

No.

**BASIC DESIGN STUDY REPORT**

**ON**

**THE PROJECT FOR RECONSTRUCTION OF**

**THE THIRD PRIMARY SHOOOL IN MALE’**

**IN**

**THE REPUBLIC OF MALDIVES**

**MARCH 2002**

**JAPAN INTERNATIONAL COOPERATION AGENCY**  
**MOHRI, ARCHITECT&ASSOCIATES, INC.**

G R 1
CR(1)
02-054

## PREFACE

In response to a request from the Government of the Republic of Maldives, the Government of Japan decided to conduct a basic design study on the Project for the Third Primary School in Male' in the Republic of Maldives and entrusted the study to the Japan International Cooperation Agency (JICA).

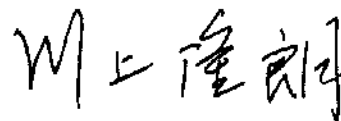
JICA sent to the Maldives a study team from November 2 to November 24, and December 17 to December 24, 2001.

The team held discussions with the officials concerned of the Government of Maldives, 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 Maldives 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 Maldives for their close cooperation extended to the teams.

March, 2002



Takao Kawakami

President

Japan International Cooperation Agency

March, 2002

### Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for the Third Primary School in Male' in the Republic of Maldives.

This study was conducted by Mohri, Architect & Associates Inc., under a contract to JICA, during the period from October, 2001 to March, 2002. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of the Maldives 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,

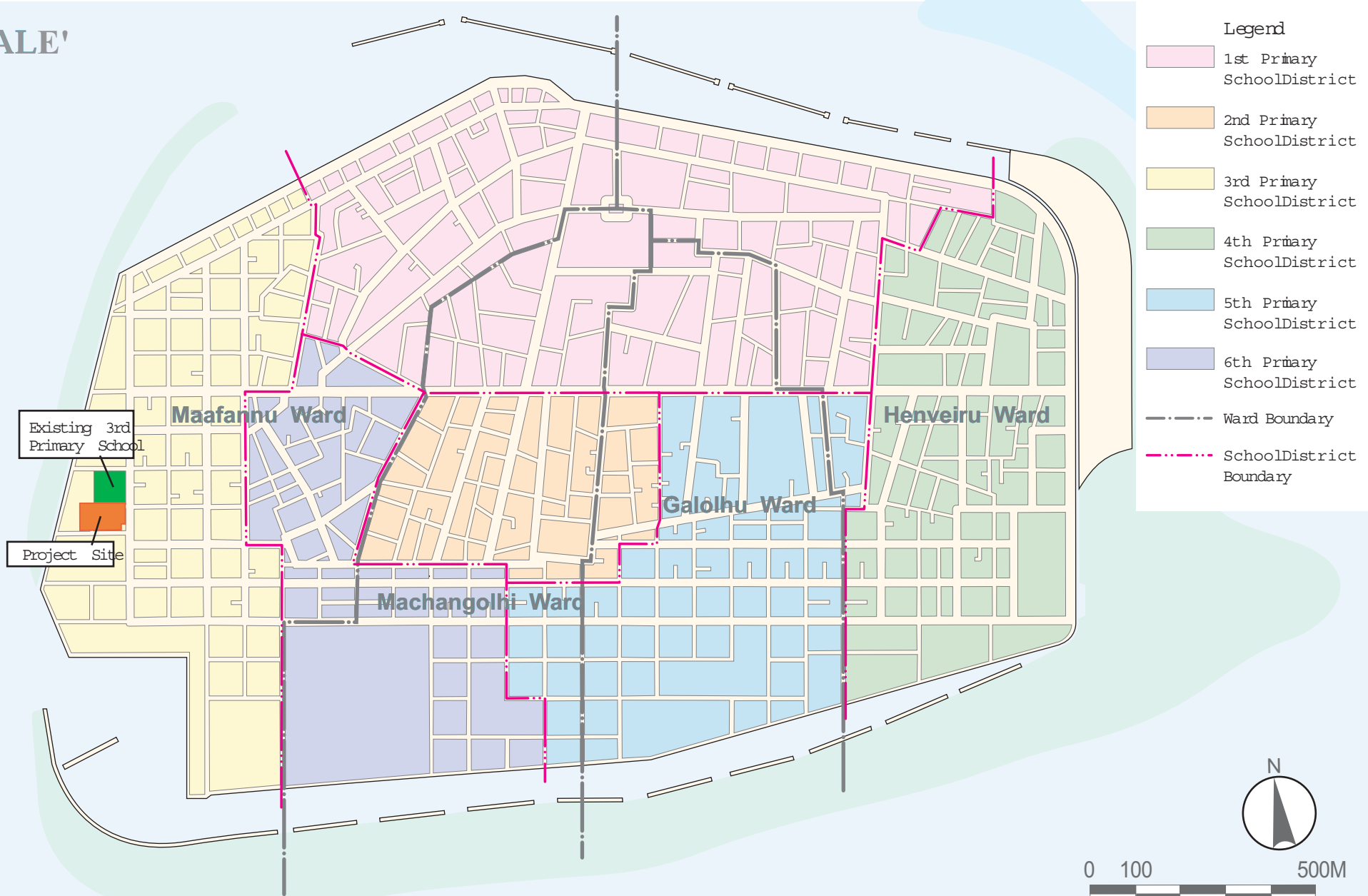


Akira Yokoyama  
Project Manager  
Basic Design Study Team on  
the Project for the Third Primary School  
in Male' in the Republic of Maldives  
Mohri, Architect & Associates, Inc.

THE REPUBLIC OF MALDIVES Location Map



MALE'



Legend

- 1st Primary SchoolDistrict
- 2nd Primary SchoolDistrict
- 3rd Primary SchoolDistrict
- 4th Primary SchoolDistrict
- 5th Primary SchoolDistrict
- 6th Primary SchoolDistrict
- Ward Boundary
- SchoolDistrict Boundary

Existing 3rd Primary School

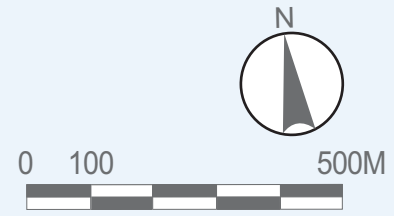
Project Site

Maafannu Ward

Henveiru Ward

Galolhu Ward

Machangolhi Ward



Project School Location Map



PERSPECTIVE

## List of Figures and Tables

Table 2-1 Number of First to Seventh Grade Students in Male' .....	2-3
Table 2-2 Number of First Grade Students in Male' .....	2-3
Table 2-3 Number of Students in Primary Education by Each Grade in Male' .....	2-3
Table 2-4 Number of Students in Primary Education by Each School in Male' .....	2-3
Table 2-5 Facilities and Equipment Use Conditions at Public Primary Schools in Male' .....	2-13
Table 2-6 Planned Rooms (1).....	2-25
Table 2-7 Planned Rooms (2).....	2-26
Table 2-8 Planned Rooms (3).....	2-27
Table 2-9 Design Load .....	2-32
Table 2-10 List of Major Materials and Equipment and the Procurement Places.....	2-54
Table 2-11 Project Implementation Schedule.....	2-55
Table 2-12 Comparison of Necessary Number of Staff Members at the Project School .....	2-59
Table 2-13 Necessary Number of Teachers at the Project School after Project Implementation .....	2-60
Table 2-14 Operation and Maintenance Cost .....	2-61
Table 2-15 Annual Maintenance Cost and Total Expenditures of the Project School.....	2-62
Table 3-1 Existing School Conditions and Project Direct Effect .....	3-3

## **Abbreviation**

ADB	Asian Development Bank
AEC	Atoll Education Center
AusAID	Australian Agency for International Development
BS	British Standard
DER	Department of External Resources
EDC	Education Development Center
FASHAN	Foundation for the Advancement of Self Help in Attaining Needs
GDP	Gross Domestic Product
IDA	International Development Association
IDB	Islamic Development Bank
ITE	Institute for Teacher Education
JOCV	Japan Overseas Cooperation Volunteers
MCHE	Maldives College for Higher Education
MOE	Ministry of Education
NEC	National Electric Code
NGO	Non-Governmental Organization
UNESCO	United Nations Educational Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations International Children's Emergency Fund
VSO	Volunteer's Service Organization
WB	World Bank
WHO	World Health Organization



## Summary

The Government of Maldives established its Basic Education Plan in 1980 to promote the improvement of primary education and the literacy rate in the country. As a result, the number of primary school students increased from 30,621 to 50,733 and the illiteracy rate dropped from 10% to 7% in 1995. The primary school gross enrolment ratio during the period from 1990 to 1996 was up an average of 136% for males and 132% for females. The improvement of primary education is still regarded as the most important theme in the country. According to the Education Master Plan 1996 to 2005, the targeted is to extend the period of primary education from the present 5 years to 7 years in order to improve the quality of education.

The education targets of "Vision 2020," the long-term national development plan of the Maldives, announced in 2000, are as follows:

- To make 10 years of formal schooling a minimum standard throughout the country;
- To establish good quality tertiary education and a system for the provision of technical knowledge and skills necessary for social and economic sustainable development in the country.

As a midterm and short-term national development plan prepared based on the "Vision 2020" in 2001, the Sixth National Development Plan was established.

The following items are set as the policy targets related to the education field:

- To provide basic facilities and resources to all schools;
- To ensure that all students across the country obtain a minimum standard of academic achievement;
- To provide opportunities for teachers to upgrade their qualifications;
- To strengthen an educational management system and develop a regionally supervised and managed school administration system.

The education system of the Maldives has 7 years of primary education, 3 years of the secondary education and 2 years of the higher secondary education. Only the 7-year period primary education is compulsory education. In order to accomplish the above targets, the teacher training and retraining at the Education Department of the Maldives College for Higher Education that was newly established by the Government of

Maldives, improvement of existing school facilities and teacher training with assistance from UNICEF and the World Bank and construction of the Forth Primary School (opened 1989) and the Sixth Primary School (opened 1999) under Japan's Grant Aid Program were conducted.

In view of the above background, the educational environment in Male', where approximately one quarter (approximately 74,000) of the population of the Maldives is concentrated and that has been the center of the country's politics, economy and culture for a long period of time is far better than that of other islands. In the fiscal year 2000, there were 301 schools on about 200 islands in the Maldives (70 public schools, 174 community schools and 57 private schools). In the fiscal year 2001, the primary education were conducted at a total of 15 primary schools in Male': 6 public primary schools, 2 public Islam schools, 4 community schools and 3 private schools. Most primary schools in the regional islands do not have school halls and special classrooms. The difference in the level of education between Male' and regional areas is quite noticeable

As a result, there are many parents on the other islands who desire to transfer their children to the primary schools in Male' for a better educational environment. In accordance with the guidance of the Ministry of Education, the public primary schools in Male' regulate the number of second and upper grade students to be admitted from other islands because of the capacity limitation of the school facilities. Thus, children living in Male' can enter the public schools, but second and upper grade students who moved from other islands to Male' have to go either to the community schools or the private schools. However, the community and private schools emphasize more kindergarten or secondary education than primary education. The public schools are regarded as having a higher educational level than the community schools and the private school in view of the school facilities and school management for the primary education. Due to capacity shortages, the public primary schools cannot satisfy the educational needs of the residents.

In the Maldives, most buildings built in the 1980s have structural defects, such as cracking and concrete exfoliation in the major structures that are caused by inappropriate construction materials due to the lack of high quality materials. The Third Primary School (Thaajuddeen School) is one of those buildings.

Thus, the Government of Maldives conducted a building inspection in 1995 and provided repair work to the buildings of the Third Primary School in

1997. However, in spite of the repair work, structural defects were not fully corrected. In addition, due to the limited capacity of the school, present facilities cannot satisfy the desire of parents wishing to transfer their children to public schools from the community and private schools. So, the Government of the Maldives, in accordance with the pre-qualifications necessary to apply for financial assistance from Japan's Grant Aid system, established the "Project for Reconstruction of the Third Primary School in Male'," and then requested grant aid assistance from the Government of Japan to reconstruct and expand the school buildings.

In response to the Request from the Government of the Maldives, the Government of Japan decided to conduct a Basic Design Study for the Project. The Japan International Cooperation Agency (JICA) dispatched the Basic Design Study Team to the Maldives twice from November 2 through November 24 and from December 17 to December 24, 2001. The Study Team confirmed (a) the contents of the Request, (b) the basic concept of facilities and equipment in the request, and (c) the background of the Project. Then a study was conducted regarding the necessity and relevance of Japan's Grant Aid Program for the Project. After returning to Japan, the Study Team analyzed the information and data that was acquired, then prepared the Basic Design of the Project. The Japan International Cooperation Agency (JICA) dispatched the Draft Final Report Explanation Team to the Maldives during the period from February 14 through 21, 2002. As a result, this Basic Design Study Report was finalized.

The Study Team investigated the structural strength of the existing buildings of the Project school and concluded that the existing buildings might be usable for a few more years on the condition that adequate repairs and reinforcing work are provided. Further, the Study Team investigated the necessity and relevance of the Project, suitability of the site to implement the Project and the scale and contents of the Request of the Government of Maldives.

The Maldives side shall provide repair and reinforcing work to existing school buildings in order to utilize them for two more years until new school building will be constructed by the Project. Thus, the Maldives side shall immediately remove the existing buildings when new school buildings are completed at the site next to the existing buildings.

The outline of the facilities that was confirmed upon facility use conditions at the Project school and other public schools, facilities' conformity with the

curriculum and improvement of the accessibility to public primary schools in Male' is shown in the list of Planned Rooms.

The Project facilities have a general teaching area which contains normal classrooms, 4 special classrooms, a library and a school hall etc.; an administrative and staff space with a principal room, a staff room and a general office etc.; and a service space with a first aid room, storage rooms and toilets etc. The number of the above 35 normal classrooms was calculated as the necessary number to accommodate those primary students who desire to transfer to public primary schools in Male'; and as the maximum number of classrooms that can be allowed at one public primary school from a school management viewpoint. Also, because the number of primary school-age children in Male' has been stable with very little change since 1996, population increases are not considered.

Among the facility components that the Maldives side requested, an art and crafts room, a secretary room and a counseling room were eliminated from the Project because they were considered as either having a low frequency of use or low necessity to be built because other rooms can be used for those purposes. As the Project is basically the reconstruction of school facilities already existing, and the current furniture and educational equipment is still in usable condition, it was decided to exclude the provision of furniture and educational equipment in the Project.

The Project buildings, to be constructed with reinforced concrete structures quite common in the Maldives, will be arranged around a central schoolyard and have a total floor space of approximately 5,400 m<sup>2</sup>. They consist of two 4-story classroom buildings, one 4-story special classroom building, one 2-story administration building and one 1-story school hall. In basic principle, the specifications shall be that of the same grade as the existing public primary schools in Male', but with some improvements made in the natural lighting and ventilation systems, building cost reduction, and facility operation and maintenance. As the school buildings are designed to be 4 story structures, soil-boring tests were conducted at the Project site during the site survey period and the ground and soil conditions were confirmed. The resulting decision was to adopt mat-foundations that can support the weight of the superstructure even on the soft, weak-bearing-strength ground of the Maldives. Further, it was decided to replace the soft and weak filled soil with good sand to make the bearing ground sturdier.

### Planned Rooms (1)

Name of Room	No.	Floor Area (m <sup>2</sup> )	Use Purpose and the Number of People to be Accommodated
<b>General Teaching Area</b>			
Classroom	35	(49.50x35) 1,732.50	To conduct ordinary classes ( 7 grades × 10 classrooms) ÷ 2 shifts. 30 students per classroom, one teacher per classroom.
Music Room	1	90.70	For music education (all graders) 30 students per class and one teacher per room.
Store Room	1		To store musical instruments.
Science Room	1	90.45	For science education (6th and 7th graders) 30 students per class. One teacher per room.
Preparation Room	1		To store medicines and equipment.
Audio-visual Room	1	90.70	For language classes and environmental education (1st to 5th graders) using audio-visual equipment.
Store Room	1		To store teaching equipment and materials.
Multi-purpose Room	1	90.45	30 students per class. One teacher per room.
Store Room	1		To store teaching materials.
Library	1	107.67	For ordinary library and language education (reading). To accommodate 30 students and one librarian and to keep 20,000 books.
Teaching Aids	1	18.92	To store various teaching materials and data.
School Hall	1	692.96	For physical education, school meetings, recitals and other school related activities. One basketball court and one volleyball court for children and two badminton courts. To accommodate 1,050 (one shift) standing students. It may be also used for conference, meetings, parties, and examination etc.
Stage	1		For school meetings and recitals.
Store Room	3	54.32	To store chairs.
Sports Storage	1		To store sports gears.
Floor Area of General Teaching Area		2,968.67 m <sup>2</sup>	

### Planned Rooms (2)

Name of Room	No.	Floor Area (m <sup>2</sup> )	Use Purpose and the Number of People to be Accommodated
Administrative and Staff Space			
General Office	1	113.52	For general administrative work. Approximately 35 staff members.
Administrator Room	1	13.07	One administrator. A safe will be installed.
Print Room	1	17.82	To install one print machine and two copy machines. Also to store paper, stationary supplies and test materials.
Meeting Room	1	36.34	To accommodate a total of approximately 20 people.
Principal Room	1		For principal's office (1 person)
Toilet for Principal	1	25.15	Only for principal's use.
Assistant Principal Room	1	25.15	For two assistant principals (one each for morning and afternoon sessions) . Two sets of desks and chairs will be installed.
Supervisors Room	1	52.98	For 8 supervisors. 8 sets of desks and chairs will be installed.
Staff Room	1	139.61	For teaching staff. To accommodate 35 teachers for one session. Co-use desks and lockers dedicated to each teacher will be installed.
Prayer Room	1	48.77	For Islam prayer. To conduct Koran teaching. An ablution basin will be installed outside the prayer room.
Pantry	1	41.46	For making hot water for teachers and staff members. A sink will be installed.
Floor Area of Administrative and Staff Space			513.87 m <sup>2</sup>

### Planned Rooms (3)

Name of Room	No.	Floor Area (m <sup>2</sup> )	Use Purpose and the Number of People to be Accommodated
<b>Service Spaces</b>			
First Aid Room	1	27.92	To provide first-aid treatment to injured and sick students. To conduct physical checkup (including scale and height measure). A health assistant will be stationed at all time.
Store Room	2	22.98	To store outdoor-sports gear and equipment and cleaning and maintenance equipment.
Store Room	2		To use spaces under stairways to store documents.
Staff Toilets	5	271.13	For teachers and staff use (on each floor)
Student Toilets	7		One on the ground floor and two each on the first to third floors. A drinking fountain will be installed near each toilet. One booth per 50 students.
Toilets for School Hall	2		For people who use the school hall. Also for people who use the schoolyard.
Universal Toilet	1		One on the ground floor. It should be usable for physically handicapped people.
Machine Room	1	25.07	To install water supply pumps and control board. Water shall be pumped up into the elevated tank then distributed by gravity. (Water well construction shall be borne by the Maldives side.)
Electric Room	1		To house receiving panel. After branched off, to wire to each distribution board.
Corridors etc.	—	1,574.79	Spaces for corridors, stairways and pilotis etc.

Floor Area of Service Spaces	1,921.89 m <sup>2</sup>
------------------------------	-------------------------

TOTAL FLOOR AREA	5,404.43 m <sup>2</sup>
------------------	-------------------------

After Project implementation, it is expected to achieve the following effects:

① Securing of Safe Educational Environment:

The existing buildings at the Project school have structural defects caused by inappropriate construction and are in dangerous conditions. They are evaluated as being unsuitable for long-term use. Thus, by reconstructing the existing school buildings, safe educational environment can be secured for 2,100 students in the school district

## ② Improvement of Access to Public Primary Schools in Male'

As public primary schools in Male' have a higher education quality than those of community schools and private schools and are free of charge, there are many parents who want to transfer their children to the public schools. However, the Government of Maldives regulates the number of second and higher-grade students to transfer to public primary schools in Male', mainly due to insufficient accommodation capacity. The increased accommodation capacity by the Project, together with the ease of the Government's regulation, will make accessibility to public primary schools much improved.

## ③ Provision of Adequate Science Classes:

In accordance with the policy of the Government of Maldives to extend the primary education period, public primary schools in Male' started to extend the education period from a conventional 5-year period to a 7-year period. The Project school will adopt the 7-year period education system from the fiscal year 2002. Once a new science room that does not presently exist at the Project school is built by the Project, it will be possible to provide science experiment education to upper grade children (sixth and seventh graders) at the Project school.

## ④ Beneficial Effects to the Community:

As Male' has only a small number of public facilities that can be used by area residents, school halls and schoolyards are opened for the general public when they are not used for classes. When Project facilities are opened to the general public, it is expected that indirect effects of the Project may result from the facilities when area residents use them for sports events and social activities.

The Project is expected to achieve various effects as described above. In addition, the Project will contribute to the educational needs of area residents. Thus, it is considered that the implementation of a portion of the Project with Japan's Grant Aid Program is relevant. As for the operation and maintenance of Project facilities, the Maldives side has sufficient personnel, technologies and funds. Therefore it is considered that there will be no problems. Further, once repair and reinforcing work is provided to existing school buildings, completed facilities will be provided with appropriate furniture and equipment and hazard prevention facilities, and adequate school districts are set up for distributing an appropriate number of students to each school respectively, it is considered that the Project will be smoothly and effectively implemented.



## CONTENTS

Preface	
Letter of Transmittal	
Location Map	
Perspective	
List of Figures & Tables	
Abbreviations	
Summary	
Chapter 1 Background of the Project	1-1
Chapter 2 Contents of the Project	
2-1 Basic Concept of the Project	2-1
2-1-1 Overall Goal and Project Objective	2-1
2-1-2 Outline of the Project	2-1
2-2 Basic Design of the Requested Japanese Assistance	2-2
2-2-1 Design Policies	2-2
2-2-1-1 Basic Policies	2-2
2-2-1-2 Policies for Natural Conditions	2-14
2-2-1-3 Policies for Social-Economic Conditions	2-15
2-2-1-4 Policies Regarding Construction	2-17
2-2-1-5 Policies for Capability of Project Operation and Maintenance	
Implementing Agency	2-19
2-2-1-6 Policies for Deciding Grade of Facilities	2-20
2-2-1-7 Policies Regarding Construction Time Period	2-20
2-2-2 Basic Design	2-20
2-2-2-1 Arrangement Plan of Facilities	2-20
2-2-2-2 Floor Plan	2-22
2-2-2-3 Section Plan	2-28
2-2-2-4 Structure Plan	2-29
2-2-2-5 Electrical Facility Plan	2-32
2-2-2-6 Water Supply and Drainage Plan	2-34
2-2-2-7 Building Material and Equipment Plan	2-36
2-2-3 Basic Design Drawings	2-37
2-2-4 Construction and Procurement Plan	2-47
2-2-4-1 Policies for Construction and Procurement	2-47
2-2-4-2 Important Matters for Project Construction and Material	
Procurement	2-49

2-2-4-3 Division of Construction Work and Procurement/Installation	2-49
2-2-4-4 Construction Supervision and Material Procurement Plans	2-52
2-2-4-5 Material and Equipment Procurement Plans	2-53
2-2-4-6 Project Implementation Schedule	2-55
2-3 Outline of Undertakings to be Borne by the Maldives Side	2-56
2-4 Operation and Maintenance Plan of Project Facilities	
2-4-1 Operation and Maintenance Plan	2-59
2-4-2 Operation and Maintenance Cost	2-61

### Chapter 3 Project Evaluation and Recommendations

3-1 Project Effect	3-1
3-2 Recommendations	3-4

### <Appendices>

1.Member List of the Study Team	AP-1
2.Study Schedule	AP-3
3.List of Parties Concerned in the Recipient Country	AP-5
4.Minutes of Discussions	AP-7
5.Cost Estimation Borne by the Recipient Country	AP-25
6.References	AP-26
7.Geological Survey and Testing	AP-27