It is necessary to enhance supplementary effects with JICA's technical cooperation project under planning stage as of January 2011, and to avoid duplicated activities.
- Training contents should include activities for WPC members to recollect the actions and challenges faced for borehole management since WPC established. Lessons acquired in the activities must be fully utilized for the future.
- The trainings should include instructions on hygiene contents besides with the original of CBM manual as follows: 1) removal or move of lavatories located close to a borehole, 2) construction of fence for livestock, 3) disinfection by chlorine on regular basis, and 4) promotion of boiling water.

#### (3) Contents aspect-Reflection of lessons learnt

Soft component activities for this time pay attention to utilize lessons from similar projects such as “Lilongwe West Ground Water Development Project”.

According to the hearing survey from WMA, it is necessary for not only pump caretakers but also other WPC members to have basic knowledge on borehole maintenance because some of WPC frequently replaces members, creating lack of technical assets within WPC members.

In addition, WPC has suffered from difficulties to gain community people's understandings, money collection matter, in particular. For this purpose, village level meeting is necessary and will be effective opportunities to promote their awareness and understanding.



Table A5-4 Recognition of WPC and community people

	Challenges	Possible counteraction / Reflection to soft component activities
Money collection / management	<p>(WPC opinions)</p> <ul style="list-style-type: none"> <li>• Difficult to collect money</li> <li>• Difficult to reserve fund systematically</li> <li>• Difficult to forecast necessary costs properly for maintenance and repair</li> </ul> <p>(Community people opinions)</p> <ul style="list-style-type: none"> <li>• Unclear about usage of reserve fund</li> </ul>	<ul style="list-style-type: none"> <li>• (Estimation of necessary costs for maintenance and repair must have been shown in CBM training.)</li> <li>• The point is: necessary to put information on notice board, and to let community people know as well.</li> <li>• Village level meeting should be included in training contents to promote community people's awareness and to avoid doubts on reserve fund.</li> </ul>
Maintenance techniques	<p>(WPC opinions)</p> <ul style="list-style-type: none"> <li>• Cannot deal with major breakdown</li> <li>• Caretakers do not maintenance activities regularly</li> <li>• Not know contact persons to ask for repair (not know area mechanics)</li> <li>• Hesitates to utilize the reserve fund before major breakdown (cannot judge when to use the fund)</li> </ul>	<ul style="list-style-type: none"> <li>• Training needs to provide contact lists of key persons including area mechanics, WMA and others (In addition, training needs to consider promoting to make maintenance contracts between area mechanics and WPC).</li> <li>• Actual actions made for breakdown before should be recollected and shared among WPC and others as lessons.</li> </ul>

#### 5.4 Plan of manpower inputs

The following Table 5-5 shows manpower inputs planned for soft component activities.

Table A5-5 Manpower Inputs for Soft Component

Activity	Manpower Inputs	Input (14 Months)	days
	Japanese Consultant (Spotted Supervision)		
	Supervision for activity (for Activity 0 to 3)	1 p*45 days	45
	Supervision for activity (for Activity 6 to 8)	1 p*30 days	30
	Supervision for activity (for Activity 8 to 10)	1 p*45 days	45
	Total for Japanese		120
	Implementation by Malawi side		
0	Preparatory confirmation (Condition of villages and boreholes)		
	Extension Workers 1 p (WMA)	1 p * 10 days	10
1	Kick-off meeting	Implemented with (2)	0
	6 p (DPD, DWO, DCDO*, DEHO*, Regional water office, MoAIWD)	ToT refresh Training	
2	ToT for refresh training: 3 days + 2 days for preparation		
	Trainer 6 p (DPD, DWO, DCDO, DEHO, Regional water office, MoAIWD)	5 p*5 days	25
	(DPD: 2 days + 1 day for preparation)	1 p*3 days	3
	Trainee: Extension Workers 18 p (3 p/ team *6 teams = 18 p)	18 p * 3 days	54
	Supporting Staff (accountant, driver 2p, assistant 2) 5 p in total	5 p * 5 days	25
3	Announcement to targeted villages and its preparation		
	Extension Worker WMA 6 p (300 villages/ 6 WMAs)	6 p*13 days	78
4	Establishment of WPC: 1 day (mobilization) + 1 day (preparation)		
	Extension Worker 6 p (preparation) : one village/ one EW	39WPC*1 p*1 day	39
	Extension worker 18 p (mobilization) (3 p/ team * 6 teams =18p)	39WPC*3 p*1 day	117
5	“Planning Phase”: 1 day		
	Extension Worker 18 p (3 p/ team * 6 teams =18p)	137WPC*3 p*1 day	411
6	“O&M Phase-refresh training” 1.5 days		
	Extension Worker 18 p (3 p/ team * 6 teams =18 p)	137WPC*3 p*1.5 day	617
7	Village Work Shop: 0.5 day		
	Extension Worker 18 p (3 p/ team * 6 teams =18 p)	137WPC*3 p*0.5 days	206
8	Technical Training for Pump Care Takers		
	Jointly 3 WPCs for one training course(138/ 3 = 46 Group)		
	Extension Worker (WMA) 6 p (46 groups/ 6 WMA)	46group*1 p*1 day	46
9	“O&M Phase-Refresh Training” : 1 day		
	Extension Worker 18 p (3 p/ team * 6 teams =18p)	199WPC*3 p*1 day	603
10	Self Evaluation Work Shop : 1 day		
	Extension Worker 18 p (3 p/ team * 6 teams =18 p)	336WPC*3 p*1 day	1,008
11	Supervision for entire activities		
	Regional water office / MoAIWD (2 days a month)	1 p*2 days*14 months	28
	DWO (6 days a month)	1 p*6 days*14 months	84
	Accountant (4 days a month)	1 p*4 days*14 months	56
	Total for Malawi Side (person-day)		3,411
	Total for Malawi side (man-month)		113.7

\* DCDO : District Community Development Officer,

\* DEHO : District Environmental Health Officer

## 6. Measures to secure necessary resources for Soft Component Implementation (Manpower input)

Soft component activities are implemented by Malawian government staffs.

Extension workers, WMA, CDA and HSA of Mchinji, conduct a series of training courses for WPC as trainers. As for WMA, since there are only 2 WMA in Mchinji, it is necessary to allocate additional manpower of WMA from other districts.

MoAIWD also actively participates in soft component as supervisor. The ministry provides its knowledge and experiences as well as confirms if the soft component activities are properly in line with the government's direction.

Considering the Malawian government under promotion of decentralization, supervising role at district level is played by District water officer of Mchinji for this soft component.

### (Material input)

Motorbike is the most suitable transportation mode for extension workers in consideration of road condition at the targeted sites. Soft component utilizes 2 existing motorbikes of Mchinji water office, though, it is necessary to add another 5 motorbikes and 6 bicycles for all the extension workers' team so as to conduct the activities. The assumption of the figure is as follows: 19 extension workers composed of WMA, CDA and HSA are involved in the activities. All of them form one team by 3 members as each category, resulting in 6 teams. In addition, one WMA in charge of caretaker training as main task is additionally assigned. WMA and CDA ride one motorbike in tandem, meanwhile HSA goes the site by bicycle because HSA is normally distributed rural areas within distance of bicycle riding. Therefore, soft component requires another 5 motorbikes for WMA and CDA, and 6 bicycles for HSA.–

## 7. Implementation schedule of soft component

Among targeted locations, soft component activities place priority onto both types of the WPCs, who receive new borehole and whose capacity of maintenance and operation of borehole is low. Both types are the targets of the Full course training. Before actual construction starts, a series of works on establishment of new WPC and "Planning Phase" content of the Full course training needs to be completed. Once actual construction starts, "O&M phase and refresh" contents and Village workshops are to carry out in the targeted WPC in parallel with rehabilitation and construction works of boreholes.

In addition, self evaluation workshop, which is one of the essentially wrap-up events of soft component, need to start in each WPC in accordance with the progress of the trainings,

assuming about 5 months prior to completion of the Project. Bar chart to show the schedule is attached.

## 8. Outcomes of soft component

- ① O&M plan for borehole
- ② Village agreement documents (only for new WPC)
- ③ Monthly and Semi quarter reports of extension workers
- ④ Report of O&M reserve fund

## 9. Approximate estimate sum of soft component

To implement soft component activities requires the following budget approximately.

Japanese Side	JPY 12.3 million
Direct Expense	JPY 6.6 million
Direct Personnel Cost	JPY 2.5 million
Indirect Expense	JPY 3.2 million
Malawian Side	MK. 35.3 Million (JPY 19.6 million)
Direct Expense	MK. 8.6 million (JPY 4.7 million)
Allowances	MK. 26.7 million (JPY 14.9 million)

## 10. Responsibility of implementing agencies/organizations in recipient country

The period of soft component implementation can cover only until actual operation of borehole starts, meaning that monitoring activities to keep WPC on the right track has to be done by Malawian side only.

Considering that Mchinji has only 3 WMA at present, additional WMA are required to conduct monitoring by reasonable frequency. In this line, efforts to secure additional manpower of WMA are highlighted herein.

In addition, it is important to have effective collaboration with WPC and Area Mechanic towards sustainable operation and maintenance of boreholes. It is expected for the government to show clear direction regarding the effective usage of Area Mechanics in line with O & M of boreholes with WPC.



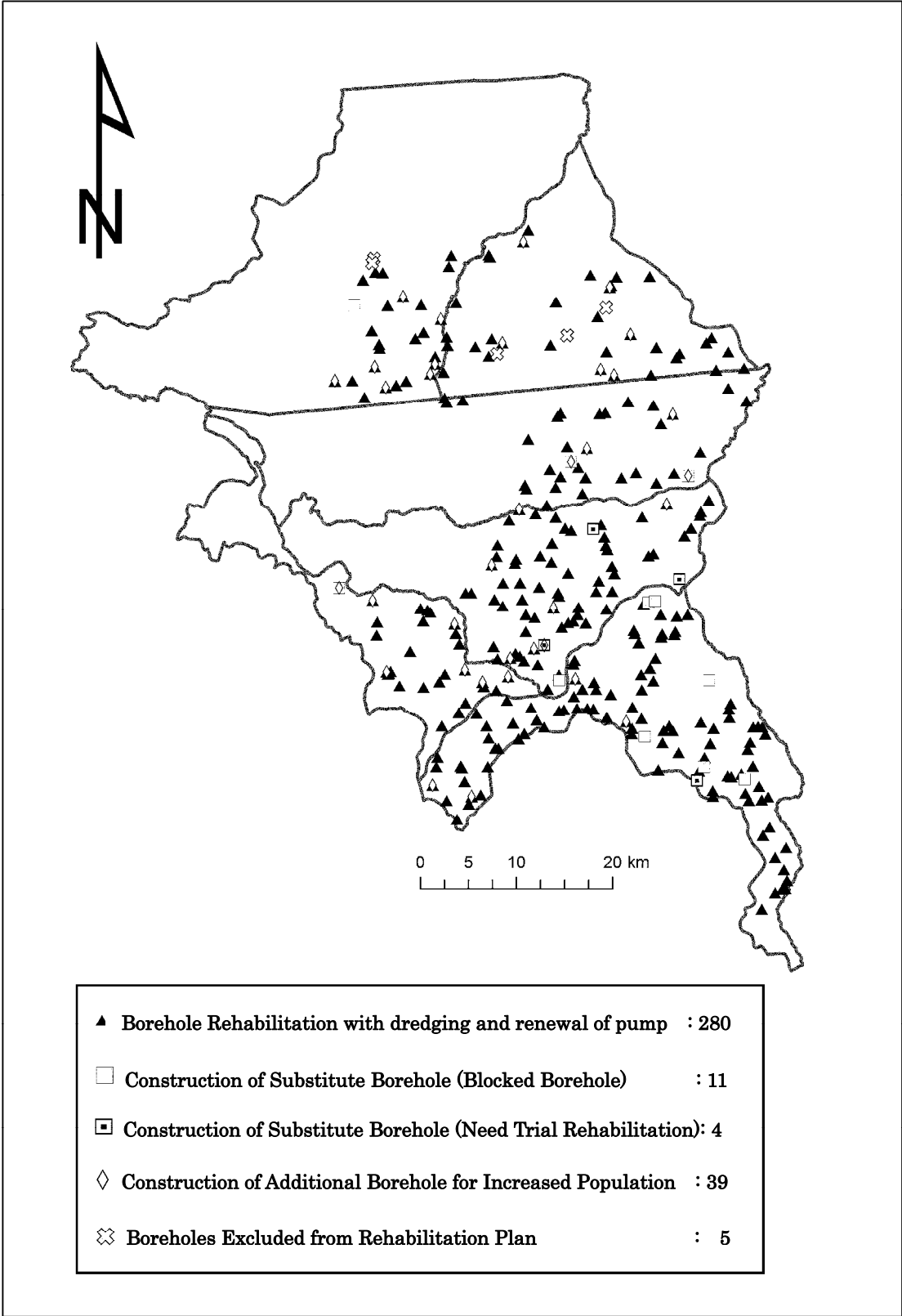


Figure A5-2 Location of Target Borehole by Type of Planed Work

Table A5-7 Borehole Rehabilitation Plan and

S/N	Borehole No.	Village Name	Borehole Condition			Rehabilitation Plan				Condition of Borehole and Existing Water Point Committee (WPC)			Plan of CBM Training Course	
			: Condition changed			REH	SUB	EXC	ADD	IRB	NRW	No WPC	For Existing BH	For Additional BH
			2010.10	2011.05										
			F: Functioning N: Not Functioning R: Running Repair L: Insufficient Discharge -: Not visit		REH: Rehabilitation SUB: Substitute Borehole EXC: Excluded from Rehab. ADD: Additional Borehole				IRB: Irreparable Borehole NRB: Pump was not repaired by WPC No WPC: WPC is not exist These WPCs are targeted for full course training					
1	1-001	Chidambo	N	-	N		⊙		⊙	⊙			Full Course	Full Course
2	1-002	Chiute	F	-	F	⊙							Advanced Course	
3	1-003	Tsamphale	F	-	F	⊙							Advanced Course	
4	1-004	Chamveka	F	-	F	⊙			⊙				Advanced Course	Full Course
5	1-005	Maliwane	F	-	F	⊙			⊙				Advanced Course	Full Course
6	1-006	Maliwane	F	-	F	⊙							Advanced Course	
7	1-007	Mlonyeni	N	-	N	⊙			⊙		⊙		Full Course	Full Course
8	1-008	Zunguze	F	-	N	⊙							Advanced Course	
9	1-009	Mkangeni	F	-	F	⊙							Advanced Course	
10	1-010	Maganga	F	-	F	⊙							Advanced Course	
11	1-011	Chiwaula	N	R	F	⊙					⊙		Full Course	
12	1-012	Chabwela	N	R	F	⊙					⊙		Full Course	
13	1-013	Mbeza	N	R	F	⊙			⊙		⊙		Full Course	Full Course
14	1-014	Chaonongeka	F	-	F	⊙							Advanced Course	
15	1-015	Mgwende	F	-	F	⊙							Advanced Course	
16	1-016	MWandawala	F	-	F	⊙			⊙				Advanced Course	Full Course
17	1-017	Kadzakurnanja	F	-	N	⊙							Advanced Course	
18	1-018	Milonga	N	-	N	⊙					⊙		Full Course	
19	1-019	Mzikaola II	F	-	F	⊙							Advanced Course	
20	1-020	Mkhala	F	-	F	⊙			⊙				Advanced Course	Full Course
21	1-021	Chibonyola(B)	F	-	F	⊙							Advanced Course	
22	1-022	Mwanayumo	F	-	F	⊙							Advanced Course	
23	1-023	Mphindu	F	-	F	⊙							Advanced Course	
24	1-024	Chibonyola (A)	F	-	F	⊙							Advanced Course	
25	1-025	Chibonyola (A)	F	-	F	⊙							Advanced Course	
26	1-026	Thukuta	F	-	N	⊙							Advanced Course	
27	1-027	Kapita	F	-	F	⊙							Advanced Course	
28	1-028	Maganga	F	-	F	⊙			⊙				Advanced Course	Full Course

ATTACHMENT - 2

S/N	Borehole No.	Village Name	Borehole Condition			Rehabilitation Plan				Condition of Borehole and WPC			Plan of CBM Training Course	
			2010.10		2011.05	REH	SUB	EXC	ADD	IRB	NRW	No WPC	For Existing BH	For Additional BH
29	1-029	Alfred	L	R	F	⊙					⊙		Full Course	
30	1-030	Pembere	L	R	F	⊙					⊙		Full Course	
31	1-031	Mtsiliza	F	-	F	⊙							Advanced Course	
32	1-032	Mkonda	F	-	F	⊙							Advanced Course	
33	1-033	Katsenga	F	-	F	⊙			⊙				Advanced Course	Full Course
34	1-034	Luka-Luciano	N	N	F	⊙							Advanced Course	
35	1-035	Chimteteka	F	-	F	⊙					⊙		Full Course	
36	1-036	Chaluma, Kalombo	F	-	F	⊙							Advanced Course	
37	1-037	Mkwezendumba	N	R	F	⊙					⊙		Full Course	
38	1-038	Galawe	F	-	F	⊙							Advanced Course	
39	1-039	Chikaza	L	R	F	⊙			⊙		⊙		Full Course	Full Course
40	1-040	Kunjawa	F	-	F	⊙							Advanced Course	
41	1-041	Kunjawa	N	-	F	⊙							Advanced Course	
42	1-042	Masukwala	F	-	F	⊙							Advanced Course	
43	1-043	Mtukwa	F	-	N	⊙							Advanced Course	
44	1-044	Mtukwa	F	-	N	⊙							Advanced Course	
45	1-045	Mwenyeanthu	F	-	F	⊙							Advanced Course	
46	1-046	Dambo	F	-	F	⊙							Advanced Course	
47	1-047	Mwanzika	L	R	F	⊙					⊙		Full Course	
48	1-048	Chiganizo	N	-	F	⊙							Advanced Course	
49	1-049	Chimkoka	F	-	F	⊙							Advanced Course	
50	1-050	Gambatula	N	R	F	⊙					⊙		Full Course	
51	1-051	Misale T. C.	F	-	F	⊙							Advanced Course	
52	1-052	John	L	R	F	⊙					⊙		Full Course	
53	1-053	Mselela	F	-	N	⊙							Advanced Course	
54	1-054	Mselela	F	-	F	⊙							Advanced Course	
55	1-055	Ngalule	F	-	F	⊙							Advanced Course	
56	1-056	Masitala	F	-	F	⊙							Advanced Course	
57	1-057	Mzingo	F	-	F	⊙							Advanced Course	
58	1-058	Nathyola	L	R	F	⊙					⊙		Full Course	
59	1-059	Kachere	F	-	F	⊙							Advanced Course	
60	1-060	Simoko	F	-	F	⊙							Advanced Course	
61	1-061	Bua T•C	F	-	F	⊙							Advanced Course	



S/N	Borehole No.	Village Name	Borehole Condition			Rehabilitation Plan				Condition of Borehole and WPC			Plan of CBM Training Course	
			2010.10		2011.05	REH	SUB	EXC	ADD	IRB	NRW	No WPC	For Existing BH	For Additional BH
62	1-062	Nkhuzu	N	N	F	⊙							Advanced Course	
63	1-063	Kazule	N	R	F	⊙					⊙		Full Course	
64	1-064	Kaole II	F	-	F	⊙							Advanced Course	
65	1-065	Kaole I	F	-	F	⊙							Advanced Course	
66	1-066	Kamphemvu	F	-	N	⊙							Advanced Course	
67	1-067	Kamphemvu	F	-	F	⊙							Advanced Course	
68	1-068	Katsenga A	N	-	N		⊙			⊙			Full Course	
69	1-069	Mlamba	F	-	F	⊙			⊙				Advanced Course	Full Course
70	1-070	Nyongani	F	-	F	⊙							Advanced Course	
71	1-071	Mtonya	F	-	F	⊙							Advanced Course	
72	1-072	Waliranji	N	-	F	⊙					⊙		Full Course	
73	1-073	Likungwi	F	-	F	⊙							Advanced Course	
74	1-074	Mnamizana	N	-	N		⊙			⊙			Full Course	
75	1-075	Kankhande	F	-	F	⊙							Advanced Course	
76	1-076	Kankhande	F	-	F	⊙							Advanced Course	
77	1-077	Mkusa	F	-	F	⊙							Advanced Course	
78	1-078	Kajiwa	F	-	F	⊙							Advanced Course	
79	1-079	Mnamizana	F	-	F	⊙							Advanced Course	
80	1-080	Kanyindula	N	R	F	⊙					⊙		Full Course	
81	2-001	Kambamd-zuwa	N	R	N	⊙					⊙		Full Course	
82	2-002	Pinda	N	R	F	⊙			⊙		⊙		Full Course	Full Course
83	2-003	Lupenga-Ndulama	N	N	N	⊙					⊙		Full Course	
84	2-004	Chikuta	N	N	F	⊙							Advanced Course	
85	2-005	Chikuta	N	R	F	⊙					⊙		Full Course	
86	2-006	Kamgwanga	F	-	F	⊙							Advanced Course	
87	2-007	Nkhumba	F	-	F	⊙							Advanced Course	
88	2-008	Makanda	F	-	F	⊙							Advanced Course	
89	2-009	Makanda	F	-	F	⊙							Advanced Course	
90	2-010	Wisikoti	F	-	F	⊙							Advanced Course	
91	2-011	Manthalu	F	-	F	⊙							Advanced Course	
92	2-012	Manthalu	N	N	N		⊙			⊙		⊙	Full Course	
93	2-013	Chamosola	N	-	N		⊙			⊙		⊙	Full Course	
94	2-014	Kafunsa-Chalimba	F	-	F	⊙							Advanced Course	

S/N	Borehole No.	Village Name	Borehole Condition			Rehabilitation Plan				Condition of Borehole and WPC			Plan of CBM Training Course	
			2010.10	2011.05		REH	SUB	EXC	ADD	IRB	NRW	No WPC	For Existing BH	For Additional BH
95	2-015	Mbwerera	F	-	F	⊙							Advanced Course	
96	2-016	Kamwaza	F	-	F	⊙							Advanced Course	
97	2-017	Papa	L	R	F	⊙				⊙			Full Course	
98	2-018	Guwende	F	-	F	⊙							Advanced Course	
99	2-019	Kamlilika	N	R	F	⊙				⊙			Full Course	
100	2-020	Tankhule	N	R	F	⊙				⊙			Full Course	
101	2-021	Welesani	F	-	F	⊙					⊙		Full Course	
102	2-022	Temanim-wendo	N	N	N		⊙			⊙			Full Course	
103	2-023	Temanim-wendo	F	-	F	⊙							Advanced Course	
104	2-024	Nkhono	F	-	F	⊙							Advanced Course	
105	2-025	Geni	F	-	F	⊙					⊙		Full Course	
106	2-026	Sinunbe	F	-	F	⊙							Advanced Course	
107	2-027	Sinunbe	F	-	F	⊙							Advanced Course	
108	2-028	Chikwan-bani	F	-	F	⊙							Advanced Course	
109	2-029	Mweso	F	-	F	⊙							Advanced Course	
110	2-030	Njiwa	F	-	N	⊙							Advanced Course	
111	2-031	Chitumba	N	-	N		⊙			⊙			Full Course	
112	2-032	Chinyata	F	-	F	⊙					⊙		Full Course	
113	2-033	Lanadi	L	R	F	⊙					⊙		Full Course	
114	2-034	Lumelo	N	R	N	⊙					⊙		Full Course	
115	2-035	Lumelo	F	-	F	⊙							Advanced Course	
116	2-036	Silombe	F	-	F	⊙							Advanced Course	
117	2-037	Silombe	F	-	F	⊙							Advanced Course	
118	2-038	Chinyata	F	-	F	⊙							Advanced Course	
119	2-039	Nkokeza	N	R	F	⊙					⊙		Full Course	
120	2-040	Mkonkha	F	-	F	⊙							Advanced Course	
121	2-041	Mkonkha T.C.	F	-	F	⊙							Advanced Course	
122	2-042	Mabvere	N	-	N		⊙			⊙			Full Course	
123	2-043	Chinkota	F	-	F	⊙							Advanced Course	
124	2-044	Mumba	F	-	F	⊙							Advanced Course	
125	2-045	Kadzombe	N	N	N	⊙					⊙		Full Course	
126	2-046	Kadzombe	F	-	F	⊙							Advanced Course	
127	2-047	Chimbala-me	F	-	F	⊙					⊙		Full Course	

S/N	Borehole No.	Village Name	Borehole Condition			Rehabilitation Plan				Condition of Borehole and WPC			Plan of CBM Training Course	
			2010.10	2011.05		REH	SUB	EXC	ADD	IRB	NRW	⊙	For Existing BH	For Additional BH
128	2-048	Chiyese-lana	F	-	F	⊙							Advanced Course	
129	2-049	Chamani	N	R	F	⊙					⊙		Full Course	
130	2-050	Chamani	F	-	F	⊙							Advanced Course	
131	2-051	Kabuthu	F	-	F	⊙							Advanced Course	
132	2-052	Kabuthu-Chifuca	F	-	F	⊙							Advanced Course	
133	2-053	Mphonde	N	R	N	⊙					⊙		Full Course	
134	2-054	Nkhompho-la	F	-	F	⊙							Advanced Course	
135	2-055	Manyengo	F	-	F	⊙							Advanced Course	
136	2-056	Kamlilika	F	-	F	⊙							Advanced Course	
137	2-057	Mjolomobe	F	-	F	⊙							Advanced Course	
138	2-058	M'manja	N	N	N		⊙			⊙			Full Course	
139	2-059	Gomani 1	F	-	F	⊙			⊙				Advanced Course	Full Course
140	2-060	Jusi	L	R	F	⊙					⊙		Full Course	
141	2-061	Mailosi	N	R	N	⊙					⊙		Full Course	
142	2-062	Mtamad-zongo	F	-	F	⊙							Advanced Course	
143	2-063	Nwandawa-ra	F	-	N	⊙							Advanced Course	
144	2-064	Kachokam-komero	N	-	F	⊙							Advanced Course	
145	2-065	Mkumba	F	-	F	⊙							Advanced Course	
146	2-066	Jamu	F	-	F	⊙							Advanced Course	
147	2-067	Chimpanba	N	R	F	⊙					⊙		Full Course	
148	2-068	Chiwoko	F	-	F	⊙							Advanced Course	
149	2-069	Chiwoko	F	-	F	⊙							Advanced Course	
150	2-070	Mazawa	F	-	F	⊙			⊙				Advanced Course	Full Course
151	2-071	Mbachunda	F	-	F	⊙							Advanced Course	
152	2-072	Mbachundu	F	-	F	⊙							Advanced Course	
153	2-073	Chintanda	N	N	N		⊙		⊙	⊙			Full Course	Full Course
154	2-074	Kachikon-do	F	-	F	⊙			⊙				Advanced Course	Full Course
155	2-075	Chiphala	N	-	N		⊙			⊙			Full Course	
156	2-076	Mthawira	N	R	F	⊙					⊙		Full Course	
157	2-077	Dzidzwa	F	-	F	⊙							Advanced Course	
158	2-078	Chalema	F	-	F	⊙							Advanced Course	
159	2-079	Kalilang-we	N	R	N	⊙					⊙	⊙	Full Course	
160	2-080	Msemwe	F	-	F	⊙			⊙			⊙	Full Course	Full Course

S/N	Borehole No.	Village Name	Borehole Condition			Rehabilitation Plan				Condition of Borehole and WPC			Plan of CBM Training Course	
			2010.10	2011.05		REH	SUB	EXC	ADD	IRB	NRW	No WPC	For Existing BH	For Additional BH
161	2-081	Msemwe	L	R	F	⊙					⊙	⊙	Full Course	
162	2-082	Mando	F	-	F	⊙							Advanced Course	
163	2-083	Gereta	F	-	F	⊙							Advanced Course	
164	2-084	Matimba	F	-	F	⊙			⊙				Advanced Course	Full Course
165	2-085	Matimba	F	-	F	⊙							Advanced Course	
166	2-086	Jenjewa	N	R	F	⊙					⊙		Full Course	
167	2-087	Kanjeleng	N	R	N	⊙					⊙		Full Course	
168	2-088	Kamndaya	N	N	F	⊙							Advanced Course	
169	2-089	Mzati	N	R	F	⊙					⊙		Full Course	
170	2-090	Zefalino	F	-	F	⊙							Advanced Course	
171	2-091	Chipha-la A	F	-	F	⊙							Advanced Course	
172	2-092	Chamveka	F	-	F	⊙							Advanced Course	
173	2-093	Kamwendo T. C.	F	-		⊙							Advanced Course	
174	2-094	Kamwendo T. C.	F	-	F	⊙							Advanced Course	
175	2-095	Chidewa	F	-	F	⊙						⊙	Full Course	
176	2-096	Chikomani	F	-	F	⊙							Advanced Course	
177	2-097	Mdawa	F	-	F	⊙							Advanced Course	
178	2-098	Kwachau-name	N	N	N		⊙			⊙			Full Course	
179	2-099	Mando	F	-	F	⊙							Advanced Course	
180	2-100	Chikoyi-Jombo	F	-	F	⊙							Advanced Course	
181	2-101	Chimteka	F	-	F	⊙							Advanced Course	
182	2-102	Chetamba-la	F	-	F	⊙							Advanced Course	
183	2-103	Chiwenkha	N	R	F	⊙			⊙		⊙		Full Course	Full Course
184	2-104	Mphanga	F	-	F	⊙							Advanced Course	
185	2-105	Durira	F	-	F	⊙							Advanced Course	
186	2-106	Mphanga	F	-	F	⊙							Advanced Course	
187	2-107	Butawo	F	-	N	⊙							Advanced Course	
188	2-108	Mdungu	N	R	F	⊙					⊙		Full Course	
189	2-109	Kaligwen-je	F	-	F	⊙							Advanced Course	
190	2-110	Kolona	F	-	F	⊙							Advanced Course	
191	3-001	Kachaje	F	-	F	⊙							Advanced Course	
192	3-002	Mchambo-Gunda	N	R	N	⊙					⊙		Full Course	
193	3-003	Geresono	F	-	F	⊙							Advanced Course	

S/N	Borehole No.	Village Name	Borehole Condition			Rehabilitation Plan				Condition of Borehole and WPC			Plan of CBM Training Course	
			2010.10	2011.05		REH	SUB	EXC	ADD	IRB	NRW	No WPC	For Existing BH	For Additional BH
194	3-004	Mchambo	F	-	F	⊙			⊙				Advanced Course	Full Course
195	3-005	Chikoloka	F	-	F	⊙							Advanced Course	
196	3-006	Tika	F	-	F	⊙							Advanced Course	
197	3-007	Chimwere	F	-	F	⊙							Advanced Course	
198	3-008	Kathyuka	F	-	F	⊙							Advanced Course	
199	3-009	Chiwete	F	-	F	⊙							Advanced Course	
200	3-010	Changata	F	-	F	⊙							Advanced Course	
201	3-011	Langwani	F	-	F	⊙							Advanced Course	
202	3-012	Sinosi	F	-	F	⊙					⊙		Full Course	
203	3-013	Kanyimbo	F	-	F	⊙							Advanced Course	
204	3-014	Machilika	N	R	F	⊙				⊙			Full Course	
205	3-015	Chikwekwe	F	-	F	⊙							Advanced Course	
206	3-016	Kanyenda	N	N	N		⊙		⊙	⊙			Full Course	Full Course
207	3-017	Mberere	F	-	F	⊙							Advanced Course	
208	3-018	Mikundi T.C.	N	N	N		⊙		⊙	⊙		⊙	Full Course	Full Course
209	3-019	Kalombo Sch	F	-	F	⊙							Advanced Course	
210	3-020	Tongole	F	-	F	⊙							Advanced Course	
211	3-021	Kalinde	F	-	F	⊙							Advanced Course	
212	3-022	Jasi	F	-	F	⊙							Advanced Course	
213	3-023	Chipuntiko-Chimutu	F	-	F	⊙							Advanced Course	
214	3-024	Kadiso	N	R	N	⊙				⊙	⊙		Full Course	
215	3-025	Makumbi	N	R	F	⊙				⊙			Full Course	
216	3-026	Mkangala	F	-	F	⊙							Advanced Course	
217	3-027	Mng'ona	N	R	F	⊙				⊙			Full Course	
218	3-028	Lezani	F	-	F	⊙							Advanced Course	
219	3-029	Goseni	F	-	F	⊙							Advanced Course	
220	3-030	Timoti	F	-	F	⊙							Advanced Course	
221	3-031	Sigereta	F	-	F	⊙							Advanced Course	
222	3-032	Chisamba	F	-	F	⊙							Advanced Course	
223	3-033	Maole	F	-	F	⊙							Advanced Course	
224	3-034	Saidi	F	-	F	⊙			⊙				Advanced Course	Full Course
225	3-035	Mikuwa ii	F	-	F	⊙							Advanced Course	
226	3-036	Sundwe	F	-	F	⊙							Advanced Course	

S/N	Borehole No.	Village Name	Borehole Condition			Rehabilitation Plan				Condition of Borehole and WPC			Plan of CBM Training Course	
			2010.10	2011.05		REH	SUB	EXC	ADD	IRB	NRW	No WPC	For Existing BH	For Additional BH
227	3-037	Mphomwe	F	-	F	⊙			⊙				Advanced Course	Full Course
228	3-038	Laisi	F	-	F	⊙							Advanced Course	
229	3-039	Kabungwe-Drawo	F	-	F	⊙							Advanced Course	
230	3-040	Machakulo	N	R	F	⊙				⊙			Full Course	
231	3-041	Kapiri	F	-	F	⊙							Advanced Course	
232	3-042	Mthema T.C.	F	-	F	⊙					⊙		Full Course	
233	3-043	Chalunda T.C.	F	-	F			⊙					Advanced Course	
234	3-044	Kasanda	F	-	F	⊙			⊙				Advanced Course	Full Course
235	3-045	Mfelankhope	N	R	F	⊙				⊙			Full Course	
236	3-046	Katonda Sch	F	-	F	⊙							Advanced Course	
237	3-047	Kamera	N	N	F	⊙							Advanced Course	
238	3-048	Chisenga	N	-	N	⊙				⊙			Full Course	
239	3-049	Kamphanbale	F	-	F	⊙							Advanced Course	
240	3-050	Kavuta	F	-	F	⊙							Advanced Course	
241	3-051	Nkhumbu	N	R	F	⊙				⊙			Full Course	
242	3-052	Mphonda-Masinja	N	N	N	⊙				⊙			Full Course	
243	3-053	Kampando	F	-	F	⊙							Advanced Course	
244	3-054	Marten	F	-	F	⊙							Advanced Course	
245	3-055	Kanzimbi	F	-	N	⊙			⊙				Advanced Course	Full Course
246	3-056	Gandali	F	-	F	⊙							Advanced Course	
247	3-057	Chinkolokota	N	R	N	⊙				⊙			Full Course	
248	3-058	Elesani	F	-	N	⊙							Advanced Course	
249	3-059	Kapiri Hosp. Miss.	N	-	N			⊙	⊙				Excluded due to abandonment	Full Course
250	3-060	Japana	N	R	F	⊙				⊙			Full Course	
251	3-061	Gong' ontha	N	R	N	⊙				⊙			Full Course	
252	3-062	Kavunguti School	F	-	F	⊙			⊙				Advanced Course	Full Course
253	3-063	Kachere	N	N	N	⊙				⊙			Full Course	
254	3-064	Kakunga	F	-	F	⊙							Advanced Course	
255	3-065	Kamenya	N	R	N	⊙			⊙	⊙			Full Course	Full Course
256	3-066	Nthema T.C.	F	-	F	⊙			⊙		⊙		Full Course	Full Course
257	3-067	Lubani	N	R	N	⊙				⊙			Full Course	
258	3-068	Chinkhali	F	-	F	⊙							Advanced Course	

S/N	Borehole No.	Village Name	Borehole Condition			Rehabilitation Plan				Condition of Borehole and WPC			Plan of CBM Training Course	
			2010.10		2011.05	REH	SUB	EXC	ADD	IRB	NRW	No WPC	For Existing BH	For Additional BH
259	3-069	Chang' amba	F	-	F	⊙							Advanced Course	
260	3-070	Kuthethe	F	-	F	⊙			⊙				Advanced Course	Full Course
261	3-071	Dina	N	R	N	⊙				⊙			Full Course	
262	3-072	Thengo	N	R	F	⊙				⊙			Full Course	
263	3-073	Lameki	N	R	F	⊙			⊙	⊙			Full Course	Full Course
264	3-074	Kaledza	N	R	N	⊙			⊙	⊙			Full Course	Full Course
265	3-075	Malungo	N	R	N	⊙				⊙			Full Course	
266	3-076	Mphunda	F	-	F	⊙			⊙				Advanced Course	Full Course
267	3-077	Kadewele-Mbewa	F	-	F	⊙							Advanced Course	
268	3-078	Kangulu	F	-	F	⊙			⊙				Advanced Course	Full Course
269	3-079	Mkanda	F	-	N			⊙					Excluded due to duplication to piped water system	
270	3-080	Mkanda	N	N	N			⊙					Excluded due to duplication to piped water system	
271	3-081	Mazombwe	N	R	F	⊙				⊙			Full Course	
272	3-082	Chimkolokota	N	R	F	⊙			⊙	⊙			Full Course	Full Course
273	3-083	Masiwa	F	-	F	⊙			⊙				Advanced Course	Full Course
274	3-084	kambandekha	F	-	F	⊙							Advanced Course	
275	3-085	Jimu	F	-	N	⊙							Advanced Course	
276	3-086	Lupiya	N	R	F	⊙				⊙			Full Course	
277	3-087	Chisauka	N	R	F	⊙				⊙			Full Course	
278	3-088	Kawere	F	-	N	⊙							Advanced Course	
279	3-089	Msanda	N	R	N	⊙				⊙			Full Course	
280	3-090	Zandana	N	-	N		⊙			⊙			Full Course	
281	3-091	Khwere	F	-	F	⊙							Advanced Course	
282	3-092	Khwere T.C.	F	-	F	⊙			⊙				Advanced Course	Full Course
283	3-093	Mkumbi	F	-	F	⊙							Advanced Course	
284	3-094	Kambuwe	N	R	N	⊙				⊙			Full Course	
285	3-095	Kambuwe	N	N	F	⊙							Advanced Course	
286	3-096	Kankhwende	F	-	N	⊙							Advanced Course	
287	3-097	Mndaka	N	R	F	⊙				⊙			Full Course	
288	3-098	Jowelo	N	R	F	⊙				⊙			Full Course	

S/N	Borehole No.	Village Name	Borehole Condition			Rehabilitation Plan				Condition of Borehole and WPC			Plan of CBM Training Course	
			2010.10		2011.05	REH	SUB	EXC	ADD	IRB	NRW	No WPC	For Existing BH	For Additional BH
289	3-099	Mtulira	F	-	N	⊙			⊙				Advanced Course	Full Course
290	3-100	Kalonga	N	R	F	⊙					⊙		Full Course	
291	3-101	Diti	N	R	F	⊙					⊙		Full Course	
292	3-102	Chitonde	F	-	F			⊙					Advanced Course	
293	3-103	Kalulu Sch	N	N	N	⊙					⊙		Full Course	
294	3-104	Kalulu T.C.	F	-	F	⊙							Advanced Course	
295	3-105	Katsompho	F	-	F	⊙							Advanced Course	
296	3-106	Msalanyama	F	-	F	⊙							Advanced Course	
297	3-107	Mchonkwe	F	-	F	⊙							Advanced Course	
298	3-108	Chiti	F	-	F	⊙							Advanced Course	
299	3-109	Chiti	F	-	F	⊙							Advanced Course	
300	3-110	Mphako	N	-	N	⊙					⊙		Full Course	
	TOTAL					280	15	5	39	15	72	17	Full Course: 98	39