Semi-Annual Environmental Monitoring Report

Project number: 34304-043

Period: July – December 2016

NEP: Kathmandu Valley Water Supply Improvement Project

Project Implementation Directorate (PID) Kathmandu Upatyaka Khanepani Limited (KUKL) Anamnagar, Kathmandu

NEP: Kathmandu Valley Water Supply Improvement Project- ADB LOAN NO 2776/3255 NEP

Submitted by

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In association with

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Prepared by Safeguards Unit of Project Implementation Directorate (PID), Kathmandu Upatyaka Khanepani Limited (KUKL), for Nepal and the Asian Development Bank.

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Abbreviations

ADB	Asian Development Bank
AP	Affected person
BDS	Bulk distribution System
B/T	Black Top Road
C-EMP	Contractor's Environmental Management Plan
CSE	Construction Supervision Engineer
CAPC	Community Awareness & Participation Consultant
DSMC	Design & Supervision Management Consultant
DMA	District Metering Areas
DSC	Design & Supervision Consultant
DNI	Distribution network Improvement
DoR	Department of Road
EAFT	Environmental Assessment and Review Framework
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMMP	Environmental Management & Monitoring Plan
EMR	Environmental Monitoring Report
EPA	Environment Protection Act
EPR	Environment Protection Rules
EO	Environmental Officer
ES	Environmental Specialist
ESA	Environmental Safeguard Assistant
EE	Environmental Expert
Ft	Feet
GRM	Grievance Redress Mechanism
GoN	Government of Nepal
HHs	Households
Ht	Height
IEE	Initial Environmental Examination
KUKL	Kathmandu Upatyaka Khanepani Limited
KMC	Kathmandu Metropolitan City
KVWSMB	Kathmandu Valley Water Supply Management Board
MoPE	Ministry of Population and Environment
MoWSS	Ministry of Water Supply and Sanitation
MLD	Million Liters per Day
NPR	Nepalese Rupee
NRW	Non-Revenue Water
OHS	Occupational Health and Safety
PID	Project Implementation Directorate
PPTA	Project Preparatory Technical Assistance
PPEs	Personal Protective Equipment
PMU	Project Management Unit
REA	Rapid Environmental Assessment
RCP	Road Cutting Permit
SPS	Safeguard Policy Statement
SESS	Safety, Environmental and Social Safeguards
SRT	Service Reservoir Tank
ToR	Terms of Reference
TLO	Tole & Lane Organization
WSTFC	Water Supply Tariff Fixation Commission

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1. INTRODUCTION

1.1 Background

The Government of Nepal (GoN) with assistance of the Asian Development Bank (ADB) is implementing the urban water supply system in the Kathmandu valley. The executing agency for the project is the Ministry of Water Supply and Sanitation (MoWSS) and the implementing agency is Kathmandu Upatyaka Khanepani Limited, Project Implementation Directorate (PID).

The GoN has managed to achieve substantial progress in institutional reforms in the water services sector of the Kathmandu Valley, including the separation of asset ownership from management, establishment of an independent regulatory commission for regulating the water tariffs, and setting up an autonomous water operator company under the *Company Act 2006*. Three key entities, namely: (i) the Kathmandu Valley Water Supply Management Board (KVWSMB), asset owner of water and wastewater systems within the Kathmandu Valley; (ii) the Water Supply Tariff Fixation Commission (WSTFC) responsible for the economic regulation of the sector; and (iii) the Kathmandu Upatyaka Khanepani Limited (KUKL) in charge of operating the assets under lease and license from KVWSMB, have been established. Relevant laws namely the *Water Supply Management Board Act 2006*, the *Water Supply Tariff Fixation Commission Act 2006* and the Amendment to the (existing) *Nepal Water Supply Corporation Act 1989*, have been amended and enacted to allow the implementation of these institutional reforms.

The water supply system suffers both from partial coverage (only 70% of the total 2.8 million population covered) and inadequate supply (100 to 150 MLD production as against an estimated demand of 190 MLD at the consumer end). Added to this is the old water supply system with aging and profusely leaking pipes resulting in high water losses (estimated at 45%). Besides, there are numerous illegal and unauthorized multiple connections, resulting in a large portion of unaccounted for water (UFW).

ADB Loan 1820–NEP: Melamchi Water Supply Project, Subproject-2

PMU (Project Management Unit) for Subproject 2 was envisaged to implement activities to improve water supply and wastewater facilities within the service area of KUKL in the Kathmandu Valley – both immediately and in the long term when Melamchi water is eventually delivered. The project implementation unit needed to be fully equipped and authorized to make prompt decisions in procurement and implementation. To address this issue, all concerned stakeholders agreed to establish a Project Implementation Directorate (PID) under the KUKL Board of Directors separate from KUKL's day–to-day management with its own independent financial mechanism. The PID would be responsible for managing and implementing all KUKL externally assisted projects, including the on-going Loan 1820 MWSP subproject-2 and Loans 2058/59 plus the preparation of future ADB loan projects.

In 2009, to assist the Government of Nepal further with its urban infrastructure development mission, ADB carried out a Project Preparatory Technical Assistance (PPTA-4893) with the

objective to develop an investment plan for the year 2025 for both water supply and wastewater treatment investments. The PPTA study examined, reviewed, analyzed all existing actions completed and ongoing and gaps in the water and wastewater sector. PPTA prepared a rolling plan for annual investment of water supply and wastewater system improvement works based on prioritized needs covering from 2010 to 2015. The PPTA reviewed the proposals of BDS (Bulk Distribution System) detailed design study and finalized the configuration of the bulk supply and distribution network system and carry out preliminary designs of the distribution network and BDS.

Kathmandu Valley Water Supply Improvement Project (ADB Loan 2776-NEP)

The project cost of $80 million was approved on 16 September 2011, mainly towards improvement of water transportation, storage and distribution system, including efficiency improvement, service delivery, institutional development and governance in the water sector in the Kathmandu Valley.

Formulated with the above PPTA, this project is designed to complement past and ongoing efforts to develop a reliable, equitable, and sustainable water supply system in Kathmandu Valley. While ongoing projects are investing in source augmentation, construction of the Melamchi tunnel and water treatment plant, this project focuses on distribution of water from the treatment plant to consumers, and improve efficiency and service delivery. The project also supports and consolidates institutional development and improvement of governance in the water sector in Kathmandu Valley.

Subsequent to restructuring of the previous loans and change in implementation arrangements, the available funds have been prioritized for source augmentation, i.e. the Melamchi tunnel. The Japan International Cooperation Agency (JICA), in a parallel financed project, is providing support for a water treatment plant to utilize water from the Melamchi tunnel. With the work on source development and treatment works in progress, to fully utilize the benefits of these ongoing projects, ADB has formulated this project to supply treated water to the consumers.

The project was developed using lessons from previous ADB interventions. An important lesson from earlier projects was to give importance to rehabilitation of networks along with the creation of assets. Accordingly, the project will focus on reducing Non-Revenue Water (NRW) and improving the existing network. To drive efficiencies and introduce best practices, the project will utilize the district metering areas (DMA) approach for distribution network improvement and NRW reduction. With the completion of the Melamchi tunnel, the Kathmandu Valley will receive an additional 170 million litres per day (MLD) water in 2014, while the current average availability is only 100 MLD against a demand of 367 MLD for 2014-15. The project will adopt contracts with adequate provisions to monitor NRW reduction, introduce asset management plans, and develop a geographical information system (GIS) to maximize benefits.

The Project Implementation Directorate (PID) of Kathmandu Upatyaka Khanepani Limited has engaged an international consulting firm CDM Smith Inc. USA in association with domestic consulting firms TAEC Consult P. Ltd. and Integrated Consultants Nepal P. Ltd. as the Design, Supervision and Management Consultant (named as DSC-03) in accordance

with the Quality and Cost Based Selection (QCBS) procedure set out in ADB's Guidelines on the Use of Consultants (2010, as amended from time to time). The agreement was done on 10th August 2012. Subsequently, the Consultant has mobilised its working team and commenced its services from September 2, 2012 and participated in the ADB mission's first meeting.

This Bi-annual Environmental Monitoring report covers the progress of environmental monitoring from July 2016 to December 2016.

1.2 Objectives

The main objective of the environmental compliance monitoring is to monitor the activities during pre-construction and construction phase to ensure that the implementation is carried out in accordance with the approved Environmental Management Plan (EMP). The objectives are to:

- Monitor the overall project implementation as per Environmental Management Plan during each bulk distribution system (BDS) and distribution network improvement (DNI) construction work package.
- Assess whether mitigation measures proposed in EMP is being implemented, and reported accordingly.
- Recommend additional or alternative measures needed to assure that environmentally sensitive areas as per the EMP.
- Monitor health and safety (HS) measures adopted during the construction period.
- Provide abatement strategies or control measures.

2. Approach and Methodology for Environmental Compliance Monitoring

The present environmental monitoring report has been prepared based on the Environmental Management Plan (EMP) described in the IEE (Initial Environmental Examination) report of the project which has been approved by the ADB and the Government of Nepal. The IEE report with the EMP is a part of the contract documents. EMPs were strictly followed at each construction package to mitigate the impacts caused by activities during pre-construction and construction phase. Appropriate safeguards, personal protective equipment (PPEs) and safe working procedures and standards applied at each construction package were stringently monitored. The major activities undertaken during the preparation of the environmental monitoring report are outlined below.

2.1 Desk Review

The project engineering report, IEE report and other relevant documents were thoroughly reviewed. The relevant policies, legislations and guidelines were also consulted. The desk study also involved the preparation of checklists for detailed field study to collect the primary

data within the Zone of Influence (ZOI). An environmental monitoring checklist was prepared to find the implementation status of the Environmental Management Plan (EMP) by the contractors and monitoring methods adopted in the project.

2.2 Safety, Environmental and Social Safeguard (SESS) Checklist

Various review and follow-up meetings were conducted during the development and preparation of the Safety, Environmental and Social Safeguards (SESS) checklist in the project work for safeguard compliance. Finalization of the SESS checklist, Project Board, Safety Signage and Barricades was done in presence of ADB/PID/DSC-3 and CAPC on the following agenda.

- Finalization of the field SESS checklist
- Finalization of Work Implementation Procedural Framework (WIPF)
- Maintaining the uniformity among the Project Board, Safety Barricades and Signage used by all contractors at the construction sites under the different contract packages.
- Joint spot check of working environment of DSC-3 work site at Kathmandu

On the other hand, various follow up meetings were conducted with all contractors at DSC-3 to get commitment and agreement to provide all required PPEs to workers and supervisors and display safety signage and barricades, project board and implementation of SESS checklist at each construction site of different packages.

Moreover, a management meeting on Safeguard Compliance was conducted with all contractors in the presence of ADB/PID/DSC-3 and CAPC on the following agenda.

- Commitment and agreement to comply with the SESS checklist developed in consultation with ADB/PID/CAPC
- Commitment and agreement to provide and install all safeguard items indicated in the SESS checklist
- Commitment and agreement to provide an independent team of workers managed by safety officer to install and remove the safeguard items indicated in the SESS checklist

Agreed actions with contractor's authorized representative were as follows:

- All Contractor's authorized representative to Note agreed compliance to the SESS checklist
- Contactors raised the issue of removing the excavated material and associated cost for Blacktopped road. PID/Engineer agreed that material removal is dependent on road lane area to be occupied and that necessary diversion plan needs to be approved by the Traffic Authority. Failing to obtain an approved diversion plan will then require removal for only one lane of 3.5 m can be allowed to be occupied for the pipe installation work.

An orientation program was conducted by the Environmental expert of DSC-3 for implementation of revised SESS checklist at construction site for contractor's representative/ project manager, site engineers/supervisors and group leaders of BDS and DNI contractors at consultant site office from 28 August to 04 September, 2016.

A revised SESS checklist, presented in Table 1, was prepared with provision of score for laying of pipelines by focusing on monitoring of key safeguard compliance activities by workers and field engineers/ supervisors of contractors. It was monitored by the environmental expert of DSC-3 according to the Environmental Safeguard Work Program as shown in Table 2, for each construction package and mitigated by construction engineers of contractors if compliance is not observed during safeguard audit as per mitigation measures proposed in the EMP

For an effective implementation of environmental safeguards, a time bound committed remedial actions were seek out by DSC-3 contractors for each construction site and a consolidated monthly report was submitted to PID/ADB, and PID will submit semi-annual environmental report to ADB for final review and disclosure.

Table 1:CHECK LIST: SAFETY, ENVIRONMENT AND SOCIAL SAFEGAURDS (SESS) – PIPE LINE WORKS

Kathmandu Valley Water Supply Improvement Project **Project Implementation Directorate, Kathmandu Upatyaka Khanepani Limited**							
Name of Work:							
Name of Contractor:							
Contract No:			**Monitoring Date**				
			Time				
Place:							
SN	**Subject**	**Activities**	**Yes** √	**No** X	**Full Score**	**Achieved Score**	**Remarks**
1	Signage	Available Sign Board with the Name of Project & Contractor			3		
		Available Visible Sign Board for Traffic Alternative Route			3		
2	Health & Safety	Available of authorized representative of contractor at work site (Engineer/Supervisor)			3		
		Regular visit of work area for supervision by contractor's Safety supervisor			3		
		Metal hoarding/Sheet fence (Safety Barrier) for BDS & DNI Primary line works on Black topped Roads Available			5		
		Hard Barricading for Working Area: Minimum 4 ft. hight Metal posts with Nylon Ropes in 3 rows for DNI works on Non-Black topped/Black topped Roads Available			5		

		Entry of Non-Authorized Person inside the area of Safety Barriers			3		
		Trench Shoring for BDS & DNI Primary line Available			4		
		Use of Personnel Protective Equipments (PPEs) by Workers i.e. hard helmets, PPE vest, Gloves, Safety Glasses, Boots, Masks etc and mention in remarks the % of use and which PPEs is not used.			7		Mandatory
		Grant of Permission for entry inside the work areas with safety barrier to the site engineer and other construction personnel without the use of PPEs such as Hard helmets and Reflector Jacket.			2		
		First Aid Box at Working Area Available			4		
		Drinking Water at Working area Available			2		
3	Grievances Redress Mechanism	Help Desk: Table, Chair and First Aid with Grievance Register Available visible by Public			3		
		Helper at Help Desk Available			2		
4	Traffic and Pedestrians Access without obstruction and Housekeeping of work area	Cross over metal platforms on trench of BDS & DNI Pipeline work Available			4		
		Availability of platforms on loose soil and Pit for safe pedestrians Access			3		

		On basis of width of Road, Availability of half portion of road is open for Traffic and Pedestrians Access during construction			5		
		Cleanliness of Working Area and Access Road by immediate removal of loose soil, dust, aggregated and excavated soil			8		Mandatory
		Availability of Safety Barrier at Pits excavated for house connection and Pressure test, If work is not immediately completed			5		
		Excess soil to be removed after the laying pipe in trench with house connection, backfilling and compaction in BDS and DNI Work on any Road			15		Mandatory
5	Damages/Repairs in Service Sector	Availability of record keeping system for damages in private and social structure			3		
		Leaving pipe laying area clean with compaction in previous condition after pipe laying in road for each 30 m stretch			5		
		Temporary reinstatement of black topped road shall be done within 2 days in BDS & DNI Pipeline work			3		
		TOTAL			100		

Following Recommendations has been made on basis of achieved score and above mention activities
a. Constrution work to be proceed due to best performance of safe guard activities
b. Following Issues shall be addressed immediately to work further proceed because safe guard related work is not satisfactory
1 .....
2 .....
3 .....
c) It is required to get re-approval from Engineer for further work proceed by immediate work stoppage after the implementation of following corrective actions because of poor compliance of safeguard standards
1 .....
2 .....
3 .....

	Overall Grading %	
	Excellent	Above 90
	Very Good	80-89
	Good	60-79
	Poor	below 60

Monitored By	**Monitored By**	**Construction Representative who has accepted the above refered monitoring work**
DSC: Name: Signature: Date: Mob. No:	CAPC: Name: Signature Date: Mob. No:	Name: Signature: Date: Mob. No

Note: **a) If assign score is not fully applicable, will be added to total achieved sc**

b) Inspector may stoppage the work if achi is less than 60 during inspection

CC:

a) Project Implementation Directorate

b) Design and Supervision Consultant

c) CAPC

d) Contractor

Table 2: Environmental Safeguard Work Program

Table 2 : Kathmandu Upatyaka Khanepani Ltd, Project Implementation Directorate
Kathmandu Valley Water Supply Improvement Project
Environmental Safeguard Work Program from August 2016 to December 2016

SN	Activities	Responsible Party	August, 2016				Sep, 2016				Oct, 2016				Nov, 2016				Dec, 2016				Remarks
			Package	Orientation Date		Week 4	Week 1	Week 2	week 3	week 4	week 1	week 2	week3	week 4	week 1	week 2	week 3	week 4	week 1	week 2	week 3	week 4	
1	Orientation by DSC-3 to Contractors	DSC-3/Contractors/ CAPC	DNI 2	28 August, 2016			Completed																Status OK
			DNI 3	29 August, 2016			Completed																Status OK
			DNI 1	30 August, 2016			Completed																Status OK
			BDS 1	1 September, 2016				Completed															Status OK
			BDS 2	31 August, 2016				Completed															Status OK
			BDS 3	2 September, 2016				Completed															Status OK
			BDS 4	4 September, 2016				Completed															Status OK
2	Orientation by Contractors to Workers	Contractors	BDS/DNI						Completed														Status OK
3	Report for 2	Contractors	BDS & DNI						Received														Status OK
4	SESS checklist Audit(Two sites a Week)	DSC-3/Contractors/ CAPC	DNI 1	Overall Grading %					To Commence on 18/9														
			DNI 2	Excellent	Above 90																		
			DNI 3	Very Good	80-89																		
			BDS 1	Good	60-79																		
			BDS 2	Poor	below 60																		
			BDS 3																				
			BDS 4																				
5	Display of Signage, Project board/Hoarding at Site	Contractors							To Commence on 16/9														
6	Data collection on Ambient Air Quality	Contractors																					
7	Report Collection from CSEs on WIPF Activities	PID/DSC-3/CAPC																					Intermittents
8	Submission of Quarterly Progress Report on SESS Audit to PID/ADB	DSC-3																					
9	Submission of Bi Annual EC & M Report to PID/ADB	DSC-3																					

2.3 Field Work

A detailed field investigation was carried out from July to December 2016 to collect the information regarding the implementation status of EMP. Efforts were made to identify, mitigate and compensate likely environmental impacts during different phases of the project. Various methods for improving the effectiveness of the environmental management plan was discussed with the team members of DSC, CAPC and the contractors. The approved safety, environmental and social safeguard monitoring checklist was used to check proposed mitigation measures and their implementation status was noted. Generally, site engineers of DSC and CAPC's social mobilizers/enumerators inspect the site works daily and submit the EMP implementation status report along with the monthly progress report to DSC for review. A time bound committed safeguard remedial actions recommended by DSC-3 through a written letter shall be implemented by contractors, if not properly addressed the safe guard issues at work site. The result of the Environmental Safeguard Compliance Audit (SCA), which was carried out from 28 September, 2016 till the end of December 2016 as per Environmental Safeguard Work Program, is presented in Table 3. The filled up SESS checklist forms are attached in Annex: 3.

Table 3: Environmental Safeguards Compliance Progress Status

SN	Audit Date	Name of Contractor	Package	Total Achieved Score %	Compliance Status	Remarks
1	28 /9/ 2016	Sumec-Lama JV	DNI-3	38	**Very Poor**	Contractor was Informed
2	03/10/ 2016	Sumec-Lama JV	DNI-3	72	Good	OK
3	29/11/2016	Sumec-Lama JV	DNI-3	73	Good	OK
4	08/12/2016	Sumec-Lama JV	DNI-3	68	Good	OK
5	18/12/2016	Sumec-Lama JV	DNI-3	65	Good	OK
6	04/10/2016	JWIL/SCPL JV	BDS-2	72	Good	OK
7	29/9/ 2016	JWIL/SCPL JV	BDS-2	81	Very Good	OK
8	19/10/2016	Hangzhou/ Sharma JV	DNI-2	73	Good	OK
9	21/10/2016	Hangzhou/ Sharma JV	DNI-2	73	Good	OK
10	10/11/2016	Hangzhou/Sharma JV	DNI-2	76	Good	OK
11	26/12/2016	Hangzhou/Sharma JV	DNI-2	70	Good	OK
12	25/10/2016	Tainjin/Raman JV	BDS-3	68	Good	OK
13	23/11/2016	JWIL/SCPL JV	BDS-2	79	Good	OK
14	02/12/2016	Hangzhou /Kalika JV	DNI-1	65	Good	OK
15	03/12/2016	Hangzhou /Kalika JV	DNI-1	56	**Poor**	Contractor was Informed
16	22/11/2016	Hangzhou/Kalika JV	DNI-1	71	Good	OK
17	19/12/2016	Hangzhou/Kalika JV	DNI-1	46	**Very Poor**	Contractor was Informed
18	22/12/2016	Hangzhou/Kalika JV	DNI-1	65	Good	OK

2.4 Collection and Review of Secondary Sources of Information

The secondary information such as safeguard equipments used, EMP implementation status, status on implementation of safety, environment and social safeguard activities by contractors were collected through the monthly progress reports that are submitted by contractors and site engineers of DSC. Information was also collected from the contractor's records and DSC's technical documents. Please refer the monthly Progress Report of BDS and DNI packages, which includes the reports from July to December 2016 and Work Methodology, Traffic Management Plan and Dust Control Management for Road Reinstatement works for Municipal Road for DNI Package (Contract No: KUKL/DNI/Municipal Road 1 is given in Annex-2 and BDS package 4 in Annex 2. Both Package are under Loan 3255. At this moment Survey work has been conducted for Road Reinstatement works for Municipal Road.

2.5 Compilation of Existing Information, Implementation Status and Monitoring Methods

The information and data regarding monitoring works and implementation status of EMP was compiled with reference to the IEE report, design reports, contractor records, physical checking, discussions with different stakeholders and visual records, qualitative as well as quantitative analysis of monitoring parameters, reports from site engineer and subjective judgments. Thus the information collected from different sources was processed and analyzed according to the physical, biological, socioeconomic and cultural environments within the zone of influence. The secondary data collected were the major sources for verification and cross checking of primary data during the field survey. The information generated from the primary source was analyzed, tabulated and prioritized. A realistic approach was applied for the implementation of the mitigation measures given in EMP in the local context.

3. Project Progress and Status

Project progress and status of BDS and DNI works is presented in Table 4.

Table 4: Project Progress and Status

S. N	Locations	Sub-project components (package no.)	Name of the contractor	Listing of works under the package	Starting date (land clearance) and schedule date of completion	What type of works continue at present	Progress percentage
BDS-SRT/01/01							
I	Mahankal Chaur J4 –Chabahil	**BDS-SRT/01/01**	JITF, Delhi	Pipe laying	Commencement date 26/3/ 2014 completion 3/10/2016	Pipe laying & Road Reinstatement work	55.60
	Chabahil-Narayan Gopal Chowk	**BDS-SRT/01/01**	JITF, Delhi	Pipe laying	Commencement date 26/3/ 2014 completion 3/10/2016	Pipe laying & Road Reinstatement work	62.64
II	J2 – Arubari SRT	**BDS-SRT/01/01**	JITF, Delhi	Pipe laying	Commencement date 26/3/ 2014 Completion 6/6/2017	None	None
	J4 – Mahankal Chaur II SRT	**BDS-SRT/01/01**	JITF, Delhi	Pipe laying	Commencement date 26/3/ 2014 Completion 6/6/2017	None	None

S. N	Locations	Sub-project components (package no.)	Name of the contractor	Listing of works under the package	Starting date (land clearance) and schedule date of completion	What type of works continue at present	Progress percentage
	SRT at Arubari, 8,500 m^3	**BDS-SRT/01/01**	JITF, Delhi	SRT	Commencement date 26/3/ 2014 Completion 6/6/2017	Earth work Excavation on Progress	7.0
	SRT at Mahankal Chaur II – 8,000 m^3	**BDS-SRT/01/01**	JITF, Delhi	SRT	Commencement date 26/3/ 2014 Completion 6/6/2017	Plaster finishing work of SRT	80.0
III	Narayan Gopal Chowk – New Bansbari SRT	**BDS-SRT/01/01**	JITF, Delhi	Pipe laying	Commencement date 26/3/ 2014 Completion Date 21/8/2016	None	None
	Chabahil Chowk – Gausala	**BDS-SRT/01/01**	JITF, Delhi	Pipe laying	Commencement date 26/3/ 2014 completion 21/8/2016	Pipe laying and Road reinstatement work	4.0
	SRT at Bansbari, 9,500 m^3	**BDS-SRT/01/01**	JITF, Delhi	SRT	Commencement date 26/3/ 2014 completion 21/8/2016	Plaster Finishing work	91.0

S. N	Locations	Sub-project components (package no.)	Name of the contractor	Listing of works under the package	Starting date (land clearance) and schedule date of completion	What type of works continue at present	Progress percentage
IV	Khasibazaar – Sita Petrol	**BDS-SRT/01/01**	JITF, Delhi	Pipe laying	Commencement date 26/3/ 2014 completion 11/12/2016	None	21.2
	Sita Petrol – Balkhu	**BDS-SRT/01/01**	JITF, Delhi	Pipe laying	Commencement date 26/3/ 2014 completion 11/12/2016	None	82.16
	Near Ekanta Kuna – Talchhikhel Chowk	**BDS-SRT/01/01**	JITF, Delhi	Pipe laying	Commencement date 26/3/ 2014 completion 11/12/2016	None	96.34

BDS-SRT/01/02

I	Panipokhari SRT	**BDS-SRT/01/02**	JWIL-SCPL JV	SRT	Site possession 6/14/ 2015; completion 8/4/2016	wall concreting completed	68.0
S. N	**Locations**	**Sub-project components (package no.)**	**Name of the contractor**	**Listing of works under the package**	**Starting date (land clearance) and schedule date of completion**	**What type of works continue at present**	**Progress percentage**
I	Narayan Gopal Chowk to Machapokhari(Balaju Bypass)	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 1100 mm DI pipe	Pipeline 22/6/2016	Pipe laying & hydro testing	73.4
	Machapokhari (Balaju By-pass) to Balaju SRT	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 100 mm DI pipe	-	-	-
	Narayan Gopal Chowk to Panipokhari SRT	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 5800 mm DI pipe	-	-	-

II	River crossing at Bagmati River – Balkhu	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 400 mm DI pipe at river crossing	Site possession 12/2/2016; completion 15/6/2016	River diversion works	45.0
S. N	**Locations**	**Sub-project components (package no.)**	**Name of the contractor**	**Listing of works under the package**	**Starting date (land clearance) and schedule date of completion**	**What type of works continue at present**	**Progress percentage**
II	Kalanki (near Makalu Bus Stop) to Khasi Bazaar, Kalanki	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 700 mm DI pipe	Site possession 13/3/2016	Pipe laying and hydrostatic pressure test	14.6
	Pipeline works near Ekanta Kuna – Balkhu	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 400 mm DI pipe	Site possession 23/3/2015;	Pipe laying and hydrostatic	75.0

						pressure test	
S. N							
	Pipeline works from Talchikhel Chowk to Tinkuna Chowk	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 800 mm DI pipe	21/7/2015	Pipe laying	68.3
III	Khumaltar SRT	**BDS-SRT/01/02**	JWIL-SCPL JV	SRT	Site possession 1/5/2015;	45% roof slab completed	80.0
SN	**Locations**	**Sub-project components (package no.)**	**Name of the contractor**	**Listing of works under the package**	**Starting date (land clearance) and schedule date of completion**	**What type of works continue at present**	**Progress percentage**
	Tinkune Chowk (near the airport) to Gaushala Chowk	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 900 mm DI pipe	9/8/2016	Pipe laying	65.4

	Thapathali to Maitighar	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 800 mm DI pipe	-	-	-
	Maitighar to Anamnagar SRT	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 400 mm DI pipe	-	-	-
III	Minbhawan Junction (Arniko Highway) to Maitighar	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 500 mm DI pipe	-	-	-
III	Minbhawan Junction (Arniko Highway) to Tinkune Chowk (near Airport)	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 400 mm DI pipe	5/12/2016	Pipe laying	27.0
III	Minbhawan Junction (Arniko Highway) to Minbhawan SRT	**BDS-SRT/01/02**	JWIL-SCPL JV	Laying of 400 mm DI pipe	-	-	-
			BDS-SRT/01/03				
	Balaju	**BDS-SRT/01/03**	Tianjin – Raman Jv	SRT	Site possession 18/8/2014; completion 13/12/2016	Roof slab concrete preparation	80.0
	Balaju Park to SRT	**BDS-SRT/01/03**	Tianjin – Raman Jv	SRT approach road	Site possession 18/8/2014; completion 13/12/2016	Clearance of earthen drains	-

I	Machhapokhari to Balaju Chowk	**BDS-SRT/01/03**	Tianjin – Raman Jv	Laying of 1000 mm DI pipe	Site possession 18/8/2014; completion 13/12/2016	Pipe laying and hydrostatic pressure test	92.71
	Balaju Chowk to Kalanki (near Makalu Bus stop)	**BDS-SRT/01/03**	Tianjin – Raman Jv	Laying of 700 mm DI pipe	Site possession 18/8/2014; completion 13/12/2016	Pipe laying, River Crossing & Pressure Test	75.0
II	Balaju Chowk to Lainchaur Chowk	**BDS-SRT/01/03**	Tianjin – Raman Jv	Laying of 700 mm DI pipe	Site possession 1/12/2014; completion 14/6/2016	Pipe laying started in October 2014 and stopped in February 2015	85.07
	Lainchaur Chowk to Thapathali Chowk	**BDS-SRT/01/03**	Tianjin – Raman Jv	Laying of 500 mm DI pipe	Site possession 1/12/2014; completion 14/6/2016	Pipe laying at Tudikhel/Ratn apark	20.0
	Thapathali Chowk to Ekantakuna Chowk	**BDS-SRT/01/03**	Tianjin – Raman Jv	Laying of 500 mm DI pipe	Site possession 1/12/2014; completion 14/6/2016	Not yet started	-
	Gaushala Chowk to New Baneshwar Chowk	**BDS-SRT/01/03**	Tianjin – Raman Jv	Laying of 500 mm DI pipe	Site possession 1/12/2014; completion 14/6/2016	Pipe laying in common pipeline trench.	6.0
DNI Package 1 (DNI/01/04)							

DNI 1, 2, 6	1- Teku, New Road Lainchaur, Naxal, Dillibazar, Putalisadak, Thapathali, Tripureshwar 2 – Naxal, Hadigaon, Ratopul, Gaushala, Bhimsengola, Purano Baneshwar, Setopul, Maitidevi, Ghattekulo, Putalisadak, Dillibazar 6- Pulchauk, Mangal Bazar, Patan Sundhara, Guwarko, Satdobato, Ekantkuna, Juwalakhel, Man Bhavan, Lagankhel,	**DNI Package-1**	Hangzhow Kalika JV	DI/HDPE (150 – 1000 mm DI and 75 – 110mm HDPE) pipe laying (124.1km) road reinstate ment works	Site possession 8/8/2013; completion 7/8/2016	Pipe laying and road reinstatement works	46.08
DNI Package 2 (DNI/01/05)							
DNI 3, 4, 5, 7	3- Naya Baneshwar; Sinamangal; 4- Anamnagar; Babarmaha;l Thapathali; 5- Pulchowk, Mangal Bazaar,	**DNI Package - 2**	Hangzhow Sharma JV	DI/HDPE (150 – 1000 mm DI and 75 – 110mm HDPE) pipe laying (178.4 km) and road reinstate ment works;	Site possession 22/12/2013; completion 22/12/2016	Pipe laying and road reinstatement works	43.0

	Gwarko, Balkumari, UN Park, Thapathali Bridge, 7- Kathmandu Darbar Square, Indrachowk, Asan, Keshar Mahal, Naya Bazaar						
DNI Package 3 (DNI/01/06)							
DNI **8, 9, 10, 11**	8 – Kupondole, Jawlakhel,Sanepa, Ekantakuna 9 – Koteshwar, Narephat 10 – Chamati, Dallu 11 – Kalimati, Kalanki, Balkhu	**DNI Package-3**	SUMEC Lama JV	DI/HDPE (150 – 600 mm DI and 75 – 110mm HDPE) pipe laying (137.6 km); road reinstatement works and river crossings at different locations.	Site possession 06/05/2013; Completion 07/05/2016; (Process of EOT in progress;	HDPE/DI Pipe laying and road reinstatement works; river crossing works.	58.0
DRILLING and DEVELOPMENT of 20 TUBEWELLS (DNI/02/20)							
1	Bode 1	DNI/02/20	Ningbo-Kankai JV	Drilling and development of tube wells completed	7/7/2013 to 6/9/2014 with Extension of time to 13 October 2016 due to site possession	None	100%

2	Mahadev-khola 2 (near Gunstar, Balaju)	DNI/02/20	Ningbo-Kankai JV	Drilling and development of tube wells completed	7/7/2013 to 6/9/2014 with Extension of time to 21 September 2016 due to site possession,	Connected to KUKL	100%
3	Bode 2	DNI/02/20	Ningbo-Kankai JV	Drilling and development of tube wells	7/7/2013 to 6/9/2014 with Extension of time to 14 December 2016 due to site possession	Civil work	100%
4	Maitrinagar (Balkhu 2)	DNI/02/20	Ningbo-Kankai JV	Drilling and development of tube wells completed	7/7/2013 to 6/9/2014 with Extension of time to 12 August 2016 due to site possession	None	35%
5	Chyasal (Lalitpur)	DNI/02/20	Ningbo-Kankai JV	Drilling and development of tube wells completed	7/7/2013 to 6/9/2014 with Extension of time to 09 December 2016 due to site possession	G/H drain construction	100%

6	Bhar-wacho Asaga, Bhaktapur-17 (Dudhpati)	DNI/02/20	Ningbo-Kankai JV	Drilling and development of tube wells completed	7/7/2013 to 6/9/2014 with Extension of time to 09 December 2016 due to site possession	None	75%
7	Koteshowr 8. Mahadev Sthan	DNI/02/20	Ningbo-Kankai JV	Drilling and development of tube wells completed	7/7/2013 to 6/9/2014 with Extension of time to 23 December 2016 due to site possession	Construction of water treatment plant	85%
8	Goldhunga	DNI/02/20	Ningbo-Kankai JV	Drilling and development of tube wells completed	7/7/2013 to 6/9/2014 with Extension of time to 17 December 2016 due to site possession	G/H construction	80%
9	Sunkothi	DNI/02/20	Ningbo-Kankai JV	Drilling and Installation of Casing Pipe of tube wells completed	25/11/2016 to 17/12/2016 with Extension of time to 04 February 2017 due to site possession	-	-

10	Among the 11 tube wells along the Bagmati Corridor, the Bagmati High Level Authority has given permission for 2 tube wells only.	-	-	-	-	-	-

4. Compliance with Environmental Covenants

DSC with the support of PID/KUKL has been striving to adhere and meet all the Environmental Covenants stipulated in the project documents. The ADB and the Government of Nepal (GoN) require all projects to undergo environmental assessment. All projects funded by the ADB must comply with the Safeguard Policy Statement (SPS) 2009 to ensure that projects are environmentally sound, are designed to operate in compliance with applicable regulatory requirements, and are not likely to cause significant environmental, health, or safety hazards. Based on the finding of the IEE, the classification of the project as category "B" is confirmed and no further detailed EIA needs to be undertaken to comply with ADB SPS (2009), requiring an IEE only because project has few adverse impacts which are anticipated during construction period, but in specific areas and for short duration, confined within the active work sites and their immediate vicinities i.e. dust, noise, traffic problem, access to building/shop etc. Adverse environmental impacts of the planned water supply project for the Kathmandu valley is considered as not significant, and can be easily and reasonably mitigated through mitigation measures and regular monitoring during construction and operation stage. On the GoN side, the statutory requirement that has to be adhered to is the *Environment Protection Act 1997*, and *Environment Protection Rules 1997* (and as amended in 1999 and 2007). The project has satisfied all the compliance requirements of the Government of Nepal, as the TORs and IEEs have been approved by MoWSS. Table 5 summarizes the status of the major project covenants and their compliances. Table 6 presents the compliance status of Environmental Management and Monitoring Plan (EMMP) during pre-construction and construction stages.

Table 5: Loan Covenants and Status of Compliance

S. No	Environmental Covenants (with reference to Loan Agreements)	Responsibility	Period/ Deadline	Current Status	Remarks
1	**LA, Schedule 5, Para. 10:** The Borrower shall ensure or cause MoWSS and KUKL to ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project and all Project facilities comply with (a) all applicable laws and regulations of the Borrower relating to environment, health and safety; (b) the SPS, 2009; and (c) all measures and requirements set forth in the IEE, the EMP, EARF and any corrective or preventative actions set forth in a safeguards monitoring report.	MoWSS/PID/KUKL	Before contract Item (c) during project implementation.	IEE report of the project including the EMP has been approved by MoWSS and ADB Being complied with IEE and its EMP	Pl refer Annex: 3
2	**LA, Schedule 5, Para. 13:** The Borrower shall make available or cause KUKL to make available necessary budgetary and human resources to fully implement the EMP.	MoWSS/PID/KUKL	Before bidding	Complied .	Pl refer BDS/DNI Contract Agreements and BOQ provisions

3	**LA, Schedule 5, Para. 14:** The Borrower shall ensure or cause KUKL to ensure that all bidding documents and contracts for Works contain provisions that require contractors to: (a) comply with the measures relevant to the contractors set forth in the IEE, the EMP, and any corrective or preventative actions set forth in a safeguards monitoring report; (b) (b) make available a budget for all such environmental measures; (c) provide the Borrower with a written notice of any unanticipated environmental, risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the IEE, the EMP; (d) adequately record the condition of roads and other infrastructure prior to starting to transport materials and construction; and (e) Reinstate pathways and other local infrastructure to at least their pre- project condition upon the completion of construction.	a) MoWSS/PID/KUKL b) MoWSS/PID/KUKL c) MoWSS/PID/KUKL d) MoWSS/PID/KUKL e) MoWSS/PID/KUKL	- During project implementation; - Before bidding; - To be complied as arise; - Being complied; -Being complied;	a)Being complied b)Complied c) Unanticipated risks or impacts have not yet occurred d) complied -Being complied	a) PI refer Annex :3 b) PI refer contract Document & BOQ provisions c) Unanticipated risks or impacts have not yet occurred d) This is routinely undertaken before the start the pipeline work e) PI refer Annex 3

4	**LA, Schedule 5, para.15:** The Borrower shall do the following or cause KUKL to do the following: (a) submit semi-annual safeguards monitoring reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission; (b) if any unanticipated environmental risks and impacts arise during construction, implementation or operation of the Project that were not considered in the IEE, the EMP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; and (c) report any actual or potential breach of compliance with the measures and requirements set forth in the EMP promptly after becoming aware of the breach.	a) MoWSS/PID/KUKL b) MoWSS/PID/KUKL c) MoWSS/PID/KUKL	Semi-annually As and when they occur No breaches occur so far	Report is being submitted to ADB No unanticipated risks and impacts so far arise No breaches occur so far	a)PI refers reference no. DSC03/4401/2016 & DSC3/5171/2017 b)No unanticipated risks and impacts so far arise c)No breaches occur so far

10	Among the 11 tube wells along the Bagmati Corridor, the Bagmati High Level Authority has given permission for 2 tube wells only.	-	-	-	-	-	-

4. Compliance with Environmental Covenants

DSC with the support of PID/KUKL has been striving to adhere and meet all the Environmental Covenants stipulated in the project documents. The ADB and the Government of Nepal (GoN) require all projects to undergo environmental assessment. All projects funded by the ADB must comply with the Safeguard Policy Statement (SPS) 2009 to ensure that projects are environmentally sound, are designed to operate in compliance with applicable regulatory requirements, and are not likely to cause significant environmental, health, or safety hazards. Based on the finding of the IEE, the classification of the project as category "B" is confirmed and no further detailed EIA needs to be undertaken to comply with ADB SPS (2009), requiring an IEE only because project has few adverse impacts which are anticipated during construction period, but in specific areas and for short duration, confined within the active work sites and their immediate vicinities i.e. dust, noise, traffic problem, access to building/shop etc. Adverse environmental impacts of the planned water supply project for the Kathmandu valley is considered as not significant, and can be easily and reasonably mitigated through mitigation measures and regular monitoring during construction and operation stage. On the GoN side, the statutory requirement that has to be adhered to is the *Environment Protection Act 1997*, and *Environment Protection Rules 1997* (and as amended in 1999 and 2007). The project has satisfied all the compliance requirements of the Government of Nepal, as the TORs and IEEs have been approved by MoWSS. Table 5 summarizes the status of the major project covenants and their compliances. Table 6 presents the compliance status of Environmental Management and Monitoring Plan (EMMP) during pre-construction and construction stages.

5. Compliance Status with the Environmental Management and Monitoring Plans (EMMP)

The Environmental Management and Monitoring Plans (EMMP) are being implemented with respect to the guidelines defined in the Initial Environmental Examination (IEE) Report. The EMP was a part of the contract documents and overall implementation of the EMP is satisfactory. During the visit, the contractor's construction engineers/safety supervisors/workers, site engineer/supervisors from the Consultant and CAPC's social mobilizers/enumerators were oriented/trained and made aware of their responsibility towards Environmental Safeguarding issues, during construction works, such as:

- Adhering to the relevant adverse environmental impacts mitigation measures that are set out in the EMP while carrying out construction activities; and
- Assessing the conditions of surrounding environmental conditions, status of adjacent cleared area and other infrastructure, prior to construction commencement and upon completion of construction and thereby fully reinstate the road/pathway to at least their pre-project conditions.

The detailed Compliance Status with EMP and Monitoring Plans of the project are presented in Table 6.

Table 6: Compliance Status with Environmental Management Plan (EMP)

Description of Impact	Mitigation measures proposed	Implementation status	Details/remarks on implementation	Monitoring methods and frequency	Monitoring conducted by	Monitoring remarks (Excellent/Satisfactory/ Partially Satisfactory/Below Satisfaction/Poor/Very Poor, Not applicable)	Remarks and actions taken to improve implementation
Pre-construction:							
Delay in project due to absence of necessary statutory permits and approvals	Apply for all tree cutting, Archaeology, road cutting, etc., required. This is to be done early in the design period. Consult relevant authorities and submit applications to get approvals. Submit such agreement and permits to DSC for official information. Obtain Letters of Approval and agreement for: (i) temporary acquisition/easements of land and properties; (ii) disruption of water supply and other utilities; (iii) required permits from relevant authorities (e.g., National Park, Department of Forest, Department of Archaeology, etc.) prior to construction works; (iv) permission/approval from Department of Archaeology prior to construction works in Patan and Kathmandu Durbar Squares; and (v) avoid tree cutting, and if necessary, cut only trees that are marked and have been agreed relevant authorities for removal and plant and rear tree saplings at the	Road cutting permits (RCP) applied for some portions and permits from the Department of Archaeology for laying of pipes in Patan and Kathmandu Durbar Squares have been received.	Except for some sections for which permits have not been received, construction works are going on smoothly.	Frequent reminders made to PID	PID/DSC	Satisfactory	-

	rate of 25 saplings for each felled tree.						
Telephone lines, electric poles and wires, water lines within proposed project area;	Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during construction phase Require construction contractors to prepare a contingency plan to include actions to be done in case unintentional interruption of services	Ongoing	Satisfactory	Site inspection daily	Construction supervision engineer, Environmental expert, Contractor	Satisfactory	-
Description of Impact	**Mitigation measures proposed**	**Implementation status**	**Details/remarks on implementation**	**Monitoring methods and frequency**	**Monitoring conducted by**	**Monitoring remarks (Excellent/Satisfactory/ Partially Satisfactory/Below Satisfaction/Poor/Very Poor, Not applicable)**	**Remarks and actions taken to improve implementation**
Illegal occupation/encr	Ensure community consultations prior to the commencement of civil	Ongoing	Satisfactory	Site inspection and	CAPC (Community	Satisfactory	**-**

oachment of property	works Delineate project land and prepare the list of project affected people and resources Prepare resettlement plan for any foreseen income losses during construction Provide compensation as per resettlement plan			discussions with stakeholders and issuing of written notices; resettlement not necessary	Awareness and Participation Consultant)		
Haphazard camps resulting in social stress and degradation of local environment	Establish workforce camps in designated sites only and in consultation with local community. All camps are to include sanitary facilities for men and women.	Ongoing	Satisfactory	Most of the camps are situated at the reservoir sites and contractors working on DNI have arranged accommodations for their workers in private houses.	Construction supervision engineer, Environmental expert, Contractor	Satisfactory	-
Local people may be deprived of opportunities, minors may be employed	Employ local people (and women in jobs and follow core labor standards) Equal pay for men and women	Ongoing	Local people employed as much as possible. Equal pay is being given to men and women	Daily Observations	CAPC	Satisfactory	-
Traffic congestion and public annoyance	Prepare and implement traffic plans to prevent traffic jams and annoyances to the public in coordination with relevant local authorities and communities.	Ongoing	Satisfactory	Daily observations	Construction supervision engineer, Environmental expert, Contractor	Satisfactory	For busy blacktop roads, all **"big"** pipes laying work has been undertaken at Night; Instruction were made to all contractors to have necessary traffic

							diversion approve by authority and work should be constrained within metal hoarding area; additional traffic management personnel need to be deployed for machine movements;

Description of Impact	**Mitigation measures proposed**	**Implementation status**	**Details/ remarks on implementation**	**Monitoring methods and frequency**	**Monitoring conducted by**	**Monitoring remarks (Excellent/Satisfactory/Partially Satisfactory/Below Satisfaction/Poor/Very Poor, Not applicable)**	**Remarks and actions taken to improve implementation**
Construction:							
Soil erosion, and slope instability due to topsoil stripping and excavation for trenches. Surface water discharges to local drainage from trench construction.	Separate stockpiling of topsoil for further use; spoil disposal at designated and stabilized sites; excavated areas backfill to be compacted and include replacement of topsoil; adopt cut and fill approach; avoid work during the rainy season as much as possible; mulching to stabilize exposed areas; use bioengineering techniques (e.g. revegetating areas promptly);	Ongoing	Bio engineering techniques for revegetating the areas is not required so far during pipe laying work;	Daily observations	Construction supervision engineer, Environmental expert, Contractor	Satisfactory	Excess soil to be removed within 2 days for BDS & DNI Primary line on **Non-Blacktop road;** Contractors raised the matter of removing the excavated material and associated cost for **black topped roads.** PID/

Runoff from construction areas including stockpiled materials. Excavation and laying of pipeline at river crossings could impact the river water quality and ecosystem. Interception and interference with localized groundwater flows due to deep excavations.	provide channels and ditches for post-construction flows; lining of steep channels and slopes (e.g. use of jute matting); prevent offsite sediment transport using settlement ponds, silt fences.		Stockpile of top soil is used for backfilling the trench;				Engineer agreed that material removal is dependent on the road lane area to be occupied and that necessary diversion plan needs to be approved by the Traffic Authority. Failing to obtain an approved diversion plan will then require removal for only 1 lane of 3.5m is allowed to be occupied for the pipe installation works.

Description of Impact	**Mitigation measures proposed**	**Implementation status**	**Details/remarks on implementation**	**Monitoring methods and frequency**	**Monitoring conducted by**	**Monitoring remarks (Excellent/Satisfactory/Partially Satisfactory/Below Satisfaction/Poor/Very Poor, Not applicable)**	**Remarks and actions taken to improve implementation**
Water and land pollution	- Provide designated areas with collection bins for wastes; - Provide toilet facilities and prohibit open defecation; - Prohibit washing of vehicles next to rivers and streams; - Proper storage of construction aggregates, hazardous and toxic materials, lubricating oils	Ongoing	Most of the labor camps are situated at the reservoir sites and contractors working on BDS & DNI have arranged accommodations for their workers in private house with	Daily observations	Construction supervision engineer, Environmental expert, Contractor	Satisfactory	SRT Contractors are make aware to maintain the aesthetic value of site by storing the construction materials, lubricating oils, used batteries, chemical container, packaging materials etc. in safe areas with proper order

	and used batteries in safe areas and the proper segregation and disposal of chemical containers, packaging materials, plastic bags etc. - Provide training to workforce on safe handling of toxic materials and OHS measures during construction		toilet facilities; Contractor's safety officer provide a tool box talk training on OHS measures before & during construction to workforce. Toxic materials is not used by BDS & DNI Contractors so far				through safeguard audit done by DSC3; Training is given to BDS & DNI contractor's workforce on OHS measures during construction;
Air quality deterioration	- Dust suppression on roads or at open sites by sprinkling water as required at regular intervals; - Cover earth stockpiles using plastic sheets or cement jute bags; - Limit vehicle speed; - See that vehicles comply with the National Vehicle Mass Emission Standards, 2056 BS; - Regular maintenance of vehicles.	Ongoing. All vehicles need Government's green stickers after emission tests Earth stockpiles are covered with plastic sheets and sprinkling of water is done for dust control as required	Satisfactory	Visual observations daily; check if vehicles have green stickers and their validity	Construction supervision engineer, Environmental expert, Contractor	Satisfactory	**SESS checklist** is used during Audit for safeguard compliance at all contractors work packages to improve the cleanliness of working area and access road.
Noise and vibration	Monitoring of noise levels regularly at site to meet the noise standards; Fit mufflers in vehicles to control noise; Limit the speed of vehicles; Regular maintenance of equipment;	Ongoing. Noise and vibration are not much of a problem at site Therefore, monitoring of noise is done only by	Satisfactory	Sensory observations throughout construction	Construction supervision engineer, Environmental expert, Contractor	Satisfactory	Workers are using air plugs at noise generating areas e.g. Generator, trial pit excavation etc on Black Topped Road;

	Compensate and repair the damages caused by vibration if caused by construction activities.	observation					

Description of Impact	**Mitigation measures proposed**	**Implementation status**	**Details/ remarks on implementation**	**Monitoring methods and frequency**	**Monitoring conducted by**	**Monitoring remarks (Excellent/Satisfactory /Partially Satisfactory/Below Satisfaction/Poor/Very Poor, Not applicable**	**Remarks and actions taken to improve implementation**
Vegetation clearance	- Avoid tree cutting; - Obtain necessary tree cutting permits; - Cut only trees that are marked and have been confirmed by the Department of Forestry; - Plant and rear tree saplings at the rate of 25 saplings for each felled tree; - Stockpile the felled trees and take permission from concerned authority for its use; - Compensate all private trees and community forests affected	NA	NA	NA	NA	NA	NA
Temporary easements and impacts to business activity including temporary relocation of vendors.	Prior to construction, hold community meetings to inform them of construction works; distribute project information; advanced notice should be provided at least 1-2 weeks in advance; place PID phone hotline on signs in visible areas; make community fully aware of grievance mechanism and provide contact info of PID and KUKL branch offices;	Ongoing	Planks provided for access to the public over trenches; management of traffic flows carried out and full street closure avoided; compensation to	Meetings with community before construction starts and when necessary during construction; visual	Carried out by DSC3 and CAPC before and after construction starts	Excellent	Distribution of leaflets to each residence/shopkeeper regarding work plan.; Undertaking community meeting (TLO) to raise awareness of works and

	maintain access to avoid disturbance to residents and businesses by providing planks and leaving spaces for businesses and residents to maintain access. manage traffic flows; conduct work at night where possible trenches open for only 1-3 days and works should be quickly completed; avoid full street closure to fullest extent possible.		vendors is not applicable; construction sites restored to original form; work so far does not involve tourist sites	observation			address concern of local community; **SESS checklist** is used during Audit for safeguard compliance at all contractors work packages to avoid disturbance to residents and businesses during construction;

Description of Impact	Mitigation measures proposed	Implementation status	Details/ remarks on implementation	Monitoring methods and frequency	Monitoring conducted by	Monitoring remarks (Excellent/Satisfactory/ Partially Satisfactory/Below Satisfaction/Poor/Very Poor, Not applicable)	Remarks and actions taken to improve implementation
	Businesses losing income due to disturbance are compensated as per the resettlement plan. Avoid involuntary displacement; temporary sites to be restored to natural and stable conditions as per agreement with land owner; proponent report in writing that temporary areas have been vacated and restored to pre-project conditions before acceptance of the works; provide employment opportunity to the affected people to extent possible; assist vendors in shifting prior to construction and to return to original location when construction is complete in relevant sections; avoid disturbance at tourist areas	-	-	-	-	-	All contractors BDS & DNI has made commitment to complete work in stretch of 30 meters during pipe laying within 3rd day; All " big" pipe laying work for busy B/T roads are undertaken at night

Reinstatement of community services and infrastructures	Compensate or reinstate/relocate community assets that are disturbed such as irrigation canals, electricity poles, telephone lines, drinking water pipes, sewerage lines, roads, etc. to the satisfaction of the people.	Ongoing	Excellent	Meetings with stakeholders and visual observation	Construction supervision engineer, Environmental expert, Contractor	Excellent	Temporary reinstatement black top road is done within 2 days of excavation for 30 meter trench stretch for all BDS & DNI primary line; **Two sets** of spare pipe fittings to be procured by respective contractors and no work are allowed to commence without spare fittings.

Description of Impact	Mitigation measures proposed	Implementation status	Details/ remarks on implementation	Monitoring methods and frequency	Monitoring conducted by	Monitoring remarks (Excellent/Satisfactory/ Partially Satisfactory/Below Satisfaction/Poor/Very Poor, Not applicable)	Remarks and actions taken to improve implementation
	- Avoid disturbance to any historic/heritage buildings or structures by taking necessary precautions (work away from any heritage buildings, hand digging, no heavy equipment, etc.) - Obtain prior permission from Department of Archaeology prior to construction in Patan and Durbar Squares - Roads in heritage areas are to be reinstated to original condition with same materials.	At the moment work has not started in heritage sites; permissions from Department of Archaeology for laying pipes in Patan and Kathmandu Durbar Squares have been received.	NA	NA	NA	NA	N/A
Health and hygiene (unsafe working conditions, accidents, fire hazard, transmission of communicable diseases etc.)	Ensure measures (fencing and/or barriers) to protect public from construction site	Ongoing	Satisfactory	Daily observations	Construction supervision engineer, Environmental expert, Contractor	Satisfactory	Site metal hoarding has been placed at all black top roads in BDS & DNI Primary line work; Hard Barricading (Minimum 4 Ft. Ht Metal Posts with Nylon Ropes in 3 Rows) together with green netting and Danger Lights (for Night

							Works) has been placed for BDS & DNI primary line works on non B/T road ; Hard Barricading (Minimum 4 Ft. Ht Metal Posts with Nylon Ropes in 3 Rows) and Danger Lights (Night Works) is erect for DNI primary & small line on all B/T and Non-B/T Roads.
	Provide a regular health check-ups, proper sanitation and hygiene, health care, and control of epidemic diseases to the workforce.	Ongoing	Maintain the proper sanitation & hygiene at construction labors camp through proper management of effluents from septic tank & generated sludge and other waste	Visual observation once a week	Construction supervision engineer, Environmental expert, Contractor	Satisfactory	Use of bleaching powder at toilet areas for disinfection in each labor camps at regular interval;

Description of Impact	Mitigation measures proposed	Implementation status	Details/ remarks on implementation	Monitoring methods and frequency	Monitoring conducted by	Monitoring remarks (Excellent/Satisfactory/Partially Satisfactory/Below Satisfaction/Poor/Very Poor, Not applicable)	Remarks and actions taken to improve implementation
	Launch awareness programs concerning human trafficking and the possibility of spread of STDs and HIV/AIDS using brochures, posters, and signboards	NA	NA	NA	NA	NA	NA
	Make available first aid kits, ambulance and fire extinguishers in camp sites	First Aid kits and Fire extinguishers are available but ambulance is not available	First Aid kits and Fire extinguishers are available at all camp sites	Visual observation once a week	Construction supervision engineer, Environmental expert, Contractor	Partially satisfactory	In the capital city, ambulances is not necessary
	Make available protection gears to all construction workers and compensate for the loss of life or any type of injuries	Ongoing	Excellent	Daily observations	Construction supervision engineer, Environmental expert, Contractor	Excellent	Usage of PPEs by construction workers has been improved to 80 % at the moment; recommended the contractors to improve the usage more than 90% by conducting tool box talk for workers before the construction work start.

Description of Impact	Mitigation measures proposed	Implementation status	Details/ remarks on implementation	Monitoring methods and frequency	Monitoring conducted by	Monitoring remarks (Excellent/Satisfactory/ Partially Satisfactory/Below Satisfaction/Poor/Very Poor, Not applicable)	Remarks and actions taken to improve implementation
	Provide insurance to the workers and training in OHS and community health and safety.	Health insurance provided and most workers are skilled and have experience in OHS and community health	Satisfactory	Once when the contract is signed	PID /KUKL	Satisfactory	-
	Ensure all work areas are clearly demarcated and marked and protect public from getting near to the trenches.	Ongoing	Excellent	Daily observations	Construction supervision engineer, Environmental expert, Contractor	Excellent	Site metal hoarding has been placed for **all black top roads** in BDS & DNI Primary line Works; Hard Barricading (Minimum 4 Ft. Ht Metal Posts with Nylon Ropes in 3 Rows) together with green netting and Danger Lights (Night

							Works) has been placed for BDS & DNI primary line works on **non B/T roads.**

Description of Impact	**Mitigation measures proposed**	**Implementation status**	**Details/ remarks on implementation**	**Monitoring methods and frequency**	**Monitoring conducted by**	**Monitoring remarks (Excellent/Satisfactory/ Partially Satisfactory/Below Satisfaction/Poor/Very Poor, Not applicable)**	**Remarks and actions taken to improve implementation**
	Provide alternate potable water supply during maintenance works and notify the public in advance.	Public made aware in advance by CAPC and pipes repaired work is done as soon as possible	Satisfactory	Visual Inspection As and when required	Construction supervision engineer, Environmental expert, Contractor & CAPC	Satisfactory	CSEs/CAPC is witnessed the repair of damages and sign off attained from residents;
Loss of archaeological and cultural sites Finding of any archaeological artifact	- Inform Department of Archaeology of plans and submit application for permission; - conduct Archaeological Impact Assessment, or other agreed document approved by DOA, if required; - obtain Department of Archaeology permission prior to works in designated areas of archaeological	At the moment work has not started yet in protected heritage sites; permissions for laying pipes in Patan and Kathmandu Durbar Squares have been	N/A	N/A	N/A	N/A	N/A

during excavation works. Heritage buildings and character of heritage areas	significance particularly in Patan and Kathmandu Durbar Squares; - ensure compliance with any Department of Archaeology (DOA) rules based on ongoing consultations with DOA during construct period including on-site field inspector; - protect archaeological and heritage sites, use manual digging and avoid heavy equipment during the digging of trenches for the laying of pipes.	received.					

Description of Impact	**Mitigation measures proposed**	**Implementation status**	**Details/ remarks on implementation**	**Monitoring methods and frequency**	**Monitoring conducted by**	**Monitoring remarks (Excellent/Satisfactory/ Partially Satisfactory/Below Satisfaction/Poor/Very Poor, Not applicable)**	**Remarks and actions taken to improve implementation**
	- in case of finding the artifacts, the DOA has to be immediately notified; appropriate action is to be taken either to relocate the artifact if situation permits as per the directions of the department or work at the location has to be abandoned and alternate plan has to be executed; - For pipe-laying works on roadways within Patan Square and Kathmandu Durbar Square, etc.) ensure the following measures:	N/A	N/A	N/A	N/A	N/A	N/A

	prior permission of DOA before construction works, no vibrating - machinery near heritage buildings, only hand digging allowed, inform community prior to construction of sections, ensure no blockage to tourist areas, have clear signage related to PID/KUKL works, ensure reinstatement of roads to original condition, ensure extra measures (fencing and/or barriers) to protect tourists and public from construction site, ensure a construction supervisor on site at all times and reinstate roads to original condition.	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A

Description of Impact	**Mitigation measures proposed**	**Implementation status**	**Details/ remarks on implementation**	**Monitoring methods and frequency**	**Monitoring conducted by**	**Monitoring remarks (Excellent/Satisfactory/ Partially Satisfactory/Below Satisfaction/Poor/Very Poor, Not applicable)**	**Remarks and actions taken to improve implementation**
Traffic congestion (Temporary disruption to local access due to open trenches, excavation across roads or road closures due to	- Develop and implement a traffic management plan and road safety plan to minimize traffic flow interference from construction activities - Coordinate with local authorities (police, VDC, local area committees, etc.) to manage traffic during construction period - Provide advance public awareness and public notification of construction activities, schedule, routing, and affected areas including road closures	On going	Satisfactory	Site Inspection Daily	Construction Supervision engineer, Environmental expert, Contractor & CAPC	Satisfactory	Best practice work procedures have been applied at the black top "busy" roads areas; Necessary traffic diversion plan need to

construction)	- Erect alternative routing signage in Nepali and English - Use of steel plates or other temporary materials across trench facilities in key areas such as pedestrian access and sidewalks and parking areas - Arrange for night time construction for activities in congested/ heavy daytime traffic areas - Arrange for onsite "grievance handling" through use of liaison officers - Undertake trench closure and facilitate surface rehabilitation or paving as quickly as feasible						be approved by contractors from authority; Undertaking community meeting (TLO) to raise awareness of works and address concern of local community; " big" pipe laying works for busy B/T roads undertaking at night; Backfilling of trench has been completed within 2 days of excavation for 30 meter stretch for all BDS & DNI primary line; On site "grievance handling" is

							done by CAPC

E: Excellent S: Satisfactory PS: Partially Satisfactory BS: Below Satisfaction P: Poor VP: Very Poor NA: Not applicable

6. Monitoring of Environmental Impacts

Comprehensive environmental monitoring parameters include ambient air quality monitoring, noise monitoring of operating machinery, availability of camp site drinking water facility, sanitation and compliance status of the EMP. The monitoring is conducted regularly under the supervision of the PID, consultant's CSE, Environmental Expert and CAPC.

6.1 Ambient Air Quality

The employer had recently informed that an independent reputable third party and not the contractor has to be engaged to monitor the before and after impacts. The determination of the impact would then be acceptable by all stakeholders. It is envisaged that the third party engagement would be undertaken in January, 2017 and impact result can be expected by February, 2017and the same will be provided to ADB.

However, the water sprinkling mechanism has been implemented at construction sites to reduce the dust pollution during pipe laying work. For mitigating these impacts, it is mandatory for all construction supervisors and workers to wear dust masks and it has been reported that the practice of wearing dust masks is satisfactory. As suggested by PID/ DSC-3, the Contractors have made arrangements to sprinkle water twice in a day and the impact of this has been visible with less dust pollution. Further, the grievance addressing mechanism is in place where the locals can register their complaints. CAPC/DSC regularly checks to confirm the public grievances are addressed immediately.

6.2 Water Quality

Drinking water quality parameters at the labor camps has not been measured yet. But the site inspection team visited each camp and found the conditions to be satisfactory. The drinking water in the camps has been provided by the contractor which is from the drinking water supply taps. Not any cases of disease have been recorded in workers due to the consumption of existing tap water. With respect to the wastewater generated from the camp, it is being discharged into a soak pit. Wastewater generated from camp toilet is being collected in soak pits/septic tanks where sewage channel is not accessible and septic tanks are desludged regularly to avoid overflow and leakages. For Fecal Sludge Management (FSM), there are number of mechanical and manual service providers registered for collection and transportation of fecal sludge in the Kathmandu valley. Kathmandu Metropolitan City (KMC), which is one of the major stakeholders involved in FSM in the valley, is currently providing fecal sludge emptying services. Instructions have been given in each camp regarding health and sanitation through proper management of effluents from septic tank & generated sludge. Furthermore, those camps where sewage line is accessible discharge their excreta directly in to the sewage line that goes in to the sewage treatment plant for final disposal.

6.3 Noise Quality

Generally, noise produced at the construction areas is found to be insignificant, especially at the time of using open cut method for pipe lying but low intensity of noise arise at the time of generator operation. The contractors have been suggested to provide air plug for their operators to prevent/reduce the impact. The sound in the construction area is not of a high range with respect to the legal requirements. However, the noise intensity during the construction period has not been tested yet. Usually, camp sites had been established away from the residential areas/urban vicinities. The contractor has been strictly instructed to keep their excavators, vehicles, generators and other machinery in good condition and they have to comply with national noise standards. The contractor workforce has been instructed to use personal protective equipment (PPE) like ear plugs at noise generating sites. The contractors have complied with this requirement. No grievance has been recorded so far from the workforce and communities in the project areas regarding noise pollution during execution of construction activities.

6.4 Solid waste Management

An orientation program has been conducted for contractors, supervisors and workers regarding environmental hazards that can be caused due to improper solid waste (organic & inorganic) handling, storage and disposal. At the same occasion, they were oriented on occupational health and safety (OHS) issues. Solid wastes, generally kitchen waste, generated in the camp site were collected in pits for an anaerobic decomposition. With respect to the construction wastes such as cement bags, metal/wood/paper/rubber/plastics scraps, which were found at some of the project sites, the contractors were instructed to adopt reuse and recycle approach. The construction waste management seems to be satisfactory. It is strongly recommended that burning of waste such as paper, rubber, plastics, clothes etc shall be strictly prohibited at construction sites to prevent the adverse impact on the environment and human health.

7. Compliance to Previous ADB's comments

a) **Ambient Air Quality**:

Please refer to Section 6.1.

b) **Noise Quality**:

Please refer to Section 6.3.

8. Findings and Recommendations

8.1 Observations

- Drilling/excavation work is being carried out carefully with minimal vibration and disturbances.
- Usage of PPEs by the construction workers has been increased from 60% to 80%. However, the contractors have been asked to improve it to 95% by conducting tool box talk daily for workers before the start of work.
- No surface water contamination due to oil/grease spillages from construction equipment has been reported.
- Not any potential losses of trees/vegetation/aesthetics were observed in the project areas.
- Locals have been engaged and employed as far as available.
- Child labour was not sighted at any site.
- Wastes produced from construction area (such as excavated and discarded materials) were collected and disposed at the approved disposal area only.
- Not any complaints from workforce and communities were recorded in the project areas alignment during construction activities.
- First aid kit was provided at work sites to attend minor injuries and there was no injuries/accidents in the reporting period.
- Till date, pipe laying work has not started in protected heritage sites; permissions for laying pipes in Patan and Kathmandu Durbar Squares have been granted.

8.2 Key Safeguards Issues

Considering the nature of the project, only minor negative impacts on the environment exist due to the implementation of the project .The key safeguards issue that are likely to occur are as follows:

- Proper management of surplus excavated materials and temporary reinstatement of pedestrians walk way in DNI secondary and small pipe laying work within 3 days has been challenging
- Traffic Management on busy blacktop narrow roads
- Engagement of a new team of workers/ supervisors frequently at DNI work packages has been challenging to get full compliance on Safeguards during pipe laying work

- Proper management of excavated wet sandy soil with narrow space for work to lay primary pipeline is challenging to keep the work area completely safe and clean at Sarswatinagar,Kapan

8.3 Additional Actions Taken

It is challenging to achieve uniformity in environmental safeguard compliance by the contractors due to variability in their capacity. However, there is a room for the improvement. More innovative construction procedures has been developed and implemented in coordination with PID, CAPC and Contractors to ensure safeguards in work area.

Example:

Few cases of people entering the work site at BDS and DNI primary line work through nylon ropes were recorded. Therefore, green net with nylon ropes and metal hoarding barricades have been used to block and prevent the public from entering the work site.

Big pipe laying works has been undertaken only at night in busy black top roads to mitigate the traffic problems and considers all required safety guards. Project boards, safety signage and hoardings have been developed and suggested to display by different contractors at their construction sites. Colour code, size and design of these have been decided in consultation with ADB/PID/CAPC, to maintain the uniformity.

9. Conclusion and Recommendation

During the safeguard compliance audit period, it was found that the all contractors have complied with most of the environmental mitigation measures prescribed in the EMP. Only minor non-compliance such as the use of complete barricade, slight delay in removals of surplus excavated materials immediately from site due to unseasonal rains, have been recorded. In view of traffic restrictions during the day time, all surplus earth was removed at night.

Safety signage has been used at all work sites. Temporary reinstatement of black top road/ pedestrians walk way in DNI secondary and small pipeline sites has not been completed within 3 days. The contractors were instructed to undertake relevant innovative measures to make site clean and controlled, through orientation meeting and written letter.

9.1 Penal Provisions for lapses in Safeguard Compliance and Road Reinstatement Backfilling Compaction Issues

The Contractors were reminded of their responsibility to reinstate the road after pipe laying with base and sub base material within one (1) day i.e. the road should be open to traffic in the morning. However to ensure that

the contractors do not overlook this important safeguard requirement, penal provisions have been introduced recently. i.e. for every instance of lapses in safe guard compliance / trench compaction issues, Engineer to recover NRs. 1.0 million from their payment certificates.

Not any serious omissions or violations of environmental standards and norms have been identified. However, few minor occasional environmental problems were identified, which only had local and short term impacts. The impacts could be easily and economically mitigated with suitable mitigation measures and regular monitoring schedules.

Annex I

PHOTOGRAPHS

Parliament team visited site at Tundikhel

Site clearance at Sanepa,

Site Visit by Government representative team, ADB Team, PID Team, Media etc. at Kumaltar SRT

Concrete block pavement reinstatement completed at

Work area is confined within barricaded area by green net, leaving space for pedestrians.

Revised Project Boards/Signage are Displayed at site

Project Director & Team leader inspected the Pipe laying site in Lalitpur

BDS-1 Bulk line Night work with Metal hoarding barricade at Chabahil on Black topped Road