4-3 Minutes of Discussion on the 4th Basic Design Study on the Project for Rehabilitation of the Bwanje Valley Irrigation System in the Republic of Malawi (Commencement of the Fourth Basic Design Study, February, 2005)

MINUTES OF DISCUSSION
ON
THE 4th BASIC DESIGN STUDY
ON
THE PROJECT FOR REHABILITATION OF THE BWANJE VALLEY IRRIGATION SYSTEM
IN
THE REPUBLIC OF MALAWI

The Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the 1st Basic Design Study Team on the Project for Rehabilitation of the Bwanje Valley Irrigation System (hereinafter referred to as "the Project") to the Republic of Malawi (hereinafter referred to as "Malawi") in February 2003, the 2nd in July 2003, the 3rd in December 2004 and the field study on river engineering in January 2005. Based on the results of these studies, JICA prepared the Technical Report (Annex-1).

In order to explain the contents of the Technical Report, hold a series of discussions with the Government of the Malawi and implement further field surveys, JICA sent the 4th Basic Design Study Team (hereinafter referred to as "Team") which was headed by Mr. Kazuo Nakagawa, Director General of Grant Aid Management Department, JICA from February 9 to March 10, 2005.

After discussion, both sides confirmed the contents of the Technical Report and main items as described on the attached sheets. The Team will proceed to further works and prepare the Draft Basic Design Study Report for the Government of Malawi.

Lilongwe, February 14, 2005

Mr. Kazuo Nakagawa
Leader
Basic Design Study Team
Japan International Cooperation Agency

Dr. Andrew T. Daudi
Secretary for Agriculture
Ministry of Agriculture
The Republic of Malawi

ATTACHMENT

1. Objective Of The Project

(1) To protect the Bwanje Valley Irrigation System from floods
(2) To rehabilitate and improve irrigation facilities
(3) To stabilize distribution of irrigation water in the Bwanje Valley Irrigation System

2. Japan's Grant Aid Scheme

(1) Malawi side understood the Japan's Grant Aid Scheme as described in Annex-2.
(2) Malawi side agreed to take necessary measures in due course as described in Annex-3.

3. Schedule Of The Study

(1) The consultant team will stay in Malawi until March 8, 2005 to continue the study.
(2) JICA will prepare the draft report in English and dispatch a mission in order to explain the contents of the project by the end of June 2005.
(3) In case that the contents of the draft report are accepted by the Government of Malawi, JICA will complete the final report and send it to the Government of Malawi by the end of August 2005.

4. Other Relevant Issues

(1) Plan For Flood Prevention

(a) The Team explained three alternative plans for flood prevention (alternative-1: new river construction works, alternative-2: main canal relocation works, alternative-3: river bank protection works) according to the Technical Report and Malawi side understood advantages and disadvantages of the respective plans.
(b) Both sides confirmed that alternative-2(the main canal relocation works) was the most agreeable measure for flood risk reduction and made it a basic concept of the Project.
(c) In order to build consensus among the stakeholders concerned, the Ministry of Agriculture held a conference with Member of Parliament, District Commissioner, Traditional Authority and Farmers' Cooperative Executive Members in February 12, 2005.
(d) Both sides confirmed all the participants came to an agreement with alternative-2 (the main canal relocation works) at the conference.

(2) Project Area

Under alternative-2, both sides confirmed that the 590ha area of the Bwanje Valley Irrigation System would be the Project Area and the 210ha area would be excluded from the Project Area.

(3) Utilization Of 210ha

(a) Even though 210ha area would be excluded from the Project Area, Malawi side explained to the Team that they would utilize the 210ha area and maintain the existing main canal by their own efforts and responsibility.
(b) The Team proposed a plan for effective utilization of 210ha to Malawi side as described in the Technical Report.
(c) Malawi side promised to provide a plan of further river realignment work which contributed to reducing flood damage to the existing main canal to the Team by the beginning of March 2005.
(d) After discussion, Malawi side explained the needs of further technical supports by the Government of Japan for the utilization of the 210ha area to the Team as follows;
- survey work, planning, design and construction supervision for damaged sections of the existing main canal, inspection road and additional river protection works in the 210 ha area.

(4) Components Of The Project

(a)Relocation of the main canal
(b)Rehabilitation of the headworks
(c)Improvement of the settling basin
(d)Land leveling for the Project Area
(e)Others relevant works

(5) Reallocation Of The Land

(a) Both sides reconfirmed the necessity of reallocation of the land in the Bwanje Valley Irrigation System and the Ministry of Agriculture had responsibility for the land reallocation process.
(b)The Ministry of Agriculture promised to provide a reallocation plan to the Team by the beginning of March 2005.

(6) Land Leveling

(a)Both sides confirmed land leveling works for the whole area of the Bwanje Valley Irrigation System should be completed by completion of the Project.
(b)Both sides promised to compile a detailed plan for land leveling (demarcation, schedule, method, etc) collectively at the time of discussion on the Draft Basic Design Study Report.

(7) Technical Supports

(a) Malawi side explained the needs of technical supports in the Bwanje Valley Irrigation System to the Team as follows;
1) technical support for the irrigation planning, operation, maintenance and management.
2) technical support for the land reallocation.
(b)The Team will study all the relevant issues and discuss the results of the study with the concerned parties in Japan.

END

Annex - 1

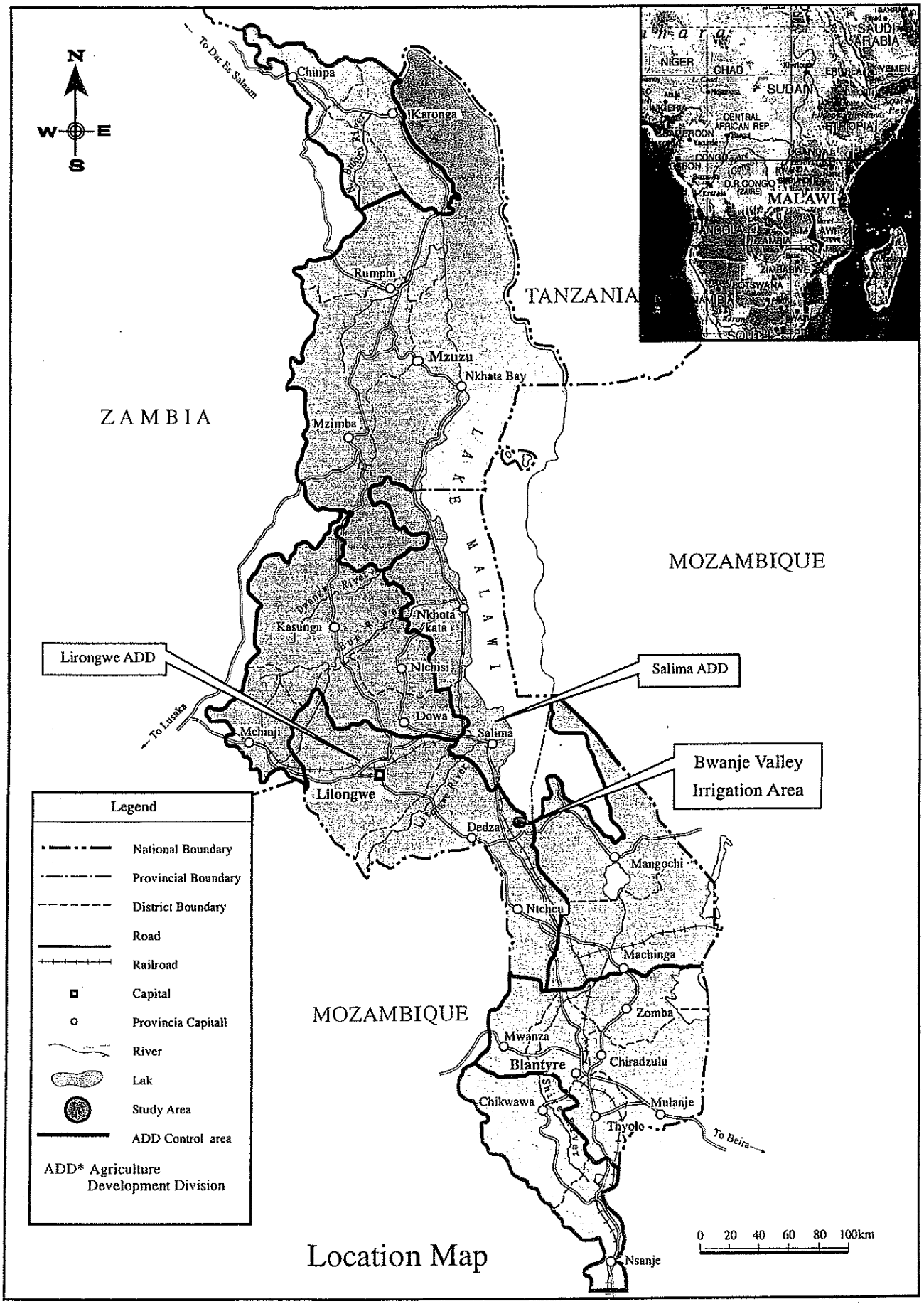
BASIC DESIGN STUDY
ON
THE PROJECT
FOR
REHABILITATION
OF
THE BWANJE VALLEY IRRIGATION SYSTEM
IN
THE REPUBLIC OF MALAWI

TECHNICAL REPORT

FEBRUARY 2005

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

NIPPON KOEI CO., LTD.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Bwanje Valley Irrigation Area
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Mangochi
Ntcheu
Machinga
MOZAMBIQUE
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Study Area
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Location Map
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CHAD
SUDAN
ERITREA
YEMEN
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CENTRAL AFRICAN REP.
ETHIOPIA
CAMEROON
CONGO
GABON
D.R.CONGO (ZAIRE)
RWANDA
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KENYA
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MALAWI
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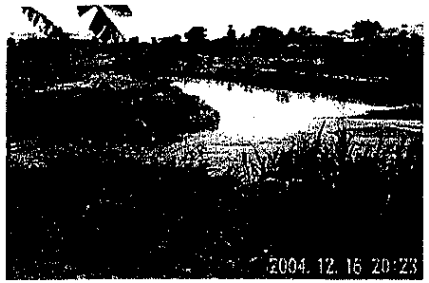

① Embankment for the New River (2004.12)

② Beginning Point of River Course Changing Works (2004.12)

③ Middlestream Part of River Course Changing Works (2004.12)

④ End Point of River Course Changing Works (2004.12)

⑤ Main Canal Damaged by the Flood (2004.12)

⑥ Main Canal Damaged by the Flood (2004.12)

⑦ Dike Damaged by the Flood (2004.12)

⑧ Dike Damaged by the Flood (2004.12)

Present Condition of the Project Area

BASIC DESIGN STUDY
ON
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TECHNICAL REPORT

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1. Study on Protection Measure against Floods

On the protection of the Bwanje Valley Irrigation System from flood, this chapter deals with the selection of a recommendable plan out of alternatives from the viewpoints of safety against floods, implementation cost, and operation/maintenance. This study is based on the technical information of the previous field investigations, especially done in December 2004 and in January 2005.

1.1 Present Condition of the Namikokwe River

1.1.1 History of the River Course

The history of the river course of the Namikokwe River, which flows just besides the irrigation system, is summarized as follows:

1. From 1992 to 1996, at 1.5 km downstream point from the headworks the river was flowing down divided into three branch rivers; the Namikokwe River, Mtanda River, and Chikonbe River.
2. In August 1997, there were irrigation canals for the upstream of the present project area and the farmers took water for the canals from the Namikokwe River.
3. From December 1997 to December 1999, the river course changed to the Chikonbe River by a temporary weir, whose purpose was to stop irrigation water to the above upstream area, during the construction of new permanent headworks.
4. After the construction work, the temporary weir was removed and the river water flew down to the Namikokwe River.
5. The Namikokwe River moved gradually close to the flood dike developing its channel scale and its riverbed tended to go down.
6. The river courses became integrated and concentrated into the Namikokwe River.
7. Therefore, the river has less possibility to shift its course into the Mtang River and Chikonbe River.
8. In 2000, farmers on the right bank area constructed a temporary weir and diverted water to the field on the right bank. During the dry seasons up to 2002, all the river water was taken to the fields.
9. From January to February 2002, the flood dike was damaged by floods at three parts and the above temporary weir was totally damaged.
10. From October 2002 to March 2003, the damaged three parts were rehabilitated

through the follow-up cooperation works.

11. Furthermore, two parts along the flood dike were damaged by floods during the rainy season from January to April 2003.
12. The relocation of the present main canal was preliminary studied.
13. In October 2003, it was reported that GOM undertook the river course changing work.
14. In December 2004, it was reported that the upstream embankment for the new river course collapsed.

1.1.2 Present Condition of the Catchments Area

The Namikokwe River originates in the western highland area (elevation: from 1200m to 1400m) and flows into the Lake Malawi (elevation: 474m).

The upper reach area of the river has been developed especially in farming and transmigration in these days. Upland crops such as maize and potato and vegetables were cultivated not only in the flat area but also on the steep slope on the mountains.

The road leading to the upper basin from the project was being damaged in many embanked and excavated places. Although the river in the upper basin is very steep, the valley is remarkably shallow.

In rainy seasons, the river conveys sufficient water with much sediment and it causes sedimentation problem in the downstream.

The river flow is still rapid until 3.5km upstream of the headworks. After that, the flow becomes slow suddenly and an alluvial plain appears. A huge swampy land spreads after the plain and the river enters to the Lake Malawi.

1.1.3 Diversion Point of Three Rivers

The diversion point for three rivers was supposed to be located at 1.5km downstream of the headworks, but there is no sign of the diversion point at present because of the spreading of the Namikokwe River.

According to several farmers, before the construction of this scheme, the river water dried up in the Namikokwe River during the dry seasons, and it continuously flew into the Mtanda and Chikonbe Rivers. Even during the construction of the headworks, the water flowing to the Namikokwe River was stopped. As the river contained much volume of soil, the riverbed of those two rivers went up. Then, after the removal of the

temporal weir, the river course changed mainly into the Namikokwer River.

1.1.4 Present Condition of the Namikokwe River

Before the construction, the river course was not fixed, its depth was shallow, and it would flow with several tributaries. In January 2005, it was observed that the river overflowed at many places from the middle to the downstream part besides the scheme. Whenever floods occurred, a lot of sediment was brought and new river courses were formed. Then, as a result, a vast floodplain was formed in the downstream area. The physical condition of the river is not stable because of the collapse of the bank and meandering. However, the river course itself seems to be stable for the time being.

1.2 Evaluation of the River Course Changing Works

(1) Objectives of the River Course Changing Works

The main objective of river course changing works is to protect the flood protection dike from floods. In addition, to supply water to the right bank area is also the important objective.

(2) Diversion Point of the New River Course

The river course changing works was forced to be suspended due to the lack of budget and troubles in the construction machines. The embankment at the diversion point was destroyed by floods when the first rainy season came (December 2004). By the affection of the recent extraordinary weather condition, flood discharge has increased in comparison with the past. Therefore, it seems difficult to control the energy of the flood discharge and divert it to the new river course.

In January 2005, no water flow was observed in the new river course and water was flowing into the Namikokwe River.

At the beginning point of the new river course, the riverbed is higher than the one of the Namikokwe River due to sedimentation. It is clear that there is a remarkable difference in the river gradient between those two rivers.

(3) Condition of the New River

The new river seemed to be constructed along the Mtanda and the Chikonbe River. Its gradient is less than the one of the Namikokwe River and its length is half of the one of the Namikokwe River. Embankment was constructed on the left side to prevent the new river from flowing to the Namikokwe River. The surface of the embankment is eroded severely. In the middlestream, hard clay exists in the riverbed and it obstructs river

flow.

(4) End Point of the New River

At the end point of the works, the river overflows and enters to the swampy area.

(5) Discharge Capacity of the New River

Although the design of the work is not clear, the discharge capacity of the river was tentatively estimated by non-uniform flow calculation. The result was 160m3/s on the condition that it had overflow on the right bank and no overflow on the left bank. However, it is estimated that river water flows into the Namikokwe River due to the difference of the riverbed elevations, which was confirmed in January 2005.

The image drawing of the present river condition is illustrated in **Attatchment-1**.

1.3 Opinion of the Beneficial Farmers on the Protection Measure against Floods

During the 3rd Basic Design Study, workshops were held for BC-1, BC-2, BC-3 (BC: Branch Canal) farmers to confirm their opinions for the measures. On the other hand, questionnaire surveys were conducted to stakeholders to obtain quantitative data. The results of those surveys are shown in the **Reference** and the result of the workshop is summarized as follows:

Farmers	Summary of Farmers' Opinion
BC-1	The river course should be shifted and the existing main canal should be rehabilitated and utilized. Land re-allocation is difficult if main canal is shifted.
BC-2	The shifting of the main canal is acceptable. Land reallocation could be done if the main canal is shifted.
BC-3	The shifting of the main canal is acceptable. Regarding land re-allocation, both opinions (difficult and possible) were observed if the main canal is shifted.

1.4 Alternatives for Protection of the Irrigation System against Floods

Based on the results shown in 1.1, 1.2, 1.3, three alternative measures are formulated for protection of the irrigation scheme against floods from the viewpoint of stakeholders' opinions and technical validity. The alternatives are:

Alternative-1: New River Construction Works,

Alternative-2: Main Canal Relocation Works, and

Alternative-3: River Bank Protection Works.

The process of formulating those alternatives is shown in **Attatchment-2**.

1.5 Alternative-1: New River Construction Works

This alternative is to move the present river course, which is close to the flood dike to the southern area in order to mitigate the risk of future flood damages. The existing main canal is to be utilized after the works.

The alternative is illustrated in **Attatchment-3**.

This alternative is consistent with the opinion of the Malawi government, who has tried to change the river course, beneficial farmers and other stakeholders. But it has several disadvantages such as high construction cost and less security against floods in the future. Furthermore, this alternative could not secure irrigation to the right bank area since the riverbed would become lower than the intake level after the construction works. The detail of this point is described in **Attatchement-4**.

1.6 Alternative-2: Main Canal Relocation Works

This alternative is to shift the main canal apart from the river course in the project area in order to avoid the risk for future flood damages on the main canal. A new inspection road is also constructed beside the new main canal.

This alternative could achieve high security against floods with the least construction cost. But it has a disadvantage that 210ha area would be excluded from the project area. There are opposite opinions among the farmers who has possesses plots in the 210ha area. Therefore, some measures should be taken to rescue this area.

The alternative is illustrated in **Attatchment-5**.

1.7 Alternative-3: River Bank Protection Works

This alternative is to protect the flood dike by revetment the left bank and to rehabilitate the existing main canal and inspection road. As well as Alternative-1, the existing main canal could be used after the work.

This alternative coincides with the major opinion of the stakeholders. In this alternative,

gabion mattresses will be adopted as protection works because they have flexibility to the lowering of the riverbed and the landslide of the river bank. It, however, may have a risk that the function of the irrigation system may stop suddenly in case floods damage the main canal.

The alternative is illustrated in **Attatchment-6**.

1.8 Selection of an Alternative for Implementation

The alternatives mentioned are compared and assessed comprehensively.

The result is shown in **Attatchment-7** and summarized in the following table:

Alternatives	Summary of the Evaluation Result
Alternative-1: New River Construction Works	The construction cost is the highest among three alternatives. There is no guarantee that the new river will not change the direction and it requires periodical monitoring and maintenance works. This alternative could not achieve irrigation to the right bank area since the riverbed will come lower than the intake level after the construction works.
Alternative-2: Main Canal Relocation Works	The construction cost is the lowest and the irrigation system is highly secured from flood damages. It is necessary to make a consensus of the farmers who possesses plots in the 210ha area.
Alternative-3: River Bank Protection Works	As the main canal faces the river directly, the irrigation function may stop suddenly in case of the damage to the main canal. This alternative requires high construction cost and large burden for maintenance works.

As a result of comprehensive evaluation from the viewpoints of operation/maintenance, safety and construction cost, "Alternative-2: Main Canal Relocation Works" could be recommended.

1.9 Utilization of the 210ha area in case of Alternative-2

It's recommended that the 210ha area should be irrigated by utilizing the main canal according to the following reasons:

1. Cultivation under rainfed condition is unstable. More stable production can be

expected by stable water supply utilizing irrigation water for the new main canal and/or river water.

2. The existing main canal is still under use and the most of the farmers desire to use it continuously in the future as well.

1.10 Irrigation Method and the Land Use for the 210ha area

For the 210ha area, the following irrigation methods are planed:

(1) Pump Irrigation

This method is to pump up water from the river and/or the new main canal by portable pumps, and supply water to the 210ha area through the existing branch canals.

(2) Gravity Irrigation through the New Main Canal

This method is to divert water from the new main canal to the branch or tertiary canals in the 210ha area.

(3) Gravity Irrigation from Small Reservoirs or Water Tanks

This method is to construct small reservoirs or water tanks to store water of the river, the existing main canal, and rainfall. The storage of water can be utilized as supplementary water supply resource.

(4) Gravity Irrigation through the Existing Main Canal

This method is to divert water from the new main canal to the existing main canal.

Those four methods were compared and assessed as shown in **Attachment-8**. As a result, the supplemental irrigation through the existing main canal is recommendable for the 210ha area due to the reduction of the risk of flood damages by the river course changing works. It is preferable in respect of economic performance and sustainability.

Although the 210ha area is out of the project in the future, the establishment of a system of irrigation to 210ha (supplemental water supply) and 590ha (ordinary water supply) is recommendable. This system is named "Collateral Irrigation System".

1.11 Recommended Plan for Implementation

Taking the result of the 3rd Basic Design Study (December 2004) and the field survey (January 2005) into consideration, the selected alternative was finalized as shown below:

1. To relocate the main canal to protect the irrigation system from flood damages. The project area will be reduced to be 590ha, and it will be irrigated for paddy production.
2. In the 210ha area, the existing paddy fields will be converted to upland ones for maize, cassava, beans, and others. Supplemental irrigation will be adopted for those fields. The operation and maintenance of the facilities should be performed under the responsibility of the Malawi government.
3. The river course changing works is to be resumed under the responsibility of the Malawi government to reduce future flood damages and establish water supply system to the right bank area.

The plan is illustrated in **Attachment-9**.

2. Method of Land Re-Allocation under the Plan for Implementation

2.1 Basic Concept

In case the final plan mentioned in chapter 1 is adopted, the new land use is required in 210 ha between the existing main canal and the new main canal. The result of the 3rd Basic Design Study revealed unfairness of present land allocation mentioned in sub-chapter 2.2. Therefore, it is indispensable to re-allocate the land in order to ensure the effect of the project.

2.2 Problem of Present Land Allocation

The present project area (800ha) is divided into four group villages (Mthembanji, Kafulama, Bwanari, and Mchanja). The area of Bwanari and Kafulama under 800ha is smaller than that of Mthembanji and Mchanja (**Attachment-10**).

In order to confirm this, the average size of the land per one farmer in each group village was calculated by the use of the land registration book which was prepared by JICA expert and JOCV. The result is shown as follows.

Group village	Kafulama	Bwanari	Mchanja	Mthenbanji	Total
Farmers (person)	105	250	508	1,041	1,904*
Average size of land (ha/person)	0.21	0.20	0.43	0.45	0.40

Data source: land registration book, 2004
*: According to the land registration book, numbers of registered farmers are 1,926. This excludes 22 farmers of which group village is unknown at this moment.

According to this result, the average size of the land per farmer in Kafulama and Bwanari is almost half of that in Mchanja and Mthembanji. And even in a certain group village, unfair situation[1] can be observed (maximum differential on the size of the land per farmer is 7.5 ha). These facts lead to big discontents of farmers who have small lands.

This situation was caused since the administrative boundary was applied at the initial

[1] land registration book, 2004

land allocation stage in this scheme.

2.3 Method of Land Re-Allocation

The method of land re-allocation at present is proposed as follows.

(1) Implementation Body

The implementation body is the land allocation committee which is scheduled to be established in the farmers' cooperative. This body makes decisions and implementation.

In case the land allocation committee can not settle some disputes (if any) among farmers due to the conflict of their interests, traditional authority or/and district commissioner is requested to intervene and they make decisions and implementation.

(2) Stakeholders for Collection of Opinions on Method of Land Reallocation

The stakeholders for collection of opinions on method of land re-allocation are as follows.

Project manager, AEDO, JOCV, the land allocation committee (scheduled to be established), traditional authority, executive of farmers' cooperative, management committee in each BC, block leaders etc.

If possible, meetings with farmers could be held and opinions directly from farmers could be collected.

(3) Important Points in Explanation of Land Re-Allocation to Farmers

The points are 1) present unfairness of land allocation, 2) new land use of 210ha, 3) method of land re-allocation.

(4) Target Farmers of Land Re-Allocation

The target farmers are all the farmers in 800ha (especially farmers in 210ha). Two group villages which have discontents due to small average size of land per farmer are almost included in 210 ha.

(5) Method of Land Re-Allocation

In adopting the final plan, the classification of the land category in 210ha area is required to be changed from paddy field to upland crops (supply of irrigation water will

be changed from full supply to supplemental one). And as mentioned in sub-chapter 2.2 and 2.3 (4), almost all of the farmers who have small land in average in Kafulama and Bwanari is included in 210ha. Therefore, some considerations to the farmers in this area are indispensable. Tentative alternatives for the method of land re-allocation at this moment are proposed in **Attachment-11**.

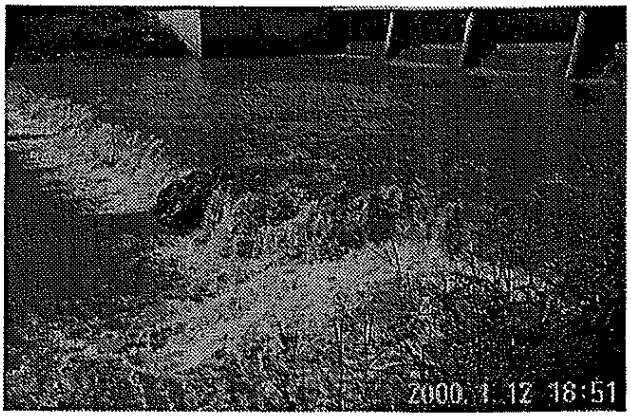
The method should be modified through the consultation with farmers and other stakeholders. And it should be finalized after a consensus of the method made among stakeholders.

Successful examples of land allocation, re-allocation in other irrigation scheme in Malawi have to be studied and referred to the examination of method of land re-allocation for this irrigation scheme.

3. Rehabilitation of the Headworks

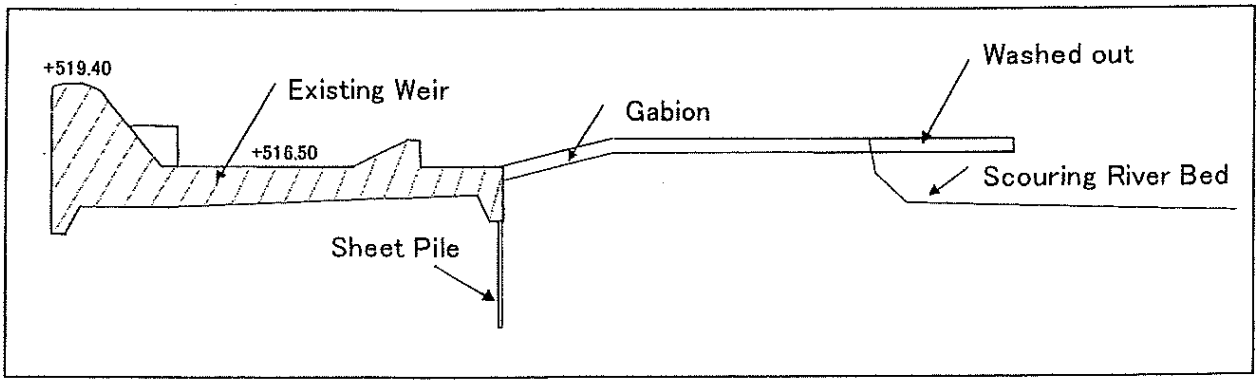
3.1 Present Condition

The riverbed at the downstream of the headworks was seriously scoured by floods from 2002 as shown in the following photographs. The riverbed level was originally the same as the elevation of the gabion provided at the downstream. However, the riverbed level went down in 1.5 m to 2.0 m due to the floods. The gap was expanded in elevation between the gabion and the riverbed as shown in the following illustration. As a result of the gap, the gabions at the downstream of scouring sluice were partially washed out. In order to protect scouring of the riverbed and secure the safety of the headworks, rehabilitation works are required in the project.



Downstream Part of the Headworks

Downstream Part of the Scouring Sluice

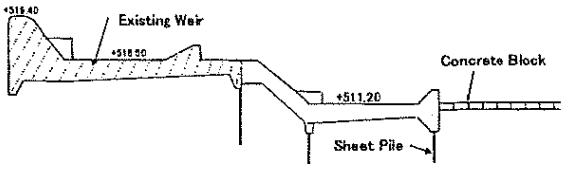
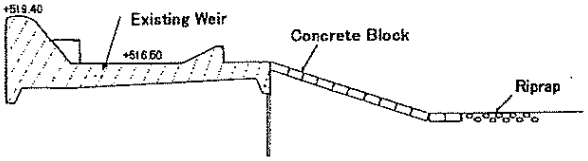


Present Condition of the Downstream Part of the Headworks

3.2 Rehabilitation Plan of the Headworks

The following two alternative plans have been considered for the rehabilitation works so far. The final plan will be selected based on the assessment from technical and economical viewpoints after the future field survey.

The headworks is re-designed to guarantee the safe convey of the recorded maximum flood discharge 460 m3/s.

Item	Alternative-1: Stilling Basin	Alternative-2: Concrete Block
1. Figure		
2. Contents	Construction of a stilling basin at the downstream of the existing weir	Provision of concrete blocks at the downstream of the existing weir
3. Merit	The effect of protection of riverbed variations is high.	Construction cost is relatively low.
4. Demerit	Construction cost is relatively high.	Repairing works are required against riverbed variations in the future.

4. Functional Improvement of the Settling Basin

4.1 Present Condition

Sediment in the Existing Settling Basin

The settling basin was provided for the purpose of excluding sediment into the canals. However, sediment entering the settling basin from the intake becomes large in quantity because sediment supply to the Namikokwe River has recently been increasing due to the development in the upstream area and frequent river bank erosions by floods after 2000. Therefore, the settling basin is rapidly filled with sediment and requires its constant removal during rainy seasons. Since the sediment removal work is manually carried out without natural flushing by gravity, this work becomes a heavy burden for farmers. Additionally, during the removal work, no water supply to the scheme is achieved. Therefore, the farmers are reluctant to carry out the sediment removal work timely. As a result, after the accumulation of sediment in the settling basin to full extent, a large amount of sediment is conveyed to the canals and interferes smooth water flow due to the reduction of flowing area with sedimentation.

According to the results of the workshops and questionnaire survey conducted in December 2004, this issue was not a serious one for the farmers in the scheme. It might mean that sediment entering the canals decreased from the previous time because the skill of the intake gate control has been improved and large-scale floods did not occur in the last rainy season. However, the problem, resulting from muddy river water during floods in rainy seasons, is still a serious issue, therefore, the functional improvement of the settling basin is one of the most important conditions for the successful implementation of the project.

4.2 Improvement Plan of the Function of the Settling Basin

Needless to say, the stable water supply to the field is the most important issue in this scheme. For this issue, the following improvement is recommended:

Improvement Plan of the Settling Basin

Item	Present condition	Improvement plan
1. Removal method of sediment	Removal by manual	Natural flushing by gravity
2. Type of sand settling channel	Single-channel type	Multi-channel type
3. Minimum particle size	0.3mm	0.2mm

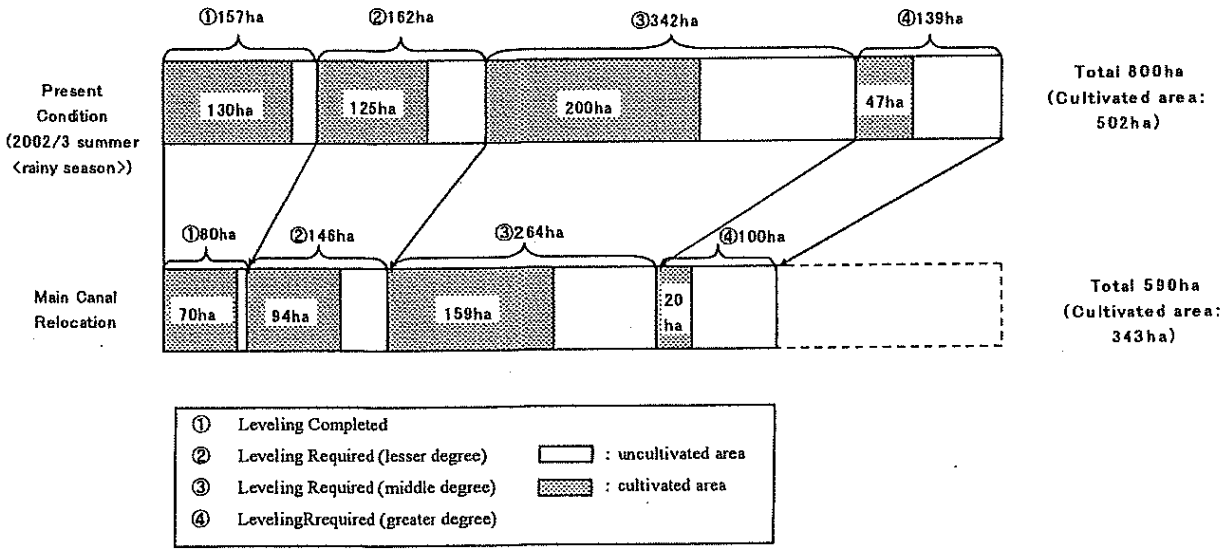
5. Land Leveling Work

5.1 Basic Concept

Based on the examination made so far, the project area is to be 590ha, therefore, the target area of land leveling work should become 590ha as well (land leveling work for 210ha is covered by the Malawi government).

5.2 Target Area

At the time of the study conducted in March 2003, the progress of land leveling work in the 590ha area was given as follows (This study was conducted by DOI and Lilongwe ADD).



According to the result of the workshop with farmers and questionnaire survey in the 3rd Basic Design Study conducted in December 2004, and the opinions of a JICA expert and JOCV volunteer, the importance of land leveling work was pointed out. Therefore, the leveling of all the land is indispensable to ensure the effect of the project after the construction works. Thus, the implementation of all the remaining land leveling works by both the Japanese and Malawi sides under the project is recommended.

The present progress of land leveling executed by both sides, and the remaining area are shown in the following table.

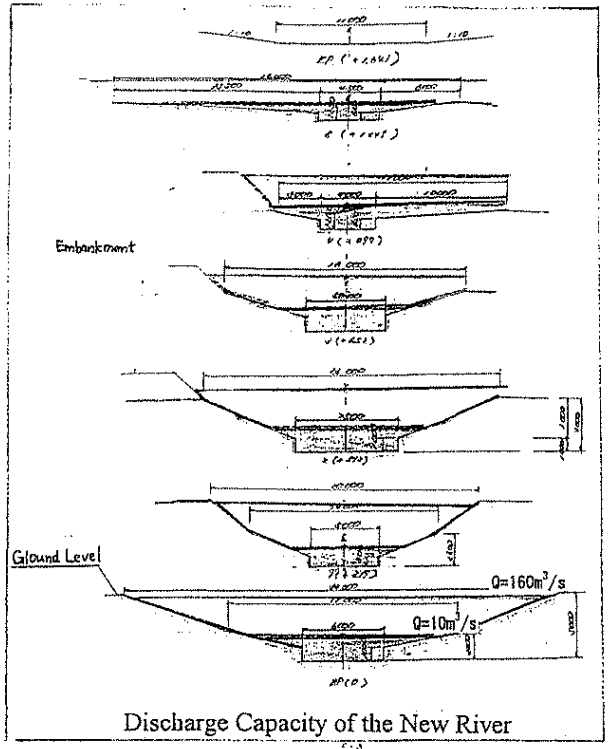
Present Progress of Land Leveling Work and Remaining Area

(Unit: ha)

No.	Category of Land Leveling	Progress of the Work		Remaining area To be Leveled	Total
		By Japanese Side	By Malawi Side		
①	Leveling Completed	26	54	0	80
②	Leveling Required (lesser degree)	0	0	146	146
③	Leveling Required (middle degree)	0	0	264	264
④	Leveling Required (greater degree)	0	0	100	100
Total		26	54	510	590

Because the leveling works with dozers by the Malawi government and by farmers has been executed intermittently since March 2003, it is required to update the present progress of land leveling work and confirm the obligation by each government.

Attachments



Discharge Capacity of the New River

Project Area 800ha

Irrigation Canal and Dikes Damaged by Floods

Utilized for Cultivation (Paddy and Maize)

Swamp

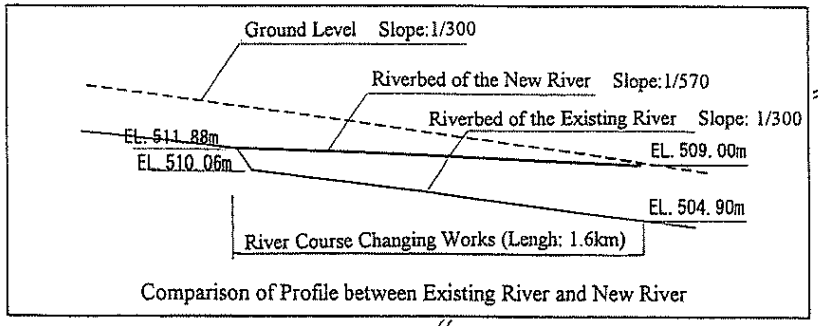
Existing Main Canal

Existing River

River Course Changing Works by GOM (Length: 1.6km)

Headworks

Naminkokwe River

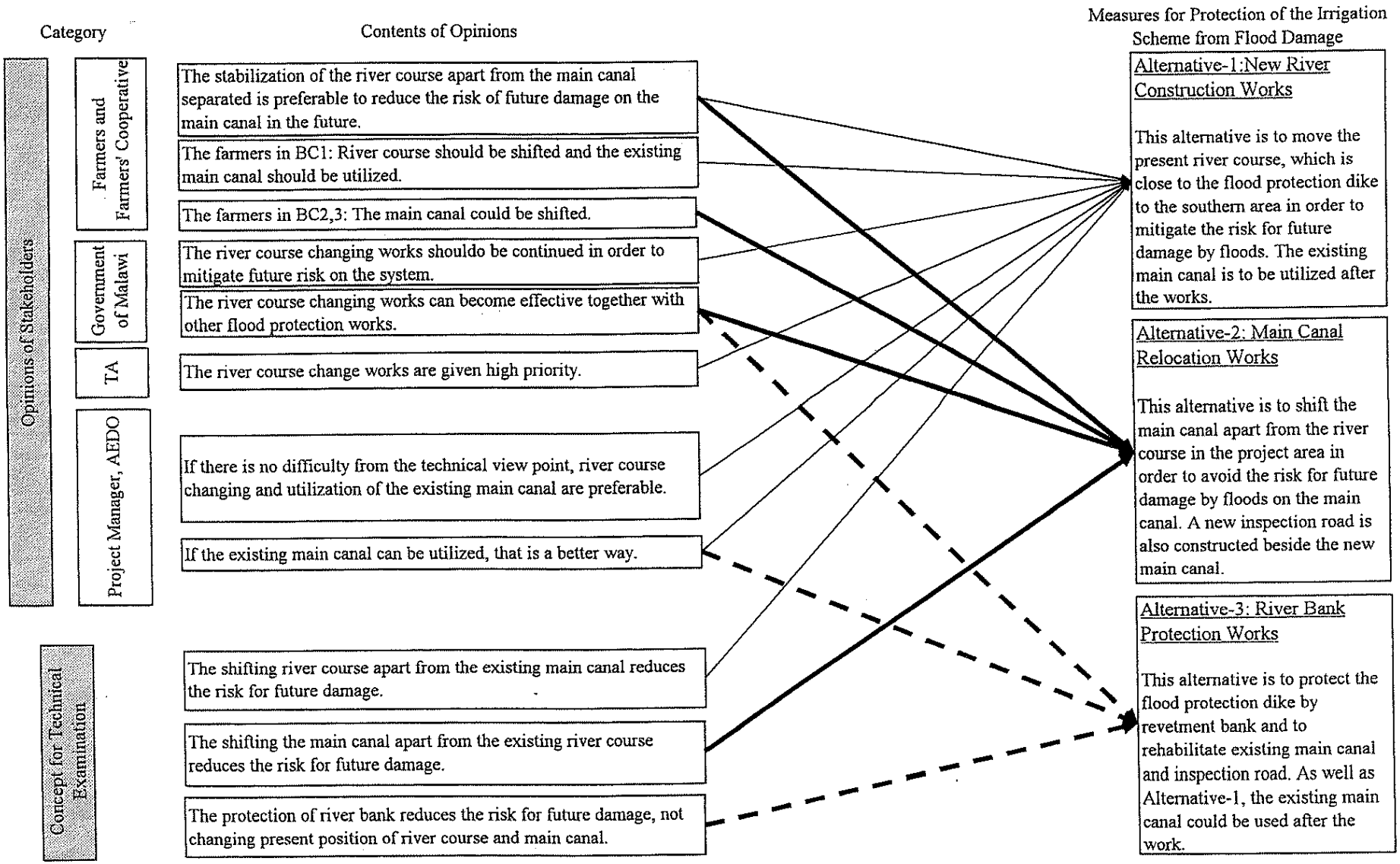


Comparison of Profile between Existing River and New River

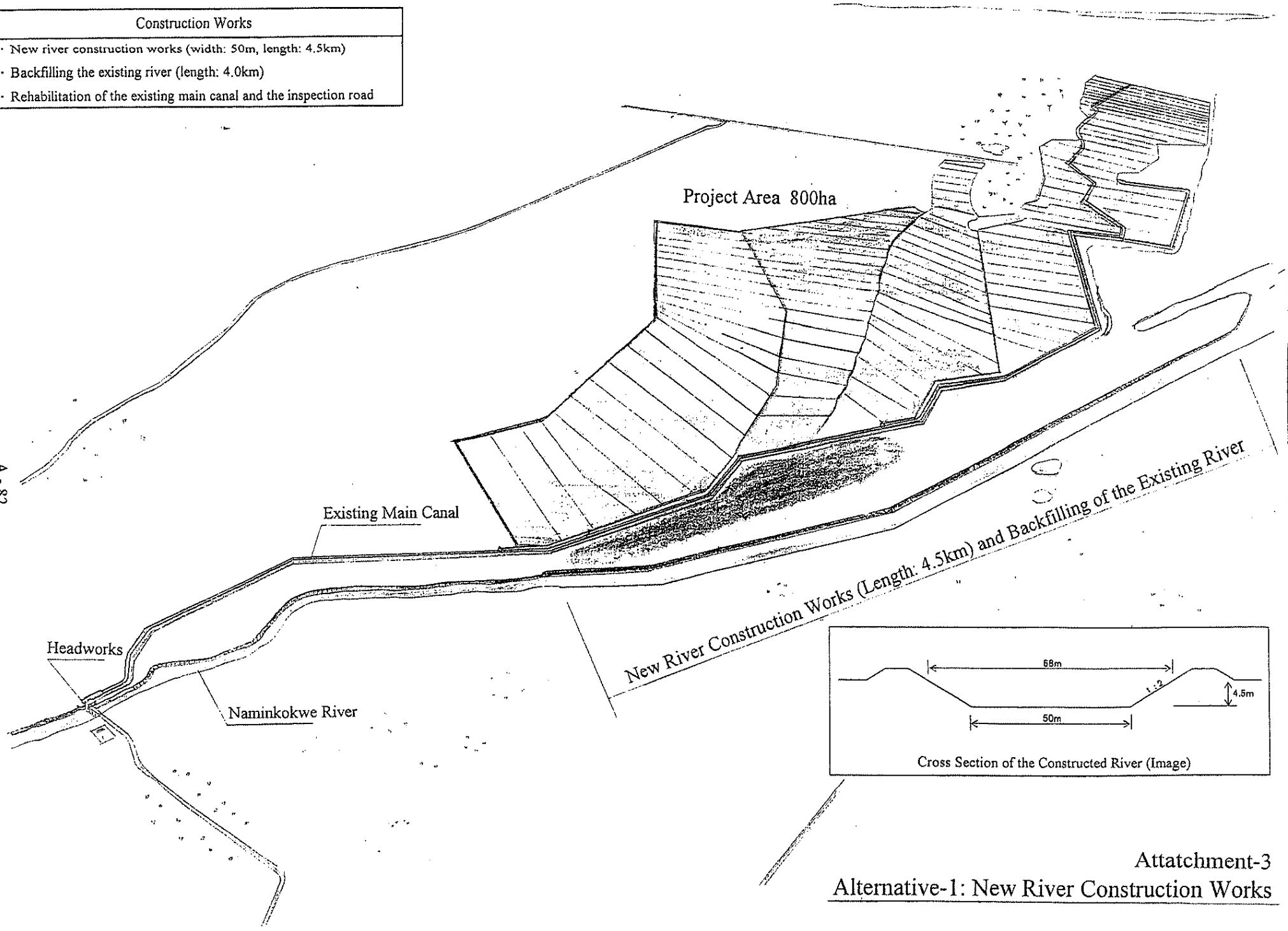
Attatchment-1

Present Condition of the Project Area and the River Course Changing Works

Attachment-2 Selection of Alternatives Measures for Protection of the Irrigation System against Floods



Construction Works
· New river construction works (width: 50m, length: 4.5km)
· Backfilling the existing river (length: 4.0km)
· Rehabilitation of the existing main canal and the inspection road



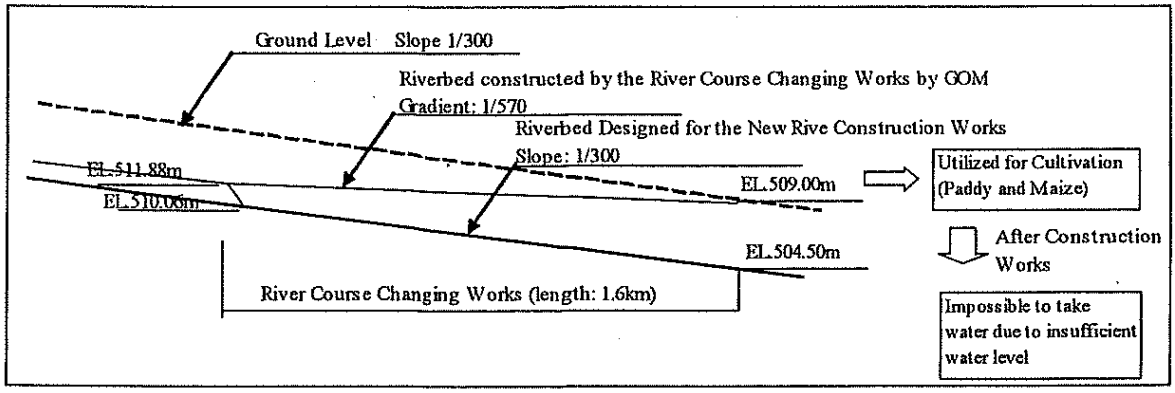
A - 82

Attatchment-3
Alternative-1: New River Construction Works

Attachment-4

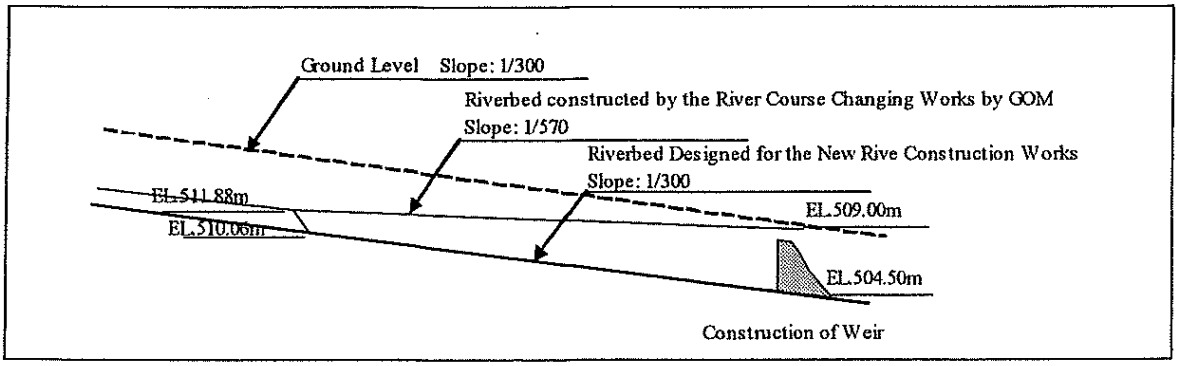
Possibility of Diversion of River Water to the Right Bank Area in case of "Alternative-1: New River Construction Works"

In case "Alternative-1" is adopted, the riverbed elevation will change and become much lower than the present one. At the intake site which is utilized by farmers to irrigate the right bank area, the riverbed will become lower by 4.5m and, thereby, farmers cannot obtain water. This discussion is illustrated in the following figure:



Comparison of Profile between Existing River and New River

To take water from the new river course, it is necessary to construct a weir and keep the intake water level for the right bank area.

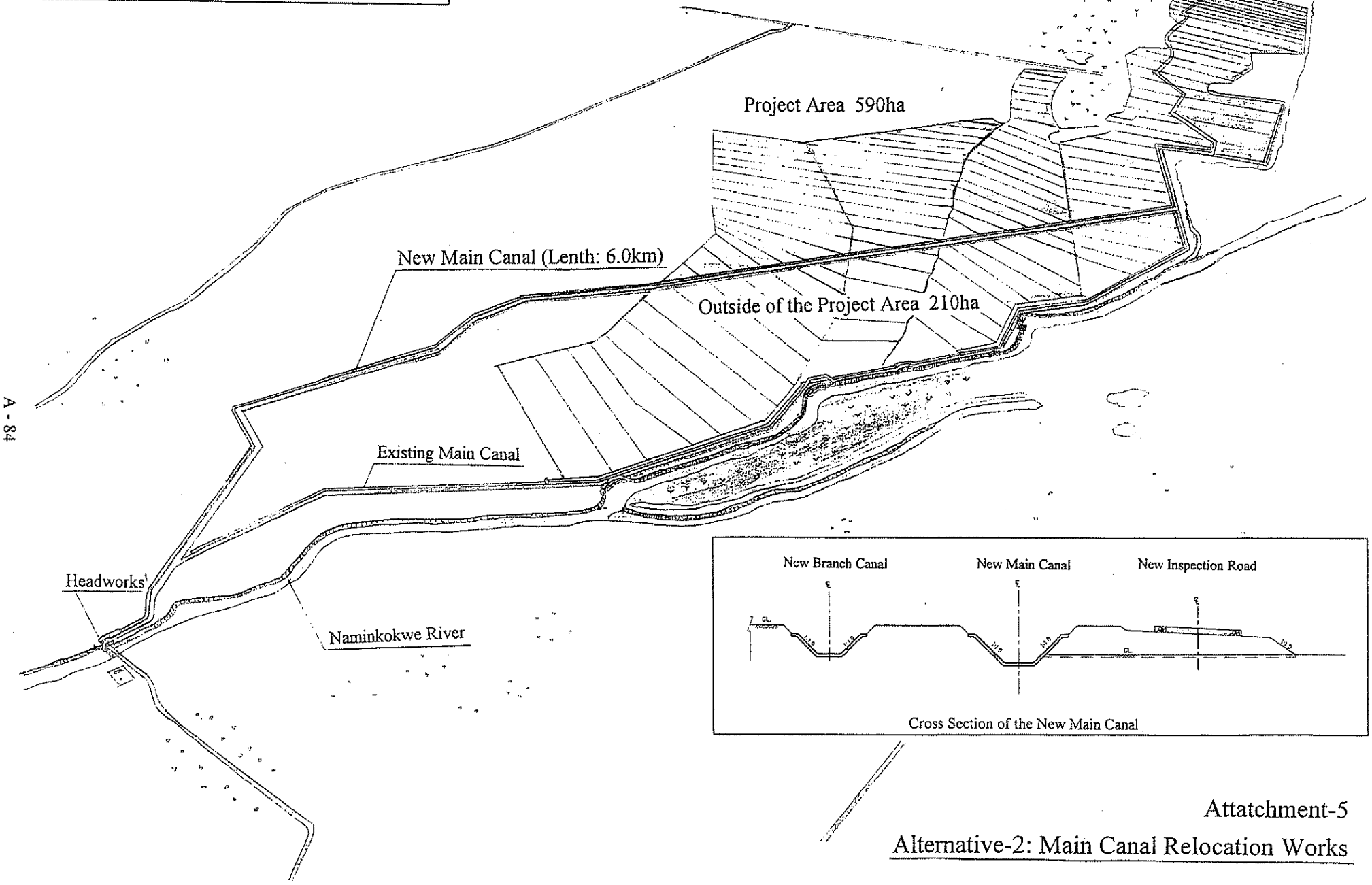


Construction of a Weir to Secure Enough Water Level

However, this measure is rather difficult to adopt from the following reasons:

1. As the weir may be constructed with simple materials such as soil, it will be destroyed by floods easily. On the other hand, a reliable weir may cost so much to guarantee the safe convey of the design flood discharge of 460 m3/s.
2. Sedimentation may be accelerated before the weir so that it might cause the change of the river course in the future.

Construction Works
· Construction of a new main canal (length: 6.0km)
· Construction of new branch canals (length: 1.8km)
· Construction of a new inspection road (length: 6.0km)

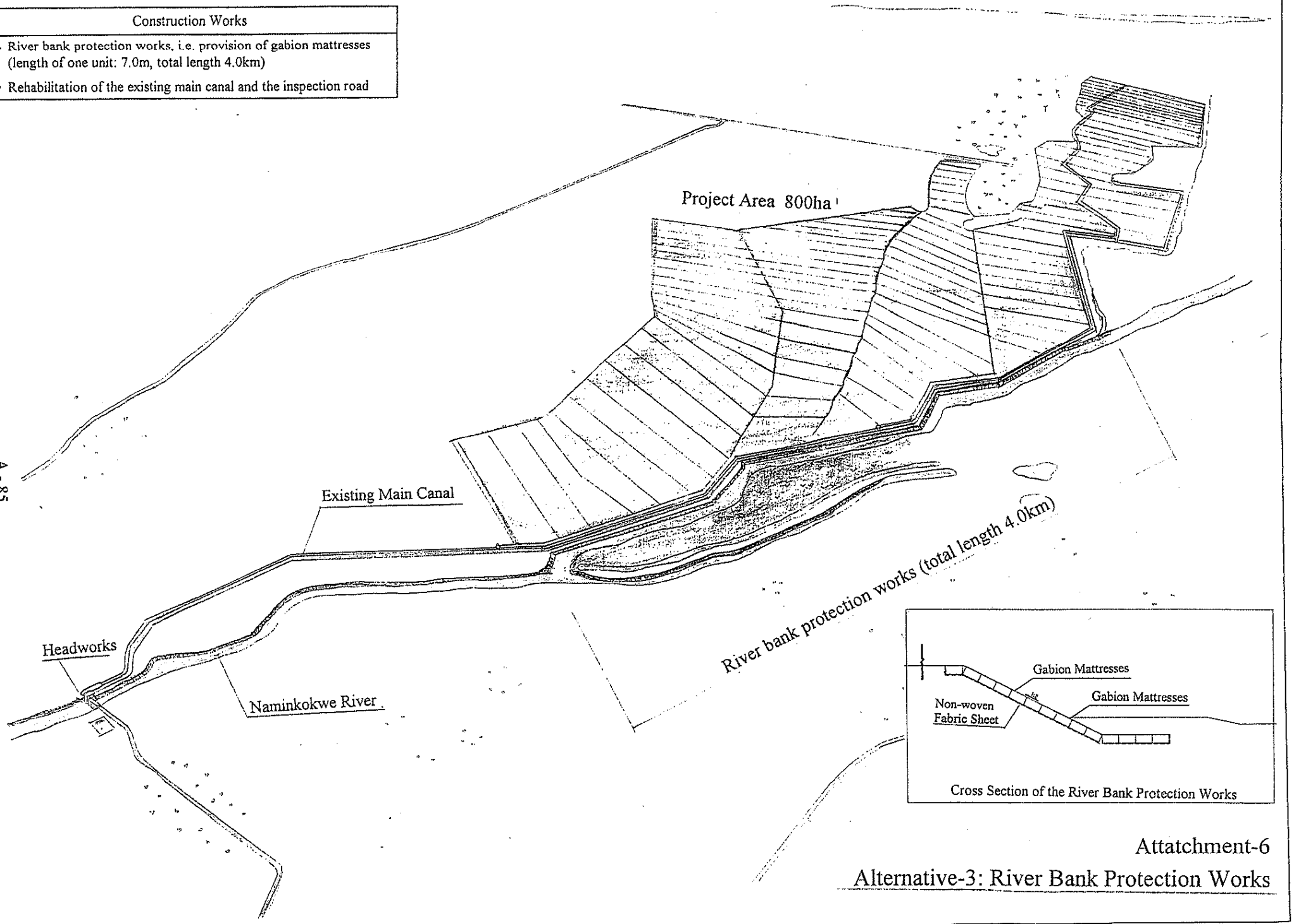


Cross Section of the New Main Canal

Attatchment-5

Alternative-2: Main Canal Relocation Works

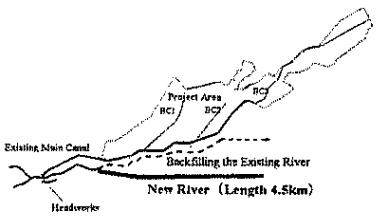
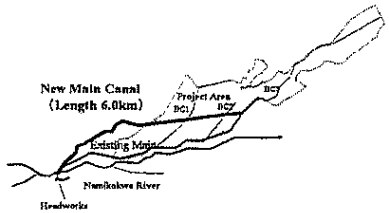
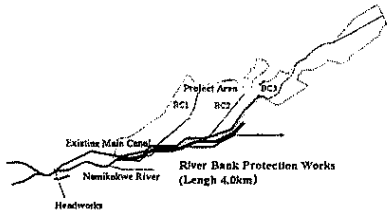
Construction Works
· River bank protection works, i.e. provision of gabion mattresses (length of one unit: 7.0m, total length 4.0km)
· Rehabilitation of the existing main canal and the inspection road



Attatchment-6

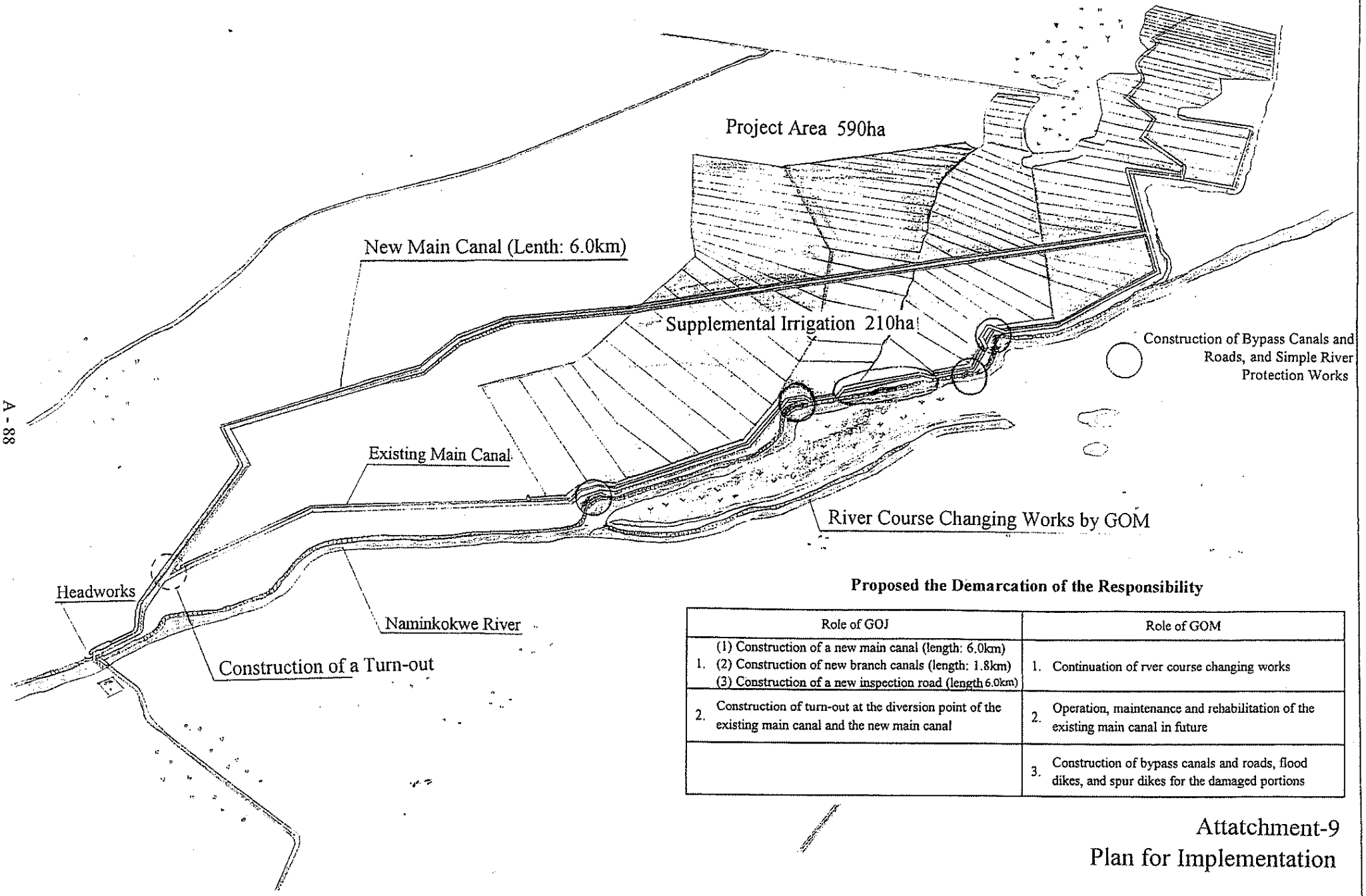
Alternative-3: River Bank Protection Works

Attatchment-7 Comparison of Three Measures for Protection of the Irrigation System against Floods

Items	Alternative-1: New River Construction Works		Alternative-2: Main Canal Relocation Works		Alternative-3 River Bank Protection Works	
General Layout						
Contents of Construction Works	(1) New river construction works (width: 50m, length: 4.5km) (2) Backfilling the existing river (length: 4.0km) (3) Rehabilitation of the existing main canal and the inspection road		(1) Construction of a new main canal (length: 6.0km) (2) Construction of new branch canals (length: 1.8km) (3) Construction of a new inspection road (length: 6.0km)		(1) River bank protection works through provision of gabion mattresses (slope length: 7.0m, total length:4.0km) (2) Rehabilitation of the existing main canal and the inspection road	
Security against Flood Damages A: High B: Middle C: Low	B	(1) It is extremely difficult to control the river course. Floods may cause the lowering of the riverbed, erode the riverbank, and change the river course easily. (2) Floods may damage the right bank area which is mostly inhabited by BC-2 farmers since the new river will pass by the area.	A	The irrigation system will be highly secured against floods with less cost since the new main canal will be moved apart from the river.	B	(1) Gabion mattresses will be adopted as protection works because they have flexibility to the lowering of the riverbed and the landslide of the river bank. (2) Gabion mattresses might be damaged by the rapid stream of the Namikokwe River. Their mesh wire might be broken and the stones be flushed away. (3) In general, gabion mattresses are usually identified as temporary works and their life is estimated to be 5-6 years. Therefore, they should be repaired and replaced periodically. (4) The river protection work will collapse when the foundation portion is scoured, and it will lead to the collapse of the main canal.
Opinion of the stakeholders A: Consistent B: Middle C: Not consistent	A	(1) This alternative is consistent with the opinion of the Malawi government, who has tried to change the river course, farmers and other stakeholders. (2) Farmers living in the right bank area are anxious about flood damages.	B	(1) There are opposite opinions among the BC-1(BC:Branch Canal) farmers who has possesses plots in the 210ha area. (2) Some BC-2 and -3 farmers agreed to this alternative because most of their plots will remain in the project area. (3) Some measures should be taken to rescue the 210ha area which will be excluded from the project area.	B	(1) This alternative coincides with the major opinion of the stakeholders that they want to use the existing main canal continuously. (2) Some of the stakeholders are anxious that the main canal might be damaged again because it is located close to the river.
Difficulty in the construction works A: Relatively easy B: Middle C: Relatively difficult	A	(1) The construction works can be done during dry seasons in principal. (2) Major construction works are earth work which is relatively simple.	B	(1) Temporary water distribution will be required during the construction period, since the works will include the relocation of the main canal and be carried out inside the farm plots. (2) The construction works can be done during both the dry season and rainy season.	C	(1) No construction works could not be done in rainy seasons since most of the works should done inside the river side. (2) Some difficult works, such as dewatering work, are required during the installation of gabion matresses.
Manpower, Cost, and Technical Difficulties for Maintenance Works of the Flood Protection A: Not difficult B: Middle C: Difficult	B	The river condition such as river bank erosion and lowering of riverbed should be periodically monitored until the river channel is stabilized. In case the river approaches to the main canal, it will require certain measures, e.g. providing spur dike, which are relatively large burden for the goverment and the farmers. Annual maintenance cost is estimated to be US$19,000.	A	It will not require much maintenance works since the irrigation system is secured from floods.	C	The condition of the river protection works should be monitored and they should be repaired periodically. Deterioration of mesh wire for gabion mattresses may requires periodical repairing. A lot of labor force is required to maintain the protection works (its whole length is 4.0km). Annual maintenance cost is estimated to be US$22,000.
Construction Cost A: Low B: Middle C: High	C	US$8.4 million	A	US$3.8 million	C	US$7.6 million
Beneficial Area A: Same as the original area B: Smaller than the original area	A	800ha (same area as the original area)	B	590ha (210ha will be excluded.)	A	800ha (same area as original area)
Evaluation and Ranking	②	The construction cost is the highest among three alternatives. There is no guarantee that the new river will not change the direction and it requires periodical monitoring and maintenance works. Furthermore, this alternative could not secure irrigation to the right bank area since the riverbed would become lower than the intake level after the construction works.	①	This alternative could achieve high security against floods with the least construction cost. It is necessary to make a consensus of the farmers who possesses plots in the 210ha area.	③	As the main canal faces the river directly, the irrigation function may stop suddenly in case of flood damages to the main canal. This alternative requires high construction cost and large burden for maintenance works.

Attachment-8 Comparison of Supplemental Irrigation Methods for the 210ha

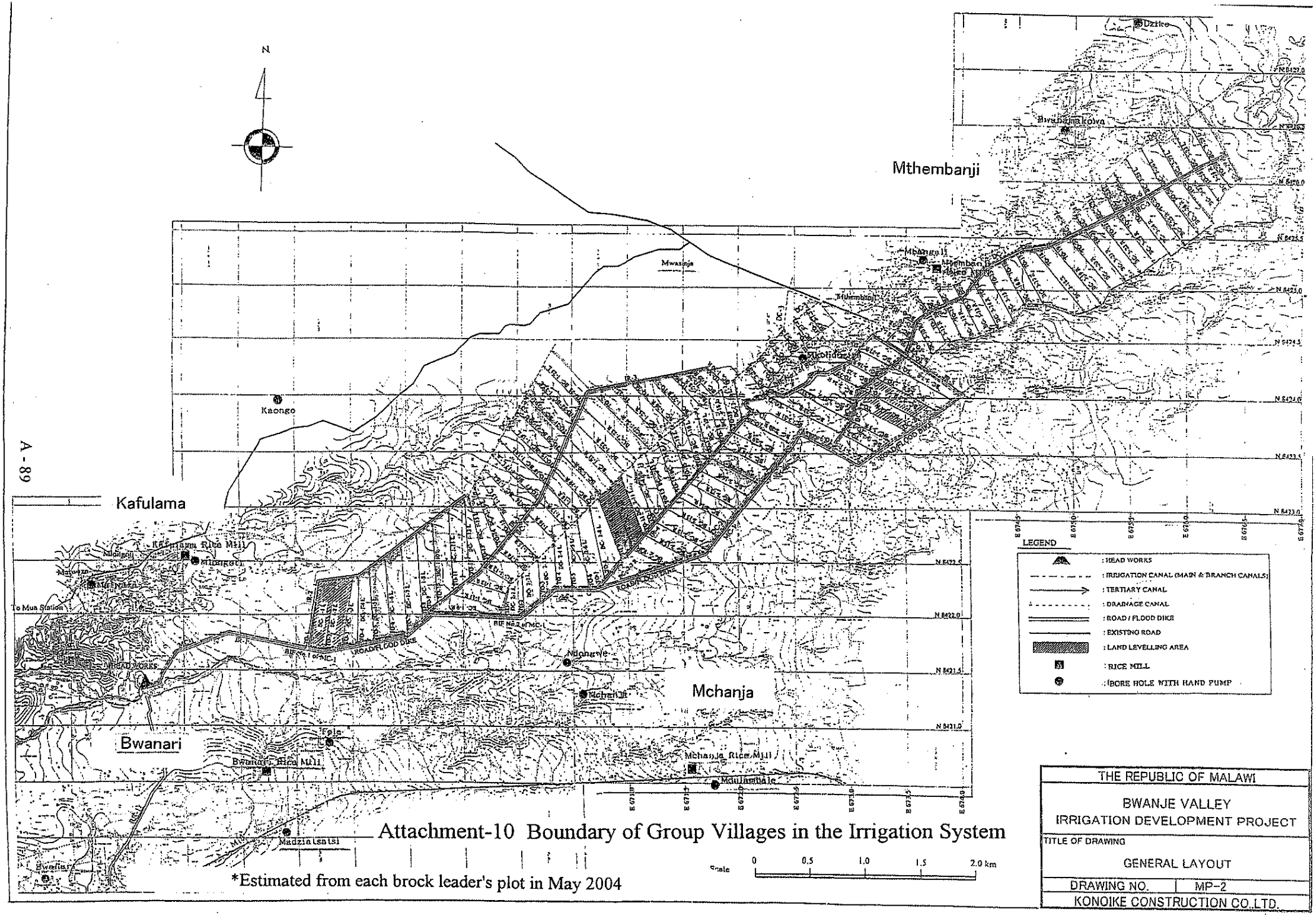
Items	Method-1 Pump Irrigation		Method-2 Gravity Irrigation through the New Main Canal		Method-3 Gravity Irrigation from Small Reservoirs or Water Tanks		Method-4 Gravity Irrigation through the Existing Main Canal	
Construction Works	Small pumps will be installed to supply water to the field.		The existing branch canals and tertiary canals will be replaced by new ones, since the new main canal will be located at the opposite side of the field after the relocation of the main canal.		Small reservoirs or water tanks will be constructed at the upstream of the fields.		A diversion facility such as turnout will be constructed at a certain place of the new main canal to divert water to the existing main canal.	
Construction Cost (Initial Investment) A: Low B: Middle C: High	B	Small pumps are not so expensive, therefore, initial investment is not so high.	C	The construction cost will be the highest among the four methods.	C	The construction cost is the second highest among four methods.	A	It requires construction of a turnout at the new main canal. The construction cost is not high.
Sustainability (maintenance works) A: Sustainable B: Middle C: Not Sustainable	C	It is difficult for the farmers to maintain pumps and purchase fuel.	A	It requires less maintenance work, as it is gravity irrigation system.	B	It requires works to remove sediment in the reservoir.	B	It requires less maintenance work as it is gravity irrigation system. However, once the existing canal is damaged by floods, it will require rehabilitation works.
Risk of Flood Damages A: Little B: Middle C: Much	A	The pumps may not be damaged by flood.	B	Farm lands along the river might be damaged but the main irrigation system will not be affected. As a whole, it has a small risk for flood damages.	A	It has little risk since the water source will be located at a certain place secured from floods.	C	This method has the highest risk of flood damages among the four methods, since the existing main canal is close to the river. However the risk has decreased due to the river course changing works done by GOM.
Evaluation A: Suitable B: Middle C: Not Suitable	C	It is not recommendable, since it is difficult for the farmers to carry out the maintenance works.	C	The construction cost is so high that the cost for unit area in the 210ha will exceed the cost for the project area (590ha).	C	The construction cost is high and it is difficult for the farmers to carry out the maintenance works.	B	The existing canal can be utilized and the maintenance works can be continued as it is. Although there is still a risk of flood damages, the risk has decreased due to the river course changing works done by GOM.



Proposed the Demarcation of the Responsibility

Role of GOJ	Role of GOM
1. (1) Construction of a new main canal (length: 6.0km) (2) Construction of new branch canals (length: 1.8km) (3) Construction of a new inspection road (length 6.0km)	1. Continuation of rver course changing works
2. Construction of turn-out at the diversion point of the existing main canal and the new main canal	2. Operation, maintenance and rehabilitation of the existing main canal in future
	3. Construction of bypass canals and roads, flood dikes, and spur dikes for the damaged portions

Attatchment-9
Plan for Implementation



Attachment-10 Boundary of Group Villages in the Irrigation System

*Estimated from each brock leader's plot in May 2004

THE REPUBLIC OF MALAWI	
BWANJE VALLEY IRRIGATION DEVELOPMENT PROJECT	
TITLE OF DRAWING	
GENERAL LAYOUT	
DRAWING NO.	MP-2
KONOIKE CONSTRUCTION CO.,LTD.	

Attatchment-11 Tentative Alternatives for Method of Land Re-Allocation

Alternative-1. Present Approval (to utilize present condition)	Alternative-2. Even Distribution (to reshuffle)	Alternative-3. Even Substitution
To reallocate 590ha to farmers who have their land under 590ha originally and farmers who have their land under 210ha and want to get some lands under 510ha, taking the present condition into consideration as much as possible.	To reallocate 590ha equally and mechanically to farmers who have the land under 590ha originally and farmers who have their land under 210ha and want to get some lands under 510ha.	To reallocate 590ha and 210ha respectively to all farmers under 800ha, equally and mechanically
Explanation on the necessity of land reallocation is made and confirmation whether he/she may remain outside the scheme or he/she wants to get some lands inside the scheme is taken one farmer by one in 210ha which become outside the scheme. Toward farmers who want to get some land inside the scheme, land reallocation is made. Firstly the land which is possessed by one farmer and bigger than average area 0.4ha is reallocated to the farmers. Finally, some adjustments are made in order for every farmer to have almost equal size of land. On the other hand, discussion is required among stakeholders regarding reallocation of 210ha.	The process until the collection of the request of farmers in 210ha is as same as that under Alternative-1. 590ha is reallocated equally and mechanically to farmers who have the land under 590ha originally and farmers who have their land under 210ha and want to get some lands under 510ha. On the other hand, discussion is required among stakeholders regarding reallocation of 210ha.	This is the reallocation to all farmers under 800ha. Namely, 590ha ÷ 1,926 farmers = 0.3ha, and 210ha ÷ 1,926farmers = 0.1ha. Each plots are reallocated to farmers respectively (0.3ha in 590ha, 0.1ha in 210ha) and mechanically.

Practically, there should be various situations in the field therefore it is necessary to examine detail condition/criteria carefully, which suite to the field situation. Possible conditions are assumed at this moment as follows;

- Actual land holding size (less than 0.1ha ~ 8ha) and confirmation of formal qualified farmers for land reallocation
- Deal of un cultivated land
- Distance from house to land
- Situation of land (distance from intake of tertiary canal, condition of land leveling)
- Situation of land rent

Reference

RESULT OF COLLETION OF FARMERS' OPINIONS

1. WORKSHOP (QUALITATIVE DATA)

1.1 Schedule

From the afternoon of Dec.16, workshops were held for the areas of BC-1, -2 and 3 as shown in the following table:

Date	Time	Location	Organizations of Attendants
Dec. 16	13:30-17:00	Project Office	Farmers in BC-1, Cooperative, Project Office of Bwanje Irrigation Scheme, Embassy of Japan, and JICA Study Team
Dec. 17	09:30-12:00	Meeting Place in Mthembanji	Farmers in BC-3, Cooperative, Project Office of Bwanje Irrigation Scheme, Embassy of Japan, JICA Malawi Office, and JICA Study Team
Dec. 17	13:30-17:00	Meeting Place in Mchanja	Farmers in BC-2, Cooperative, Project Office of Bwanje Irrigation Scheme, Embassy of Japan, JICA Malawi Office, and JICA Study Team

1.2 Method

Collection of opinions was made by Rapid Rural Appraisal (Ranking). Following numbers of farmers participated.

BC-1	BC-2	BC-3
88 farmers	66 farmers	63 farmers

Total 217 farmers (11 % of the total farmers 1,926 in the scheme)

Agenda was as follows.

- Pray
- Introduction of each other
- Explanation of purpose
- Explanation of present situation
- Discussion / Ranking

  a)opinions on present situation about Bwanje Valley Irrigation System

b)opinions on alternative plans currently under examination

Collected opinions through discussion were prioritized together with farmers.

- Summarizing of workshop and explanation of future schedule
- Closing

1.3 Result

Result of workshop was summarized as attached (refer to page A1-3).

2. Questionnaire Survey (quantitative data)

2.1 Schedule

The survey was conducted right after completion of workshop in each Branch Canal, held on 16th, 17th of December 2004, mentioned in 1.1.

2.2 Method

The survey was made by use of questionnaire. Questionnaires were distributed to farmers who mainly participated in workshop and each farmer filled up one form of questionnaire. AEDO assisted to fill up the form in case farmers were illiterate.

Following numbers of questionnaire were collected.

BC-1	BC-2	BC-3
84	71	62

Total 217 numbers (11 % of the total farmers 1,926 in the scheme)

2.3 Result

Result of workshop was summarized as attached (refer to page A1-4~9).

Summary of Farmers' Opinions in Workshops

	BC1 Date: 16th December Participants: 88 farmers Location: Project Office	BC2 Date: 17th December Participants: 66 farmers Location: Primary School in Mchanja village	BC3 Date: 17th December Participants: 63 farmers Location: Primary School in Mthembanji village
Opinions on Present Situation of Bwanje Valley Irrigation Scheme (the Order of Priority)	1 Main Canal is close to the river. As countermeasure, river course should be shifted. 2 Main Canal is damaged. 3 Land is unlevelled. 4 Plot is small (land reallocation issue) 5 Main Canal is small. 6 Road is not fully maintenanced. 7 There is no market.	1 Main Canal is damaged because Main Canal is close to the river. As countermeasure, (1) Main Canal should be shifted (2) River course should be shifted. 2 Land is unlevelled. 3 Tertiary Canal is not cemented. 4 There is lack of bridge for access to the land in the scheme 5 Main Canal is small. 6 There are no dam and reservior. 7 Sand is in the canal.	1 Main Canal is damaged. As countermeasure, (1) Main Canal should be shifted (2) River course should be shifted. 2 Present facilities is not enough to secure adequate water. (each branch canal should have each headwork, main canal is too small, no reservoir, water would be pumped up from the lake to dam, and the scheme is small considering size of main canal) 3 Land is unlevelled. 4 Tertiary Canal is not cemented. 5 Farmers want water to their land by pipe. <Same priorities after the fifth> ・ Sand is in the canal. ・ There is lack of water in winter (dry) season. ・ Cooperative is immature.
Opinions on Future Plan of Bwanje Valley Irrigation Scheme (Not in the Order of Priority)	・ River course should be shifted (refer to bove opinions). ・ Existing Main Canal should be rehabilitated and utilized.	・ First priority is Main Canal should be shifted, second priority is River course should be shifted (refer to above opinions).	・ First priority is Main Canal should be shifted, second priority is River course should be shifted (refer to above opinions).
Opinions on Canal Shifting Plan	・ If main canal were shifted, some farmers would lose their land inside the Scheme (outside irrigable area). ・ Former owner who had the land before establish this Scheme might bring back the land if main canal were shifted and the land became outside the scheme. ・ Land reallocation is difficult (farmers from the land outside future scheme to the land inside the future scheme). ・ Farmers want to cultivate their lands which can receive water. They don't want to cultivate outside the scheme (not irrigable area). ・ Even if main canal will be shifted, present main canal is requested to be utilized. ・ If possible, new branch canal is requested to be constructed from shifted main canal so that present land could receive water.	・ Farmers may cultivate their land which will be outside the future scheme, under rainfed condition. ・ Land reallocation can be done (farmers from the land outside future scheme to the land inside the future scheme).	・ Farmers may cultivate their land which will be outside the future scheme, under rainfed condition. ・ Land reallocation seems difficult (farmers from the land outside future scheme to the land inside the future scheme). ・ Land reallocation can be assisted (farmers from the land outside future scheme to the land inside the future scheme). ・ Land reallocation will be discussed in land allocation committee in the cooperative.(farmers from the land outside future scheme to the land inside the future scheme).
Summary of opinions (majority)	***River course should be shifted and the existing main canal should be rehabilitated and utilized.*** ***Land reallocation is difficult if the main canal is shifted.***	***Shifting of the main canal is acceptable.*** ***Land reallocation can be done if the main canal is shifted.***	***Shifting of the main canal is acceptable.*** ***Regarding land reallocation, both opinions (difficult and possible) were observed if main canal is shifted.***

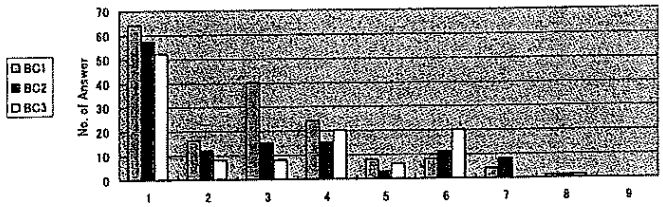
Result of Questionnaire Survey for The Project for Rehabilitation of The Bwanje Valley Irrigation System

A lot of formulating queries that only the person who did a specific answer by the pre-question answered the question were included in this questionnaire. Though there were farmers who had answered without understanding the queries of the questions mentioned above, this results include such answers in order to pick up maximum needs of farmers. Figure in pie chart is number of anwers and figure under blacket in same chart is the propotion in the whole answers in parentheses.

A. Present situation of Bwanje Valley Irrigation System

A-1 What are your most unsatisfactory issues under present situation of Bwanje Balley Irrigation System?
Please select 2 (two) choices.

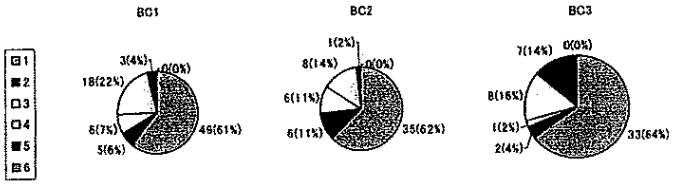
1.Adequate water doesn't come to your land
2.Water management committee doesn't function well
3.Situation of land tenure is not fair in Bwanje Valley Irrigation System
4.Crop yield is low.
5.Farming information and input can not be obtained.
6.Product of crop can not be sold at satisfactory price or there is no access to sell the product
7.Distance between your house and your land in Bwanje Valley Irrigatio System is long due to the lack of bridge
8.There are no particular unsatisfactory issues.
9.Others



It is the most unsatisfactory issue that adequate water doesn't come to the land in BC1, 2 and 3.
In BC1, the second unsatisfactory issue is unfair land tenure and numbers of its answer are much more than those in other branch canals.
In BC2, the second unsatisfactory issues are unfair land tenure and low crop yield. Numbers of answer of these two issues are not much difference among other issues. In BC3, the second unsatisfactory issues are relating to farming practice, low crop yield and marketing matters.

A-1-1 If you select 1 in Question A-1, what is the first reason that water doesn't reach to your land?

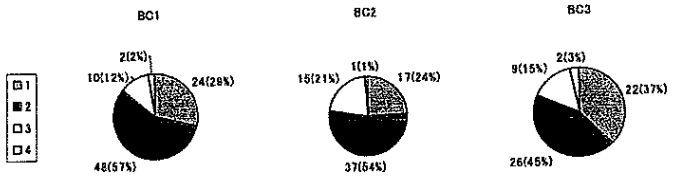
1.There are no adequate water in the canal because the main canal was damaged by heavy flood
2.Water doesn't flow smoothly because there is a lot of silt in the canal
3.Too much water is withdrawn to the land in upper stream area in Bwanje Valley Irrigation System.
4.Water can not cover the land because level of the land is higher than water level.
5.Water can not be withdrawn from headwork and/or Branch canal to because control of the gate is not appropriate.
6.Others



More than 60% of the farmers in BC1,2 and 3 recognize the reason is there is no adequate water in the canal because of damage of the main canal.
The second reason in BC1,2 and 3 is that the land is not leveled.
In BC3, the propotion of numbers of answer "unappropriate gate control" to total answers is higher than that in other BCs.

A-2 Main canal has suffered from heavy flood. How did it influence on your land?

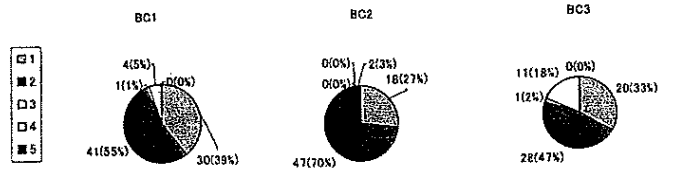
1.Water didn't come to your land totally.
2.Amount of water decreased compared with amount of water before flood.
3.Threat to suffer your land from flood increased.
4.No paticular change.



In each BC, as an influence by the damage of main canal, farmers think firstly "amount of water decreased", secondly "water didn't come to their land totally", thirdly "threat to suffer their land from flood increased". Same tendency is observed in all three BCs.

A-3 Currently Government of Malawi conducts the construction work to change the course of Namikokwe river. What do you expect for this work?

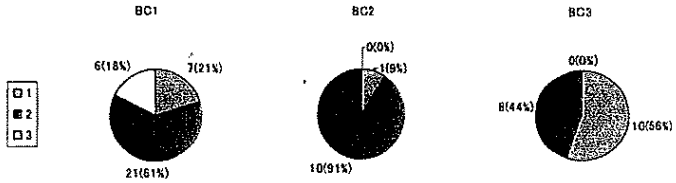
1.Present main canal could be utilized without any threat of damage for future.
2.Threat of suffering your land might decrease because river course would be apart from your land and stabilized.
3.No expectation
4.On the contrary there is unsatisfaction or concern
5.Others



As for present river course changing work, farmers in each BC expect firstly "Threat of suffering your land might decrease because river course would be apart from your land and stabilized" and secondly "Present main canal could be utilized without any threat of damage for future". Around 20 % of farmers in BC3 have unsatisfaction or concern, this propotion is bigger than that in other BCs.

A-3-1 If you select 4 in Question A-3, what is the content about unsatisfaction or concern?

1.River course might be changed again to previous channel due to future flood.
2.Flood might occur in the new river course
3.Others

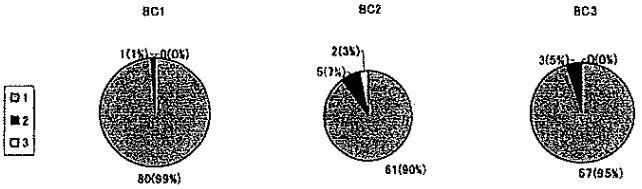


In BC1, about 60 % of the farmers are worried about flood which might occur in the new river course, on the other hand, around 20 % of them think river course might be changed again to previous channel. In BC2, almost 90 % of the farmers are worried about flood which might occur in the new river course. In BC3, the concern "river course might be changed again to previous course", which around 60 % of the farmers answerd , following "river course might be changed again to previous channel due to future flood"(around 40%).

Farmers organization

A-4 Are you a member of farmers organization?

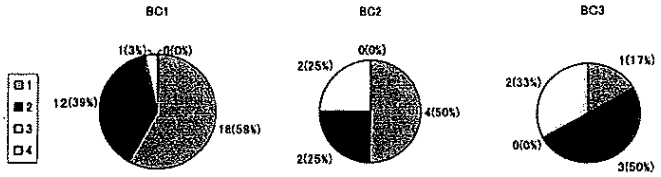
1.Yes
2.No
3.I do not know



More than 90% of the farmers recognize that they are members of farmers cooperative (Here "cooperative" is used instead of "organization" because of registration completed) in every BC.

A-4-1 If you select 2 in Question A-4, what is the reason?

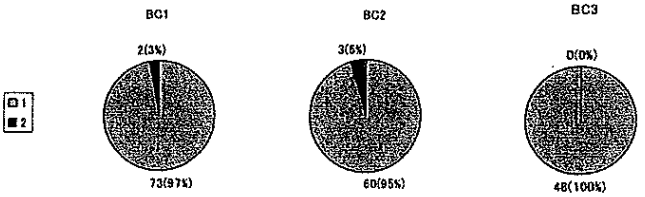
1.Water doesn't reach to your land from canal
2.You do not want to do obligation which member has to do
3.You do not know farmers organization itself
4.Others



In BC1 and 2, the first reason to prevent farmers to be a member of coopertive is "water doesn't reach to their land from canal".
In BC3 around 50 % of the farmers think they do not want to do the obigation which member has to do.
(It has to be noted that numbers of answer are less than 10 in BC2,3.)

A-4-2 If you select 1 in Question A-4, do you participate in activities of farmers organization?

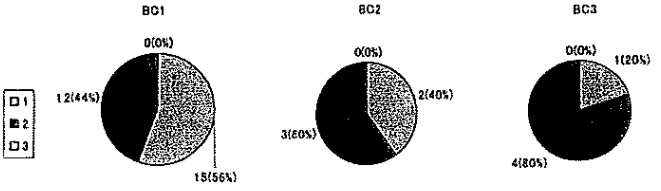
1.Yes
2.No



Almost all of the farmers (more than 95%) in each BC recognize that they participate cooperative acitivities.

A-4-3 If you select 2 in Question A-4-2, what is the reason?

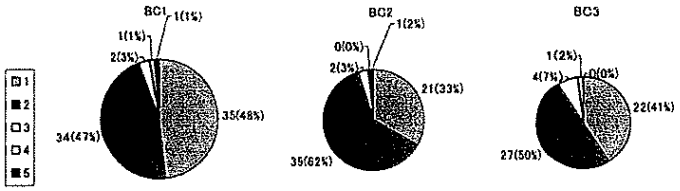
1.Water doesn't reach to your land from canal
2.You do not know its activities
3.Others



The first reason to prevent farmers to participate cooperative's activities in BC1 is "water doesn't reach to their land from canal" (almost 60 %), and first rason in BC2,3 is "the farmers don't know the activities of cooperative"(60~80%).
(It has to be noted that numbers of answer are less than 10 in BC2,3.)

A-5 What do you expect for farmers organization most?

1.To conduct its activities appropriately
2.To inform usage of collected money from you
3.To disseminate information of activities
4.Nothing special
5.Others

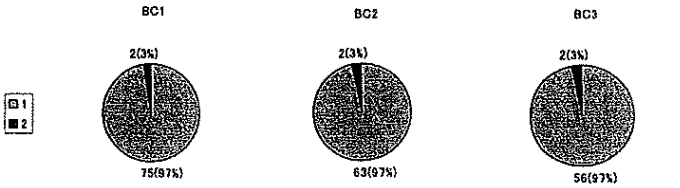


In every BC, more then 50% of the farmers expect that coopertive should inform usage of collected money from them, 30~50% of the farmers think that cooperative should conduct its activities appropriately.

Water fee

A-6 Did you pay water fee last year?

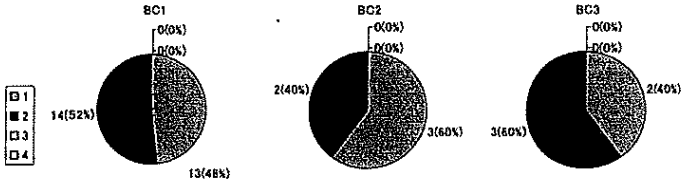
1.Yes
2.No



Almost all of the farmers in each BC reply that they paid water fee.

A-6-1 If you select 2 in Question A-6, what is the reason?

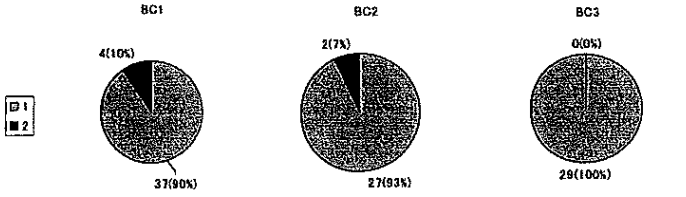
1.Water doesn't reach to your land from canal
2.Water reaches to your land from canal but you do not know the usage of collected money from you
3.You don't have enough money to pay.
4.Others



As the reason why farmers didn't pay water fee, "Water doesn't reach to your land from canal", and "They don't know the usage of collected money" account for 40~60 % respectively in each BC.
(It has to be noted that numbers of answer are less than 10 in BC2,3.)

A-6-2 If you select 2 in Question A-6, do you surely pay water fee if you receive water from canal?

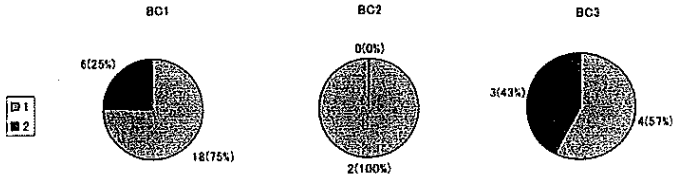
1.Yes
2.No



Opinion "farmers surely pay water fee if they receive water from canal" is dominant in every BC.

A-6-3 If you select 2 in Question A-6-2, what is the reason?

1.You do not know the usage of collected money from you
2.Others

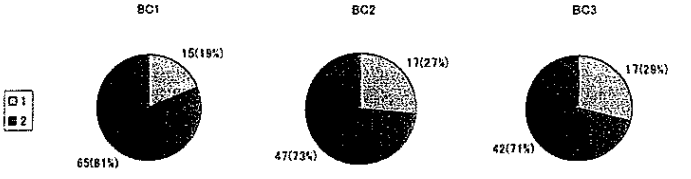


Regarding the reason not to pay even though water comes to the field from canal, opinion of the distrust "they do not know the usage of money which they pay" accounts for more than 60% through each BC.
(It has to be noted that numbers of answer are less than 10 in BC2,3.)

Land levelling

A-7 Is your land levelled?

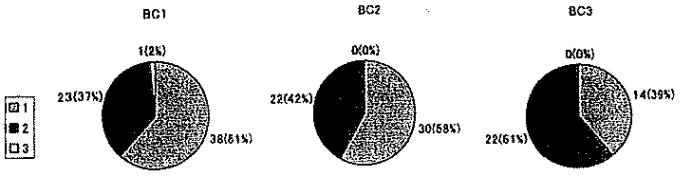
1.Yes
2.No



70~80% of the farmers which answerd this question think their land is not leveled.

A-7-1 If you select 2 in Question A-7, what is your dissatisfaction on your land not levelled ?

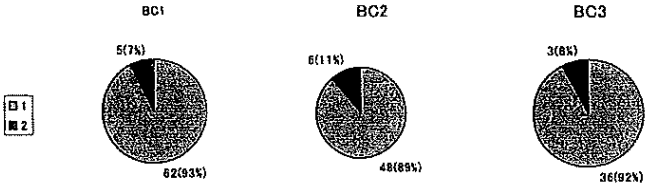
1.Water doesn't reach to your land from canal
2.It is not fair because some lands have already been levell
3.Others



In BC1,2 opinion "water doesn't reach to the land" as dissatisfaction of unleveld land account for 60% and 40% of the opinion is "unfairness because of levelled land which is possessed by other farmers". In BC3, 60% of the opinions is unfairness.

A-7-2 If you select 2 in Question A-7, do you want your land to be levelled?

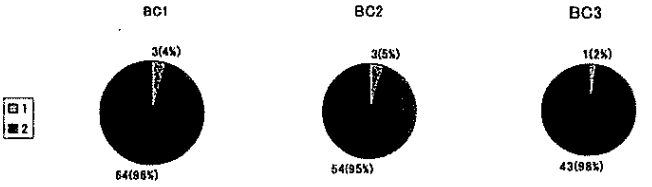
1.Yes
2.No



Around 90% of all the farmers want their land to be leveled.

A-7-3 If you select 1 in Question A-7-2, do you level your land by yourself?

1.Yes
2.Difficult

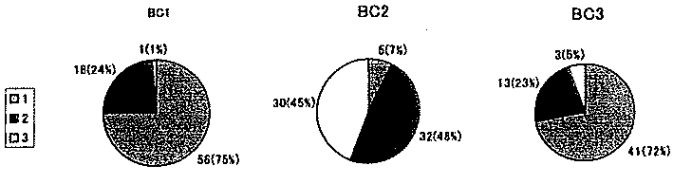


Almost all the farmers in every BC think it is difficult for them to level their land by themselves.

B. Future plan for Bwanje Valley Irrigation System, which is now under examination by Governemnt of Malawi and Government of Japan

B-1 If your land can not receive water from canal based on the technical examination, what do you think about this assumption?

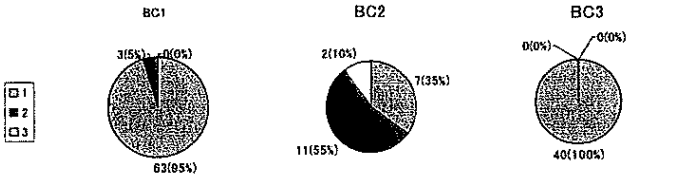
1.Object
2.No way, accept
3.No paricular problem



In BC1 and 3, more than 70 % of the farmers object a plan "their land can not receive water from canal" and around 20% of the farmers accept such a plan for lack of an alternative. On the other hand, in BC2 more than 90% of the farmers accept such a plan for some reason or other <"no choice but to accept" (48%), "no problem" (45%)>, these answers are far more than those of the objection (7%).

B-1-1 If you select 1in Question B-1, what is the reason?

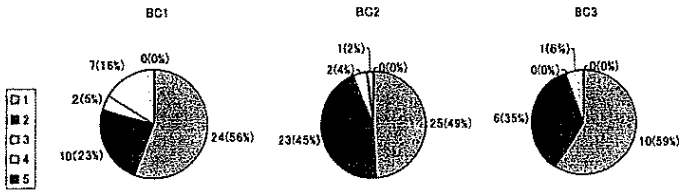
1.You do agriculture only at your land inside Bwanje Valley Irrigation Sysytem so if water doesn't come to your land, production would decrease and this result in serious problem for your life
2.You merely object to stopping water distribution due to the plan although water is received right now
3.Others



In BC1 and 3, opinion No.1 accounts for more than 90% and this implies the scheme is important. However, 55% of the farmers in BC2 answer opinion No.2, that means infringement of the vested right.

B-1-2 If you select 2 or 3 in Question B-1, what is the reason?

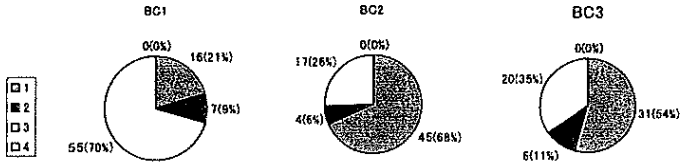
1.It is no way to accept if the plan would be technically right
2.There is no problem because you can cultivate this land inside Bwanje valley irrigation system by use of rainfall
3.There is no problem because you can cultivate other land outside Bwanje valley irrigation system
4.The situation would not be changed because water doesn't reach to your land right now, too.
5.Others



In each BC, the reason that is no choice but to accept if a plan is technically right accounts for 50 ~ 60 %. As for the second reason through all BCs (opinion No.2), the propotion in BC2 and 3 (45%,35%) is bigger than that in BC1 (23%). The third reason in BC1 (opinion No.4) accounts for 16%, bigger than the propotion in other BCs.

B-2 If your land can not receive water from canal as a result of the technical examination, how do you do your farming activities?

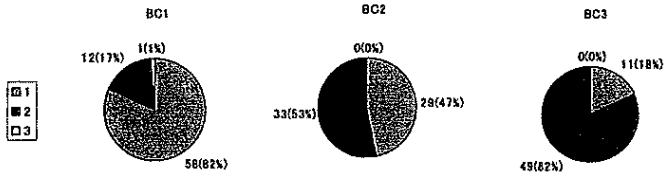
1.Continue your fariming activities in the same land by use of rainfall even if water might not come from canal
2.Not continue yor fariming activities in the land and leave the land
3.Need other land (to be re-distributed, for example) inside Bwanje Valley Irrigation Sysytem
4.Others



In BC2 and 3, 50% ~70% of opinions is "Continue their farming activities in the same land by use of rainfall", following "need other land in the scheme" (26%, 35%). On the other hand in BC1, 70% of opinions is "need other land in the scheme" and opinion "Continuation of their farming by raifall" accounts for 20 %.

B-3 If all the lands inside Bwanje Valley irrigation system are re-distributed again, how do you think of possibility of the realization?

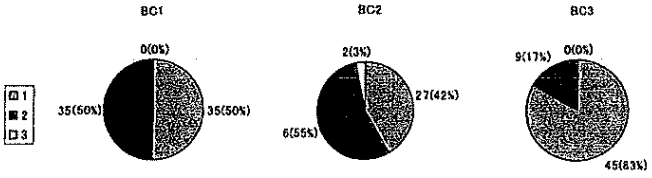
1.Possible
2.Difficult
3.Others



In BC1, more than 80% of opinions is that land re-distribution is possible. In BC2, both opinions, "difficult" and "possible" have almost same propotion(47%,53%, respectively). On the other hand in BC3, opinion "Land re-distribution is difficult" accounts for more than 80% on the contrary of BC1's case.

B-4 If size of your land decreases as a result of re-distribution of the land, what do you think?

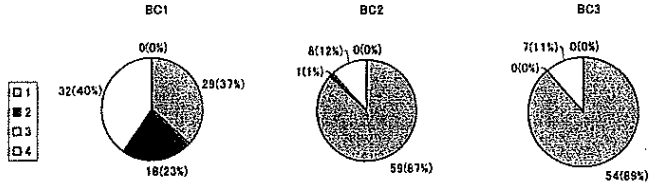
1.Object
2.No way, accept
3.Others



Both opinions "difficult" and "accept" is competitive in BC1. In BC2, opinion "accept" (55%) is more than "difficult"(42%)
In BC3, opinion "difficult" accounts for more than 80%, and this is far more than that of "accept"(17%)

B-5 Do you have any request for both governments in order to mitigate future flood damage by Namikokwe river?

1.Change and stabilize river channel apart from present main canal
2.Keep as it is because it is not good to change the nature any more
3.Basically any plan is acceptable as far as present land and canal system would be protected
4.Others

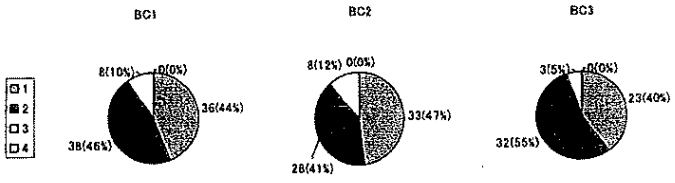


In BC1, propotion of the opinion "change and stabilize river course apart from present main canal" is almost same as that of "any plan is acceptable as far as present land and canal system would be protected"(around 40%). And Opinion No.2 accounts for around 20%, this implies their concern about future flood due to uncertainty of the nature.
In BC2,3, propotion of the opinions "change and stabilize river course apart from present main canal" is almost 90%.

C. Others

C-1 Suppose future plan would be decided and include some contents which is different from your opinion, as the result of technical examination in order to mitigate future flood damage to Bwanje Valley Irrigation System. Do you accept such plan?

1.Accept without any condition
2.Accept with some condition
3.Not Accept
4.Others



Around 90% of the farmers (opinion No.1 and opinion No.2) in every BC accept a plan which include some contents that is diferent from their opinions for protection of the scheme from flood dmage, for some reason or other.

JAPAN'S GRANT AID SCHEME

1. Grant Aid Procedure

1) Japan's Grant Aid Program is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request. If necessary, JICA send a Preliminary Study Team to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Programme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

a) confirmation of the background, objectives and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation;

b) evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from the technical, social and economic points of view;

c) confirmation of items agreed on by both parties concerning the basic concept of the Project;

d) preparation of a basic design of the Project; and

e) estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For the smooth implementation of the Study, JICA uses a consulting firm selected through its own procedure (competitive proposal). The selected firm participates the Study and prepares a report based upon the terms of reference set by JICA.

At the beginning of implementation after the Exchange of Notes, for the services of the Detailed Design and Construction Supervision of the Project, JICA recommends the same consulting firm which participated in the Study to the recipient country, in order to maintain the technical consistency between the Basic Design and Detailed Design as well as to avoid any undue delay caused by the selection of a new consulting firm.

3. Japan's Grant Aid Scheme

1) What is Grant Aid?

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

2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments 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 consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

5) 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 the Government of Japan. This "Verification" is deemed necessary to secure accountability

of Japanese taxpayers.

6) Undertakings required to the Government of the recipient country

a) to secure a lot of land necessary for the construction of the Project and to clear the site;

b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities outside the site;

c) to ensure prompt unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant Aid;

d) to exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;

e) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;

f) to ensure that the facilities constructed and products purchased under the Grant Aid be maintained and used properly and effectively for the Project; and

g) to bear all the expenses, other than those covered by the Grant Aid, necessary for the Project.

7) "Proper Use"

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

8) "Re-export"

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

9) Banking Arrangement (B/A)

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

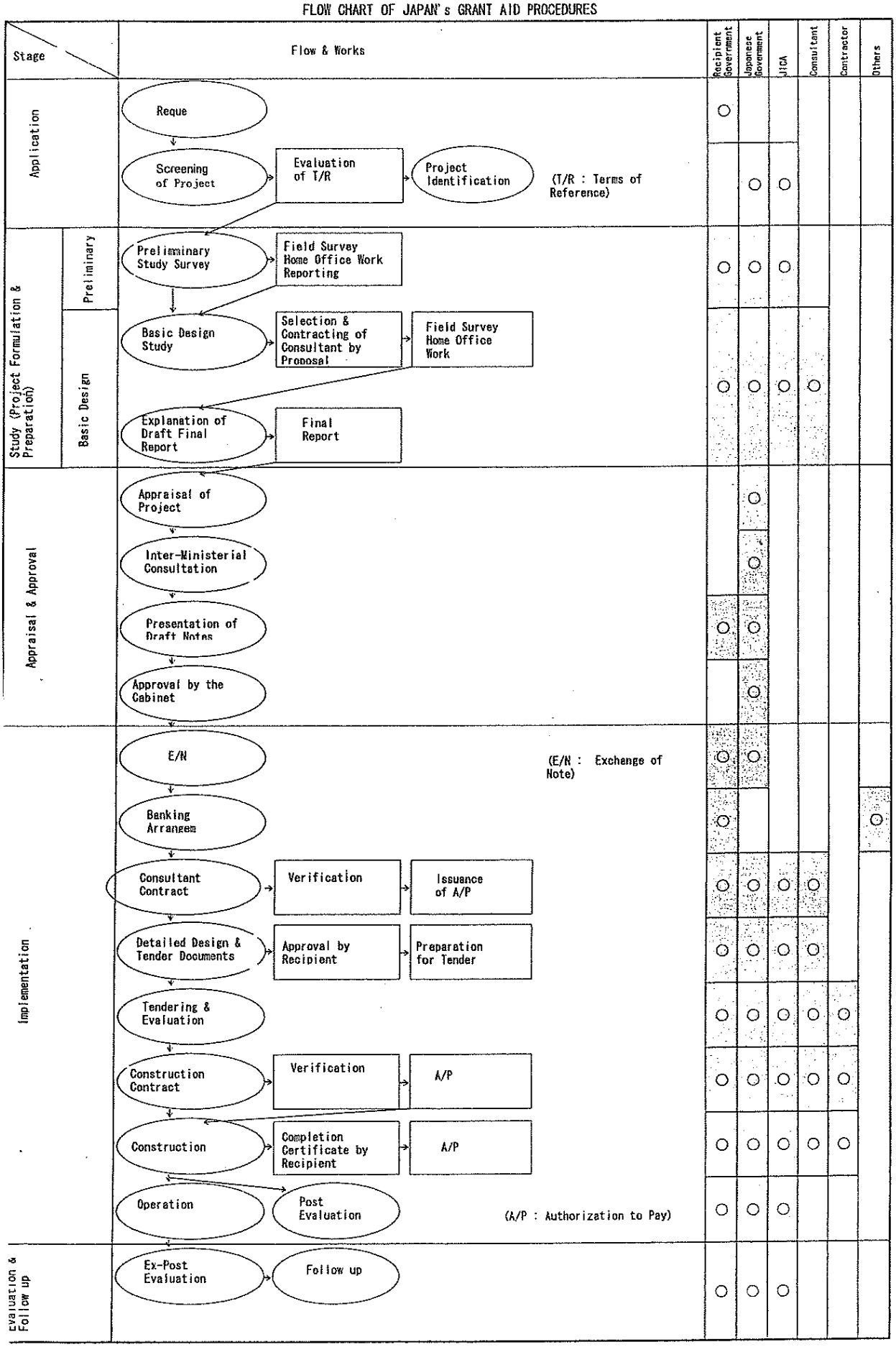
incurred by the Government of the recipient country or its designated authority under the verified contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of 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 to the Bank.

FLOW CHART OF JAPAN's GRANT AID PROCEDURES



Annex-3

Major Undertaking to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		◎
2	To reallocate the land		◎
3	To construct access roads		◎
	1) Within the site when required	◎	
	2) Outside the site		◎
4	To rehabilitate Bwanje Valley Irrigation System		
	1) Relocation the main canal	◎	
	2) Functional improvement of the settling basin	◎	
	3) Rehabilitation of the headworks	◎	
	4) Land leveling	◎	◎
5	To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the B/A (Banking Arrangement)		◎
	1) Advising commission of A/P (Authorization to Pay)		◎
	2) Payment commission		◎
6	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	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	◎	◎
7	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contact such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		◎
8	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts.		◎
9	To maintain and use property and effectively the facilities constructed and equipment provided under the Grant.		◎
10	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.		◎

4-4 Minutes of Discussion on the Basic Design Study on the Project for Rehabilitation of the Bwanje Valley Irrigation System in the Republic of Malawi (Explanation on Draft Final Report, September, 2005)

MINUTES OF DISCUSSION
ON
THE BASIC DESIGN STUDY
ON
THE PROJECT FOR REHABILITATION OF THE BWANJE VALLEY IRRIGATION SYSTEM
IN
THE REPUBLIC OF MALAWI
(EXPLANATION ON DRAFT FINAL REPORT)

In February 2005, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the 4th Basic Design Study Team on the Project for Rehabilitation of the Bwanje Valley Irrigation System (hereinafter referred to as "the Project") to the Republic of Malawi (hereinafter referred to as "Malawi"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft final report of the study.

In order to explain and to consult Malawi on the components of the draft final report, JICA sent to Malawi the Draft Final Report Explanation Team (hereinafter referred to as "the Team"), which was headed by Mr. Kyoji Mizutani, Resident Representative, JICA Malawi Office and was scheduled to stay in the country from September 1st to September 8th, 2005.

As a result of discussion, both parties confirmed the main items described on the attached sheets.

Lilongwe, September 7th, 2005

Mr. Kyoji Mizutani
Leader
Basic Design Study Team
Japan International Cooperation Agency

Mr. Randson P. Mwadiwa
Principal Secretary for Agriculture and Food Security
Ministry of Agriculture and Food Security
The Republic of Malawi

Mr. Grain W. P. Malunga
Principal Secretary for Irrigation and Water Development
Ministry of Irrigation and Water Development
The Republic of Malawi

ATTACHMENT

1. THE BASIC DESIGN POLICY OF THE DRAFT FINAL REPORT

The Government of Malawi agreed and accepted in principle the basic design policy and components of the draft final report explained by the Team.

2. JAPAN'S GRANT AID SCHEME

Malawi side understood the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Malawi as explained by the Team and described in Annex-2 and Annex-3 of the Minutes of Discussion signed by both sides on February 14th, 2005. (ANNEX-1)

3. FURTHER 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 October 2005.

4. OTHER RELEVANT ISSUES

4-1. Environmental Impact Assessment

Both sides confirmed the Environmental Management Act in Malawi and Malawi side explained to the Team that EIA was not required for the Project as shown in ANNEX-2.

4-2. Major Items to be undertaken by Malawi side

Malawi side gave the Team their assurance that they would complete the following undertaking by the time as agreed upon:

- Land acquisition for the new main canal, the inspection road and the temporary site office and the storage (deposit) for materials by the end of July 2006.

4-3. Land Reallocation

(1) Malawi side has full responsibility of land reallocation and promised to implement it according to the schedule as shown in ANNEX-3.

(2) Malawi side understood farmers' agreement of land reallocation should be the critical condition of E/N for construction works and both sides agreed the contents of the agreement and how to confirm farmers' agreement as follows;

<u>The contents of the agreement</u>

- Both English and Local language have to be used.
- Following Sentence "I hereby agree to equitable land reallocation in the Bwanje Valley Irrigation System" should be included.
- Information on individual farmers should be included such as serial number, farmers' name, age, sex, village, registration number of farmers for the farmers' cooperative, and date of signing.
- Signature/thumb print of each farmer should be included.
- An acknowledgement of the agreement should be returned to the farmers.

<u>The way to confirm farmers' agreement</u>

- One copy of all of the agreement should be submitted from the project O&M office to JICA Malawi office through Lilongwe ADD by the end of February 2006.
- JICA Malawi office will check whether the agreement contains sufficient information based on the above mentioned contents, especially signature/thumb print.
- JICA will inform the Ministry of Foreign Affairs about the agreement.

4-4. Soft Component Plan

Malawi side understood the soft component plan explained by the Team and promised to take measures as

shown in ANNEX-4 for smooth implementation of soft component.

4-5. Confirmation of Executing Agency

Both sides confirmed the executing agency is the Ministry of Agriculture and Food Security with the support of the Ministry of Irrigation and Water Development.

4-6. The Draft Final Report

The Team handed the Draft Final Report to the following persons. Both sides agreed that the Draft Final Report was confidential and should not be duplicated or released to any outside parties.

Mr. Malumbo K. Gondwe, Economist, Planning Department, Ministry of Agriculture and Food Security
Mr. Grain W. P. Malunga, Principal Secretary, Ministry of Irrigation and Water Development
Mr. S. Maweru, Director, Department of Irrigation, Ministry of Irrigation and Water Development
Mr. T. Z. Chunga, Program Manager, Lilongwe ADD
Mr. A. C. M. Msowoya, Principal Irrigation Officer, Lilongwe ADD
Mr. E. Y. K. Phiri, Project Manager, the Bwanje Valley Irrigation System
Mr. M. Jere, Dedza District Commissioner

END

JAPAN'S GRANT AID SCHEME

1. Grant Aid Procedure

1) Japan's Grant Aid Program is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request. If necessary, JICA send a Preliminary Study Team to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Programme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

a) confirmation of the background, objectives and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation;

b) evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from the technical, social and economic points of view;

c) confirmation of items agreed on by both parties concerning the basic concept of the Project;

d) preparation of a basic design of the Project; and

e) estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure 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 in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For the smooth implementation of the Study, JICA uses a consulting firm selected through its own procedure (competitive proposal). The selected firm participates the Study and prepares a report based upon the terms of reference set by JICA.

At the beginning of implementation after the Exchange of Notes, for the services of the Detailed Design and Construction Supervision of the Project, JICA recommends the same consulting firm which participated in the Study to the recipient country, in order to maintain the technical consistency between the Basic Design and Detailed Design as well as to avoid any undue delay caused by the selection of a new consulting firm.

3. Japan's Grant Aid Scheme

1) What is Grant Aid?

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

2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments 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 consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

5) 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 the Government of Japan. This "Verification" is deemed necessary to secure accountability

of Japanese taxpayers.

6) Undertakings required to the Government of the recipient country

a) to secure a lot of land necessary for the construction of the Project and to clear the site;

b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities outside the site;

c) to ensure prompt unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant Aid;

d) to exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;

e) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;

) to ensure that the facilities constructed and products purchased under the Grant Aid be maintained and used properly and effectively for the Project; and

:) to bear all the expenses, other than those covered by the Grant Aid, necessary for the Project.

') "Proper Use"

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

) "Re-export"

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

Banking Arrangement (B/A)

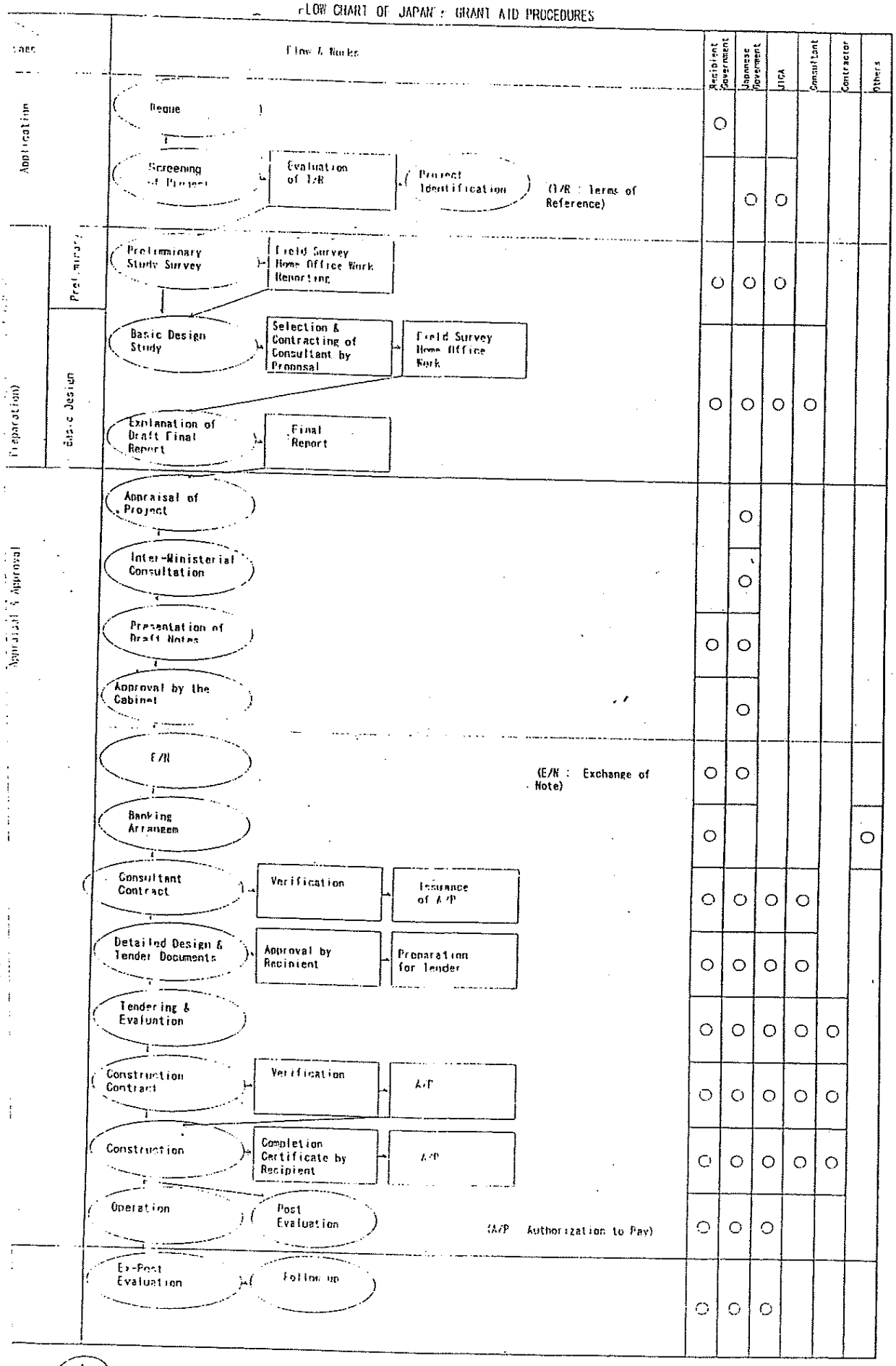
The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments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

incurred by the Government of the recipient country or its designated authority under the verified contracts.

h) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of 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 to the Bank.


FLOW CHART OF JAPAN's GRANT AID PROCEDURES
Case
Flow & Works
Recipient Government
Japanese Government
JICA
Consultant
Contractor
Others
Application
Request
Screening of Project
Evaluation of T/R
Project Identification
(T/R : Terms of Reference)
Preliminary
Preliminary Study Survey
Field Survey
Home Office Work
Reporting
Basic Design
Basic Design Study
Selection & Contracting of Consultant by Proposal
Field Survey
Home Office Work
Explanation of Draft Final Report
Final Report
(Preparation)
Appraisal & Approval
Appraisal of Project
Inter-Ministerial Consultation
Presentation of Draft Notes
Approval by the Cabinet
E/N
(E/N : Exchange of Note)
Banking Arrangem
Consultant Contract
Verification
Issuance of A/P
Detailed Design & Tender Documents
Approval by Recipient
Preparation for Tender
Tendering & Evaluation
Construction Contract
Verification
A/P
Construction
Completion Certificate by Recipient
A/P
Operation
Post Evaluation
(A/P Authorization to Pay)
Ex-Post Evaluation
Follow up

Annex-3

Major Undertaking to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		○
2	To reallocate the land		○
3	To construct access roads		○
	1) Within the site when required	○	
	2) Outside the site		○
4	To rehabilitate Bwanje Valley Irrigation System		
	1) Relocation the main canal	◎	
	2) Functional improvement of the settling basin	○	
	3) Rehabilitation of the headworks	○	
	4) Land leveling	○	○
5	To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the B/A (Banking Arrangement)		◎
	1) Advising commission of A/P (Authorization to Pay)		○
	2) Payment commission		○
6	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	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	◎	○
7	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contact such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		◎
8	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts.		○
9	To maintain and use property and effectively the facilities constructed and equipment provided under the Grant.		○
10	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.		○

ANNEX-2

Ref. No.: EAD/99/7/5 6th September 2005

FROM: DIRECTOR OF ENVIRONMENTAL AFFAIRS, P/BAG 350, LILONGWE 3

TO : DIRECTOR OF IRRIGATION SERVICES, P.O. BOX 30797, LILONGWE 3

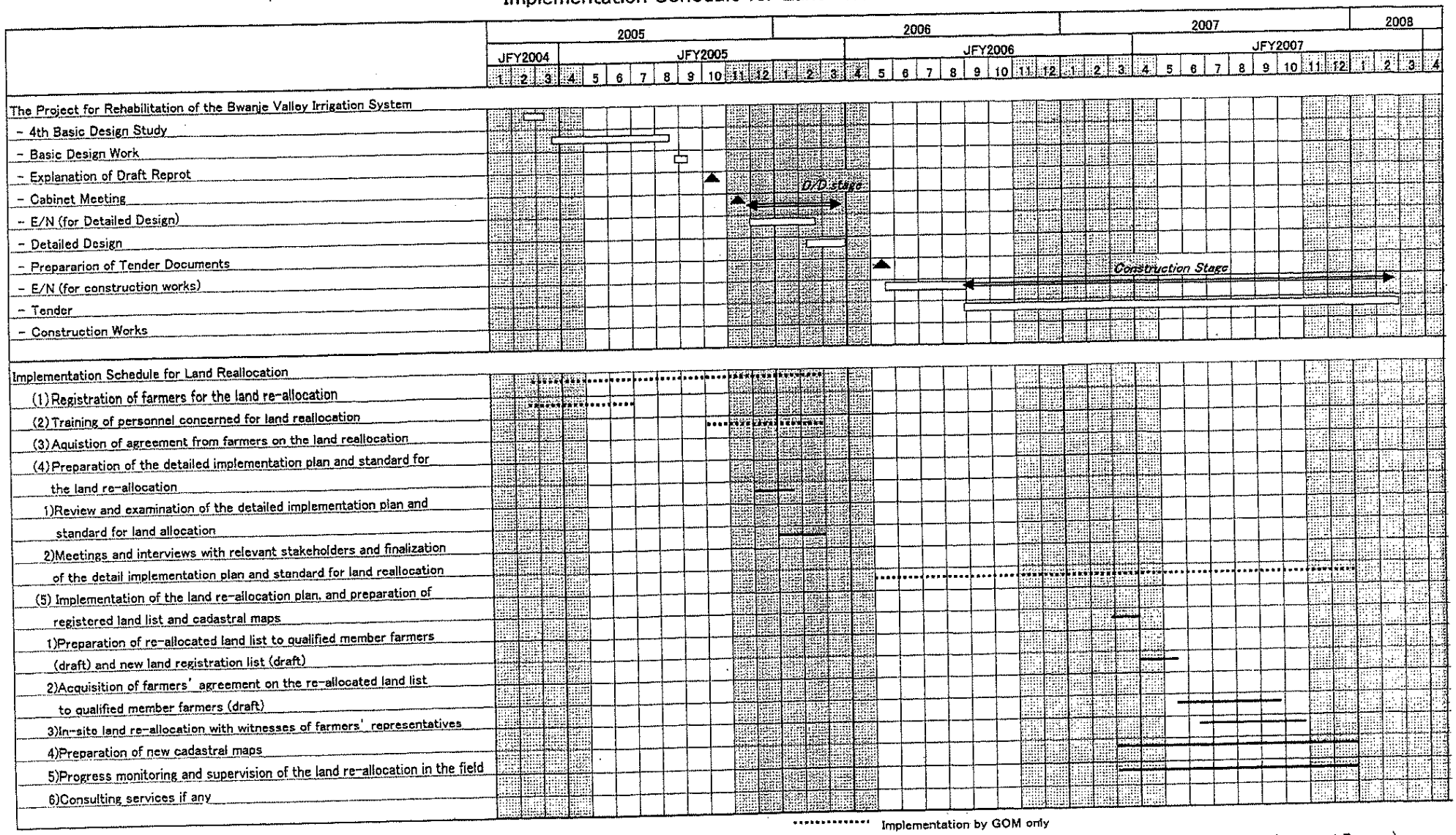
REHABILITATION OF BWANJE VALLEY IRRIGATION SCHEME

Following the re-submission of your project brief and Environmental Management Plan (EMP) for the above captioned-project, I wish to inform you that the Department has reviewed your submission.

Due to the nature and size of the project, it was found that an EIA is not required for the project. The Environmental Management Plan and Environmental Monitoring Plan were found to be satisfactory. You may therefore proceed with implementation of the project in line with the EMP.

Dr. A.M. Kamperewera
For DIRECTOR OF ENVIRONMENTAL AFFAIRS

Implementation Schedule for Land Reallocation



ANNEX-4

OBLIGATIONS OF GOM FOR THE SOFT COMPONENT PROGRAM

The obligations of GOM and the farmers' cooperative for Soft Component Program will be as follows:

1) Land Re-Allocation Assistance

The land re-allocation is a responsibility of GOM. Before JICA starts the assistance to the land re-allocation, GOM is highly requested to finish the following to secure its success:

- Registration of farmers for the land re-allocation
- Acquisition of agreement from farmers on the land re-allocation
- Training of personnel concerned for the land re-allocation such as study and review of the similar land re-allocation cases in other irrigation projects in Malawi

After the land re-allocation has been finished, farmers to which farm land has been re-allocated will have to start farming operation in their farm land, and monitoring of re-allocated land use. Technical assistance and guidance to farmers will have to be continued by GOM, especially staffs at the project O&M office (one project manager and three agricultural extension development officers) and to make the proper activity of the cooperative continue.

2) Water Management Strengthening Assistance

Water management strengthening will be made under the Soft Component Program for attainment of the equal irrigation water distribution by the cooperative. In order to secure further sustainability of O&M of the irrigation system, the farmers' cooperative will have to be activated, including strengthening further financial status of the farmers' cooperative. For this, continuous assistance from GOM is indispensable to the farmers' cooperative.

3) Flood Damage Mitigation and Repair Measures Assistance

It is important for GOM to keep the system to assign construction equipments immediately by measures acquired through the Soft Component Program in case flood occurs. Furthermore, GOM has to prepare the budget for these activities.