

**Earthquake Rehabilitation and Reconstruction Agency
The Islamic Republic of Pakistan**

OUTLINE DESIGN STUDY REPORT

ON

THE PROJECT FOR THE RECONSTRUCTION OF

THE EARTHQUAKE-AFFECTED FACILITIES

IN NORTH WEST FRONTIER PROVINCE

IN

THE ISLAMIC REPUBLIC OF PAKISTAN

December 2006

JAPAN INTERNATIONAL COOPERATION AGENCY

**NIPPON KOEI CO., LTD.
BINKO INTERNATIONAL LTD.**

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JR
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PREFACE

In response to a request from the Government of the Islamic Republic of Pakistan, the Government of Japan decided to conduct an outline design study on the project for the reconstruction of the earthquake-affected facilities and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Pakistan a study team for five field surveys during the period from January 25 to July 12, 2006.

The team held discussions with the officials concerned of the Government of Pakistan, and conducted a field study at the study area. After the team returned to Japan, further studies were made. 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 Islamic Republic of Pakistan for their close cooperation extended to the teams.

December, 2006

Kuroki MASAFUMI

Vice President

Japan International Cooperation Agency

December, 2006

LETTER OF TRANSMITTAL

We are pleased to submit to you the outline design study report on the project for the reconstruction of the earthquake-affected facilities in North West Frontier Province in the Islamic Republic of Pakistan.

This study was conducted by the Consortium of Nippon Koei Co., Ltd. and Binko International Ltd., under a contract to JICA, during the period from January, 2006 to December, 2006. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Pakistan and formulated the most appropriate outline 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,

Yoshikimi INOUE

Project Manager,

Outline design study team on

the Project for the Reconstruction of the
Earthquake-Affected Facilities in North West
Frontier Province in the Islamic Republic of
Pakistan

The Consortium of Nippon Koei Co., Ltd. and
Binko International Ltd.

SUMMARY

(1) Existing Conditions of the Country

The Islamic Republic of Pakistan (hereinafter referred to as Pakistan) is located in Southwest Asia and surrounded by neighboring countries of India, Afghanistan, and Iran. Pakistan has a national land area of 796,000 km² and a population of 155.4 million in 2005.

Nearly 60% of the total land of the country consists of dry or semi-dry climate, and about 60% of the population resides in Punjab plains in the central part. Mountains encompasses widely in the northern part area forming the forest range, with more than 60 mountain peaks beyond 6,700m. Among them, K-2 (8,611m) is a second highest mountain in the world. In summer from April to September The southern part and the low ground part become high temperatures of over 40 degree, while the northern part is clement. During winter, It becomes 10 to 20 degree in the south, while the northern part experiences below freezing point.

The main industries of the national economy are agriculture and cotton industries. A gross domestic product (GDP) by industry in 2005 was estimated at 21.6% for agriculture, 25.1% for manufacturing, and 53.3% for service. GDP per capita in the same year was 847 USD/person.

(2) Background of the Project

A magnitude 7.6 earthquake occurred in Pakistan at 8:50 a.m. on 08 October 2005. The earthquake epicenter was located 100 kilometers north-northeast of Islamabad. The provinces of Azad Jammu and Kashmir (AJK) and the northern districts of the North West Frontier Province (NWFP) bore the full force of the earthquake in terms of number of lives lost, injuries sustained, and destruction of infrastructure and economic assets. According to the Government of Pakistan figures, as of November 3, approximately 73,000 people had died and more than 70,000 had been severely injured or disabled. Over 2.8 million persons have been left without shelter, and it is estimated that about 2.3 million persons are without adequate food.

The Government of Pakistan submitted a request to the Government of Japan for Non-Project Grant Aid for the project for the reconstruction of the earthquake-affected facilities in North West Frontier Province (hereinafter referred to as “the Project”). The Government of Japan entrusted an outline design study for the Project to the Japan International Cooperation Agency (hereinafter referred to as “JICA”).

JICA dispatched an outline design study team to Pakistan. The study team conducted surveys from January 23 to February 02, 2006 and confirmed the necessity, urgency, and appropriateness of this Project. Finally, the Government of Pakistan and the study team agreed on February 02, 2006 to carry out the outline design study on the reconstruction of earthquake-affected facilities for health and education sectors as the first priority and infrastructure sector as the second priority.

People in the Battagram district are poorly provided with health facilities, of which the preparedness is evaluated at the lowest level among the districts in NWFP because the health facilities in the district are not accessible by roads suited for the vehicle transportation from residential areas, and water supply and sanitation systems are not provided. In addition to those reasons, the low literacy rate in the district obstructs the prophylaxis education.

After the earthquake, the Pakistani government, NGOs, and Donors provided first-aid services for the affected peoples at temporally facilities and tents. However, the affected facilities are still not rehabilitated or reconstructed according to a mid-long term plan. Therefore, the Pakistani government requested the reconstruction of 34 earthquake-affected health facilities together with medical equipment in Allai *Tehasil* (county) and Battagram *Tehasil* in the Battagram district as presented in the table below.

Table 1: Health Facilities Requested for Reconstruction

Health Facilities	Quantity (nos)
District Headquarters (DHQ)	1
Rural Health Centers (RHC)	2
Basic Health Units (BHU)	28
Civil Hospital (CH)	1
Tuberculosis Control Center (TBC)	1
Executive District Office (EDO)	1
Total	34

Note: The DHQ includes the Mother and Child Health Center (MCHC).

Primary and secondary education is formed by four different education levels that consist of the primary (for the first five years), middle (for the following three years), high (for the next five years), and high secondary (for the final two years) levels. From the primary levels, schools are separated for boys and girls.

The number of schools affected in the primary level was estimated at 605 (equivalent to 90% of the total number of schools in this level), 44 in the middle level (95%), and 26 in the high and high secondary levels (72%). The total number of the schools affected was 675 that was equivalent to 92% of the total 727 schools in the district. Among those schools affected, the Pakistani government requested the reconstruction of 411 earthquake-affected schools that consist of 363 primary schools, 25 middle schools, and 411 high and high secondary schools. In addition to the 411 schools, the Pakistani government requested the reconstruction of a boys' degree college.

Table 2: Education Facilities for which Reconstruction was Requested

Education Facilities	Number of Affected Facilities (nos)	Number of Facilities Requested (nos)
Primary school	605	363
Middle school	44	25
High and high secondary school	26	23
Boys' degree college	1	1
Total	675	411

As the second priority sector, the Pakistani government requested the reconstruction of bridges at seven locations, main access roads on seven routes with a total length of 128 km, and community roads on 14 routes with a total length of 227 km.

(3) Basic Concept of the Project

The outline design study team conducted a field survey and confirmed the necessity, urgency, and appropriateness of the Project. The study team prepared the criteria for selecting the facilities to be reconstructed in the Project as listed below.

- Health sector: i) damage level, ii) accessibility, iii) site conditions, iv) number of doctors and medical staffs, v) number of outpatients, and iv) activities of other donors.
- Education sector: i) damage level, ii) accessibility, iii) number of students and teachers, iv) site

conditions, v) number of classrooms, vi) activities of other donors, vii) existing conditions of neighboring schools, and viii) land ownership.

- Infrastructure sector (roads and bridges): i) damage level, and ii) contribution to the access improvement to the selected educational and health sector facilities.

Then, the study team and the Pakistani government selected and agreed to the facilities to be reconstructed in the Project as presented in the table below. The study team and the Pakistani government selected 17 basic health units for the reconstruction; however the Pakistani government thereafter requested to upgrade four basic health units at Paimal Sharif, Rashang, Pashoto, and Shumlai to rural health centers. Since the additional request by the Pakistani government required new sites adequate for the upgrading the BHUs, the four BHUs were temporarily excluded from the selected facilities for reconstruction.

Table 3: Selected Facilities to be reconstructed in the Project

Sector	Facilities	Quantity (nos)
Health (19 facilities and medical equipment)	District Headquarters (DHQ)	1
	Tuberculosis Control Center (TBC)	1
	Mother and Child Health Center (MCHC)	1
	Executive District Office (EDO Office)	1
	Rural Health Center (RHC)	1
	Civil Hospital (CH)	1
	Basic Health Units (BHU)	13
Education (118 facilities in total)	Government Primary Schools (GPS)	63
	Government Girls Primary Schools (GGPS)	43
	Government Middle Schools (GMS)	2
	Government Girls Middle School (GGMS)	1
	Government High Schools (GHS)	7
	Government High Secondary School (GHSS)	1
	Boys Degree College	1
Road and Bridge (3 locations in total)	Bridges No. 3, No. 6, and No. 7	3

Note: The number of BHUs excludes the four BHUs at Paimal Sharif, Rashang, Pashoto, and Shumlai.

(4) Construction Schedule and Cost Estimation

The project period was estimated at 25 months from the signing of the exchange of notes (E/N) to the completion of the construction. The implementation cost was estimated at 3,094 million yen (3,093 million yen by the Japanese government and one million yen by the Pakistani government).

(5) Project Evaluation and Recommendations

Direct beneficiaries of the implementation of the Project were estimated at 302,000 outpatients and 144 medical experts in the health sector and 3,700 students and 455 teachers in the education sector. In addition to those beneficiaries, the Project was expected to indirectly contribute to the living environmental improvement for the families and relatives of the direct beneficiaries.

Since the Project aimed at the reconstruction of the earthquake-affected facilities, the Project would not require any additional costs for operation and maintenance. Therefore, the Pakistani government was recognized capable to operate and maintain the facilities reconstructed in the Project.

The study team pointed out the issues that must be addressed in order to implement the Project efficiently and effectively as mentioned below.

- (1) Housing construction for doctors and medical staffs: There were many vacancies for doctors in the rural areas. Because the sphere of daily existence was extremely limited in the narrow area in the Battagram district due to the precipitous topography in the mountainous regions and low preparedness of

infrastructure, it was not unusual that there was no doctor in villages. In addition to the insufficient number of the doctors in the district, female doctors were limited to one senior doctor and one obstetrician and gynecologist in the DHQ. Low provision of the female doctors is another important issue in the health sector in the district. Although the Pakistani government made efforts to improve the medical services, most of educated medical experts wanted to stay in the urban areas. Therefore, the housing for doctors and medical staffs needed to be constructed at the sites of the selected health facilities to provide an incentive for allocating the medical experts.

- (2) Employment of teachers: During the site survey, the study team discovered that there were three high secondary schools (GHS Battamori, GHS Shamlai, and GHS Biari) of which school buildings were constructed and could not be opened for one year because the NWFP governments could not employ teachers for these schools. Those high secondary schools were thereafter destroyed by the earthquake. Therefore, the Pakistani government needed to confirm the availability of teachers who would be employed for the schools to be reconstructed in the Project.
- (3) Improvement of accessibility: Access to the affected schools relied on the inconvenient routes of narrow streets, terraced fields, rivers, and slopes. Students and teachers are forced to walk on those inconvenient routes. Schools accessible by vehicle transportation were rare among the schools of the Project. Construction materials and consumer goods were transported by donkeys to the schools inaccessible by vehicle transportation.

On the other hand, the Pakistani government requested to adopt a universal design including ramps and other methods, which provided access for disabled persons. The outline design team took into account the better accesses within the schools; however the most important issue was to provide better access between the residential areas and the schools. Since the Project did not include the improvement of the accessibility, the Pakistani government was therefore responsible to provide and improve the access roads.

Outline Design Study Report
on
the Project for the Reconstruction of the Earthquake-Affected Facilities
in North West Frontier Province
in the Islamic Republic of Pakistan

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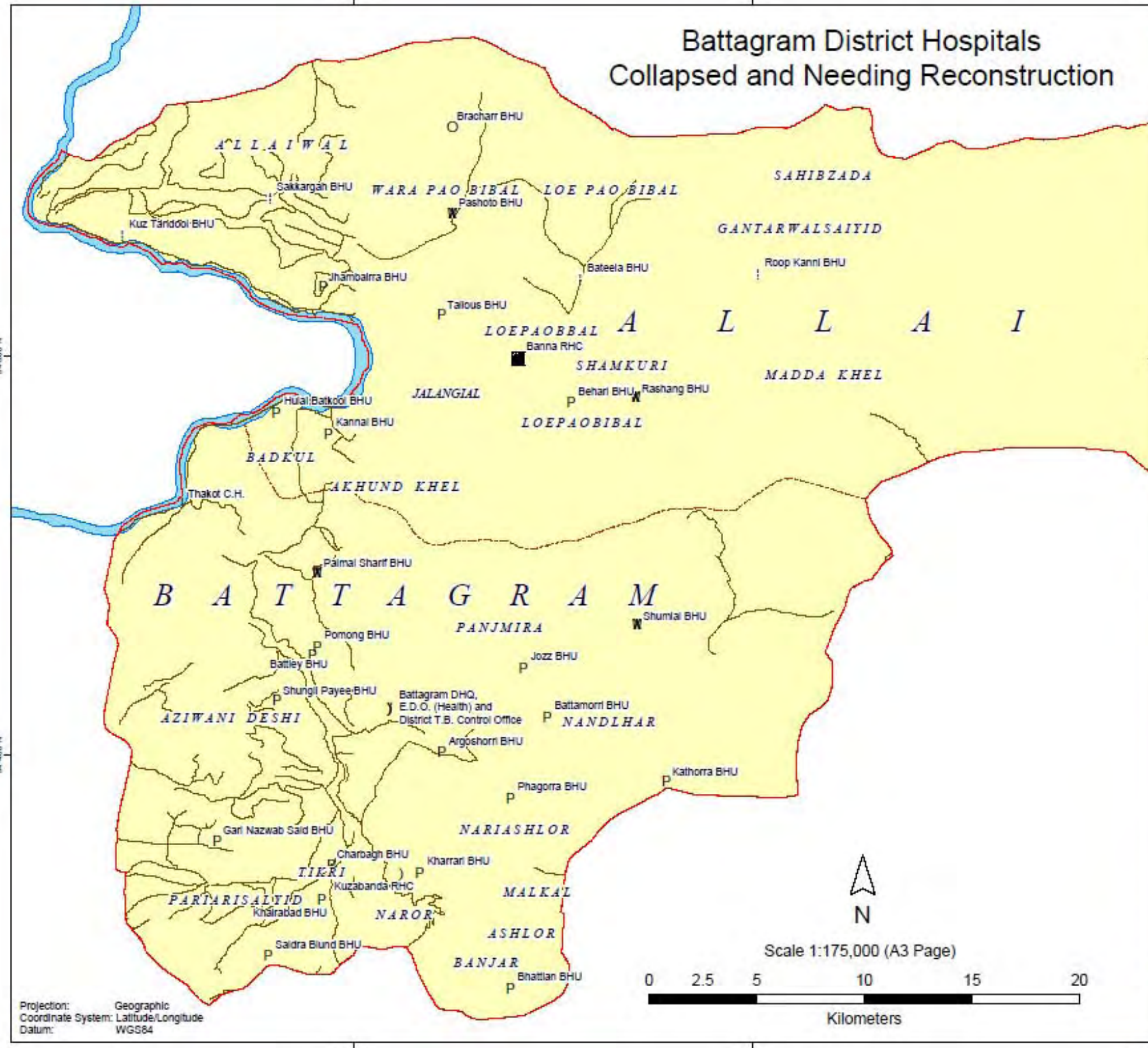
LOCATION MAP

Battagram District Hospitals Collapsed and Needing Reconstruction

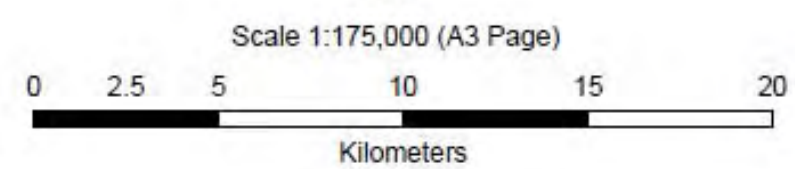
Health Department, NWFP, Peshawar
Errors and Omissions Excepted
Please Contact: Deputy Director (HMIS)
Phone No: 091 9210342

Legend - Hospitals Requested for Reconstruction

P	Argoshori BHU	P	Kharrari BHU
□	Banna RHC	!	Kuz Tandool BHU
!	Bateela BHU)	Kuzabanda RHC
)	Battagram DHQ	W	Paimal Sharif BHU
)	Battagram District T.B. Control Office	W	Pashoto BHU
)	Battagram E.D.O. (Health) Office	P	Phagorra BHU
P	Battamori BHU	P	Pomong BHU
P	Battley BHU	W	Rashang BHU
P	Behari BHU	!	Roop Kannl BHU
P	Bhattian BHU	!	Sakkargah BHU
O	Bracharr BHU	P	Saldra Blund BHU
P	Charbagh BHU	W	Shumtal BHU
P	Gari Nazwab Sald BHU	P	Shungil Payee BHU
P	Hulal Batkool BHU	P	Talious BHU
P	Jhambalra BHU	!	Thakot C.H.
P	Jozz BHU	—	Roads
P	Kannal BHU	—	Rivers
P	Kathorra BHU	—	Tehsil Boundaries
P	Khalrabad BHU	—	Battagram District



Projection: Geographic
Coordinate System: Latitude/Longitude
Datum: WGS84



HEALTH FACILITIES REQUESTED FOR RECONSTRUCTION

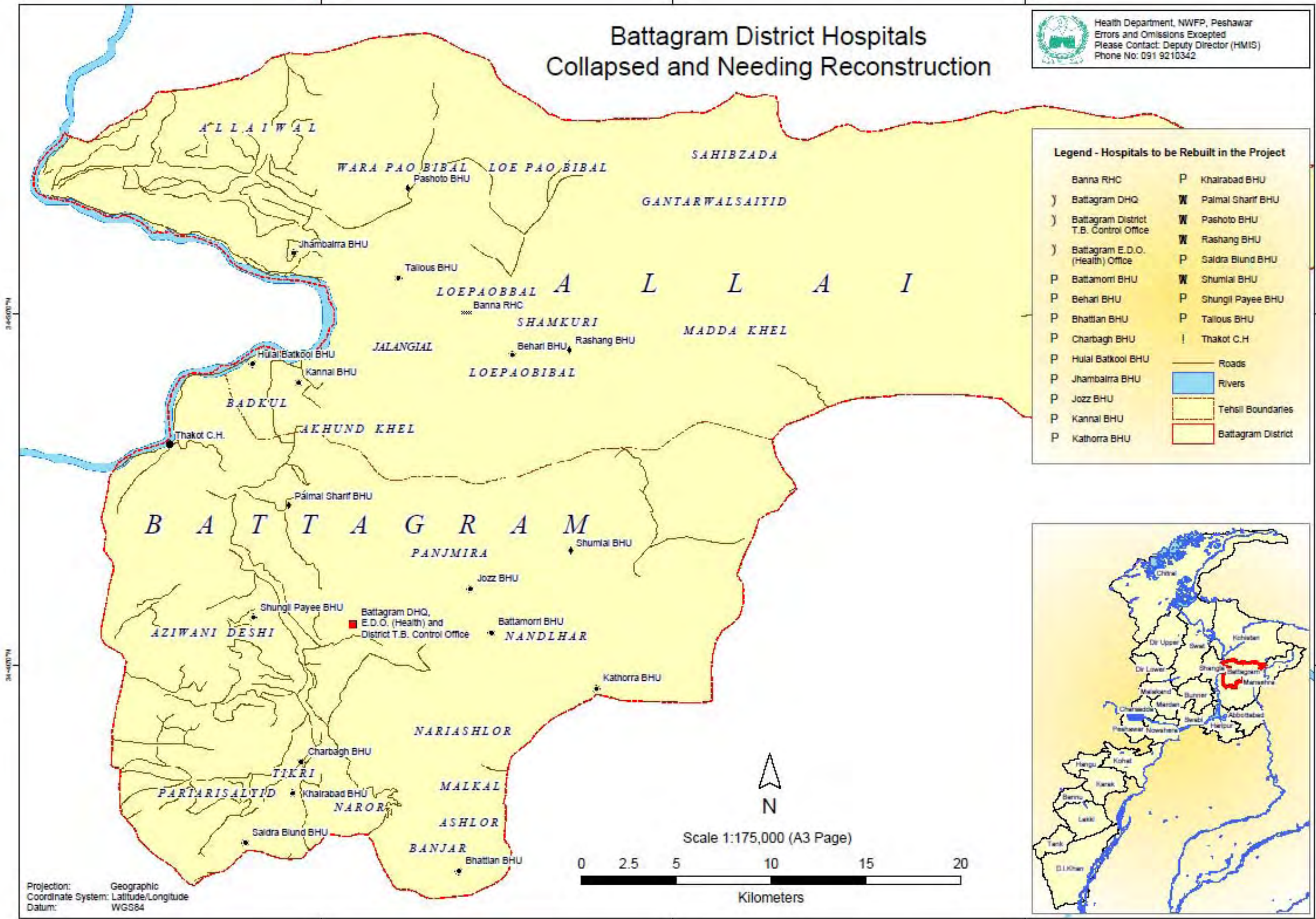
Battagram District Hospitals Collapsed and Needing Reconstruction



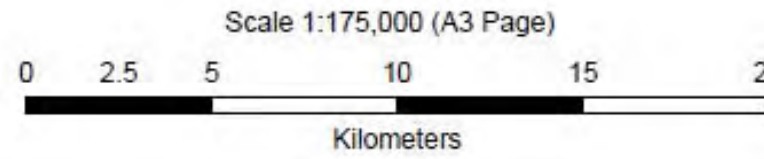
Health Department, NWFP, Peshawar
Errors and Omissions Excepted
Please Contact: Deputy Director (HMIS)
Phone No: 091 9210342

Legend - Hospitals to be Rebuilt in the Project

Banna RHC	P	Khairabad BHU
Battagram DHQ	W	Paimal Sharif BHU
Battagram District T.B. Control Office	W	Pashoto BHU
Battagram E.D.O. (Health) Office	W	Rashang BHU
Battagram BHU	P	Saidra Blund BHU
Behari BHU	W	Shumial BHU
Bhattian BHU	P	Shungli Payee BHU
Charbagh BHU	P	Talious BHU
Hulal Balkool BHU	I	Thakot C.H.
Jhambalra BHU		
Jozz BHU		
Kannal BHU		
Kathorra BHU		
		Roads
		Rivers
		Tehsil Boundaries
		Battagram District



Projection: Geographic
Coordinate System: Latitude/Longitude
Datum: WGS84

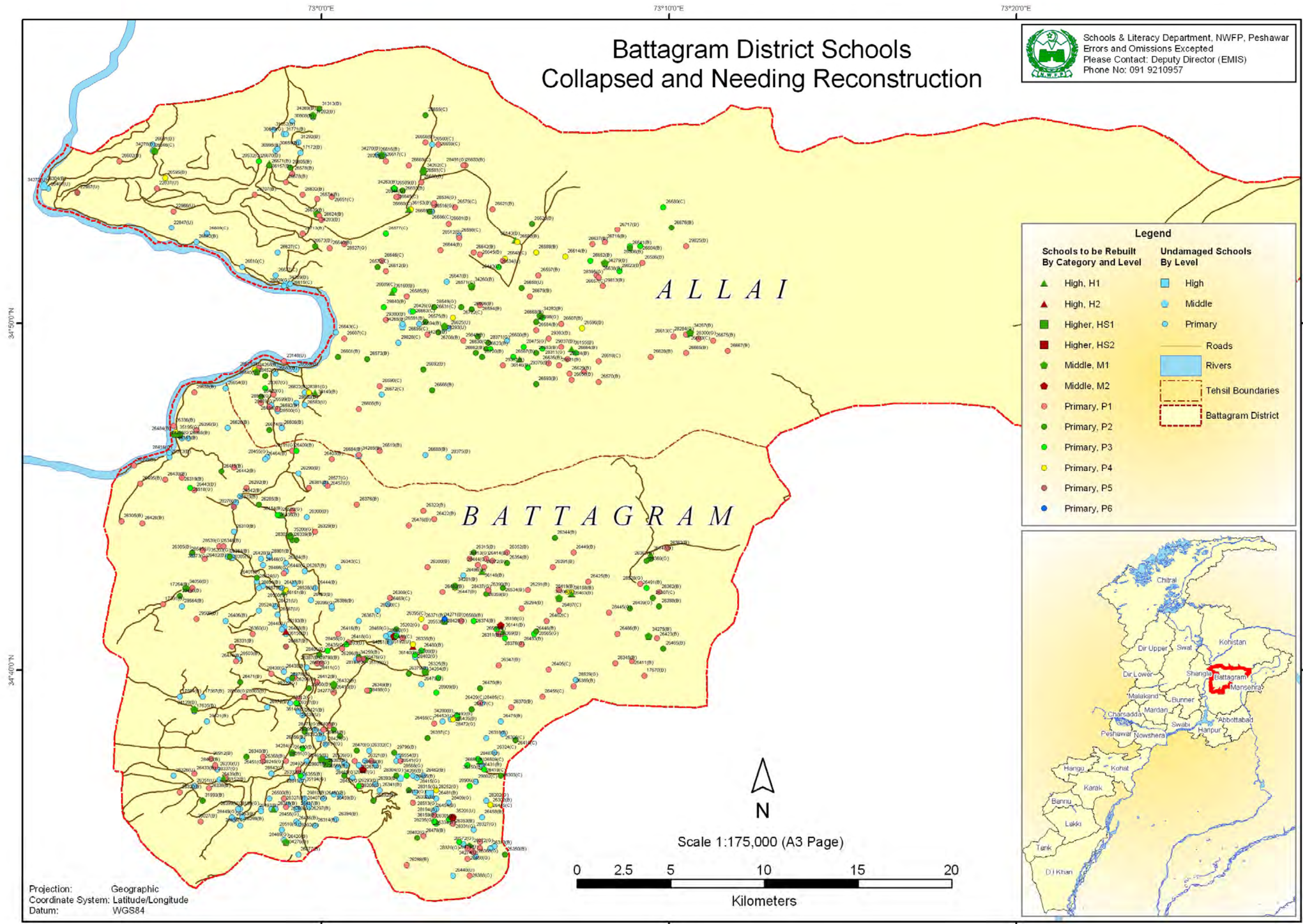


HEALTH FACILITIES SELECTED FOR RECONSTRUCTION

Battagram District Schools Collapsed and Needing Reconstruction



Schools & Literacy Department, NWFP, Peshawar
Errors and Omissions Excepted
Please Contact: Deputy Director (EMIS)
Phone No: 091 9210957

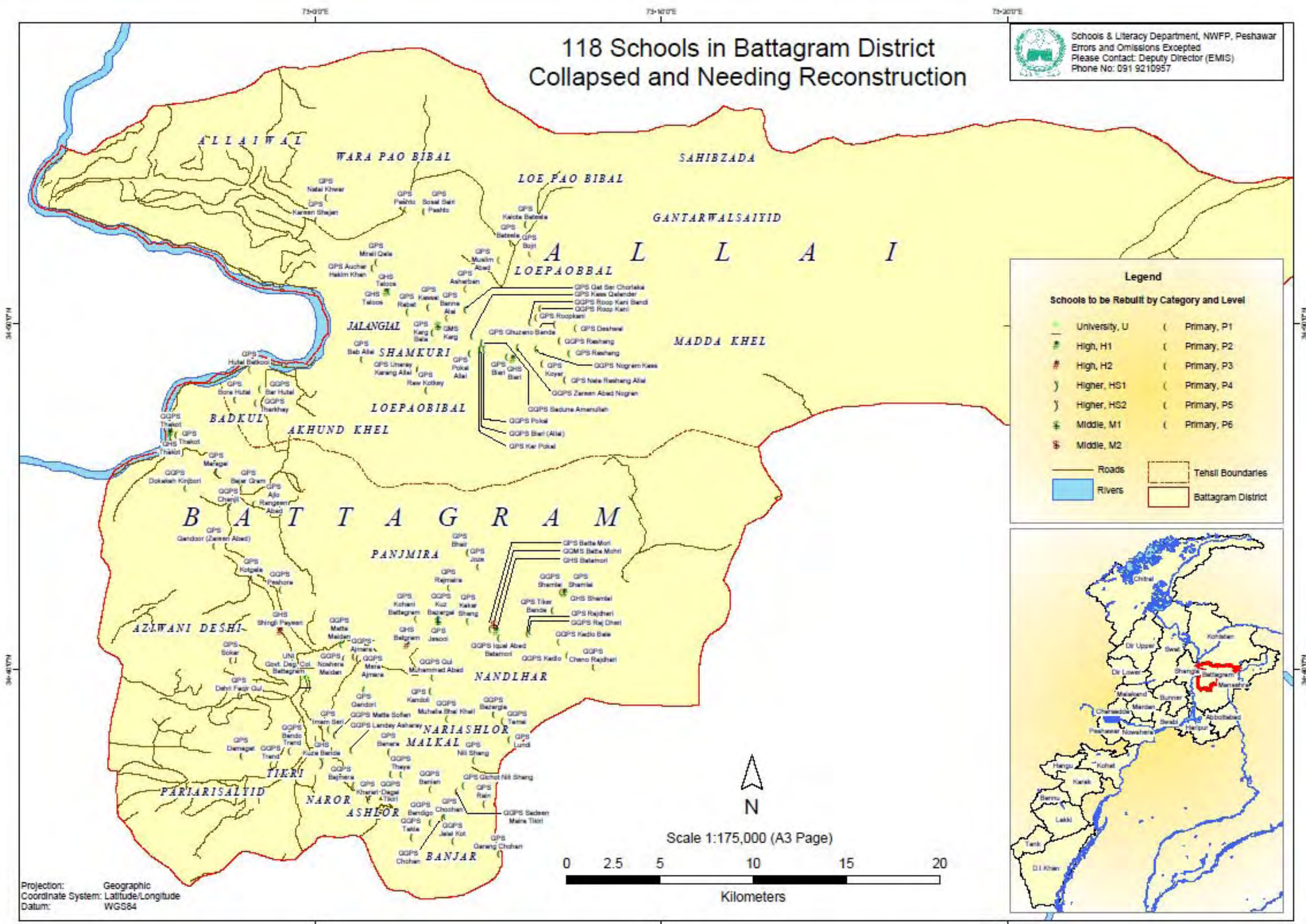


EDUCATION FACILITIES REQUESTED FOR RECONSTRUCTION

118 Schools in Battagram District Collapsed and Needing Reconstruction



Schools & Literacy Department, NWFP, Peshawar
Errors and Omissions Excepted
Please Contact: Deputy Director (EMIS)
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EDUCATION FACILITES SELECTED FOR RECONSTRUCTION

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ABBREVIATIONS

1 Name

(1) Organization

ADB Asia Development Bank

ERRA Earthquake Reconstruction & Rehabilitation Authority

GTZ Deutsche Gesellschaft für Technische Zusammenarbeit

JICA Japan International Cooperation Agency

JICS Japan International Cooperation System

NGO Nongovernmental Organization

NWFP North West Frontier Province

SADC Swiss Agency for Development and Cooperation

WB World Bank

WFP World Food Program

WHO World Health Organization

(2) Health sector

ARI Acute Respiratory Infectious

BHU Basic Health Unit

CCU Coronary Care Unit

CD Civil Dispensary

CH Civil Hospital

DHQ District Head Quarter

Dia. equal to Traditional Birth Attendant

Dis. Dispenser

EDO Executive District Office

ENT Ear, Nose and Throat

EPI Expanded Programme of Immunization

LHV Lady Health Visitor

MCHC Mother and Child Health Center

MO Medical Officer

MD Medical Doctor

MT Medical Technician

Ob/Gy Obstetric and Gynecology

OPD Outpatient Department

RHC Rural Health Center

SS Sub-Specialty

TBC Tuberculosis Control Center

THQ *Tehasil* Headquarter

(3) Education sector

BDC Boys Degree College

EMIS Education Management Information System

GGMS Government Girls Middle School
GGPS Government Girls Primary School
GHS Government High School
GHSS Government High Secondary School
GMS Government Middle School
GPS Government Primary School
PTA Parent-Teacher Association

(4) Others

BHN Basic Human Needs
CE Communauté Européenne
E/N Exchange of Notes
GDP Gross Domestic Product
ISO International Organization for Standardization
M/D Minutes of Discussion
PC Planning Commission
SAC Structure Adjustment Credit

2 Unit

Area

mm^2 = Square-millimeters (1.0 mm x 1.0 mm)

cm^2 = Square-centimeters (1.0 cm x 1.0 cm)

m^2 = Square-meters (1.0 m x 1.0 m)

km^2 = Square-kilometers (1.0 km x 1.0 km)

ha. = Hectares (10,000 m^2)

Length

mm = Millimeters

cm = Centimeters (= 10 mm)

m = Meters (= 100 cm)

km = Kilometers (= 1,000 m)

" = Inch (= 2.54 cm)

' , ft = Feet (= 12 inches)

Currency

US\$, \$ = United State Dollars

(US\$1.0 = 116 yen)

JPY, Yen = Japanese Yen

Rs = Pakistan Rupee (Rs 1.0 = 2.11 yen)

Other

V, v = volt

W, w = watt

Hz = Hertz

% = Percent

N = Newton

Volume

cm^3 = Cubic-centimeters

(1.0 cm x 1.0 cm x 1.0 cm)

m^3 = Cubic-meters (1.0 m x 1.0 m x 1.0 m)

L = Liter (1,000 cm^3)

Weight

mg = Milligram

g = Grams (= 1,000 mg)

kg = Kilograms (=1,000 g)

ton, t = Metric tonne (=1,000 kg)

Time

sec, s = Seconds

min = Minutes (= 60 sec)

hr, h = Hours (= 60 min)

d = day

CHAPTER 1

BACKGROUND OF THE PROJECT

CHAPTER 1 BACKGROUND OF THE PROJECT

A magnitude 7.6 earthquake occurred in Pakistan at 8:50 a.m. on 08 October 2005. The earthquake epicenter was located 100 kilometers north-northeast of Islamabad. The provinces of Azad Jammu and Kashmir (AJK) and the northern districts of the North West Frontier Province (NWFP) bore the full force of the earthquake in terms of number of lives lost, injuries sustained, and destruction of infrastructure and economic assets.

In a response to the huge disaster caused by the earthquake, the Government of Pakistan requested that the Government of Japan reconstruct the earthquake-affected facilities for the health and education sectors as the first priority and the infrastructure sector as the second priority.

(1) Health Sector

Most of health facilities located in the Battagram *Tehasil* and Allai *Tehasil* were affected by the earthquake. The Pakistani government, NGOs, and donors provided first-aid services and medical services for the affected people in temporary tents. The Pakistani government requested that the Japanese government reconstruct 34 earthquake-affected medical facilities as presented in the table below.

Table 1.1: Medical Facilities for which Reconstruction was Requested

Medical Facilities	Quantity (nos)
District Headquarter (DHQ)	1
Rural Health Centers (RHC)	2
Basic Health Units (BHU)	28
Civil Hospital (CH)	1
Tuberculosis Control Center (TBC)	1
Executive District Office (EDO)	1
Total	34

Note: The DHQ includes the Mother and Child Health Center (MCHC).

(2) Education Sector

The Pakistani government requested that the Japanese government reconstruct one boy's degree college and 411 schools that included 363 primary schools, 25 middle schools, and 23 high and high secondary schools as presented in the table below.

Table 1.2: Education Facilities Requested for Reconstruction

Type of School	Damaged Schools (school)			Reconstruction Requested (school)	Enrollment (person)
	Destroyed	(schools)	(persons)		
1) GPS	256	140	396	252	31,500
2) GGPS	115	94	209	111	15,364
Sub-total	371	234	605	363	46,864
3) GMS	16	13	29	17	1,665
4) GGMS	7	8	15	8	369
Sub-total	23	21	44	25	2,034
GHS	14	8	22	22	3,413
GGHS	1	2	3	0	612
GHSS	1	0	1	1	166
Sub-total	16	10	26	23	4,191
Total	410	265	675	411	53,089

Source: Information obtained from the office of executive district officers, the school & literacy department, Battagram

Note: Enrollment is as of the school year 2005.

(3) Infrastructure Sector (Road and Bridge)

The Pakistani government requested the reconstruction of seven bridges, main access roads of seven routes with a total length of 128 km, and community roads of four routes with a total length of 217 km as presented in the table below.

Table 1.3: Roads for which Reconstruction was Requested

Location	Road	Length (km)
Battagram <i>Tehasil</i>	Main access roads (district roads)	
	1 Oghi Battagram Road	15
	2 Kuzabanda Chattarplain Road	24
	3 Battagram Shumlai Hill Road	26
	4 Battagram to Paimal, Rangeen Abad, Surgai Road	22
	Community roads	
	5 Landikass Perijhari Road	13
	6 Joz Road	4
	7 Lachmaira Road	4
	8 Gajkot Battoian Road	5
	9 Japan Bridge to Kotgalla Road	3
	10 Kohani Merani Road	13
	11 Bilandkot Road	4
	12 Hill to Malikan Gali Road	5,
Sub-total	138	
Allai <i>Tehasil</i>	Main access roads (district roads)	
	1 Kund Banna Road	20
	2 Biari Gidri Road	9
	3 Karrag Jabbar Road	12
	Community roads	
	4 Talious Pashto Road	12
	5 Banna Bateela Road	8
	6 Asharban Banna Road	6
	7 Bela Pazang Road	5
	8 Sakargah Darra Road	4
9 Kuntar Gat Sheeshal Road	3	
Sub-total	79	
Total		217

Table 1.4: Bridges for which Reconstruction was Requested

Location	Bridges	Lengs, Width (m)
Battagram <i>Tehasil</i>	Shumrai	33.5, 2.5
	Battagram college	16.5, 4.6
	Pashto	15, 4.8
Allai <i>Tehasil</i>	Rope Kanai	45, 1.5~2.0
	Banna	22.5, 4.6
	Besham	20, 5.0
	Bahari	32, 4.6

(4) Natural Conditions

The project sites were located in mountainous areas with the highest elevation of 4689 m. Since there were no weather observation offices in the Battagram district, there was no official weather data. According to the Manshera weather observation office that was located in the district neighboring the project sites, the average temperature fluctuated in the range from 21 °C to 35 °C in the summer and from 2 °C to 14 °C in the winter. The annual average rainfall was in the range from 1000 to 2000 mm/year. In the winter, it snowed in the northern part and highlands of Battagram district. Access roads to the district were closed by snow in the winter.

(5) Environmental and Social Consideration

The Project will be implemented to reconstruct the affected facilities for the health, education, and infrastructure sectors. The new facilities will be reconstructed at the sites of the old facilities. Therefore, the Project will not cause any negative impacts in view of environmental and social considerations.

CHAPTER 2

CONTENTS OF THE PROJECT

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2-1 BASIC CONCEPT OF THE PROJECT

(1) Overall Goal

The overall goal of the Project was to rehabilitate the health and education services that were affected by the earthquake in the Battagram *Tehasil* and Alli *Tehasil*. To achieve this overall goal, the purpose of the Project was aimed at the reconstruction of bridges and facilities for the health and education sectors.

(2) Selection of Facilities to Be Reconstructed in the Project (Health Sector)

An outline design study team carried out the field survey and evaluated the 34 health facilities that were requested for reconstruction by the Pakistani government. Then, the study team prepared the criteria to select the health facilities which will be reconstructed in the Project as presented in the table below.

Table 2.1: Criteria for Selecting the Facilities to be Reconstructed (Health Sector)

Criteria	Description
(1) Extent of damage	<ul style="list-style-type: none"> • Priority was placed on a facility of which damage was visually observed. • Since it was difficult to evaluate the extent of structural damages in the limited time of the field survey, buildings of which damage was not confirmed and still used were excluded from the Project.
(2) Accessibility	<ul style="list-style-type: none"> • High priority was placed on a facility easily accessible by car. • Since most of health facilities were not accessible by car, medium priority was placed on a facility which was accessed on foot and to which construction materials were transported by donkey and human power. • Low priority was placed on a facility to which the study team could not gain access due to the hazards of landslides and rock falls.
(3) Site conditions	<ul style="list-style-type: none"> • A project site hazardous for rock fall was excluded from the Project. • Priority was placed on a facility for which the provincial government provided an alternative site.
(4) Number of health workers of a health facility	<ul style="list-style-type: none"> • A facility without any doctors was excluded from the Project.
(5) Number of outpatients	<ul style="list-style-type: none"> • Priority was decided based on the number of outpatients.
(6) Activities of other donors	<ul style="list-style-type: none"> • Low priority was placed on a facility that was supported by other donors or NGOs. • WHO was reconstructing eight basic health units' outpatient wards. The reconstructed wards will be temporary steel structures. WHO agreed that those temporary wards will be used for storage and residences for medical workers if the Japanese government will decide to reconstruct permanent structures. Therefore, high priority was placed on those eight outpatient wards.

Based on the selection criteria, the study team and the Pakistani government selected the health facilities to be reconstructed in the Project. The selected health facilities included a DHQ, a TBC, a MCHC, an EDO, an RHC, a CH, and 17 BHUs. Among the 17 BHUs, the Pakistani government requested to expand four BHUs to RHCs. Those BHUs were located at Paimar Sharif, Rashang, Pashoto, and Shumlai. Since the expansion of the four BHUs required alternative sites larger than the existing sites, those four BHUs were tentatively excluded from the Project. A decision for those BHUs will be made after confirmation of alternative sites which will be provided by the Pakistani government.

Table 2.2: Criteria for Priority Health Facilities to be Reconstructed in the Project

No.	Medical Facility	Number of Outpatient	Recovery Priority	Criteria of Reconstruction Priority									Scope of Reconstruction					
				Damaged Status					Access Condition	No. of Staff	No. of OPD	Situation	Donors' Aid	OPD	Ward	Doctors' House	Staff Dormitory	Guard's Dormitory
				OPD	Doctors' House	Staff Dormitory	Guard's Dormitory											
1	DHQ Hospital Battagram	120,000	A	A	A	A	A	A	-	AA	-	-	Re-construction of whole facility					
2	RHC Banna	28,800	A	A	A	A	A	A	-	AA	-	-	Re-construction of whole facility					
3	EDO (Health) Office		A	-	-	-	-	A	-	-	-	-	Re-construction of facility					
4	District TB Control Office	11,000	A	-	-	-	-	A	-	-	-	-	(Re-construction in DHQ)					
5	RHC Kuzabanda	7,200	C	C	B	B	C	A	-	A	-	-	-	-	-	-	-	
6	CH Thakot	108,000	A	A	A	A	A	A	-	AA	-	-	1	-	1	1	1	
7	BHU Shumlai	4,800	A	A	A	A	A	A	B	B	C	C	1	1	1<	1<	1	
8	BHU Paimal Sharif	4,800	A	A	A	A	A	A	B	B	-	A	1	1	1<	3<	1	
9	BHU Pashoto	3,600	A	A	B	C	B	B	B	B	-	A	1	1	1<	2<	1	
10	BHU Sakkargah	4,800	D	-	-	-	-	C	B	B	-	A	-	-	-	-	-	
11	BHU Rashang	7,200	A	A	A	A	A	B	B	A	-	A	1	1	1<	2<	1	
12	BHU Jhambairra	1,800	A	A	A	A	A	B	B	C	-	-	1	-	-	1	3	
13	BHU Gari Nawab Said	2,400	C	C	C	C	C	B	B	B	-	-	-	-	-	-	-	
14	BHU Shungli Payeen	6,000	A	A	A	A	A	B	B	A	-	-	1	-	-	3	1	
15	BHU Phagorra	6,000	C	C	C	C	C	A	B	A	-	-	-	-	-	-	-	
16	BHU Bhattian	3,600	A	A	A	A	A	B	B	B	-	A	1	-	-	3	1	
17	BHU Jozz	4,800	A	A	A	A	A	A	B	B	-	-	1	-	-	2	1	
18	BHU Kannai	3,600	C	C	C	C	C	B	B	B	-	-	-	-	-	-	-	
19	BHU Bateela	2,400	D	-	-	-	-	C	B	B	-	A	-	-	-	-	-	
20	BHU Kathorra	2,400	A	A	A	A	A	B	B	B	-	-	1	-	-	3	1	
21	BHU Kharrari	3,600	A	A	A	A	A	A	B	B	-	-	1	-	-	2	1	
22	BHU Khairabad	1,800	A	A	A	A	A	A	B	C	-	-	1	-	-	2	1	
23	BHU Saidra Blund Kot	3,000	A	A	A	A	A	A	B	B	-	-	1	-	-	2	1	
24	BHU Battley	1,800	C	C	C	C	C	B	B	C	-	-	-	-	-	-	-	
25	BHU Argashorri	4,200	C	C	C	C	C	B	B	B	-	-	-	-	-	-	-	
26	BHU Pomong	1,800	C	C	C	C	C	B	B	C	-	-	-	-	-	-	-	
27	BHU Battamorri	4,800	B	A	A	A	A	A	B	B	-	C	(1)	-	-	(4)	(1)	
28	BHU Hotal Batkool	4,800	A	A	A	A	A	A	B	B	-	A	1	-	-	2	1	
29	BHU Behari	1,200	A	A	A	A	A	B	B	C	-	-	1	-	-	-	2	
30	BHU Roop Kanni	1,200	D	-	-	-	-	C	B	C	-	-	-	-	-	-	-	
31	BHU Tailous	3,600	A	A	A	A	A	B	B	B	-	-	1	-	-	2	3	
32	BHU Kuz Tandool	2,400	D	-	-	-	-	C	B	B	-	A	-	-	-	-	-	
33	BHU Bracharr		D	-	-	-	-	C	B	-	-	-	-	-	-	-	-	
34	BHU Charbagh	3,600	A	A	A	A	A	A	B	B	-	-	1	-	-	3	1	

Legend

Recovery Priority

- A: To be reconstructed
- B: To be reconstructed if no duplication with other donors is confirmed
- C: Excluded from the Project, due to slight damage
- D: Excluded from the Project, since the existing conditions could not be confirmed.

Criteria for damage

- Extensive damage, out of use: A
- Moderate damage, needs repair: B
- Slightly damaged, no problems: C

Criteria for outpatients

- 10,000/year or more: AA
- 6,000-9,999/year: A
- 2,000-5,999/year: B
- 1,999/year or less: C

Other criteria

- Lack of Doctors: B
- Inappropriate Site: C
- Under Other Donor's Aid: C

(3) Selection of Facilities to be Reconstructed in the Project (Education Sector)

1) Criteria for selecting the facilities to be reconstructed in the Project

A screening of priority schools was carried out on the basis of the selection criteria on 412 schools requested by the Pakistan side: 363 primary schools, 25 middle schools, 22 high schools, one high secondary school and one boys' degree college. Priority was given to a school that was in conditions as follows.

- A school that required reconstruction due to heavy damage by the earthquake.
- A school that was accessible from a main road to the school for the transport of construction materials and equipment.
- A school that had a certain enrollment and the necessary teachers.
- A school with eligible land to reconstruct.
- A school with two classrooms or more before the earthquake.
- A school that had no duplication of assistance for reconstruction by other donors.
- A school without any availability of alternative schools nearby to receive the proposed school students.
- A school of which a site was owned by the provincial or state government.

Based on the priorities above mentioned, the selection criteria were set up as follows.

Table 2.3: Criteria for Priority Schools to be Reconstructed in the Project

No.	Selection Items			Decision	Criteria	Notes
(1)	Extent of damage			A	Collapsed or heavily damaged	[Source1] Report on Rapid Assessment Survey of Government Schools in Earthquake Affected District of NWFP (surveyed by School Mapping Consultants), 17 Nov., 2005 (2 nd edition) [Source2] Field Survey by the study team
				C	Slightly damaged	
(2)	Accessibility			A	Accessible by car	[Source 1] Road Restriction Information by Pakistan Army Operation Room in Battagram Camp as of the End of February, 2006 [Source 2] Field Survey by the study team [Source 3] School & Literacy Department of Battagram district
				B	Accessible on foot or by donkey	
				C	Not accessible due to road restrictions or decision by School Monitors of School & Literacy Department of Battagram district	
(3)	Min. required number of students and teachers	Students*1)	GPS and GGPS	A	50 students or more	[Source 1] List of Government Primary, Middle, High and Higher Secondary Schools in District Battagram provided by Government of NWFP School & Literacy Department. [Source 2] Education Statistics of School & Literacy Department of Battagram District in 2006 School year 2 teachers or more
			GMS and GGMS	C	Less than 50 students	
				A	75 students or more	
			GHSS	C	Less than 75 students	
	A	100 students or more				
	Teachers*2)		A	2 teachers or more		
			C	Less than 2 teachers		
			A	2 teachers or more		
C			Less than 2 teachers			
(4)	Present situation of existing sites			A	Flat and sufficient land area for reconstruction	[Source 1] Field survey by the study team
				B	Narrow land but possible for reconstruction by reducing the number of classrooms in case of three classrooms or more	
				C	Insufficient land for reconstruction	
(5)	Number of existing classrooms before the earthquake			A	Two classrooms or more	[Source 1] List of Proposed Schools attached to "Reconstruction of damaged school buildings in district Battagram, 19 Jan., 2006, Government of NWFP School & Literacy Department".
				C	Less than two classrooms	
(6)	No duplication of assistance for school reconstruction by other donors			A	Duplicated	[Source 1] Information from the Executive District Officer of School & Literacy Department of Battagram District
				C	Not available	
(7)	Availability of alternative schools nearby to receive the proposed school students			A	Not available	[Source 1] Field survey by JICA Study Team
				C	Available	
(8)	Land ownership			A	Owned by provincial or state government	[Source 1] Information from School & Literacy Department of Battagram District
				C	Owned by private citizens	

Remark *1: Number of students was 75 students/school. The numbers of schools with 75 students or more for which reconstruction was requested were equal to 35% of the total number of primary schools, 27% of middle schools, and 68% of high schools and high secondary schools. Therefore primary schools with 50 students or more were selected. The number of those primary schools was increased to approximately 60% of the total number of primary schools. Criteria for high schools and high secondary schools were increased to 100 students or more.

Remark *2: Priority was given to a school that had two classrooms or more and two teachers or more before the earthquake.

2) Selected facilities to be reconstructed in the Project

It was very difficult to make a reconnaissance survey of all the schools for which reconstruction was requested due to a limited study period and difficult accessibility to the sites. Therefore, existing statistics data and site information given by the school & literacy department also were applied to evaluate the school selection items. If there was one or more selection items rated C, such a school was excluded from the Project. As a result, 118 schools were selected: 106 primary schools, three middle schools, seven high schools, one higher secondary school and one degree college.

Table 2.4: Summary of Priority Schools to be Reconstructed in the Project

Type of School.	Classification	Number of Schools for which reconstruction was requested	Number of Priority Schools		
			Allai Tehasil	Battagram Tehasil	Sub-Total
(1) Primary Schools	GPS	252	32	31	63
	GGPS	111	10	33	43
	Sub-Total	363	42	64	106
(2) Middle Schools	GMS	17	1	1	2
	GGMS	8	0	1	1
	Sub-Total	25	1	2	3
(3) High Schools and Higher Secondary Schools	GHS	22	2	5	7
	GHSS	1	0	1	1
	Sub-Total	23	2	6	8
(4) Boys' Degree College		1	0	1	1
Total		412	45	73	118

Major reasons not to be selected as a priority school were that the number of teachers was less than two teachers and the number of students was less than the nominally required number. The second reasons were insignificant damage and/or the inaccessibility to the school.

Table 2.5: Schools not to be selected and the Reasons

Type of Schools	Selection Criteria for not Selecting the Schools								Number of schools not selected
	(1) Only Slightly Damaged by the Earthquake	(2) Not Accessible	(3) Not sufficient for minimally required number of students and teachers	(4) Not enough land area to reconstruct due to an insufficient area and hilly slope of the land boundary	(5) Under 2 Classrooms existed before the Earthquake	(6) Duplicated assistance of school reconstruction by other donors	(7) Available of alternate schools nearby to receive the proposed school students	(8) Owned by private parties	
GPS	43	74	116	4	29	0	1	0	189
GGPS	30	12	43	1	3	0	0	0	68
GMS	5	2	12	0	0	0	0	0	15
GGMS	5	0	7	0	0	0	0	0	7
GHS	5	0	8	0	0	0	0	0	15
GHSS	0	0	0	0	0	0	0	0	0
Total	88	88	186	5	32	0	1	0	294

Note: Some of the schools were duplicated in different selection items.

(4) Selection of Facilities to be Reconstructed in the Project (Roads and Bridges)

1) Bridges

Based on the site survey, the study team selected the priority bridges to be reconstructed in the Project. Necessity of the reconstruction works was confirmed for all the seven bridges that were requested by the Pakistani government. However, the Project decided to focus on the bridges that will improve the accessibility to health and education facilities to be reconstructed in the Project. Therefore, three bridges, No. 3, No. 6, and No. 7 were selected as the priority bridges.

Table 2.6: Evaluation of Bridges for which reconstruction was requested

Bridge	Evaluation
Pashuto Bridge (Bridge No.1)	<ul style="list-style-type: none"> The superstructure was seriously damaged. Abutment structures were also unstable. Urgent reconstruction was required to replace the damaged superstructure and the abutment. A new bridge with two traffic lanes will be favorable. Bridge No. 1 will not improve the accessibility for the health and education facilities in the Project. Bridge No. 1 was therefore excluded from the Project.
Rope Kanai Pedestrian Bridge (Bridge No.2)	<ul style="list-style-type: none"> Superstructure collapsed completely due to the earthquake and the abutment structures were seriously damaged. Those damaged structures hindered the access to the residential areas. Urgent reconstruction was required to replace the damaged superstructure and the abutment. Bridge No. 2 will not improve the accessibility for the health and education facilities in the Project. Bridge No. 2 was therefore excluded from the Project.
Banna Bridge (Bridge No.3)	<ul style="list-style-type: none"> Bridge No. 3 was located at a main road in the Allai <i>Tehasil</i> in the Battagram district and near the urbanized areas. The bridge was located on the main road in Allai and bore relatively large traffic volume. The bridge had a narrow road width of one traffic lane. The superstructure had been damaged by floating logs and flood due to the insufficient clearance above the high water level of the river. The abutment was damaged due to the earthquake. A new bridged should be designed to secure the freeboard above the high water level. Urgent reconstruction was required to replace the damaged superstructure and the abutment. A new bridge with two traffic lanes was favorable.
Besham Bridge (Bridge No.4)	<ul style="list-style-type: none"> Bridge No. 4 completely collapsed. A temporary embankment was constructed to allow the passage of road traffic. In the next rainy season, the temporary embankment will be eroded and out of use. Urgent reconstruction was required to replace the damaged superstructure and abutment. A new bridge with two traffic lanes was favorable. The bridge will not improve the accessibility for the health and education facilities in the Project. Therefore, the bridge was excluded from the Project.
Shumlai Bridge (Bridge No.5)	<ul style="list-style-type: none"> An old bridge was damaged by the earthquake. Vehicles forded the river at shallow places that will be flooded and closed in the rainy season. Urgent reconstruction of the bridge was required. A new bridge with two traffic lanes was favorable. Bridge No. 5 will not improve the accessibility for the health and education facilities in the Project. Therefore, bridge No. 5 was excluded from the Project.
Battagram College Bridge (Bridge No.6)	<ul style="list-style-type: none"> Bridge No. 6 was damaged by the earthquake. The damage to the bridge was still progressing. Therefore, the urgent reconstruction was required by the installation of a new bridge having the same road width of the existing bridge of one traffic lane.
Banna Bridge (Bridge No.7)	<ul style="list-style-type: none"> The foundation works had been completed before the earthquake and were then affected by the earthquake. The recommencement of the construction was not decided yet. Urgent reconstruction of the bridge was required. An old bridge was located 300 m upstream from bridge No. 7. The river width at the old bridge was narrower and more appropriate for construction than the site of bridge No. 7. Therefore, the new bridge was recommended to be located at the site of the old bridge.

2) Roads

Roads for which reconstruction was requested by the Pakistani government were located in the mountainous areas and the areas that had a hazardous nature due to landslides and slope failures. Before the earthquake, there were frequent slope failures caused by rainfall. The hazards of the landslides and slope failures seemed to be made worse by the earthquake. In addition to those hazardous natures, the road width of the seven main access roads was limited to two traffic lanes and in some places to one traffic lane, due to hilly topographic conditions.

Therefore, extensive slope protection will be required to secure the safe and stable traffic ways. The extensive slope protection means that the reconstruction of the requested roads requires a very long

construction period and will entail very high construction costs. On the other hand, the Project needed to be completed within a short time. Therefore, the requested roads were excluded from the priority infrastructure of the Project.

(5) Agreement with the Pakistani Side for the Selected Facilities to be Reconstructed in the Project

Based on the screening as mentioned above, the Pakistani side agreed with the contents of the selected facilities that will be reconstructed in the Project. In a response to this agreement, ERRA issued the letter that confirmed the contents of the Project as attached in the appendices.

2-2 OUTLINE DESIGN OF THE REQUESTED JAPANESE ASSISTANCE

2-2-1 Design Policy

(1) Basic Direction

The Project will be implemented in accordance with the basic directions as follows.

- The Project will reconstruct damaged facilities; however, it will not rehabilitate facilities.
- Damaged facilities will be reconstructed to be capable to serve the same function as they did pre-earthquake. Thus, future demand will not be taken into account in designing the scale of the facilities.
- Reconstruction works will be implemented at the same sites where the facilities were damaged and alternative sites were not considered.

(2) Natural Conditions

Temperature fluctuates largely within a day and a year in the Battagram district. Small windows were recommended to protect from the strong sunshine in the summer and the cold weather in the winter. A ceiling height was designed to protect rooms from the radiant heat caused by the heated roofing. A construction schedule was planned to avoid the earthworks and foundation works in the rainy season from July to September. One of the most important things that caused the large scale of the disaster due to the earthquake was that the earthquake-resistant designs were not applied to most of the existing buildings. The Japanese standard for the earthquake-resistant design was applied to all the buildings of the Project to strengthen the earthquake resistance.

(3) Social Conditions

A school in Battagram has employed a *chowkidar* (janitor) for crime prevention and cleaning. An iron-barred window was provided as an antitheft device in the principal's room.

(4) Construction Materials

The construction materials will be provided from domestic and imported products which will be available in the country. The project sites were located in mountainous areas. Therefore, the transport of the construction materials and equipment will be carried out by donkeys and human power.

(5) Practical Use of Local Contractors

Public works in Battagram district have been carried out by local contractors which have been selected from the registered companies. The local companies did not have adequate capacity in terms of the business scale and quality management to implement the construction works of the Project. Therefore, the contractor will be selected through a pre-qualification process and from the large-scaled companies in Islamabad, Peshawar, and other large cities.

(6) Operation and Maintenance

Durable and weather-resistant construction materials were selected to ease the operation and maintenance works.

(7) Type of Materials and Equipment

Simple and durable finishing and materials were selected to ease the repair and maintenance works.

(8) Construction Methods and Construction Schedule

Construction methods commonly practiced by the local contractors were selected. Strict quality management will be required for the reinforcement bar arrangement.

The construction schedule was planned to be appropriate to the limitations imposed by the rainy season.

(9) Procurement of Equipment

Directions for procurement of equipment were mentioned in each relevant sector.

(10) Health Sector

ERRA issued a basic policy for the reconstruction of the earthquake-affected facilities in the health sector. The policy was named “Build back better, Health Sector”. Then, ERRA issued a design policy for each type of health facility in accordance with the basic policy.

1) District headquarters (DHQ) hospital

A regulation was issued to classify the type of health facilities in 2001. In accordance with the regulation, type C was selected for the DHQ based on the existing and future population within the service range of the hospital.

Table 2.7: Classification of Health Facilities

Category	Number of beds	Number of specialist departments
A	350 beds	16 + surgery/internal medicine 2 units
B	210 beds	16 ^{*2}
C	110 beds	10 ^{*1}
D	40 beds	Internal medicine, surgery, pediatrics, obstetrics and gynecology

*1: Surgery, internal medicine, obstetrics and gynecology, ophthalmology, radiology, clinical laboratory test, dentistry, ENT, and orthopedic surgery

*2: *1 plus anesthesiology, heart internal medicine, heart surgeon, physical medicine, plastic surgery, reconstructive surgery

ERRA worked out a basic policy to upgrade the DHQ to type B having a ward of 200 beds. However the new building reconstructed by the Japanese side had the main objective of restoring the affected

building to the pre-earthquake level. The DHQ was designed to permit future expansion in view of the fact that it will be upgraded to a hospital of type B by the Pakistani side.

The DHQ was being expanded as the central hospital for secondary medical service in the Battagram district. Hence, the plan was designed to cope with future extension/reconstruction of facilities to meet modifications in medical technology in the future. As was the entire hospital, the plan was made practical to meet the requirements of the local medical system.

2) Rural health center (RHC), Banna

On the basis of the standard drawings of the Pakistani side, a facility will be constructed to satisfy the needs of the medical services that were specified by ERRA. This facility is a core hospital in Allai Tehasil, and in the future it is planned to be upgraded from a rural health center to the Tehasil Headquarters hospital in accordance with the basic policy of ERRA, and it will be expanded in terms of facilities and organization in the future. The Project will reconstruct the facility to the level of rural health center having a 20-bed ward, and the portion of the facility to be extended to become a 40-bed ward in the future was being handled by the Pakistani side. The plan was such that future extension or reconstruction will be possible.

3) Civil hospital (CH), Thakot

The existing ward portion had not been utilized before the earthquake and the damage due to the earthquake was minor. Thus, the portion to be restored was only the outpatient treatment portion, which was seriously damaged, and the plan was to add the rooms for family planning and pharmaceutical dispensary to the basic plan of the basic health unit (BHU).

4) Basic health unit (BHU)

On the basis of the standard drawings of the Pakistani side, facilities were designed to satisfy the needs of the medical services that were specified by ERRA.

Each basic health unit was a minimum basic unit having waiting rooms, a consultation room, a Woman's Health Visitor's room, and a vaccination (EPI) room. Depending on the size of the site of each basic health unit, the rooms for family planning and pharmaceutical dispensing were added on the basis of the plan of the minimum basic unit. The precondition for expanding the facilities was that the Pakistani side guaranteed to employ the required personnel.

5) Medical equipment

Medical equipment will be provided as follows:

- The Project will provide medical equipment equivalent to that which was damaged by the earthquake and which can be operated by the existing medical staffs. (The Project will provide the equipment for an intensive care unit, an ENT, and an orthopedics unit of which construction had been started before the earthquake. Because the provincial government had approved the costs to employ the medical staffs for the equipment under construction.)
- Type of medical equipment will be of the orthopedics operation equipment that can be handled by general surgeons, the ENT diagnosis treatment equipment that can be used by ordinary doctors, the ventilators that can be used by internists, and the ICU related equipment.
- Electrical medical equipment will not be provided for any basic health units which were not

connected to a stable power supply.

- Electrical medical equipment will be provided with automatic voltage regulators to avoid equipment troubles due to voltage fluctuation.

(11) Education Sector

1) Degree college and high secondary school

In addition to the above, the contents of facilities were designed to keep the project cost within the project budget. Religious facilities were excluded from the Project.

2) Educational equipment

The Project will provide the furniture for classrooms and the principal's rooms.

Students in the primary schools have been used to attending classes in which the students sat on the floors. However, chairs and tables for students will be provided for the middle schools or higher. A set of one chair and table for each student will be easily used for different types of classes, such as group works. This single type of chairs and tables was adopted for the Project. Chairs and tables for teachers will be provided for all the schools in the Project. Steel lockers with keys will be provided for classrooms and principal's rooms.

(12) Infrastructure sector (roads and bridges)

1) Determination of Width and Number of Lanes

Width and number of lanes at the bridges was determined through discussions with the Works and Services Department, Battagram based on geometric design criteria of National Highway Authority and Government of NWFP.

2) Determination of the Bridge Location

The bridges should be on the present location from the view point of recovery of the present conditions.

3) Determination of the Bridge Length

The bridge length should be determined in order to ensure freeboard from the design high water level.

2-2-2 Basic Plan (Construction Plan/ Equipment Plan)

(1) Health sector

1) District headquarters

Basic plans for the district headquarters (DHQ) was formulated as mentioned below.

Table 2.8: Basic Plan for DHQ (1/2)

Existing building	Building to be reconstructed
(1) Medical treatment facility (seven buildings)	All treatment facilities will be reconstructed. (ICU under construction will be completely reconstructed in the Project.)
(2) Residential building	Residences for doctor and staffs will be reconstructed after confirmation with the Government of NWFP.

Table 2.8: Basic Plan for DHQ (2/2)

Item	Description
Site plan	<ul style="list-style-type: none"> • The project site has been divided into two portions, the south and north sites astride the Karakoram highway. Main medical facilities have been located at the south site, while residential facilities for medical staffs have been located at the north site. • After the earthquake, a temporary medical facility was constructed at the north site to recommence the medical services. To restart the full medical services, the main medical facilities were planned at the south site. • The south site did not have adequate land area to expand the hospital in the future. Therefore, the MCHC and TBC were planned at places which did not obstruct the medical services at the temporary medical facility in the north site. • Facilities have not been well-coordinated to provide the proper functional linkage due to frequent expansions and reconstruction. Circulation within the facilities has been congested and parking spaces have been inadequately provided. Residences for medical staffs have occupied a large portion of the site and hindered the functional arrangement of the buildings. • Future expansion has been planned to meet the requirements of the secondary medical facility, which has required a ward with 100-200 beds. As the medical technology progresses, future expansion would be required for the clinical laboratory test department and the outpatient department in which a lot of laboratory test equipment have been used. • To cope with such future expansions and changes, the comb-shaped type was applied for the building arrangement. The comb-shaped type was more preferable than the satellite type for the site with steep slopes and limited vacant spaces.
Floor plan	<ul style="list-style-type: none"> • An outpatient treatment building, first aid unit, and administration department were planned at places that were easily assessable for visitors, outpatients, and vehicles. Those facilities were planned near the Karakoram highway. The examination department and an inpatient ward were planned at places far from the noise source of the Karakoram highway. A vacant space for future expansion to type B with 100 beds was provided to the south of those buildings. • The progress of examination and treatment technologies will require a change in the types of rooms and increase the number of rooms in the treatment department. Expansion to type B will require the modification of the facilities especially for the image diagnosis department. Thus, the floor plan was designed to meet those future requirements. • Both the outpatient treatment department and the inpatient ward were divided into male and female sections in accordance with religious doctrine. • Equipment for providing meals for inpatients has not been constructed in the existing facilities. Attendants of the inpatients have served meals. Therefore, kitchens were designed for the reconstructed buildings.
Section plan	<ul style="list-style-type: none"> • Ceiling height was set at 2800mm for ordinary rooms, while the ceiling height of 3000mm was applied for the operating room and image diagnosis room. • Storey height was set at 4000mm. • Galvanized corrugated sheet with iron roofing on steel trusses was adopted for the roof structure. Since the temperature in the summer rises to 50°C, a concrete slab was designed for the ceiling to provide a void space between the roof and the ceiling. The void space encouraged the ventilation and lowered the temperature in the building.
Circulation plan	<ul style="list-style-type: none"> • There was a difference of 25 m in the land elevation between the south and north sides. The slope gradient was larger than 1/12, which is the maximum gradient for a wheel chair. Due to the conditions imposed by the surrounding roads and an adjacent school, it was not practical to make the flat land. • The circulation plan was prepared to meet the requirements for transport of patients, equipment, and disabled persons. An elevator and a pedestrian bridge were planned at the proper places. • The elevator has a disadvantage in that it can have an effect on the clinical laboratory test equipment such as the electroencephalograph. Therefore, the elevator was planned to be as far as possible from the clinical laboratory test room.
Structural plan	<ul style="list-style-type: none"> • A rigid-framed structure of reinforced concrete was adopted to cope with the future expansion and change of facilities. Structural walls were also designed. • In Pakistan, there was no earthquake-resistant structural standard. Therefore, the structural plan followed the requirements in the technical standards for reinforced concrete structures and the specifications for building construction in Japan. • Curtain walls were of the brick masonry type. To improve the earthquake resistance, the brick walls will be fixed by reinforcement bars which will be fixed to columns and beams.

Item	Description
Equipment plan	<ul style="list-style-type: none"> • Aging of the architectural equipment for electricity, water supply, and sanitation was faster than that of structural membranes. In addition, the improvement of facilities and equipment resulted in an increase in demand for water and electricity. Expansion of building structures could be implemented without any suspension of medical services. However, the expansion of the architectural equipment was difficult to implement without any suspension of the 24-hour a day operation of the hospital. • Therefore, the architectural equipment plan has taken the future expansion into consideration. <p>[Electrical equipment]</p> <ul style="list-style-type: none"> • An in-house power generator was indispensable for the hospital because the power supply in Battagram was frequently interrupted and fluctuates. Therefore, the in-house power generation was designed to secure a back-up system for the power supply. • Electricity of high voltage was designed to be stepped down at the electricity room. Power demand of existing medical equipment was not large; however the power demand was set at 50Wm² to meet the future demand increase due to the expansion and improvement. • A small generator for emergency power supply was designed exclusively for the operating room and ICU. • A generator exclusive for the elevator, emergency lamps, and receptacles was designed separately from the generator for the medical services. • Type B sockets were selected for the architectural equipment and the medical equipment. Sockets for the medical equipment were designed to be grounded in accordance with the technical requirements for the medical equipment. • Taking into consideration the existing illumination, the intensity of the illumination was designed as follows: 100 lx for stairways; 200 lx for corridors, a waiting room, and a visitor room; 400 lx for a consultation room, a meeting room, and an office; 1000 lx for an operating room. <p>[Air-conditioning equipment]</p> <ul style="list-style-type: none"> • Nurse call was adopted. <p>[Air-conditioning equipment]</p> <ul style="list-style-type: none"> • A partial air-conditioning system was adopted for an operating room, an ICU, wards, and a mortuary. <p>[Water supply equipment]</p> <ul style="list-style-type: none"> • A water tank of the fiber glass type was designed at a elevated place in the site. The water tank will be installed on a platform or embankment with a height of 7 m. Water will be distributed by gravity flow. • Medical facilities and residents will be equipped with sanitary equipment including sinks and toilets. • Water demand was set at 1000 L/day/bed to meet the demand of the future expansion. <p>[Wastewater treatment equipment]</p> <ul style="list-style-type: none"> • Collection pipes will be installed and connected to the wastewater treatment equipment that will be located at the lowest place in the site. • Capacity of the septic tank was designed to meet the demand, including the future expansion. The wastewater discharge rate was set on the basis of 20,000 outpatients/month, 150 health workers/day, and 300 inpatients and attendants/day. <p>[Medical waste disposal equipment]</p> <ul style="list-style-type: none"> • The capacity of an incinerator for medical waste disposal was designed to meet the demand, including the future expansion of the hospital. The designed capacity was set for a 300-bed hospital in accordance with the technical standard issued by WHO. <p>[Medical gas supply]</p> <ul style="list-style-type: none"> • The capacity of a small oxygen gas generator was set at 3.30 Nm³/h with a discharge pressure of 0.3MPa.

2) Banna Rural Health Center

Basic plans for the Banna rural health center (Banna RHC) were formulated as mentioned below.

Table 2.9: Basic Plan for Banna RHC (1/2)

Existing building	Building to be reconstructed
(1) Medical treatment facility (five buildings)	All five buildings will be reconstructed in the Project.
(2) Residence (eight buildings)	All eight buildings will be reconstructed in the Project.

Table 2.9: Basic Plan for Banna RHC (2/2)

Item	Description
Site plan	<ul style="list-style-type: none"> • The site had a gradual slope rising from a front road to the far side of the site. This slope was less than 1/12 and therefore suitable for a wheel chair. • A mother and child health center and a mosque were planned for near the front road. At the far side of the site, residential facilities were arranged. The mosque is arranged on a portion near the entrance of the site. • Medical facilities will be divided into four blocks: a mother and child health center, a medical treatment block including an outpatient treatment building with test and examination sections, an image diagnosis department, and a ward. Those blocks were designed to form a comb-shaped plan to cope with the future expansion of the medical facilities. Existing residential areas that would require a rather large land area were reduced to provide the vacant land that would be necessary for the future expansion.
Floor plan	<ul style="list-style-type: none"> • Three components, the outpatient treatment building, the clinical laboratory test department, and the ward will be divided into three blocks and connected by corridors to cope with the future expansion. • A kitchen will be provided for attendants to provide meals to the inpatients. • A ramp suitable for a wheel chair will be provided from the front road to the outpatient treatment building. The other blocks will be interlinked by corridors with a gradual slope suitable for the wheel chairs.
Equipment plan	<p>[Electrical equipment]</p> <ul style="list-style-type: none"> • Electricity will be supplied at a low voltage. There will be no electric room in the RHC. • Electrical equipment was planned to allow the installment of the emergency power supply equipment in the future expansion. • An uninterruptible power supply system will be installed for the lighting in the operating room. • Receptacles will be of Type B. Receptacles for medical equipment will be the earth type in accordance with the standards for medical facilities. • Based on the existing conditions, the illumination was designed as follows: 200 lx for corridors, a waiting room, and a visitor room, 400 lx for a consultation room and an office, and 1000 lx for an operating room. • Nurse call will be installed. <p>[Air-conditioning equipment]</p> <ul style="list-style-type: none"> • A partial air-conditioning system will be adopted for an operating room, an ICU, wards, and a mortuary. <p>[Water supply equipment]</p> <ul style="list-style-type: none"> • Drinking water will be supplied from a city distribution system. • Sanitary equipment, including sinks and toilets will be installed in the medical rooms and residences with water service. <p>[Wastewater collection equipment]</p> <ul style="list-style-type: none"> • A storage tank will be installed in the site. Indoor and outdoor drain pipes will be connected to the storage tank. • Collecting pits for the outdoor pipes will be made of concrete. <p>[Wastewater treatment equipment]</p> <ul style="list-style-type: none"> • Indoor and outdoor pipes will be installed. • Wastewater treatment equipment will be installed near the front road. • Taking the future expansion into account, the capacity of the septic tank was decided to be capable to serve 5,000 outpatients/month, 30 health workers/day, and 100 inpatients and attendants/day. <p>[Medical waste disposal equipment]</p> <ul style="list-style-type: none"> • Medical waste incinerating equipment for a 300-bed hospital will be installed to cope with the future expansion and standards issued by WHO. <p>[Medical gas supply]</p> <ul style="list-style-type: none"> • A small oxygen gas generator with a capacity of 3.30Nm³/h and a discharge pressure of 0.3MPa will be installed.
Section plan	<ul style="list-style-type: none"> • Ceiling height will be 2,800 mm for ordinary rooms while it will be 3,000 mm for an operating room and an image diagnosis room.
Structural plan	<ul style="list-style-type: none"> • Buildings will be rigid-framed structures. Bearing walls will be made of reinforced concrete, while partition walls will be brick walls. Structural analysis will follow the structural standards in Japan. • The roof will be made with the galvanized corrugate sheet iron roofing supported by steel trusses. Since the temperature in the summer rises to 50°C, a concrete slab will be installed at the ceiling level to provide a void space between the roof and the ceiling. The void will encourage the ventilation and lower the temperature in the building.

3) Thakot civil hospital

Basic plans for the Thakot civil hospital (Thakot CH) were formulated as mentioned below.

Table 2.10: Basic Plan for Thakot CH (1/2)

Existing building	Building to be reconstructed
(1) Outpatient treatment building	The outpatient treatment building will be reconstructed in the Project.
(2) Dental treatment building	The dental treatment building will not be reconstructed because no doctor or medical technician had been assigned there before the earthquake and the building had been out of use.
(3) X-ray room/test room	The x-ray room and test room will be left as they are.
(4) Wards	The wards will be left as they are.
(5) Residential building	The residential building will be reconstructed in the Project.

Table 2.10: Basic Plan for Thakot CH (2/2)

Item	Description
Site plan	<ul style="list-style-type: none"> An outpatient treatment building will be reconstructed at the same location as the existing building. A dental treatment building will be demolished because it will be dangerous to leave the damaged building as it is. Residential facilities will be reconstructed at the same location as the existing facilities.
Floor plan	<ul style="list-style-type: none"> In the medical treatment building, the medicine department will be attached to the basic floor plan of the basic health unit.
Equipment plan	<p>[Water supply equipment]</p> <ul style="list-style-type: none"> The water receiving tank of 1m³ will be of the type to withstand outside exposure and made with fiber glass. The water receiving tank will be equipped with a pump. An elevated water tank will be placed on the roof of an outpatient treatment building. Drinking water will be supplied from the elevated tank by gravity flow. Sanitary equipment including sinks and toilets will be installed at medical rooms and residences with water service. The water receiving tank will be equipped with one water faucet to secure continuous water supply in case of a power failure. <p>[Wastewater collection equipment]</p> <ul style="list-style-type: none"> An osmotic cell will be installed within the site. Indoor and outdoor drain piping will be connected to the osmotic cell. The osmotic cell with a cover will be made with a concrete frame. Collecting pits for the outdoor piping will be made of concrete. <p>[Wastewater treatment equipment]</p> <ul style="list-style-type: none"> Indoor and outdoor sewage piping will be installed. A septic tank will be installed and connected with the indoor and outdoor piping. An inlet will be made of concrete. The septic tank will be connected to the osmotic cell. <p>[Medical waste disposal equipment]</p> <ul style="list-style-type: none"> A box made of bricks with 1 m square shape and 1.2 m depth will be installed underground. The medical wastes will be dumped into the box. The wall height will be 1m above the ground.
Section plan	<ul style="list-style-type: none"> Ceiling height will be 2800mm for ordinary rooms.
Structural plan	<ul style="list-style-type: none"> The roof will be made with galvanized corrugated sheet iron roofing supported by steel trusses. Since the temperature in the summer rises to 50°C, a concrete slab will be installed at the ceiling level to provide a void space between the roof and the ceiling. The void will encourage the ventilation and lower the temperature in the building. The buildings will be rigid-framed structures. Structural analysis will follow the structural standards in Japan. Curtain walls will be made of bricks.

4) Basic health unit (BHU)

Basic plans for the basic health units (BHU) were formulated as mentioned below.

Table 2.11: Basic Plan for BHU(at Behari) (1/3)

Existing building	Building to be reconstructed
(1) Outpatient treatment building	Damaged buildings will be reconstructed in the Project.
(2) Ward	Damaged buildings will not be reconstructed in the Project, because no doctor had been arranged before the earthquake.
(3) Doctor residences	Damaged buildings will not be reconstructed in the Project, because no doctor had been arranged before the earthquake.
(4) Staff residences	Damaged buildings will be reconstructed in the Project.
(5) Guard residences	Damaged buildings will be reconstructed in the Project.

Table 2.11: Basic Plan for BHU (at Other Locations) (2/3)

Existing building	Building to be reconstructed
(1) Outpatient treatment building	Damaged buildings will be reconstructed in the Project.
(2) Doctor residences	Damaged buildings will not be reconstructed in the Project, because no doctor had been arranged before the earthquake.
(3) Staff residences	Damaged buildings will be reconstructed in the Project.
(4) Guard residences	Damaged buildings will be reconstructed in the Project.

Note: This includes BHU Jhambairra, BHU Shungli Payeen, BHU Bhattian, BHU Jozz, BHU Kathorra, BHU Kharrari, BHU Khairabad, BHU Saidra Blund Kot, BHU Huta Batkool, BHU Tailous, and BHU Charbagh

Table 2.11: Basic Plan for BHU (3/3)

Item	Description
Site plan	<ul style="list-style-type: none"> There is no room to rearrange outpatient treatment buildings or residential buildings at most of the sites for 13 basic health units (BHU). Therefore, new buildings will be reconstructed at the same location as the existing buildings.
Floor plan	<ul style="list-style-type: none"> The medical treatment facility will consist of three rooms: an outpatient treatment room for male patients, an LHV's (Lady's Health Visitor) room for examining pregnant women and children, and a vaccination (EPI) room for vaccinations and storage of the equipment. The medical treatment facility will be attached to the male/female waiting rooms and toilets. Those rooms above mentioned will form the minimum basic unit. In case of rather large sites, the minimum basic unit will be attached to a pharmacy and a family plan room.
Equipment plan	<p>[Electrical equipment]</p> <ul style="list-style-type: none"> The receptacles will be of Type B. Receptacles for medical equipment will be the earth type in accordance with the standards for medical facilities. The wiring will be installed in an exterior wall of the building and then fixed to a plastic junction box at the exterior wall. <p>[Water supply equipment]</p> <ul style="list-style-type: none"> A water receiving tank of 1m³ will be of the type to withstand exterior exposure and made with fiber glass. The water receiving tank will be equipped with a pump. An elevated water tank will be placed on the roof of an outpatient treatment building. Drinking water will be supplied from the elevated tank by gravity flow. Sanitary equipment including sinks and toilets will be installed in medical rooms and residences with water service. The water receiving tank will be equipped with one water faucet to secure continuous water supply in case of a power failure. <p>[Wastewater collection equipment]</p> <ul style="list-style-type: none"> An osmotic cell will be installed within the site. Indoor and outdoor drain piping will be connected to the osmotic cell. The osmotic cell with a cover will be made with a concrete frame. Collecting pits for the outdoor piping will be made of concrete. <p>[Wastewater treatment equipment]</p> <ul style="list-style-type: none"> Indoor and outdoor sewage piping will be installed. A septic tank will be installed and connected with the indoor and outdoor piping. An inlet will be made of concrete. The septic tank will be connected to the osmotic cell. <p>[Medical waste disposal equipment]</p> <ul style="list-style-type: none"> A box made of bricks with 1 m square shape and 1.2 m depth will be installed underground. The medical wastes will be dumped into the box. The wall height will be 1m above the ground.
Section plan	<ul style="list-style-type: none"> The roof will be made of galvanized corrugated sheet iron roofing supported by steel trusses. Since the temperature in the summer rises to 50°C, a concrete slab will be installed at the ceiling level to provide a void space between the roof and the ceiling. The void will encourage the ventilation and lower the temperature in the building.
Structural plan	<ul style="list-style-type: none"> The buildings will be rigid-framed structures. Structural analysis will follow the structural standards in Japan. Curtain walls will be made of bricks.

5) Facility planning for the residential facilities

Residential facilities will be provided to stabilize the working conditions of the health workers. Contents of the residential facilities will be different in keeping with the positions of the medical experts as presented in the table below. The design concept for the equipment and structures will be similar to the basic health units.

Table 2.12: Residential Facilities according to the Positions of the Health Workers

Position class	Position	Residential type	Details of residential facility
1	Special Doctor	Type 1	Lounge, 3 bedrooms, kitchen, toilet, shower room
	Medical Officer		
3	Medical Technician	Type 2	2 bedrooms, kitchen, toilet, shower room
	Dispenser		
	LHV (Lady Health Visitor) Technician		
	X-ray Technician		
	EPI Technician		
4	Laboratory Technician	Type 2	1 bedroom, kitchen, toilet, shower room
	Laboratory Assistant		
	Dai (TBA)		
	Chaukidar		
	Sweeper		

6) Equipment Plan

Specifications for the main medical equipment were as follows.

Table 2.13: Specifications for the Main Medical Equipment

No.	Equipment name	Specifications
2	Anesthesia machine	Vaporizer: halothane, isoflurane, with ventilator for anesthetizing
3-1	High pressure boiling sterilizer	Capacity: 400L or more Sterilizing temperature: 120°C or higher Accessories: recorder, cart
36	Operating light (Ceiling installation type)	Ceiling installation type Main light: 8 lamps or more, illuminance 135,000 or higher Auxiliary light: 5 lamps or more, illuminance 100,000 or higher
50	X-Ray equipment accessories	Vessel: one vessel type Rating: 150KV, 500mA or more Bucky table, standing bucky
76	Blood calculator, automatic	Number of measuring items: 18 Capacity: 50 specimens/hour or more Specimen volume: full blood 50 uL or less
98	Critical care ventilator for adults	System: pressure-controlled type or volume-controlled type Ventilation amount per cycle: 200 to 2,000 m or more
100	Critical care ventilator for infants	System: pressure-controlled type or volume-controlled type Ventilation amount per cycle: 10 to 990 m or more
120	YAG laser	Focus size: 10um or less Aiming beam: diode laser with electric stand

Main medical equipment to be installed at the DHQ was specified as follows.

Table 2.14: Main Medical Equipment for Department in the DHQ

No.	Department	Main Equipment
1	Surgical Ward	Pulse oxymeter, Suction machine, Bed
2	Medical OPD	Diagnostic set
	Medical Ward	Pulse oxymeter, ECG monitor, ECG, Infusion pump
3	ob/GY Ward	Pulse oxymeter, Infusion pump, Bed
	Ob/Gy OPD	Fetal Doppler , Education set for family planning
4	Pediatric Ward	Pulse oxymeter, Phototherapy unit
5	Eye OT	Operating light, Operating table, YAG laser
	Eye OPD	Ophthalmometer
	Eye Ward	Bed
6	Casualty	Minor surgery set , Defibrillator, ECG
7	Pharmacy	Laboratory refrigerator, Refrigerator
8	OT No.1	Defibrillator, Operating light, Patient monitor
	OT No.2	Operating light, Operating table
	Labor Room	Bed for obstetric, Fetus monitor
	Sterilization	High pressure boiling sterilizer, High speed sterilizer
9	Radiology	X-ray equipment
10	ICU/CCU	Suction unit, Ventilator , ICU bed, Syringe pump, Infusion pump
11	Pathology	Spectrophotometer, ELISA microplate reader
12	Mortuary	Autopsy table, Autopsy tool set
13	Dental Clinic	Dental set
14	Laundry	Laundry, Extractor, Iron
15	ENT OPD	ENT unit, Diagnostic set
	ENT Ward	Pulse oxymeter
16	Orthopedic OPD	Plaster splinting table
	Orthopedic Ward	Pulse oxymeter, Suction machine, Bed
17	TB Control Office	Microscope
18	Maintenance	Oscilloscope
19	Referral cases (Ambulance)	Suction unit (mobile), Incubator

(2) Education sector**1) Site Plan**

Most primary schools have been located in small sites. Classroom buildings were built to the fullest extent of the flat areas of the sites. Therefore, classroom buildings to be reconstructed in the Project will be placed at the same location as the existing buildings, due to the limited flat areas. Even though retaining walls will be constructed at the slopes, the available flat land will not be enough to expand or relocate the existing buildings.

2) Architectural plan**i) Size of classrooms and latrines**

Among the schools for which reconstruction was requested by the Pakistani government, the largest number of classrooms was six for primary schools, three for middle schools, ten for high schools and 13 for higher secondary schools. The number of classrooms to be reconstructed in the Project will be the same as the number of previously existing classrooms. In cases where the project site was too narrow to reconstruct the same number of classroom buildings as the previously existing classrooms and/or the number of teachers was inadequate, the number of classrooms to be reconstructed was reduced.

The outline design study team formulated standard types of classroom buildings, of which the number of classrooms varied from two to five. The number of reconstructed classrooms was adjusted by the combination of the different types of classroom buildings.

The number of latrine booths was decided based on the number of the reconstructed classrooms. A latrine of the one booth type was planned for a school with two classrooms, while a latrine of the two booth type was designed for a school with three or four classrooms. A latrine of the three booth type was attached to a school with five classrooms or more. A school with nine classrooms or more was provided with a latrine of the four booth type.

ii) Floor planning

The North Western Frontier Province (NWFP) and Earthquake Rehabilitation & Reconstruction Authority (ERRA) have proposed different types of standard school buildings. Neither proposed standard type has been officially approved yet. The NWFP expected the outline design study team to propose earthquake-resistant school buildings.

Classroom buildings

The dimensions of the existing classrooms have been classified into two different types: a 25 feet x 16 feet type (approximately 7.6 m x 4.9 m) and a 24 feet x 20 feet type (approximately 7.3 m x 6.1 m). According to the department of school & literacy in NWFP, the standard number of students in a classroom has been set at 40 students per classroom. The dimensions of the 16 feet classroom type have been a little small for the 40 students. In a school with two classrooms, the 16 feet classrooms have been placed to form an L-shape and connected by a verandah. On the other hand, the 20 feet classrooms have been placed straight along a verandah as a linear type. A principal's room and a store room have been placed at the edge of the classroom buildings.

The outline design study team formulated eight different types of classroom buildings. Type A classroom building was formed in the L-shape. The 16 feet classroom type was applied to the type A. No principal's room or storage room were provided for the type A. The 20 feet classroom type was applied to four classroom types from type B to type E. The classrooms of these four types were placed along a verandah in linear form. The other three types from type F to type H were designed for the narrow sites. The 16 feet classroom type was applied to these three types.

A principal's room and storage room were attached to a classroom building with three classrooms or more. The width of the principal's room was set at 3 m. The storage room was placed behind the principal's room.

Table 2.15: Types of Classroom Buildings

Code	Type of Classroom Building	Dimension and Floor Area (m ²)	Type of Classroom	Note
A	L shaped 2 classroom type	41ft x 25ft (≅12.5m x 7.6m) (95.0m ²)	25ft x 16ft (≅7.6m x 4.9m)	This type applies to schools with 2 classrooms.
B	Linear 2 classroom type	48ft x 28ft (≅14.6m x 8.5m) (124.1m ²)	24ft x 20ft (≅7.3m x 6.1m)	This type applies to a combination with other types in a school with 5 classrooms or more.
C	Linear 3 classroom type incl. a principal's room and a store room	82ft x 28ft (≅24.9m x 8.5m) (211.6m ²)	24ft x 20ft (≅7.3m x 6.1m)	
D	Linear 4 classroom type incl. a principal's room and a store room	106ft x 28ft (≅32.2m x 8.5m) (273.7m ²)	24ft x 20ft (≅7.3m x 6.1m)	
E	Linear 5 classroom type incl. a principal's room and a store room	130ft x 28ft (≅39.5m x 8.5m) (335.7m ²)	24ft x 20ft (≅7.3m x 6.1m)	
F	Narrow depth and linear 2 classroom type	50ft x 24ft (≅15.2m x 7.3m) (110.9m ²)	25ft x 16ft (≅7.6m x 4.9m)	This type will be applied in a site with narrow depth of land.
G	Narrow depth and linear 3 classroom type incl. a principal's room and a store room	85ft x 24ft (≅25.8m x 7.3m) (188.3m ²)	25ft x 16ft (≅7.6m x 4.9m)	ditto
H	Narrow depth and linear 4 classroom type incl. a principal's room and a store room	110ft x 24ft (≅33.4m x 7.3m) (243.8m ²)	25ft x 16ft (≅7.6m x 4.9m)	ditto

Laboratory

A laboratory was designed for high schools and higher secondary schools. The dimensions of the laboratory were set at 24 feet x 20 feet. A preparatory room and a store room were placed adjacent to the laboratory.

Latrine

The layout of the existing latrines has been classified into two different types: a latrine inside a classroom building and a latrine separated from a classroom building. The separated type was adopted in the Project, taking the issues of stench and hygiene into account. A Turkish toilet of a soil water pit and a soak pit was chosen for the latrines. The dimensions of the latrines were formulated as follows.

Table 2.16: Dimensions of Latrines

Mark	Type of Latrine	Dimension and Floor Area	Note
1	1 booth for a school with 2 classrooms	4'8" x 5'5" (approximately 1.4m x 1.7m) (1.9m ²)	A soak pit 4'8" x 3'6" (approximately 1.4m x 1.1m) is installed away from the latrine building. The area of the soak pit does not include the floor area of the latrine building.
2	2 booths for a school with 3-4 classrooms	4'8" x 5'5" (approximately 2.8m x 1.7m) (4.7m ²)	A soak pit 9'4" x 3'6" (approximately 2.8m x 1.1m) is installed away from the latrine building. The area of the soak pit does not include the floor area of latrine building.
3	3 booths for a school with 5-8 classrooms	14' x 5'5" (approximately 4.3m x 1.7m) (7.3m ²)	A soak pit 14' x 3'6" (approximately 4.3m x 1.1m) is installed away from the latrine building. The area of the soak pit does not include 4'8" x 5'5" (approximately 1.4m x 1.7m) (1.9m ²) the floor area of latrine building.
	4 booths for a school with 9 classrooms or more		Two latrines of 2 booths each will be applied to a school with 3-4 classrooms.

iii) Section Planning

All the buildings will be single storied type. A section plan was formulated as follows.

- A ceiling will be installed to reduce the radiant heat in summer and the noise of rain. The ceiling height will be 3 m and a ventilation hatch will be installed in the ceiling.
- Roofing will be a pitched and trussed roof. The trusses will be made of steel.
- Distance from wall to eaves will be 0.6 m.
- Floors will be made of concrete with steel trowel finishing. Walls will be of laid brick with paint finishing. Windows will be of wooden frame.

iv) Structure planning

Anchorage of reinforcing bars into concrete of a beam and a column has been insufficient in most of the existing school buildings, so that the beams and columns have not been structurally rigid. Therefore, there are many buildings the beams and columns of which were damaged and separated because the parts of beam and column could not resist deformation by the earthquake. There is no standard for structural calculations to handle such a big earthquake in Pakistan. Consequently Japanese structural design standards were applied to the Project.

- Structural frame: The load-bearing capacity of the soil was estimated at five ton per square meter. The substructures will be reinforced concrete wall footings. The floors will be of concrete with steel trowel finishing and a rigid frame of reinforced concrete will compose the wall foundations, columns and beams.
- Design load: The Coefficient of standard shearing stress of 0.2 described in a Japanese architectural standard law was applied as a seismic load.
- Strength of materials: Design strength of the reinforced concrete is 21N/mm^2 .

v) Electric installation planning

Electric power was to be provided for a school only when electricity had previously been provided to the school or where an electric line had already been run to the school site.

- Lighting fixtures: Fluorescent fixtures were planned taking maintenance and economy into consideration.
- Receptacle outlet fixtures: A receptacle outlet was planned in rooms that required electric power. Available power was 3 phase and 230 V. The number of receptacle outlets was planned at one set per classroom, one set per principal's room and two sets per laboratory.

vi) Water supply planning

Water supply plumbing fixtures were planned for a school only when water service had previously existed at the school. In such cases water pipes will be installed to connect to the latrines.

vii) Construction material plan

Construction materials for the Project were selected taking locally available construction materials and methods into consideration.

Table 2.17: Planned construction methods

Part	The Project	Local Construction Method	Reasons to be selected	
Structure	Foundation	Reinforced concrete	Reinforced concrete	Locally available
	Floor	Concrete	Concrete	ditto
	Walls	Brick work	Stone work, Brick work	ditto
	Columns and beams	Reinforced concrete	Reinforced concrete	ditto
	Roof	Steel trusses with corrugated galvanized iron sheets	Steel trusses with corrugated galvanized iron sheets, wooden trusses with corrugated galvanized iron sheets	ditto
Exterior finish	Exterior walls	Mortar with paint finish	Mortar with paint finish	ditto
	Exterior slabs	Concrete with steel trowel finish	Concrete with steel trowel finish	ditto
	Windows	Wooden windows with paint finish	Wooden windows with paint finish	ditto
	Doors	Wooden doors with paint finish	Wooden doors with paint finish, Steel doors with paint finish	ditto
Interior finish	Floors	Concrete with steel trowel finish	Concrete with steel trowel finish	ditto
	Walls	Mortar with paint finish	Mortar with paint finish	ditto
	Ceiling	Ceiling boards with paint finish	Ceiling boards with paint finish	ditto

3) Equipment plan

Furniture for classrooms and the principal's rooms will be provided in the Project.

- One set consisting of a chair and a desk for a teacher will be provided for every classroom and principal's room.
- Chairs and desks for students will be provided for middle schools and higher. Forty sets of chairs and desks will be provided for every classroom to serve the standard number of students per classroom at 40 persons. Rugs will be provided for primary schools.
- One set of steel lockers will be provided for every classroom and principal's room.

Table 2.18: Furniture Plan

Room	Furniture	Quantity per room	Total Quantity
Classrooms of a primary school	Rugs	20 pieces (1 piece/2 pupils)	245 classrooms x 20 pieces/classroom = 4,900 pieces
	A set consisting of a desk and chair for a teacher	1 set	245 classrooms x 1 set/classroom = 245 sets
	Steel locker	1 unit	245 classrooms x 1 unit/classroom = 245 units
Classrooms of a middle school, high school, and higher secondary school	A set consisting of a desk and chair for a student	40 sets	66 classrooms x 40 sets/classroom = 2,640 sets
	A set consisting of a desk and chair for a teacher	1 set	66 classrooms x 1 set/classroom = 66 sets
	Steel lockers	1 unit	66 classrooms x 1 set/classroom = 66 sets
Principal's room	A set consisting of a desk and chair for a teacher	1 set	30 classrooms x 1 set/classroom = 30 sets
	Steel lockers	1 unit	30 classrooms x 1 set/classroom = 30 sets

4) Basic plan for boys degree college and high secondary school

Basic plans for the boys degree college and high secondary school were formulated as mentioned below.

Table 2.19: Basic Plan for Boys Degree College and High Secondary School

Item	Boys Degree College	High Secondary School
1) Facility Plan	The project will reconstruct the academic block including the classroom building and the administrative building. The number of classroom will be adjusted to the number of existing teachers. The computer laboratory and the physics and tech. laboratory will be attached to the academic block.	The project will reconstruct classrooms, computer labo., examination hall, technical labo., administrative office, toilets, and guard office.
2) Site Plan	Building will be placed on the same location with the existing buildings to protect from flood.	A classroom building will be formed by two stories to secure the places for SADC. The buildings will be placed on the same location with the existing buildings.
3) Floor Planning	Size of facilities such as classrooms, physics and tech. laboratory, computer laboratory, library, administrative offices, halls, latrines, and corridors will be designed based on the size of existing facilities and the girls degree college that was under construction. A courtyard will be arranged in the site.	Size of facilities such as classrooms, physics and tech. laboratory, computer laboratory, library, administrative offices, halls, latrines, and corridors will be designed based on the size of existing facilities.
4) Section Planning	Buildings will be formed by two stories. Roofing will be a trussed roof that will be made of steel.	Buildings will be formed by two stories. Roofing will be a trussed roof that will be made of steel.
5) Structure Planning	A rigid frame of reinforced concrete will compose the wall foundations, columns and beams. Walls will be made of bricks and will not be structural walls. Structural calculation will be examined in accordance with Japanese structural design standards.	A rigid frame of reinforced concrete will compose the wall foundations, columns and beams. Walls will be made of bricks and will not be structural walls. Structural calculation will be examined in accordance with Japanese structural design standards.
6) Electrical Installation and Water Supply Planning	Receptacle outlets will be placed in rooms that will require electric power. Drinking water will be supplied from an existing elevated tank. Sanitary equipment will be installed in toilets and bathrooms. Wastewater will be discharged into septic tanks.	Receptacle outlets will be placed in rooms that will require electric power. Drinking water will be supplied from an existing elevated tank. Sanitary equipment will be installed in toilets and bathrooms. Wastewater will be discharged into septic tanks.

(3) Bridges

1) Consistency with design standards

Existing bridges have been formed with a narrow width for one traffic lane. Taking into account the increased traffic demand due to the future expansion of the urbanized areas, the width of the bridges will be widened for all the bridges except the Battagram College bridge (No. 6). The Battagram College bridge will be on a drive from a main road to the college, therefore the one traffic lane will be sufficient for the traffic demand in the future.

2) High water level

Based on the information from local residents and the department of roads, Battagram District, the high water level was decided for the Banna bridge (No. 3) and Battagram College bridge (No. 6).

3) Location and length

Location for the three bridges in the Project will be same as the existing bridges.

4) Type of bridges

- Abutments: Pile foundations were applied to the Banna bridge (No. 3) and the Battagram college bridge (No. 6) to prevent scouring.
- Superstructures: Reinforced concrete structure was applied to the Battagram College bridge (No. 6) taking the length of the bridge and economic aspects into account. Pre-cast concrete type was applied to bridges No. 3 and No. 7.

5) Access road to the bridges

Designed elevation of the Banna bridge (No. 3) was raised by 3 m from the elevation of the existing bridge to secure adequate clearance from the high water level in the river. Therefore, an access road was required at both ends of the bridge for the length of 100 m.

2-2-3 Outline Design Drawing

Basic design drawings for the bridges and health and education facilities are shown in the annex 1 to 3.

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

(1) Directions for construction

The Project will cover the scope of works as follows.

- Civil works including debris removal, land preparation, drainage, and foundation works,
- Building construction for hospitals, schools, and residential units, and
- Civil works for the bridges.

To implement the Project effectively and efficiently, there will be several issues to be addressed as follows.

- A part of the construction works, including construction supervision, will be carried out by the Pakistani government. Those works for which the Pakistani side is responsible will need to be coordinated with the related works in the Project. The Pakistani side will need to arrange the required budget and staffs.
- Hospitals and schools in the Project will be mainly small scale buildings of one story. The Project will need to be completed in a short construction period and divided into a series of contract packages. Therefore, the use of local contractors was recommended.

(2) Directions for procurement

The procurement policy was made as follows.

- Medical equipment using electricity (especially battery-operated ones) will be limited to Japanese products or some products of third countries, in consideration of durability and its resistance for voltage fluctuation.
- Of the medical equipment using electricity, products made in China will be allowable for consumables such as operating lamps that need to be constantly replaced. Because the costs can be easily afforded.
- Medical furniture and beds that will not directly influence the accuracy of medical diagnosis or treatment will be procured from local products.

The policy as to the provision period for consumables will be as follows.

- In Battagram district, the department in charge of ordering consumables is busy with arranging medical records because the confusion after the disaster still remains. For this reason, consumables will be provided for one year in consideration of quick startup of operations after delivery of the equipment.

2-2-4-2 Implementation Conditions

(1) Safety management

The project sites are located in hilly areas and have limited land areas with difficult accessibility. Safety management will be an important issue in the construction works. Before the construction begins, work groups will have coordination meetings to prepare the work schedules. In addition to the coordination meetings, hazard signs and security fences will be installed to make the work spaces more safe and efficient.

(2) Work coordination

Various kinds of construction works will be carried out in the project sites. The construction works will include demolition of existing facilities, land preparation, building and civil works, water supply and sanitation works, and electric works. Therefore, more than two subcontractors will simultaneously work in the sites. The management capability of the contractor will be fundamental to secure the quality of the facilities. Precautions will be taken to prevent early commencement of the building works before the completion of land preparation and foundation works.

Contractors and consultants will confirm the responsibilities and schedules of construction works to clarify the safe work conditions and quality control. The work schedules will be prepared based on the coordination between the related works to make the construction works more efficient and effective.

(3) Securing the work space

Project sites are located in hilly areas and have the small land areas, which will be insufficient to secure the spaces for a temporary office, a stock yard, and construction roads. In case of small project sites, alternative sites for work spaces in adjacent areas will need to be used temporarily upon prior agreement with the owners and neighborhoods.

(4) Direction for climate and social conditions

Precipitation in the rainy season from July to September is in a range from 150 to 200 mm/month. Construction schedules need to be prepared so as to prevent delays due to the rainfall.

Every year, Pakistan has a fasting period for approximately 35 days (*Ramadhan*) in the Islamic calendar. The workmanship and speed of procurement will be lowered in the fasting period. Therefore, the construction schedule needs to take the *Ramadhan* period and *Eid ul-Fitr* festival into account.

(5) Direction for the project period and construction method

The construction schedules will be planned to avoid construction methods unsuitable in the rainy season. The construction methods will basically follow the local practices. Quality control will be carried out, especially for fixing the reinforcement bars.

The contractors were classified into four categories as presented in the table below.

Table 2.20: Qualification for Tenderers

Class	Contract Amount	Required Number of Engineers
A	More than Rs. 10.0 million	2 engineers or more
B	Rs.10.0 million or less	2 engineers or more
C	Rs.5.0 million or less	No requirements
D	Rs.2.5 million or less	No requirements

According to the Battagram district office of the ministry of public works, the construction companies in the Battagram district were limited to companies in class C and D. Those companies had the capability to construct a basic health unit. The construction companies in class A will be recommended to secure the work schedule and workmanship in the Project.

Among the class A companies, the capability thereof were different considering the number of engineers and construction equipment. Therefore, pre-qualification will be recommended to select the candidates for the tenders. Criteria in the pre-qualification will include the following items.

- Number of engineers,
- Number of vehicles to transport the materials and equipment, and
- Number of pieces of equipment to control the quality of concrete including pot mixers and vibrators.

(6) Direction for procurement of materials and equipment

Construction materials will be both local and imported. Due to the hilly topography, the access to the project sites will be difficult for vehicles. Therefore, the transportation will be carried out by donkeys and manpower. The project sites will be widely dispersed in the district. The required number of donkeys and workers will need to be estimated for the demolition works and land grading works that will be conducted in the early stage of the Project.

Since the medical equipment will be produced on an order basis, a period of four months will be required from ordering to completion of manufacturing. For the procurement of the first shipment urgently required for reconstruction, the delivery time will be set at 0.5 months.

2-2-4-3 Scope of Works

Responsibilities of Japanese and Pakistani sides were examined as mentioned in the table below.

Table 2.21: Responsibilities of Japanese and Pakistani sides

Japan	Pakistan
<ul style="list-style-type: none">• Compilation of tender and contract documents, and executions of consulting service of construction management etc.• Construction of medical facilities, educational facilities, and bridges shown by the Outline Design• Construction of outdoor facilities shown by the Outline Design, and• Granting of medical treatment equipments shown by outline design.	<ul style="list-style-type: none">• Securing of the site necessary for construction (The offer of the keeping first machine parts place in the DHQ site is included).• Amendment of construction in the building etc. when meeting obstacles.• Provision of public services such as water supply and electricity to be constructed to the building site.• Transfer of machine parts used in temporary housing hospital.

Contents of the Project will be divided into nine packages as presented in the table below. Demarcation of the packages was examined based on the type of facilities, the location of the project sites, and the priority of the facilities. The Pakistan government will relocate existing equipment that is currently being used in the temporary health facilities.

Table 2.22: Scope of Works by Package

Package	Description
Package 1	• Schools (permanent structures with high priority)
Package 2	• DHQ (temporary structure for urgent rehabilitation)
Package 3	• DHQ (permanent structure)
Package 4	• Banna RHC
Package 5	• Thakot CH • BHUs, schools, and bridges in the Battagram Tehasil
Package 6	• BHUs, schools, and bridges in the Allai Tehasil
Package 7	• Boys Degree College • High secondary schools
Package 8	• Medical equipment for DHQ, Banna RHC, and BHUs
Package 9	• Four BHUs upgraded to RHC

2-2-4-4 Consultant Supervision

(1) General

The government of Pakistan and Japan International Cooperation System (JICS) will conclude an exchange of notes (E/N). Minutes of meeting (MOM) will be attached to the E/N and signed by both authorities. The MOM will specify the contents of the Project based on the result of the Outline Design Study. After the signing of the E/N, A non-project grant aid will be commenced for the Project. A consultant company will conclude a contract for consulting service with JICS. The scope of works of the consulting service will be specified in the E/N. The consultant company will be responsible for the items listed below in the tender and construction supervision.

- To prepare tender documents and references that will be suitable for construction works,
- To demarcate the Project into contract packages effective and suitable for implementation,
- To secure the safety and the environmental and social issues.

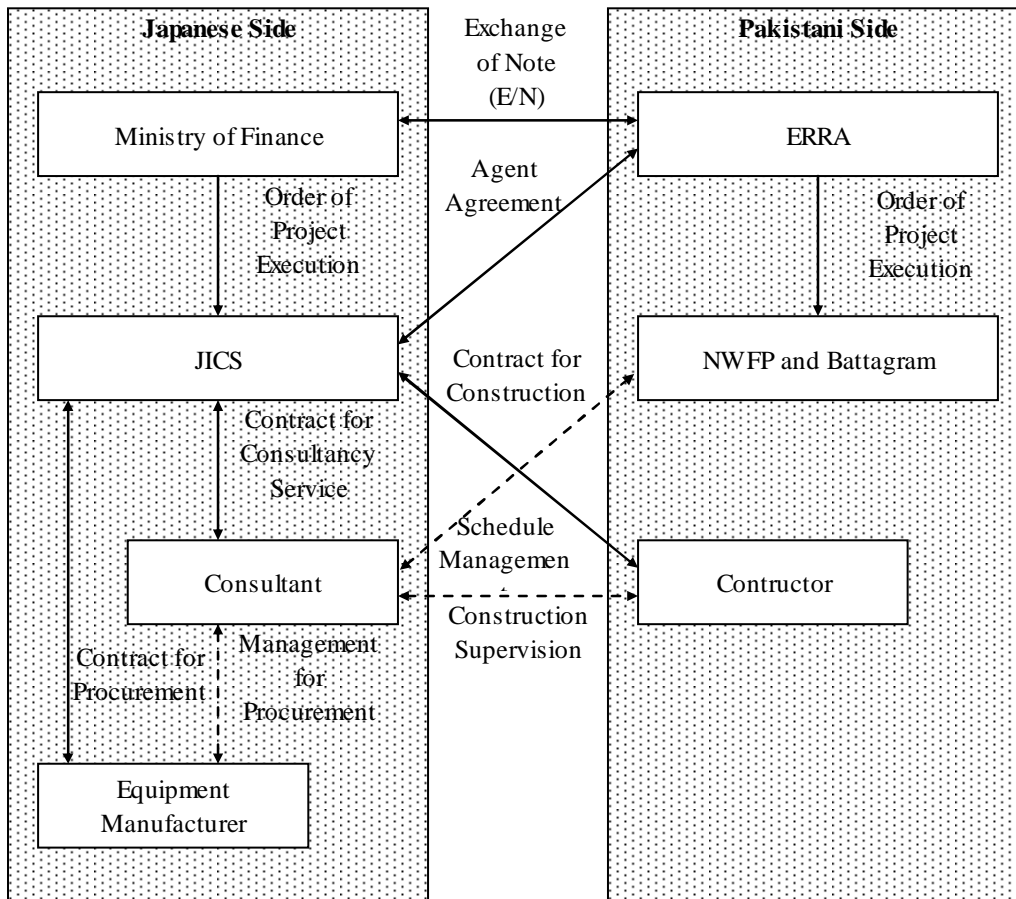


Figure 2.1: Structure of Project Execution

(2) Contents of consulting services

1) Tender process

- After the public announcement, the consultants will distribute the tender documents and explain the contents of the Project.
- The consultants and JICS will jointly evaluate the tender documents submitted by tenderers in

Islamabad.

- The consultants will assist in issuing an award for the successful tenderer.
- After the approval of an evaluation report by JICS, the consultant will assist in preparing the contract with the successful tenderer.
- The consultant will request the participation of the Pakistani government to implement the Project.

2) Construction supervision

- The consultants will explain design drawings and technical specifications.
- The consultants will review and approve the drawings submitted by the contractor.
- The consultants will assign a residential engineer for the construction supervision at the project site.
- The consultants will report the result of tests for facilities, materials, and equipment.
- The consultants will verify the materials, experts, and topographic survey.
- The consultants and JICS will settle any trouble or problems caused in the Project.
- The consultants will instruct the contractor so as to follow the work schedule.
- The consultants will report the work progress and other necessary information to JICS.
- The consultants will issue the certificates that will be required for the payment to the contractor.

3) Procurement and installment of equipment

- The contractor will propose the types of the autoclave, x-ray apparatus, and medical equipment for dentistry and otolaryngology. The consultants will confirm the proposed medical equipment with the design drawings and instruct the contractor to revise, if necessary, the proposal.
- The manufacturer will carry out the tests of the medical equipment. The consultants will inspect the manufacturer's tests.
- If any defects are revealed in the manufacturer's tests, the consultants will confirm the results of the tests and instruct the manufacturer regarding the method for rectification.
- The consultants will issue a test report prior to shipping.
- The consultants will confirm stock yards and installation sites. They will supervise the installation works and the acceptance procedures.

4) Defect liability

- The consultants will issue a completion certificate and assist in the processes of the taking over. Then, the consultants will prepare a completion report.
- The consultants will support the inspection and repair works after the completion of construction works.

(3) Assignment schedule of consultants

The consultant team will be headed by a project manager who have experience with similar projects and understand the contents of the Project. The consultant team will be formed of experts who have the experience with tenders, design reviews, and construction supervision. The project manager will assign a representative expert for each contract package.

Table 2.23: Scope of Works by the Consultant

Position	Scope of Works
Project Manager	<ul style="list-style-type: none">• To supervise the work progress and work schedule of the Project.• To instruct and advise the team members.• To coordinate between JICS and the embassy of Japan.
Team Member for Package 1 & 2	<ul style="list-style-type: none">• To support a public announcement and a tender evaluation.• To attend the contract negotiation with the successful tenderer.• To review the drawings submitted by the contractor and approve the drawings.• To supervise the construction works at the site.
Team Member for Package 3 & 4	ditto
Team Member for Package 5	ditto
Team Member for Package 6	ditto
Team Member for Package 7	ditto
Team Member for Package 8	<ul style="list-style-type: none">• To support a public announcement and a tender evaluation.• To attend the contract negotiation with the successful tenderer.• To supervise and inspect the installment works of the medical equipment.
Medical Expert	<ul style="list-style-type: none">• Two Japanese experts and two experts for procurement will supervise the procurement works.• To coordinate installation of the medical equipment.• To verify the operation and maintenance after the installation works and training.• To inspect the manufacturer's test of the products made in Japan and third countries.

2-2-4-5 Quality Control Plan

(1) Civil and building works

1) Review and approval of construction drawings

The contractor shall submit the design drawings, structural drawings, and construction drawings for approval to the consultants. The consultants will review and approve the submitted drawings.

2) Material tests

The consultants will test the construction materials. The material tests will be carried out at the sites and places appropriate for the supplier and manufacturer.

(2) Health sector

Chinese products will be procured if the products are manufactured under good quality control. For the ISO 9001 quality management system in China, the audit standards of the examination institute are very low in comparison with those of Europe, America and Japan. Its reliability is low, therefore only the models having acquired the CE marking will be procured.

As to the quality assurance of local products, it is necessary to divide the medical furniture and the medical instruments. Many of the medical furniture manufacturers are manufacturing at factories having received the ISO9001 quality management system certification. As to their individual products, however, they have not obtained the CE marking because their market is mainly the domestic market. On the other

hand, the manufacturers of medical instruments are exporting their products and have obtained the certification (CE marking) for the individual products. Under such circumstances, the furniture products having the ISO9001 certification and the medical instruments having the CE marking shall be procured.

As to the products made in third countries such as Germany and Japan, there is no quality control problem because adequate domestic laws are in place.

2-2-4-6 Procurement Plan

(1) Building and civil works

Construction equipment will be arranged from domestic sources, while the medical equipment will be provided from Japan. The imported equipment will be unloaded at the Karachi port and transported to the site.

- The Pakistani government will support the tax exemption for customs clearance and be responsible for customs procedures.
- Access roads capable for transport will be limited to the urbanized areas and trunk roads. Therefore, the construction equipment will be transported to the sites by donkeys which are commonly used in the project areas.

(2) Procurement (health sector)

1) Current practices for procurement of medical equipment

Products such as medical furniture, medical instruments, ENT treatment tables, and suction units, excluding advanced electronic medical equipment, are mainly manufactured in the Islamic Republic of Pakistan. Recently such manufacturers have obtained the ISO9001 quality management system certificate and are exporting their products to Europe. As to the advanced electronic medical equipment including imaging equipment such as ultrasound and X-ray equipment, anesthesia apparatus, ventilators, electrocardiograms, and patient monitoring equipment, products imported from Europe, America and Japan are widely used. The recent trend is that products made in China are selected because of the lower prices of the equipment and lower prices of the consumables.

2) Considerations for procurement of medical equipment

As to ordinary medical equipment, with the precondition of a certain level of quality assurance, products made in Pakistan can be procured in consideration of economic efficiency. As to the medical electronic equipment, the procurement is from Japan or third countries because of the diagnosis system and durability. As to the consumables and equipment requiring parts for periodical replacement, Chinese products can be procured. Supplier countries of the main equipment are shown below.

Table 2.24: Supplier Countries of Main Equipment

Code.	Equipment name	Supplier		
		Pakistan	Japan	Third countries
2	Anesthesia machine with ventilator		●	●
3-1	High pressure boiling sterilizer	●	●	
9	Pulse oxy-meter		●	●
12	Defibrillator		●	●
18	Electrocardiogram (ECG)		●	●
20	ENT unit		●	●
30	Microscope		●	●
36	Operating light (Ceiling installation type)		●	●
37	Operating table		●	●
39	Patient monitor		●	●
65	Fetus monitor		●	●
66	High pressure sterilizer		●	●
69	Apparatus for cataract & glaucoma operations	●	●	●
76	Blood cell counter, automated		●	●
86	Spectrophotometer		●	●
91	ECG monitor		●	●
93	Sigmoidoscopes for adults and infants		●	●
96	ELISA microplate reader		●	●
98	Ventilators for adults		●	●
100	Ventilators for infants		●	●
120	YAG laser		●	●
127	Portable ventilator		●	●

2-2-4-7 Operation Guidance Plan

As to the equipment to be provided to DHQ and TBCO, the unpacking, installation, trial operation, operation, and explanation on operation and maintenance will be the responsibility of the suppliers. The equipment to be provided to CH, RHC, BHU, and MCHC do not use electricity and do not require special installation or trial operation, but it is difficult to make an opportunity for the health care professionals in the prefecture to gather at one place, and so the unpacking, installation, guidance on operation, and explanation of operation and maintenance methods shall be executed at each facility by the suppliers.

2-2-4-8 Implementation Schedule

The project period was estimated at 25 months from the signing of the E/N to the completion of construction works. The implementation schedule was formulated as shown in the figure below.

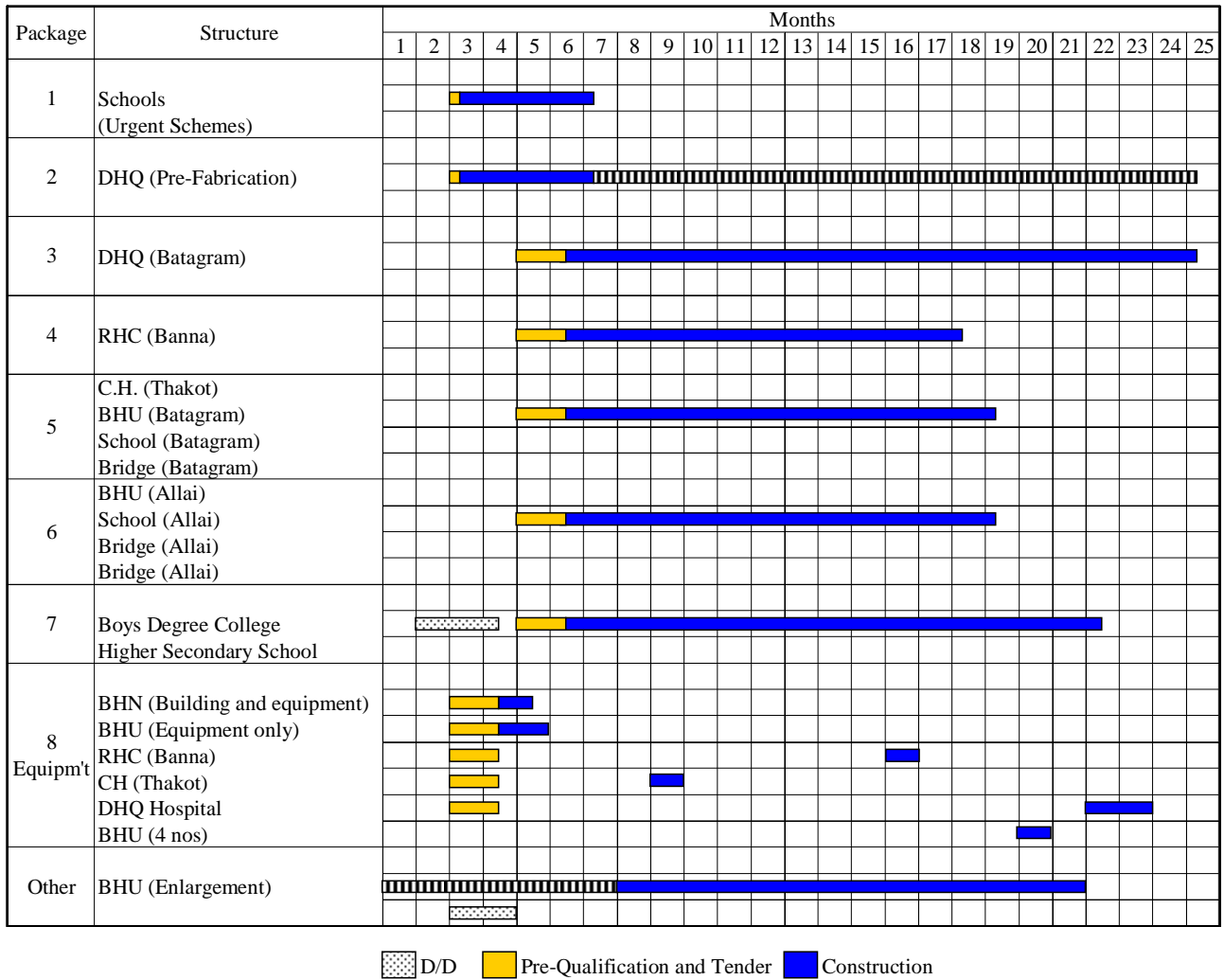


Figure 2.2: Implementation Schedule

Since much of the medical equipment will be produced on an order basis, the period to manufacture the equipment for DHQ was scheduled at four months. The inspection before shipping was scheduled at half a month. Ten-ton trucks will transport the equipment from Karachi to Islamabad, but from Islamabad to Battagram, only 8-ton trucks will be usable because the Karakoram Highway becomes narrow in width. Based on those conditions, the required periods were estimated at 1.3 months for sea transport and 0.7 months for inland transport. Most of the BHUs are located at inconvenient places; therefore the required periods were estimated at one day for unpacking/installation at each BHU. The total period for the unpacking/installation was estimated at one month.

Work Items	Month									
	1	2	3	4	5	6	7	8	9	10
Discussion with construction side	■									
Discussion with supplier	■									
Preparation of equipment fabrication drawing		■								
Manufacturing of equipment		■	■	■	■	■	■	■	■	■
Product (factory) inspection		■	■	■	■	■	■	■	■	■
Inspection before shipping						■				
Equipment checking before shipping						■				
Shipping						■				
Equipment transportation							■	■	■	■
Unpacking, carrying-in, installation									■	■
Adjustment/trial operation									■	■
Initial operation guidance									■	■
Acceptance, completion delivery									■	■

Figure 2.3: Procurement Implementation Processes (Proposal)

2-3 OBLIGATIONS OF RECIPIENT COUNTRY

The Pakistani government will be responsible for the following items to implement the Project.

- To arrange the customs clearance of imported products at the Karachi port.
- To arrange the approval by relevant organizations required for the implementation of the Project (including the procedures for environmental and social considerations).
- To permit Japanese and third country experts related to the Project to enter the country.
- To arrange the tax exemption for the imported and domestic products.
- To arrange the sites required for the Project (including a temporary place in the DHQ).
- To secure the safety of experts, materials, and facilities related to the Project and protect them from vandalism.
- To install the terminal points of public utilities, which include water supply, telecommunications, and power supply.
- To arrange the budget required for operation and maintenance of the facilities and equipment to be provided in the Project as well as for medical staffs (ENT, orthopedics, and ICU) and technical staff (paramedical).
- To arrange the consumables/replacement parts required for maintenance of the facilities/equipment
- To relocate the equipment currently used at the temporary hospital. Professional engineers will be required to move the X-ray equipment. The relocation work will be done as soon as possible after the budget allocation (about 1 million to 1.2 million yen) to be facilitated by discussions between the installers and the provincial government.

2-4 PROJECT OPERATION PLAN

(1) Health sector

To operate and maintain the medical equipment, the Pakistani government will need to establish an operation and maintenance system. The requirements for the O&M system will not be limited to employ

adequate and capable experts but also to prepare the O&M manuals. The O&M system will also need to be capable to report institutionally the record of accidents, inventories, and maintenance.

The sub-workshop of Abbottabad has controlled five districts including Battagram. The periodic checking of medical equipment and troubleshooting have been conducted on an on-call basis. A chief engineer has been assigned at the central workshop in the Pshawar/Khyber educational medical institute. His guidance will be given when unspecified failure occurs in the equipment. Repair reports on all the problems encountered with the equipment will be submitted to the chief engineer, and the activities of each workshop will be reported to the major planning officer.

The personnel of the sub-workshop have the technical capabilities to cope with a wide range of repair work from replacement of X-ray tubes to oil filling for suction units if replacement parts necessary are available.

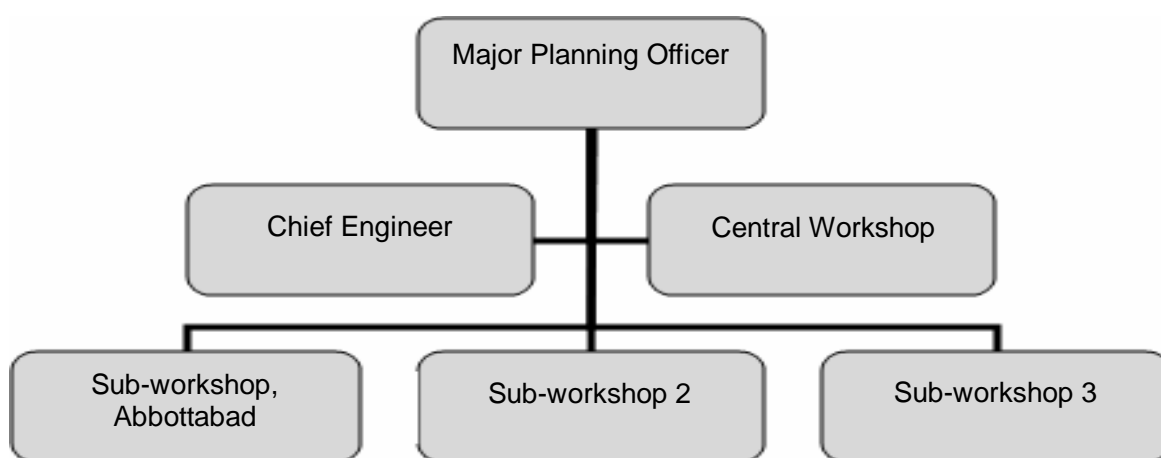


Figure 2.4: Organization Chart of Maintenance/Control Workshop

Table 2.25: Position and Education Level of Personnel of Abbottabad Sub-Workshop

Position	Number of persons	Education level
Engineer	3 persons	Degree obtained (2 persons) Honorary degree of electrical engineering (1 person)
Mechanic	1 person	Degree obtained

(2) Education sector

1) Procedure for operation and maintenance

There are two different procedures for operation and maintenance as mentioned below.

i) Procedure for heavily damaged facilities

- The literacy & education department of the Battagram district will request that the public works department of the district provide a site survey and cost estimation.
- The public works department will request that the development planning department of the NWFP via the literacy & education department provide a budget allocation.
- The development planning department will approve the submitted cost estimation and arrange a

budget for the public works department. The development planning department will submit requests to the public works department for repair works.

- The public works will carry out the repair works.

ii) Procedure for slightly damaged facilities

- A school will submit a request for repair work to the development planning section, the literacy & education department, the Battagram district.
- The development planning section will survey the damage to the facilities and confirm the request submitted by the school.
- The development planning section will approve the request and deposit an amount of 1,760 Rs/classroom to the bank account of the school.
- The school will carry out the repair work.

2) Role of PTA

A PTA has been formed by teachers and parents of the students in the school. The PTA has held monthly meetings and submitted the minutes of meeting to the department of literacy and education under the Battagram district. The PTA has operated and maintained the school and monitored activities in the school.

3) Records of operation and maintenance

Operation and maintenance cost has been set at 1,760 Rs/classroom. The O&M cost has been called the PTA fund. Records of the O&M costs in FY2004 are as follows.

- Primary school: 1,550,500Rs for 868 classrooms of boys' schools and 735,000Rs for 420 classrooms of girls' schools.
- Middle school: 138,250Rs for 79 classrooms of boys' schools and 103,750Rs for 52 classrooms of girls' schools.
- High schools: 28,165Rs for 131 classrooms for boys' schools.

There have been funds for the O&M cost other than the PTA fund. The funds have consisted of the president's program with an amount of 3 million Rs and the educational renovation program with an amount of 7 million Rs. Most of these funds have been used to purchase equipment and conduct training and the literacy education for adults. Budget for the O&M cost has been limited.

(3) Bridges

The works and services department of the Battagram district will be responsible for the operation and maintenance of three bridges to be reconstructed in the project. The operation and maintenance works will consist of items mentioned below.

1) Inspection and maintenance to be carried out every year

- To clean the sediment in the drainage,
- To weed shoulder and slope along the access roads, and

- To inspect and repair the bank protection after the flood.

2) Inspection and maintenance to be carried out every five and ten years

- To overlay the road surface treatment.
- To replace and repair the expansion joints.

2-5 PROJECT COST ESTIMATION

2-5-1 Initial Cost Estimation

The initial cost for the Project was estimated at 3.1 billion yen. Based on the conditions for the cost estimation mentioned in section (3) below, the initial costs by the Japanese side and the Pakistani side were estimated as follows. Those estimated costs were not defined as the amount of the grant aid, which would be specified in the E/N.

(1) Initial cost estimation taken care of by the Japanese side

Initial cost estimation: 3.093 million yen

Battagram District, 19 medical facilities, 118 education facilities, and 3 bridges

Package	Facility	Q'ty	Initial Cost (million yen)	
			(unit)	
PACKAGE 1	General Items	1	L.S.	8
	GPS/GGPS	6	no.	210
	Sub-total			218
PACKAGE 2 (Contract amount)	Pre-fabricated OPD	1	no.	39
	Sub-total			39
PACKAGE 3	General Items	1	L.S.	10
	Main Building	1	no.	415
	MCHC	1	no.	15
	OPD	1	no.	59
	Casualty	1	no.	34
	Mortuary	1	no.	4
	TB control center	1	no.	14
	EDO office	1	no.	52
	Sub-total			603
PACKAGE 4	General Items	1	L.S.	6
	Main hospital	1	no.	71
	Generator room	1	no.	9
	Elevated water tank	1	no.	6
	Mortuary	1	no.	3
	Residence Type I	4	no.	28
	Residence Type II	5	no.	31
	Residence Type III	2	no.	9
	Outdoor works	1	no.	2
Sub-total			165	
PACKAGE 5	General Items	1	L.S.	28
	Thakot Civil Hospital	1	no.	6
	Basic Health Unit, 12G5S	6	nos.	53
	Basic Health Unit, 12G7S	3	nos.	35
	Residence Type I	10	nos.	70
	Residence Type II	14	nos.	86
	Residence Type III	10	nos.	44
	School Type A	53	nos.	267
	School Type B	5	nos.	27
	School Type C	11	nos.	103
	School Type D	1	no.	11
	School Type E	3	nos.	40
	School Type F	1	no.	5
	School Type H	1	no.	10
Sub-total			785	
PACKAGE 6	General Items	1	L.S.	19
	Basic Health Unit, Original	2	nos.	10

Package	Facility	Q'ty	Initial Cost	
			(unit)	(million yen)
PACKAGE 6	Basic Health Unit, 12G5S	1	no.	9
	Basic Health Unit, 12G7S	1	no.	12
	Residence Type I	4	nos.	28
	Residence Type II	4	nos.	25
	Residence Type III	4	nos.	17
	School Type A	30	nos.	151
	School Type B	2	nos.	11
	School Type C	9	nos.	84
	School Type D	2	nos.	22
	School Type G	2	nos.	17
	Bridge No. 3	1	no.	29
	Bridge No. 7	1	no.	21
	Sub-total			455
PACKAGE 7	General items	1	no.	3
	Battagram higher secondary school			
	Classroom	1	no.	16
	Computer laboratory	1	no.	16
	Examination hall	1	no.	41
	Physics and tech. laboratory	1	no.	16
	Administration block	1	no.	17
	Boys degree college			
	Classroom	1	no.	186
	Hostel (rehabilitation)	1	no.	72
Bridge No. 6	1	no.	14	
Sub-total			381	
Package 8	General Items	1	no.	
	Medical Equipment etc.	1	no.	157
	Sub-total			157
Total				2,803

Construction supervision, and technical training

290 million yen

(2) Initial cost taken care of by the Pakistani side

- Relocation of existing x-ray apparatus and cost for commissioning test: 0.6 million Rs (1.2 million yen)

(3) Conditions for initial cost estimation

- Time of cost estimation: March, 2006
- Exchange rate: 1\$ = 117.19 yen
1Rs = 2.11 yen
- Duration of the Project: The Project will be implemented in one phase. The periods of detailed design and equipment procurement were formulated as shown in the implementation schedule.
- Others: The cost estimation was carried out in accordance with the regulations of the grant aid scheme system of the Government of Japan.

2-5-2 Operation and Maintenance Cost

(1) Health sector

1) Maintenance budget

The budget for the operation and maintenance of equipment and facilities has been as presented in the table below. Costs for repairing and maintenance have been as shown in the table below. The costs

combine those for both facilities and equipment. Repair works for the equipment have been carried out by a sub-workshop under the Ministry of Health free of charge. All the costs, except for periodic parts replacement, have been paid as the maintenance costs of the facility.

Table 2.26: Operation Budgets of Medical Facilities

Item	DHQ		RHC		BHU		MCHC	
	Rupee	Yen	Rupee	Yen	Rupee	Yen	Rupee	Yen
Cost of repairing and maintenance control	135,000	¥284,850	10,000	¥21,100	79,413	¥167,561	0	¥0

Source: Executive District Office

Note: Exchange rate at 1 Rs = 2.11 yen

Since the Project will reconstruct the damaged facilities and equipment, the equipment to be provided in the Project will exclude the equipment that was still in operation. The Project will not cause any increase of costs for operation and maintenance.

2) Issues to be addressed for operation and maintenance

Delivery of periodic replacement parts will take time and the malfunctioned equipment will be left as it is for long time. The staff of the sub-workshop will need to arrive at the site within one or two days after receiving information of the trouble by telephone. He will investigate the cause of the trouble and report to the director. If the budget from the district is sufficient, the sub-workshop will immediately start the procedure for procurement. However, the budget allocation will be done every three months after approval of the annual budget. Therefore, the procurement will often take time. As a flexible arrangement, it will be recommended that they deposit the diagnosis fees and then utilize the deposits to purchase the periodic replacement parts.

(2) Education sector

The Project will aim to reconstruct the affected facilities. Therefore, the Project will not require additional costs for operation and maintenance. However, the study team confirmed that there were schools that did not have an adequate number of teachers or budget for operation and maintenance before the earthquake. During the implementation of the Project, the Pakistani government will need to confirm the availability of teachers and budget related to the Project.

(3) Bridges

The operation and maintenance costs will be required as mentioned in the table below.

Table 2.27: Operation and Maintenance Costs for Bridges to be Reconstructed

Item	Frequency	Parts to be Inspected	Scope of Works	Estimated Cost (Rupee)
Drainage	Two times per year	Road surface drainage	To replace sediments	2,200
Access road	Two times per year	Shoulder and slope	To weed along shoulder and slope	31,200
Bank protection	After flood	Bank protection along river	To repair the parts damaged by flood	61,700
Road pavement	One time per five years	Road surface treatment	To overlay the road surface treatment	453,100
Expansion joint	One time per ten years	Expansion joint	To replace and repair the expansion joint	18,500

2-6 OTHER RELEVANT ISSUES

There are several issues to be addressed in order to implement the Project efficiently and effectively.

- The Pakistani government will carry out the works for which it is responsible without any delays.
- The building work for the orthopedics, ENT, and ICU had been in progress under SAC (structural adjustment credit) before the earthquake. Under the SAC, it had been planned that the infrastructure improvement, personnel arrangement, and equipment provision would be sequentially made, but the earthquake occurred during the infrastructure improvement. Presently there is no doctor in charge of the units at DHQ. A CPO (chief planning officer) of Department of Health, Government of NWFP confirmed that the department will secure the personnel during the construction phase, but it will be necessary to obtain a definite promise on this point from the Pakistani government.
- Check with the Department of Health, Government of NWFP to ascertain if it has plans for a budget of the same amount or higher than the amount in fiscal 2005.

CHAPTER 3

PROJECT EVALUATION AND RECOMMENDATIONS

CHAPTER 3 PROJECT EVALUATION AND RECOMMENDATIONS

3-1 PROJECT EFFECT

Project effect was evaluated as follows.

(1) Health sector

Table 3.1: Project Effect in the Health Sector

Existing Conditions and Problems	Methods implemented in the Project	Direct Effect	Indirect Effect
<ul style="list-style-type: none"> • Most of existing medical facilities in the Battagram <i>Thesil</i> and <i>Allai Tehasil</i> were damaged heavily or partially by the earthquake • The Pakistani government provided first aid and medical services for outpatients in temporary facilities. However the reconstruction of the affected facilities was not implemented yet. 	<ul style="list-style-type: none"> • The Outline Design Study was carried out and selected 19 medical facilities to be reconstructed out of 34 medical facilities that were requested by the Pakistani government for the reconstruction. • The Project will reconstruct the selected 19 medical facilities and provide medical equipment. 	<ul style="list-style-type: none"> • The functional recovery of the referral system can be promoted by recovering the functions of each facility. • In villages, postnatal examination, (safe delivery), antenatal examination, and (family plan service) activities are recovered. • In villages, simple surgical treatment can be received. • In villages, ordinary diagnosis/prescription can be received. • In urban area (Battagram), X-ray diagnosis, clinical laboratory test, and diagnosis/treatment services by 8 specialists are restored. 	<ul style="list-style-type: none"> • Improvement of maternal and infant mortality rates, health indexes of mothers/children • Improvement of crude death rate in Battagram District through functional recovery of referral system

(2) Education sector

Table 3.2: Project Effect in the Education Sector

Existing Conditions and Problems	Methods implemented in the Project	Direct Effect	Indirect Effect
<ul style="list-style-type: none"> • Most of existing education facilities in the Battagram <i>Thesil</i> and <i>Allai Tehasil</i> were damaged heavily or partially by the earthquake • The reconstruction of the affected facilities was not implemented yet. 	<ul style="list-style-type: none"> • The Outline Design Study was carried out and selected 118 education facilities to be reconstructed out of 411 education facilities that were requested by the Pakistani government for the reconstruction. • The Project will reconstruct the selected 118 education facilities and provide equipment. 	<ul style="list-style-type: none"> • The Project will provide the earthquake-resistant education facilities with well-prepared environment for 13,887 students. • The Project will provide the work spaces and equipment for principals and teachers to improve the management of the schools. 	<ul style="list-style-type: none"> • Education level will be improved in the project area.

(3) Infrastructure sector (bridge)

Table 3.3: Project Effect in the Infrastructure Sector (bridge)

Existing Conditions and Problems	Methods implemented in the Project	Direct Effect	Indirect Effect
<ul style="list-style-type: none">• Bridges in the Battagram <i>Thesil</i> and Allai <i>Thesil</i> were damaged by the earthquake.	<ul style="list-style-type: none">• The Outline Design Study was carried out and selected three bridges to be reconstructed out of seven bridges and 21 roads that were requested by the Pakistani government for the reconstruction.• The Project will reconstruct the selected three bridges.	<ul style="list-style-type: none">• Accessibility to the schools and medical facilities that will be reconstructed in the Project will be improved.	<ul style="list-style-type: none">• The Project will contribute to the improvement of the opportunity for education and medical services in the project area.

3-2 RECOMMENDATIONS

(1) Health sector

To implement the Project effectively, the Pakistani government will be responsible for the issues mentioned below.

1) Securing health care professionals

To improve the medical services, it will be necessary not only to improve the hardware such as facilities and equipment but also secure health care professionals (doctors, nurses, X-ray technicians, pharmacists, etc.). Both improvements for hardware and software will be required to ensure proper and effective medical services. Especially to support the mother/child health care services at remote places, it will be necessary to secure nurses for public health and maternity at basic health units.

2) Strengthening operation/maintenance system and securing the budget

It will be necessary to strengthen the operation and maintenance systems and secure proper budgets for increasing related costs. Part of the treatment fees will need to be allocated for procuring the maintenance parts, thus securing financially independent development.

3) Improving the infrastructure related to the project sites

It will be necessary to improve the infrastructure including access road, electricity, communication, and water supply that will be related to the facilities of the Project.

(2) Education sector

The Pakistan government will need to deal with the following challenges and recommendations to maintain continuously and effectively schools that will be reconstructed in the Project.

1) Appropriate deployment of teachers

Teachers for the schools to be reconstructed in the Project will be employed by the departments of school & literacy and higher education in NWFP and Battagram district.

2) *In-service teacher training*

In-service teacher training will be carried out by the department of school & literacy in NWFP and Battagram district. The training will be highlighted to the quality improvement in the primary education and the education for girls, because a promotion rate from primary schools to middle schools in Battagram district have rated at the second lowest level in NWFP.

3) *Proper maintenance of school infrastructures*

Departments of school & literacy and higher education in NWFP and Battagram district will prepare an annual budget for maintenance and operation. The departments of school & literacy and higher education in NWFP will prepare a maintenance manual on a building and equipment. The department will hold a seminar of school maintenance for stakeholders. Principals will reorganize school maintenance committees mainly formed by a local community and strengthen regular maintenance activities.

(3) Collaboration with other donors

In the health sector, international donors of WB, ADB, and WHO implemented the projects to improve the human resource, the medical equipment, and the infrastructure related to the medical facilities. The project sites were not duplicated with the sites of the Project. In the implementation of the Project, the consultants will need to confirm the activities of other donors with ERRRA.

In the education sector, there was no NGO and donors which implemented the project in accordance with a mid-long term plan. In the implementation of the Project, the consultants will need to confirm the activities of other donors with ERRRA.

APPENDICES

A.1 MEMBER LIST OF THE STUDY TEAM

1st Field Study

Name	Organization	Position
Kazuo NAKAGAWA	General Manager, Grant Aid Management Department, Japan International Cooperation Agency	Team Leader
Fuyuki SAGARA	Grant Aid Management Department, Japan International Cooperation Agency	Project Coordinator
Yoshikimi INOUE	Nippon Koei Co., Ltd.	Project Manager/ Planner for Reconstruction and Rehabilitation
Atushi MORIOKA	Nippon Koei Co., Ltd.	Architect (Medical Facility)
Masao OKUI	Binko International Ltd.	Architect (Medical Facility)
Nobuyoshi FURUICHI	Binko International Ltd.	Expert for Construction Planner (Medical Facility)
Yasuko ASANUMA	Binko International Ltd.	Expert for Medical Equipment
Kyoichi SUGIYAMA	Nippon Koei Co., Ltd.	Architect (Education Facility)
Nobuhiro KOIZUMI	Nippon Koei Co., Ltd.	Expert for Construction Planner (Education Facility)
Takashi OGAWA	Binko International Ltd.	Cost Estimator (Medical Equipment)
Ichiro ARAKI	Nippon Koei Co., Ltd.	Cost Estimator 1 (Facility)
Masaru ISHIKAWA	Nippon Koei Co., Ltd.	Cost Estimator 2 (Facility)
Shohei YAMAMOTO	Nippon Koei Co., Ltd.	Water Supply Engineer
Hidenori OSUMI	Nippon Koei Co., Ltd.	Road and Bridge Engineer1
Ahmed MORGAN	Nippon Koei Co., Ltd.	Road and Bridge Engineer2

2nd Field Study

Name	Organization	Position
Yoshikimi INOUE	Nippon Koei Co., Ltd.	Project Manager/ Planner for Reconstruction and Rehabilitation
Atushi MORIOKA	Nippon Koei Co., Ltd.	Architect (Medical Facility)
Nobuyoshi FURUICHI	Binko International Ltd.	Expert for Construction Planner (Medical Facility)
Yasuko ASANUMA	Binko International Ltd.	Expert for Medical Equipment
Kyoichi SUGIYAMA	Nippon Koei Co., Ltd.	Architect (Education Facility)
Nobuhiro KOIZUMI	Nippon Koei Co., Ltd.	Expert for Construction Planner (Education Facility)
Gentaku GOTO	Nippon Koei Co., Ltd.	Coordinator

3rd Field Study

Name	Organization	Position
Yoshikimi INOUE	Nippon Koei Co., Ltd.	Project Manager/ Planner for Reconstruction and Rehabilitation
Atushi MORIOKA	Nippon Koei Co., Ltd.	Architect (Medical Facility)
Nobuhiro KOIZUMI	Nippon Koei Co., Ltd.	Expert for Construction Planner (Education Facility)
Gentaku GOTO	Nippon Koei Co., Ltd.	Coordinator

4th Field Study

Name	Organization	Position
Yoshikimi INOUE	Nippon Koei Co., Ltd.	Project Manager/ Planner for Reconstruction and Rehabilitation
Atushi MORIOKA	Nippon Koei Co., Ltd.	Architect (Medical Facility)
Nobuhiro KOIZUMI	Nippon Koei Co., Ltd.	Expert for Construction Planner (Education Facility)
Masaru ISHIKAWA	Nippon Koei Co., Ltd.	Cost Estimator 2 (Facility)
Gentaku GOTO	Nippon Koei Co., Ltd.	Coordinator

5th Field Study

Name	Organization	Position
Yoshikimi INOUE	Nippon Koei Co., Ltd.	Project Manager/ Planner for Reconstruction and Rehabilitation

A.2 STUDY SCHEDULE

1st Field Survey [January 25 – March 3, 2006]

No	M/D	Day of the Week	Trip	Stay	Activity
1	1/25	Wed	Tokyo to Islamabad	Islamabad	Move to Islamabad
2	1/26	Thu	Islamabad to Battagram	Battagram	Site reconnaissance
3	1/27	Fri	Battagram, Tokyo to Islamabad	Battagram	Site reconnaissance
4	1/28	Sat	Battagram	Battagram	Site reconnaissance
5	1/29	Sun	Battagram	Battagram	Site reconnaissance
6	1/30	Mon	Islamabad, Battagram	Islamabad, Battagram, Peshawar	Site reconnaissance, filing of survey results, and meeting
7	1/31	Tue	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, and meeting
8	2/1	Wed	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, and meeting
9	2/2	Thu	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, and meeting
10	2/3	Fri	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, and meeting
11	2/4	Sat	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, and meeting
12	2/5	Sun	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, and meeting
13	2/6	Mon	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, and meeting
14	2/7	Tue	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, and meeting
15	2/8	Wed	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, and meeting
16	2/9	Thu	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, and meeting
17	2/10	Fri	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, meeting, and design works
18	2/11	Sat	Islamabad, Battagram, Islamabad to Tokyo	Islamabad, Battagram	Site reconnaissance, filing of survey results, meeting, and design works
19	2/12	Sun	Islamabad, Battagram, Tokyo to Islamabad	Islamabad, Battagram	Site reconnaissance, filing of survey results, meeting, and design works
20	2/13	Mon	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, meeting, and design works
21	2/14	Tue	Islamabad, Battagram, Islamabad to Tokyo	Islamabad, Battagram	Site reconnaissance, filing of survey results, meeting, and design works
22	2/15	Wed	Islamabad, Battagram, Tokyo to Islamabad	Islamabad, Battagram	Site reconnaissance, filing of survey results, meeting, and design works
23	2/16	Thu	Islamabad, Battagram	Islamabad, Battagram, Peshawar	Site reconnaissance, filing of survey results, meeting, and design works
24	2/17	Fri	Islamabad, Battagram	Islamabad, Battagram, Peshawar	Site reconnaissance, filing of survey results, meeting, and design works
25	2/18	Sat	Islamabad, Battagram, Tokyo to Islamabad	Islamabad, Battagram, Peshawar	Site reconnaissance, filing of survey results, meeting, and design works
26	2/19	Sun	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, meeting, and design works
27	2/20	Mon	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, meeting, and design works
28	2/21	Tue	Islamabad, Battagram	Islamabad, Battagram, Peshawar	Site reconnaissance, filing of survey results, meeting, and design works
29	2/22	Wed	Islamabad, Battagram	Islamabad, Battagram	Site reconnaissance, filing of survey results, meeting, and design works
30	2/23	Thu	Islamabad, Battagram, Islamabad to Tokyo	Islamabad, Battagram	Site reconnaissance, filing of survey results, meeting, and design works
31	2/24	Fri	Islamabad	Islamabad, Peshawar	1 st C.C., meetings with the Pakistani governments, and design works
32	2/25	Sat	Islamabad	Islamabad, Peshawar	Meetings with the Pakistani governments and design works

No	M/D	Day of the Week	Trip	Stay	Activity
33	2/26	Sun	Islamabad, Islamabad to Tokyo	Islamabad	Meetings with the Pakistani governments and design works
34	2/27	Mon	Islamabad	Islamabad	Meetings with the Pakistani governments and design works
35	2/28	Tue	Islamabad, Islamabad to Tokyo	Islamabad	Meetings with the Pakistani governments and design works
36	3/1	Wed	Islamabad	Islamabad	Meetings with the Pakistani governments and design works
37	3/2	Thu	Islamabad	Islamabad	Meetings with the Pakistani governments and design works
38	3/3	Fri	Islamabad to Tokyo	flying overnight	Move to Tokyo

2nd Field Survey [March 29 – April 9, 2006]

No.	M/D	Day of the Week	Trip	Stay	Activity
1	3/29	Wed	Tokyo to Islamabad	Islamabad	Move to Islamabad
2	3/30	Thu	Islamabad	Islamabad	Meeting with EOJ, WB, and Save the Children
3	4/1	Fri	Islamabad	Islamabad	Filing of survey results and design works
4	4/2	Sat	Islamabad	Islamabad	Filing of survey results and design works
5	4/3	Sun	Islamabad	Islamabad	Filing of survey results and design works
6	4/4	Mon	Islamabad	Islamabad	Preparation of materials for presentation
7	4/5	Tue	Islamabad	Islamabad	2 nd C.C.
8	4/6	Wed	Islamabad	Islamabad	Filing of survey results and design works
9	4/7	Thu	Islamabad to Peshawar	Peshawar	Filing of survey results and design works
10	4/8	Fri	Peshawar to Islamabad	Islamabad	Meeting with Peshawar Province
11	4/9	Sat	Islamabad to Tokyo	Flying overnight	Move to Tokyo

3rd Field Survey [May 17 – June 1, 2006]

No.	M/D	Day of the Week	Trip	Stay	Activity
1	5/17	Wed	Tokyo to Islamabad	Islamabad	Move to Islamabad
2	5/18	Thu	Islamabad	Islamabad	Filing of survey results and design works
3	5/19	Fri	Islamabad	Islamabad	Meeting with EOJ, JICA, and JICS and design works
4	5/20	Sat	Islamabad	Islamabad	Filing of survey results and design works
5	5/21	Sun	Islamabad	Islamabad	Filing of survey results and design works
6	5/22	Mon	Islamabad	Islamabad	Filing of survey results and design works
7	5/23	Tue	Islamabad to Peshawar	Islamabad, Peshawar	Meeting with the health department of NWFP and the education department
8	5/24	Wed	Islamabad	Islamabad	Filing of survey results and design works
9	5/25	Thu	Islamabad	Islamabad	Filing of survey results and design works
10	5/26	Fri	Islamabad to Peshawar	Peshawar	Move to Peshawar and meeting with local consultants
11	5/27	Sat	Islamabad	Islamabad	Meeting with Dr. Afridi of the health department, NWFP
12	5/28	Sun	Islamabad	Islamabad	Filing of survey results and design works
13	5/29	Mon	Islamabad	Islamabad	Meeting with a representative in the education sector in the ERRA
14	5/30	Tue	Islamabad	Islamabad	Meeting with a representative in the health sector in the ERRA
15	5/31	Wed	Islamabad	Islamabad	Meeting with the JICA study team for master plan in the Muzaffarabad city
16	6/1	Thu	Islamabad to Tokyo	Flying overnight	Move to Tokyo

4th Field Survey [June 14 – June 29, 2006]

No.	M/D	Day of the Week	Trip	Stay	Activity
1	6/14	Wed	Tokyo to Islamabad	Islamabad	Move to Islamabad
2	6/15	Thu	Islamabad	Islamabad	Meeting with JICA and JICS
3	6/16	Fri	Islamabad	Islamabad	Meeting with EOJ and a representative in the health sector, ERRA
4	6/17	Sat	Islamabad to Battagram	Battagram	Move to Battagram
5	6/18	Sun	Battagram to Islamabad	Islamabad	Site reconnaissance at schools in Battagram, hospitals, and BHU upgraded to RHC
6	6/19	Mon	Islamabad	Islamabad	Review of structural design for CH and BHU
7	6/20	Tue	Islamabad	Islamabad	Initial cost estimation
8	6/21	Wed	Islamabad	Islamabad	Meeting with JICA in regard to the initial cost estimation and meetings for the work progress of designs for college, higher secondary school, DHQ, and RHC
9	6/22	Thu	Islamabad	Islamabad	Filing of survey results and design works
10	6/23	Fri	Islamabad	Islamabad	Meeting with EOJ, JICA, and JICS
11	6/24	Sat	Islamabad to Peshawar	Peshawar	Meeting with local consultants
12	6/25	Sun	Islamabad	Islamabad	Filing of survey results and design works
13	6/26	Mon	Islamabad	Islamabad	Filing of survey results and design works
14	6/27	Tue	Islamabad	Islamabad	Filing of survey results and design works
15	6/28	Wed	Islamabad	Islamabad	Filing of survey results and design works
16	6/29	Thu	Islamabad to Tokyo	Tokyo	Move to Tokyo

5th Field Survey [July 5 – July 13, 2006]

No.	M/D	Day of the Week	Trip	Stay	Activity
1	7/5	Wed	Tokyo to Islamabad	Islamabad	Move to Islamabad
2	7/6	Thu	Islamabad	Islamabad	Filing of survey results and design works
3	7/7	Fri	Islamabad	Islamabad	Filing of survey results and design works
4	7/8	Sat	Islamabad	Islamabad	Filing of survey results and design works
5	7/9	Sun	Islamabad	Islamabad	Filing of survey results and design works
6	7/10	Mon	Islamabad	Islamabad	Filing of survey results and design works
7	7/11	Tue	Islamabad	Islamabad	Filing of survey results and design works
8	7/12	Wed	Islamabad	Islamabad	Meeting with JICA
9	7/13	Thu	Islamabad to Tokyo	Islamabad	Move to Tokyo

Note: ERRA - Earthquake Rehabilitation and Reconstruction Agency, PERRA - Provincial ERRA, CC - Consultative Committee, NWFP - North West Frontier Province, DHQ - District Headquarter, RHC - Rural Health Center, CH - Civil Hospital, BHU - Basic Human Unit

A.3 LIST OF PARTIES CONCERNED IN THE RECIPIENT COUNTRY

Earthquake Reconstruction & Rehabilitation Authority (ERRA)

Saleem Altaf	Chairman
General Nadeem Ahmed	Deputy Chairman
Dr. Mateer Ahmad Shaheen	Prime Minister Secretariat, Health Sector
Dr. Ameer Hussain Naqui	Education Sector
Dr. Saeed Ashraf Siddiqui	Road & Transport
Dr. Awais Manzur SUMRA	Education, Water Supply & Social Sector

National Engineering Services Pakistan (Pvt.) Limited (NESPAK)

Tahir Shamshad	General Manager of Islamabad Office
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Provincial Earthquake Reconstruction and Rehabilitation Authority (PERRA)

Mr. Jan Shed Ul - Hasan	Director General
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Government of NWFP

Dr. Abdul Hameed Afridi	Deputy Chief, Health Sector
Mr. Afsar Said	Chief Planning Officer, School & Literacy Department
Mr. Naseer Khan Khattak	Deputy Director of Planning & Development, Higher Education Department
Mr. Nafees Anwar	Assistant Director of Planning & Development, Higher Education Department
Mr. Anwar Ahmad Khawaja	Chief Planning Officer, Higher Education Department
Mr. Arbab Rifaqat Ali	Statistical Officer, Higher Education Department
Mr. Syed Bilal Khisro	Chief of Earthquake Reconstruction Cell, Planning & Development Department
Mr. Abdur Rashid	EDO (Executive District Officer), School & Literacy Department of Battagram District
Mr. Bakht Zadkan	DO (District Officer) for Girls Schools, School & Literacy Department of Battagram District
Mr. Faizur Rahman	Deputy DO for Boys Schools, School & Literacy Department of Battagram District
Mr. Abdul Qayoum	Assitant DO for monitoring in Circle Coloney Battagram of Boys Schools, School & Literacy Department of Battagram District
Mr. Muhammad Younas	Assitant DO for monitoring in Circle Karg Allai of Boys Schools, School & Literacy Department of Battagram District
Dr. Atla ur Pehmah	Pathologist, DHQ Hospital Battagram
Dr. Abdul Khalgn	TB control officer, DHQ Hospital Battagram
Dr. Hanig	TB, DHQ Hospital Battagram
Dr. Nasir	Surgent, DHQ Hospital Battagram
Dr. Shaza Reshid	Senior Female Officer, Ob/Gy, DHQ Hospital Battagram
Dr. Hazhazala	Gynecologist, DHQ Hospital Battagram
Dr. Amjet	Dental Technichian, DHQ Hospital Battagram
Dr. Musa Karim	Refractionist, DHQ Hospital Battagram
Dr. Aptal Food	Ophthalmologist, DHQ Hospital Battagram
Dr. Abdul Rafut	Ophthalmologist(Surgery), DHQ Hospital Battagram
Dr. Abdura Khariq	Pediatrichian, DHQ Hospital Battagram
Dr. Nasim	Casuality, DHQ Hospital Battagram
Dr. Tahir Aziz	Casuality, DHQ Hospital Battagram
Dr. Ehat Eslem	Casuality, DHQ Hospital Battagram
Mr. Sabir	Senior Cleark, DHQ Hospital Battagram
Mr. Jeharzef	Assistant Account Branch, DHQ Hospital Battagram
Dr. Mehboob-ur-Reham	Medical Superintendent, DHQ Hospital Battagram
Dr. Aha-ur Rehman	Pathologist, DHQ Hospital Battagram
Dr. Sar Bulaud	Medical Superintendent, RHC Banna
Mr. Mohammad Araz	Cleark, EDO,Health
Dr. Muhammad Younis	EDO, EDO,Health
Dr. Abdul Khalig	District T.B. Control Officer, District T.B. Control Office
Dr. Muhammad Saleem	Medical Officer, RHC Kuza Banda
Dr. Muhammad Saleem	Medical Superintendent, RHC Kuza Banda
Mr. Irshad Muhhamad	Dispenser, CD Kuza Banda
Mr. Shah Alem	MO, CH Takot
Mr. Ataurrehman	Dispenser, CH Takot
Ata Urrehman	Medical Technitian, CH Thakot
Said Maman	Medical Technitian, BHU Shumlai
Mr. horama Hagerac	Dispenser, BHU Shungli Payeen
Ms. Chan	LHV, BHU Shungli Payeen
Ghulam Hazrat	Medical Technitian, BHU Shungli Payeen
Abdullah	Dispenser, BHU Kharari
Mr. Aftab Howsainshahi	Computer operator for EDO Health, BHU S.B.Kot

Mr. Taj Bar	Medical Technician, BHU Battley
Musharaf Khan	Medical Technitian, BHU Argoshorri
Sultan Muhammael	Medical Technitian, BHU Pomong
Said Ahmed Saeed	Medical Technitian, BHU Battamori
Ali Zar	Medical Technitian, BHU Hualal Batkool
Prince Muhammad Nawax Allai	Medical Technitian, BHU Biari
Mohammed Younis	Dispenser, BHU Tailous
Mukhtiar Ullah	BHU Charbagh
Dr.Repthifhaet	MS, DHQ Abbotabad
Dr.Hifzur Rehuman	Dupty Superintendent, DHQ Mansera
Zaffar Iqbal	District Coodnation Officer, District Coodnation Office
Niaz Muhammad	Sub Engineer, EDO(W&S)
Yousaf Shah	Assistant Director, EDO(W&S)
Iqbal Muhammad	Sub Engineer, EDO(W&S)
Mr.Rahim Zada	Chief planning officer, Health Dept.Gov.of NWFP
Dr. Shaheen Afridi	Health Sector Reform unit, Health Dept.Gov.of NWFP
Dr.Jalil ur Rahman	Director of Helath Services, Health Dept.Gov.of NWFP
Mrs.Zahida Perree	LHV, MCHC Battgram
Dr. Martin Awori	Head of field office Shangia(Kohistan), WHO Islamabad
Dr. T.Zeribi	Environmental Health Officer, WHO Islamabad
Dr. Rayana Bu-Hakah	Desk Officer, WHO Islamabad

Embassy of Japan

Takehiro OKUBO	First Secretary, Economic Department
Hironobu TASHIRO	Second Secretary

JICA Pakistan Office

Takao KAIBARA	Resident Representative
Sachiko MISUMI	Acting Resident Representative
Mohmood A.Jilani	Deputy Resident Representative & Chief Programme Officer
Shinsaku FUKAZAWA	Deputy Resident Representative
Mitsunobu INABA	Deputy Resident Representative
Hiroshi IMAI	Group III Global Environment Department

JICS Office

Masahiro NAGASAKU	Program Manager, Project Management Dept.
Hidekazu TANEMURA	Project Management Dept.
Tokumitsu KOBAYASHI	Project Management Dept.
Mr. Suleman JAMES	Coordinator, JICS Project Office

A.4 MINUTES OF DISCUSSIONS

A.4.1 Minutes of Discussions

MINUTES OF DISCUSSIONS
ON THE OUTLINE DESIGN STUDY
ON THE PROJECT FOR THE RECONSTRUCTION
OF THE EARTHQUAKE-AFFECTED FACILITIES
IN THE ISLAMIC REPUBLIC OF PAKISTAN

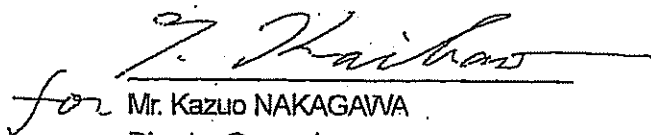
In order to reconstruct the facilities such as hospitals, schools and other infrastructures which are affected by the great earthquake in the northern area of the Islamic Republic of Pakistan (hereinafter referred to as "Pakistan") under "Non-Project Grant Aid" scheme, the Government of Japan decided to conduct a Outline Design Study (hereinafter referred to as "the Study") on the Project for the Reconstruction of the Earthquake-Affected Facilities (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Pakistan the Outline Design Study Team (hereinafter referred to as "the Team"), headed by Mr. Kazuo NAKAGAWA, Director General, Grant Aid Management Department, JICA, and is scheduled to stay in the country from January 23 to February 27, 2006.

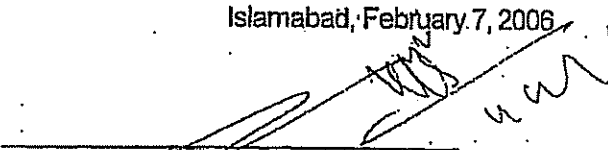
The Team held discussions with the officials concerned of the Government of Pakistan and conducted a field survey at the study area.


In the course of discussions and field survey, parties concerned confirmed the main items described on the attached sheets. The Team will proceed to further works.

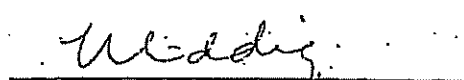
Islamabad, February 7, 2006



for Mr. Kazuo NAKAGAWA
Director General
Grant Aid Management Department
Japan International Cooperation Agency


Lt. General Muhammad ZUBAIR
Chairman
Earthquake Rehabilitation and
Reconstruction Authority (ERRA)
Prime Minister Secretariat
Government of Pakistan


Mr. Muhammad Ikram KHAN
Secretary
Planning and Development Department
Government of NWFP


Ms. Najma SIDDIQI
Joint Secretary
Economic Affairs Division
Ministry of Economic Affairs and Statistics
Government of Pakistan

1. Objectives of the Study

The objectives of the Study are as follows

- (1) to outline the Project
- (2) to estimate approximate cost for the Project
- (3) to draft tender documents for the Project
- (4) to propose a construction plan
- (5) to study for supply for drinking water in affected area

2. Study area

The sites of the study are located in Batagram district and the neighboring area in the North-West Frontier Province(NWFP).

3. Implementing and Responsible Organization

As the Government of NWFP is the Implementing organization, Earthquake Rehabilitation and Reconstruction Authority (ERRA) is the coordinating body among the concerned organizations. Economic Affairs Division (EAD), Ministry of Finance and Statistics is responsible for the bilateral cooperation including the Non-Project Grant Aid.

4. Schedule of the Study

JICA explained that the Team conducted the quick Assessment for the requested facilities from January 26, 2006. The consultants will proceed to further studies in Pakistan until February 27, 2006. The second mission shall be dispatched in March 2006, after necessary works and analysis in Japan.

5. Outline of the Project

Both sides agreed that the following concepts regarding the Project should be taken in the area of Batagram District

5-1. Priority sectors

Top priority shall be put on both Health and Education sectors in the Project. Infrastructure sector including the road and bridge reconstruction shall be put on second priority.

5-2. Implementing order

The projects of the top priority sector shall be forwarded to study and implement first. After that the projects of the second priority shall be commenced.

5-3. Criteria for the selection of sites in the Health and Education sector

In Health Sector, the study shall cover the reconstruction of the facilities related to the Referral System in Batagram District, which is composed of one DHQ Hospital, one Civil Hospital, 2 RHCs, 28 BHUs and 2 others.

In Education sector, Pakistan side requested 363 Primary schools, 25 Middle schools, 22 High schools, one Higher Secondary school and one College to be reconstructed in Batagram. JICA replied that JICA shall consider the appropriateness of each site.

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Selection in the both sectors shall be done by the following criteria in the Study. However the criteria can be modified under mutual understandings of both sides.

- (1) The facilities directly damaged by the earthquake
- (2) Accessibility to the project site
- (3) Sufficient number of staffs and funds shall be secured for operation and maintenance
- (4) Sufficient size of land shall be secured for the construction
- (5) Topography and shape of the site is appropriate for the reconstruction
- (6) Safety condition for the reconstruction in the site have to be secured
- (7) No duplication of similar projects by other donors or NGOs
- (8) Enrollment (in case of school)

5-4. Road and Bridge

Pakistan side asked JICA to study and implement the reconstruction of 6 bridges and roads in Batagram District. JICA replied to examine the contents of them.

6. Other Relevant Issues

6-1. Site clearance

JICA requested Pakistan side to clear the debris of affected buildings at each site before implementation stage. Pakistani side replied to make every effort to do so. However, Pakistan side strongly requested JICA to include the cost of clearance of debris into the Project for the quick implementation.

6-2. Fast implementation

Both sides agreed to deal with the procedure related to the Project in a fast manner.

6-3. Total Project Cost

JICA explained that the total cost of the Project shall not be over the amount of the grant aid which is stipulated in the E/N between the two governments. And also, the cost for supervising and monitoring shall be covered in the Project.

6-4. Coordination

Both sides agreed that Pakistan side is responsible for the coordination among the concerned organizations and also take the necessary measures to proceed the Study smoothly.

6-5. Establishment of Consultative Committee and Working Group

Both side agreed to establish a Consultative Committee and its Working Group for the smooth implementation of the Project. Their organization charts are as ANNEX.

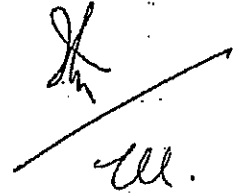
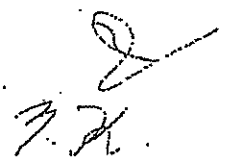
6-6. Undertakings to be conducted by the Pakistan side

- (1) to secure lands necessary for the Project and to submit the land ownership documents to the Team, if necessary.
- (2) to coordinate environmental and social issues among Pakistani side if necessary
- (3) to coordinate other donors to avoid duplication of project sites
- (4) to provide the Team with necessary information

(5) to assist the Team for their collection of information

6-7. Outcome of the Study

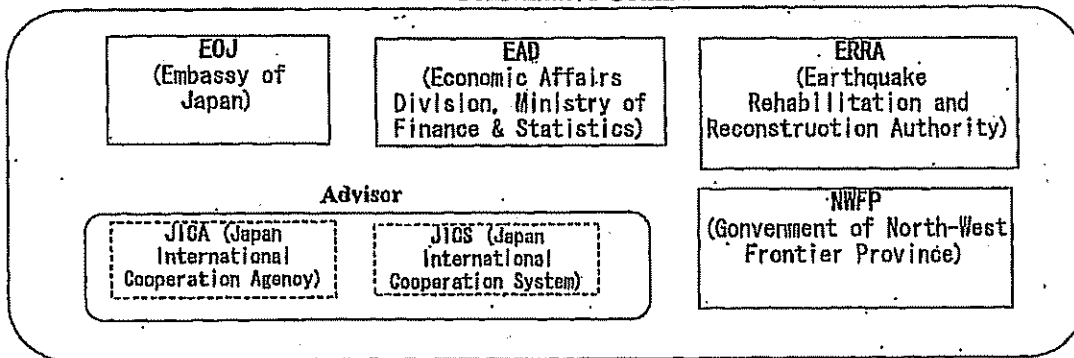
The Outcome of the Study such as drawings, specifications, draft tender documents and other related documents shall be used for the purpose of the implementation of the Project under "Non-Project Grant Aid" scheme, if the Government of Pakistan concludes them as appropriate. JICA shall have the intellectual propriety for the outcome. JICA shall not assume any responsibility for the results attributed to the use of the Outcome.

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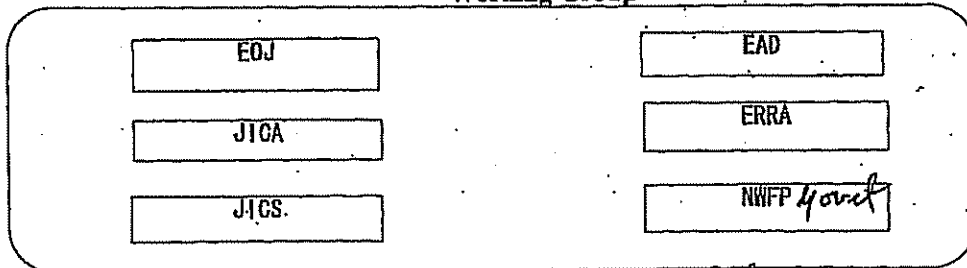
Non-Project Grant Aid for Earthquake-Damaged Facilities in Northern Pakistan

Organizations related to Consultative Committee and Working Group

Consultative Committee



Working Group



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A.4.2 Record of Agreement (Health Sector)

PRIME MINISTER'S SECRETARIAT
EARTHQUAKE RECONSTRUCTION AND REHABILITATION AUTHORITY
(DONORS & SPONSORSHIPS CELL)

F.NO.2 (29)/2006-Dir/DS

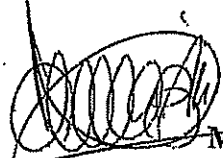
Islamabad July 07,2006

SUBJECT:- N.O.C. FOR JICA- RECONSTRUCTION OF DHQ,RHC,CH,BHU
UP-GRADING AND BHU

I am directing to issue NOC for reconstruction of the under mentioned health facilities by JICA in District Battagram (list attached):-

BHU	13
BHU upgrading	04
DHQ	04
RHC	01
Civil Hospital(CH)	01
Total:	23

2. Earthquake Reconstruction and Rehabilitation Authority (ERRA) has no objection to the reconstruction of the above mentioned health facilities by "JICA" subject to the provision of structural designs, detailed calculation along with computer model for the said buildings, to be vetted by the NESPAK consultant.


Major
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Nawazish Ali Khan
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Email:nawazish@erra.gov.pk

Mr.Mahmood A Jilani,
Deputy Resident Representative,
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G-5/2, Islamabad(051-2829473 (Fax-2829471)

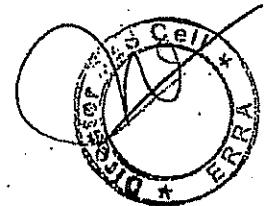
1. COS, ERRA.
2. The Director General, PERRA, NWFP.
3. Secretary, Health, Govt. of NWFP, Peshawar.
4. Director, Chairman Office, ERRA,
5. Program Manager, District Reconstruction Unit, Battagram.
6. Dy.Director (Health), ERRA

List of Health Facilities to be reconstructed

No.	Name of BHU	Tehsil	Type
BHU Reconstruction			
1	Batammori	Battagram	12G5S
2	Behari	Allai	12G7S
3	Bhattian	Battagram	12G5S
4	Charbagh	Battagram	12G5S
5	Hutal Batkool	Allai	12G5S
6	Jambairra	Allai	Smaller than 12G5S
7	Jozz	Battagram	12G5S
8	Kathorra	Battagram	12G5S
9	Khairabad	Battagram	12G7S
10	Kharari	Battagram	12G7S
11	Saidra Blund Kot	Battagram	12G5S
12	Shungli Payeen	Battagram	12G7S
13	Tailous	Allai	Smaller than 12G5S
BHU Upgrading			
14	Paimal Sharif	Battagram	Up-Grade to RHC
15	Pashuto	Allai	Up-Grade to RHC
16	Rashang	Allai	Up-Grade to RHC
17	Shumlai	Battagram	Up-Grade to RHC
DHQ		Battagram	
1	District Head Quarter Hospital		
2	TB Control Center		
3	Mother Child Health Center		
4	EDO Health Office		
Rural Health Center (RHC)		Battagram (Banna)	
Civil Hospital (CH)		Battagram (Thakot)	

1. BHU No.14 to 17 will be upgraded on condition that the sufficient alternative lands will be acquired until 15th of July.

2. Land measurement/topographic survey of the lands for above BHU Upgrading will be executed as soon as possible by Pakistan side after the lands are decided.



A.4.3 Record of Agreement (Education Sector)

PRIME MINISTER'S SECRETARIAT
EARTHQUAKE RECONSTRUCTION AND REHABILITATION AUTHORITY
(DONORS & SPONSORSHIPS CELL)

F.NO. 2 (29)/2006-Dir/DS

Islamabad July 7, 2006

SUBJECT:- N.O.C. FOR JICA PROJECTS- EARTHQUAKE AFFECTED AREAS - BATTAGRAM

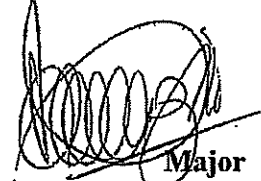
I am directed to issue NOC for reconstruction/rehabilitation of the under mentioned 118 schools (list attached) in District Battagram

GBP schools	63
GGP Schools	43
GM School	03
GH Schools	08
Boys Degree College	01

2. Earthquake Reconstruction and Rehabilitation Authority (ERRA) has no objection to the reconstruction/rehabilitation of the above mentioned education facilities by "JICA subject to the following condition i.e JICA will;

- i) ensure that the education facilities allocated to them are fully rehabilitated and reconstructed in line with ERRA's strategy for education sector as well as ERRA's overall strategy of build back better;
- ii) submit detailed implementation plan/project progress to ERRA within six weeks of issuance of NOC;
- iii) submit designs/specifications of project to ERRA, or an agency duly authorized by ERRA - NESPAK, which will endorse the same or otherwise, within a period of two weeks of submission;
- iv) accept and facilitate monitoring of the rehabilitation and reconstruction work by DRUs line agencies, Provincial State Earthquake Reconstruction and Rehabilitation Authority(PERRA) / ERRA and take appropriate remedial measures in light of the feedback;
- v) submit a brief report to DRU/ PERRA/ERRA on monthly basis. A comprehensive report will also be submitted on completion of project on annual basis to ERRA;
- vi) after completion of rehabilitation and reconstruction work and commissioning of scheme obtain "work completion certificate" from the line agency and DRU for onward submission to PERRA/ERRA; and

- vii) The project will be handed over to the line agency or community organizations, whichever the case may be, after completion of work and commissioning.



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✓
Mr. Mahmood A Jilani,
Deputy Resident Representative,
JICA, 3rd floor Comsats HQ Building
G-5/2, Islamabad (051-2829473 (Fax-2829471)

1. COS, ERRA.
2. The Director General, PERRA, NWFP.
3. Secretary, Education, Govt. of NWFP, Peshawar.
4. Director, Chairman Office, ERRA,
5. Program Manager, District Reconstruction Unit, Battagram.
6. Director (Education), ERRA

GPS

No.	List No.	Name of School Requested	Tehsil	Number of Planned Classrooms
1	99	GPS Ajo Rangeen Abad	Battagram	2
2	13	GPS Asharban	Allai	2
3	66	GPS Auchar Hakim Khan	Allai	2
4	54	GPS Bab Allai	Allai	4
5	122	GPS Bajar Gram	Battagram	2
6	103	GPS Banara	Battagram	2
7	18	GPS Bannu	Allai	5
8	12	GPS Bateela	Allai	3
9	37	GPS Battarori	Battagram	4
10	68	GPS Bhair	Battagram	2
11	27	GPS Bhatta	Allai	5
12	16	GPS Bojri	Allai	3
13	59	GPS Bora Hatal	Allai	2
14	115	GPS Chillar	Battagram	2
15	76	GPS Chohan	Battagram	2
16	86	GPS Damagal	Battagram	2
17	138	GPS Dehri Faqir Gul	Battagram	2
18	15	GPS Deshwal	Allai	3
19	108	GPS Gandoor (Z. Abad)	Battagram	2
20	34	GPS Gandori	Battagram	2
21	72	GPS Garang Chohan	Battagram	2
22	65	GPS Gat Ser Chorlaka	Allai	2
23	135	GPS Ghuzano Banda	Allai	2
24	24	GPS Gichkot Nili Shang	Battagram	2
25	10	GPS Hatal Batkool	Allai	3
26	102	GPS Imam Seri	Battagram	2
27	17	GPS Jhal	Battagram	5
28	116	GPS Joze	Battagram	2
29	40	GPS Kakar Shang	Battagram	2
30	92	GPS Kalota Bateela	Allai	3
31	29	GPS Kandoli	Battagram	2
32	52	GPS Kar Pokal	Allai	2
33	140	GPS Karen Shajan	Allai	2
34	53	GPS Karg Bala	Allai	3
35	79	GPS Kuss Qalander	Allai	3
36	90	GPS Kussaj	Allai	2
37	84	GPS Kharari	Battagram	2
38	5	GPS Kohani Battagram	Battagram	2
39	62	GPS Kolgala	Battagram	2
40	131	GPS Koyar	Allai	2
41	96	GPS Lundi	Battagram	2
42	67	GPS Maragai	Battagram	2
43	137	GPS Mirali Qala	Allai	2
44	20	GPS Muslim Abad	Allai	2
45	128	GPS Nain Rashang Allai	Allai	2
46	139	GPS Nain Khwar	Allai	2
47	8	GPS Pashto	Allai	2
48	45	GPS Nili Shang	Battagram	4
49	105	GPS Pokal Allai	Allai	2
50	23	GPS Rabat	Allai	2
51	120	GPS Rain	Battagram	2
52	36	GPS Rajdhari	Battagram	3
53	6	GPS Rajmaira	Battagram	2
54	42	GPS Rashang	Allai	4
55	78	GPS Raw Kotkey	Allai	2
56	26	GPS Roopkani	Allai	2
57	7	GPS Shamlai	Battagram	3
58	117	GPS Sokar	Battagram	2
59	101	GPS Sosai Satri Pashto	Allai	2
60	35	GPS Talloos	Allai	2
61	63	GPS Thakol	Battagram	5
62	134	GPS Tiker Banda	Battagram	2
63	69	GPS Umaray Karag Allai	Allai	3

GGPS

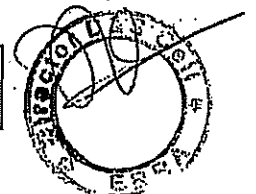
No.	List No.	Name of School Requested	Tehsil	Number of Planned Classrooms
1	291	GGPS Ajmara	Battagram	2
2	275	GGPS Bajmera	Battagram	2
3	319	GGPS Banda Trand	Battagram	2
4	276	GGPS Bandigo	Battagram	2
5	262	GGPS Banian	Battagram	2
6	283	GGPS Bar Hatal	Allai	2
7	289	GGPS Bazargia	Battagram	2
8	270	GGPS Bari (Allai)	Allai	5
9	254	GGPS Charji	Battagram	3
10	323	GGPS Cheno Rajdhari	Battagram	2
11	272	GGPS Chohan	Battagram	4
12	293	GGPS Dagal Tikri	Battagram	2
13	282	GGPS Dokakah Kijnbori	Battagram	2
14	280	GGPS Gul Mohand Abad	Battagram	5
15	313	GGPS Gul Zar Abad	Battagram	2
16	271	GGPS Iqbal Abad Bat'mori	Battagram	2
17	267	GGPS Jalal Kot	Battagram	2
18	260	GGPS Kadlo	Battagram	2
19	258	GGPS Kadlo Bala	Battagram	2
20	253	GGPS Kuz Bazargui	Battagram	2
21	306	GGPS Lunday Asharay	Battagram	2
22	268	GGPS Mahta Maidan	Battagram	3
23	288	GGPS Mahta Sofian	Battagram	2
24	255	GGPS Mera Ajmera	Battagram	2
25	256	GGPS Muballa Bhai Khail	Battagram	2
26	274	GGPS Nogram Kass	Allai	2
27	311	GGPS Nushera Maidan	Battagram	2
28	264	GGPS Peshora	Battagram	2
29	286	GGPS Pokal	Allai	2
30	303	GGPS Rajdheri	Battagram	2
31	307	GGPS Rashung	Allai	2
32	310	GGPS Roop Kani	Allai	2
33	287	GGPS Roop Kani bandi	Allai	2
34	316	GGPS Sadeen Maira Tikri	Battagram	2
35	292	GGPS Saduna Amanullah	Allai	2
36	257	GGPS Shamlai	Battagram	2
37	304	GGPS Takia	Battagram	2
38	261	GGPS Tamai	Battagram	2
39	259	GGPS Thakol	Battagram	3
40	314	GGPS Tharkhay	Allai	2
41	277	GGPS Thaya	Battagram	2
42	263	GGPS Trand	Battagram	2
43	285	GGPS Zareen Abad Nogram	Allai	2

GMS, GGMS, GHS, GHSS

No.	List No.	Name of School Requested	Tehsil	Number of Planned Classrooms
1	2	GMS Karg	Allai	3
2	5	GHS Blari	Allai	7
3	8	GHS Talloos	Allai	5
4	5	GMS Jesool	Battagram	3
5	25	GGMS Batta Mohri	Battagram	5
6	1	GHS Batgram	Battagram	10
7	2	GHS Shingli Payeen	Battagram	7
8	6	GHS Thakol	Battagram	6
9	9	GHS Shamlai	Battagram	5
10	14	GHS Battamori	Battagram	7
11	1	GHSS Kuza Banda	Battagram	10

BDC

No.	List No.	Name of School Requested	Tehsil
1		Boys Degree College	Battagram



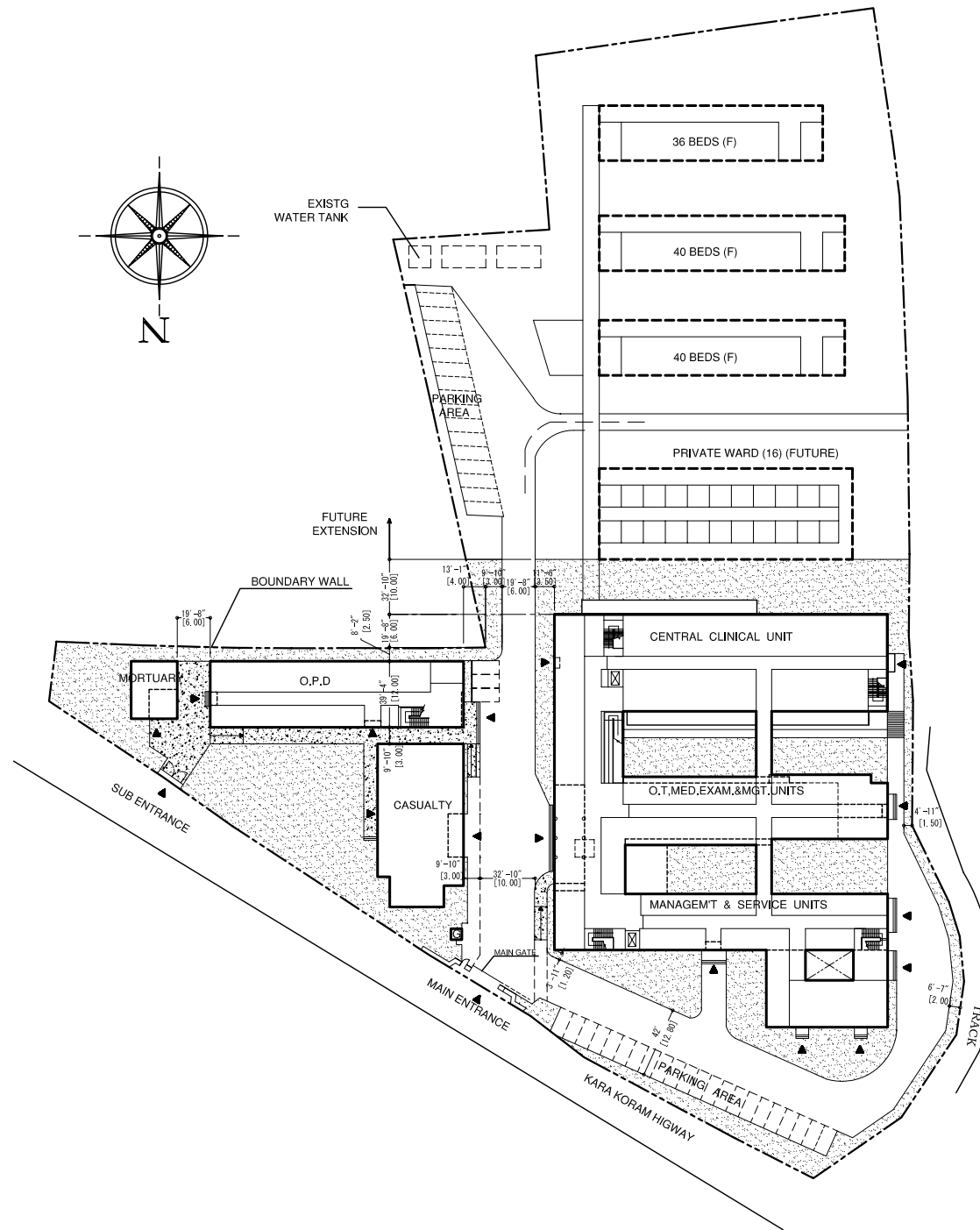
ANNEX

ANNEX 1: DRAWING LIST (HEALTH SECTOR)

[Drawing List]

District Headquarters Hospital (DHQ) Battagram – General Plot Plan.....	AN1-1
District Headquarters Hospital (DHQ) Battagram – Main Hospital – Floor Plan-1 (GF-1/2)	AN1-2
District Headquarters Hospital (DHQ) Battagram – Main Hospital – Floor Plan-2 (GF-2/2)	AN1-3
District Headquarters Hospital (DHQ) Battagram – Main Hospital – Floor Plan-3 (1F-1/2).....	AN1-4
District Headquarters Hospital (DHQ) Battagram – Main Hospital – Floor Plan-4 (1F-2/2).....	AN1-5
District Headquarters Hospital (DHQ) Battagram – Main Hospital – Floor Plan-5 (2F-1/2).....	AN1-6
District Headquarters Hospital (DHQ) Battagram – Main Hospital – Floor Plan-6 (2F-2/2).....	AN1-7
District Headquarters Hospital (DHQ) Battagram – Main Hospital – Sections	AN1-8
District Headquarters Hospital (DHQ) Battagram – OPD – General Floor Plan-1 (GF).....	AN1-9
District Headquarters Hospital (DHQ) Battagram – OPD – General Floor Plan-2 (1F).....	AN1-10
District Headquarters Hospital (DHQ) Battagram – OPD – Sections	AN1-11
District Headquarters Hospital (DHQ) Battagram – TB Center – Floor Plan.....	AN1-12
District Headquarters Hospital (DHQ) Battagram – TB Center – Sections	AN1-13
District Headquarters Hospital (DHQ) Battagram – EDO – Ground Floor Plan	AN1-14
District Headquarters Hospital (DHQ) Battagram – EDO – 1 st Floor Plan.....	AN1-15
District Headquarters Hospital (DHQ) Battagram – EDO – Sections	AN1-16
District Headquarters Hospital (DHQ) Battagram – MCHC – Floor Plan.....	AN1-17
District Headquarters Hospital (DHQ) Battagram – MCHC – Section Detail.....	AN1-18
District Headquarters Hospital (DHQ) Battagram – Casualty – Floor Plan.....	AN1-19
District Headquarters Hospital (DHQ) Battagram – Casualty – Sections.....	AN1-20
District Headquarters Hospital (DHQ) Battagram – Mortuary – Floor Plan.....	AN1-21
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NOTE:

DISTRICT HEADQUARTERS
HOSPITAL (DHQ)
BATTAGRAM

THE OUTLINE DESIGN STUDY ON THE PROJECT FOR THE RECONSTRUCTION OF THE EARTHQUAKE AFFECTED FACILITIES

NIPPON KOEI CO., LTD IN ASSOCIATION WITH
BINKO INTERNATIONAL

DWG. TITLE: DHQ - O.P.D

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GENERAL PLOT PLAN

SCALE	SHEET NO.	REV. NO.
1:1000	A-2	