

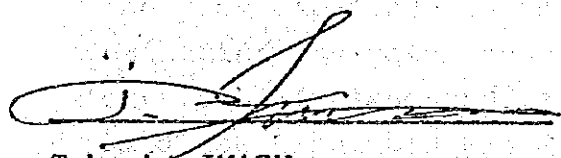
MINUTES OF DISCUSSION  
ON  
THE BASIC DESIGN STUDY  
ON  
THE WATER SUPPLY PROJECT  
FOR  
EBURRU REGION

In response to the request made by the Government of the Republic of Kenya for the water supply project for EBURRU Region (Hereinafter referred to as "the Project"), the Government of Japan, through Japan International Cooperation Agency (JICA) has dispatched a Basic Design Study Team headed by Mr. Takeshi IMAZU, Deputy Head, Basic Design Division, Grant Aid Department, JICA (hereinafter referred to as "the Team") to conduct the Basic Design Study on the Project from July 15th to August 11th, 1984.

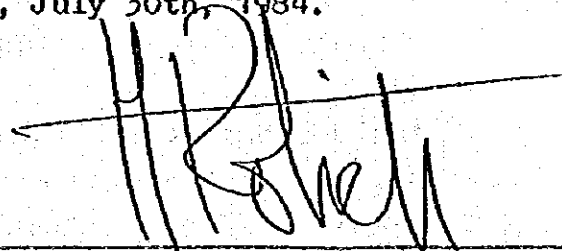
The Team has carried out a field survey, had series of discussions and exchanged views with Kenya Government Authorities concerned with the Project.

Both parties have agreed to report the result of study attached herewith to their respective Government.

Nairobi, July 30th, 1984.



Takeshi IMAZU  
Leader  
Japanese Survey Team  
JICA



Director of Water Development  
FOR: PERMANENT SECRETARY  
Ministry of Water Development  
NAIROBI.



ATTACHMENTS

1. The objective of the requested Eburru Water Supply Project by the Government of Kenya is to supply the domestic water to the area which is located at the north and northeast of Lake Naivasha with an area of about 720 Km<sup>2</sup>.

After the discussions on the above mentioned request, both parties confirmed the Project which is considered and studied by the Japanese Survey Team will supply water to the area covering Eburru Settlement and Lake Area as shown in Annex-1.

2. In the Project area, the Government of Kenya has planned to implement geothermal development and Kenyan side is planning to supply water for the geothermal development use under this Project.

After discussion and in view of an earlier communication from JICA (ref: letter of 11th July, 1984 ref: NOJNB/308/84 from JICA to M.F.P) it was agreed that the project should include the geothermal development water requirements. Separate water development for each human, livestock and geothermal development would be costly and undesirable.

3. The Government of Kenya has alternative sources of water supply in the area stated in article 1 and requested the Team to find the most economical one to be applied to the project.

The Team explained to the Kenyan side that the present Project, utilizing the water source of Lake Naivasha is the most realistic one to be implemented, and considered to make a study for the Japanese Grant Aid based on the following reasons; to which both parties confirmed:-

- 1) Though the operation cost of the project is estimated rather high, the initial investment would be lower than other sources development.



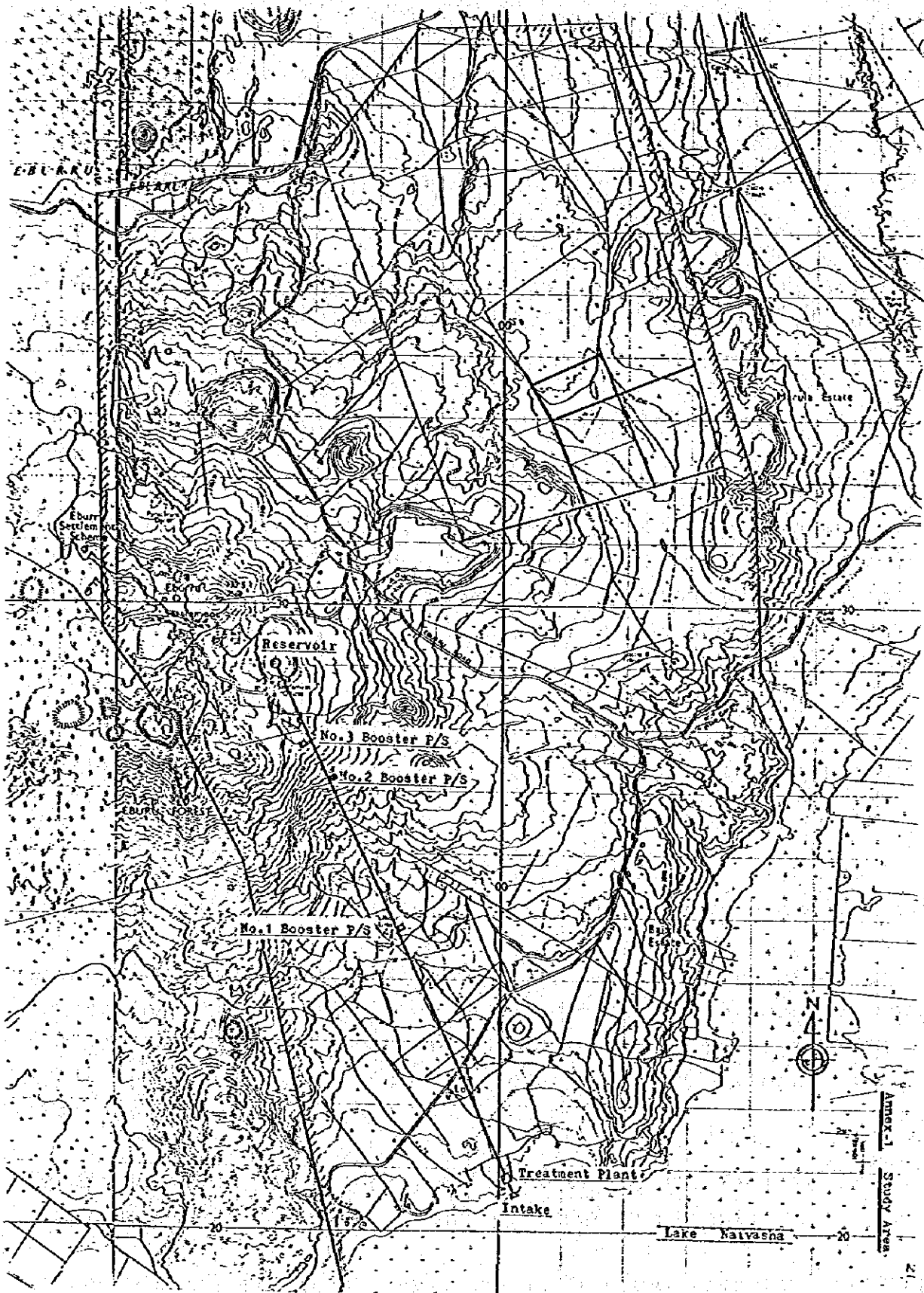
- 2 -

- ii) The new settlement programme, which has been projected by the Government of Kenya in this area, requires the earlier implementation of water supply and the project will be possible to satisfy the requirement within the shortest period.
- iii) Water development in this Project area will contribute to the quick and smooth implementation of the geothermal development programme.

4. The Government of Kenya has understood the Grant Aid system to be extended by the Government of Japan, especially the arrangements by the Government of Kenya in Annex-2.







Annex-1  
Study Area.






ANNEX 2.

Following arrangements will be required to be taken by the Government of Kenya.

1. To provide necessary data and information for basic design study - on the project.
2. To carry out site preparation such as clearing, filling and leveling, and provide access road before commencement of construction works.
3. To provide facilities for distribution of electricity to the proposed site.
4. To ensure prompt unloading, tax exemption, customs clearance for the products purchased under the Grant at ports of disembarkation in Kenya. Arrangements for prompt internal transportation, to be paid under the Grant, shall be made for the products.
5. To exempt Japanese nationals from customs duties, income taxes and other fiscal levies which may be imposed in Kenya with respect to the supply of the products and services under the verified contracts.

These exemptions shall be subject to the existing rules and regulations which are applicable to similar grants aid programs.

6. To accord Japanese national whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Kenya and stay therein for the performance of their work.
  7. To maintain and use properly and effectively the facilities constructed and equipment purchased under the Grant.
  8. To undertake incidental works such as fencing, exterior lighting and etc.
- 



**MEMBER LIST OF STUDY TEAM**

<b>Title and Assignment</b>	<b>Name of Professional</b>
<b>Team Leader</b>	<b>Takeshi IMAZU Deputy Head, Basic Design Div., Grant Aid Dept., JICA</b>
<b>Project Coordinator</b>	<b>Minami NAGAI Basic Design Div., Grant Aid Dept., JICA</b>
<b>Water Supply Planner</b>	<b>Shoji SASAKI Nihon Suido Consultants Co., Ltd.</b>
<b>Facilities Planner</b>	<b>Eiichi ISHII Nihon Suido Consultants Co., Ltd.</b>
<b>Facilities Designer</b>	<b>Tetsuya NIIZUMA Nihon Suido Consultants Co., Ltd.</b>



### JICA MISSION FIELD SURVEY SCHEDULE

(15 July, 1984 – 11 August, 1984)

Date	Activity
<b>July</b>	
15 (Sun)	– Departure (Tokyo – Paris) AF269
16 (Mon)	– Trip (Paris – Nairobi) AF483
17 (Tue)	– Visit Embassy of Japan & JICA Office – Meeting MOWD Officials
18 (Wed)	– Field visit: Naivasha District Water Office, Eburru Settlement & Officials
19 (Thu)	– Field visit: Lake Naivasha, Pipeline route & Eburru hills
20 (Sat)	– Field visit: Eburru hills & Lake area
22 (Sun)	– Field visit: Lake Naivasha, water sampling & quality analysis
23 (Mon)	– Visit MOWD HQs, meeting & data collection
24 (Tue)	– Visit MOWD HQs, Laboratory, Training School & data collection
25 (Wed)	– Visit MOWD HQs, meeting & data collection
26 (Thu)	– Visit MOWD HQs, Ministry of Energy, meeting & data collection
27 (Fri)	– Visit MOWD HQs, discussions on minutes of discuss – Visit JICA Office, discussions
28 (Sat)	– Study Team internal meeting
29 (Sun)	– Study Team internal meeting
30 (Mon)	– Visit MOWD HQs, meeting & discussions – Visit JICA Office, meeting & reporting
31 (Tue)	– Visit MOWD HQs, data collection – Visit JICA Office, meeting



Date	Activity
<b>August</b>	
1 (Wed)	– Field visit: Eburru Settlement Office, Eburru hills & Naivasha Water Office
2 (Thu)	– Field visit: Nakuru District Development Office, Livestock Office, Water Office & Lake area
3 (Fri)	– Field visit: Naivasha DDO, Agriculture Office, District Water Office & Eburru hills
4 (Sat)	– Field visit: Lake Naivasha, Longnot & Suswa area
5 (Sun)	– Field visit: Kinangop area & Sasmua Dam
6 (Mon)	– Visit JICA Office, field visit reporting
7 (Tue)	– Visit MOWD HQs, data collection – Visit JETRO Office, data collection
8 (Wed)	– Visit MOWD HQs, data collection & reporting – Visit JICA Office, reporting field survey
9 (Thu)	– Leave Nairobi for London, BA054
10 (Fri)	– Trip (London – Tokyo) BA005
11 (Sat)	– Arrive Tokyo





## LIST OF INTERVIEWEE

1. Embassy of Japan, Kenya
 

NAKANO Osamu	First Secretary
--------------	-----------------
  
2. JICA, Nairobi
 

YANAI Susumu	Resident Representative
NAGASHIMA Toshikazu	Deputy Resident Representative
TAKENAKA Hayao	Asst. Resident Representative
IWASAKI Tsutomu	Asst. Resident Representative
  
3. Ministry of Water Development (MOWD)
 

Nairobi Headquarters:

Y.F.O. MASAKHALIA	Permanent Secretary, MOWD
OKALI	Assistant Secretary, MOWD
F.G. MUREITHI	Deputy Director, Planning & Design Department
L.M. MUSYOKA	Division Head, Project Planning Division
MAKOHA	Division Head, In-house Design Division
A. SANTHARAM	Section Head, Project Coordination and Monitoring Division
R.A. NAMDE	Section Head, Project Coordination and Monitoring Division
NAKANOSONO Kenji	Japanese Expert, MOWD
ISHII Kooichi	Japanese Expert, MOWD

Rift Valley Province Water Office, Nakuru:

E. CHESEREM	Provincial Water Engineer, RVP
OSEBE	Provincial Development Engineer, RVP
P.K. CHUMO	Senior Inspector, Naivasha Divisional Headquarters, RVP



4. **Ministry of Energy and Regional Development (MERD)**  
**B.W. BIWOTT** Minister of MERD  
**SATO Yoshiaki** Japanese Expert, MERD
  
5. **Kenya Power and Lighting Company**  
**Nakuru Office (Electricity House):**  
**ABDELLA** Area Commercial Engineer
  
6. **Ministry of Agriculture and Livestock**  
**Nakuru District:**  
**LANGAT** District Agriculture Officer  
**KIMANI** District Agriculture Officer  
**Naivasha Division:**  
**M.L. AMATA** Livestock Development Officer
  
7. **District Development Office**  
**Nakuru:**  
**AJWANG** District Development Officer  
**Naivasha:**  
**A.T. MUMANGI** District Development Officer
  
8. **District Settlement Office**  
**Nakuru:**  
**E.G. OGOLI** District Settlement
  
9. **Range Officer, Gilgil**  
**N.M. KIMUNYA** District Range Officer
  
10. **JETRO, Nairobi**  
**INUI Fumio** Executive Director  
**MASE Susumu** Director



Raw Water Quality of Lake Naivasha

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Max.	Min.	Ave.	
pH	8.0	8.4	7.7	7.8	8.2	8.0	8.4	8.2	8.1	7.1	8.2	8.3	7.9	8.5	8.4	8.6	8.6	7.1	8.1	
Colour mg/pt/l	-	30	10	40	-	-	5	40	-	-	-	-	-	20	20	30	40	5	24.4	
Turbidity N.T.U.	6	7	4	4.7	-	6.0	3.5	2.2	3.0	5.5	2.0	2.0	6.8	7.0	11	9	11	2.0	5.3	
Permanganate No. mg/l	-	-	9.78	11.73	22.1	28.4	-	23.7	34.76	50.56	6.32	31.6	18.0	10	48	47	50.56	9.78	26.3	
Conductivity /cm	200	240	270	300	1,848	300	300	-	260	290	230	270	360	320	350	300	1,848	200	389	
Iron mg/l	1.1	1.0	Less 0.01	-	0.09	-	1.6	2.9	0.8	4.8	-	-	-	Less 0.01	-	-	4.8	Less 0.01	1.37	
Manganese mg/l	0.4	0.4	0.2	0.2	0.6	0.1	Nil	5.5	0.1	0.3	-	-	-	-	-	-	5.5	Nil	0.8	
Calcium mg/l	22.3	27.4	14.5	18.1	57	4.3	7.0	-	26	28	21.6	20.8	22	24	24	23	28	4.3	22.7	
Magnesium mg/l	7.1	13.0	8.4	7.8	18	1.6	3.9	Nil	7.7	9.5	6.8	6.3	6.8	6.3	7.3	7.8	18	Nil	7.4	
Total Hardness mg/l	69.1	69.1	71.15	-	218	17.3	-	-	82	88	82	78	84	86	90	90	218	17.3	86.5	
Total Alkalinity mg/l	123	122	115	120	104	111	129	161	186	148	128	124	162	154	168	162	186	104	139	
Chloride mg/l	13.8	10.4	9.8	5.2	10.5	10.2	9.0	10.0	11.0	1.4	11.5	13.0	16.0	16.0	36	36	36	1.4	13.7	
Fluoride mg/l	1.00	0.86	0.6	0.30	-	0.61	0.32	0.62	1.3	-	1.1	1.6	1.54	1.3	-	-	1.6	0.30	0.93	
Sulphate mg/l	0.08	-	-	0.82	Nil	1.0	Trace	Nil	-	-	0.4	0.6	2.4	0.92	Less 1.0	Less 1.0	2.4	Nil	0.7	
Orthophosphate mg/l	-	-	0.017	-	0.015	0.006	-	0.059	-	0.3	-	Trace	1.7	0.02	-	-	1.7	Trace	0.26	
Total Suspended Solid mg/l	22	-	9	21	-	-	-	-	-	-	-	-	-	-	-	-	22	9	17	
TDS mg/l	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
COD mg/l	19.2	-	-	-	-	-	-	-	-	-	-	-	-	192	210	180	210	180	194	
Date	29/1 '79	12/2 '79	27/4 '79	29/5 '79	23/8 '79	19/8 '79	31/10 '79	12/10 '79	10/1 '79	22/1 '83	6/9 '83	17/11 '83	16/12 '83	14/6 '84	20/7 '84	20/7 '84	20/7 '84			

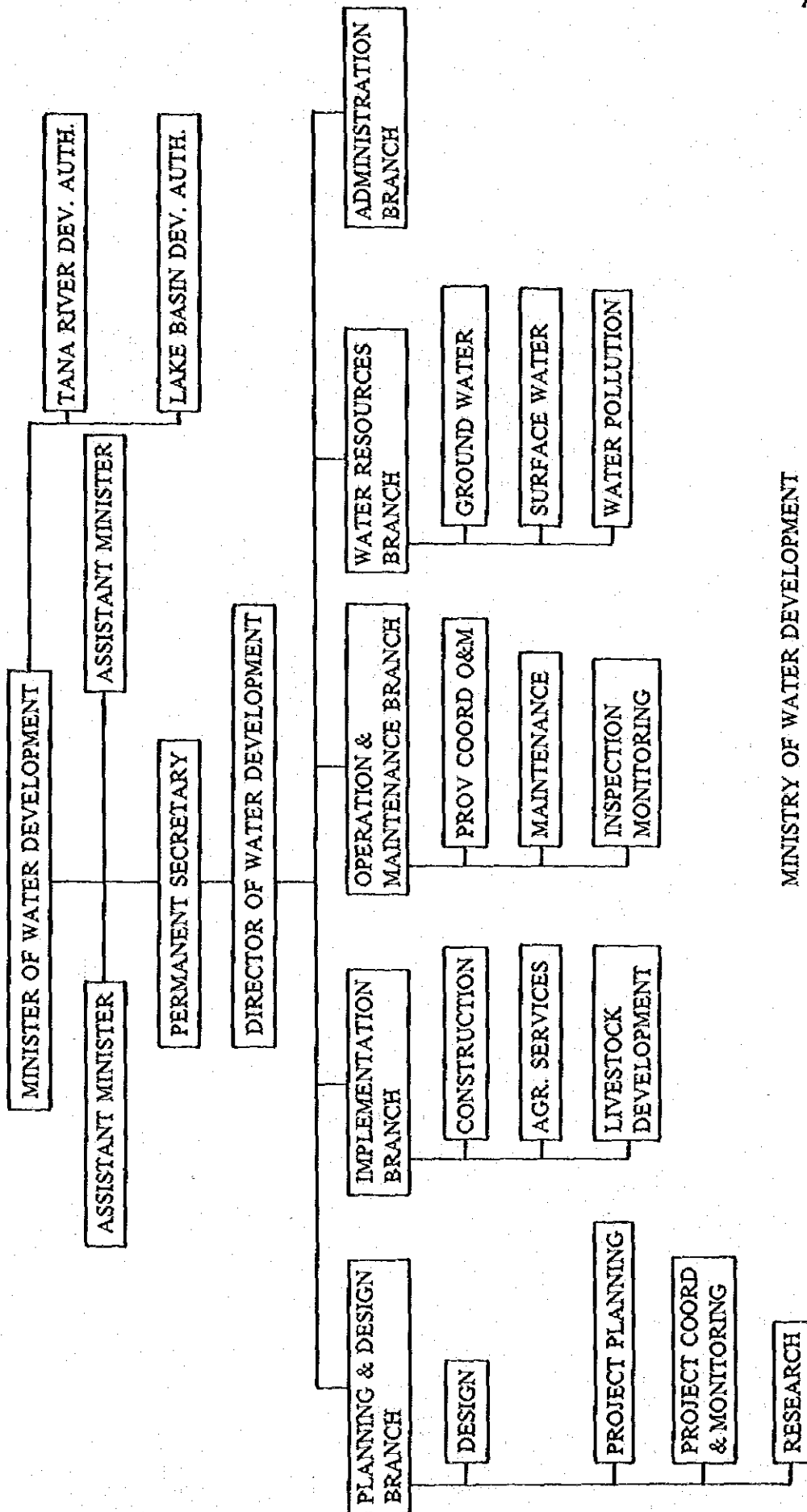


## Future Population by Growth Rates

Growth Rate (%)	Subarea	Area (km <sup>2</sup> )	1984		Initial 1986		Future 1996		Ultimate 2006	
			Population	Population Density (per km <sup>2</sup> )	Population	Population Density	Population	Population Density	Population	Population Density
3.0	Eburru	56	4,000	71	4,240	76	5,700	102	7,660	136
	Lake area	54	2,300	43	2,440	45	3,280	61	4,410	82
	Malewa	43	100	2	110	3	140	5	190	4
	Total	153	4,600	30	6,790	44	9,120	60	12,260	80
3.5	Eburru	56	4,000	71	4,280	76	6,040	108	8,530	152
	Lake area	54	2,300	43	2,460	46	3,480	64	4,900	91
	Malewa	43	100	2	110	3	160	4	240	6
	Total	153	4,600	30	6,850	45	9,670	63	13,640	89
4.0	Eburru	56	4,000	71	4,330	77	6,400	114	9,480	169
	Lake area	54	2,300	43	2,490	46	3,680	68	5,450	101
	Malewa	43	100	2	110	3	160	4	240	6
	Total	153	4,600	30	6,930	45	10,240	67	15,170	99
4.5	Eburru	56	4,000	71	4,370	78	6,780	121	10,530	188
	Lake area	54	2,300	43	2,510	46	3,900	72	6,060	112
	Malewa	43	100	2	110	3	170	4	260	6
	Total	153	4,600	30	6,990	46	10,850	71	16,850	110







MINISTRY OF WATER DEVELOPMENT  
 TECHNICAL ORGANIZATION CHART  
 (Unofficial Structure in 1984)









JICA