PART.2　Phase-2 Basic Design Study

Location Map of Study Areas

The Project for the Improvement of Water Supply Facilities in Urban and Semi - Urban Centres in the Kingdom of Nepal

Summary（Phase-2）

The Kingdom of Nepal (hereinafter “Nepal”), the country land extends north to south with length of 200km and the climate changes from subtropical to polar ones. Gorges, which run from high mountains of Himalaya in the north to the south, hinder construction of infrastructures in mountainous areas. The Gross Domestic Product (GDP) per capita is USD 236 and that shows Nepal is one of typical agricultural Least Developed Countries (LDC). The His Majesty’s Government of Nepal is making forceful efforts to maintain social order. However, these are frequent Maoist uprisings, which are originated in poverty. Nepal locates itself geographically as a buffer zone between China and India and this fact means sustainable development of this country is an important factor in the regional stability.

His Majesty’s Government of Nepal has expanded safe water supply systems under the Ninth Five Years Development Plan (Target Year 2001/2002). However, the rate of population served of the country is 71.6% by the end of the target year, whereas 28.4% of the people have yet to be served with potable water supply. Extending water supply to non-service area is one of the most significant issues to be solved promptly.

To solve the poor status of water supply at national level His Majesty’s Government of Nepal has organized National Planning Commotion of Nepal and formulated Tenth Five Years Development Plan (2002～07). The objectives for water supply under the plan are, (1) to achieve 85% service rate, (2) to improve quality of drinking water suitable for consumption, etc. And under this plan every effort, not only of the nation, local authorities but also Non-government Organizations (NGOs) and community organizations, would be directed to achieve the objectives utilizing supports of all donors.

In this regard, His Majesty’s Government of Nepal requested the Government of Japan to extend a grant aid to water supply system in ten regions outside of the capital area. In response to the request Japan International Cooperation Agency (JICA) conducted an overseas project formulation study in 2003 and in this study eight regions were selected as the priority project area after the evaluation of project factors such as urgency and necessity of the project, accessibility to the sites, political stability, and maintenance capacity of the water supply originations etc. The Basic Design Study of Water Supply Facilities in Urban and Semi-Urban Centers was conducted aiming to improve life environment of the people in the project area

The Basic Design Study is conducted in two (2) phases, taking project priority, effectiveness and scale into consideration. It was proposed that Phase-1 study covers three (3) areas, namely Dhulabari, Gauradaha and Mangadh while Phase-2 study covers five (5) areas, Manthali, Besisahar, Bhimeswor, Beljhunddi and Nepalgunj. Due to the political instability in the five areas proposed for the Phase-2 study, Birgunj and Janakpur are selected as Phase-2 Study areas instead of above five areas.

The results of the Phase-2 study are summarized hereinafter.

The original request by the Napalese side for water supply of the two cities in Phase-2 is tabulated in Table-1.

Table-1 The Original Request by the Nepalese Side

Item	Request	
	For Birgunj City	For Janakpur City
1. Planning Objectives	・Expansion of service area, ・Increase of water supply flow	・Expansion of service area, ・Increase of water supply flow
2. Source Development	・Three new wells (3.0m^3/minutes/well)	・One new well (2.0m^3/minute/well) ・Rehabilitation of three existing wells
3. Conveyance Pipeline	・New pipeline: approx. 4.0 km	-
4. Water Treatment Plant	-	・Rapid filters x 5, ・Clear water reservoir 300m^3 x 1, ・Disinfection equipment
5. Disinfection Facility	・Disinfection facility x 4	
6. Distribution Reservoir	・Elevated tanks: 450m^3 x 6	・Elevated tank: 450m^3 x 1
7. Distribution pipeline	・Rehabilitation: approx. 15.0km ・New: approx. 16.5km	・New pipeline: approx. 12.6km
8. Organization/ O&M	・Strengthening organization and O&M capacity	・Strengthening organization and O&M capacity

Ministry of Physical Planning (MPPW) has executive authority on all the water supply services in Nepal. There are two executing agencies, namely Nepal Water Supply Corporation (NWSC) and Department of Water Supply and Sewerage (DWSS). NWSC is in charge of construction, operation and maintenance of water supply services in 13 major cities. DWSS controls water supply systems in small to medium cities with population over 1,500. Under DWSS, Water Supply and Sanitation Division Office (WSSDO) constructs water supply infrastructures, which are handed over to Water Users and Sanitation Committee (WUSC) of each city for operation and maintenance, as long as it deems feasible.

The existing water supply systems of the three areas in the Phase-1 study (Dhulabari, Gauradaha and Mangadh) are supervised by DWSS. The proposed facilities of the Phase-1 study will be construction under supervision of WSSDO, then handed over to WUSC upon the completion.

In Birgunj and Janakpur, construction, operation and maintenance of water supply systems are being done by NWSC.

Nepal government started to distribute executive authorities of various services to local authorities in order to improve efficiency of local government. In accordance with this move, DWSS has already handed down responsibilities of water supply operation and maintenance to WUSU in most of the cities under their control, including the cities in the Phase-1 study.

NWSC also started in 2005 to transfer responsibility of water supply services to local authorities. The Phase-2 study puts a special emphasis on capacity building for operation and maintenance of the proposed hand-over of water supply operation from NWSC to local authorities. Two field trips were proposed for Phase-2 study. The first field trip was intended to examine progress of taking-over of water supply services by local authorities, while a basic design will be performed in the second field survey.

The first field trip was conducted from 12 September 2005 to 28 September 2005. A questionnaire on progress of handing/taking-over of water services was submitted to the concerned authorities. The response to the questionnaire was not sufficient for proper evaluation. Through the field survey, the study team found that Birgunj city municipality is keen on taking over the city's water supply service, while Janakpur does not intend to take over at present.

The second field trip/survey was cancelled from the following reasons.

1) No actual plan and schedule have been set for taking-over of water supply facilities in two cities. It is difficult to name appropriate executing agencies for the grant-aid project at this stage, which success of the project will depend on.
2) The Japanese government proposed that the Nepalese Cabinet approval of "National Water Supply & Sanitation Policy 2005", which legalize the handing/taking-over, establishment of a central coordination committee, and a local coordination committee as preconditions for Japanese cabinet approval of this project. Even though the basic design could be finalized by March 2006, the project could not be considered for cabinet approval unless the above preconditions are met. In case that it takes some time to meet the preconditions, the basic design will require an implementation review study to update its contents.

Thus, the second field trip was postponed indefinitely until the Nepal government could propose solid action plans and schedules for taking-over of water supply services by local authorities and these plans and schedules meet requirements of Japanese grant aid scheme.

Based on the findings of the first field trip, the study team proposed required actions for improving and expanding the existing water supply services in Birgunj and Janakpur cities, which are set out in the Table below.

Table-2 Major Problems and Recommended Actions of Water Supply Services in the Phase-2

Item	Condition and Major Problems	Recommended Actions
Birgunj City		
1. Planning Objectives	・Small service area, insufficient supply flow ・Hand-dug wells contaminated by arsenic	・Review overall water supply system ・Expand service area
2. Source Development	・Two out of seven existing wells abandoned ・Flow meter, generator, disinfection equipment not sufficient	・Well development plan according to service blocks and water balance ・Source seasonal flow measurement and water quality analysis
3. Conveyance Pipeline		・Planning from wells to distribution reservoirs
4. Water Treatment Plant	-	-
5. Disinfection Facility	・Equipment deteriorated	・Renew and add equipment
6. Distribution Reservoir	・Insufficient capacity, distribution flow not known ・Direct distribution from wells in some areas	・Build new reservoirs, install flow meters ・Distribution using gravity from elevated tanks
7. Distribution pipeline	・Mixed distribution system with gravity distribution and direst distribution from wells. Unstable water pressure and changing flow direction causing pipe contamination. ・Unbalanced water pipe network, data not readily available, large water leakage.	・Distribution using gravity from elevated tanks ・Looping water pipe network to stabilize water pressure and flow, data management ・Renew leaking pipes
8. Organization/ O&M	・55 staff under NWSC ・Weak organization and O&M capacity	・Strengthening plan for the local authority to take over
Janakpur City		
1. Planning Objectives	・Small service area, insufficient supply flow ・Hand-dug wells contaminated by arsenic	・Review overall water supply system ・Expand service area

2. Source Development	・Two out of six existing wells to be abandoned ・Flow meter, generator, disinfection equipment not sufficient	・Well development plan according to service blocks and water balance ・Rehabilitation to be considered ・Source seasonal flow measurement and water quality analysis
3. Conveyance Pipeline		・Planning from wells to distribution reservoirs and water treatment plant
4. Water Treatment Plant	・High turbidity observed during wet season	・Study requirement of water treatment plant based on water quality data
5. Distribution Reservoir	・Insufficient capacity, distribution flow not known	・Build new reservoirs, install flow meters
6. Distribution pipeline	・Insufficient distribution capacity ・Contamination through pipeline ・Pipeline data not readily available	・Improve distribution capacity in the city center ・Identify and renew damaged pipes ・Pipeline data management
7. Organization/ O&M	・42 staff under NWSC (overstaffed) ・Weak organization and O&M capacity	・Strengthening and restructuring plan for the local authority to take over
8. Others		・Master plan study recommended to overcome unknown factors

The study team recommends that the above action plan to be used as a guideline for the future basic study.

Basic Design Study on the Project for the Improvement of Water Supply Facilities in Urban and Semi-urban Centres Phase2

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Abbreviations

ADB	Asian Development Bank
BCCI	Birgunj Chamber of Commerce & Industries
DIP	Ductile Iron Pipe
DWSS	Department of Water Supply and Sewerage
EIA	Environmental Impact Assessment
EOJ	Embassy of Japan
GI	Galvanized Iron Pipe
GOJ	Government of Japan
HDPE	High Density Polyethylene Pipe
HMG/N	His Majesty's Government of Nepal
IEE	Initial Environmental Evaluation
JCCI	Janakpur Chamber of Commerce & Industries
JICA	Japan International Cooperation Agency
MPPW	Ministry of Physical Planning and Works
NGO	Non-government Organization
NPC	National Planning Commission
Nrs	Nepal rupees
NWSC	Nepal Water Supply Corporation
MoLD	Ministry of Local Development
PVC	Polyvinyl Chloride Pipe
RC	Reinforced Concrete
SDU	Service Delivery Utility
SP	Steel Pipe
VDC	Village Development Committee
WB	World Bank
WHO	World Health Organization
WSMB	Water Supply Management Board
WSSDO	Water Supply and Sanitation Division Office
WUSC	Water Users and Sanitation Committee

1. Request from Recipient Country and Contents of Survey

1－1 Request from Recipient Country

1-1-1 Background of the Request and History of the Study

The Basic Design Study is conducted in two (2) Phases, taking project priority, effectiveness and scale into consideration. It was proposed that Phase-1 study covers three (3) areas, namely Dhulabari, Gauradaha and Mangadh while Phase-2 study covers five (5) areas, Manthali, Besisahar, Bhimeswor, Beljhunddi and Nepalgunj. Due to the political instability in the five areas proposed for the Phase-2 study, Birgunj and Janakpur are selected as Phase-2 Study areas instead of above five areas.

Ministry of Physical Planning (MPPW) has executive authority on all the water supply services in Nepal. There are two executing agencies, namely Nepal Water Supply Corporation (NWSC) and Department of Water Supply and Sewerage (DWSS). NWSC is in charge of construction, operation and maintenance of water supply services in 13 major cities. DWSS controls water supply systems in small to medium cities with population over 1,500. Under DWSS, Water Supply and Sanitation Division Office (WSSDO) constructs water supply infrastructures, which are handed over to Water Users and Sanitation Committee (WUSC) of each city for operation and maintenance, as long as it deems feasible. Figure-1 shows overall water service organization in Nepal.

The existing water supply systems of the three cities in the Phase-1 study are supervised by DWSS. The proposed facilities of the Phase-1 study will be construction under supervision of WSSDO, then handed over to WUSC upon the completion.

In Birgunj and Janakpur, construction, operation and maintenance of water supply systems are being done by NWSC.

Nepal government started to distribute executive authorities of various services to local authorities in order to improve efficiency of local government. In accordance with this move, DWSS has already handed down responsibilities of water supply operation and maintenance to WUSU in most of the cities under their control, including the cities in the Phase-1 study.

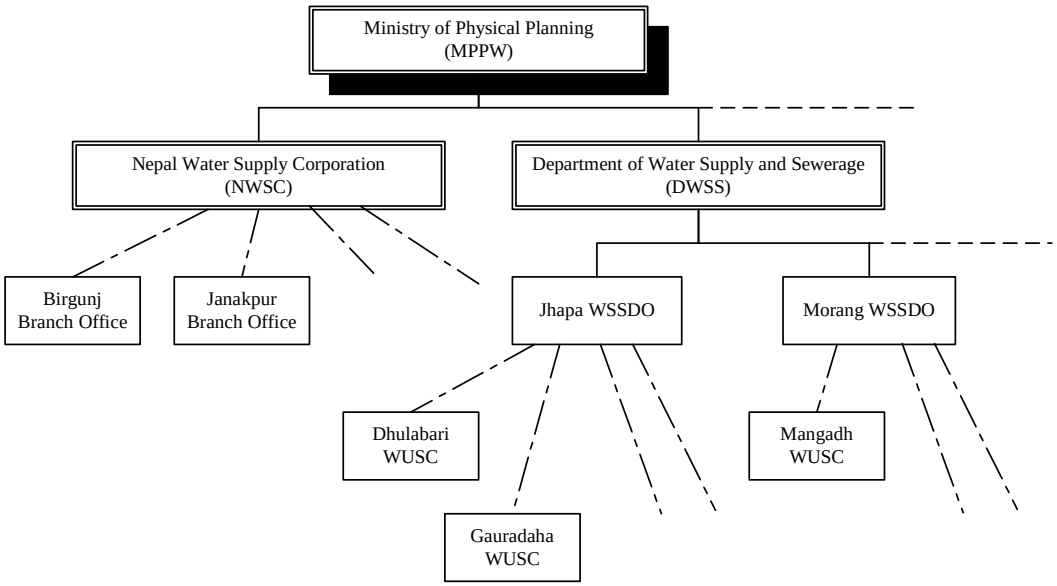

Figure-1-1 Water Supply Service Organizations in Nepal

NWSC also started in 2005 to transfer responsibility of water supply services to local authorities. The Phase-2 study puts a special emphasis on capacity building for operation and maintenance of the proposed hand-over of water supply operation from NWSC to local authorities. Two field trips were proposed for Phase-2 study. The first field trip was intended to examine progress of taking-over of water supply services by local authorities, while a basic design will be performed in the second field survey. The first field trip was conducted from 12 September 2005 to 28 September 2005.

1-1-2 The Request by the Nepalese Side

The current conditions of the existing water supply systems in Birgunj and Janakpur, which are to be studied under the Phase-2 Basic Design Study, are shown in Table-1-1, together with the requested facilities by the Nepalese Side.

1－2 Objectives of Phase-2 Basic Design Study

Main objectives of the first field survey of the Phase-2 basic design study is to review the request from the Nepalese government and to evaluate the progress of handing-over of water supply services to the local authorities, in order for the Japanese government to decide whether or not to continue the study with the second field survey. There are three options to be considered:

a) To proceed with the second field survey on the two cities

b) To proceed with the second field survey on one of the two cities

c) To postpone the second field survey

Items to be studies under the first field survey are as follows:

1) To evaluate progress of taking-over of the water supply services by the local authorities

2) To review the condition of the existing facilities through hearing and field trips

3) To collect the existing water quality data and to perform water quality analysis

4) To review the proposed facilities by the JICA overseas project formation study in 2004

5) To review institutional set-up for water supply services and organization for operation and maintenance

6) To perform preliminary study on priority and extent of the grant aid scheme

Table-1-1 The Condition / Problems of the Existing Facilities and the Request by the Nepalese Side

Category	Item	Janakpur		Birgunj	
		Condition and Problems	Request	Condition and Problems	Request
		Study in 2004*1	Target Year (2014)	Study in 2004*1	Target Year (2014)
Basic Water Supply Parameters	Population of service area	93,875	138,935	126,529	187,293
	Served population	23,000	48,627	86,601	146,088
	Service coverage	25%	35%	68%	78%
	Unit water supply	Approx. 40L/capita/day	120L/capita/day	Approx. 60L/capita/day	120L/capita/day
	Total water supply	1,350m^3/day	6,655m^3/day	8,500m^3/day	22,200m^3/day
	Supply duration	Less than 6 hours		Less than 12 hours	
	Unaccounted-for water	21.48%	10%	39%	10%
	Standposts	Individual 2,115, Public 42		Individual 5,715, Public 45	
	Construction years	1967～2001		1965~2001	
Outline of facilities	Water source/ intake	Groundwater: Wells 6 (including 3 nonoperational)、3 wells x 18 hours = 6,300m^3/day	Groundwater: One new well (2,000L/minute/well) Rehabilitation of three wells	Groundwater: Wells 7 (including 2 nonoperational)、5 wells x 18 hours = 12,310m^3/day	Groundwater: Three new wells (3,000L/minute/well)
	Conveyance pipeline	φ150~300x approx. 1.68km Pipe material: DI, MS	-	φ150~φ300x approx. 1.15km Pipe material: MS, DI	DI: φ200 x approx. 4.0km
	Water Treatment Plant	-	Rapid filters x 5 Clear water reservoir 300m^3 x 1,・Disinfection equipment x 1	-	-
	Disinfection facility	Chlorine disinfection 1,500m^3/day x 0.3mg/L x 2	-	Chlorine disinfection 0.3mg/L x 2	Chlorine disinfection 0.3mg/L x 4
	Distribution reservoir	Elevated tanks (RCC) 450m^3x 2	Elevated tank (RCC) 450m^3 x 1	Elevated tanks (RCC) 450m^3x 2	Elevated tanks (RCC) 450m^3x 6
	Distribution pipeline	φ20~φ300 x approx. 39.757km Pipe material: CI, DI, GI	DI: φ100~φ200 x approx. 9.7km GI：φ65~φ80 x approx. 2.9km	φ25~φ250 x approx. 120.58km	Renewal DI: φ150~φ200 x 15.0km Extension: DI: φ150~φ200x16.5km
	Flow meter	-		-	Horizontal Type x 6
O&M organization	Organization	NWSC-Janakpur		NWSC-Birgunj	
	Number of O&M staff	41		55	
Problems	Water flow	Small service area, insufficient supply flow, low service ratio	Construction of new wells, rehabilitation of existing wells	Small service area, insufficient supply flow	Construction of new wells
	Water quality	Bacteriological contamination, high turbidity observed during wet season	Construction of new water treatment plant	Hand-dug wells contaminated by arsenic and bacteria	Additional disinfection facilities
	Facility	Insufficient supply capacity, insufficient distribution capacity	Expansion of distribution network, construction of additional elevated tanks	Insufficient distribution capacity, large unaccounted-for water ratio	Additional elevated tanks, expansion of distribution network
	Operation and management	Weak organization and O&M capacity	Strengthening organization and O&M capacity	Weak organization and O&M capacity	Strengthening organization and O&M capacity

*1: Overseas Project Formation Study Report (JICA, 2004)

2. The Current Condition of Water Supply in Birgunj City

2－1 Willingness of the local authority for taking-over water supply service

Birgunj Sub-Metropolitan Office expresses a strong desire to take over the city's water supply service from NWSC. They have already established a steering committee, which includes all the stakeholders. They intend to hire the current NWSC staff working for the city's water supply.

Birgunj Chamber of Commerce & Industries, which is regarded as a representative body of users, expresses their support for this taking-over.

2－2 The current condition of the existing facilities under NWSC and the recommended actions

Table-2-1 The Current Condition and Recommended Actions for Birgunj Water Supply

Item	Current Condition and Problems	Request	Action Plan (Draft)
1. Basic Water Supply Parameters	・Small service area, insufficient supply flow, low service coverage (56%) ・Hand-dug wells contaminated by arsenic	・Expansion of supply area, increase of supply flow	・Revise overall water supply system ・Expand supply area especially to North and South ・Target Year (2014)
2.Water Source Facilities	(Existing wells) ・Two out of seven existing wells abandoned ・Flow meter, genset, disinfection equipment not sufficient (Water quality) ・Turbidity, iron, manganese, arsenic levels are below the quality standards E.coli. detected in No.2 well (New wells) ・Location not yet decided	・Three new wells ($3.0m^3$/min/well)	・Well development plan according to service blocks and water balance ・Install flow meter, disinfection equipment and genset for the existing wells ・Ask Nepal side to select new well sites before the second field survey ・Flow measurement and quality analysis in the second field survey
3.Conveyance pipeline		・New pipeline: approx. 4.0km	・Pipeline from new wells to distribution reservoirs
4.Disinfection equipment	・Equipment deteriorated	・Chlorine disinfection x 4	・Install at appropriate locations
5.Distribution reservoir	・Leaking existing elevated tanks x 2, one ground tank not used ・Insufficient capacity ・Supply flow not known ・Direct distribution from wells in some areas	・Elevated tanks $450m^3$ x 6	・Rehabilitation of elevated tanks ・New service reservoirs to 8 hours water storage ・Install flow meters ・Distribution using gravity from elevated tanks
5.Distribution pipeline	・Mixed distribution system with gravity distribution and direst distribution from wells. Unstable water pressure and changing flow direction causing pipe contamination ・Unbalanced water pipe network ・Data not readily available ・Large water leakage	・Renew: approx. 15.0km ・New: approx. 16.5km	・Distribution using gravity from elevated tanks ・Looping water pipe network to stabilize water pressure and flow ・Data management ・Renew leaking pipes
6.Organization and O&M	・55 staff under NWSC ・Weak organization and O&M capacity	・Strengthening organization and O&M capacity	・Strengthening plan for the local authority to take over

The recommended actions are summarized as follows.

1) The Birgunj Sub-Metropolitan Office requested expansion of the water supply area as a precondition of taking-over. On the other hand, the request from the Nepal government concentrates on the improvement of service level in the current service area. In order to meet the request from the Birgunj Sub-Metropolitan Office, the scope of works to be covered under the grant aid scheme to be extended to include more distribution pipes.

2) There could be seasonal variation in water source flow and quality. As this first field survey was done in the rainy season, it is required to conduct another field survey on the source water on the dry season, in order to evaluate reliability of the proposed water source.

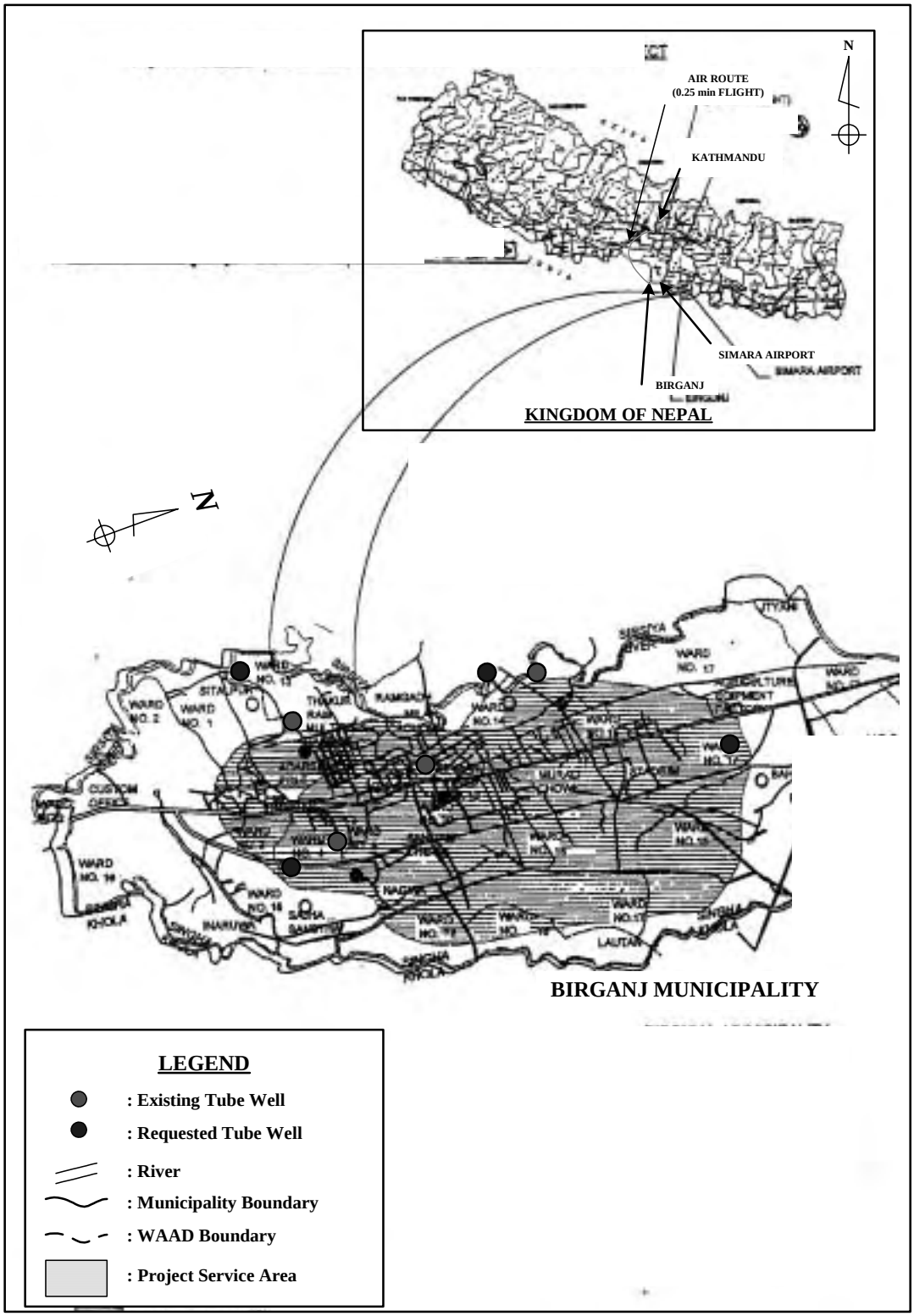

Figure-2-1 Location of Birgunj Sub-metropolitan

3. The Current Condition of Water Supply in Janakpur City

3－1 Willingness of Local Authority for Taking-over Water Supply Service

Janakpur Municipality Office, at present, does not want to take over water supply service, currently under NWSC the due to the following reasons.

- The existing water supply facility only covers the city center and could not meet the city's water demand
- Financial and institutional capacity of Janakpur Municipality Office is too weak to take over and to expand the water supply service
- Janakpur Municipality Office may consider taking-over when water supply service is expanded and capacity of the Municipality Office is strengthened. The Janakpur Municipality Office has a plan to incorporate surrounding area, thus the Municipality Office hopes Japanese government to formulate a long-term water supply development plan and a facility plan for the next fifty to hundred years. Janakpur Chamber of Commerce & Industries, which is regarded as a representative body of users, supports the above view of the Municipality Office. The city has many heritage sites, such as famous temples, and is the center of this region. It has 25,000 workers and transients coming daily to the city from the surrounding areas. There are three religious festivals in a year, which attract total 100,000 visitors in 15 days. The future water supply development plan shoud consider the above factors.

3－2 The Current Condition of the Existing Facilities under NWSC and Recommended Actions

Table-3-1 The Current Condition and Recommended Actions for Janakpur Water Supply

Item	Current Condition and Problems	Request	Action Plan (Draft)
1. Basic Water Supply Parameters	・Small service area, insufficient supply flow, service coverage: 30% ・Hand-dug wells contaminated by arsenic	・Expansion of service area ・Increase of water supply flow	・Review overall water supply system ・Expand service area ・Target Year (2014)
2.Water Source Facilities	(Existing wells) ・Two out of seven existing wells abandoned ・Flow meter, genset, disinfection equipment not sufficient (Water quality) ・Water quality generally meets the standards. Hand-dug wells contaminated by arsenic (New wells) ・Location has been proposed	・One new well ($2.0m^3$/minute/well) ・Rehabilitation of three existing wells	・Well development plan according to service blocks and water balance ・Rehabilitation to be considered ・Study requirement of flow meter, disinfection equipment and genset for the existing wells ・Source water quality analysis in dry season
3.Conveyance pipeline			・Planning from wells to distribution reservoirs and water treatment plant
4.Water Treatment Plant	・High turbidity observed during wet season	・Rapid filters x 5 ・Clear water reservoir $300m^3$ x 1 ・Disinfection equipment	・Study requirement of water treatment plant based on water quality data
5.Distribution reservoir	・Leaking existing elevated tanks x 2 ・Insufficient capacity ・Distribution flow not known	・Elevated tank: $450m^3$ x 1	・Rehabilitate elevated tanks ・New service reservoirs to 8 hours water storage ・Install flow meters
6.Distribution pipeline	・Insufficient distribution capacity ・Contamination through pipeline ・Pipeline data not readily available	・New pipeline: approx. 12.6km	・Improve distribution capacity in the city center ・Identify and renew damaged pipes ・Pipeline data management
6.Organization and O&M	・42 staff under NWSC (overstaffed) ・Weak organization and O&M capacity	・Strengthening organization and O&M capacity	・Strengthening and restructuring plan is required
7.Others			・Master plan study recommended to overcome unknown factors

The recommended actions are summarized as follows.

1) Source water flow shall be monitored. Requirement of water treatment plants are to be evaluated based on source water quality in the dry season.

2) Water quality tests performed in this field survey show that E.coli levels meet the drinking water standards, although high turbidity water was observed at some other standposts. NWSC officials also express concerns over contamination through distribution pipes. Improvement of distribution pipes shall be considered as well as construction of a new water treatment plants.

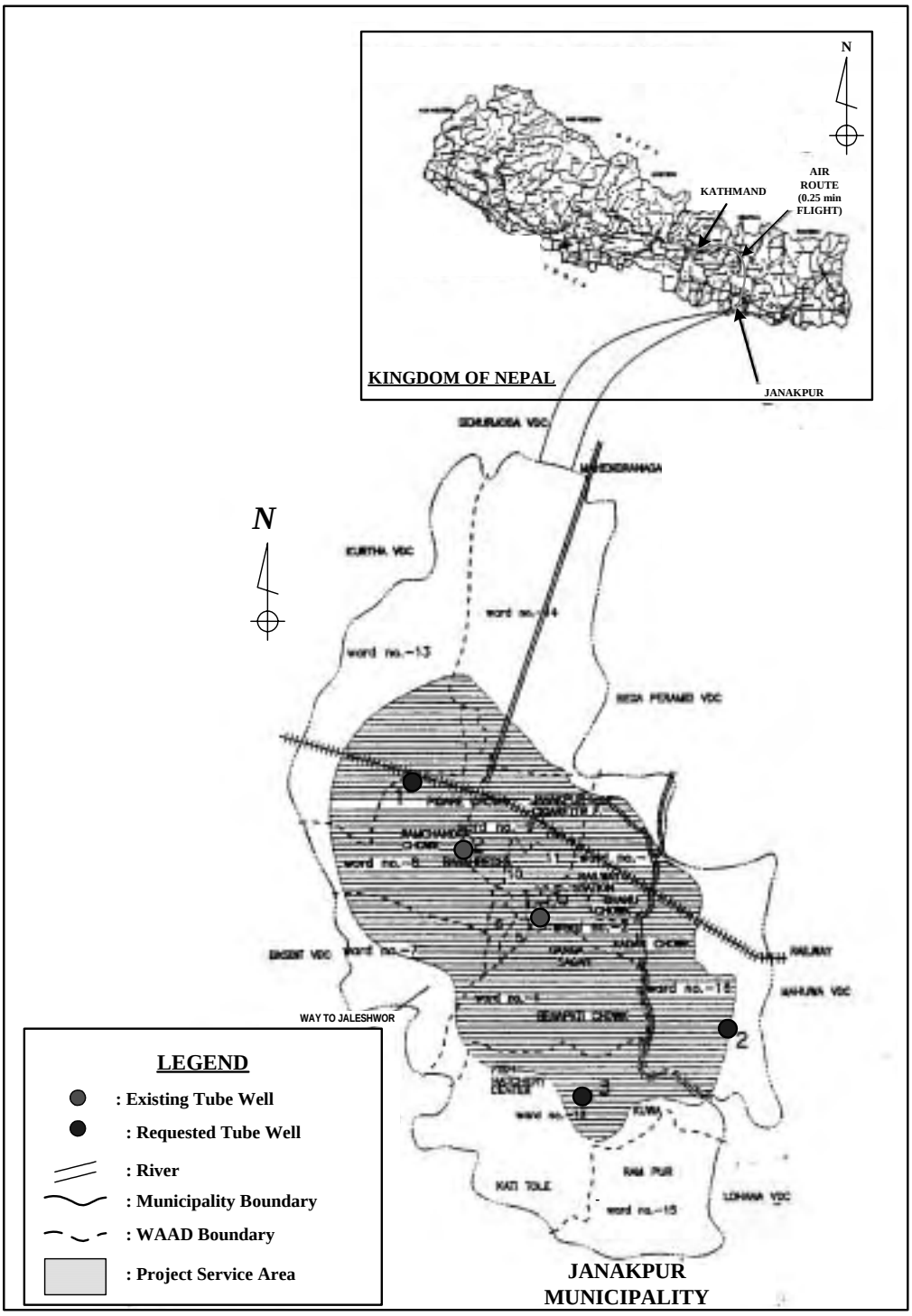

Figure-3-1 Location of Janakpur Municipality

4. The Current Status of Taking-over of Water Supply Services by Local Authorities

4－1 Progress of Taking-over

4-1-1 Roadmap for taking-over

The current roadmap for taking-over of water supply services by local authorities is shown in Annex-4. Actions to be taken by Nepalese authorities are as follows.

(1) Central Government Bodies

a. To finalize “National Water Supply and Sanitation Policy 2005”, which will legalize the taking-over. The policy shall be approved by the cabinet. The concerned government bodies are MPPW, NPC, MoF and MoLD.

b. To establish “Water Supply Tariff Fixation Commission”.

c. To draw up a handing-over manual for NWSC.

d. To establish “Central Coordination Commission”. The expected members of the committee are MPPW, NPC, MoF, MoLG, NWSC and concerned municipal authorities.

(2) Local Authorities

a. To establish “Local Coordination Committee”. The expected members of the committee are municipalities, DDC, NWSC branch offices, CCI and ward chairmen.

b. To establish “Water Supply Management Board (WSMB)” as an authority to take over.

c. To establish “Service delivery Utility (SDU)” as an operation and maintenance organization of taken-over water supply facilities, which could come under the above WSMB.

4-1-2 Evaluation of the Nepalese Side response to the Questionnaire provided by JICA Study Team

In order to evaluate the progress of the above taking-over, a questionnaire prepared by the study team was submitted to the Nepal government, which was attached to the Minutes of Discussion dated on 7th October 2005. The response, set out in Attachment-5, was evaluated as follows.

(1) Central Government Bodies (MPPW, MoLD)

a. The response failed to provide details of handing-over procedures and progress.

b. A meeting was held to discuss the establishment of coordination committee, attended by MPPW, NPC, MoF, MoLD and municipalities.

c. The response failed to provide the status of feasibility study on handing-over water supply services.

d. The central government intends to use the WSMB of Birgunj sub-metropolitan city as a model case for other cities, although water supply of Hetauda and Bharatpur under NWSC could be used as a model as well.

(2) Nepal Water Supply Corporation (NWSC)

a. Taking-over by Kathmandu Valley Water Supply Management Board, which was supposed to be

completed by June 2005, has been delayed. The reasons for delay are not clear and it requires further investigation.

b. Taking-over of water supply services by Hetauda and Bharatpur cities are already formalized and under way. It is funded by ADB under "Urban and Environmental Improvement Project (UEIP)".

(3) Progress of taking-over in Birgunj and Janakpur

a. Willingness of these two municipal offices for taking-over is not changed since the first field survey, which is described in the previous chapters.

b. The current staff of NWSC will be hired by the newly formed WSMB. It is still not confirmed that the current O&M staff will be hired by the new service delivery utility.

c. There are not sufficient data to evaluate success of taking-over.

4－2 Outlook for Future of Taking-over

(1) From the above response to the questionnaire, it is difficult to evaluate institutional and organizational capacity of executing authorities for proper and sustainable operation of the facilities to be funded by a Japanese grant aid scheme, although the Nepal government held a meeting on formulation Central Coordination Committee on 16th November 2005.

(2) Development of an appropriate organization to operate and maintain water supply facilities is crucial issue for sustainable project implementation. It has already decided that the current staff of NWSC branch office will move to WSMB. It is not clear that a part or all of the staff will move further to SDU.

(3) It is expected that the taking-over process takes some time to complete, although the schedule for taking-over was not presented to the study team. The possible scenario is as follows.

a. Establishment of Central Coordination Committee/Local Coordination Committee

↓

b. Establishment of Water Supply Management Board (WSMB)

↓

c. Operation and Maintenance Agreement with Service Delivery Utility (SDU)

(4) Only local authorities willing to take over water supply services are considered for Japanese grant aid scheme. The second field survey may only cover Birgunj city if taking-over proceeds.

(5) Draft Conditions for Japanese Grant Aid Project Formation

In order to earn Japanese government approval for the project and to resume the basic design study, the most important issues are introduction of laws and regulations for water supply taking-over by local authorities, and capacity building of operation and maintenance organizations. The required actions to be taken by the Nepal government are as follows.

1) To finalize "National Water Supply and Sanitation Policy 2005", which will legalize the taking-over.

The policy shall be approved by the cabinet and put into action.

2) To establish Central Coordination Committee and clarify responsibility of each member.

3) The most important issue is establishment of O&M organization. After a Local Coordination Committee is organized, WSMB/SDU shall be formulated with sufficient capacity to operate water supply services.

The above conditions shall be used as criteria for evaluate readiness of the Nepal government for the grant aid project implementation.

5. Conclusions and Recommendations

5－1 About the Second Field Survey

The second field trip/survey was cancelled from the following reasons.

1) No actual plan and schedule have been set for taking-over of water supply facilities in two cities. It is difficult to name appropriate executing agencies for the grant-aid project at this stage, which success of the project will depend on.
2) The Japanese government proposed the preconditions, set out in the above section 4-2 (5), for Japanese cabinet approval of this project. Even though the basic design could be finalized by March 2006, the project could not be considered for cabinet approval unless the above preconditions are met. In case that it takes some time to meet the preconditions, the basic design will require an implementation review study to update its contents.

Thus, the second field trip was postponed indefinitely until the Nepal government could propose solid action plans and schedules for taking-over of water supply services by local authorities and these plans and schedules meet requirements of Japanese grant aid scheme.

The progress of taking-over is observed, such that a meeting was held for formation of Central Coordination Committee on 16th November 2005 and taking-over in two cities under the ADB project is well under way.

5－2 Outlook of taking-over Process

The Nepal government started to distribute executive authorities of various services to local authorities in order to improve efficiency of local government. In accordance with this move, DWSS has already handed down responsibilities of water supply operation and maintenance to WUSU in most of the cities under their control, including the cities in the Phase-1 study.

NWSC also started in 2005 to transfer responsibility of water supply services to local authorities. The Phase-2 study puts a special emphasis on capacity building for operation and maintenance of the proposed hand-over of water supply operation from NWSC to local authorities.

Taking-over of water supply services by Hetauda and Bharatpur cities are already formalized and under way. It is funded by ADB under “Urban and Environmental Improvement Project (UEIP)”. It is recommended that Birgunj and Janakpur municipalities will start taking-over water supply services following examples of Hetauda and Bhadrapur cities.

5－3 Draft Action Plan for Water Supply Services in Birgunj and Janakpur Cities

Based on the findings of the first field trip, the study team proposes required actions for improving and expanding the existing water supply services in Birgunj and Janakpur cities, which are set out in Table-4-1.

The study team recommends that the action plan shown in Table-4-2 will be used as a guideline for formulating survey plan and further basic design study.

Table-5-1 Major Problems and Recommended Actions of Water Supply Services in the Phase-2

Item	Condition and Major Problems	Recommended Actions
Birgunj City		
1. Planning Objectives	・Small service area, insufficient supply flow ・Hand-dug wells contaminated by arsenic	・Review overall water supply system ・Expand service area
2. Source Development	・Two out of seven existing wells abandoned ・Flow meter, genset, disinfection equipment not sufficient	・Well development plan according to service blocks and water balance ・Source seasonal flow measurement and water quality analysis
3. Conveyance Pipeline		・Planning from wells to distribution reservoirs
4. Water Treatment Plant	-	-
5. Disinfection Facility	・Equipment deteriorated	・Renew and add equipment
6. Distribution Reservoir	・Insufficient capacity, distribution flow not known ・Direct distribution from wells in some areas	・Build new reservoirs, install flow meters ・Distribution using gravity from elevated tanks
7. Distribution pipeline	・Mixed distribution system with gravity distribution and direst distribution from wells. Unstable water pressure and changing flow direction causing pipe contamination. ・Unbalanced water pipe network, data not readily available, large water leakage.	・Distribution using gravity from elevated tanks ・Looping water pipe network to stabilize water pressure and flow, data management ・Renew leaking pipes
8. Organization/ O&M	・55 staff under NWSC ・Weak organization and O&M capacity	・Strengthening plan for the local authority to take over
Janakpur City		
1. Planning Objectives	・Small service area, insufficient supply flow ・Hand-dug wells contaminated by arsenic	・Review overall water supply system ・Expand service area
2. Source Development	・Two out of six existing wells to be abandoned ・Flow meter, genset, disinfection equipment not sufficient	・Well development plan according to service blocks and water balance ・Rehabilitation to be considered ・Source seasonal flow measurement and water quality analysis
3. Conveyance Pipeline		・Planning from wells to distribution reservoirs and water treatment plant
4. Water Treatment Plant	・High turbidity observed during wet season	・Study requirement of water treatment plant based on water quality data
5. Distribution Reservoir	・Insufficient capacity, distribution flow not known	・Build new reservoirs, install flow meters
6. Distribution pipeline	・Insufficient distribution capacity ・Contamination through pipeline ・Pipeline data not readily available	・Improve distribution capacity in the city center ・Identify and renew damaged pipes ・Pipeline data management
7. Organization/ O&M	・42 staff under NWSC (overstaffed) ・Weak organization and O&M capacity	・Strengthening and restructuring plan for the local authority to take over
8. Others		・Master plan study recommended to overcome unknown factors

APPENDICES

Appendix-1 Member List of the Study Team (Phase-2)

Member	Assignment	Position
Mr. Shinji Yoshiura	Team Leader	Residential Representative of JICA in Nepal
Mr. Heihatiro Ishihara	Water Supply Policy	JICA Expert
Ms. Sayako Tokuda	Planning Management	JICA Nepal Office
Mr. Hiroki Fujiwara	Chief Consultant/ Water Supply Planning	NJS Consultants Co., Ltd.
Mr. Toru Hamano	Water Supply Facility/Design	Nihon Suido Consultants Co., Ltd.

Appendix-2 Study Schedule (Phase-2)

Month/Date		Activities
September 13	Tue.	・Meeting at JICA Office (Phase 2), Courtesy Call to EOJ
September 14	Wed.	・Meeting (Phase 1)
September 15	Thu.	・Meeting with MPPW/NWSC (Phase 2)
September 16	Fri.	Kathmandu→Birgunj ・Meeting at NWSC Birgunj Office ・Meeting at Birgunj Municipality Office ・Meeting with WSSDO, Parsa ・Field Survey
September 17	Sat.	・Field Survey ・Meeting with Birgunj Chamber of Commerce & Industries ・Meeting with NWSC, Data Collection
September 18	Sun.	・Groundwater Sampling ・Meeting with NWSC ・Meeting at Birgunj Municipality Office ・Data Collection, Field Survey
September 19	Mon.	・Meeting with NWSC ・Data Collection, Field Survey ・Meeting at Ground Water Resource Development Office
September 20	Tue.	・Meeting with NWSC ・Meeting at Birgunj Municipality Office ・Data Collection
September 21	Wed.	Birgunj→Janakpur ・Meeting at NWSC Janakpur Office ・Meeting at Janakpur Municipality Office ・Field Survey
September 22	Thu.	・Meeting with Janakpur Chamber of Commerce & Industries ・Meeting with NWSC ・Field Survey
September 23	Fri.	・Meeting with NWSC ・Meeting with WSSDO ・Field Survey
September 24	Sat.	・Data Collection, Field Survey
September 25	Sun.	・Meeting with NWSC Janakpur→Kathmandu
September 26	Mon.	・Meeting with JICA and EOJ
September 27	Tue.	・Meeting with MPPW/NWSC/MoLD
September 28	Wed.	・Meeting with JICA Kathmandu→Bangkok
September 29	Thu.	Bangkok→Narita

Appendix-3 List of Parties Concerned in the Recipient Country (Phase-2)

1. Ministry of Physical Planning & Works (MOPPW)

1)	Mr. Janak Raj Joshi	Secretary
2)	Mr. M.G. Maleku	Joint Secretary
3)	Mr. V.R.Yami	Undersecretary
4)	Mr. N.R.Khatri	Senior Div. Engineer
5)	Mr. Heihatiro Ishihara	JICA Expert

2. Ministry of Local Development (MoLD)

1)	Mr. D.K. Thepaliya	Undersecretary

3. Department of Water Supply and Sewerage (DWSS)

1)	Mr. Hari Ram Koirala	Director General

4. Nepal Water Supply Corporation (NWSC)

1)	Mr. D.K. Bajimaya	General Manager
2)	Mr. M.S. Shrestha	Deputy General Manager
3)	Mr. B. Prasad	Assistant Manager
4)	Mr. S.K. Dutta	Office in Charge, Birgunj Branch Office
5)	Mr. N. Kumarhal	Office in Charge, Janakpur Branch Office

5. District Development Committee, Parsa (DDC, Parsa, Birgunj)

1)	Mr.D.K. Chapagain	Local Development Officer
2)	Mr.M.Thakur	Engineer

6. Birgunj Sub-Metropolitan City Office

1)	Mr. K.P. Ojha	Executive Officer
2)	Mr. A. Dwibedi	Ex. Dy. Mayer
3)	Mr. B. Dangol	Tax Officer
4)	Mr. P.M.S. Amatya	Chief Engineer
5)	Mr. S. Shrestha	Engineer
6)	Mr.N. Giri	Engineer
7)	Mr.D.P. Chaurasia	Engineer

7. Birgunj Chamber of Commerce & Industries (BCCI)

1)	Mr. B. Srivastaga	Ex-Mayer, Birgunj Sub-Metropolitan city
2)	Mr. V.K. Sarawagi	President
3)	Mr. G. Kedia	Secretary
4)	Mr. C. Timalsina	Program Officer

8. Janakpur Municipality Office

1)	Mr. Y.P. Panthi	Executive Officer
2)	Mr. D. Prasad	Ex-Mayer
3)	Mr. B. Tadar	Engineer

9. Janakpur Chamber of Commerce & Industries (JCCI)

1)	Mr. C. Walhd	Vice President
2)	Mr. A. Sah	Secretary
3)	Mr. R.P. Sah	Member

10. Embassy of Japan in Nepal

1)	Mr. Takeshi Osaka	First Secretary

11. JICA Nepal Office

1)	Mr. Shinji Yoshiura	Residential Representative
2)	Ms. Sayako Tokuda	Program Officer
3)	Mr. Sourab Rana	Program Officer

Appendix-4 Minutes of Discussions on the Basic Design Study for Phase-2 (M/D)

NPKM-024 '16

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY FOR PHASE-2
ON THE PROJECT FOR THE IMPROVEMENT
OF WATER SUPPLY FACILITIES IN URBAN AND SEMI-URBAN CENTRES
IN THE KINGDOM OF NEPAL
(1st STAGE)

Based on the results of the Development Study, the Government of Japan decided to conduct THE BASIC DESIGN STUDY FOR PHASE-2 (hereinafter referred to as "the Study") ON THE PROJECT FOR THE IMPROVEMENT OF WATER SUPPLY FACILITIES IN URBAN AND SEMI-URBAN CENTRES IN THE KINGDOM OF NEPAL (hereinafter referred to as "the Project") and entrusted the Study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA dispatched the Basic Design Study Team for the Study (hereinafter referred to as "the Team") to the Kingdom of Nepal (hereinafter referred to as "Nepal"), which is headed by Shinji Yoshihara, Resident Representative of JICA Nepal Office, from September 12 to September 28, 2005.

The Team held discussions with the officials concerned of Nepal and conducted a field survey at the Study area.

In the course of discussions and the field survey for Phase-2, both parties confirmed the main items described on the attached sheets.

Kathmandu, October 7, 2005

Shinji Yoshihara
Leader
Draft Report Explanation Team
Japan International Cooperation Agency
Japan

Mr. Janak Raj Joshi
Secretary
Ministry of Physical Planning & Works
Nepal

Mr. D. K. Bajimaya
General Manager
Nepal Water Supply Corporation
Ministry of Physical Planning & Works
Nepal

NPkM-024 96

ATTACHMENT

1. Objectives of the Study

The objectives of the Study are,

1-1. To collect necessary information on the candidate sites (i. e. Birgunj and Janakpur) for consideration of the Project Phase-2 through,

(a) Discussion with related officials

(b) Field survey in Birgunj and Janakpur

1-2. To confirm the provision for the future devolution of the water supply project from the Nepal Water Supply Corporation (NWSC) to the local government and,

1-3. To consider the possibility of the implementation of the Project Phase-2 as a result of the Study.

The Study will be implemented in the 1st Stage and the 2nd Stage separately.

Both sides agreed that if unsatisfactory factor(s) are found in the 1st Stage of the Study, there would be the possibility that one site or both sites would be excluded from the Project and the 2nd Stage of the Study might be cancelled.

2. Sites of the Study

The sites of the Project are Birgunj and Janakpur, shown in Annex- I .

Both sides agreed that 5 sites, i. e. Manthali in Ramechhap District, Besisahar in Lamjung District, Bhimeshwor in Dolidha District, Baljhundi in Dang District and Nepalgunj in Banke District which were stipulated in the Minutes of Discussions signed by both sides on June 15, 2005, had been excluded due to security reasons.

3. Responsible and Implementing Agency

3-1. The Responsible Agency is the Ministry of Physical Planning and Works (MoPPW) in Nepal.

3-2. The Implementing Agency is NWSC with involvement of Birgunj sub-metropolitan city and Janakpur municipality.

4. Items requested by the Nepalese side

After the discussions with the Team, the items described in Annex- II were finally requested by the Nepalese side. The Team will assess the appropriateness of the request.

5. Findings of the Study

5-1. Both sides understood that the devolution of the water supply service from NWSC to local government and quality of water resources would be very important factor on the Project. Both sides also understood that the candidate site(s) which has a positive prospect of the devolution would be prioritized for the 2nd Stage of the Study.

5-2. MoPPW declared its position to initiate handover process by the letter dated September 19, 2005 (Annex-III).

NP/GM-024 '06

5-3. The Team proposed the following materials as a tentative plan of the devolution.

(a) Framework for Handing Over the Water Supply Project Management from NWSC to the Local Bodies (Annex-IV)

(b) Flow chart of the Handover Process (Annex-V)

(c) Role of the Service Delivery Utility (Annex-VI)

(d) Tentative Schedule for the Handover Process (Annex-VII)

6. Schedule of the Study

6-1. The Team will proceed to further studies in Japan based on the results of the 1st Stage and the answer to be submitted by the Nepalese side by October 21, 2005. The Team will map out its course for the 2nd Stage of the Study.

6-2. JICA might dispatch the Team to Nepal in November 2005 according to the course to be mapped out for the 2nd Stage of the Study.

6-3. JICA might prepare the draft report in English and dispatch the Team in order to explain its contents to the Nepalese side in February 2006.

6-4. In case that the contents of the draft report are accepted in principle by the Nepalese side, JICA will complete the final report and send it to the Nepalese side by May 2006.

7. Undertaking by the Nepalese Side

7-1. To submit the answer to the Questionnaire (Annex-VIII) to the Team through JICA Nepal Office by October 21, 2005.

7-2. To submit the tentative schedule and to forward the necessary procedures for the devolution of the water supply service in accordance with the letter dated September 19, 2005. The tentative schedule should be submitted together with the above-mentioned answer to the Questionnaire.

7-3. To select the candidate lands for construction of the proposed water supply facilities described in Annex-II in consultation with the local government, prior to the 2nd Stage of the Study, in case the Japanese side decided to dispatch the Team.

7-4. To organize technical information on the existing water supply facilities in the Study area, specially distribution pipes, for preparation of the 2nd Stage of the Study.

7-5. To list the assets of NWSC in the Study area for preparation of the 2nd Stage of the Study

8. Understanding of both sides

Based on the discussions, both the Nepalese side and the Japanese side had the understanding that;

8-1. MoPPW will forward the enforcement process of the Draft of National Urban Water Supply and Sanitation Policy 2005.

8-2. The tentative plan proposed by the Team as per Annex-IV ~ VII will be the basis of the future devolution plan of the water supply project.

3

NP/GA-629/16

Annex- I : Site Map of Birgunj and Janakpur

Annex- II : Items requested by the Nepalese side

Annex-III: Letter from MoPPW (Ref. 062/063-70, dated September 19, 2005)

Annex-IV: Framework for Handing Over the Water Supply Project Management from NWSC to the Local Bodies

Annex-V : Flow chart of the Handover Process

Annex-VI: Role of the Service Delivery Utility

Annex-VII: Tentative Schedule for the Handover Process

Annex-VIII: Questionnaire on the status of decentralization and preparation for handover of facilities and management of water supply systems

Annex- I Site Map of Birgunj and Janakpur

Location Map of Study Areas
The Project for the Improvement of Water Supply Facilities in Urban and Semi - Urban Centres in the Kingdom of Nepal

Annex-II Items requested by the Nepalese side

Phase 2

Item		Birgunj	Janakpur
Intake Facility	Well	Newly Construction of 3 Deep Wells (3,000 L/min./well)	Newly Construction of 1 Deep Well (2,000 L/min./well) Rehabilitation of 3 Deep Wells
Transmission Main Pipeline		DI: dia. 200 mm × 4.0 km	–
Water Treatment Plant		–	Rapid Sand Filter × 5 basins Clear Water Reservoir: 300 m^3 × 1basin Chlorination facility: 1 unit
Chlorination Unit		0.3 mg/L × 4 units	–
Service Reservoir		Elevated Tank (RC) 450m^3x 6 basins	Elevated Tank (RC) 450m^3x 1 basin
Distribution Pipeline		Replace: DI : dia.150 mm - 200 mm × 15.0 km Expansion : DI : dia.150 mm – 200mm × 16.5 km	DI: dia. 100 mm – dia. 200 mm × 9.7 km GI: dia. 65 mm – dia. 80 mm × 2.9km
Water Meter		Horizontal Type × 6 units	–

Annex-III

His Majesty's Government

MINISTRY OF PHYSICAL PLANNING & WORKS

Phone: 4227280, 4229282, 4228931, 4228285, 4227732
Fax : 4228420
SINGHDURBAR
Kathmandu, Nepal.

Date: September 19, 2005

Ref. 062/063-70

To,
Mr. Shinji YOSHIURA
Resident Representative
JICA Nepal Office

Subject: **Information on Policy/Plan Regarding the Decentralization Process of Water Supply System managed by NWSC**

This is based on our discussion during presentation on project for improvement of water supply facilities under NWSC held in MPPW on 15th September 2005

First of all considering your views Ministry has decided to initiate handover process as per attached sheet and already written to NPC/MOF/MLD for their consent.

Regarding your questionnaire our answers are

1. Central Government(MPPW,MLD)

National Urban Water Supply and Sanitation Policy need further improvement to incorporate comments received from stakeholders. Very soon a steering committee will finalize (English/Nepali) and forward for approval. Then MPPW will implement and monitor through concerned organizations.

HMG has already issued ordinance for Water Supply Management Board (WSMB) for managing water services in municipalities. Hand over of NWSC projects will be as per WSMB concept.

HMG has also issued ordinance for Water Tariff Commission and which is under formation process. Water tariff commission may also take most of the functions of water supply regulatory commission as thought by the draft policy.

So far we do not have appropriate guideline on hand for handover and not yet been done such activities for NWSC projects.

2. NWSC

His Majesty's Government
MINISTRY OF PHYSICAL PLANNING & WORKS
Phone: 4227280, 4229282, 4228931, 4228285, 4227732
Fax : 4228420
SINGHDURBAR
Kathmandu, Nepal.

Ref.

Organization has been already established for handover of project in Kathmandu Valley to Kathmandu Valley Water Supply Management Board, and for remaining 22 service centers outside valley proposed process will be applicable

HMG will bring (under finalization process) Voluntary Retirement Scheme (VRS) for about 25% staff of NWSC assumed to be over staffed. This is applicable for whole NWSC organization.

3. Local Government

Ownership and responsibility of water supply system will be of users committee as per "water supply regulation 2054" in general, however, for municipal projects, specially NWSC, it will be as per ordinance for WSMB explained before.

4. Not decided definitely

We hope anything not answered will be cleared by the proposed process.

Thank you for your cooperation

Sincerely Yours

Madan Gopal Maleku
Joint Secretary

Devolution/Handover process for NWSC projects of outside Kathmandu valley

1. Policy decision by MPPW with consent of NPC/MOF/MLD
2. Formation of coordination committee(MPPW/DWSS/NWSC/MLD/MOF/NPC)
3. Appointment of facilitator
4. Feasibility study(Technical/Financial/Managerial)
5. Formation of Water Supply Management Board (WSMB) as per ordinance for each service centers (22)
6. Handover of projects from NWSC to WSMB
7. Shifting of manpower from NWSC to WSMB on deputation
8. Capacity building of Service Delivery Utility(SDU)
9. Support for service/quality improvement by HMG/JICA/Municipality
10. Restructuring of SDU and permanent shifting of manpower from NWSC to WSMB
11. Monitoring

Annex- IV

Framework for Handing Over the Water Supply Project Management from NWSC to Sub-metropolitan City/Municipality

Key Indicators: (For Example: Birgunj)

In 2004
Served Population: 86,601 Coverage (%): 68 Revenue: Rs. 14,229,000
In 2014
Served Population: 146,088 Coverage (%): 78 Revenue: Rs. 77,279,200

Organization	Responsibilities	Activities
Ministry of Physical Planning and Works (MPPW) **&** ***Ministry of Local Development (MOLD)*** **(I)**	Policy making	1. Policy Decision 1). MPPW issues the letter to: i) MoLD ⇒ Sub-metropolitan City/Municipality ii) MOF iii)NWSC 2. Monitoring the policy 3. Establishment of Central Coordination Committee for handover 1). Members of Coordination Committee i). MPPW: (Secretariat) ii). MoLD iii). MOF iv). NPC v). NWSC vi). Sub-metropolitan City/Municipality 2). Tasks of Coordination Committee i). Establish the Policy framework and regulation and action plan ii). Make Sub-metropolitan City/Municipality familiar with the existing and future water supply systems iii). Manpower and assets handover mechanism to Sub-metropolitan City /Municipality iv). Guidelines of water tariff v). Monitoring and evaluating of the utility vi). Submit the monthly progress report to JICA
Nepal Water Supply Corporation (NWSC) **(II)**	Supporter and facilitator	1. Support and advice the policy decision 2. Capacity building of Service Delivery Utility (SDU) 3. Shifting manpower with appropriate technology to SDU 4. Shifting of the assets 5. Construction of the water supply facility 6. Handover water supply facility to Water Supply Management Board 7. Monitoring the water quality
Sub-metropolitan City/Municipality **(III)**	Service Delivery Utility	1. Establishment of new management organization and Regulations (By-Law) 2. New water tariff setup (Full Cost Recovery) 3. Outline and establish the mechanism of disclosure of the information regarding the w/s management 4. Land Acquisition 5. Participation of construction of new water supply facilities 6. Education for local habitants in reference to the utilization of water supply system 7. Water service delivery 8. Public awareness 9. Operation and maintenance of the facilities 10. Human resource development 11. Prepare the corporate plan 12.Establish the Local Coordination Committee Members of Local Coordination Committee i) Sub-metropolitan City/Municipality ii) DDC iii)NWSC Branch Office iv) BCCI v) Ward Chairmen

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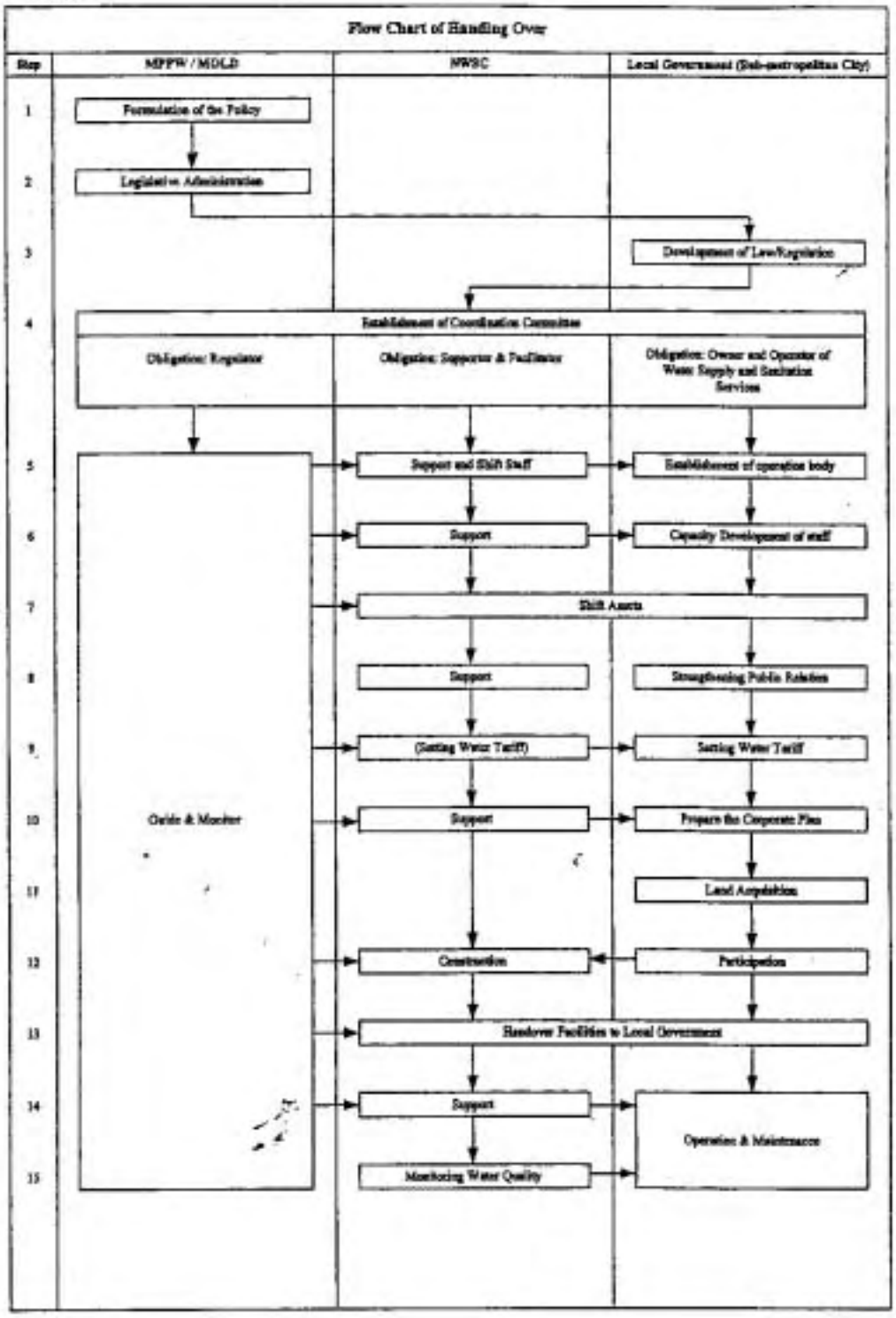
Annex-V


Flow Chart of Handing Over
Step
MPPW / MDLD
NWSC
Local Government (Sub-metropolitan City)
1
Formulation of the Policy
2
Legislative Administration
3
Development of Law/Regulation
4
Establishment of Coordination Committee
Obligation: Regulator
Obligation: Supporter & Facilitator
Obligation: Owner and Operator of Water Supply and Sanitation Services
5
Support and Shift Staff
Establishment of operation body
6
Support
Capacity Development of staff
7
Shift Assets
8
Support
Strengthening Public Relation
9
(Setting Water Tariff)
Setting Water Tariff
10
Support
Prepare the Corporate Plan
11
Land Acquisition
12
Construction
Participation
13
Handover Facilities to Local Government
14
Support
Operation & Maintenance
15
Monitoring Water Quality
Guide & Monitor

Annex-XI

Sub-metropolitan City/Municipality
(Water Supply Service Delivery Utility)

Subject:

1. **Establishment of Organisation**
   - Develop the rules and regulations.
   - Develop organization chart
   - Develop job description for all the positions
   - Develop O&M manual
   - Develop financial management
2. **Adopt a full cost recovery model for management of the utility**
3. **Outline and establish the mechanism of disclosure of the information regarding the water supply management.**
4. **Land acquisition**
5. **Accelerate the public participation since the inception of the project**
   - Ensure the participation of representatives of consumers (Ward Chairpersons) by taking their feedback periodically in present services of the utility and in developing future plans
6. **Education for local habitants in reference to the utilisation of water supply systems**
7. **Water service delivery**
   - Willingness to pay
   - Satisfaction
     - Quality
     - Quantity
     - Supply hours
     - Pressure
8. **Public awareness**
   - Water Services
   - Water Quality
   - Water Tariff
9. **Operation and maintenance of the water supply systems**
10. **Human resource development and training**
    - Conduct training as per the training needs assessment and review the training program as per the set goal for future plans
    - Management
    - Administrative staff
    - Engineers and technicians
11. **Prepare the corporate plan**
12. **Establish Local coordination Committee**
13. **Consumer's registration book**
14. **Management of database system**
    - Develop and maintain data base system in relation to technical, financial and institutional aspects so as to provide information as and when needed for various management requirements

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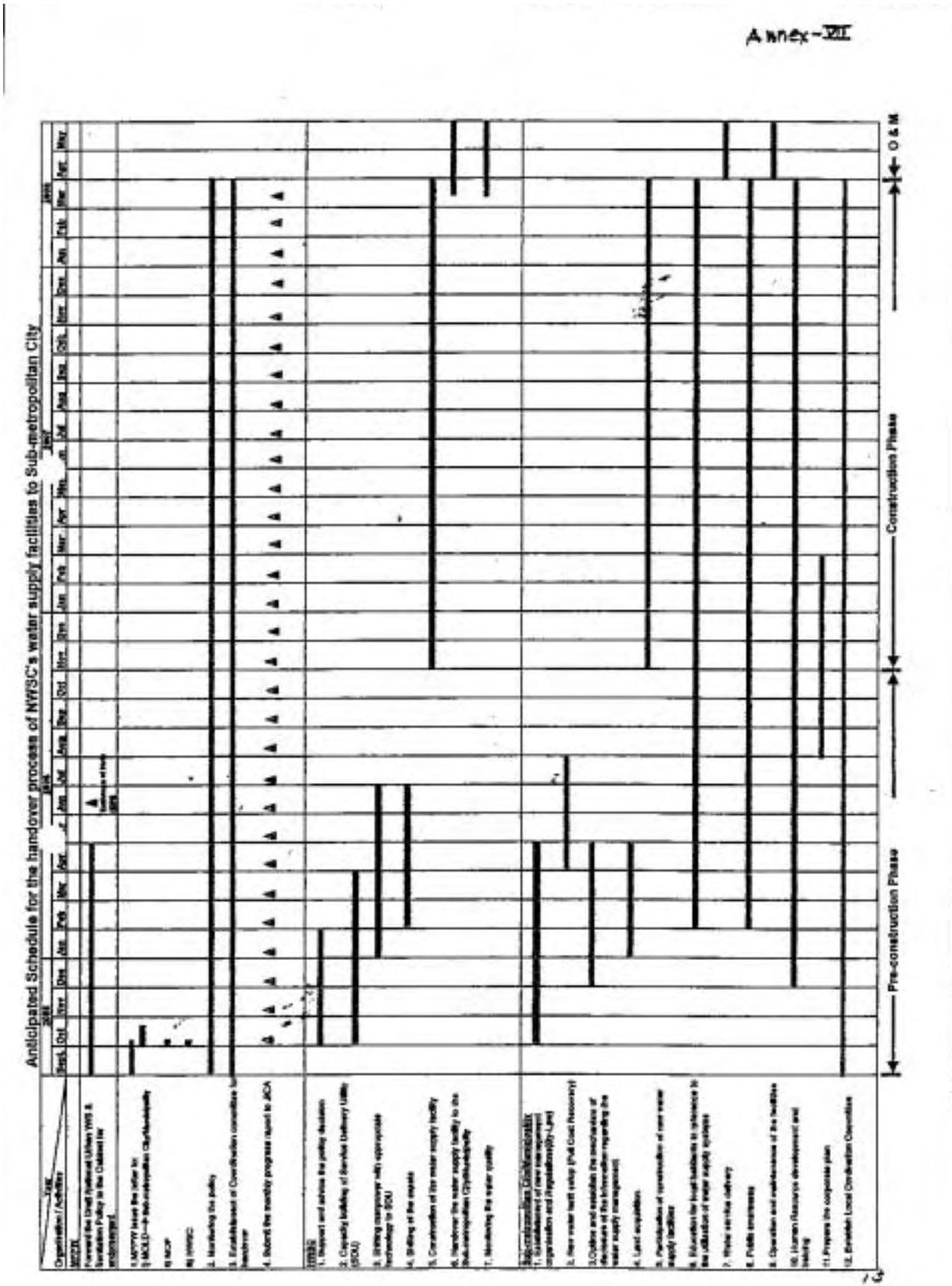
Annex-XII


Anticipated Schedule for the handover process of NWSC's water supply facilities to Sub-metropolitan City
Pre-construction Phase
Construction Phase
O & M

Annex-VI

Questionnaire
on
the Status of decentralization and preparation for handover of facilities and management of water supply systems

Please provide the following information about the status of preparation for handover of water supply systems to local government / municipality / private sector organization:

1. Central Government (MPPW, MOLD)

a. Detailed information about the handover process focused on Birgunj / Janakpur case shown in the attachment of the letter dated on 19th September 2005 issued by MPPW:
   - Anticipated time schedule including establishment of the Water Tariff Commission
   - Detailed description of each process
   - Scope of works of the process, No.4 Feasibility study,
   - Program of the process, No.8 Capacity building
   - Plan of the process, No.11 Monitoring

b. Status of formation of the Water Tariff Commission.

2. NWSC

a. Documents and detailed information about the Kathmandu Valley Water Supply Management Board as:
   - Organization
   - Procedure
   - Time schedule
   - Progress

b. To improve the present operation of water supply services, NWSC has:
   - Any outsourcing works at present? (meter reading, equipment operation, others)
   - Any improvement program in activity of public relation (information disclosure, public hearing, communication)
   - Others if any

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3. Recipient of water supply system (Birgunj Sub-Metropolitan City, Janakpur Municipality)

a. Willingness to take over the water supply system from NWSC

b. Status of establishment an organization (preparatory committee) for receiving the water supply system

c. Plan for organization of operation of the water supply services

d. Plan for Capacity Building Program for operation/maintenance/expansion of the water supply system
   - Institutional aspect
   - Human resources
   - Financial resources

e. Plan for the following items in operational and maintenance aspects:
   - Setting / revise water tariff
   - Private Sector Participation
   - Public Relation by disclosure of information, hearing, research, propaganda for improvement of services and obtaining user's understanding water tariff
   - Outsourcing works (meter reading, plant operation, leakage detection works, others)

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Appendix-5 Questionnaire on the Status of Decentralization and Response from the Nepalese Side

Questions	Response on October 21, 2005	Additional response on October 26, 2005	Comments by the Study Team
1. Central Government (MPPW, MOLD)			
a. Detailed information about the process focused on Birgunj / Janakpur case shown in the attachment of the letter dated on 19th September 2005 issued by MPPW:	Detailed process plan and program of handover process will be workout by coordination committee which is in process of formation. (Attachment) 1. Letter from NWSC to MOPPW regarding the response from Birgunj Sub-Metropolitan City and Janakpur Municipality on the handover of Birgunj and Janakpur Water Supply System. (English Translation)		The response failed to provide details of the attachment of the letter dated on 19th September 2005 issued by MPPW (Further inquiry on the details was sent to the Nepal government through JICA Nepal office)
- Anticipated time schedule including establishment of the Water Tariff Commission	(No response)	Actual time schedule will be prepared after formation of coordination committee. As Birgunj Municipality is willing to takeover the projects it will be arranged as per anticipated schedule attached in minute of discussion.	
- Detailed description of the each process	(No response)		
- Scope of works of the process, No.4 Feasibility study,	(No response)		
- Program of the process, No.8 Capacity building	(No response)		
- Plan of the process, No.11 Monitoring	(No response)		
b. Status of formation of the Water Tariff Commission.	Water tariff commission is targeted to be formed within three months.		For taking-over Water Supply Management Board (WSMB) shall be established first.

Questions	**Response on October 21, 2005**	**Additional response on October 26, 2005**	**Comments by the Study Team**
		1. Policy decision by MPPW with consent of NPC/MOF/MLD - A briefing meeting will be held during third week of November and a Coordination committee will be formed then after.	
		2. Formation of coordination committee (MPPWD/DWSS/NWSC/MLD /MOF/NPC) - Coordination committee will be chaired by MPPW and responsible for policy guiding.	
		3. Appointment of facilitator - Facilitation work will be done by existing staff of MPWW(Water Sanitation Division) and JICA	
		4. Feasibility study (Technical/Financial/Managerial) - MPPW will arrange feasibility study for all 22 service centers of NWSC, however, feasibility study of Birgunj and Janakpur will be carried by Basic Design team of JICA	JICA basic design study does not include feasibility studies.
		5. Formation of Water Supply Management Board (WSMB) as per ordinance for each service centers (22) - Coordination committee will guide NWSC to form WSMB, however, actual process will be initiated by concerned municipality. Focus will be given to form model board in Birgunj	The Nepal side intends to use Birgunj WSMB as a model, but WSMB is already established in Hetauda and Bharatpur Municipality as described in 2.b below.

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		6. Handover of projects from NWSC to WSMB - Handover of the projects include ownership and full responsibility including assets, liability.	
		9. Support for service/quality improvement by HMG/JICA/Municipality - These include improvement works as requested to JICA for Birgunj and Janakpur.	
		11. Monitoring - After handover of project coordination committee will closely monitor the activity of New WSMB at least one year.	Water supply services will be operated by SDU, thus the activities shall be monitored for at least one year after formation of SDU.
2. NWSC			
a. Documents and detailed information about the Kathmandu Valley Water Supply Management Board as:	Kathmandu Valley Water Supply Board has been set up as per the Ordinance promulgated by HM the King. The KVWMSB has been constituted and is holding regular board meeting. (Attachment) 1. Annual plan and Progress of KVWMSB		1. Details not provided
- Organization	A full time Executive Director and some subordinate staff have already been deputed.		No official organization charts are provided.
- Procedure	(No response)		
- Time schedule	Hand over of the facilities within Kathmandu valley is planned to complete by the June 2005.		Reasons for delay shall be investigated.
- Progress	It is in the process of setting up Water Utility Operator		Water Utility Operation Company shall be investigated.

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	Company.		
b. Documents and detailed information about the willingness of Hetauda and Bharatpur Municipality to takeover the water supply facilities - Current NWSC Organizations in the two Municipalities	(attachment) 1. Organization chart of NWSC Hetauda 2. Organization chart of NWSC Bharatpur		
- Informal understanding between NWSC and the two Municipalities for handover of water supply facilities	Preliminary discussions have been held between NWSC, UEIP and municipality representatives from Hetauda and Bharatpur for the handover of NWSC.		
- Plan and completed process for the preparation of setting up of the Water Supply Management Board for the two Municipalities.	- The Hetauda municipality has requested NWSC for handover of water supply facility in the municipality. - Both the Municipalities have decided to form a water supply management board as per the government policy. - NWSC will extend necessary cooperation to these municipalities to setup the Water Supply Management Board and smooth handover of its operations. (attachment) 1. Request letter from Hatauda Municipality to MOLD for initiation of the		Examples of Hetauda and Bharatpur cities not used as a model case.

Questions	Response on October 21, 2005	Additional response on October 26, 2005	Comments by the Study Team
	process for the take over of the water supply system from NWSC. 2. Letter from MOLD to NWSC on the request for initiating the necessary process for the hand over of the water supply facilities to Hetauda Municipality. 3. Sending of a copy of the decision to Urban Environment Improvement Project by the Hetauda Municipality. The decision was taken to initiate the request to NWSC for handing over the water supply system to the municipality. 4. Letter from NWSC to MOLD mentioning that there is legal provision to hand over the water supply system to the Municipalities. 5. Letter from NWSC Central Office to NWSC Hetauda mentioning to initiate the take over process by conducting a study and submitting a proposal with a detail report. 6. Letter from Bharatpur Municipality to Urban and Environment Improvement Project on the sending of the decision of the municipality on initiating the take over of the water supply system		

Questions	**Response on October 21, 2005**	**Additional response on October 26, 2005**	**Comments by the Study Team**
	7. Letter from Bharatpur Municipality to Urban and Environment Improvement Project on the sending of the decision of the Meeting at the Bharatpur. 8. The decision of the meeting at the Bharatpur Municipality mentioned that ‘ It was decided to initiate the process for the setting up of the Water Supply Management Board. 9. Letter from NWSC Hetauda to NWSC Central Office mentioning that the NWSC Hetauda does not have the required manpower to conduct the study. Therefore, the letter also requests the Central office to make necessary provision (support) for preparing the report. 10. Letter from Urban and Environment Project to Hetauda Municipality mentioning that the meeting among the institutional expert and water supply expert with the related stakeholders have come to conclusion that “ there is a need to proceed for the preparation to form the water supply management board.		
c. To improve the present operation of water supply services, NWSC			

Questions	**Response on October 21, 2005**	**Additional response on October 26, 2005**	**Comments by the Study Team**
has: - Any outsourcing works at present? (meter reading, equipment operation, others) - Any improvement program in activity of public relation (information disclosure, public hearing, communication) - Others if any	No, we do not have any plan for outsourcing works at present. Yes, we have regular activities of public relation by dissemination of information through radio, TV programs and the print media. We participate in various discussion programs organized by government and non-government agencies. We do participate in public hearing programs as well.		The current activities to be reviewed.
3. Recipient of water supply system (Local Government)			
a. Willingness to take over the water supply system from NWSC	The Janakpur Municipality has so far shown no willingness to takeover water supply system in present condition. The Birgunj Sub-metropolitan has shown strong willingness to takeover the water supply system of this sub-metropolitan city. (attachment) 1. Letter from NWSC to Birgunj Sub-metropolitan city on the willingness to take over the water supply system 2. Letter from NWSC to Janakpur Municipality on the willingness to take over the water supply system		The statement supports the results of the first field survey.

Questions	**Response on October 21, 2005**	**Additional response on October 26, 2005**	**Comments by the Study Team**
	3. Response letter from Janakpur Municipality to NWSC on the decision of the Municipality not to take over the water supply system in the current situation. 4. Meeting notes on the unwillingness of Janakpur municipality to take over the water supply system from NWSC in the current situation. 5. Meeting notes on the willingness of Birgunj sub-metropolitan city to take over the water supply system from NWSC.		
b. Status of establishment an organization (preparatory committee) for receiving the water supply system	(No response)		Refer to the above 1.a.
c. Plan for organization of operation of the water supply services	After setting up of Water Supply Management Board in the municipalities, the Board will prepare plan for institutional, human resources and financial resource improvements as well as tariff setting, private sector participation, public relation improvement and outsourcing works.	7. Shifting of manpower from NWSC to WSMB on deputation - Concerned staff will be deputed to new WSMB temporarily for about a year. Then after depending on interest of staff and WSMB these staff will be all permanently shifted to WSMB.	Staff under NWSC will be transferred to WSMB, thus O&M of the facilities will continue as present. It is not clear that the staff further move to SDU.
d. Plan for Capacity Building Program for operation/ maintenance/expansion of the water supply system	(No response)	8. Capacity building of Service Delivery Utility (SDU) - Capacity building of SDU includes training, development in management aspects.	WSMB may contract O&M out to SDU.

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- Institutional aspect	(No response)		
- Human resources	(No response)		
- Financial resources	(No response)		
e. Plan for the following items in operational and maintenance aspects:			
- Setting / revise water tariff	(No response)	10. Restructuring of SDU and permanent shifting of manpower from NWSC to WSMB - New structure depends on model of SDU adopted by WSMB. Tariff will be updated as per requirement for sustainability. Tariff system proposed by WSMB will be effected after review approval by Water Tariff Fixation Commission.	Organization structure of SDU is not provided.
- Private Sector Participation	(No response)		
- Public Relation by disclosure of information, hearing, research, propaganda for improvement of services and obtaining user's understanding water tariff	(No response)		
- Outsourcing works (meter reading, plant operation, leakage detection works, others)	(No response)		

Note: Questionnaire and responses are same as the originals.