

NATIONAL IRRIGATION ADMINISTRATION  
THE REPUBLIC OF THE PHILIPPINES

**BASIC DESIGN STUDY REPORT**  
**ON**  
**THE PROJECT FOR REHABILITATION**  
**OF THE APRON OF ANGAT AFTERBAY**  
**REGULATOR DAM**  
**IN**  
**THE REPUBLIC OF THE PHILIPPINES**

NOVEMBER 2000

JAPAN INTERNATIONAL COOPERATION AGENCY  
CTI ENGINEERING INTERNATIONAL CO., LTD.

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## PREFACE

In response to a request from the Government of the Republic of the Philippines, the Government of Japan decided to conduct a basic design study on the Project for Rehabilitation of the Apron of Angat Afterbay Regulator Dam and entrusted the study to the Japan International Cooperation Agency (JICA).

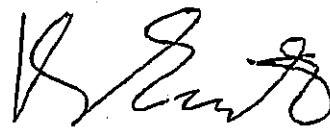
JICA sent to the Philippines a study team from March 9 to April 19, 2000.

The team held discussions with the officials concerned of the Government of the Philippines, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to the Philippines in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of the Philippines for their close cooperation extended to the teams.

November 2000



Kunihiko Saito  
President

Japan International Cooperation Agency

November 2000

Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Rehabilitation of the Apron of Angat Afterbay Regulator Dam in the Republic of the Philippines.

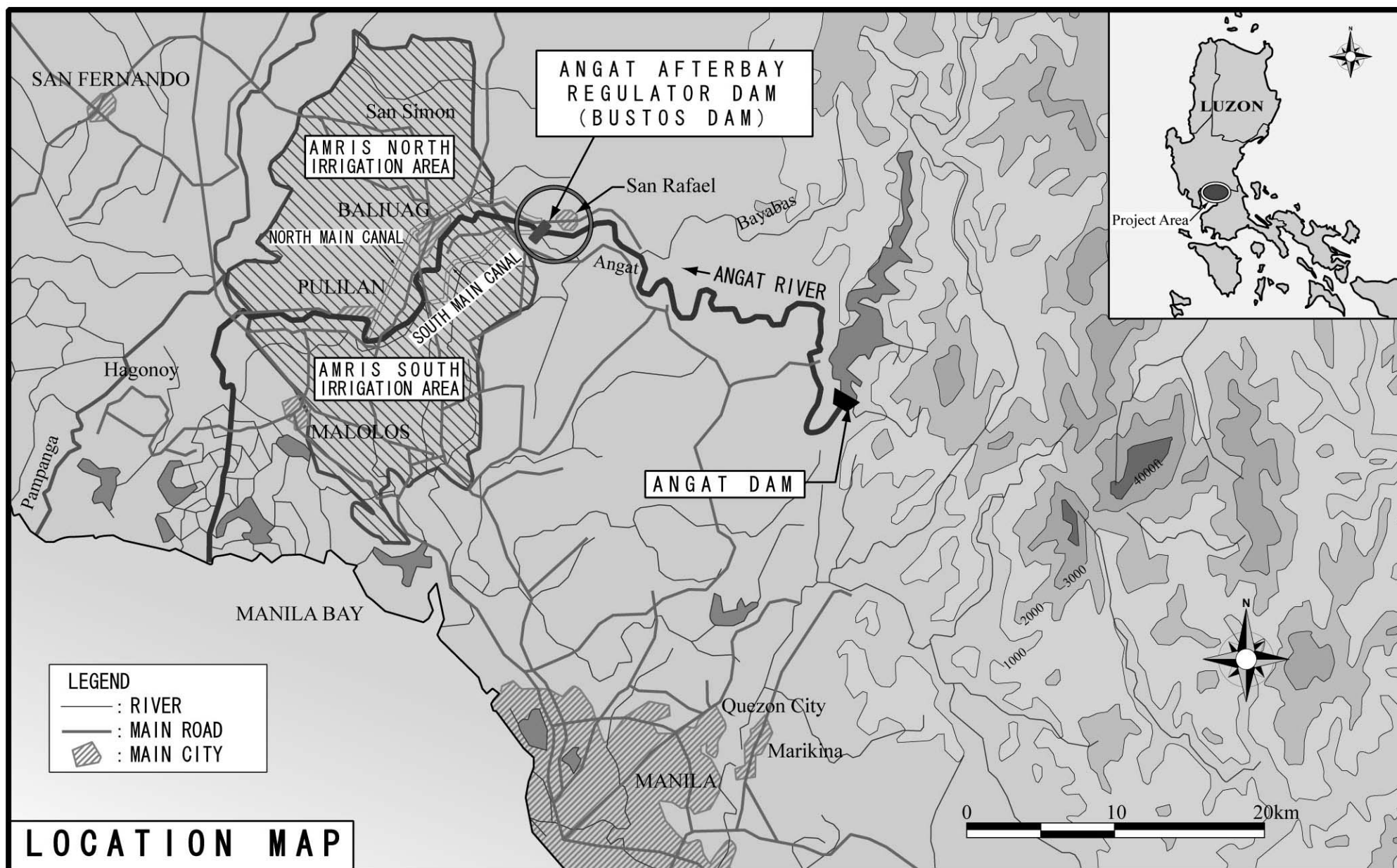
This study was conducted by CTI Engineering International Co., Ltd., under a contract to JICA, during the period from March 3, 2000 to December 25, 2000. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of the Philippines and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



Toshiki Kawakami  
Project manager,  
Basic design study team on  
the Project for Rehabilitation  
of the Apron of Angat Afterbay  
Regulator Dam  
CTI Engineering International Co., Ltd.







Angat Afterbay Regulator Dam to be Taken at the Left Bank



The Downstream of the Dam to be Taken at the Right Bank

## **PHOTOGRAPHS OF THE PROJECT SITE**

## ABBREVIATIONS

### Organizations/Agencies

AMRIS	:	Angat Maasim River Irrigation System
BIO	:	Bulacan Irrigation Office
DENR	:	Department of Environmental and Natural Resources
DPWH	:	Department of Public Works and Highways
DA	:	Department of Agriculture
GOJ	:	The Government of Japan
GOP	:	The Government of the Philippines
ICC	:	Investment Coordination Committee
JICA	:	Japan International Cooperation Agency
LWUA	:	Local Water Utilities Administration
MERALCO	:	Manila Electric Company
MWSS	:	Manila Water and Sanitation System
NEDA	:	National Economic and Development Authority
NIA	:	National Irrigation Administration
NPC	:	National Power Corporation
NTC	:	National Telecommunications Commission
PAGASA	:	Philippine Atmospheric, Geophysical and Astronomical Services Administration
PNP	:	Philippine National Police
RWSA	:	Rural Water and Sanitation Association

### Acronyms

A/P	:	Authorization to Pay
B/A	:	Banking Arrangement
BOT	:	Built, Operation and Transfer
BT	:	Built and Transfer
CIS/PIS	:	Communal/Pump Irrigation Systems
ECC	:	Environmental Compliance Certificate
EIA	:	Environmental Impact Assessment
EIS	:	Environmental Impact Statement
EL	:	Elevation
E/N	:	Exchange of Notes
GDP	:	Gross Domestic Product
GNP	:	Gross National Product
IEE	:	Initial Environmental Examination
MOA	:	Memorandum of Agreement
NIS	:	National Irrigation System
O&M or O/M	:	Operation and Maintenance
ODA	:	Official Development Assistance
SAL	:	Structural Adjustment Loan
SWIM	:	Small Water Impounding Management
TTS	:	Telegraphic Transfer Selling
VAT	:	Value Added Tax

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