Semi-Annual Environmental Monitoring Report

Project number: 34304-043

Period: July – December 2017

NEP: Kathmandu Valley Water Supply Improvement Project

Prepared by the Project Implementation Directorate (PID), Kathmandu Upatyaka Khanepani Limited (KUKL), Government of Nepal for the Asian Development Bank. This document is made publicly available in accordance with ADB's Public Communication Policy (2011) and does not necessarily reflect the views of ADB.

Environmental Monitoring Report

ADB LOAN-2776 SF

Semi-Annual Report
July-December, 2017

Project Implementation Directorate,
Kathmandu Upatyaka Khanepani Limited
(KUKL),
Nepal

Prepared by

DOWHA Engineering Co. Ltd in association with sub-consultants Environment & Resource Management Consultant (P) Ltd., Building Design Authority (P) Ltd, and TAEC Consult (P) Ltd. for the KUKL/Project Implementation Directorate and the Asian Development Bank.

January, 2018

1. INTRODUCTION

1.1. Overall project description and objectives

The Kathmandu Valley Water Supply Improvement Project (KVWSIP) known as Melamchi Subproject-II has implemented its programs and activities as different components to support ongoing efforts of the Government of Nepal towards improving water supply services and waste water management system in Kathmandu Valley. The project is under implementation since September 2012, aims to create an efficient water distribution system by improving the water supply services of the Kathmandu Valley. Project Implementation Directorate (PID) under Kathmandu Upatyaka Khanepani Ltd. (KUKL) has been executing different projects to improve regular water supply and sewerage management in the project area. The project is mainly working on establishing several layers of distribution network such as Bulk Distribution System (BDS), Distribution Network Improvement (DNI), District Metering Area (DMA) and Service Reservoir Tanks (SRT) and completing previously ongoing projects. The resultant synergy is expected to increase efficiency, greater improvement in service delivery, higher impact on health outcomes and quality of life for inhabitants of the Kathmandu valley.

Kathmandu consists of Kathmandu Metropolitan City at its core and its sister cities Patan, Kirtipur, Thimi, and Bhaktapur. The metropolitan city area has 50.67 square kilometers and has a population density of 19,250 persons per km². The city is located at an elevation of approximately 1,400 meters (4,600 ft) in the bowl-shaped Kathmandu Valley. The city has insufficient urban infrastructure facilities: water supply, sewerage and sanitation, drainage, solid waste management, roads, electricity and street lighting. The existing water supply system is managed by Kathmandu Upatyaka Khanepani Limited (KUKL). The water supply system in Kathmandu Valley is dependent partly on ground water and partly on surface water sources. At present, water is drawn from 31 surface sources and 75 deep tube wells located in different parts of the valley. The total water production from these sources put together is about 100 MLD (dry season) to 150 MLD (monsoon). These sources supply water to 21 Water Treatment Plants (WTPs) with a total treatment capacity of 85 MLD.

The additional financing of the Kathmandu Valley Water Supply Improvement Project (the project) ADB Loan 3255 SF will support the ongoing efforts of the Government of Nepal (the government) towards improving the water supply services by developing reliable, equitable and sustainable water supply system in Kathmandu Valley. The project will invest in water treatment plant capacity, bulk water transmission, distribution network improvement and reservoirs in addition to reduction of non-revenue water and improvement of efficiency and service delivery to citizens. The sub-project packages under the ADB Loan-2776 SF are included in this report.

The major ongoing works under Loan-2776 will be about 135,000 household connections (this includes household connections under L-3255 as well), 51 km of Bulk Distribution System Network (BDS), about 700 km of Distribution Network Improvement (DNI) and about 58 Bulk meters.

1.2. Environmental category as per ADB Safeguard Policy Statement, 2009

As per ADB's Safeguard Policy Statement Guideline (2009) and Operations Manual section on Safeguard Policy (OM F1), borrowers/clients are required to submit following monitoring reports for ADB review.

Project Category	Frequency of Reports
Environment Category A	Semi-annual monitoring reports during project construction Annual monitoring reports during project operation
Environment Category B	Periodic monitoring reports as deemed appropriate
Involuntary resettlement category A and B	Semi-annual monitoring reports
Indigenous people's category A and B	Semi-annual monitoring reports
Highly complex and sensitive deemed by ADB	Quarterly monitoring reports

Hence, this Bi-Annual Environmental Monitoring Report is prepared for ADB review and it covers the projects supervised by the Design and Supervision Consultants, DSC-05 for the period of July-December 2017.

ADB's Environment Policy is to consider environmental issues in all aspects of the Bank's operations. ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, financial intermediation loans and private sector investment operations.

The nature of the assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts, and the availability of cost- effective mitigation measures. Projects screened for their expected environmental impacts are assigned to one of the following categories:

Category A: Projects that could have significant environmental impacts. An Environmental Impact Assessment (EIA) is required.

Category B: Projects that could have some adverse environmental impacts, but of less significance than those for Category A. An Initial Environmental Examination (IEE) is required to determine whether significant impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report. A Category B project may be classified as B-sensitive if it involves environmentally sensitive activities. Such projects require IEEs, but have the same requirements for disclosure and Environmental Management Plans as Category A.

Category C: Projects that is unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.

Category FI: Projects that involve investments of ADB funds to, or through, financial intermediaries.

The Project comprises water supply and wastewater infrastructure improvements. Project classified by ADB as Category B and following normal procedures for project loans, an IEE was conducted according to ADB's Safeguard Policy Statement 2009 (which came into effect on 20 January 2010)

1.3. Environmental category of each subproject as per national laws and regulations:

The requirement of Environmental in Nepal is established by the National Environmental Protection Act (1997) and the procedures are defined in the Environmental Protection Rules (1997) and Amendment of 20 August 2007. The Government of Nepal (according to EPR 1997) requires that all water supply projects supplying drinking water to a population of more than 100,000, the connection of new sources and waste water management activities to be undertaken with the objectives of providing services to a population more than 10,000 requires an EIA.

Kathmandu Valley Water Supply Improvement Project is a de-facto part of the Melamchi Water Supply Project (MWSP).The MWSP was subjected to an EIA in 2000 and was approved by the then Ministry of Population and Environment (MOPE), GoN. The proposed project does not include any new infrastructure that requires a separate environmental examination. EIA process of 2000 are still valid and only IEE was carried out to supplement the gaps for the unanticipated environmental problems.

An Initial Environmental Examination (IEE) was done to examine the proposed infrastructure components for the year 2012-2016 to ensure that it will not damage the environment and provide guidance for planning, construction and operation. In environmental assessment, potential environmental impacts are identified, their significance assessed and strategies devised to avoid those impacts or reduce them to the acceptable level. The strategies called mitigation measures are carried forward into Environmental Management Plan (EMP). This EMP assigns responsibilities, timescales and performance indicators/standards for each mitigation measure- to make sure that they are implemented and not ignored.

1.4. Project Safeguards Team

Table 1: Project Safeguards Team

Name	Designation/Office	Email Address	Contact Number	Roles
1. PMU				
Non Exist				
2. PIUs				
Er Divakar Dhakal	DPD/Safeguard Chief	divakardhakal@gmail.com	All Contracts	ESSS compliance and enforcement, meetings with consultants and contractor's ESSS teams, guidance and direction to the teams.
Er, Prajan Hada	Engineer	-	All Contracts	Review the ESSS reports, site monitoring, suggest DPD for necessary improvement.
3. Consultants				
Er Bishwa Bhakta Kharel	Environmental Expert /DSC05	kharelbishwa2014@gmail.com	All Contracts	Problems monitoring and mitigation, compliance enforcement.

Smiriti Sharma	Environmental Officer/DSC05	smritisharma013@gmail.com	All Contracts	Site inspection, prepare env. monitoring check list and report writing
Rajendra Pandit	Social Safeguard Expert/CASSC		All Contracts	grievances handling, public awareness, safeguards compliance and report writing
Sitaram Kandel	Environmental Expert/CASSC	sramkandel@gmail.com	All Contracts	Site inspection and instruct to contractors, prepare environmental monitoring check list and report writing

1.5. Overall project and sub-project progress and status

Under ADB Loan No-2776, DNI-1, DNI-2, DNI-3, BDS-1, BDS-2, BDS-3 and drilling of tube wells in Kathmandu valley are of on-going construction status.

1.6. Description of subprojects (package-wise) and status of implementation (preliminary, detailed design, on-going construction, completed, and/or O&M stage)

ADB Loan No-2776

Table 2: Physical progress of subprojects package wise

Package Number	Components/ List of Works	Contract Status (specify if under bidding or contract awarded)	Status of Implementation (Preliminary Design/Detailed Design/On-going Construction/Completed/O&M)[1]	If On-going Construction	
				% Physical Progress	Expected Completion Date
DNI-1	Pipe laying	Contract awarded	On-going Construction	72.5	30 July, 2018
	Valve Chambers			23.5	
	Household connections			52	
	Road reinstatement			36	
Total Progress				**77.63**	
DNI-2	Valve Chambers	Contract awarded	On-going Construction	29.8	22 Dec, 2018
	Household connections			47	
	Road reinstatement			72	
	Pipe laying			81.5	
Total Progress				**92.00**	
DNI-3	Valve Chambers	Contract awarded	On-going Construction	70.5	Nov 2017
	Household connections			57	

[1] If on-going construction, include %physical progress and expected date of completion

	Road reinstatement			100	
	Pipe laying			99	
Total Progress				**70.50**	
BDS-1	Pipe laying	Contract awarded	On-going Construction	79	6 May, 2018
	Valve Chambers			17	
	Service Reservoir Tank (SRT) 3 No.			82	
	Road Reinstatement (RRI)			88	
Total Progress				**85.00**	
BDS-2	Pipe laying	Contract awarded	On-going Construction	87	Jan, 2018
	Valve Chambers			49	
	SRT- 3 No.			79	
	RRI			90	
Total Progress				**100.00**	
BDS-3	Pipe laying	Contract awarded	On-going Construction	86	Nov, 2017
	Valve Chambers			20	
	SRT 1 No.			96	
	RRI			73	
Total Progress				**81.03**	
Drilling and development of Tube wells in Kathmandu Valley				**68.00**	19 Dec, 2017

2. COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS[2]

Table 3: Package wise environmental compliance status

Package No.	Subproject Name	Statutory Environmental Requirements[3]	Status of Compliance[4]	Validity if obtained	Action Required	Specific Conditions that will require environmental monitoring as per Environment Clearance, Consent/Permit to Establish[5]
DNI-1	Kathmandu	Approved IEE,	Not required	Not required	Not required	NP, WP, AP monitoring

[2] All statutory clearance/s, no-objection certificates, permit/s, etc. should be obtained prior to award of contract/s. Attach as appendix all clearance obtained during the reporting period. If already reported, specify in the "remarks" column.

[3] Specify (environmental clearance? Permit/consent to establish? Forest clearance? Etc.)

[4] Specify if obtained, submitted and awaiting approval, application not yet submitted

[5] *Example: Environmental Clearance requires ambient air quality monitoring; Forest Clearance/Tree-cutting Permit requires 2 trees for every tree, etc.*

Package No.	Subproject Name	Statutory Environmental Requirements[3]	Status of Compliance[4]	Validity if obtained	Action Required	Specific Conditions that will require environmental monitoring as per Environment Clearance, Consent/Permit to Establish[5]
	Valley Water Supply Improvement Project-2 (KVWSIP-2)	no forest area.				are mandatory. Forest clearance not required. Project comes in urban area. Archaeological area clearance received.
DNI-2	KVWSIP-2	Approved IEE, no forest area.	Not required	Not required	Not required	"
DNI-3	KVWSIP-2	Approved IEE, no forest area.	Not required	Not required	Not required	"
BDS-1	KVWSIP-2	Approved IEE, no forest area.	Not required	Not required	Not required	"
BDS-2	KVWSIP-2	Approved IEE, no forest area.	Not required	Not required	Not required	"
BDS-3	KVWSIP-2	Approved IEE, no forest area.	Not required	Not required	Not required	"
Drilling and development of tube wells	KVWSIP-2	Approved IEE, no forest area.	Not required	Not required	Not required	"

3. COMPLIANCE STATUS WITH ENVIRONMENTAL LOAN COVENANTS

Table 4: Compliance as per Environmental Loan Covenants

No. (List schedule and paragraph number of Loan Agreement)	Covenant	Status of Compliance	Action Required
41	Safeguard monitoring	Good	Issued the letter to the Contractors to comply monitoring requirements
43	Compliance monitoring	AP: Water sprinkled 3-4 times a day to minimize AP. WP: Jar water used for drinking and no work in the river front NP: Air muffs use by the workers. Periodic maintenance of the equipments is done.	Issued the letter to the Contractors to comply monitoring requirements

4. COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT PLAN (REFER TO EMP TABLES IN APPROVED IEE/S)

Contractors have prepared their site specific EMP/construction EMPs. They are entitled to follow the project's IEE and EMP.

Table 5: Package-wise IEE Documentation Status

Package Number	Final IEE based on Detailed Design				Site-specific EMP (or Construction EMP) approved by Project Director? (Yes/No)	Remarks
	Not yet due (detailed design not yet completed)	Submitted to ADB (Provide Date of Submission)	Disclosed on project website (Provide Link)	Final IEE provided to Contractor/s (Yes/No)		
DNI-1			**15 Feb, 2015**	**Y**	**No**	**IEE of bid document is the functional IEE**
DNI-2			15 Feb, 2015	Y	No	"
DNI-3			15 Feb, 2015	Y	No	"
BDS-1			15 Feb, 2015	Y	No	"
BDS-2			15 Feb, 2015	Y	No	"
BDS-3			15 Feb, 2015	Y	No	"
Drilling and tube wells in Kathmandu valley			15 Feb, 2015	Y	No	"

Table 6: Package-wise Contractor/s' Nodal Persons for Environmental Safeguards

Package Name	Contractor	Nodal Person	Email Address	Contact Number
DNI-1	Hangzhou-Kalika JV	NA	NA	NA
DNI-2	Hangzhou-Sharma JV	NA	NA	NA
DNI-3	SUMEC-Lama JV	NA	NA	NA
BDS-1	JITIF Water Infrastructure Ltd.	NA	NA	NA
BDS-2	JWIL-SPPCL JV	NA	NA	NA
BDS-3	Tianjin-Raman JV	NA	NA	NA
Drilling and tube wells in Kathmandu valley	Ningbo-Kankai JV	NA	NA	NA

Table 7: Summary of Environmental Monitoring Activities (for the Reporting Period)[6]

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
Design Phase						
	Not required because of the construction phase	-		-	-	-
Pre-Construction Phase						
	Not required because of the construction phase	-	-	-	-	-
Construction Phase						
Physical						
1.Change in Hydrology and Morphology of streams and rivers	• Quarrying/mining activities in river/streams for extraction of construction materials shall not be done so as to change the river cross sections and longitudinal profiles. • Ensure that irrigation canals are not blocked due to construction activities. Ensure that existing flows of stone spouts are not disturbed due to construction activities.	• Cross sections of river before construction and during construction upstream (at the quarry site, upstream and downstream) and river discharge • Visual inspection, discussion with locals, discharge measurements before Back fill compact and during construction	• Visual Inspection of the sites • Visual Inspection of the sites	• Work sites • Work sites	• Frequently • Frequently	BB kharel/ Smriti Sharma

[6] Attach Laboratory Results and Sampling Map/Locations

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
2.Soil erosion and slope stability	1a. spoil disposal at designated and stabilized site excavated areas" backfill to be compacted; avoid work during the rainy season as much as possible mulching to stabilize exposed areas; use bioengineering techniques (e.g. re-vegetating are promptly); provide channels and ditches for post-construction flows; lining of steep channels and slopes (e.g. use of jute matting); prevent off-site sediment transport using settlement ponds, silt fences. 1b. Use of settling basins at reservoir sites; use of straw for filtering of small discharges; routine inspection and monitoring of larger discharges to water courses. 1c. Use of temporary bunds; use of catchment basins below steep reservoir sites. 1d. Construction to be done in the dry season only; use of river diversions with bundings; pile driving and foundations at pipe bridge sites to be bunded off from river. 1e. Local wells and springs to be bunded from temporary spoil dumps; local wells and spring fed spouts or kuwas to be monitored particularly downhill of reservoir excavations plus temporary supply provided if flow is affected; permeable base and side backfill required at deeply excavated reservoir sites or an alternate source of drinking water provided at the existing location	1a.Excess spoil are disposed in the designated area, Backfill compacted, Work stopped in rainy season, 1b.not applicable 1c. Not applicable 1d. Construction in dry season only. 1e.Not applicable	Visual Inspection of the sites Visual Inspection of the sites	Work sites Work sites	Frequently Frequently	BB kharel/ Smriti Sharma

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
3. Water pollution	Avoid camping facilities within the drainage area. Provide designated areas with collection bins for wastes. Provide toilet facilities and prohibit open defecation in open areas. Storage of construction aggregates, hazardous, and toxic materials in safe areas and proper disposal of chemical containers, packaging materials, plastic bags etc. Prohibit washing of vehicles next to rivers and streams. Provide training to workforce on safe handling of toxic materials and OHS measures during construction.	• Water • General Health of the workers	Check lists and visual inspections. Interactions with the workers. • Drinking quality Jar Water is provided to the workers. Health status of workers is good. •	• At all camps and worksites.	Frequent site inspection	BB kharel/ Smriti Sharma
4. Effect in air quality	• 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. • Routine monitoring of dust (TSP). Limit vehicle speed. • See that vehicles comply with the National Vehicle Mass Emission Standards, 2056 BS. Regular maintenance of vehicles. • Provide proper ventilation in confined working areas.	• Regularly water sprinkling. • No monitoring of TSP by the contractor. • Cover of stockpiles by the plastic sheets. • Maintenance of vehicles done.	Regular inspection at the work sites	• At all camps and worksites.	Frequent site inspection	BB kharel/ Smriti Sharma
5. Noise Level and vibration	• Monitoring of noise levels regularly at site. • Fit mufflers in vehicles to control noise. • Limit the speed s of vehicles. • Ban the use of power horns in vehicles. • Regular maintenance of equipment. • Prohibit the operation of crushing plants and construction vehicles between 7 PM to 6 AM. • Compensate the damages caused by vibrations.	• No NP monitoring at sites. Sped limit. • Horn is legally banned. • No crushing plant near the vicinity.	• Check lists and visual inspections. • Interactions with the workers	• At all camps and worksites.	Frequent site inspection	BB kharel/ Smriti Sharma

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
6. Solid waste problem	• Store all materials, toxic, non-toxic and hazardous materials in safe place (warehouse). › Collect, segregate and dispose waste at designated areas	• Stored in the safe designated place. • Sends the wastes through the trucks for the stuck at the designated locations.	• Check lists and visual inspections. • Interactions with the workers	• At all camps and worksites.	Frequent site inspection	BB kharel/ Smriti Sharma
Biological Environment						
1. Vegetation clearance	• Prohibit the use of fuel wood and timber collection. • Prohibit illegal collection of NTFPs and trade. Provide LPG/kerosene to workforce. • Stockpile the felled trees and take permission from concerned authority for its use • Plant and rear tree saplings at the rate of 25 saplings for each felled tree.	• LPG gas is used for cooking purpose. • NTFP non-applicable. • No trees felled. • Planting of saplings is non-applicable	• At all and worksites.	• At all camps and worksites.	Frequent site inspection	BB kharel/ Smriti Sharma
Socio-economic						

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
1. Compensation to affected people	• Avoid involuntary displacement. Provide employment opportunity to the affected people. • Provide all possible assistance to the displaced people until they are settled. ◗ Provide disturbance and rehabilitation costs. Resettlement according to agreed Entitlements Policy and RP. Arrangement of a "grievance redress committee". Protect traditional rights of locals. Compensate for any loss of crops, trees and other natural resources. Establish technical committee to assess compensation for damages caused by vibration. ◗ Temporary sites should be restored to natural or stable conditions as per agreement with land owner. Exposed areas of temporary sites planted with endemic vegetation. Proponent report in writing that temporary areas have been vacated and restored to pre-project conditions before acceptance of the works	● No one is displaced. ● No effect ● This is not applicable in this period.	● GRM is used. ● Check lists.	● At all and worksites.	Frequent site inspection	CASSC persons
2. Reinstatement of damaged infrastructures and services	● 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.	● Damaged utilities.	● GRM is used.	● At all and worksites.	Frequent site inspection	CASSC persons
3. Crime and community stress	● Prohibit gambling and alcohol consumption in camp sites. ● Instruct the outside workforce to respect the loca cultures, traditions, rights etc. ● Provide security in camps.	● No case is found.	● Meetng and discussions with locals.	● At all and worksites.	Frequent site inspection	CASSC persons

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
4 Health and hygiene	• Provide regular health checkups, proper sanitation and hygiene, training in community health and safety, OHS measures, health care, and control of epidemic diseases to the workforce. • Launch awareness programs concerning human trafficking and the possibility of spread of STDs and HIV/AIDS using brochures, posters, and signboards. • Make available first aid kits, ambulance and fire extinguishers in camp sites.	• No health checkups. • No training to workforce. • Awareness programs are launched. • FABs, fire extinguishers and ambulances are available at the camps and sites.	• Check lists and visual inspections. • Interactions with the workers	• At all camps and worksites.	Frequent site inspection	Smriti Sharma CASSC persons
5. Archaeological and cultural heritage sites	a. Protect archaeological and cultural heritage sites In case of relocation, consult local community b. inform the Chief District Officer who has to report the findings in writing to the Department of Archaeology within 35 days, according to the Ancient Monuments Protection Act, 1956 and Rules, 1989. c. Use manual labour for digging trenches and avoid heavy equipment	• Protection of heritage sites in presence of archaeological personnel and local people. • Only manual work is permitted.	• Meeting and discussions. • Site inspection.	• All heritage sites where work is streamlined.	Frequent site inspection	CASSC persons
6. Demolition	Remove all unnecessary structures and reinstate the area to its original condition	• Number of structures demolished.	• Site inspection.	• Narayan Gopal Chowk	Reinstatement completed on 4th December, 2017	CASSC persons
7. Traffic Management	• Develop a traffic plan to minimize traffic flow interference from construction activities. • Advance local public notification of Construction activities, schedule, routing, and affected areas including road closures via VDCs. • Erect signage in Nepali and English languages. • Use of steel plates or other temporary across trench facilities in key areas such as foot trails or livestock routes; arrange for pedestrian access and sidewalks and parking areas. • Arrange for night-time construction for activities	• Traffic police are informed before the construction activities. • Communities are informed. • Signage erected at all work sites. • Steel plates placed across the trench. • Nigh time work is continued in congested/heavy traffic area.	• Site inspection and check lists.	• All heritage sites where work is streamlined.	Frequent site inspection	CASSC persons

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
	in congested/ heavy day-time traffic areas. • Undertake trench closure and facilitate rehabilitation as quickly as feasible.					
d Operational Phase						
Quality and quantity of drinking water supplies	• Treatment (including chlorination) of water before distribution. • Water quality checks to be done regularly and residual chlorine to be checked daily at taps. • Regular inspection of pipes for leakage and maintenance; implement a leak detection and repair program.	Residual chlorine, turbidity, color, odor, pH	water quality tests	-	-	-
Pipe flushing	• Discharge flush water into municipal storm water drain; Minimize erosion of erosion-prone areas.	That flush water is discharge into the storm water drain an does not cause erosion.	Visual operation	-	-	-
Health and safety	Provide trainings to workers on OHS	Number of trainings given	Quizzes and interviews	-	-	-

Table 8: Overall Compliance with CEMP/ EMP

No.	Sub-Project Name	EMP/ CEMP Part of Contract Documents (Y/N)	CEMP/ EMP Being Implemented (Y/N)	Status of Implementation (Excellent/ Satisfactory/ Partially Satisfactory/ Below Satisfactory)	Action Proposed and Additional Measures Required
1	DNI-1	Y	Good	Partially Satisfactory	Enforcement of compliance to the contractors is essential.
2	DNI-2	Y	Good	Partially Satisfactory	″
3	DNI-3	Y	Good	Partially Satisfactory	″
4	BDS-1	Y	Good	Partially Satisfactory	″
5	BDS-2	Y	Good	Partially Satisfactory	″
6	BDS-3		Good	Partially Satisfactory	″
7	Tube wells drilling and development	Y	Good	Partially Satisfactory	″

4.1 Environmental and Safeguards Monitoring (Checklist) Results

Project Implementation Directorate (PID) in consultation with ADB has developed a checklist for the environmental and social safeguards compliance monitoring. PID has mobilized the then Community Awareness and Participation Consultant (CAPC) and Design and Supervision Consultant (DSC05) for the monitoring of compliance status at different construction sites on different dates.

The main objective of the environmental compliance monitoring is to monitor the activities during construction phase to ensure that the implementation is carried out in accordance with the approved Environmental Management Plan (EMP). Later two new checklists were developed to monitor chambers and SRT constructions. Below in table 9, 10, 11 and 12 are the compliance status of pipe lines, chambers and SRTs for the months July-December, 2017.

The compliance status of monitoring is presented in **Table 9**. According to **Table 9**, majority of the monitored construction sites comply the environmental and social safeguard. Those who have scored below 75 has been informed about their weakness and instructed to update the condition of the site as soon as possible.

Table 9: Pipeline monitoring as per checklist

S N	Date	Location	Name of contractor	Package	Achieved score %
1	20th July	Thamel	Hangzhou Sharma JV	2, DNI 7	89
2	24th July	Khusibu	Hangzhou Sharma JV	2, DNI 7	68

S N	Date	Location	Name of contractor	Package	Achieved score %
3	3rd July	Tridevi marg, Kesharmahal	Hangzhou Sharma JV	2, DNI 7	82
4	5th July	Ekantakuna	Sumec Lama JV	3, DNI 8	56
5	31st July	Chabahil	JITF	1, BDS	77
6	31st July	Mahankal	JITF	1, BDS	54.5
7	23rd July	Patan	Hangzhou Sharma JV	2, DNI 5	67
8	25th July	Kuslechaur Marg	Hangzhou Sharma JV	2, DNI 7	75
9	16th August	Pinglasthan, Gaushala	Hangzhou Sharma JV	1, DNI2	83
10	27th August	Purnachandi, Pathan	Hangzhou Kalika JV	1, DNI6	74
11	22nd August	Swaymbhu (Balaju-Kalaki section)	Tianjin Raman JV	BDS 3	71
12	27th August	Ghattekulo	Hangzhou Kalika JV	1, DNI 2	71.5
13	10th September	Chappal Karkhana	JITF	BDS 1	71
14	10th September	Mahankal	JITF	BDS 1	63.5
15	12th September	Balaju Chowk	Tianjin-Raman JV	BDS 3	85
16	12th September	Kohiti, Paropakar section	Kalika Raman JV	1, DNI 6	74
17	12th October	Paropakar section, Nasa Galli	Hangzhou Kalika JV	1, DNI 1	62
18	9th October	Tripureshwor	Hangzhou Kalika JV	1, DNI 1	79
19	10th October	Nirtyanath Marg, Thaiti	Hangzhou Sharma JV	2, DNI 7	87.5
20	9th November	Bhadrakali	Tianjin-Raman JV	BDS 3	89.5
21	9th November	Teku	Hangzhou Kalika JV	DNI Pkg 1	86.5
22	12th November	Dillibazar	Hangzhou Kalika JV	DNI Pkg 1	80.5
23	17th November	Gyaneshwor	Hangzhou Kalika JV	DNI Pkg 1	87
24	29th November	Putalisadak	Hangzhou Kalika JV	DNI Pkg 1	59
25	18th December	Krishna Mandir	Hangzhou Kalika JV	DNI Pkg 1	47
26	22nd December	Patan Hospital	Hangzhou Kalika JV	DNI Pkg 1	80
27	22nd December	Patan Durbar Square	Hangzhou Kalika JV	DNI Pkg 1	74
28	22nd December	UN Park	Hangzhou Sharma JV	DNI Pkg 2	86

Table 9 showed that 14 out of 28 monitored sites scored below 60 showing that the work performance does not comply with environmental and social safeguard, whereas 9 monitored sites have performed above the satisfactory level in June.

Average score of July-December, 2017

Table 10 (in English) and present the average score of the respective observation based on the environmental and social safeguard compliance monitoring at 28 different sites (mentioned in **Table 9**).

As in previous months, compliance of signage i.e. information board and road diversion is seen satisfactory in 2nd biannual as well. In terms of health and safety, it is seen that Occupational Health and Safety issues are addressed satisfactorily, as the presence of site supervisor is observed in most of the sites, the practice of personal protective equipments (PPEs) by workers is also improving, however, the observation also shows that the contractors should mobilize safety officers efficiently and on-site supervisors/engineers should be encouraged to use PPEs as well. Apart from occupational health and safety issues, a special attention should be given to community health issues; some of the construction sites lack the provision of help desk, first aid box and grievance recoding mechanism.

Similarly, although observation shows that green nets have been used in most of the sites, however contractors should be encouraged to use green net and caution ribbon effectively, to maintain cleanliness of the working environment as well as to confine stockpile, debris and bedding materials. With respect to reinstatement, contractors should be encouraged to remove excess debris as soon as possible to minimize its impact on the public movement and the environment.

Table 10: Average score of July-December, 2017

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	2.2	Satisfactory
		Available Visible Sign Board for Traffic Alternative Route			2	2	Satisfactory
2	Health & Safety	Available of authorized representative of contractor at work site (Engineer/Supervisor)			3	2	Satisfactory

SN	Subject	Activities	Yes(√)	No (X)	Full Score	Achieved Score	Remarks
		Regular visit of work area for supervision by contractor's Safety supervisor			3	1.3	Below average but improvement from previous biannual inspection.
		Hard Barricading for Working Area: Minimum 4 ft. height Metal posts with Nylon Ropes/Green net in 3 rows for BDS/DNI works and danger light (for night work) on Non-Black topped Roads (Primary line)			4	4	No primary line work
		Metal hoarding/Sheet fence (Safety Barrier) for BDS & DNI Primary line works on Black topped Roads Available			4	3.8	No primary line work
		Hard Barricading for Working Area: Minimum 4 ft. height Metal posts with Nylon Ropes in 3 rows for DNI works on Non-Black topped/Black topped Roads Available			4	3	Satisfactory, but needs more improvement
		Entry of Non-Authorized Person inside the area of Safety Barriers			3	2	Satisfactory
		Trench Shoring for BDS & DNI Primary line Available			4	4	Not many Primary lines
		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	3.5	Satisfactory but needs improvement
		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	1	Satisfactory
		First Aid Box at Working Area Available			4	1	Not satisfactory because the first aid boxes do not have contents as per any standards.
		Drinking Water at Working area Available			2	2	Supply from nearby hotels/shops or jar water. However the water quality needs to be periodically tested.
3	Grievances Redress Mechanism	Help Desk: Table, Chair and First Aid with Grievance Register Available visible by Public			3	1	In most places the supervisor carries the first aid and grievance register in his bag

SN	Subject	Activities	Yes(√)	No (X)	Full Score	Achieved Score	Remarks
		Helper at Help Desk Available			2	.7	not satisfactory
4	Traffic and Pedestrians Access without obstruction and Housekeeping of work area	Cross over metal platforms on trench of BDS & DNI Pipeline work Available			3	2	Usually alternative to metal platforms are used.
		Availability of platforms on loose soil and Pit for safe pedestrians Access			3	3	Satisfactory
		On basis of width of Road, Availability of half portion of road is open for Traffic and Pedestrians Access during construction			5	3.4	Satisfactory
		Cleanliness of Working Area and Access Road by immediate removal of loose soil, dust, aggregated and excavated soil			8	6.3	Satisfactory
		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	12.5	Though back filling and compaction work is satisfactory, excess soil removal is not satisfactory
		Availability of Safety Barrier at Pits excavated for house connection and Pressure test, If work is not immediately completed			5	4.8	Mostly not applicable in many cases
5	Damages/ Repairs in Service Sector	Availability of record keeping system for damages in private and social structure			3	1	Not satisfactory
		Leaving pipe laying area clean with compaction in previous condition after pipe laying in road for each 30 m stretch			5	4.2	Satisfactory
		Temporary reinstatement of black topped road shall be done within 2 days in BDS & DNI Pipeline work			3	2.5	Satisfactory
		TOTAL			**100**	73.7	

Chamber Monitoring Status:

It was decided that monitoring will be done not only of sites where pipes are laid but also of chambers constructed at various sites. Following are key activities for standard safeguards compliance for chambers construction and compliance status for this period is presented in the table 3.

- Chamber needs to be barricaded using green nets/Zinc sheets all around the chamber.
- The green net/Zinc sheet needs to be placed using metal posts both vertically and horizontally so that no any vehicles can fall inside the trench. Green nets/Zinc sheets to be placed inside the metal poles.

- Reflective tape needs to be pasted all around the chamber to make it visible at night.
- Road diversion board and information board needs to be place beside the chamber.
- There should not be any excess material (soils, gravels, construction materials) outside the green net.
- Shoring has to be installed during chamber construction.
- All the safeguard measures mentioned above needs to be complied until the trench section is reinstated and cleaned.

Table 11: Chamber Monitoring Status as per Checklist

S N	Date	Location	Package	Achieved score %
1	07-09-17	Gwarko 1	2, DNI	89
2	07-09-17	Gwarko 2	2, DNI	79
3	07-09-17	Gwarko 2 (ANFA)	2, DNI	73
4	07-09-17	Near Sumit Hotel	3, DNI	81
5	07-09-17	Jhamsikhel (Infront of Army Camp)	3, DNI	76
6	07-09-17	Jhamsikhel (Arun Thapa Marg)	3, DNI	79
7	07-09-17	Balkumari	3, DNI	65
8	07-09-17	Koteshwor	3, DNI	58
9	07-09-17	Gwarko (NCIT College)	3, DNI	61
10	07-09-17	Gwarko (Guna Hall)	3, DNI	57
11	07-09-17	Sanepa Road 1	3, DNI	68
12	07-09-17	Sanepa Road 2	3, DNI	76
13	07-09-17	Sanepa Road 2	3, DNI	81
14	12-09-17	Tudikhel 1	BDS 3	83
15	12-09-17	Tudikhel 2	BDS 3	78
16	12-09-17	Tudikhel 3	1, DNI	86
17	12-09-17	Gyaneshwor (Swet Bhairab Marg)	1, DNI	76
18	12-09-17	Balaju Park	2, DNI	71
19	13-09-17	Damkal Chowk	3, DNI	93
20	13-09-17	Ghattekulo 1	2, DNI	88
21	13-09-17	Ghattekulo 2	2, DNI	81
22	14-09-17	Ratopul 1	1, DNI	66
23	14-09-17	Setopul	1, DNI	81
24	19-09-17	Durbar H.S. School	2, DNI	66
25	19-09-17	Sorhakhutte Oralo	2, DNI	73
26	19-09-17	Balaju Chowk	2, DNI	83
27	19-09-17	Bishnumati Corridor	2, DNI	85
28	19-09-17	Bishnumati Corridor	2, DNI	63
29	19-09-17	Bishnumati Corridor	2, DNI	59
30	19-09-17	Gyaneshwor	1, DNI	68
31	03-10-17	Gaushala Chowk	1, DNI	90
32	04-10-17	Chabahil	1,BDS	68
33	18-10-17	Gaushala Chowk	1, DNI	80
34	18-10-07	Battisputali	1, DNI	81
35	24-10-17	Ram Mandir, Battisputali	1, DNI	81
36	30-10-17	Battisputali	1, DNI	83
37	18-10-17	Chabahil	1, BDS	73
38	18-10-17	Chabahil	1, BDS	52
39	06-11-17	Chabahil	1, DNI	78
40	06-11-17	Gaushala	1, DNI	73
41	07-11-17	Battisputali	2, DNI	83
42	06-11-17	Thapagaun	2, DNI	68
43	12-11-17	Ghattekulo	2, DNI	68
44	14-11-17	Battisputali	1, DNI	78
45	14-11-17	Gaushala	1, DNI	73
46	14-11-17	Gaushala	1, DNI	61

47	14-11-17	Gaushala	1, DNI	73
48	14-11-17	Gaushala	1, DNI	68
49	16-11-17	Maligaun	1, DNI	73
50	16-11-17	Maligaun Chowk	1, DNI	66
51	16-11-17	Maligaun Chowk	1, DNI	66
52	16-11-17	Maligaun Chowk	1, DNI	68
53	16-11-17	Kalopul	1, DNI	75
54	16-11-17	Kalopul	1, DNI	61
55	17-11-17	Balaju	2, DNI	83
56	17-11-17	Balaju	2, DNI	86
57	20-11-17	Gyaneshwor	1, DNI	63
58	20-11-17	Gyaneshwor	1, DNI	56
59	20-11-17	Sanepa	3, DNI	74
60	22-11-17	Old Baneshwor	2, DNI	83
61	12-12-17	Battisputali	2, DNI	58
62	18-12-17	Jawalakhel	1, DNI	80
63	18-12-17	Jawalakhel	1, DNI	51
64	22-12-17	Narephat	3, DNI	46
65	22-12-17	Thasikhel	3, DNI	36
66	23-12-17	NarayanGopal Chowk	BDS 1	66
67	23-12-17	Chappal Karkhana	BDS 1	48
68	25-12-17	New Baneshwor (BICC)	DNI 2	65
69	25-12-17	New Baneshwor (Everest Hotel)	DNI 2	65
70	25-12-17	Kupondole, Kandevtasthan	DNI 3	63
71	25-12-17	Jhamsikhel	DNI 3	68
72	25-12-17	Bhanimandal	DNI 3	61

Out of 72, 30 sites failed to achieve above 75% whereas the remaining 42 sites were able to achieve above 75%. It was observed that most sites lacked information boards with complete information as well as site safety boards. It was observed that most sites had barricade done efficiently at the beginning (July-Sept) but towards the end of the months (Oct-Dec) the green nets were worn out and reflective tapes were also seen to be missing from the sites. The contractors have been informed about their shortcomings.

SRT Monitoring Status

It has been observed that out of 8 sites observation 3 sites failed to comply the criteria for compliance. Most sites have displayed signage boards at the premise of the SRTs. Unauthorized people are not allowed to enter the site, however it is observed that most sites need to have emergency plan are contact numbers displayed at sites. There has been no complains of noise, and drinking water has been supplied to the workers by contractors. However, the first aid box does not have contents as per standards.

Table 12: SRT Monitoring Status as per Checklist

SN	Date	Location	Name of contractor	Package	Achieved score %	Compliance status
1	12-11-17	Arubari	JITF	BDS 1	68	Poor
2	17-11-17	Balaju	Tianjin-Raman JV	BDS 3	80	Good
3	10-9-17	Mahankal	JITF	BDS 1	71	Poor
4	10-9-17	Bansbari	JITF	BDS 1	70	Poor
5	9-9-17	Arubari	JITF	BDS 1	75	Good
6	6-9-17	Khumaltar	JWIL-SCPL JV	BDS 2	75.5	Good

SN	Date	Location	Name of contractor	Package	Achieved score %	Compliance status
7	10-11-17	Khumaltar	JWIL-SCPL JV	BDS 2	80	Good
8	27-12-17	Khumaltar	JWIL-SCPL JV	BDS 2	79	Good

5. APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT

5.1 ENVIRONMENTAL MONITORING

5.1.1 Air Quality

A. Background

Air pollution is the human introduction of chemicals, particulate matter, or biological materials that cause harm or discomfort to humans or other living organisms, or damages the environment into the atmosphere. Air pollution causes deaths and respiratory disease. Air pollution is often identified with major stationary sources, but the greatest source of emissions is mobile sources, mainly automobiles. Gases such as carbon dioxide, which contribute to global warming, have gained recognition as pollutants by climate scientists, while they also recognize that carbon dioxide is essential for plant life through photosynthesis.

An air pollutant is known as a substance in the air that can cause harm to living beings and the environment. Pollutants can be in the form of solid particles, liquid droplets, or gases. In addition, they may be natural or man-made.

Air is one of the most vulnerable components of the environment. Activities like quarrying, blasting and excavation, disposal of the spoils, blasting of the rocks and other constructional activities within the project area seriously deteriorate the air quality. Furthermore, emission from increased number of vehicles, re-suspension of the road dust by fleeting vehicles, operation of the various types of power generating equipments all contribute to the increase of air pollution within the project area. Similarly, the increase in human population is also responsible to some extent for the increased air pollution. Vehicular and mass activity increases the particles of dust and emission of unwanted gases into the atmosphere which has direct impact on the human health.

Air pollution, in the work area, is measured by using high/ low volume air sampler. The methodology is described precisely.

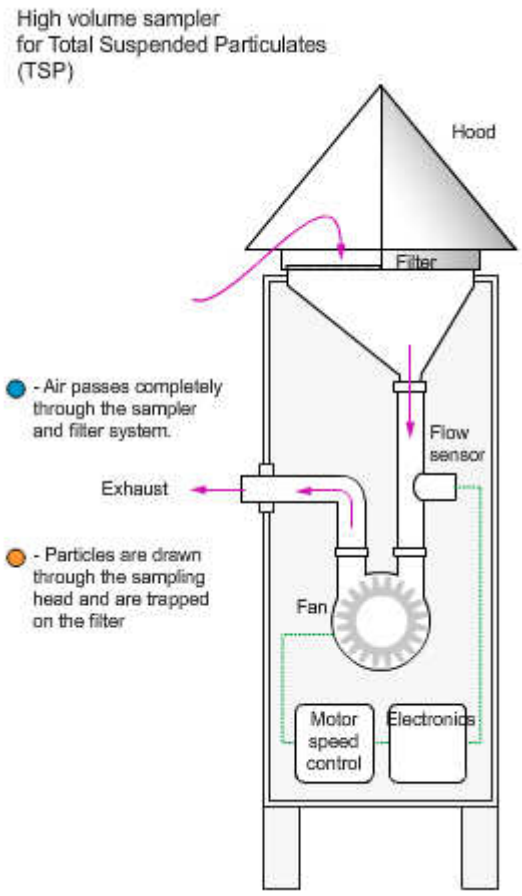
B. HIGH AND LOW VOLUME AIR SAMPLERS

High and low volume air samplers are instruments used to collect samples of air particles. The difference between high and low volume air samplers is the amount of air sampled. High volume air samplers typically sample more than 1500 cubic meters (m^3) of air over a 24-hour period, while low volume air samplers draw through only 24m^3 of air, or less.

Total suspended particulate matter (tsp)

TSP monitoring measures the total amount of particles suspended in the atmosphere. An instrument called a high volume air sampler is used to collect TSP samples. The high volume air sampler draws a large known volume of air through a pre-weighed filter for 24 hours.

As shown in the figure, the sampler filter traps the TSP particles as air passes through the instrument.



After sampling, the filter is re-weighed and the difference in filter weight is the collected particulate matter mass. Dividing the mass by the volume of air sampled gives the concentration of TSP.

Particles less than 10 micrometers in diameter (PM_{10})

Particle less than 10 µm are especially concerning as these particles can enter the human respiratory system and penetrate deeply into the lungs, causing adverse health effects. Motor vehicles and other combustion processes that burn fossil fuels such as power stations, industrial processes and domestic heaters, generate PM_{10}. Dust storms and smoke particles from bushfires can also be another source of PM_{10}missions.

Instruments used to measure PM_{10} are either a high or low volume air sampler.

The PM_{10} high or low volume air sampler is similar to that described above for TSP, except that the air sample passes through a size-selective inlet. The inlet removes particles larger than 10µm by using their greater inertia to trap them on a greased plate, while smaller particles pass through the instrument onto the pre-weighed filter.

The diagram of a high volume sampler shows this.

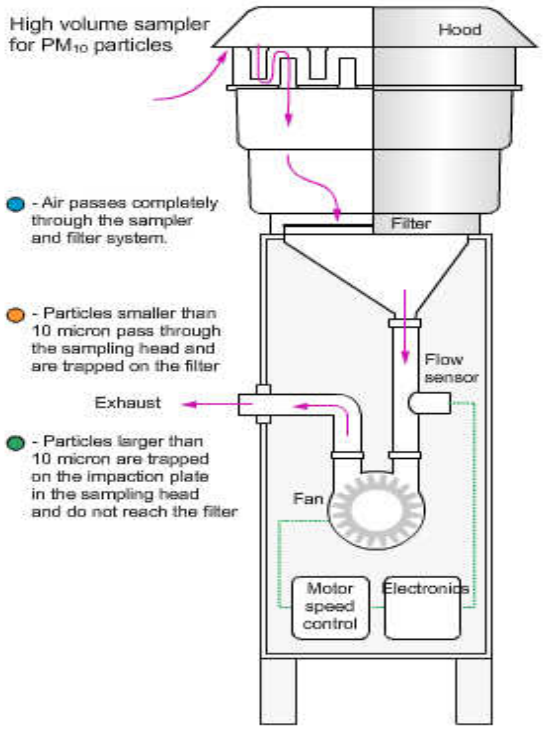


Diagram of a PM_{10} sampler

Measuring the volume of air sampled and weighing the filters before and after sampling determines the concentration of PM_{10} particles in the air.

The Project Implementation Directorate/Kathmandu Upatyeka Khanepani Limited (PID/KUKL) has conducted air quality monitoring at various sites, as presented in **Table 1**. The monitoring sites include the locations where PID/KUKL's activities were carried out and few other reference sites to get an idea of ambient air quality. The main aim of the monitoring program is to evaluate the contribution of its activities in air pollution of the Kathmandu Valley.**Table 1** provides the quality of air at nine sites namely Balaju, Chabahil, Gaushala, Gwarko, Jamal, New Baneshwor, Jayabageshwori, Lazimpat and Sinamangal on various dates. Out of these observation sites, Jamal and Balaju provides ambient air quality without any construction work and Gwarko provides the scenario affected by the road expansion work. Please note that the presented data includes other sources of Total Suspended Particulates (TSP), Particulate Matter of Aerodynamic Size 10 micron (PM_{10}) and Size 2.5 micron ($PM_{2.5}$) besides PID/KUKL's activities.

The observed values have been compared with the TSP, PM_{10} and $PM_{2.5}$ values monitored at the Tinkune Sallaghari Trisection during the Bhaktapur road construction period. The observation shows that the TSP values are quite compatible during these two occasions. However, the values for TSP are somewhat compatible with the values observed at New Baneshwor and Jamal (before construction work).Moreover, the values has been benchmarked with the values observed at Balaju and Gwarko, where PID's activities have not been commenced.

As depicted in **Table 13**, not any single monitored site comply the prescribed National Ambient Air Quality Standards (NAAQS 2012) limits for all monitored parameters. According to the observation, New Baneshwor and Lazimpat are the least polluted locations where as Chabahil is the most polluted one.

Ambient air: Ambient air in the project surroundings are not only impacted by the project construction activities but also it is being impacted by the other stakes also. Main causes of the air pollution are heavy traffic, various construction works by the stakeholders and existing road conditions. PID had monitored what is the actual situation of ambient air quality in Kathmandu valley at different locations at different dates. Some of the samples monitored are listed below. Though these are not the samples during this period, yet it gives the knowledge of the ambient conditions in Kathmandu valley.

Table 13: National Ambient Air Quality Standards (NAAQS 2012) and ambient air sampled

Locations	TSP $\mu g/m^3$	PM_{10} $\mu g/m^3$	Date/Time	Remarks
NAAQS (Limits for 24 hrs averaging time)	230	120	-	-
Balaju	1479.68	1241.6	11 Jan, 2017, 16:00	Ambient condition. Not any construction work
Gwarko	2918.37	2522.93	15 Jan, 2017, 13:00	”
Chabahil	3567.68	2940.12	08 Jan, 2017, 14:30	Construction in progress
Sinamangl	2114.61	1960.04	11 Jan, 2017, 13:50	Trench excavation in progress

The ambient air quality during no construction work condition is also alarming and during the construction progress is highly alarming. The same situation is still standing. The water sprinkling is the method to suppress the air dusts in the construction sites. The suppression of dusts is being done by the contractors by sprinkling the water three to four times a day. This has helped to decrease the air pollution in the surrounding.

5.1.2 Noise Quality

Noise is considered as a serious environmental hazard. Noise can be defined as “any sound that is undesirable because it interferes with speech and hearings, is intense enough to damage hearing, or is otherwise annoying”. The definition of noise as unwanted sound implies that it has an adverse effect on human beings and their environment, including infrastructures and domestic animals. Noise pollution affects both health and behavior. Unwanted sound (noise) can damage psychological and physiological health. Noise pollution can cause hypertension, high stress levels, tinnitus, noise induced hearing loss, sleep disturbances, and other harmful effects.

Sound becomes unwanted when it either interferes with normal activities such as irritation from vehicles horns, sleep, conversation, or disrupts or diminishes one's quality of life.

Chronic exposure to noise may cause noise-induced hearing loss. Older males exposed to significant occupational noise demonstrate more significantly reduced hearing sensitivity than their non-exposed peers, though differences in hearing sensitivity decrease with time.

High noise levels can result in cardiovascular effects and exposure to moderately high levels during a single eight-hour period causes a statistical rise in blood pressure of five to ten points and an increase in stress, and vasoconstriction leading to the increased blood pressure noted above, as well as to increased incidence of coronary artery disease.

During the construction of any developmental project, activities like blasting, drilling and vehicular movement, power tool operation may generate unacceptable noise levels that may

seriously deteriorate the environment and may cause detrimental impacts on human beings and other ecological components.

Kathmandu valley is considered as the Urban Residential Area as per the National Ambient Sound Quality Standards the sound level is to maintained 55 dB(A) for the day time and 50 dB(A) in the night time which is mentioned in Table 14.

Table 14: National Ambient Sound Quality Standards of Nepal-2012

S.N.	Area	Noise Level dB(A)	
		Day time	Night time
1	Industrial Area	75	70
2	Commercial Area	65	55
3	Urban Residential Area	55	50
4	Rural Residential Area	45	40
5	Mixed Residential Area	63	55
6	Peace Area	50	40

In any work site Sound level is measured by using precise decibel sound meter.

The noise level was not monitored in this period by the contractors. Their undesired and willingness discouraged the noise pollution monitoring. Table below shows the status of monitoring.

Table 15: Bi-annual noise monitoring status construction sites in 2017 (July-Dec)

Sites/Contract No. / Months	DNI-1	DNI-2	DNI-3	BDS-1	BDS-2	BDS-3	Tube well drilling & development
July	NA	NA	NA	NA	NA	NA	NA
August	NA	NA	NA	NA	NA	NA	NA
September	NA	NA	NA	NA	NA	NA	NA
October	NA	NA	NA	NA	NA	NA	NA
November	NA	NA	NA	NA	NA	NA	NA
December	NA	NA	NA	NA	NA	NA	NA

5.1.3 Water Quality

Water is one of the most important components of the environment and can be deteriorate through various anthropogenic activities. Therefore, it is necessary to utilize manifold evaluation of water quality characteristics in order to develop a total evaluation of existing water quality as well as micro scale changes that result from project activities in the water bodies. Any construction activity at the upstream or downstream of a River and nearby water sources degrades the water quality.

The EMP team has to fix strategic locations for water sampling depending on the work sites. The samples will be collected in disinfected pet bottles and tested in the laboratory as per the IEE requirement for drinking water and waste water coming to the inland water from the contractor's camps.

Other things to be managed by the contractors

There are several things to be managed by the contractors in the project construction sites. These are briefly described as below.

Water Quality: During the report period no water and waste water sample were tested by any contractors. Contractors have provided the jar water to their workers at the camps and the work sites. No such water is being checked at the lab. The water discharged to the inland waters from the contractor's camps is also not tested.

Muddy Water: Muddy water escaping the boundary can be seen during rains. To manage the problem Kathmandu Municipality does not allow the work in the rainy season.

Soil erosion: Since the construction area is located in gently flat area in Kathmandu valley, no such erosion is expected during heavy rains.

Concrete works: Identify designated areas for concrete works, chemical storage, construction materials, and refueling. Attach photographs of each area in the Appendix.

The designated concrete areas are Service Reservoir Tanks (SRT), thrust blocks and chambers.

Chemical storage: Chemical are stored in SRT construction area.

Construction materials: Construction materials like aggregates, sands, cement, reinforcement rods, pipes and plasticizer are stored normally in the SRT locations. Contractor has no crushing plant in the project area. All of them transport the approved size of crushed aggregates and sand form the approved crushing plants and quarries respectively and store required quantity in the SRT site area. The all above materials must screen with the required tests.

Refueling: Since construction area is entirely in Kathmandu valley, contractors do the refueling in the gas stations.

Spill kits: No one contractor has any spill kit in their sites. The Consultant advised the contractors to manage the proper spill kits for the emergency use to handle the spill of lubricants.

Management of solid and liquid wastes on-site: Normally solid wastes generated in the camp by 50 workers are 200 kg per week. This solid waste is collected by the waste collectors of the area and they manage by dumping to the notified dumping sites. Liquid wastes are sending to the sewerage system of the area.

Barricades, signage: Whenever there is any construction work to start, barricading and signage are placed properly to prevent any untoward accidents due to the construction activities..

Activities being under taken out of working hours: Labor Law Act of Nepal defines 8 hrs working time per day. For out of hour's activities, Contractor pays extra benefits to the workers as per Labor Law. Normally, pipe line works and chamber construction takes place in the night to minimize the traffic problem

Chemical storage: Plasticizers in the packed drums are kept at the SRT construction sites by the contractors. Some contractor has stored in the open shades made of corrugated CGI sheets and someone has stored in the closed rooms.

Management of stockpiles and excavated soils: The stockpiling of the construction materials are kept in the approved stock yards. DNI-1, BDS-1, BDS-2, BDS-3, DNI-7A, DNI-3 stock piles are stored in Sundarighat in Kathmandu and Lalitpur area. BDS-4 contractor has stored and stockpiled the materials in Kirtipur SRT area. Some of the construction materials of BDS-1 construction materials are stocked Mahankal SRT area Arubari SRT area. Municipal road reinstatement works materials are stored in Koteswor, Mahadevsthan area. In the time of need these materials are transported in the location of construction

activities. The excess materials are sent back to the stores by the contractors. The excavated soils are refilled back to the trenches. The excess soils are sent to the store area to upgrade low lands.

Environmental parameters to be monitored: NP, WP, AP need to be monitored at the construction sites by the contractors as per the IEE of the project. No monitoring was carried out by the contractors on any sites during this period.

Table 16: Air Quality Results

Site No.	Date of Testing	Site Location	Parameters (Government Standards)		
			PM10 µg/m3	SO2 µg/m3	NO2 µg/m3
All sites			120	50	40

Site No.	Date of Testing	Site Location	Parameters (Monitoring Results)		
			PM10 µg/m3	SO2 µg/m3	NO2 µg/m3
DNI-1	NA	NA	NA	NA	NA
DNI-2	NA	NA	NA	NA	NA
DNI-3	NA	NA	NA	NA	NA
BDS-1	NA	NA	NA	NA	NA
BDS-2					
BDS-3	NA	NA	NA	NA	NA
Tube wells drilling and development	NA	NA	NA	NA	NA

Table 17: Drinking Water Quality Results

Site No.	Date of Sampling	Site Location	Parameters (Government Standards)					
			pH	Conductivity µS/cm	BOD mg/L	TDS mg/L	TN mg/L	TP mg/L
All sites and packages			6.5-8.5	1500	-	1000	-	-

Site No.	Date of Sampling	Site Location	Parameters (Monitoring Results)					
			pH	Conductivity µS/cm	BOD mg/L	TDS mg/L	TN mg/L	TP mg/L
DNI-1	NA	NA	NA	NA	-	NA	-	-
DNI-2	NA	NA	NA	NA	-	NA	-	-
DNI-3	NA	NA	NA	NA	-	NA	-	-
BDS-1	NA	NA	NA	NA	-	NA	-	-
BDS-2	NA	NA	NA	NA	-	NA	-	-
BDS-3	NA	NA	NA	NA	-	NA	-	-
Tube wells drilling and development	NA	NA	NA	NA	-	NA	-	-

Table 18: Waste Water Quality Results

Site No.	Date of Sampling	Site Location	Parameters (Government Standards)					
			pH	Conductivity µS/cm	BOD mg/L	TSS mg/L	TN mg/L	TP mg/L
All sites and packages			5.5-9.0	-	50	50	-	-

Site No.	Date of Sampling	Site Location	Parameters (Monitoring Results)					
			pH	Conductivity µS/cm	BOD mg/L	TSS mg/L	TN mg/L	TP mg/L
DNI-1	NA	NA	NA	NA	-	NA	-	-
DNI-2	NA	NA	NA	NA	-	NA	-	-
DNI-3	NA	NA	NA	NA	-	NA	-	-
BDS-1	NA	NA	NA	NA	-	NA	-	-
BDS-2	NA	NA	NA	NA	-	NA	-	-
BDS-3	NA	NA	NA	NA	-	NA	-	-
Tube wells drilling and development	NA	NA	NA	NA	-	NA	-	-

Table 19: Noise Quality Results

Site No.	Date of Testing	Site Location	LA_{eq} (dBA) (Government Standard)	
			Day Time	Night Time
			70	50

Site No.	Date of Testing	Site Location	LA_{eq} (dBA) (Monitoring Results)	
			Day Time	Night Time
NA	NA	NA	NA	NA

6. GRIEVANCE REDRESS MECHANISM (GRM)

PID/KUKL is responsible for handling the issues/ complains/ problems raised by the local people, land owners regarding the loss or disturbance on livelihood, health, water, sanitation and other types of utilities during the construction period. For this, then CAPC and now Community Awareness and Safeguard Support Consultant (CASSC) is assisting PID/KUKL in handling those grievances. At this stage, PID/CASSC is handling those issues at the construction site regularly as per ADB's Safeguard Policy and Government of Nepal's safeguards frameworks. A Grievance Redress Mechanism (GRM) has been established in different level to address and provided orientation to receive, evaluate and facilitate to resolve the grievances of the affected people/family, concerned community. The GRM examines grievances about losses, compensation, social and environmental safeguard issues at local level and forwards the cases to different levels, if not resolved locally. The GRM aims to provide a trustable environment to address affected people's concerns.

6.1 GRIEVANCE REDRESS MECHANISM (GRM)

There are four levels of GRM. If they are not redressed in the first level of GRM, it will follow the subsequent levels. If it is not redressed in the fourth level too the case goes to the court and

court's verdict will be final. It follows the path as mentioned Schematic Diagram of Grievance Redress Mechanism in the Fig 6.1

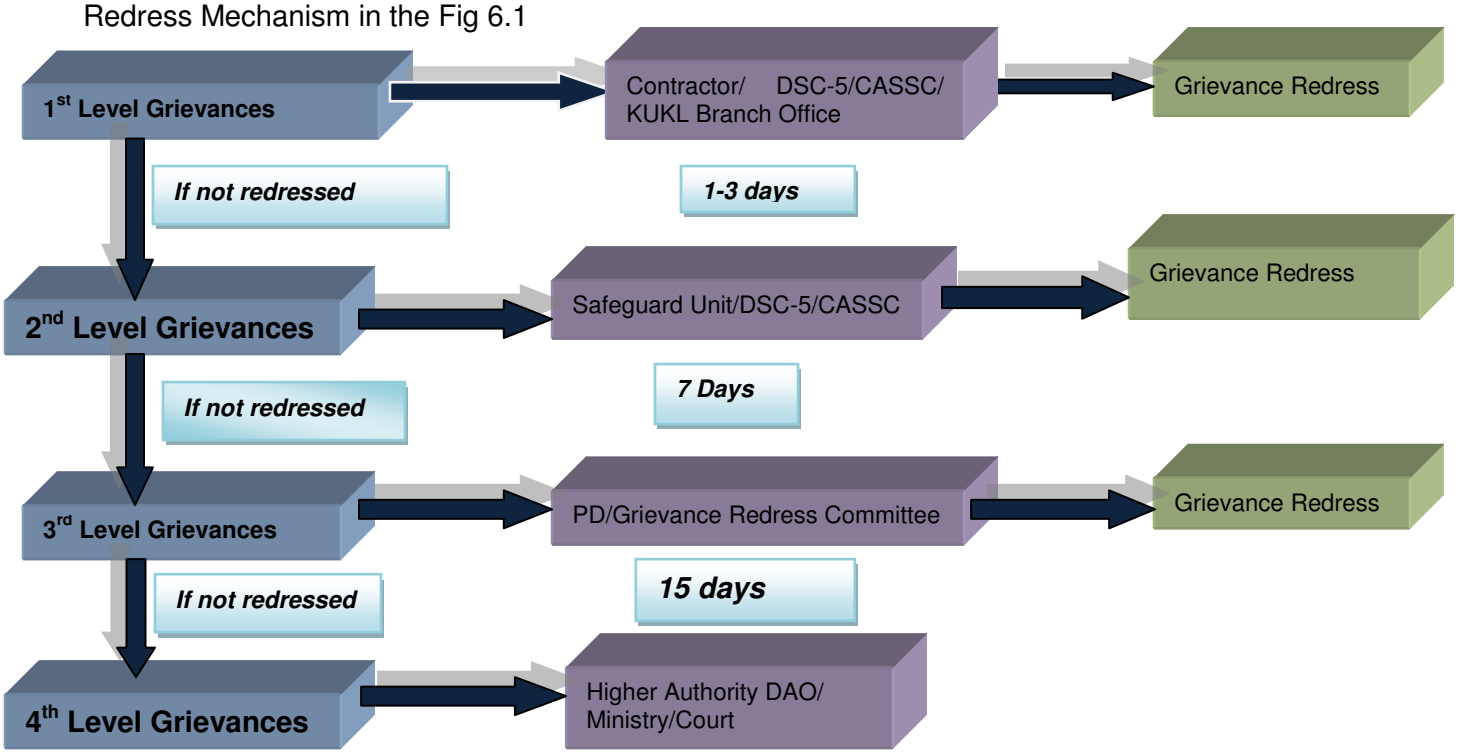


Figure-6.1: Schematic Diagram of Grievance Redress Mechanism (GRM)

Formation criteria of GRM

A grievance redress mechanism (GRM) has been established (safeguard officer from PID, safeguard expert from DSC, CASSC, contractor and TLO member) in PID to receive, evaluate, and facilitate the resolution of affected people's concerns, complaints, and grievances about the social and environmental performance at the level of the project. A Community Issue Resolution Team (CIRT) is also established to address the grievances immediately in the field level. The Safeguard officer from PID has been assigned as coordinator for grievance handling. The GRM aims to provide a trusted way to voice and resolve concerns linked to the project, and to be an effective way to address affected people's concerns. The GRM for the project is outlined below, and consists of three levels with time-bound schedules and specific persons to address grievances.

First level of GRM: The first level and most accessible and immediate contact for the fastest resolution of grievances by CIRT (contractors, CASSC, TLO member and DSC supervisor) on site. Prior to construction of any works, CAPC, DSC, and contractors holds local community meetings and form local tole committee to notify the local residents about ongoing project's objective, assess the impact of land, houses, trees, road, businesses etc. and inform to the project Implementation Office. If any complaints arise, the contractors, DSC, and PID try their best to resolve the complaint on site, and if necessary, the team takes the assistance of the local tole committee. To ease the general people, Contractor and CASSC office's phone number has been provide to the public on construction site and TLO. Any person with a grievance related to the project works can contact the project to file a complaint. The CASSC consultants is documenting the complaint, and immediately addressing and resolving the issue within 1-3 days. The CAPC consultant is notifying the PID safeguards unit that a complaint was

received, and whether it was resolved. The CAPC is documenting the following information: (i) name of the person and contract number, (ii) date of complaint, (iii) nature of complaint, (iv) location, and (v) possess of complain resolved.

Second level of GRM: If the grievance remains unresolved; the CAPC consultants forward the complaint to the PID safeguards unit. The PID safeguards units Chief

Address the grievances. Grievances are resolved through continuous interactions with affected persons, and the PID is answering the queries and resolve grievances regarding various issues, including environmental, social, or livelihood impacts. Corrective measures are undertaken at the field level by the PID safeguards staff within 7 days. The relevant safeguards unit staff is fully documenting the following information: (i) name of the person, (ii) date complaint was received, (iii) nature of complaint, (iv) location and (v) how the complaint was resolved.

Third level of GRM: If the grievance remain unresolved, the PID project director will activate the third level of the GRM by referring the issue (with written documentation) to the local Grievance Redress Committee (GRC) of the KUKL, who will, based on review of the grievances, address them in consultation with the PID safeguards unit, project director, and affected persons. The local GRC will consist of members of the PID, affected persons, and local area committee, among others determined to provide impartial, balanced views on any issues. The GRC should consist of around five persons. A hearing will be called with the GRC, if necessary, where the affected person can present his or her concerns/issues. The process will promote conflict resolution through mediation. The local GRC will meet as necessary when there are grievances to be addressed. The local GRC will suggest corrective measures at the field level and assign clear responsibilities for implementing its decision within 15 days. The functions of the local GRC are as follows: (i) to provide support to affected persons on problems arising from environmental or social disruption, asset acquisition (if necessary), and eligibility for entitlements, compensation and assistance; (ii) to record grievances of affected persons, categorize and prioritize them, and provide solutions within 15 days; and (iii) to report to the aggrieved parties developments regarding their grievances and decisions of the GRC. The PID safeguards officers will be responsible for processing and placing all papers before the GRC, recording decisions, issuing minutes of the meetings, and taking follow-up action to see that formal orders are issued and the decisions carried out.

Fourth level of GRM: In the event that a grievance is not addressed by the contractor, DSC, branch office, PID, or GRC, the affected person can seek legal redress of the grievance in the appropriate courts, the fourth level of the GRM, which is the formal legal court system. The grievance redress mechanism and procedure is depicted in Figure 6.1.

7. COMPLAINTS RECEIVED DURING THE REPORTING PERIOD

In PID office, for 2nd level grievances resolution, Grievance Redress Unit has been formed in the leadership of En. Prajan Hada,. If resolution is not achieved in the 1st level grievances, then this unit in consultation with safety as well as environmental experts and associates of the DSC05 and CASSC come to the amicable conclusion in 7 days for any non-resolved issue to be redressed. If that resolution is not acceptable to any grievance then it goes to 3rd level grievances. PD/Grievances Redress Committee (GRC) shall look the case and gives the resolution within 15 days. GRC has been formed in the leadership of DPD (PID), one engineer (PID), safeguard and environmental specialists (CASSC), environmental expert (DSC05) and environmental officer (DSC05). In the case of non-acceptance of the resolution, the case goes to the fourth level. Ultimately, court's verdict is the final.

Table 20: Categorize Grievances July-Dec, 2017

S.N.	Type of Grievances	No. Of Grievances	No. of Grievances Resolved
1.	Land Acquisition	-	-
2.	Structural damage	1	-
3.	Tree/Crops	2	1
4.	Maintenance/Reinstatement Of Road	11	3
5.	Dumping of Construction material	-	-
6.	Demand of additional structure	-	-
7.	Livelihood Disturbance & Claim	-	-
8.	Claim due to lack of information	49	34
9.	Maintenance of utility	8	3
10.	Others	3	2
	Total	**74**	**43**

In total 74 grievances were registered in this period from Project Loan no: 2776 and 3255. Out of 74 grievances, 43 had been resolved. Remaining is in the process of resolution.

8. SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

- The environmental monitoring is planned to take action from this month onward. Some of the contractors have assured to monitor the environmental issues. It shall be done as per the IEE of the project. AP monitoring will be done once in a month. NP monitoring will be carrying out every week. Whereas WP monitoring will be done for every month.
- Understanding the lack of OHS issues being addressed by the contractors, OHS action plan was prepared by ADB, PID and DSC for the compliance of OHS issues.

9. SUMMARY OF CONSULTATIONS:

Environmental monitoring is the essential part of the contract. Till the date the contractors have done nothing regarding the WP and NP. AP is somehow suppressed by the water sprinkling three to four times a day at the work place where AP is expected due to the construction activities. The contractors are advised to carry out the environmental monitoring and mitigate the problems seen in the reports as per the condition of contract. If compliance is not achieved enforcement is essential.

10. APPENDICES

i. Photographs

Figure 1: Sand and aggregates stocked at Arubari, BDS Package 1 (JITF)

Figure 2: Aura mix at Arubari SRT, BDS Package 1 (JITF)

Figure 3 Pipes stockpiled at Kirtipur, Stockyard for BDS Package 1 and 2 (JITF and JWIL-SCPL)

Figure 1 Cement bags not managed properely, BDS Package 2 (JWIL-SCPL JV)

Figure 5: Entrance gate at Mahankal SRT, BDS Package 1

Figure 6: Batching plant at Arubari SRT, BDS Package 1

Figure 7: Pipes stockpiled at Sundarighat, Stockyard for DNI Package 3 (Sumec Lama JV)

Figure 8: accommodation at Sundarighat DNI Package 3 (Sumec Lama JV)

Figure 9: Accommodation building at sudarighat for DNI-3

Figure 10 Toilet at Sundarighat DNI Package 3 (Sumec Lama JV)

Figure 11 Accommodation for BDS-2, JWIL-SCPL JV

Figure 12 Fittings stored for DNI-3

Figure 13 Work condition at site with PPES

Figure 14 First Aid Box at site.

Figure 15 Mixture machine at Khumaltar SRT

Figure 16 Ready for survey Mahadevsthan, Koteswor with some PPEs

Figure 17 Lubricant stored at Khumaltar SRT, BDS Package 2

Figure 18 Solid wastes stocked at Khumaltar work site.

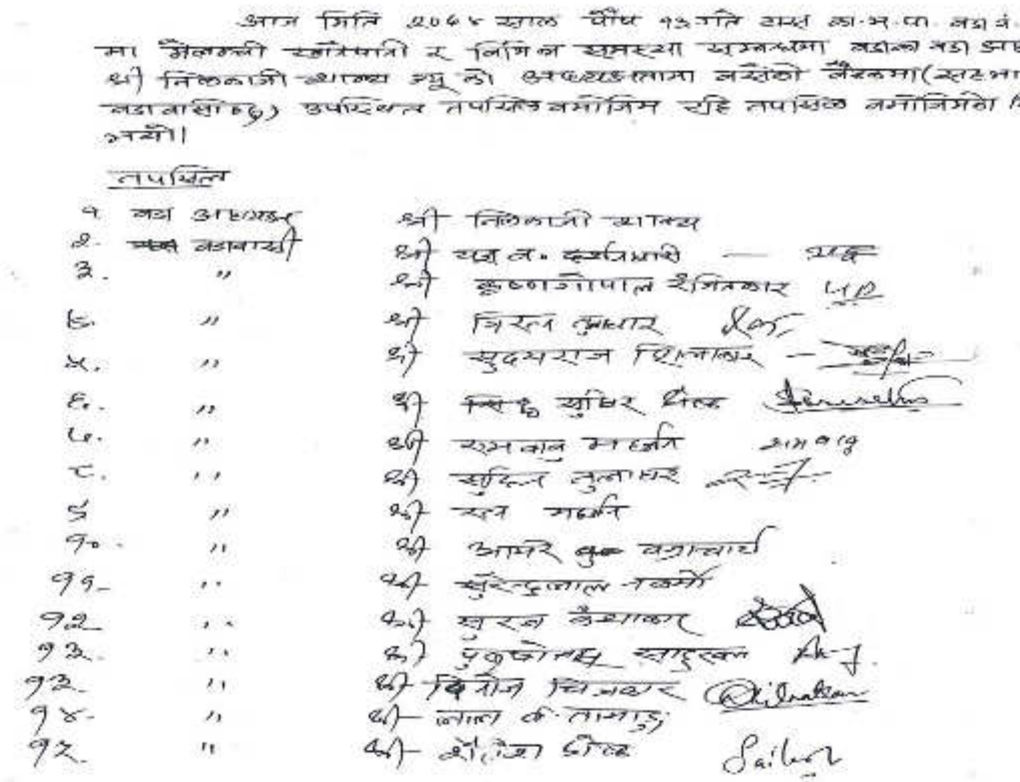
Figure 19 Dustbin of JWIL-SPCL JV, BDS Package 2

Figure 20 Work condition Khumaltar guard house, BDS Package 2

11. COPIES OF ENVIRONMENTAL CLEARANCES AND PERMITS

Copies of environmental clearances and permits are not available.

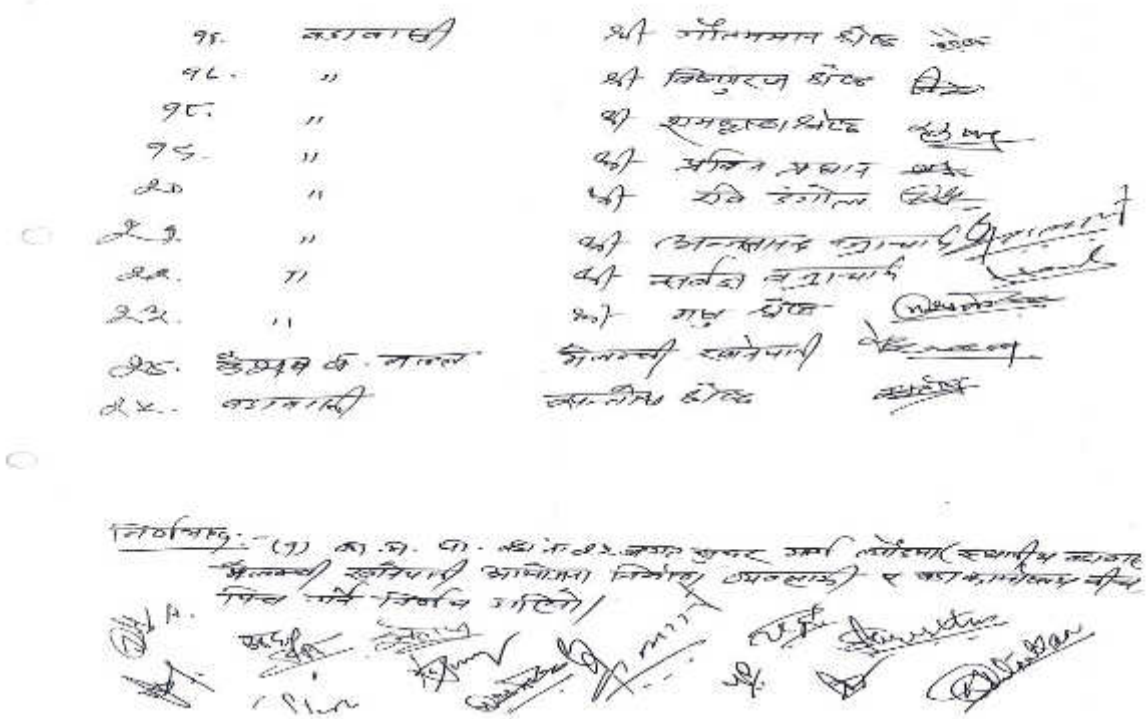
12. SAMPLE OF GRIEVANCE RECORDS



आज मिति २०६८ साल पौष १३ गते हामी का.म.पा. वडा नं. २ मा बैलम्ली खानेपानी र निर्माण समस्या सम्बन्धमा वडाका वडा अध्यक्ष श्री निलकाजी ... को अध्यक्षतामा बसेको बैठकमा (सहभागी वडावासीहरु) उपस्थित तपसिल बमोजिम रही तपसिल बमोजिमको निर्णय गर्यौं।

तपसिल

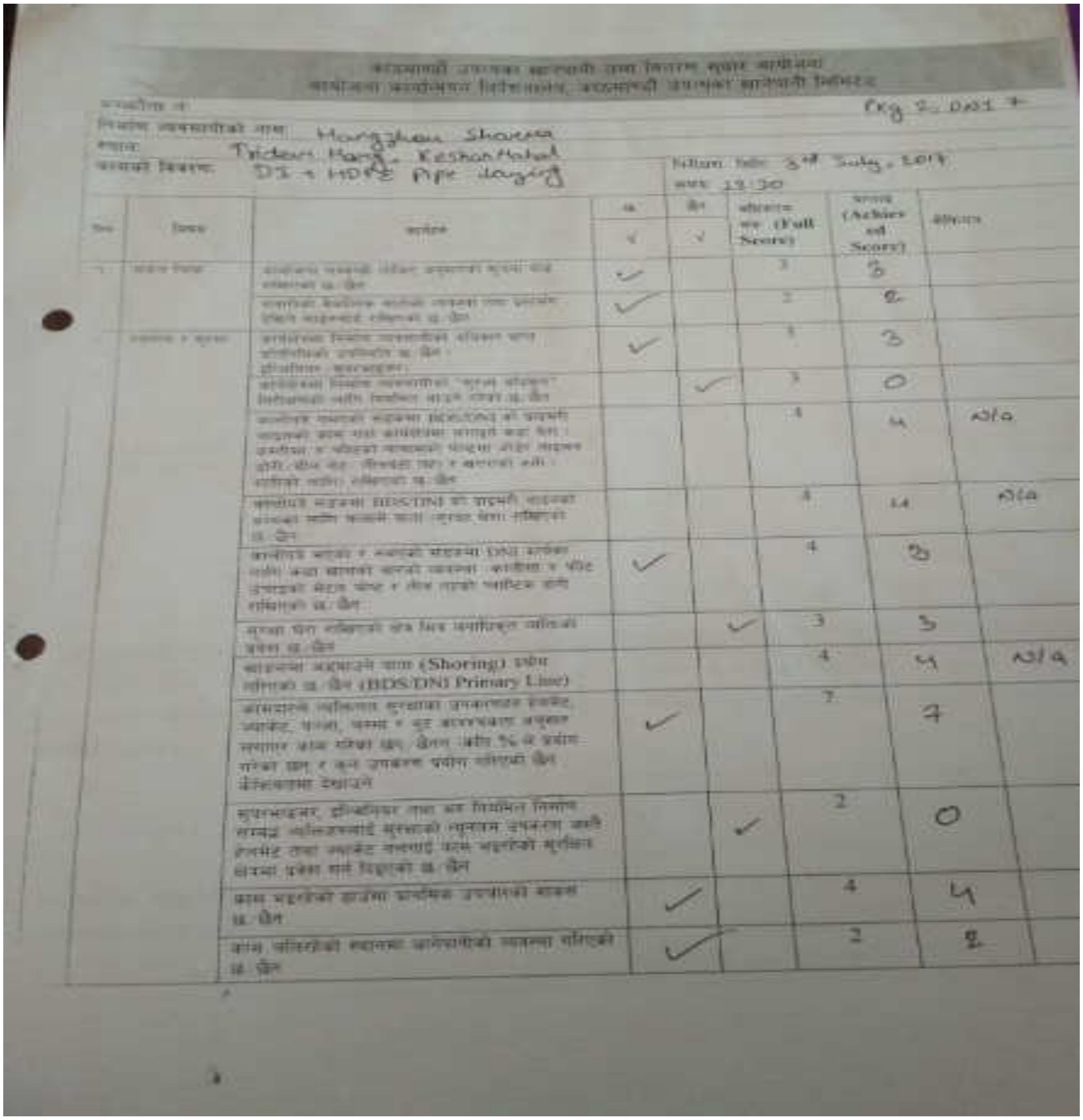
१. वडा अध्यक्ष — श्री निलकाजी [illegible]
२. वडावासी — श्री [illegible]
३. " — श्री कृष्णगोपाल [illegible]
४. " — श्री [illegible]
५. " — श्री [illegible]
६. " — श्री [illegible]
७. " — श्री [illegible]
८. " — श्री [illegible]
९. " — श्री [illegible]
१०. " — श्री [illegible]
११. " — श्री [illegible]
१२. " — श्री [illegible]
१३. " — श्री [illegible]
१४. " — श्री [illegible]
१५. " — श्री [illegible]
१६. " — श्री [illegible]



13. S

1)	राजकुमारी	बौद्ध	
2)	बालकुमारी	जोरपाटी	(के. टेरवा)
3)	Phone:	984,979553	
	पवन कुं थापा	9849264196	पिच गर्दा गर्दै खन्ने
पवनकुमार थापा		ओरबरजोट मार्ग बनेश्वर (थापागाउँ)	जातीको पाइप आर्चेको (मेलम्ची आर्चेको)
			पाइप जोडेको ठाउँ मेलम्चीको, नाङ्लो खन्न आर्चेको)

14. SAMPLE OF ENVIRONMENTAL SITE INSPECTION REPORT AND SUPPORTING DOCUMENTS INCLUDING SIGNED MONTHLY ENVIRONMENTAL SITE INSPECTION REPORTS PREPARED BY CONSULTANTS AND/OR CONTRACTORS



Pkg 5: DN01 ?

Mangzhou Sharma

Tridevi Marg - Keshar Mahal

DI + HDPE Pipe laying

3rd July, 2019

13:30

[illegible]	[illegible]	[illegible]	√	√	(Full Score)	(Achieved Score)	[illegible]
[illegible]	[illegible]	[illegible]	√		3	3	
		[illegible]	√		2	2	
	[illegible]	[illegible]	√		3	3	
		[illegible]		√	3	0	
		[illegible] BDS/DNI [illegible]			4	4	N/a
		[illegible] BDS/DNI [illegible]			4	4	N/a
		[illegible] DNI [illegible]	√		4	3	
		[illegible]		√	3	3	
		[illegible] (Shoring) [illegible] (BDS/DNI Primary Line)			4	4	N/a
		[illegible]	√		7	7	
		[illegible]		√	2	0	
		[illegible]	√		4	4	
		[illegible]	√		2	2	

३	गुनासो सुनुवाई संयन्त्र	सार्वजनिक डेस्क, टेबल र कुर्सी साथै प्राथमिक स्वास्थ्य सामग्री र गुनासो पुस्तिका साइटमा सधैँ देखिने गरी राखिएको छ/छैन	✓		3	3	
		सहयोग डेस्कमा सहयोगीको उपस्थिति छ/छैन	✓		2	2	
४	मोटर तथा पैदल यात्रुको निर्वाध आवत जावत तथा काम क्षेत्रको सफाई	पाइप लाइनको कार्य गर्दा आवतजावतका लागि BDS र DNI मा खनेको ट्रेन्च माथि राख्न मेटल पातिको उपलब्धता छ/छैन			3	0	
		हिलो तथा खाल्डो माथिबाट पैदल यात्रु सुरक्षित रुपमा आवत जावत गर्न आँगनभन्दा माथि प्लेटफर्म राखिएको छ/छैन			3	3	N/a
		निर्माण कार्य गर्दा सडकको चौडाइ हेरी बढीमा आधा क्षेत्रमात्र ओगटी बाँकी आधा भाग मोटर, मोटरसाइकल, साइकल तथा अन्य पैदल यात्रुको लागी सफा गरी खुला गरिएको छ/छैन	✓		5	3	Pipe layed in footpath
		काम भइरहेको क्षेत्र वरपर हिलो, धुलो, गिट्टी, खनेको माटोलाई तुरुन्त उठाई, बाटो सफा राख्ने काम भइरहेको छ/छैन।	✓		8	6	
		कुनै पनि सडक BDS/DNI को काम गर्दा ट्रेन्च खने पछि पाइप बिछ्याई house connection गरि back filling Compaction गरी बाँकी भएको माटो उठाइएको छ कि छैन ?	✓		15	12	
		Pressure test तथा house connection को लागि खाल्डो खनेर तत्काल काम गर्न नभ्याइएमा सुरक्षा घेरा अनिवार्य राखिएको छ कि छैन ?			5	5	N/a
५	सेवाक्षेत्रमा क्षति तथा पुनर्स्थापना	रेकर्ड पुस्तिकामा तत्काल निजी तथा सामाजिक संरचनाहरुमा भएको क्षतिको विवरण रेकर्ड गरेको छ/छैन			3	3	~~No one reg~~ no complaints.
		हरेक ३० मीटर सडकमा पाइप बिच्छ्याएपछि सो क्षेत्र सफा र पुरानै स्थितिमा Compaction सहित छाडिएको छ/छैन	✓		5	3	
		BDS र DNI का लागि पाइप बिछ्याउँदा कालोपत्रे सडक खनेको दुई दिनभित्र त्यसको अस्थायी पुनर्स्थापना भएको छ/छैन	✓		3	3	
		जम्मा			**100**	82	

माथि उल्लेखित विवरणहरु र दिइएको भारका आधारमा तपसिल अनुसार निर्देशन गरिन्छ :

क) माथि उल्लेखित सुरक्षा र वातावरण सम्बन्धी कार्यहरु अति राम्रो तथा निर्वाधरुपमा भएकोले निर्माण कार्य अघि बढाउने।

ख) उपरोक्त अनुसारका सुरक्षा र वातावरण सम्बन्धी कार्यहरु सन्तोषजनक नदेखिएकोले निम्न कार्यहरु तत्काल सुधार गरेर मात्र निर्माण क… गर्नुपर्ने देखिन्छ।

१ ....

२ ....

३ ....

ग) उपरोक्त अनुसारका सुरक्षा र वातावरण सम्बन्धी मापदण्डहरुको पालना नगरेको देखिएकोले निर्माण कार्य तत्काल रोकी तल उल्… व्यवस्थापन गरेर मात्र पुन: स्वीकृति लिएर निर्माण कार्य अघि बढाउने।

१ ....

	Overall Grading
Excellent	Above 90
Very Good	80-89
[illegible]	60-79
[illegible]	Below 60

निरीक्षक DSC:	निरीक्षक CAPC	माथि उल्लेखित निरीक्षण कार्य मनासिब छ भनी स्वीकार गर्ने निर्माण व्यवसायीको प्रतिनिधि
नाम: Smriti Sharma	नाम:	नाम: [illegible] Raman
हस्ताक्षर: [signature]	हस्ताक्षर:	हस्ताक्षर: [signature]
मिति: 3rd July, 2017	मिति:	मिति: 3rd July '17
मोबाइल नं: 9841427813	मोबाइल नं:	मोबाइल नं: 9868278062
समय: 12:42 pm	समय:	समय: 12:42 pm

द्रष्टव्य: १ तौकिएको भार पूर्णरुपमा लागू नभएको खण्डमा सो अंक स्वत जोडिने छ।
२ यदि निर्माण कार्यको निरीक्षण क्रममा ६० भन्दा कम प्राप्ताङ्क आएमा निरीक्षकले काम रोक्न सक्नेछ।

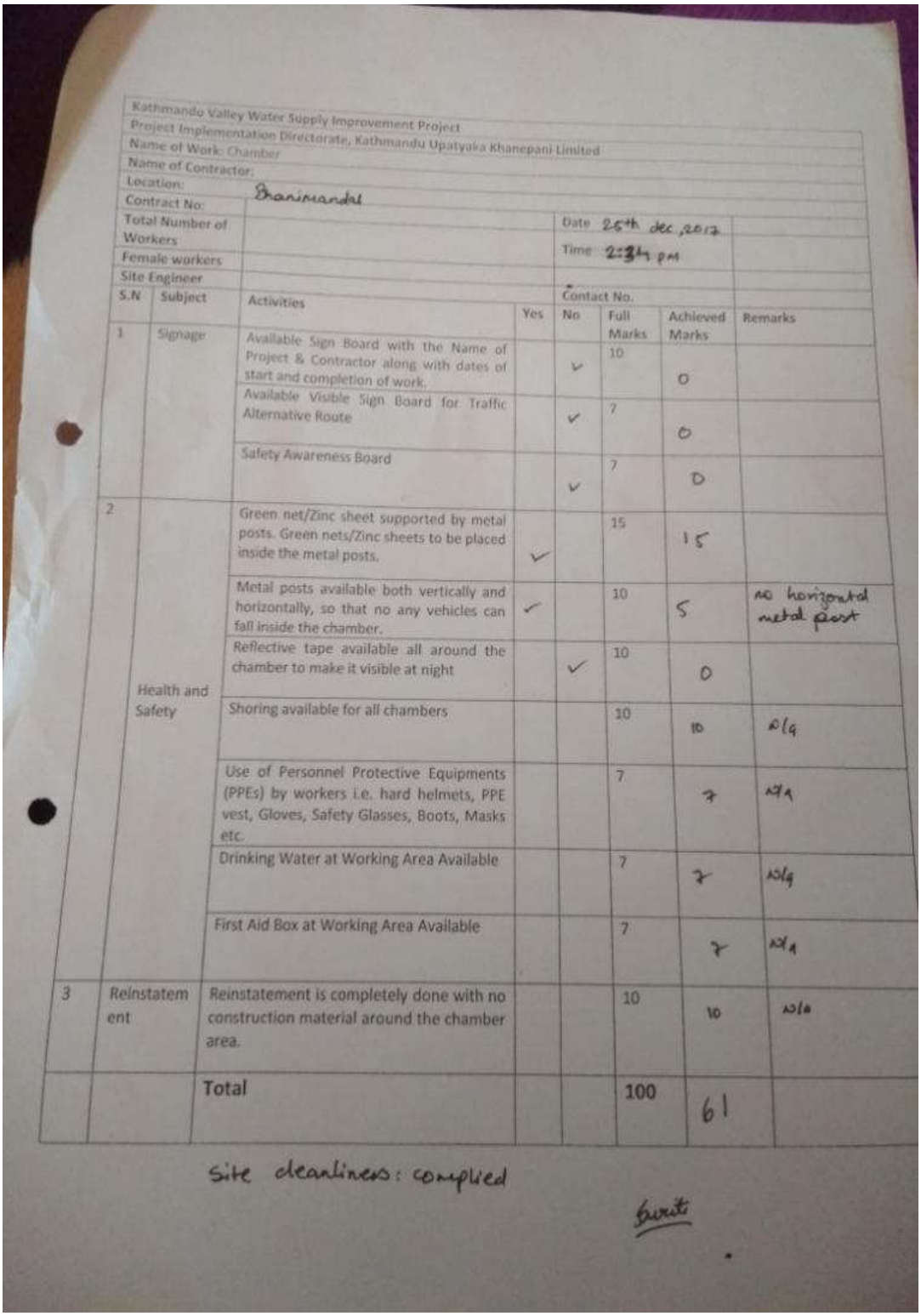
प्रति:

१ योजना कार्यान्वयन निर्देशनालय

२ डिजाइन तथा सुपरभिजन कन्सलट्यान्ट

३ सामुदायिक सचेतना तथा सहभागिता परामर्शदाता

४ निर्माण व्यवसायी



Kathmandu Valley Water Supply Improvement Project
Project Implementation Directorate, Kathmandu Upatyaka Khanepani Limited
Name of Work: Chamber
Name of Contractor:
Location: Bhaisimandal
Contract No:
Total Number of Workers — Date 25th dec, 2017
Female workers — Time 2:34 pm
Site Engineer — Contact No.

S.N	Subject	Activities	Yes	No	Full Marks	Achieved Marks	Remarks
1	Signage	Available Sign Board with the Name of Project & Contractor along with dates of start and completion of work.		✓	10	0	
		Available Visible Sign Board for Traffic Alternative Route		✓	7	0	
		Safety Awareness Board		✓	7	0	
2	Health and Safety	Green net/Zinc sheet supported by metal posts. Green nets/Zinc sheets to be placed inside the metal posts.	✓		15	15	
		Metal posts available both vertically and horizontally, so that no any vehicles can fall inside the chamber.	✓		10	5	no horizontal metal post
		Reflective tape available all around the chamber to make it visible at night		✓	10	0	
		Shoring available for all chambers			10	10	N/A
		Use of Personnel Protective Equipments (PPEs) by workers i.e. hard helmets, PPE vest, Gloves, Safety Glasses, Boots, Masks etc.			7	7	N/A
		Drinking Water at Working Area Available			7	7	N/A
		First Aid Box at Working Area Available			7	7	N/A
3	Reinstatement	Reinstatement is completely done with no construction material around the chamber area.			10	10	N/A
		Total			100	61	

Site cleanliness: complied

Suresh

15. OTHERS

16. OTHERS:

Commission of Abuse of Authority (CIAA), an anti grafting has raised the issues of air pollution due to the construction activities.

SAMPLE ENVIRONMENTAL SITE INSPECTION REPORT

Project Name: Kathmandu Valley Water Supply and Sanitation Project

Contract Number: ADB Loan: 2776, DNI-1, DNI-2, DNI-3, BDS-1, BDS-2, BDS-3, Tube well drilling and development.

NAME: _____ DATE: _____

TITLE: _____ DMA: _____

LOCATION: _____ GROUP: _____

WEATHER CONDITION:

_____

INITIAL SITE CONDITION: _____

CONCLUDING SITE CONDITION:

Satisfactory _√_____ Unsatisfactory _____ Incident _____Resolved _____ Unresolved _____

INCIDENT:

Nature of incident:

No incident has been reported during this period. Intervention Steps:

Contractors were instructed to monitor the environmental requirements as per the condition of contract.

Incident Issues

Resolution

Project Activity Stage	Survey	Y
	Design	Y
	Implementation	Y
	Pre-Commissioning	N
	Guarantee Period	Y

Inspection

Emissions: Non effective	Waste Minimization: Done
Air Quality: Not monitored	Reuse and Recycling; Not required
Noise pollution: Not monitored	Dust and Litter Control: Done
Hazardous Substances-not reported	Trees and Vegetation: Not in the sites

Site Restored to Original Condition No

Signature

_____

Sign off

Name: Bishwa Bhakta Kharel **Name:**

Position: Environmental Expert **Position**