ASIAN DEVELOPMENT BANK

PCR: NEP 31624

PROJECT COMPLETION REPORT

ON THE

MELAMCHI WATER SUPPLY (ENGINEERING) PROJECT
(Loan 1640-NEP[SF])

IN

NEPAL

December 2003

CURRENCY EQUIVALENTS

(as of 28 November 2003)

Currency Unit – Nepalese rupee/s (NRe/NRs)

		At Fact-Finding	At Project Completion
		12 October 1998	March 2002
NRe1.00	=	$0.0147	$0.0129
$1.00	=	NRs67.93	NRs77.40

ABBREVIATIONS

ADB	–	Asian Development Bank
BDS	–	bulk distribution system
CSP	–	country strategy and program
DNI	–	distribution network improvements
EIRR	–	economic internal rate of return
EMU	–	engineering management unit
GWRDB	–	Ground Water Resources Development Board
IA	–	implementing agency
ICB	–	international competitive bidding
IS	–	international shopping
LCB	–	local competitive bidding
MDS	–	Melamchi Diversion Scheme
MPPW	–	Ministry of Physical Planning and Works
MWSDB	–	Melamchi Water Supply Development Board
MWSP	–	Melamchi Water Supply Project
NGO	–	nongovernment organization
NORAD	–	Norwegian Agency for International Cooperation
NWSC	–	Nepal Water Supply Corporation
PMU	–	project management unit
PMC	–	project management consultants
POE	–	panel of experts
PPAR	–	Project performance audit report
RAP	–	Resettlement action plan

NOTES

(i) The fiscal year (FY) of the Government ends on 15 July.

(ii) In this report, "$" refers to US dollars.

CONTENTS

BASIC DATA

A. Loan Identification

1.	Country	Nepal
2.	Loan Number	1640-NEP
3.	Project Title	Melamchi Water Supply (Engineering) Project
4.	Borrower	Nepal
5.	Executing Agency	Ministry of Physical Planning and Works
6.	Implementing Agency	Melamchi Water Supply Development Board
7.	Amount of Loan	SDR3,646,000 ($5 million equivalent)
8.	Project Completion Report Number	PCR: NEP 748

B. Loan Data

1.	Fact-Finding	
	– Date Started	24 November 1997
	– Date Completed	10 December 1997
2.	Loan Negotiations	
	– Date Started	12 October 1998
	– Date Completed	14 October 1998
3.	Date of Board Approval	10 November 1998
4.	Date of Loan Agreement	21 February 1999
5.	Date of Loan Effectiveness	
	– In Loan Agreement	22 May 1999
	– Actual	13 April 1999
	– Number of Extensions	0
6.	Closing Date	
	– In Loan Agreement	31 December 2000
	– Actual	18 July 2002
	– Number of Extensions	3
7.	Terms of Loan	
	– Interest Rate	Service charge 1%
	– Maturity (number of years)	40 years
	– Grace Period (number of years)	10 years

8. Disbursements

a. Dates

Initial Disbursement	Final Disbursement	Time Interval
15 June 1999	18 July 2002	3 years, 1 month
Effective Date	**Original Closing Date**	**Time Interval**
13 April 1999	31 December 2000	1 year, 8 months

b. Amount ($)

Category		Original Allocation	Amount Reallocated	Amount Available	Amount Disbursed	Undisbursed Balance
01	Civil Works: Pilot Projects	1,199,945	(1,053,336)	146,609	146,609	0
02	Equipment & Vehicles	204,333	(95,565)	108,668	108,668	0
03	Service Contracts	193,363	(193,363)	0	0	0
04	Consulting Services	2,675,535	1,467,483	4,143,018	4,135,224	7,794
05	Incremental Administration	24,685	(24,685)	0	0	0
06	Service Charge	49,369	(2,101)	47,268	46,159	1,109
07	Unallocated	652,770	(282,770)	370,000		370,000
99	Imprest Account		29	29	0	29
	Total	**5,000,000**		**4,815,592**	**4,436,660**	**378,932**

Source: Loan Financial Information System of the Asian Development Bank.

9. Local Costs (Financed)
   - Amount ($) 80,719
   - Percent of Local Costs 30.00
   - Percent of Total Cost 11.47

C. Project Data

1. Project Cost ($ million)

Cost	Fact-Finding Estimate	Actual
Foreign Exchange Cost	4.19	4.36
Local Currency Cost	2.56	2.70
Total	**6.75**	**7.06**

Source: Loan Financial Information System of the Asian Development Bank and executing agency.

2. Financing Plan ($ million)

Cost	Fact-Finding Estimate				Actual			
	Foreign	Local	Total	Percent	Foreign	Local	Total	Percent
Borrower-Financed	0	1.75	1.75	26	0.00	2.62	2.62	37
ADB-Financed	4.19	0.81	5.00	74	4.36	0.08	4.44	63
Total	4.19	2.56	6.75	100	4.36	2.70	7.06	100

ADB = Asian Development Bank.

Source: Loan Financial Information System of the Asian Development Bank and executing agency.

3. Project Schedule

Item	Fact-Finding Estimate	Actual
Contract Signing with Consultants		
Part A: Engineering & Design Consultants for BDS	31 December 1998	26 March 1999
Part B: Project Management Consultants	31 December 1998	23 March 1999
Completion of BDS Design	31 December 1999	31 October 1999
Completion of Consulting Services		
Part A: Engineering Design and Consultants for BDS	31 December 2000	31 December 2001
Part B: Project Management Consultants	31 December 2000	31 March 2002
Equipment and Supplies (i.e., service vehicles, computers, and office supplies):		
First Procurement	Not estimated at fact-finding	17 July 2000
Last Procurement	Not estimated at fact-finding	20 February 2001

BDS = bulk distribution system.

4. Project Performance Report Ratings

	Ratings	
Implementation Period	Development Objectives	Implementation Progress
From10 November 1998 to 28 February 2001	S	S
From 01 March 2001 to 31 March 2001	S	U[a]
From 01 April 2001 to 31 May 2001	S	S[a]
From 01 June 2001 to 31 March 2002	S	PS

S = satisfactory, PS = partially satisfactory, U = unsatisfactory.

[a] Historical ratings for implementation progress of "U" from 1 to 31 March 2001, and "S" from 1 April to 31 May 2001 in the ADB Project Performance Report System appear incorrect. The Project should have been rated "PS" from 1 March 2001 until the completion date (31 March 2002) because the implementation delay was already 40% greater than the original appraisal schedule as of 1 March 2001, but there were no other significant implementation issues.

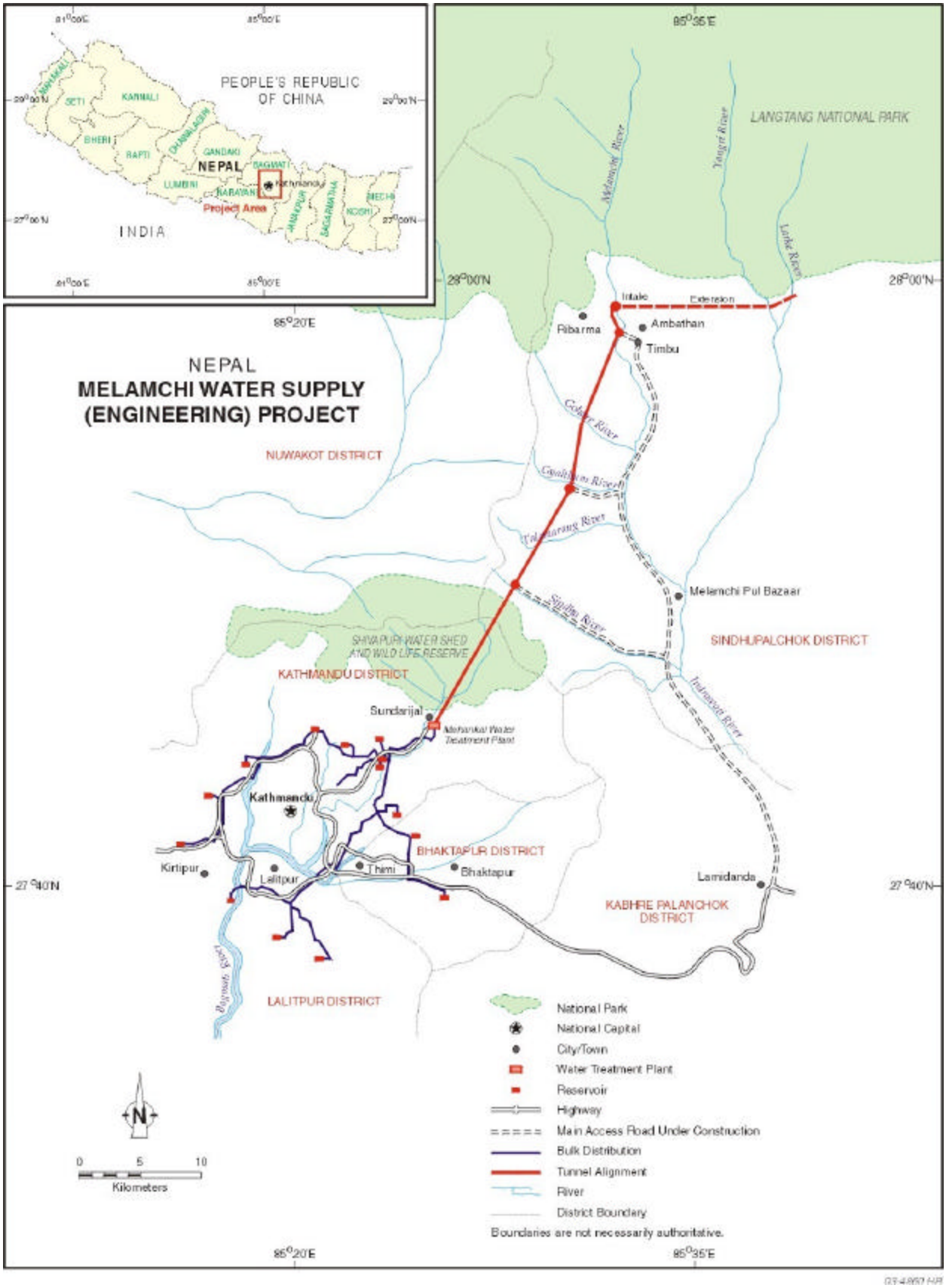
D. Data on Asian Development Bank Missions

Name of Mission	Date	No. of Persons	No. of Person-Days	Specialization of Members[a]
Fact-Finding	24 Nov–10 Dec 1997	7	112	b, c, d, f, h, l, j
Special Review	12–24 Jan 1999	1	13	c
Inception	07–15 Jun 1999	3	27	a, c, k
Review 1	21–27 Aug 1999	1	7	c
Review 2	01–05 Nov 1999	1	5	c
Review 3	07–19 Feb 2000	2	16	a, c
Review 4[b]	23 April– 4 May 2001	3	28	a, c, k
Review 5[b]	25 Feb–8 Mar 2002	3	31	c, g, k
Project Completion Review[c]	18 Jun–02 Jul 2003	2	30	g, l

[a] a = manager, b = sr. project economist, c = sr. project engineer, d = economist, f = financial analyst, g = sr. urban development specialist, h = environmental planner/consultant, i = hydrologist/consultant, j = financial analyst/consultant, k = assistant project analyst, l = associate project analyst.

[b] The Project was reviewed in conjunction with the review of Loan 1820-NEP: Melamchi Water Supply Project.

[c] The project completion report was prepared by K. Tamaki, Sr. Urban Development Specialist, and M. Espiritu, Associate Project Analyst.


PEOPLE'S REPUBLIC OF CHINA
NEPAL
INDIA
Project Area
Kathmandu
MAHAKALI
SETI
KARNALI
BHERI
RAPTI
DHAULAGIRI
GANDAKI
LUMBINI
NARAYANI
BAGMATI
JANAKPUR
SAGARMATHA
KOSHI
MECHI
81°00'E
85°00'E
29°00'N
27°00'N
85°35'E
85°20'E
28°00'N
27°40'N
LANGTANG NATIONAL PARK
Melamchi River
Yangri River
Larke River
Intake
Extension
Ribarma
Ambathan
Timbu
NEPAL
MELAMCHI WATER SUPPLY
(ENGINEERING) PROJECT
NUWAKOT DISTRICT
Gobar River
Gyalchen River
Tadi Khola River
Melamchi Pul Bazaar
Sipalu River
SHIVAPURI WATER SHED AND WILD LIFE RESERVE
KATHMANDU DISTRICT
SINDHUPALCHOK DISTRICT
Indrawati River
Sundarijal
Mechanical Water Treatment Plant
Kathmandu
BHAKTAPUR DISTRICT
Kirtipur
Lalitpur
Thimi
Bhaktapur
Lamidanda
KABHRE PALANCHOK DISTRICT
Bagmati River
LALITPUR DISTRICT
National Park
National Capital
City/Town
Water Treatment Plant
Reservoir
Highway
Main Access Road Under Construction
Bulk Distribution
Tunnel Alignment
River
District Boundary
Boundaries are not necessarily authoritative.
N
0
5
10
Kilometers

I. PROJECT DESCRIPTION

1. The main objective of the Engineering Loan Project was to assist the Government of Nepal in preparing the Melamchi Water Supply (Investment) Project (MWSP)[1] to provide a reliable and safe 24-hour water supply service to 2 million urban dwellers in the Kathmandu Valley by 2012. The Project resulted from a series of Government studies, dating back to 1988, through which the MWSP was identified as the most appropriate long-term solution to the valley's water shortage problem.

2. The MWSP will be carried out in three stages and will ultimately divert 510,000 m^3/day of water from the Melamchi, Yangri, and Larke rivers to the Kathmandu Valley for use in the municipalities of Kathmandu, Kirtipur, Lalitpur, Madhyapur Thimi, and Bhaktapur. The first stage of the MWSP will convey 170,000 m^3/day of water, and will comprise five key physical components:

(i) the Melamchi Diversion Scheme (MDS), which includes access roads, a diversion weir, desilting basins, and a 28 km x 7.5 m^2 gravity water conveyance tunnel. At fact-finding, inclusion of a 15-megawatt hydropower plant was envisaged;

(ii) a water treatment plant (WTP) at Mahankal, near Sundarijal, 10 km northeast of Kathmandu, designed to operate by gravity flow;

(iii) a bulk distribution system (BDS) comprising 54 km of mostly gravity-fed mains for bulk water transmission, ranging from 300 mm to 1,400 mm in diameter, serving strategically located service reservoirs in the Kathmandu Valley;

(iv) distribution network improvements (DNI) to be carried out by the private sector; and

(v) improvement of wastewater systems, including rehabilitation of existing facilities and further development of sanitation services.

3. Deforestation in the Kathmandu Valley has led to rapid runoff of rainfall during the short wet season (June–August) and hence, poor replenishment of aquifers. This, combined with over-abstraction of groundwater, has resulted in low river base flows in the dry season. The combination of low flows and uncontrolled wastewater disposal has led to gross environmental pollution of the local rivers, particularly the Bagmati, which runs through Kathmandu. The Project's secondary objective was, therefore, to investigate the feasibility of artificial recharge of groundwater in the Kathmandu Valley in order to assess the potential conjunctive use of groundwater and surface water for ensuring long-term sustainability of its water supplies, and improvement of its environmental conditions.

4. Even before the Asian Development Bank (ADB) indicated that it would support MWSP, other donor agencies[2] had indicated interest in funding the upstream tunnel, the WTP, and the DNI.

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[1] ADB. 2000. *Melamchi Water Supply Project*. Manila (Loan 1820-NEP for $120 million, approved on 21 December 2000).

[2] The Japan Bank for International Cooperation (JBIC) committed $52 million for the WTP, the Norwegian Agency for Development Cooperation (NORAD) committed $28 million to meet the tunnel costs and MDS design, the Swedish International Development Cooperation Agency (Sida) committed $25 million to finance part of the tunnel, the Nordic Development Fund (NDF) committed $9 million to finance construction supervision for the MDS, the Organization of Petroleum Exporting Countries Fund for International Development (OPEC Fund) committed $13.7 million for the access roads, the Japan International Cooperation Agency (JICA) committed $18 million to finance the shallow groundwater development in Manohara, and the World Bank was expected to provide $15 million credit for the private sector lease contract and additional credit of $65 million for the DNI.

Therefore, ADB decided to provide assistance by funding the BDS and downstream tunnel. ADB had been requested to take the lead role, so it was logical for ADB to also fund project management. This included the timely packaging of all MWSP components, and ensuring quality of the end product. The Project aimed for award of all major construction contracts by 30 June 2000, and commission of the MWSP by 2005.

II. EVALUATION OF DESIGN AND IMPLEMENTATION

A. Relevance of Design and Formulation

5. The Project was highly relevant to the ADB Country Strategy and Program (CSP) for Nepal, whose main aim has consistently been a sustainable reduction in poverty. The key components of the 2001 CSP update were to improve basic social services, to enhance human resources development, and to promote good governance in the water and sanitation sector. ADB policy advocates adoption of an integrated approach to river basin management, improved access to quality water services, the introduction of regulatory control, and use of the private sector for scheme development and management of Kathmandu water supply facilities. All of these policies were reflected in the Project.

6. Similarly, the Project was very relevant to Nepal's development objectives as defined in the Government's Ninth Development Plan (1997–2002). This plan set, as a primary objective, the long-term goal of providing a minimum level of drinking water services to Nepal's entire population, with increased levels of service over the years. Further relevant objectives of the plan included the provision of appropriate sanitation services, reduction of water-borne diseases, and elimination of the burden of water fetching, which is done mostly by women and children. The plan also explicitly stated that nongovernment organizations (NGOs) would be involved in the further development of Nepal. The inclusion of NGO coordination in the Project was, therefore, particularly appropriate.

7. The Project scope proposed at fact-finding consisted of the following three parts:

(i) **Part A: Engineering for the bulk distribution system.** providing consulting services for investigations, detailed engineering design, tendering and award of contracts for bulk distribution of water from the new water treatment plant to the service reservoirs;

(ii) **Part B: Project management.** providing consulting services to (a) coordinate activities of the cofinanciers of the investment project; (b) review the design and tender documents, and conduct tender evaluations of all project packages; (c) report on project progress; (d) account for project costs; (e) prepare financial, economic, environmental, and social analyses of the investment project; (f) conduct socioeconomic, regional planning, and environmental surveys; and (g) prepare a public awareness program encompassing hygiene education, water conservation, and understanding of water tariffs; and

(iii) **Part C: Artificial recharge of groundwater.** implementing a pilot project for artificial recharge of groundwater at the Bishnumati and Manohara river sites in Kathmandu Valley.

B. Project Outputs

8. The project outputs as assessed at fact-finding, and the extent to which they were achieved by project completion, are described below.

(i) Part A: Engineering for the Bulk Distribution System

9. BDS work, which began in May 1999, was divided into the design phase and the detailed engineering phase. The BDS consultant was hampered significantly by the lack of information concerning water demand in the MWSP service area. The original intention was that this information would be provided by the private operator appointed for management, rehabilitation, and expansion of the distribution network under World Bank (WB)[3] financing. But the private operator was not appointed in time, so the BDS consultant had limited information.

10. In order to finish the work within the implementation period and budget, instead of gathering data on their own, the BDS consultant had to make assumptions regarding key issues such as the location of demand nodes, per-capita demand figures, daily and seasonal peak factors, and annual population growth. The water demand figures used were based on projections made by the advisory consultants responsible for recruitment of the private operator. Spatial demand for water was based on projections for urban development.[4]

11. The design report for the BDS engineering work was presented to the Melamchi Water Supply Development Board (MWSDB) in October 1999. There was general concurrence with findings of the report, although a number of recommendations were made regarding pipeline security and possible changes in pipeline configuration to facilitate construction in areas where access was difficult. As a result, a provision was made in the design for the possible subsequent closing of the gap between the two BDS arms in order to make a complete ring main around the urban area and improve distribution efficiency and security.

12. A year after project completion, some questions arose about appropriateness of the final BDS design, and its compatibility with the required distribution system. Taking into account current and future water demand, the BDS design now appears to need modification to make it more compact and efficient. In retrospect, it would have been better to have amended the BDS consultant's scope of work and to have conducted a more in-depth assessment of the volumetric and spatial demand for water.

13. Tender documents were prepared for two civil works packages through international competitive bidding (ICB), and three equipment supply packages, two to be procured through ICB and the other, through international shopping (IS).

(ii) Part B: Project Management

14. At fact-finding, it was envisaged that the project management consultant (PMC) would be in a position to support the Implementing Agency in all aspects of the MWSP, and to coordinate the cofinanciers' activities. In reality, only the MDS and the BDS progressed during project implementation. No WTP or DNI activities were carried out because the private operator

[3] Responding to a government request, the World Bank withdrew from MWSP in June 2002 to reallocate its financing for other national priorities. Subsequently, upon government request, ADB took over this component. ADB decided that in the current Nepali context, it would be more appropriate to engage a private operator under a performance-based management contract rather than a lease-management contract as earlier pursued by WB. ADB also changed the term private operator to management contractor.

[4] Halcrow Fox Associates. 1991. *Planning Study, Nepal.*

had not yet been appointed. The objective of coordinating all aspects of the MWSP was, therefore, not achievable within the project time frame. The PMC successfully completed the reviews of the designs of the MDS and BDS components, together with preparation of the project justification studies.

15. The MDS component commenced ahead of PMC mobilization under the Norwegian grant assistance, and the design study report was submitted in August 1999. This was not a full-scale design report, but was prepared to estimate the cost of water transfer. After a diligent review of the report by the PMC, and a series of technical discussions with the MWSP cofinanciers, it was concluded that the environmental impacts of the "with hydropower" option were excessive and thus, it should not be considered further. Adverse impacts included a 100% increase in spoil volume from the tunnel, longer access roads in steeper topography, a 15% diminution of the available watershed, construction of intakes inside a national park, and potential aggravation of flooding in Kathmandu Valley during the rainy season. Furthermore, studies showed that the MWSP with a hydropower plant would cost about $48 million more than a “water supply only” project with a lower intake on the Melamchi Khola, outside the national park. The extra cost was associated with (i) longer access roads, (ii) larger and longer tunnel size, and (iii) mitigation of adverse environmental impacts.

16. The PMC undertook the necessary surveys, workshops, and studies as required to provide support for ADB approval of the MWSP investment project. Key aspects addressed included resettlement planning and land acquisition in accordance with ADB policies, liaising with NGOs for the purposes of environmental impact mitigation, collection and analysis of socioeconomic data, recommendations for the equitable distribution of water generated by the MWSP, and identification of affected indigenous people. Land acquisition and compensation were problematic areas because of the general complexity of the issues. A resettlement action plan (RAP) was submitted in December 2000, but the extent of resettlement required was not finalized until August 2001. The RAP identifies the (i) extent of losses; (ii) number of project-affected persons; (iii) policies and legal framework applicable; (iv) arrangements for compensation payments, relocation, and assistance in income restoration; and (v) responsibilities for delivering and monitoring the implementation measures. The design and location of the infrastructures to be constructed under MWSP were carefully considered to minimize land acquisition and resettlement. Eighty-three percent of the project-affected families will be marginally affected, and only 10% (726 households) will be severely affected, by loss of agricultural land. A total of 253 households, with 1,428 project-affected persons, will be displaced because their houses will be affected. The incomes of 230 households (1,288 persons) will be affected when their temporary shops are cleared from public rights-of-way. To ensure smooth operation, the Loan Agreement for the MWSP requires that no civil work contracts be awarded until all land acquisition is complete.

17. The PMC conducted a socioeconomic survey on present water use and the living environment in Kathmandu Valley. The final report was submitted in August 2000. The survey demonstrated the critical nature of the water supply situation; 84% of the households surveyed had either no or too little water. Poor water quality was found in 67% of the cases, and 86% of households were compelled to utilize secondary sources. Gender issues were addressed in the social studies, but not in significant depth. A public relations consulting firm was hired in December 2000 whose tasks include liaison with local communities and the development of a project website. The lateness of this appointment was unfortunate, because adverse publicity that certain NGOs and media groups generated was not dealt with adequately or soon enough. In line with one project objective, close attention was given to improving the lives of people in

Melamchi Valley. Indeed, one of the first tangible benefits to arise from the Project was the construction of access roads in Melamchi Valley.

18. The Project sought to cover a wide range of environmental issues, including updating of the environmental impact assessment, preparation of an environmental management plan, updating of the Melamchi Fisheries Study, a water quality study of the Bagmati and Melamchi rivers, a study of the population carrying capacity of the Kathmandu Valley, liaison with NGOs, strengthening of hydrological data collection downstream of the Melamchi intake, and disposal of spoil from tunnel construction. A comprehensive report addressing all of those issues, submitted in August 2000, concluded that the major environmental impacts of the MWSP related to (i) the disruption and dislocation of people due to the need for land and property acquisition, and (ii) the dry season reduction in flows in the Melamchi River downstream of the MDS. Other lesser, but nevertheless important, impacts include the social problems resulting from the influx of outside workers to the Melamchi Valley, the disposal of spoil, and noise and vibration during construction. It was considered that these impacts could be mitigated. The report concluded that MWSP's positive impacts on the social and socioeconomic development of more than a million people in the Kathmandu Valley outweighed its adverse effects. But the importance of adhering to recommendations of both the environmental management plan and the RAP was stressed.

19. The PMC conducted a review of regional planning, and comprehensive financial and economic analyses of the MWSP. The PMC also conducted socioeconomic and environmental surveys, and prepared a public awareness program encompassing hygiene education, water conservation, and understanding of water tariffs. Appendix 1 gives a full list of reports and documents that the PMC prepared.

(iii) Part C: Artificial Recharge of Groundwater

20. A pilot project for artificial recharge of groundwater was included in the Project to look into short-term ways to address the critical water supply situation in the Kathmandu Valley before commissioning of the MWSP; and long-term ways by exploring possible conjunctive use with the Melamchi water supply. A key objective was to determine the possibility of storing excess wet season flow in the underground aquifers, in lieu of appropriate surface water storage facilities, with a view to subsequent abstraction during the long dry season. When the PMC began to implement this component, a number of obstacles surfaced including (i) the water treatment, and the extraction and injection wells (for 10,000 m^3/day capacity) would involve land acquisition; (ii) problems at the riverbed locations included flooding and change in the channel locations in the dry season; and (iii) examination of water treatment costs indicated that the pilot project budget would probably be insufficient. For these reasons, and because the project had a relatively short implementation period, it was proposed that the pilot project, with a $1.20 million budget, be downsized to a research and development activity with a $0.02 million budget.

21. ADB approved the major change in scope, and associated reallocation of loan proceeds, in January 2000. The savings were used to finance a number of unforeseen activities that were identified by the Technical Assistance (TA) for Urban Water Supply Reforms in Kathmandu Valley[5] as necessary for justification of, and thorough preparation for, the MWSP. These activities were (i) groundwater monitoring and investigations; (ii) environmental impact assessment; (iii) a geotechnical survey; (iv) use of a principal consultant;

[5] ADB. 1998. *Urban Water Supply Reforms in Kathmandu Valley*. Manila (TA 2998-NEP, for $800,000, approved on 16 March 1998).

(v) engagement of a panel of experts (POE) comprising a civil engineer, a hydraulic engineer, a tunnel engineer, and a geotechnical engineer; (vi) recruitment of public relations consultants; and (vii) preparation of an alternate tunnel design.

22. For research and development, a smaller scheme, located at Manohara, was formulated. The target recharge rate was revised from 10,000 m^3/day to 864 m^3/day. The design report and tender documents were completed in March 2000, and three packages of civil works contracts were awarded through local competitive bidding (LCB), instead of IS as envisaged at fact-finding. Despite an initial agreement, the Nepal Water Supply Corporation (NWSC) declined to monitor groundwater because disagreements over management fees could not be resolved. Therefore, the Ground Water Resources Development Board (GWRD) took over this task. Testing began in December 2001, and continued until project completion.

C. Project Costs

23. At fact-finding, the project cost was estimated at $6.75 million equivalent (inclusive of taxes and duties). ADB financing was envisaged to comprise $4.19 million in foreign exchange costs, and $0.81 million equivalent in local currency costs, to cover 74% of the total Engineering Project cost. The Government was expected to contribute $1.75 million to cover 26% of the total project cost. At completion, the actual project cost was $7.06 million, comprising $4.36 million in foreign exchange costs and $0.08 million equivalent in local currency cost financed by ADB (63%), with $2.62 million equivalent contribution in local currency cost by the Government (37%). The Project financing plan at fact-finding, compared with actual financing, is shown in Basic Data.

24. At fact-finding, the loan amounts allocated for the three Project components were: $0.96 million for Part A, $1.71 million for Part B, and $1.20 million for Part C. Upon project completion, the actual loan amounts disbursed for these components were $1.40 million, $2.69 million, and $0.19 million, respectively. Although savings from other loan categories were considerable, because of the ADB-approved major change in project scope (para. 20), only $378,932 had been canceled at the loan closing date, on 18 July 2002. That was because of a 54% increase in the cost of consulting services. The total loan amount disbursed for consulting was $4.14 million vs the original cost estimate of $2.68 million. The increase was caused by (i) an underestimated cost of consulting services during fact-finding, (ii) increased consulting services inputs, from 260 to 332 person-months, and (iii) lump-sum payments for additional studies (i.e., environmental impact assessment = $36,000, socioeconomic survey = $10,000, geotechnical and other surveys = $170,000, and groundwater monitoring surveys = $65,000). The additional cost of consulting services is justified because it ensured the proper preparation of the subsequent MWSP loan.

D. Disbursements

25. Appendix 2 shows the breakdown of ADB's and the Government's actual annual disbursements. Total disbursements under the loan amounted to $4,436,660, or 89% of the total loan amount ($5 million). No disbursement projections were made at fact-finding. The first loan disbursement was in the second quarter of 1999. As anticipated at fact-finding, there was a high level of disbursement early in the Project due to the mobilization payments made to the two consulting firms recruited for Parts A and B. Overall, disbursement of the loan was delayed, reflecting the project implementation delays. Payments to the consulting firms recruited for Parts A and B were directly remitted to their respective bank accounts. The imprest account, which

had a ceiling of $50,000, was used only to purchase small items, including project equipment, and to pay contractors for surveys and investigations.

E. Project Schedule

26. The Project was not completed until 31 March 2002—1 year and 9 months after the originally scheduled completion date of 30 June 2000. The delay was caused by (i) the change in project scope, and (ii) the need to prepare thorough justification studies for MWSP (para. 21).

F. Implementation Arrangements

27. The Project has largely been implemented according to arrangements developed at fact-finding. The Ministry of Physical Planning and Works (MPPW), formerly called the Ministry of Housing and Physical Planning, was the Executing Agency (EA) for the Project. The Melamchi Water Supply Development Board was established as the Implementing Agency (IA) before loan effectiveness. The MPPW secretary was chairperson of the MWSDB Board; the other four members comprised representatives from the Ministry of Finance and Ministry of Water Resources, the mayor of Kathmandu Metropolitan City, and the appointed full-time executive director of MWSDB, who was also project director.

28. The main difference in the actual arrangements vs those envisaged at fact-finding was that the planned separate engineering management unit was not established. Instead, the Project Management Unit (PMU) and the PMC coordinated all aspects of the Project. The decision not to establish a separate engineering management unit did not seem to have seriously affected project implementation.

G. Conditions and Covenants

29. All conditions of loan effectiveness were met expeditiously and the loan was declared effective on 13 April 1999, only 51 days after the loan signing date of 21 February 1999. The conditions of loan effectiveness comprised completion of negotiations with the first-ranked firms for the consultancy contracts, along with the provision of satisfactory evidence of the Borrower's commitment to finance project components and the assignment of specific autonomy to MWSDB to implement the Project.

30. Appendix 3 gives the status of compliance with major loan covenants. The Government and MPPW generally complied with the loan covenants except for the requirement to provide a project completion report, and the requirement for the project director to remain in office for the Project's entire duration. Failure to provide a project completion report was a straightforward oversight, which would been avoided if the requirement had been included in the PMC's terms of reference. The requirement for the project director to remain in office was not practical. It could not be fulfilled because it would be difficult to prohibit someone from transferring to another job that offers promotion and higher remuneration. The covenants requiring coordination and cooperation of government departments and agencies for the Project were rated only partially complied with, due to NWSC's nonparticipation in Part C "Artificial Recharge of Groundwater" (para. 22).

H. Consultant Recruitment and Procurement

31. Two packages of consulting services were engaged: (i) consultants for the bulk distribution system (Part A), and (ii) consultants for project management (Part B). Despite ADB's

approval of advance action, allowing the recruitment of consultants as early as January 1998, consultant services for both packages began only in May 1999, about 5 months behind the fact-finding schedule. The delay was partly caused by nonconformity with ADB technical evaluation criteria that required reevaluation of the technical proposals for both consultancy packages. A government representative came to Manila to reevaluate, jointly with ADB, the technical evaluation reports that the Government had earlier submitted for both consultancy packages. The reevaluation resulted in the award of the Part A contract to a consulting firm—but not the firm the Government had recommended. Part B was awarded to the first-ranked firm, as the Government had recommended. A total of 332 person-months (141 international and 191 domestic) of consulting services were provided, compared with 260 person-months (100 international and 160 domestic) proposed at fact-finding. The increase in consultant inputs was caused by (i) the extension of the Part A consultancy contract to assist MWSDB in resettlement and land acquisition; (ii) the extension of the Part B consultancy contract to provide a short overlap of the initial consultants with the subsequent PMC consultants hired for the MWSP to enable transfer of institutional memory; (iii) engagement of a public relations consulting firm; and (iv) recruitment of individual consultants (i.e., a principal consultant, a liaison officer, and a POE (para. 21). All consultants were selected in accordance with ADB's *Guidelines on the Use of Consultants.*

32. Appendix 4 summarizes ADB-financed contracts. Procurement of all goods and works under the Project was in accordance with the ADB's *Guidelines for Procurement.* Minor civil works contracts were contracted through LCB. Service vehicles and equipment valued less than $50,000 were procured either through IS or direct purchase.

I. Performance of Consultants, Contractors, and Suppliers

33. Performance of all consultants recruited under the Project is rated satisfactory, except for the initial team leader for the PMC, whose communication skills were not of the standard required. The team leader was immediately replaced upon MWSDB's request, with no adverse effects on the PMC's performance. The PMC provided sound inputs on project management, formulation of the RAP, and environmental impact assessment. The PMC also thoroughly reviewed studies prepared for the MWSP. The BDS consultants met all requirements defined under the terms of reference. The public relations consultants successfully carried out the initial public awareness activities. The program document for the improvement of water supply and sanitation services in Kathmandu Valley, which the principal consultant prepared, was of high quality. The POEs visited the project site and gave valuable independent recommendations on geotechnical issues, tunnel design, construction management, and the bidding documents prepared for MDS. GWRDB, through a consultancy contract, monitored 50 deep wells in Kathmandu Valley, and prepared high-quality reports analyzing the results.

34. Small civil works contracts were awarded under LCB for the drilling of recharge and testing wells as part of research and development for the artificial recharge of groundwater. The contractors completed the works on schedule and with good quality. Their performance is rated satisfactory.

J. Performance of the Borrower and the Executing Agency

35. In the initial stages of the Project, there were some difficulties in coordination among the PMC, PMU, and consultants for BDS and MDS (financed by the Norwegian Agency for Development Cooperation, or NORAD). This was mainly because the initial PMC team leader had such poor communication and management skills, but was also because some staff

assigned to the PMU lacked experience in handling such a large project. The problem was partly resolved after 6 months, when the initial PMC team leader was replaced. Circumstances improved further with time, as PMU members better understood their roles. MPPW and MWSDB have shown a deep level of commitment and sense of project ownership. The Government gave the Project high priority, and provided timely and sufficient local counterpart funds. The EA complied satisfactorily with accounting, financial reporting, procurement, and progress reporting. Concerned government agencies and ministries supported the Project fully, except NWSC (para. 30). Overall, the performance of the Government, MPPW, and MWSDB is rated satisfactory.

K. Performance of ADB

36. The performance of ADB is rated satisfactory. The Project's design was basically sound, and addressed all key issues fundamental to a water supply project. Most project risks were identified and stated in the project framework, although land acquisition issues should have received more attention. During the 2 years and 11 months of actual project implementation, ADB dispatched seven review missions, including an inception mission for monitoring, supervising, and administrative purposes. Every mission had open discussions on project-related issues. Besides the recorded review missions, ADB communicated frequently with MPPW, MWSDB, project consultants, and MWSP cofinanciers through E-mail and informal meetings. ADB responses to EA inquiries and proposals were timely, with no serious delays.

III. EVALUATION OF PERFORMANCE

A. Relevance

37. The underlying project objective—to increase the supply of water to inhabitants of Kathmandu Valley—remained the same throughout implementation. Relevance of the Project clearly increased with time, considering the ever-increasing population and the continued deterioration of the water supply and sanitation services in the urban areas. Throughout the Project, the need was emphasized for equitable distribution of water both between Melamchi and Kathmandu valleys, and within metropolitan Kathmandu itself. Particular attention was paid to providing water to the urban poor. The MWSP, prepared by the engineering project, not only aims to improve and expand water delivery, but also requires (i) establishment of the Kathmandu Valley Water Authority, to holistically manage all water in the Kathmandu Valley, and thus preserve the quality and quantity of water resources; (ii) establishment of the National Water Supply Regulatory Board, to oversee policy implementation for the water supply and sanitation sectors; (iii) enactment of a law on groundwater licensing, to facilitate the controlled extraction of groundwater; (iv) introduction of an overall charging scheme based on full cost recovery; (v) payment of a levy by Kathmandu Valley consumers to the people of Melamchi Valley for use of their water; and (vi) private sector management of urban water supplies, from source to consumers.

38. Scaling down of the investigations into artificial recharge of groundwater and the cancellation of the hydropower element did not adversely affect the Project's relevance. Conversely, it allowed funds to be redistributed for improved project preparation. At fact-finding, the Project was consistent with the Government's development strategy, and ADB's lending strategy for Nepal. The consistency still applies. Therefore, the Project is rated highly relevant.

B. Efficacy in Achievement of Purpose

39. Although the Project did not achieve all of its objectives (notably, the Project failed to award all major construction contracts by 30 June 2000, mainly because of the delay in recruiting a private operator), progress was considerable during project implementation. By project completion, the MWSP was in a good position to proceed to the next stage. Key achievements include:

(i) Preparation of the design and tender documents for the BDS was completed, although they may have to be revised to ensure better compatibility with the proposed improvements to the existing distribution system.
(ii) Coordination and design review of the MDS component was carried out, ensuring that the most cost-effective and environmentally acceptable solution was selected.
(iii) The justification studies were successfully completed, and provided essential support for ADB approval of the subsequent investment project.
(iv) Physical works for research on and development of the artificial recharge of groundwater were constructed, and equipment was installed, at Manohara .

40. The Project is rated less efficacious because it not only failed to achieve its target of awarding all major construction contracts by 30 June 2000, but also was only able to carry out the artificial recharge of groundwater at Manohara on a much smaller scale than envisaged. The total recharge rate was 864 m^3/day compared with the original envisaged target recharge rate of 10,000 m^3/day, to be implemented both at Manohara and Bashnumati.

C. Efficiency in Achievement of Outputs and Purpose

41. The BDS design and tender documents were prepared efficiently and effectively. Problems with base data were overcome to a certain extent, although in retrospect there appears to be a need to revise the BDS design. The efficiency of the MWSP coordination process was not really tested, mainly because a comprehensive coordination team had been put in place. This was despite the fact that only two of the four major components, the MDS and the BDS, were progressing during the course of the Project. The Project is rated less efficient because full "value for money" could not, therefore, be realized and further investments in coordination and design review will be required in the future.

42. A summary of the results of the economic and financial analyses of the MWSP prepared under the Project is attached as Appendix 11 to the Report and Recommendation of the President for the *Melamchi Water Supply Project (Loan 1820-Nepal)*.

D. Preliminary Assessment of Sustainability

43. The outputs of this engineering project are mainly study reports and minor physical infrastructures for the research and development activity at Manohara (para. 22). This infrastructure is now being used to monitor the groundwater. These project facilities are likely to be sustainable because their operation and maintenance costs are minimal. Sustainability of the ongoing MWSP is highly dependent on (i) effective cost control during implementation, to avoid cost overruns; (ii) strict compliance with the environmental and social programs identified by the Project; (iii) adequate cost recovery through implementation of realistic tariffs; and (iv) creation of effective institutional mechanisms to operate and maintain the facilities to be constructed under MWSP. The following measures were incorporated into MWSP to enhance sustainability: (i) hiring of a third party for monitoring, to ensure compliance with environmental and social

issues; (ii) formulation of a Kathmandu Valley Water Supply and Sanitation Sector Strategy to ensure cost recovery by implementing a realistic tariff structure; (iii) recruitment of a private operator (now called a management contractor) to manage and operate the Kathmandu Valley water supply and sewerage systems; (iv) introduction of groundwater licensing to protect Kathmandu Valley aquifers from further depletion; and (v) enactment of water sharing and levy policies that will provide Melamchi Valley communities sustainable income sources for development. Inclusion of these measures in MWSP implementation makes MWSP likely to be sustainable.

44. Public hygiene awareness and NGO participation are important aspects of the Project, and must continue to be focal points for future work to enhance MWSP sustainability. But urban sanitation problems would severely affect MWSP sustainability, so action to improve wastewater collection and treatment facilities, in parallel with the construction of the water supply facilities, is essential.

E. Environmental, Sociocultural, and Other Impacts

45. Because of the technical assistance nature of the Project, the institutional development, environmental, and sociocultural impacts are not directly linked to the Project itself but to the subsequent MWSP, which was prepared by the Engineering Project. (Key issues and impacts of the MWSP are summarized in paras 14–19.) Thus, the institutional development, environmental, sociocultural, and other impacts of the Engineering Project were rated "little." The actual impacts of the Engineering Project are generally positive and are limited to (i) transfer of technical skills from the consultants to MWSDB staff, as a result of their high level of interaction; (ii) heightened public awareness of the importance of water as an economic good, as a result of information campaigns of the public relations consultants; and (iii) raising of stakeholders' concerns on environmental and social issues, especially on the effect of hiring a management contractor on the cost of water tariffs, and on disruption of people's livelihoods and their resettlement because of land acquisition.

46. A census survey of project-affected families, including ethnic groups, was undertaken. The survey combines an inventory of losses, ownership, and land tenure status, as well as preferences for compensation and rehabilitation. The survey included group discussions, and served as a forum for participation and consultation. A project library has been established in the MWSDB office to serve as a public information center. Brochures about the MWSP have been distributed, and a MWSP website (http://www.melamchiwater.org) was created to keep the public fully informed, and to receive queries and complaints. MWSDB has also established a field office in Melamchi Valley to handle grievances of project-affected persons and the public.

IV. OVERALL ASSESSMENT AND RECOMMENDATIONS

A. Overall Assessment

47. The Project was generally implemented as conceived. Revisions were made during implementation to better address the project needs for achieving its objectives. A major revision was the downsizing of the pilot project on the artificial recharge of groundwater to a research and development activity. Thus, this secondary Project objective was considered only partially achieved.

48. The Project did not achieve its target of awarding all major construction contracts by 30 June 2000. But this target was too optimistic. It did not make sufficient provisions for

(i) protracted tendering procedures, and (ii) program slippage by other financiers, specifically the World Bank's inability to recruit the private operator.

49. Despite shortcomings, following the guidelines of ADB's Evaluation Department, the Project is rated successful because the Engineering Project achieved its primary objective of preparing a soundly designed investment project, the MWSP, that addresses all key issues fundamental to a water supply project. Although the MWSP is complex, most risks and mitigation measures were identified in MWSP's project framework. Coordination and design review of the MDS component ensured that the most cost-effective and environmentally acceptable solutions were selected. NGO participation was introduced. The population's needs for hygiene education were identified, and a future program to address those needs was planned. Justification studies prepared under the Engineering Project provided essential support for the ADB Board to approve the MWSP.

50. The high level of interaction among the consultants, the POE, and MWSDB staff stimulated on-the-job technology transfer, and strengthened the skills and institutional capacity of MWSDB.

B. Lessons Learned

51. A project that requires the coordinated efforts of multiple funding agencies is difficult to implement in a timely manner. A higher level of commitment from funding agencies should be obtained before starting project preparation, to avoid delays in project implementation.

52. The assumption that BDS pipelines would be laid in existing rights-of-way was not entirely correct. That caused some project delays. Similarly the land acquisition problems related to the pilot project for the artificial recharge of groundwater were not identified before commencement. Land acquisition was obviously more complex than originally envisaged. The lesson for future projects: examine land acquisition issues more closely before project appraisal.

53. The Project would have benefited from a more proactive public consultation program that addressed issues such as water tariffs and private sector participation, rather than concentrating on just the environmental aspects. The Project was a good example of the need for early NGO involvement, and to address issues in a participatory manner.

54. A review by an independent POE is beneficial for technically complex projects. In this case, the POEs had a significant impact in improving the quality and robustness of project deliverables.

C. Recommendations

1. Project-Related

a. Future Monitoring

55. As preparation of the outstanding MWSP elements proceeds, it will be important to review the work already carried out, and make amendments, if necessary, to ensure full compatibility among all components. Of particular concern is the BDS design which, because a private operator was not appointed early in the Project, was carried out in virtual isolation from the upgrading work required for the distribution system.

56. NGO participation has become an important aspect of MWSP. It should be further increased to promote better understanding of the Project, and to ensure smooth project implementation. Besides the environmental impacts, attention should also be paid to social aspects, including affordability of, and equitable access to, the piped water supply through a management contract.

57. Further public relations should be initiated to ensure that Kathmandu Valley residents clearly understand the MWSP benefits. Residents should also understand the positive impact of hiring a management contractor for the water supply and sewerage systems. Monitoring of public relations efforts, including the MWSP website, is important. Means of information sharing should be more proactive, so that stakeholders better understand and support the Project.

58. The public hygiene education and promotion program developed under the Project should be implemented at an appropriate time so the public will realize, more fully, MWSP benefits.

b. Covenants

59. Requiring key counterpart officers to remain in their offices for a certain time period is often impractical, and often cannot be fulfilled, because it is difficult to prohibit someone from moving to, or being promoted to, a better job. Continuity of the project director's appointment should be discussed openly with the EA during fact-finding, and the project should be designed accordingly. If job changes are inevitable, then a clear succession program should be established for the deputy project director to assume the project director's responsibilities. Alternatively, the project director position might be raised in the government structure, so the position is considered a promotion and significant career move.

c. Further Action or Follow-Up

60. The EA should closely monitor MWSP implementation.

d. Additional Assistance

61. During the Project, it became apparent that NWSC was paying insufficient attention to needs of the urban poor, who are not currently connected to a piped water supply. Making some grant funds available to address this issue would be good.

e. Timing of PPAR Preparation

62. Since the Engineering Project outputs are mostly study reports and tender documents, rather than physical infrastructure and facilities, the PPAR for the Engineering Project should be prepared in conjunction with the preparation of PPAR for MWSP.

2. General

63. Sustainability of the MWSP will be severely affected if urban sanitation problems result. Thus, action is essential to improve facilities for wastewater collection and treatment, in parallel with construction of water supply facilities.

REPORTS PREPARED BY THE PROJECT MANAGEMENT CONSULTANTS

No.	Title of Report	Date of Issue
1	Report of Hydrology Review	July 1999
2	Water Quality Study of Bagmati River	July 1999
3	Scoping Report for Environmental Impact Assessment, Water Treatment Project	September 1999
4	Socioeconomic Survey Report on Present Water Use and Living Environment in Kathmandu Valley	September 1999
5	Land Optimization at the Water Treatment Plant Site	October 1999
6	Bagmati River Fishery and Ecological Study, Status Report	October 1999
7	Fishery & Ecological Study of Bagmati River, Status Survey Report	November 1999
8	Due Diligence Review of Melamchi Diversion Scheme (i) Hydraulic Engineering of MDS (ii) Environmental Aspects of MDS (iii) Hydrological Aspects of MDS (iv) Socioeconomic Environment, Social Uplift and Community Development Plan of the [spell] MDS (v) Adit Access Road of MDS (vi) Water Quality and Treatment Aspects of MDS (vii) Financial Aspects of MDS (viii) Tunnel Alternative Study of MDS (ix) Review of Tunnel Engineering Aspects of MDS	November 1999
9	Due Diligence Review of Bulk Distribution System to (i) Technical Aspect of BDS (ii) Water Requirement Aspects of BDS (iii) Urban Planning Prospective of BDS	November 1999
10	Socioeconomic Survey for Mahankal Water Treatment Plant	December 1999
11	Environmental Impact Assessment for Water Supply Project	January 2000
12	Review of Final Design Study of Melamchi Diversion Scheme Part I Diversion Proposal Review Part II Potential Alternative Project Layouts	January 2000
13	Physical, Fishery, Ecological and Water Quality Aspects of Bagmati River, Melamchi Water Supply Project Part I Final Assessment Report on Water Quality of Bagmati River	January 2000
14	Design Report for Artificial Recharge Pilot Project	January 2000
15	Draft Report for Environmental and Social Issues (Subject to Revision)	February 2000
16	Supplemental Review Report for Melamchi Diversion Scheme	February 2000
17	Physical, Fishery, Ecological and Water Quality Aspects of Bagmati River, Melamchi Water Supply Project Part II Final Assessment Report on Physical, Fishery, Ecological of Bagmati River	February 2000
18	Resettlement Policy	March 2000
19	Brief Report, Fourth NGO Coordination Workshop on Program Planning of Selected Issues Related to MWSP	March 2000
20	Design Report for Artificial Recharge Pilot Project	March 2000
21	Review of Resettlement Policy	March 2000
22	Artificial Recharge Pilot Project, Tender Document Package 1: Civil and Electrical Works Component	April 2000
23	Artificial Recharge Pilot Project, Tender Document Package 2: Package Water Treatment Plant	April 2000
24	Artificial Recharge Pilot Project, Tender Document Package 3: Construction of One Recharge/Abstraction Well, Three Observation Wells & Supply and Installation of Submersible Pumps	April 2000
25	Report on Site Identification for Monitoring Well Installation	May 2000
26	NGO Participation Plan	June 2000
27	Design Report on Installation & Rehabilitation of Monitoring Well	June 2000

No.	Title of Report	Date of Issue
28	Cost Estimate for Construction of Monitoring Wells/ Rehabilitation of Existing Tube Wells	June 2000
29	Bidding Document, Package I Construction of Monitoring (Observation) Wells/Rehabilitation of Existing Tube Wells	June 2000
30	Bidding Document, Package II Construction of Monitoring (Observation) Wells	June 2000
31	Hygiene Education and Promotion Program Volume I Water Usage, Hygiene and Health (Draft) Volume II Past and Current Implementations Status (Draft) Volume III Hygiene Education and Promotion (Draft)	June 2000
32	Technical Review of Hydraulic Calculations for Bulk Distribution System	June 2000
33	Initial Environmental Examination, Melamchi Water Supply Project, Bulk Distribution System	July 2000
34	Resettlement Plan	July 2000
35	Socioeconomic Survey Report on Present Water Use and Living Environment in Kathmandu Valley Vol. I Main Report Vol. II Socio-economic Data Bank	August 2000
36	Review of Preliminary New Tunnel Design	August 2000
37	Environmental Impact Assessment Vol. I Main Report Vol. II Environmental Management Plan Vol. III Annexes to Volume I & Volume II	August 2000
38	Hygiene Education & Promotion Program Vol. IV Report on Focus Group Discussion/Community Meeting Vol. V Annexes of Knowledge, Attitude and Practice (KAP) Survey	September 2000
39	Social Dimension on Melamchi Water Supply Project	September 2000
40	Addendum to Melamchi Diversion Scheme Environmental Impact Assessment of December, 1999	September 2000
41	NGO Participation Strategy	November 2000
42	Financial Analysis of Melamchi Water Supply Project	November 2000
43	Economic Analysis	August 2000
44	Resettlement Plan	December 2000
45	Resettlement Plan Update Volume 1: Action Plan Volume 2: Inventory of Project Affected Families Volume 3: Socio-economic Profile of Project Affected Families Volume 4: Photographic Records of Heads of Surveyed Households	August 2001
46	Environmental Management Plan for Main Access Road	July 2002

NGO = nongovernment organization.

BREAKDOWN OF YEARLY DISBURSMENT OF FUNDS

($)

Year	Quarter	Asian Development Bank		Government		Total
		Amount	Cumulative	Amount	Cumulative	
1999	II	527,828.00	527,827.80	295,153.14	295,153.14	822,980.94
	III	465,785.00	993,613.18	12,471.25	307,624.39	1,301,237.57
	IV	715,150.00	1,708,763.51	108,084.24	415,708.63	2,124,472.14
2000	I	249,719.54	1,958,483.05	442,595.84	858,304.47	2,816,787.52
	II	540,565.14	2,499,048.19	98,354.63	956,659.90	3,455,708.09
	III	355,189.43	2,854,237.62	98,354.62	1,055,013.72	3,909,251.34
	IV	818,035.14	3,672,272.76	180,316.82	1,235,330.54	4,907,603.30
2001	I	107,540.39	3,779,813.15	732,307.71	1,967,638.25	5,747,451.40
	II	319,590.54	4,099,403.69	45,769.23	2,013,407.48	6,112,811.17
	III	103,295.34	4,202,699.03	125,865.39	2,139,272.87	6,341,971.90
	IV	123,677.41	4,326,376.44	240,288.46	2,379,561.33	6,705,937.77
2002	I	10,404.91	4,336,781.35	7,139.99	2,386,701.32	6,723,482.67
	II	93,793.17	4,430,574.52	42,839.94	2,429,541.26	6,860,115.78
	III	6,085.00	4,436,659.52	188,019.74	2,617,561.00	7,054,220.52

Source: Loan Financial Information System

STATUS OF COMPLIANCE WITH MAJOR LOAN COVENANTS

Covenant	Reference in Loan Agreement	Status of Compliance
The Borrower shall cause the Project to be carried out with due diligence and efficiency in conformity with sound administrative, financial, engineering, environmental and public utility practices.	4.01	Complied with
The Borrower shall make available, or cause MPPW to make available,as promptly as needed, the funds, facilities, services and other resources that are required, in addition to the loan proceeds, to carry out the Project.	4.02	Complied with
The Borrower shall ensure that its ministries and agencies cooperate fully with competent and qualified consultants and contractors acceptable to the Borrower and the Asian Development Bank (ADB), to be employed under terms and conditions satisfactory to the Borrower and ADB, in the performance of their services for the Project. The Borrower shall make available, or cause to be made available, to ADB all such information and assistance as ADB reasonably requests in carrying out the Project.	4.03(a)	Partly complied with. NWSC was uncooperative in Part C "Artificial Recharge of Groundwater."
The Borrower shall cause the Project to be carried out in accordance with plans, design standards, specifications, work schedules, and construction methods acceptable to the Borrower and ADB. The Borrower shall furnish, or cause to be furnished, to ADB promptly after preparation, such plans, design standards, specifications, and work schedules, and any material modifications made subsequently, in such detail as ADB shall reasonably request.	4.03(b)	Complied with
The Borrower shall ensure that the activities of its departments and agencies, with respect to carrying out the Project, are conducted and coordinated in accordance with sound administrative policies and procedures.	4.04	Complied with
The Borrower shall make arrangements satisfactory to ADB for insurance of project works, equipment, and vehicles financed from proceeds of the loan to such extent and against such risks and in such amounts as are consistent with sound practice.	4.05	Complied with
The Borrower shall maintain records and accounts adequate to identify the goods, services, and other items of expenditure financed from loan proceeds; and to disclose and reflect their use in the Project in accordance with consistently maintained and sound accounting principles.	4.06(a)	Complied with
The Borrower shall (i) maintain, or cause to be maintained, separate accounts for the Project; (ii) have such accounts and related financial statements audited annually by independent auditors with qualifications, experience, and terms of reference acceptable to ADB; (iii) furnish to ADB, as soon as available but no later than 6 months after the end of each fiscal year, certified copies of such audited accounts, financial statements, and auditors' reports, in English.	4.06(b)	Complied with. Audited financial statements were received with unqualified audit opinions. The audited statements were submitted before the due dates, and were of acceptable quality.

Covenant	Reference in Loan Agreement	Status of Compliance
The Borrower shall enable ADB, upon ADB's request, to discuss MPPW's financial statements and financial affairs related to the Project with MPPW's internal auditors. The Borrower shall authorize and require any representative of such auditors to participate in any such discussions that ADB requests.	4.06(c)	Complied with
The Borrower shall furnish to ADB all reports and information as ADB reasonably requests concerning (i) the loan, expenditure of its proceeds, and maintenance of its service ; (ii) goods and services financed from loan proceeds; (iii) the Project; (iv) the administration, operations, and financial condition of agencies of the Borrower that are responsible for carrying out the Project, or any part of it; (v) copies of all documents that consultants prepare relating to the Project, including reports, plans, designs, specifications, construction schedules, estimates of costs and other relevant information; and (vi) any other matters relating to purposes of the loan.	4.07(a)	Complied with
The Borrower shall furnish, or cause to be furnished, to ADB quarterly reports on the carrying out of the Project and on management of project facilities.	4.07(b)	Complied with
Soon after physical completion of the Project, but no later than 3 months afterward or on a later date agreed upon by the Borrower and ADB, the Borrower shall prepare and furnish to ADB a report on the execution and initial operation of the Project, including its cost, the Borrower's performance of its obligations under the Loan Agreement, and accomplishment of the loan's purposes.	4.07(c)	Not complied with
The Borrower shall enable ADB's representatives to inspect the Project, goods financed from loan proceeds, and any other relevant records and documents.	4.08	Complied with
The Borrower shall ensure that project facilities are operated, maintained, and repaired in accordance with sound administrative, financial, engineering, environmental, public utility, maintenance, and operational practices.	4.09	Complied with
MPPW shall be the Project's Executing Agency.	Schedule 6, para. 1	Complied with
The Project Director shall remain in office for the duration of the Project, unless otherwise agreed with ADB.	Schedule 6, para. 2	Not complied with. The original project director was replaced because he was promoted to another position 4 months after his appointment. Nine months later, the second project director was also promoted to another post and, subsequently,

Covenant	Reference in Loan Agreement	Status of Compliance
		replaced by a third project director, who served until project completion.
The Borrower shall establish a project management unit, comprising consultants and counterparts that report to the project director.	Schedule 6, para. 3	Complied with
The Borrower shall establish an engineering management unit comprising consultants that report to the project director.	Schedule 6, para. 4	Not complied with
The Borrower shall maintain the Melamchi Water Supply Development Board, which was established to make high-level decisions on the Melamchi Water Supply Project.	Schedule 6, para.5	Complied with
The Borrower shall convene semiannual meetings of representatives of the funding agencies involved in the investment project, and the Borrower's representatives.	Schedule 6, para. 6	Complied with
The Borrower shall ensure that budgetary allocations of $1.75 million equivalent of counterpart funds are provided for the Project.	Schedule 6, para. 7(a)	Complied with. Total counterpart funds allocated by the Borrower were $2.62 million equivalent.
MPPW shall ensure that costs for vehicle operation, offices and their accommodation and furnishings; vehicle purchase; transportation for counterpart travel; water, power and telephones; rental (local) and remuneration of counterparts are provided.	Schedule 6, para. 7(b)	Complied with
The Borrower shall ensure the timely release of funds to enable effective project implementation.	Schedule 6, para. 8	Complied with
The Borrower shall ensure the convening of monthly progress meetings, with minutes forwarded to ADB. The Borrower shall further ensure submission of quarterly progress reports from consultants of each project component to ADB.	Schedule 6, para. 9	Complied with. Reviews were assessed as satisfactory.

SUMMARY OF CONTRACTS FINANCED BY THE ASIAN DEVELOPMENT BANK

Description	Mode of Procurement	Contract Signed	Nationality	Amount $
A. Consultancy Contracts				
Project management	ICB	23-Mar-99	JPN/NEP	2,231,513
Bulk distribution system design	ICB	26-Mar-99	UK/GER/NEP	1,402,936
Principal consultant	DP	23-Feb-00	AUS	246,070
Panel of experts [a]	DP	27-Sep-00	AUS/CAN/GER/ITA	97,704
Ground water monitoring consultants	DP	26-Jan-00	NEP	32,258
Public relations consultants	ICB	12-Dec-00	NEP	113,604
Artificial recharge consultants	DP	21-Nov-01	NEP	11,139
B. Civil Works Contracts				
Civil and electrical component for ARPP	LCB	27-Jun-00	NEP	36,585
Package for water treatment plant ARPP	LCB	27-Jun-00	NEP	8,104
Recharge/abstraction & observations of wells	LCB	05-Jul-00	NEP	46,613
Monitoring/rehabilitation of existing tube wells	LCB	17-Aug-00	NEP	55,306
C. Supply Contracts				
Vehicles	IS	18-Dec-00	JPN	67,476
Computers, printers and accessories	IS	29-Jun-00	JPN	14,769
Photocopiers	IS	29-Jun-00	JPN	17,274
Survey equipment	DP	29-Jun-00	JPN	9,148
Total				**4,390,499**

ARPP = Artificial Recharge Pilot Project; DP = direct purchase; ICB = international competitive bidding; IS = international shopping; LCB =competitive bidding.

[a] comprised one hydraulic expert, one civil engineer, one geotechnical engineer and one tunnel engineer.

Source: Loan Financial Information System