Asian Development Bank	CDCL	Kingdom of Bhutan

Construction Development Corporation Limited (CDCL)
Phuentsholing Township Development Project

Project Number: 50165-002
Loan Number: 3668-BHU(COL)
Grant Number : 0573-BHU(SF)
Contract N°: PTDP-CW-01 &
PTDP-PIC-1

Quarterly Project Report N° 06

01 January 2020 – 31 March 2020
PIC Report Cataloguing n° PTDP – 056

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History of modifications

Version	Date	Written by	Approved/ Reviewed by
No. 02	2nd May 2020	PIC, & Kamal Dhakal, PIU	PMU

Abbreviations

ADB	: Asian Development Bank
ADF	: Asian Development Fund
ALDTP	: Amochhu Land Development and Township Project
APFS	: Audited Project Financial Statement
BMBMS	: Biodiversity Monitoring and Bench Marking Study
CDCL	: Construction Development Corporation Ltd.
CEMP	: Contractor-Environmental Management Plan
CW	: Civil Works
CV	: Contract Variation
DHI	: Druk Holdings and Investment Ltd.
DMF	: Design Monitoring Framework
EA	: Executing Agency
EIA	: Environmental Impact Assessment
EMP	: Environmental Management Plan
FIDIC	: Fédération des Ingénieurs Conseils
GAP	: Gender Action Plan
GFC	: Good For Construction
GRC	: Grievance Redress Committee
GRM	: Grievance Redress Mechanism
HSE	: Health Safety and Environment
IA	: Implementing Agency
ICB	: International Competitive Bidding
LTP	: Letter to Proceed
MoF	: Ministry of Finance
MOM	: Management, Operation and Maintenance
MoWHS	: Ministry of Works and Human Settlements
NCB	: National Competitive Bidding
NC	: Non-Conformance
NCR	: Non-Conformance Report
NEC	: National Environment Commission
Nu	: Ngultrum
PT	: Phuentsholing Thromde (city council)
PAC	: Project Advisory Committee
PCR	: Phuentsholing – Chamkuna - Road
PIC	: Project Implementation Consultant
PIU	: Project Implementation Unit
PMU	: Project Management Unit
PS	: Provisional sum
PTDP	: Phuentsholing Township Development Project
PPTA	: Project Preparatory Technical Assistance
QAP	: Quality Assurance Plan
RENEW	: Respect Educate Nurture Empower Women
RGoB	: Royal Government of Bhutan
RFI	: Request For Inspection
RFQ	: Request For Quotation
SEMR	: Semi-annual Environmental Monitoring Report
TN	: Technical Note
ToR	: Terms of Reference
VO	: Variation Order

Contents

Table of Appendices

List of Tables

Project at a Glance

Name of the project	Phuentsholing Township Development Project
Cost of project	63.00 $million
Name of Agency	Druk Holding and Investments Limited
Implementing Agency	Construction Development Corporation Ltd
Approval Date	5th June 2018
Project effectiveness (Loan & Grant)	26th July 2018
CDCL PMU created	26th July 2018
Project Completion Date	30th June 2025 (Overall Zone-A)
Project Closing Date	31st December 2025
Project Location	Bhutan / Phuentsholing
PTDP anticipated impact	Impact 1: Balanced and sustainable development of human settlements ensured; Impact 2: Smart growth principles applied in planning and development.
PTDP anticipated outcome	Phuentsholing's urban area protected from floods and expanded with improved amenities and services
PTDP Outputs	Output 1: Flood and erosion protection measures installed Output 2: Municipal infrastructure constructed Output 3: Township management systems installed
Date of the Loan & Grant agreements	03rd July 2018
Mobilization of PIC	01st October 2018
CW-01 start date	1st November 2018
ADB review missions since project start	14th to 15th Nov 2018, 7th to 10th May 2019, 31st October to 1st November 2019, 16th March to 18th March 2020
Reporting Period	1st January to 31st March 2019

Project funding source	Amount ($million)	Share of Total (%)
Asian Development Bank[a]	53.00	84.1
Ordinary capital resources (concessional loan)	28.74	45.6
Special Funds resources (ADF grant)	24.26	38.5
Government	10.00	15.9
Total	**63.00**	**100.0**

[a] Disaster Risk Reduction Fund will finance $6.07 million equivalent of the concessional OCR loan and $6.07 million of the ADF Grant.

Source: Asian Development Bank.

A. Project activities

A.1 Project Organization Management

General

The proposed Phuentsholing Township Development Project will reclaim total area of 1146.69 acres of riparian land out of which 162.88 acres is under development in zone A. The project will develop river training structure to prevent threat of flooding and erosion, thereby creating additional land for a planned expansion of the Phuentsholing township. The reclaimed areas will be provided with planned services and facilities like access road, water supply, sewerage system, solid waste management, Power, Telecom and early warning system.

Organization

Within the ADB Project agreements, the Executing Agency (EA) of the project is Druk Holding and Investments Limited (DHI). The Implementing Agency (IA) is Construction Development Corporation Limited (CDCL), a subsidiary of DHI specialized in urban and infrastructure development, who has established a Project Management Unit (PMU) at Thimphu and a Project Implementation Unit (PIU) in Phuentsholing for the sole purpose of implementing the Project.

The PIU is headed by a Project Manager and is well staffed. The PIC reports to the Project Manager and supports PIU. The Project management organization chart is displayed hereafter.

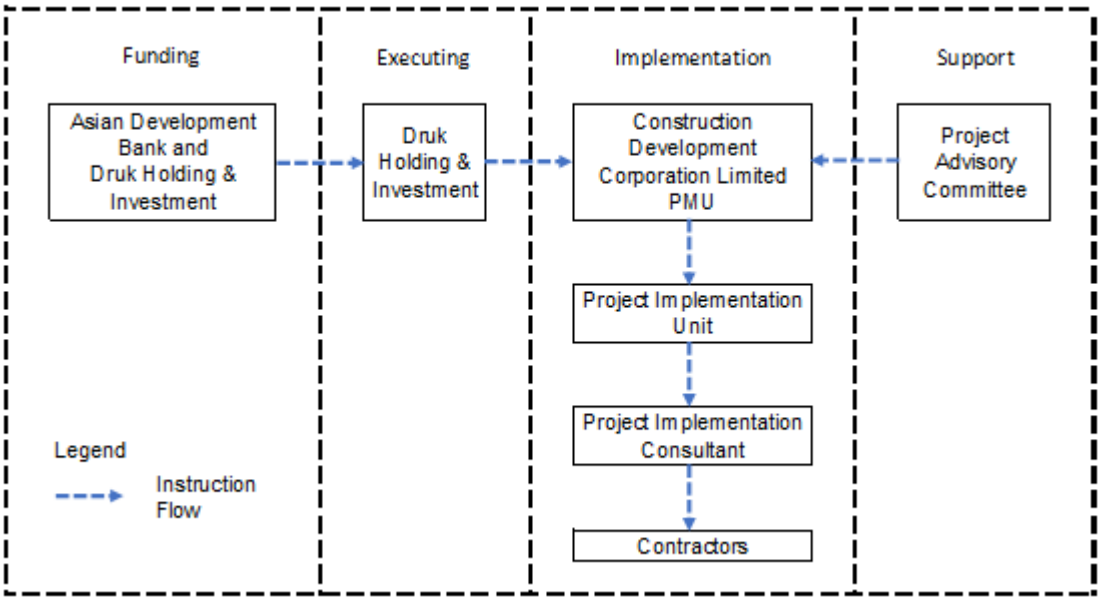


Figure 1: PDTP (Phase 1) Implementation Arrangements

The PMU and PIU staffs are listed in **Appendix 3.**

A.2 Consultant Activities

A.2.1 Signed Consultancy Contracts data / Ongoing Procurement

Consultancy service contract has been signed with M/s. Egis International - Egis India Joint Venture, in association with M/s. Gyaltshen Consultancy as sub-consultant for Project Implementation Consultancy services on 18th July 2018 and were mobilized from 28 October 2018.

Procurement of Independent Environmental Monitoring Expert (IEME), including negotiations, has been conducted by PIU/PMU and the contract signed on April 4, 2019. The input schedule of IEME is attached in Appendix 12. Till date the IEME is mobilized twice in the project to review the project's environmental activities.

A.2.2 Status of Variation Orders

PIC contract Variations:

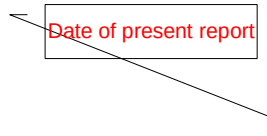
Contract Variation No.1 has been signed on 7th March 2019

Contract Variation No.2 has been signed on 26th July 2019

A.2.3 PIC Organization and Personnel Activities

Consultant Staffing

Table 1: PIC Staffing bar Schedule



	Position (Experts)	January 2020	February 2020	March 2020
1	Chief Resident Engineer / Team Leader			
2	Senior Civil Engineer / DTL			
3	Material Engineer / Engineering Geologist			
4	Contract Specialist			
5	Environmental Specialist			
6	Financial Management Specialist			
7	Hydrology/Sediment Specialist			
8	Quality Control/ Construction Manager			
9	Material Engineer			
10	Safeguards Specialist			
11	Geotechnical Engineer			
12	Structural Engineer			
13	Roads Engineer			
14	Water Supply / Sewerage. / Hydr. Eng.			
15	Water Treatment Process Specialist			
16	Solid Waste Management Specialist			
17	Electro-Mechanical Engineer			
18	Quantity Surveyor			
19	Environmentalist			
20	National Hydraulic Engineer			
21	International Hydraulic Modelling Specialist			

PIC Logistic

Table 2:PIC logistics

Site Office	Provided by Client as per contract
Office Equipment	Adequate, as per contract
Transportation	Adequate, as per contract

Construction Supervision (CS) Team Activities

1. **Mobilization of Specialists**

Table 3:Mobilization of Specialist

Sl. No.	Particulars	Date	Purpose
1	Safeguard & Communication Specialist / Mr. Megay Penjore (Project Site)	5th January 2020 to 19th January 2020	- Discussed on the activities carried out at site from July 2019 – December 2019 with the Team Leader & the Contractor. - Reviewed Contractor's Health & Safety Report (July 2019 – December 2019) - Produced & Finalized Health & Safety Report - Site Inspection in terms of Health Safety & Environment
2	International Hydraulic Modelling Specialist / Mr. Christiaan Sprengers (Home Input)	9th January 2020 – 10th January 2020	- Hydraulic Model Simulations
		15th January 2020 – 17th January 2020	- Hydraulic Model Simulations - Reporting Model Simulation Results
		20th January 2020 – 24th January 2020	- Start setting up Morphology Model - Continue setting up Morphology Model - Preparing MIKE 21C results for GIS processing - Continue setting up Morphology Model - Start sensitivity runs Morphology
		27th January 2020 – 31st January 2020	- Continue sensitivity runs Morphology - Final selection Morphology settings - Start Morphology Simulation runs - Setup Simulation run with Spurs
3	Deputy Team Leader / Resident Engineer, Mr. Edwin Anggrijatno (Project Site)	1st February 2020	
4	National Hydraulic Engineer / Mr. Chhimi Dorji (Home Input)	04th February 2020	- Worked on incorporation of lower walkway levels and rewording the conclusions and recommendations.
		05th February 2020	- Checked the water surface elevations and velocities
		06th February 2020	- Reviewed the Bathymetry data with field information
		07th February 2020	- Worked on developing the polygon for manning's N for different areas
		08th February 2020	- Cross checking the flow measurements and cross section details for model calibration
		13th February 2020	- Review of literature on velocity at bends and curvilinear grids
		14th February 2020 – 15th February 2020	- Editing and formatting of Technical Note No. 16 in support to international expert

5	International Hydraulic Modelling Specialist / Mr. Christiaan Sprengers (Home Input)	03rd February 2020	- Trans boundary effects simulation runs
		04th February 2020	- Simulation runs with spurs
		05th February 2020	- Simulation runs checking results
		06th February 2020 – 07th February 2020	- Post processing simulation results
		10th February 2020	- Post processing simulation results
		11th February 2020 – 14th February 2020	- Reporting model simulation results
		17th February 2020	- Submission of draft final modelling report (Technical Note No. 16 – Hydraulic Modelling)

2. PIC Reports

Table 4:PIC Reports

Sl. No	Reports	Date
1	**Bi-weekly Progress Report 2020**	
A	Bi- Weekly Progress Report (15th January 2020)	24th January 2020
B	Bi- Weekly Progress Report (01st February 2020 - 15th February 2020)	20th February 2020
C	Bi- Weekly Progress Report (01st March 2020 – 15th March 2020)	21st March 2020
2	**Monthly Project Report 2020**	
A	Project Monthly Report M14 – December 2019	24th January 2020
B	Project Monthly Report M15 (January 2020)	20th February 2020
C	Project Monthly Report M16 – February 2020	21st March 2020
3	**Quarterly Project Report**	
A	Quarterly Project Report N5 Period from 1st October 2019 – 31st December 2019) Revision 01	20th January 2020
4	**Semi Annual report /Environmental Monitoring Report (EMR)**	
A	Semi Environmental Monitoring Report Period 1st July 2019 – 31st December 2019 (Revision 01)	24th February 2020
B	Semi Annual Environmental Monitoring Report No. 3 (Period 1st July 2019 – 31st December 2019) Revision (Soft Copy)	19th March 2020
5	**Biodiversity Monitoring and Bench Marking Study (BMBMS) 2020**	
A	PIC suggestion for rescheduling of the Biodiversity Monitoring & Bench Marking Study	14th January 2020
B	PIC suggestion for Conducting of BMBMS or Rescheduling of the Study	30th January 2020
6	**Topography ad Bathymetry Survey & 2D Hydraulic Modelling 2020**	
A	Topographic & Bathymetric Survey Report Along Amochhu	27th February 2020
B	2D Hydraulic Modelling Final Report (Revision 01 – Draft)	13th March 2020
7	**Other Reports 2020**	
A	Risk Management Plan (updated)	15th January 2020

3. Official Meeting /Site Visit

- International Border Visit with PIU, PIC, CW01 & Phuentsholing Thromde on 10th January 2020.
- Site visit by Secretary from Dept. of Roads, MoWHS along with team of chief engineers for walkon survey across all the Outfalls – 16th January 2020. Decided to review the outfall dimensions.
- Independent Environmental Monitoring Expert visit on 20th January 2020
- Presentation on Finishing Stone for Upper walkway by Nice & Natural Group to PIU, PIC & CW01 on 24th January 2020

- MOWHS, PCR & PTDP Meeting on 04th February 2020
- National Land Commission & Phuentsholing Thromde Site Visit to the International Boundary on 13th February 2020
- Interface Meeting between PTDP & PCR on 19th February 2020
- STCBL, PMU & other stakeholders site visit on 19th February 2020
- PIU/PIC & PCR Meeting on 28th February 2020
- Royal Audit Authority at PTDP on 10th March 2020 – 13th March 2020
- Royal Bhutan Army and other officials site visit on 25th March 2020
- PCR & PTDP Meeting on 30th March 2020
- Information Session on COVID-19, Menstrual Hygiene & HIV/AIDS by Phuentsholing General Hospital at PTDP on 31st March 2020

4. ADB Mission Meetings/Site Visits

- Last ADB mission & site visit at PTDP on 16th March 2020 – 18th March 2020

5. Health Safety & Environment

- Dr. Lam (Independent Environmental Monitoring Expert) meeting with the PTDP Health Safety & Environment Team on 03rd February 2020

Table 5:Activities under Health safety and Environment

Sl. No	Activities	Date
1	Safety Award by CW01	05th February 2020
2	Health Awareness Program on COVID-19 by Phuentsholing General Hospital	07th February 2020
3	Body Temperature Checking by CW01 to all PTDP Personnel for COVID-19	From 13th February 2020 (Ongoing)
4	Safety Awards by CW01	06th March 2020
5	PTDP Health Safety & Environmental team visited Eco Lab Laboratory at Pasakha	18th March 2020
6	Terrestrial walkthrough with Independent Environmental Monitoring Expert & PTDP HSE Team at Zone C	23rd January 2020

6. Coordination Meeting (PIU, PIC, CW01)

- Coordination Meeting – 4 (PIU, PIC & CW01) was conducted on 24th January 2020

7. Production of PIC Technical Note in this Report Period

- TN n° 16 - 2D Hydraulic Modelling Report
- TN n° 17 - PIC's Evaluation Regarding to Boulders Laying / Placing Work
- TN n° 18 - Physical Sub-Soil Condition at End Part of Protection Wall (Curve Portion) & Proposal in
- Part – 8 (Peg No. 749R' to 755R')

8. Site Activities

- Presentation on Finishing Stone for Upper Walkway by Nice & Natural Group attended by PIU, PIC & CW01 on 24th January 2020

9. Update on Site Condition due to COVID-19

- Bhutan Government decides to seal the entry & exit of international border with effect from 23rd March 2020 until further notice due to COVID-19 and the risk posed by this Pandemic

- This situation has impacted CW01 work force, who were on leave since last week, 16th March 2020

- Workers coming in from across the border are no more allowed; hence CW01 workforce has reduced

- Indian Government announced 21 days of complete lockdown for India w.e.f. 25th March 2020 midnight. Therefore, PIC explored the extent at which PTDP will be affected due to this situation for further discussion with the team

  Following are the notice from Ministry of Home and Cultural Affairs (Bhutan):

  1. In order to enter from the international border, everyone shall be subject to medical screening & mandatory two-week quarantine at a designated facility

  2. Foreigners will be allowed to exit

Use of Provisional Sum

Table 6:Status of use of PIC contract provisional sum

Item	Status	Amount (USD)
Studies, Surveys and Reports	a) Biodiversity Monitoring and Benchmarking Survey: • Due to ongoing activities in Zone-C by private parties, BMBMS study need to be reschedule and PMU / PIU to decide on this matter. b) Flood Management Consultancy: • PIU has forwarded inception report for ADB's review and approval. • Processing endorsement of Flood Management Expert's CV to initiate FMC	230 000
Topographic and Bathymetric Surveys for 2D Modeling	PIC submitted Topographic and Bathymetric Survey report along Amochu on 27th February 2020 for PIUs review and record.	35 000
2D Modeling Software License Rental for 2 months	The 2D modelling software, MIKE 21C was rented till February 2020 as per PIUs approval. The proposed amount was not adequate to purchase the software license since higher version software was suggested by ADB consultant. This was not envisaged hence it was processed with prior approval from PMU/PIU. Additional amount will be adjusted from PIC contingency amount. Contract value remains unchanged.	1 750

2D Modeling

- The 2D Modeling Software, MIKE 21C is rented till 5th February 2020 as per PMU/PIU's approval.
- PIC submitted 2D Hydraulic Modeling draft report revision 01 on 13th March 2020 for PIUs review and further submission to ADB.

A.2.4 PIC Performance

PIC is mandated to provide technical, management and supervision support to PIU/PMU in implementation of the project. Thus far, PIC has been professional and consistent in furnishing with the required deliverables as agreed in contract documents. PIC has also provided technical advice and support to client in areas of project interest and ensured proper supervision and monitoring at project site. Hence, the client is currently comfortable with the performance and the competence in PIC. While PIC has mobilized the new Team Leader from 22nd October 2019, the deputy Team Leader was demobilized in 3rd November 2019 and mobilized again from February 1st week, 2020.

The mobilization and demobilization of PIC experts are followed as per the planned and agreed schedule within the project period. The mobilization-demobilization schedule will ensure that the number of PIC man-months proposed/agreed for each expert (as per contract) fits in the overall project duration of 60 months.

A.2.5 PIC Man-Months:

Table below shows the summary of PIC experts mobilized till the report period and the remaining man-months available:

PIC Person Month Used / Balance as of March 2020

No.	Name / Position (as in TECH-6)	Nationality / Firm	Currency	CONTRACT PROVISION AFTER CONTRACT VARIATION 2 (Person-month)	Mobilized till Mar- 2020	BALANCE REMAINING (Person-month)
	#NAME?					
1.	Mehmet Kahraman	Ireland	USD	1.50	0.20	1.30
	Chief Resident Engineer / Team Leader	Egis International		32.50	9.29	23.21
2.	Edwin ANGGRIJATNO	Indonesian	USD	1.00		1.00
	Senior Civil Engineer / Deputy Team Leader	Egis International		39.00	12.80	26.20
3.	Vishwas R RAO	Indian	USD	-		0.00
	Material Engineer/ Engineering Geologist	Egis India		4.00	0.90	3.10
4.	Lucila PERLADA	Filipino	USD	1.00	0.73	0.27
	Contract Specialist	Egis International		3.00	0.83	2.17
5.	Surjit Singh DEEPAK	Indian	USD	-		0.00
	Environmental Specialist	Egis India		3.00	0.53	2.47
6.	Virgilio DIZON	Filipino	USD	1.00		1.00
	Financial Management Specialist	Egis International		5.00	0.87	4.13
7.	John FIELD	American	USD	1.00		1.00
	Hydrology/Sediment Specialist	Egis International		2.50	1.63	0.87
7.a	John FIELD	American	USD	1.00		1.00
	Team Leader / River Engineer / River Morphology Specialist	Egis International		2.50	0.43	2.07
8.	Christiaan Sprengers	Dutch	USD	-		0.00
	Hyraulic Modelling Specialist	Egis International		2.23	2.23	-
	Sub-Total for Key Experts (International)			**100.23**		78.88
	KEY EXPERTS (National)					
9.	Sonam Tobgay K	Bhutanese	BTN	-		0.00
	Quality Control / Construction Manager	Gyaltshen		40.00	17.03	22.97
10.	Dwarika Gotamey	Bhutanese	BTN	-		0.00
	Material Engineer	Gyaltshen		40.00	14.43	25.57
11.	Megay Penjore	Bhutanese	BTN	-		0.00
	Safeguards and Communications Specialist	Gyaltshen		8.00	2.54	5.46
12.	Chimi Dorji	Bhutanese	BTN	-		0.00
	National Hydraulic Engineer	Gyaltshen		2.00	1.63	0.37
12.a	Chimi Dorji	Bhutanese	BTN	-	-	0.00
	Flood Early Warning Specialist/Hydrologist/Hydraulic	Gyaltshen		4.00	-	4.00
13.	Gautam Thapa	Bhutanese	BTN	-		0.00
	Flood Management Specialist	Gyaltshen		4.00		4.00
	NON-KEY EXPERTS (International)					
14.	Bosco PURNOMO	Indonesian	USD	-		0.00
	Geotechnical Engineer	Egis International		3.00		3.00
15.	Prasanta Kumar Bhowmik	Bangladesh	USD	1.00	-	1.00
	Structural Engineer	Egis International		3.00	0.97	2.03
16.	Nirupam Singh	Indian	USD	1.00		1.00
	Roads Engineer	Egis India		2.50		2.50
17.	Guillaume HOUDRE	French	USD	1.00	0.13	0.87
	Water Supply / Sewerage / Hydraulics Engineer	Egis International		1.00		1.00
18.	Gautier MAIN	French	USD	1.00	0.10	0.90
	Water Treatment Process Specialist	Egis International		1.00		1.00
19.	Christopher ROUND	French	USD	1.00	0.13	0.87
	Solid Waste Management Specialist	Egis International		1.00		1.00
20.	Dominique CHOD	French	USD	1.00	0.20	0.80
	Electro-Mechanical Engineer	Egis International		1.00		1.00
	NON-KEY EXPERTS (National)					
21.	Karma Dezang	Bhutanese	BTN	-		0.00
	Quantity Surveyor	Gyaltshen		40.00	12.43	27.57
22.	Sonam Deki	Bhutanese	BTN	-		0.00
	Environmentalist	Gyaltshen		20.00	5.60	14.40
23.	Yangchen Seldon	Bhutanese	BTN	-		0.00
	Laboratory Technician 1	Gyaltshen		24.00	7.50	16.50
24.	Tashi Namgyel	Bhutanese	BTN	-		0.00
	Site Inspector 3	Gyaltshen		24.00	8.10	15.90
25.	Yeshi Jamtsho	Bhutanese	BTN	-		0.00
	Site Inspector 4	Gyaltshen		24.00	4.00	20.00

A.2.6 Independent Environmental Monitoring Expert:

CDCL signed the contract with Independent Environmental Monitoring Expert on 4th April 2019. The proposed mobilization dates for the Independent environmentalist is attached in **Appendix 12**

A.3 Implementation of physical works

A.3.1 Signed Civil Works Contracts data / Ongoing Procurement

Only one contract is signed with AFCONS Infrastructure Pvt. Ltd for river training works on 18th July 2018. Site handed over on 27th September 2018. Notice to commence from 1st November 2018.

A.3.2 Status of variation orders

No new Variation Order issued for CW-01.
PMU/PIU is currently processing to award the additional work along Omchhu. The variation order is expected to be awarded to CW-01 contractor within second Qtr, 2020, after prior endorsement from ADB.

A.3.3 Civil Works package summary of financial progress

Table 7:CW-01 Summary of financial progress

Contract	Contract Date	Start date	Time for completion (days)	Completion date	Financial progress (%)		Elapsed time (days)
					Target	Actual	
CW-01	18 July 2018	01 Nov. 2018	912	01 May 2021	67.44	44.72	516

Material Advance for January 2020

Table 8:CW-01 Contractors Establishment

N°	Description	Status
1	Project Management	At the end of the report period, 38 expatriat staffs, 12 national staffs and 15 Sub-Contractor national staffs. Totally 65 Management Staff available up to this month.
2	Manpower	At the end of the report period, there was 385 manpower available. Contractor: 62 National Manpower and 174 Expatriate Manpower. Sub-Contractors: 80 National Manpower and 69 Expatriate Manpower.
3	Plant and Equipment	All key equipment as per required by Contract Document – General Specifications, Section-7 had been mobilized to the project site.
5	Quarry / Crusher	No Quarry / Crusher is provided by Contractor. *Source of coarse aggregates and fine aggregates are from private Quarry / Crusher supplier located within the vicinity of the project site*.
6	Pre-casting Yard	Pre-casting yard for precast grass paver blocks,tree pit, tree pit cover and drain including curing ponds and stock yard.
7	Filling Material	No Quarry will be provided by Contractor *Source of filling material is from Quarry / Crusher supplier located at project vicinity*

Table 9:CW-01 Work progress

General Requirements

N°	Description	Status
1	Site Possession	Handover of Hindrance Free Area for the project on 27th September 2018. Area handover for Site Installation 1st November 2018
2	Obstructions	Traffics from public / private vehicles moves inside project site at some locations.
3	Utilities [electrical poles etc.]	Frequent failures of electrical power supply at site offices. Tap water supply for site offices is not continuous during the day work. *Contractor to provide suitable generator set to supply electricity temporarily during blackout time.* *Contractor to ensure the continuous supply of tap water by providing a proper pump.*
4	Health &Safety	No NCR / CAR issued. 2 Lost time injury, 24 Man – days lost, 2 Near Miss were reported during the period.
5	Maintenance of Site Road	PTDP Contractor and PCR Contractor carries out dust control by a periodic sprinkling of water on and maintenance of the temporary road.
6	Environment	No NCR / CAR issued. No environmental accidents reported.
7	GRM	No grievances related to Contractors activities registered during the last 3 months.
8	Design	The contractor is required to review all the latest revision working drawing (good for construction) and submit a discrepancy list (if any). There is no discrepancy, querries submitted by Contractor. Outfall design to be revised refer to approved 2D hydraulic modelling result and PCR project final design Hill slope stability structure probably will be redesigned by using gabion

Quality Control Activities

N°	Description	Status
1	Contractor Quality Control Plan	Quality Control Plan has been submitted to PIC by contractor. Quality Control Plan is very broadly and refers to an internal set of procedures from Contractors, submitted on case-by-case basis. PIC checks when required and sometimes may request for improvement, dependin on its requirement. PIC, in particular, requires the Contractor to revise QCP as follows: *Method Statement for all work activities with shop drawings are submitted and approved prior to the commencement of work.* *Test are conducted for all materials to be used for construction as per the technical specifications and as per the instruction of the engineer's representative.* *Testing frequency is followed as per the technical specification and standard* *QCP are submitted for all work activities.*
2	Material Source Approval & mix designs	Materials source have been approved: - *Double wall corrugated HDPE pipe sample has been approved* - *Cow chain sample is under process* - *Design mixes of Grade M30 & M25 with Hindcon (Hind Plastics super HPC) & Normat (Tamcem 18H) chemicals has been approved*
3	Materials Testing	Compressive strength results of Mix Design with OPC Dragon and HINDCON Admixture concluded. Concrete mix design with HINDCON admixture was carried out during this reporting period
4	Non-Conformance	NCR no.02 regarding embankment work was issued during this reporting period

Works Status

N°	Description	Status
1	General Items	Site offices, Contractor's Staff and Labour accommodation, Materials Stock Yards, Testing Laboratory and Batching Plant with Silos have all been established. CW01 is responsible of Operation and Maintenance for all facilities
2a	River Training Works	Guide Wall work: 4667 m cumulative length completed Diaphragm Wall: 3522 m cumulative length completed Cast In-situ Wall: 5297 cum cumulative completed
2b	Embankment Works	The upper walkway level: 5.920 m and the embankment level: 6.040 m above the proposed river bed level have been finalized resulted from the 2D Hydraulic Modelling Report. Outfall 2- 60% completed (as per initial design level). Outfall 3- 18% completed (as per initial design level). Some modification/alteration is required to adjust the completed outfall works to the revised design level. Embankment Filling Item 301 – completed 12960 cum Embankment Filling Item 302 – completed 1938 cum Total quantity of embankment filling – completed 14898 cum
2c	General Earth Filling	Started on 18 Feb. 2019. Earthworks are executed by Sub-Contractor, M/s Rigsar Construction Company Pvt. Ltd. General Earth Filling Item No. 401 – completed 589,157.53 cum General Earth Filling Item No. 402 – completed 438,693.00 cum Total quantity of general earth filling – completed 10278505.53 cum
2d	Promenade Finishing	Production of Precast Grass Paver Blocks (Hollow) – completed 7459 Nos. Production of Precast Cement Concrete Blocks (Solid) – completed 1425 Nos. Production of Tree pit – completed 320 Nos. during this reporting period Production of Tree pit cover – Completed 114 Nos. during this reporting period Production of precast channel – completed 228 Nos. during this reporting period Total quantity – completed 9546 Nos.
2e	Irrigation & Landscape	Not yet started
3	Provisional Sum	For Survey Equipment, Office Camera, Projector and Radio Handset. *Procurement conducted and equipment received.*
		For pickup vehicles. *Procurement cancelled by the employer. Vehicle procured from employer's fund.*
		For electricity main supply: partially used for installing the main transformer for the project
		For Geological Investigations. *Partially used for investigations of rock / boulders layer at North end part-08*
		For Temporary Flood Protection *Partially used for strengthening existing long spur and existing big bund and to construct new spurs*
4	Day works	No day works ordered
5	Extra Item	No extra item

Table 10:Physical Progress per Major Works Items

Major works items	Unit	Contract quantity	Target 31/03/2020	Achieved	% Achieved
Diaphragm wall	M^2	40,929	9190	7403	81.00
Cast in situ wall	M^3	9800	2400	3926	163.58
Retaining wall	M^3	8,600	0	0	0
Ducted and open outfalls	M	2,562	On hold		
General Earth Filling	M^3	3,140,000	280000	265227	94.72
Lower Level walkway	M^2	4,600	0	0	0
Upper Level walkway	M^2	23,800	0	0	0

Note: Above table 10 figures are based on the original baseline schedule. The revised baseline schedule shall be set after all the outstanding design issues are solved.

A.4 Progress Made Until 31 March 2020

Table 11: Project Progress during the period

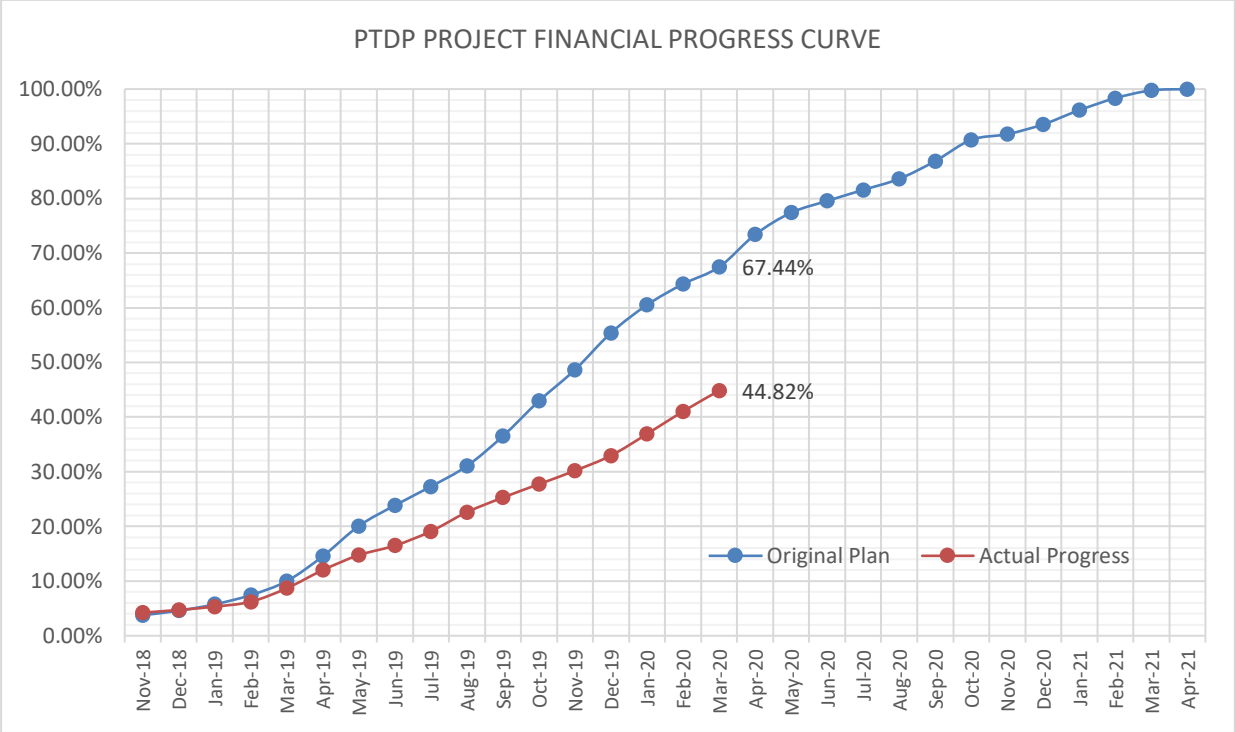
Activity	% Accomplished vs. Target for the period[a]		Summary of Progress
	Accum.	Planned	
River Training and Embankment Protection Works	44.82%	67.44%	D-Wall: 3522 m length; Cast In Situ Wall (3.42 m height): 1656 m length; General Earth Filling: 1027850 cum
Common Urban Infrastructures	0.0%	0.0%	
Township Management System	0.0%	0.0%	

*Accomplishment and target refer to the financial forecast

Progress of activities against output indicators are listed in **Appendix-1**.

The updated implementation schedule showing actual progress included in **Appendix-2**.

Progress photograph is attached in **Appendix-13**



CW01 Financial disbursement Vs. Baseline projection

A.5 Field Monitoring visits, workshops, training and particular meetings

The list of field monitoring visits, workshops, training and particular meetings is presented in **Appendix 4**

B. Key Implementation Challenges and Proposed Actions

B.1 Major issues

The Major issues described here are analyses of the problems encountered during the execution of the project as well as making recommendations for future action to resolve by the project stakeholders through their contractual obligations from the start of the project until 31 March 2020.

The Client (PIU / PMU):

- To confirm works sanctioning for milestones (problems in taking over of part of completed works, several defects liability periods and responsibility of maintenance of post construction). Originally set milestones have not been applied. New milestones need to be set due to the change of project level, refer to 2D Hydraulic Modelling results.

- To provide sufficient works front for the contractor to avoid possible delay claims resulted from the embankment level changes.

- To agree and revise the final layout of the project boundary between PTDP and PCR in relation to the change of road alignment from single carriageway to dual carriageway type and associated junctions, service roads details for a smooth connectivity to PTDP.

- To issue the outstanding revised Outfall GFC drawings for CW-01 to proceed for construction in order to prevent the possible delay for the project. This depends on the approval of the 2D Modeling result as well as the PCR culverts final design agreed with all the relevant parties.

- To issue an official instruction to start the additional works from PTDP boundary to Omchu bridge

- To confirm the approval on the upper walkway level and final embankment level recommended by the PIC resulted from 2D Hydraulic Modelling.

- To be prepared for the possibility of cost compensation claims by Contractor due to the design changes, particularly for delay in outfall works.

- To consider and decide regarding the possibility of design changes at hill slope stability structures (change from RCC wall to Gabion basket considering site conditions), alternate structure at the termination area at curve portion, floor finishing material at upper walkway from dolep and kota stone to new finishing floor material as per the Design Consultant's proposal.

- To continue working on the package CW-02 bid documentation, finalize the scope, BoQ and the revised drawings of the CW02 for submission to ADB.

- Be prepared for the negative effect of the COVID-19 on the project resources requirements.

To coordinate with the relevant Governmental Authorities in order to control / mitigate the possible negative impact from the temporary settlements within PTDP initiated by the Government, caused by the COVID-19.

The Consultant (PIC):

- To plan to conduct FMC study in early May 2020 after the 2D Hydraulic Modelling is reviewed / approved by the ADB, and National Flood Management Expert is mobilized.
- To continue to cooperate / coordinate with the changing of the Contractor's resources requirements, for timely completion of the project
- To propose recommendation for the upper walkway level and final embankment level after finalizing the 2D Hydraulic Modelling.
- To assist PIU for the preparation of package CW-02 bid documentation together with the help of international experts input for submission and review / comment / approval by the ADB
- Be prepared and coordinate with the CW01 and PIU for the negative impact of the COVID-19 on the project.

The Contractor (CW01):

- Plan to mobilize /demobilize resources as per the project progress, in order to achieve the agreed project completion date and the set budget for the project
- To maintain the approved / agreed temporary traffic management together with cooperation / coordination with the PCR's contractor throughout the project life
- To enhance the implementation of HSE rules and regulations for the project as set out in the HSE Plan as well as updating the Health and Safety file as required
- To implement flood protection measures and emergency plan for the upcoming monsoon.
- Plan ahead and be prepared for the shortages of the critical project resources, materials, and logistics to mitigate the negative impact of the COVID-19 on project completion date.
- To revise baseline plan and the milestones after all the outstanding final designs have been issued by the client.
- Fast track program need to be proposed so that the project completion could be achieved as per agreement and project delay can be minimized as much as possible

B.2 Problems encountered

Below are the proposed actions taken for the pending issues encountered until 31st March 2020.

1. Revision of Design

Due to the datum level issues, an updated / revised level required for the lower walkway level, upper walkway level and the final embankment level as recommended by 2D Hydraulic Modelling results. The proposed recommendations are set for the lower walkway level at 3.42 meters, upper walkway level at

5.92 meters, and the embankment level at 6.04 meters above the proposed river bed level. A letter was issued from PIC to PIU recommending necessary updates/revisions on the civil and structural design including outfalls. In addition, some of the works already constructed might require remedial works including design, e.g. the top of the constructed diaphragm walls will need to be raised with additional cast in-situ concrete wall to achieve the revised design level, and the already casted outfall culverts (2 nos) needs to be modified and raised to the revised levels.

2. PIC staffing and mobility

The construction supervision team has been upgraded to fulfill set tasks (control and supervision) of the project works with recent deputation of two more site inspectors for the project. However, in the future the construction activities are anticipated to increase after receiving the updated /revised design documentation, drawings from PIU. Consequently, the project will certainly need to employ additional technical staff for an effective monitoring, checking, witnessing, reporting and recording the site activities for a successful completion of the project.

3. CW-01 Civil Works Contract

3.1 Contract design drawings

The ground conditions considered during preparation of detail design drawing is not consistent with the existing ground conditions. This could be due to seasonal flooding of Amochhu, temporary flood protection works and/or extensive dredging activities, but the main reason was due to datum issue.

The redesigning of outfalls structures need to be carried out, which will be done by HCP (design consultant for PTDP). Now with the datum issue resolved and levels finalized as per 2D modeling results, PIU/PMU informed HCP about the changes and accordingly the outfalls drawings are under process of revision by HCP.

To maintain the work progress and minimize the contractual issues, delay claims, etc., PIC in consultation with PIU have tried the best possible way to create work fronts for CW01 and allowed for producing precast concrete blocks for the slope protection work.

3.2 Site safety

Temporary flood protection measures are planned to protect the project and the surrounding areas from 2020 monsoon flooding.

The contractor is now fully engaged to complete the construction of diaphragm walls (approx. 4.8 km long) up to lower walkway level in order to protect the project from the negative impact of the approaching 2020 monsoon season.

The contractor to enhance the implementation of HSE rules during the execution of the project, plan and prepared to mitigate the negative impact of the COVID-19 on project manpower.

3.3 Works sectioning and milestones for Delay Damage application

Particular conditions of Contract introduced 5 sections of work, a time for completion and a rate for application of Delay Damages on each section. Usually, when linear works are concerned, sections are clearly defined as once works are completed taking over certificate for part of works are issued and immediately the Defect Liability Period for that section starts. The Employer is then responsible for any damages occurred due to external activities.

However, in the case of CW-01 no sections have been geographically determined and work to be accomplished are just related to quantities of some items. In these conditions, issuance of taking over certificate of part of works would be difficult to apply as it will discharge Contractor for further responsibility. That means if a section of diaphragm wall is taken over by Employer and later when the contractor has to construct cast in situ walls or any other structure linked to the D-wall section, Employer has to hand over the site to the Contractor back again. This situation does not seem practicable.

In view of the above, the Engineer's Representative will not be taking over part of completed works and hence there will be no ground for Delay Damages notice as per the milestones.

Therefore, it has been suggested that:

- Either works sectioning be clearly defined with linear works functional section; or
- Works sectioning with intermediate milestones removed as impractical.

This was discussed during the last ADB mission visit in October 2019, whereby it was decided to maintain the milestone targets as per contract to keep the construction activities on track, but the sections of completed work will not be taken over by the client. Further it was discussed that in case of any delay for achieving the set milestone targets in contract, the delay damages will not be levied on the sectional milestones due to above mentioned complexities.
Milestone definition need to be revised after all major design changes (due to the change of PTDP levels and PCR outfall levels) had been resolved and the revised GFC drawings have been endorsed by Client/ ADB and issued to Contractor.
Further to above, the milestones and revised base line schedules need to be discussed and agreed with all relevant parties.

3.4 Pay Item for payment of backfilling works

The contractor had been paid in full under BoQ item 401 after they started dredging and leveling of river bed with general earth filling works as per the requirement of BoQ item no 401. Previously withheld 10% amount also been released and no outstanding issues with regarding to pay item under 401 general earth filling works.

For the BOQ item no. 402 under bill no. 2c, contractor has updated and is now executing the general earth filling work as per the contract requirements. CW01 has submitted the method statement incorporating the comments from PIC and they have agreed to execute with selected approved materials after excavating from the river bed and bank with 95% proctor density by using vibratory roller for compaction including leveling the river bed to a proposed level as per the requirements of BoQ item no 402. The rate applied shall be quoted rate with 10% rebate as laid out in the contract.

B.3 Proposed program of activities / work plan for the next quarter (01 April to 30 June 2020)

From PIU / PMU

- Liaising with all the third parties, PCR, PMU, MoWHS, and ADB to resolve the outfalls sizes and levels as well as the smooth connectivity from PCR proposed - 4 lane way type of road in to the PTDP.
- Update PTDP master plan and incorporate necessary changes in coordination with HCP.
- Issue updated GFC drawings, mainly for outfalls, in coordination with HCP.
- Submission of the CW-02 bid documentations for ADB review.
- Submit contract variation proposal to ADB for Omchhu additional works
- Submit SEMR to ADB for public disclosure.

From PIC

- Assist PIU/PMU for preparation and submission of the CW-02 bid documents to ADB
- Mobilization / demobilization of construction supervision team as the project progresses
- Continue supervising Civil Works N°01 (CW-01) under FIDIC MDB June 2010 Contract

- Prepare and conduct training session for PIU & PMU
- Prepare SEMR for further submission to PIU
- Preparation of responses for the EoT submitted by the CW01
- Start working on the contract variation for CW-01

From Contractor

- Continue implementation of the C-EMP;
- Carry out HIV/AIDS and health disease awareness campaign at project periodically.
- Continue coordination with temporary traffics management for public vehicles with PCR as required
- Continue working on construction of Diaphragm Wall
- Continue working on General Earth Filling works
- Continue construction of Cast in Situ Wall
- Continue production of Precast Grass Paver Blocks and Tree pits
- Continue working on placing the boulders at front of D-walls
- Continue working on dead man anchor work
- Continue working on anchor slab work
- Prepare to start working for outfall works after receiving the revised drawings
- Start nursery for sapling
- Start upper walkway retaining wall work
- Start stone in wire crates work

C. Financial Management

C.1 Status of Contract Awards

Table 12:Status of Contract Award

Contract	Bid preparation	Bid period	Bid evaluation	Award & Negotiation	LTP
Civil works packages					
CW-01 River Training	Q1 2017	Q1& Q2 2017	Q2 2017	Q2 2018	12 Sep. 2018
CW-02 Common urban infrastructure	Q3 2019	Q2 & Q3 2020	Q4 2020 & Q1 2021	Q1 2021	Q2 2021
CW-03 Flood early warning system	Q1 2021				
CW-04 Power transmission infrastructure	Q1 2023				
CW-05 ICT infrastructure	Q1 2023				
Consultancy services packages					
CS-01 PIC	Q1 2017	Q2 & Q3 2017	Q3 2017	Q3 2017	17 Sep. 2018
CS-01-CV-01 Environment monitoring expert	Q4 2018	Q1 2019	Q1 2019	Q2 2019	4 April 2019
CS-01-CV-02 Flood Management Consultancy	Q1 2019	Q1 2019	Q1 2019	Q2 2019	
CS-03 Urban Management Advisor					
CS-04 Investment Promotion Advisor					
CS-05 Sustainable Township management capacity development consultants					
CS-06 Investor promotion and transaction advisory consultants					

Appendix 6 shows the Updated Procurement plan and Contract Award schedule. There is no change compared to the initial PAM Procurement Plan.

C.2 Disbursement of Project Funds

The total and breakdown of investment costs remain unchanged (see **Appendix 7**) as per the contract award. The invoice amounts are as follows (extracted from **Appendix 7**).

Table 13: Financial Status of PTDP Civil Works, Goods & Consultancy Contracts (PIC)

Investment costs	Contracts Amount (Taxes included)		Certified up to November 2019		Certified this Month*(December 2019)		Certified this Month*(January 2020)		Certified this Month*(February 2020)		Total Certified*	
	Cur;	Amount	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Civil Works Contracts (CW-01)	BTN	2,934,669,207	860,383,432	29.3	78,966,027	2.7	112,465,870	3.8	117,980,093	4.0	1,169,795,423	39.9
Consultancy Services (CS-01 PIC)	USD	4,138,144	608,394	14.7	96,392	2.3	43,152	1.0	45,739	1.1	793,677	19.2
	BTN	91,474,227	22,661,700	24.8	2,434,800	2.7	2,461,867	2.7	2,185,324	2.4	29,743,691	32.5
Independent Environmental Expert	BTN	5,425,417.25	154,670.0	2.85					456,725.0		611,395.0	11.27

* Amount of works and services billed in the table above excludes taxes and advances. The data are from invoice December 2019 to February 2020.

Summary of disbursements for the reporting period showing actual payments against each contract is indicated in the table below.

Table 14: Status of Disbursement of project Fund (till report period)

Category	Description/ Name	Budget Allocation (mil. US$)	Contracts Awarded (mil. US$)	Uncontracted Balance (mil. US$)	Total Disbursed (mil. US$)	Undisbursed Amount (mil. US$)
		(a)	(b)	(c) = (a - b)	(d)	(e) = (a -d)
Loan	Civil Works	15.05	15.05	0	0	15.05
	Consulting services *(PIC)*	7.42	5.27	2.073	1.034	6.378
	Independent Environment Expert		0.077		0.008	
	Others	6.28	0	6.28	0	6.28
	Total	**28.74**	**20.397**	**8.353**	**1.042**	**27.62**
Grant	Civil Works (CW-01)	19.57	19.57	**0**	17.097	2.473
	Others	**4.69**	**4.69**	0	0	4.69
	Total	**24.26**	**24.26**	**-**	**17.097**	**7.433**
DHI	PMU and PIU Expenditures	1.67	N/A		0.212	1.458
	Training	0.21	0	0	0.043	0.167
	Operation and Maintenance	0.86	0	0	0.173	0.687
	Others	7.25	0		0.394	6.856
	Subtotal	**10.00**			**0.80**	**9.168**

*1US$ = 71.0 BTN

Appendix 8 displays the proposed S-curves and quarterly details for Loan 3668-BHU and Grant 0573-BHU contracts awards and disbursements. The Reconciliation of disbursements and Status of External Audit is presented in **Appendix 8.4 and 8.5** respectively

C.3 Details of Counterpart Contribution

Within the report date, DHI has disbursed an amount of USD 1.8 Million as equity fund to CDCL from which the counterpart disbursements are made. The table below shows the status:

N°	Required Counterpart Expenditure by EA	Budget by DHI/CDCL till report period (2019 + 1st Qtr 2020) (million USD)	Actual Amount Released (million USD)	Disbursed till December 2019 (million USD	Balance (million USD)
1	Non-Reimbursable (Activities fully funded by EA)	1.429	1.8	1.32	0.48
2	Reimbursable (from Loan)	Nil	Nil	N/A	Nil

C.4 Implementation Schedule

Appendix 2 display updated Implementation schedule for Outputs (actual vs. scheduled)

D. Environmental Aspects

D.1 Environmental Monitoring Review

A Summary of Environmental Monitoring Review from January 2020 – March 2020 is attached in **Appendix 9.**

In addition to above, there are some activities that have been carried out as part of the submission from the PIC or Contractor side during the quarterly review period, which is listed in the **Table 15** below:

Table 15: Environmental Deliverables

No	Subject/ Deliverables	Date
1	Independent Environmental Monitoring Expert Dr. Lam was mobilized in the project	20th January 2020
2	Environmental meeting was held by Dr. Lam with attendance from PIU, Project Manager and Environment Manager, and PIC Team leader.	3rd February 2020
3	An approval letter from the Department of Forest and Park Services was submitted by PIU to AFCONs to conduct the pre-monsoon aquatic survey	6th March 2020
4	Submission of Environmental Monitoring Report by AFCONs to PIU & PIC	9th March 2020
5	AFCONs submitted air and noise monitoring location schedules to PIU & PIC for monitoring purpose	9th March 2020
6	AFCONs submitted calibration certificate for all monitoring equipment used by Ecolab, which is used at the PTDP project site	12th March 2020
7	AFCONs submitted emission test certificates for all vehicles deployed by AFCONs for the PTDP project.	17th March 2020
8	Submission of calibration certificate for equipment's used to test water quality at the PTDP project site	23rd March 2020
9	Traffic survey report submitted by AFCONs for March 2020	30th March 2020

Some environment-related issues had been observed as part of the monitoring at the project site. The major issues have been highlighted and observation/action taken has been duly reflected as follows:

- 16th January 2020: Terrestrial walkthrough was conducted by Eco lab along with PIU environment manager, PIC representative and AFCONs team.
- 23rd January 2020: Field visit to upstream of Amochhu and Zone C via Kaileshwar hill by the officials from PIU, PIC and Dr. Lam Dorji.
- For the month of January 199 MT of Sodium Bentonite was used.
- 18th February 2020: Sixth terrestrial walkthrough was conducted by Eco lab along with PIU environment manager, PIC representative and AFCONs team.
- Approximately 1.86 metric ton of degradable waste and 1.4 metric tons of biodegradable waste was generated from the PTDP project for the month of February 2020.
- 28th March 2020: Eco Lab was requested to conduct a three-day consecutive test on groundwater and borehole upon ADBs request. This is to ensure that the water being used for drinking is safe and no extra filtration is required. The test was conducted from 23-25th March 2020, and the test results were submitted to PIU and PIC on 28th March 2020.

- For March 381 MT of Sodium Bentonite was used.
- While supervising the project site, the toilet stall between part 4 & 5 location has an overflown septic tank, which is releasing foul odour, attracting flies and is not sanitary to be left idle. AFCONs has been informed verbally by the PIU environmentalist on March 25th, with a follow up on April 7th and the PIC environmentalist on April 9th 2020. The issue was also raised during the PIC & CW01 meeting number 55 (April 10th 2020) to immediately rectify the problem and to remove any toilet stalls, not in use by the project. For now, they have stuck "CLOSED" sticker and have informed the municipal to send the vehicle for immediate unclogging and cleaning of the location. AFCONs has been given a few days to rectify the problem.
- Approximately 1.45 metric ton of degradable waste and 1 metric ton of biodegradable waste was generated from the PTDP project for March 2020.
- AFCONs has been informed to barricade the backfilled locations, as private vehicles are speeding generating dusty, and poses a threat to the project workers.
- Trespassers are entering into the project site and dumping their waste in the outfall. AFCONs has informed the guards to ensure that other than project vehicles and individuals, to not allow access to other individuals. A list of vehicles mobilized with the project and private vehicles of experts have all been handed over to the guards to ensure only project vehicles are plying on the road.
- It was noticed that the project site has become very dusty, due to multiple external factors such as kilometres of unpaved roads, multiple ongoing projects and activities, and the weather conditions, but AFCONs is ensuring that daily sprinkling is ongoing in the projects and a sprinkling log sheet is submitted with the monthly report. To reduce the dust, the contractor has also created speed bumps and erected speed limit signs.

E. Health and Safety

E.1 Health and Safety Updates

- 11th January 2020: Hot work permit was conducted by AFCONs in part 6 & 7.

- 25h January 2020: Personal Hygiene spot briefing was conducted by AFCONs HSE in charge to the civil work workers.

- 28 & 29th of January 2020: With the outbreak of Coronavirus, tool box talk and a short briefing was conducted on-site by senior Safety Officer and Environmental Engineer. Proper training by the Phuentsholing General hospital will also be conducted in the month of March.

- AFCONs has also been asked to repaint and replace posters which are stuck in the entrance of the project office.

- 5th February 2020: On 5th February 2020 AFCONs AFCONs held the safety award program to recognize all the workers who have been taking all the safety measures during work activity.

- 7th February 2020: With the outbreak of Coronavirus, AFCONs held a health awareness program for the project. They invited two doctors from Phuentsholing General Hospital to inform and demonstrate the project personnel's regarding the outbreak, hand washing techniques and its importance, and other preventive measures.

- 13th February 2020: Following the COVID-19 information session AFCONs initiated a daily thermal screening at the PTDP project site. The daily reports are submitted to PIU and PIC by AFCONs and PIU submit the daily screening reports to the Ministry of Health.

- 14th February 2020: Spot briefing was conducted by HSE AFCONs team on rigging and lifting safety. They also informed the workers on lifting safety protocol, rigging safety, and use and importance of PPE.

- 26th February 2020: Mr. Sujith Sha while working at the D-wall was assisting Mr. Sunil who was operating the B25 rig (ACRIGO Casagrande) to stabilize and adjust the plate, as it was swinging. While the helper was adjusting, the operator was not aware of it and swung the rig, which caught Mr. Sha off guard, and was unable to catch the plate properly. In the process Mr. Sha's right hand middle and ring finger got caught between the plate and the rig roller. The injured was immediately taken to the Phuentsholing General hospital for a thorough check up.

- 28th February 2020: Spot briefing was conducted by AFCONs on the importance and use of PPE at work, the function and importance of each PPE and proper usage and maintenance of PPE.

- AFCONs has repainted and replaced the posters which are posted at the entrance of the project office. AFCONs has also provided safety poster to be posted at the new CDCL residential camp.

- It was noticed during site visit that some workers were not wearing their helmets, had torn gloves, and were not wearing their masks. This is to be strictly monitored and ensure that all workers are dressed in proper PPE while at site.

- With the outbreak of COVID-19, AFCONs has been requested to submit a daily and weekly COVID report. The daily report is for submission to Ministry of Health upon their request and the weekly report which includes the name, gender, designation, work station and the temperature recording of all individuals from the PTDP project site. AFCONs is also taking other initiatives like:
    - Checking the temperature of all workers every day

- Temperature guns have also been placed outside the project office entrance to check the temperature of all non-project people entering the offices and registration book is maintained to keep records of all the visitors.
- Installation of water and soaps outside the office and labour camp entrances and at the project site where work is ongoing.
- Moreover, masks and hand sanitizers are distributed to all employees.
- Awareness posters have been posted around the project site
- Awareness program initiated by AFCONs as part of the health briefing was conducted by health officials from Phuentsholing General Hospital to caution and aware the workers of PTDP about COVID-19.

- March 2nd 14th 19th & 28th: Submission of weekly COVID reports. So far there has been no case or signs and symptoms in any worker currently engaged in the project. Monitoring will continue.

- 6th March 2020: Safety awards by AFCONs.

- 10th -13th March 2020: Auditing was conducted at the PTDP project.

- 16th – 18th March 2020: ADB mission from Bhutan visited the PTDP project site, and the ADB mission from Manila was unable to come to Bhutan due to COVID-19 and joined the meeting virtually.

- 13th March 2020: AFCONs submitted walkthrough report for March

- 17th March 2020: Corona Virus awareness information session was conducted by Mr. Ashok, B.K.Singh and in charges from respective worksites to the mess cooks and helpers. They were briefed on the spread and symptoms of COVID-19, the preventative measures one should take and to report to concerned personnel if in case of fever, cough, and cold.

- 18th March 2020: The HSE team from PIU, PIC and AFCONs visited the Eco Lab laboratory to observe and learn how the test is conducted and if the equipment is well maintained.

- 19th March 2020: Submission of letter explaining the preventative measure taken by AFCONs. Buckets of water and soap water have been stationed outside the project office and labour camps, safety posters have been posted throughout the camp, the temperature is being checked daily by the health officials at the project site.

- 25th March 2020: Due to COVID-19 and many Bhutanese forced to vacate their homes in Jaigoan, they have all been provided shelter in schools around Phuentsholing. With the COVID-19 case increasing by the day, His Majesty has decided to provide temporary shelters to 1000 families and move them out of the schools. Before the building of the structures started, RBA and other senior officials visited the project site to monitor and locate where the structures would be erected.

- 30th March 2020: A collaborative meeting between PIU, PIC and PCR was held.

- 30th March 2020: SOP for COVID-19 was submitted by AFCONs to PIU and PIC

- 31st March 2020: Heath briefing on COVID-19, HIV/AIDS & Feminine Hygiene was conducted by Gyeltshen Jigme Anaesthetist from Phuentsholing General Hospital. The session was attended by 24 participants out of which eight were women from PIU, PIC and AFCONs.

- All PPE gears are being provided to workers every morning by AFCONs. Continuous monitoring is being conducted to ensure the use of PPE. It was noticed during site visit that some workers were not wearing their helmets, had torn gloves, and were not wearing their masks. This is also because most or all workers are not used to working with PPE and due to the weather condition in

Phuentsholing. Yet it is still being strictly monitored and for those who are not in proper PPE are being handed with penalty slips by AFCONs.

- In the last few months the dust pollution at the PTDP site has drastically increased. It is not only from the project but due to involvement of multiple parties and activities along the project vicinity. Dust control measures are being taken care of by sprinkling of water along the road and construction sites, a log sheet is maintained by the driver to indicate the number of times and location of sprinkling activity. Safety tapes have been set up around specific parts of the project to ensure no private vehicles ply on the road. Gate guards have been positioned at the entrance and other parts of the site, speed bumps have been created, and speed limit signage has been erected along the project site

Health and safety-related issues have been observed at the site as mentioned below:

Table 16: Recommendation for Health and safety issues

Issue	Recommendation and action taken
Removal of breeding sources	With the onset of COVID-19 the officials at the Phuentsholing General Hospital has been busy and unable to come to the PTDP site to conduct fogging. While tackling COVID-19, outbreak of Dengue has also become of major concern with the arrival of summer. As a part of preventive measures AFCONs has already distributed mosquito nets and repellents to their works. Moreover, HSE team is supposed to identity the breeding grounds for mosquito in and around the camp site and immediately rectify it by removing those breeding grounds.
Cleaning of all septic tanks	It is to be ensured that septic tanks and soak pits are cleaned every three to four weeks. It would be unsanitary to have an overflowing tank, which would contaminate the soil and possibility of seeping into the river impacting the aquatic life and cause multiple health problems around the project.

E.2 Accident prevention

From January – March 2020, one serious incident was reported. 26th February 2020, Mr. Sujith Sha while working at the D-wall was assisting Mr. Sunil who was operating the B25 rig (ACRIGO Casagrande) to stabilize and adjust the plate, as it was swinging. While the helper was adjusting, the operator was not aware of it and swung the rig, which caught Mr. Sha off guard, and was unable to catch the plate properly. In the process Mr. Sha's right hand middle and ring finger got caught between the plate and the rig roller. The injured was immediately taken to the Phuentsholing General hospital for a thorough check up.

All other cases reported to the First Aid Station were minor issues. All issues or cases are registered at the First Aid Station located at the Project site. The signboard display with accident statistics has been erected at the entrance of the office zone.

E.3 HIV / AIDS Prevention

The first Health and Safety Campaign on "HIV / AIDS prevention, Malaria, Dengue Fever, and Menstrual Health and Safety" was conducted by Phuentsholing General hospital from 21st – 23rd March 2019 as reported in the 2nd QPR.

Due to the ongoing Dengue epidemic in Phuentsholing, it was difficult to bring in a health professional to conduct the health and safety campaign. To ensure the safety of the workers at site, an information session on Dengue was jointly conducted by PIU, PIC & AFCONS safety and environment team on 7th & 8th August 2019. This session was conducted to inform and spread awareness to all the employees of PTDP project (especially the ones residing outside the project camps) on the outbreak of Dengue, and

precautions, which need to be taken. As part of the initiative, mosquito repellent creams (ODOMOS) were distributed to all the participant to ensure necessary prevention of such diseases in future.

The health and safety campaign was delayed, but the second camping was conducted on 16th October 2019, by official from the Phuentsholing General hospital. AFCONS invited new recruits from PIU, PIC and AFCONs, along with other employees who missed the last health briefing session which was conducted in March. The topics addressed were on Dengue, Hypertension, HIV/AIDS and Feminine Hygiene.

The third health and safety campaign was conducted on 30th December 2019 by Mr. Kelzang Jigme, Anaesthetist from Phuentsholing General Hospital to the new recruits and OJT students. The session focused on HIV/AIDS, Feminine hygiene and diabetes

The fourth health and safety campaign was conducted on 7th February 2020. With the outbreak of Coronavirus, AFCONs held a health awareness program for the project. They invited two doctors from Phuentsholing General Hospital to inform and demonstrate the project personnel's regarding the outbreak, hand washing techniques, and other preventive measures.

The fifth health and safety campaign was conducted on 31st March 2020 by Dr Kelzang Jigme from Phuentsholing General Hospital. The Heath briefing was focused on COVID-19, HIV/AIDS & Feminine Hygiene. The session was attended by 24 participants out of which eight were women from PIU, PIC and AFCONs.

E.4 Traffic Safety

On 1st March the contractors constructed traffic diversion and rerouting for third party vehicles. This was initiated because the number of third-party vehicles plying along the approach road to the project office site was increasing, and was not abiding by the enforced speed limit, making it risky for PTDP passer-by's, generating dust and degrading the air quality in the locality. After the diversion, AFCONs was able to manage the speed limit to the project vehicles, making it safer for the PTDP passer-by's and also not generating as much dust. 9th August 2019, another road was diverted at part 3, which is only accessible for project vehicles. This has drastically reduced the number of private vehicles plying at the project site, which has in return made it easier to monitor the speed limit. The detail on the traffic study is attached as **Appendix 5**.

E.5 Labor Engagement Statistics at the end of the Reporting Period

The contractor only recruits Bhutanese with proper documents and other foreign workers with authentic permits. Work permits are issued to all the Non-Bhutanese Engineers, workers and labours working in Bhutan. As of March 2020, the contractor has employed the following:

- Bhutanese Day Labour (Female) – 18
- Non-Bhutanese Day Labour (Female) – None
- Bhutanese Day Labour (Male) – 37
- Non-Bhutanese Day Labour (Male) – 25
- Non-Bhutanese Resident Labour (Male) – 166

The labour register and muster roll of the main contractor are maintained and updated.

E.6 Engagement of Vehicle, machines and equipment

The contractor has deployed various vehicle, machines, and equipment at the site either directly or through subcontractors. Vehicles are also checked for proper registration, fitness, and emission certificates. Please refer to **Appendix 14** for all vehicle clearance certificate.

F. Social Safeguard and Communication

F.1 Social Safeguard

No specific action conducted this quarter

F.2 Communication action (website, events…)

CDCL Information Technology team visited the project site on 26th March 2019 and has developed the CDCL website, which is being updated time to time on regular basis. Information on the PTDP is already available in CDCL website (www.cdcl.bt).

See **Appendix 4** for a comprehensive list of meetings

F.3 Updated Stakeholder Communication Plan

The Project Administration Manual has developed a stakeholder communication plan which was updated as follows:

Table 17: Updated stakeholder communication plan

Project information to be communicated	Means of communication	Resp. Agency	Audience(s)	Frequency
Report and Recommendation of the President	ADB Website (linked documents)	ADB	ADB, DHI, CSOs, beneficiaries and RGoB	Once at Project inception
Procurement and bidding documents	Invitations for bids published on the DHI and CDCL websites and in the newspapers. Information for pre-bid meetings to be published likewise	PMU	Contractors and local suppliers of goods and services ADB, DHI, CDCL	During the procurement period. 1. Project Quarterly Report 2. As per the procurement plan
Construction	The selected construction company(s) will ensure that the construction areas will have signage boards with their contact information	PIU	ADB, DHI, CDCL, Stakeholders	During the construction period. Reported Monthly in Monthly Progress Report
Progress status during construction works and construction issues	Signage boards on site	PIU	ADB, DHI, CDCL General Public	During the construction period. 1. Reported Monthly in Monthly Progress Report 2. For the general public. Within Specific Public event (once a year)
Project performance reports	ADB and DHI Websites	ADB and DHI	Beneficiaries, stakeholders and RGoB	Either Semi-annually or annually once DMF (Design and Monitoring Framework) is set-up.
Safeguard monitoring (Environment and Social monitoring reports)	ADB websites	ADB and CDCL	ADB, DHI, CSOs, beneficiaries and RGoB	Semi-annually (January to June 2019)
Project completion Report	ADB Websites	ADB and CDCL	ADB, DHI	At Project closure

G. Grievance Redress Mechanism

G.1 Grievance Redress Mechanism set-up

A two-tier mechanism is adopted by the project. The first tier is in the field at the PIU level led by PIU head and the second level/tier GRM is led by the PMU head.

Secretariat

The first level secretariat of GRM is established in the PIU office, with PIC/PIU's Health and Safety officer acting as the secretary.

Composition

At the first level GRM, the team called the 'Grievance Redress Committee (GRC)' is established at the PIU level and consist of the PIU head as the lead of GRC. The composition of the first tier GRM is shown in Table 18 hereafter.

Table 18: Composition of the First tier GRM

Organization	Positions	Names
PIU	Project Manager	Mr. Kamal Dhakal
PIU	Dy Project Manager	Mr. Dawa Tshering
PIU	Environment Manager	Mr. Pemchung
PIC	Team Leader	Mr. Mehmet Kahraman
PIC	Dy Team Leader	Mr. Edwin Anggrijatno
PIC	Safeguard and H&S Specialist	Mr. Megay Penjore
Phuentsholing Constituency	Representative	Mr. Nar Bahadur Rai
Phuentsholing Thuemi	Representative	Mr. Sonam Tenzin
RENEW (Community-based org.)	Representative	Ms. Dechen
Members on-call basis based on the nature of grievance representing relevant section of district office		
Contractor CW-01	Project Manager	Mr. Ravichandran

The composition of the second tier GRM is shown in Table 19 hereafter:

Table 19: Composition of the Second Tier GRM

Organization	Positions	Names
PMU	Project Director	Mr. Tshering Dupchu
PMU	Urban Planner	Ms. Kamala Thapa
PIU	Project Manager	Mr. Kamal Dhakal
PIU	Environment Manager	Mr. Pemchung
Central Government / MOWHS	Representative	Mr. Namgay Tshering
RENEW (Community-based org.)	Representative	Ms. Lhaden

G.2 Revised GRM

As part of the site visit by PIC environmental specialist to review and approve the draft CEMP, revisions were proposed in the draft GRM which was endorsed by ADB as part of the CEMP. The changes made were as follows:

Table 20: Comments and observation on GRM by PIC

Chapter; Section Comment	Comment
Issues	It should be mentioned that Grievances related to the Social and Environmental Concerns of the project shall be covered by the GRM
Complaint/ Feedback/ Dropbox	Shall be at the contractor's site office and PIU office with a proper signboard with names and numbers of contact person at all these locations.
Dealing with complaints	It was suggested that minor issues/complaints received may be dealt by PIU and contractor directly as appropriate. But proper recording should be done and reported to the committee.
Register of complaints	All complaints received- written, telephonic, email, verbal, anonymous etc shall be recorded and verified. A proper register should be maintained and reported to the GRM committee.
Corrective Measures to be done by the contractor	Please include how corrective measures would be addressed and borne by the contractor

All the comments have been incorporated and are part of the GRM in the CEMP

G.3 Grievances registered

- No grievances have been registered till March 2020
- Grievance reporting format has also been uploaded on the CDCL website (www.cdcl.bt/ptdp/)

H. Design Monitoring Framework and actions agreed during last ADB review mission

H.1 Performance against DFM Indicators

Status of performance against Project Design and Monitoring Framework indicators is shown in **Appendix 1**. Compliance with loan and grant Covenant updated table is attached in **Appendix 11.**

H.2 Action agreed during last ADB review mission

The last ADB mission was from 16th – 18th March 2020 and the subsequent agreed action schedule is shown in table 21 below:

Table 21: Status of actions agreed during last ADB review mission (March 2020)

Sl.No	Activities	Due date (ADB)	Responsibilities	CDCL Proposal	Remarks
1	**Project Management**				
1.1	Submit the additional details required for annual report 2019	30th April 2020	PMU	Done	
1.2	Submit Quarterly Progress Report to ADB (include PPMES)	30th April 2020	PMU/PIU	Agreed	
1.3	Update the RMP	Every Quarterly	PIU/PIC	Agreed	
1.4	Coordination meeting with PCR and LAP(dust suppression and traffic management	Monthly	PIU/PIC	Agreed	
1.5	Fully staff PIU	April, 2021	PMU/PIU/CDCL	Agreed	
1.6	organize Project Coordination Meeting with PCR and MoWHS	20th April 2020	PMU/PIC	Agreed	
2	**Flood Forecasting**				
2.1	Flood Management Plan Shared with ADB	30th April 2020	PIU/PIC	Agreed	
2.2	NCHM MOU shared with ADB	31st May 2020	PMU/PIU	Agreed	

3	**CW01**				
3.1	Way Forward on Outfall Dimension Change and Updated, Masterplan Submitted	May 2020	PIU/PMU/PIC	Agreed	
3.2	Gantt Chart for CW01 and CW02 Submitted	31st March 2020	PIU/PIC	Done	
4	**CW02**				
4.1	Submit updated SAP timelines to ADB	15th April 2020	PMU/DHI	as per SAP updates (Refer Table 22)	
4.2	PIU to submit CW02 Bid Documents to ADB	15th April 2020	PMU/PIU	30th May 2020	1st draft was agreed on 15th April, but will be defered now since more review on BoQ is under process.
4.3	Obtain MOU with PT for cooperation and modus of operation in the development of the PTDP	30th April 2020	PMU	as per SAP updates (Refer Table 22)	
5	**CW-04 & CW-05**				
5.1	BPC and BTL MOU shared with ADB	15th April 2020	PMU/PIU	30th June 2020	
6	**Safeguards**				
6.1	BMBMS recruited under PIC (requirement to be decided)	Immediate	PIC	Deferred	BMBMS cannot be initiated at the moment due to interface issues with ongoing works by private parties at Zone-C. Dateline proposed to be deferred as requested vide PMU letter dated Feb 10, 2019.
6.2	Public consultation Meeting	On-going	PIU	Agreed	
6.3	Final EMR Covering Jan to June 2020 submitted	July, 2020	PMU	Agreed	
6.4	Conduct one round of pest control at labour camps	30th June 2020	PIU	Agreed	
7	**Finances**				
7.1	Submit 2019 APFS to ADB	30th June 2020	PMU	Agreed	

Table 22:Strategic Action Plan (Updates) - Phuentsholing Township Development Project

Sl. No	Action / Activity	Timeline	Responsibility	Source of funding Package	DHI Remarks	Revised Dates
Legal and Policy						
1	**Due diligence.** Complete legal due diligence of the proposed institutional options and recommend legal and/or policy changes required for operationalization of the separate Development Authority and special planning area; help to ensure common understanding on details of the institutional arrangement; review implications of the Special Planning Act, which is currently under development	1-Jul-17	ADB/CDCL	Legal Expert mobilized through ADB RETA no. 9050		
2	**Legal or policy framework.** Initiate approval for necessary policies or regulations - e.g. development control regulations. Note: Development control regulations are approved by the National Consultative Committee for Human Settlements (NCCHS), which is chaired by Minister, Ministry of Works and Human Settlement (MOWHS).	31-Dec-19	CDCL		Draft DCR is ready. The Draft DCR is currently being reviewed internally to revalidate earlier assumptions. We propose for finalisation internally first and then initiate for approvals in a timeframe of about one to one and half years	30-Jun-21
Institutional						
3	**Roles and responsibilities.** Define and agree on all relevant agencies' roles and responsibilities for all aspects of township management and services delivery; and identify opportunities for outsourcing and sharing facilities/services. (e.g. for water supply, sanitation, solid waste management, public spaces, emergency services, tax collection, enforcement of bylaws, city services (e.g. issuing identification cards), and others	31-Dec-19	CDCL/Phuntsholing Thromde/MoWHS	Government consulant to provide recommendations	There are clarity on certain matters while other matters are being pursued. With the project in an early stage of implementation, it is seen that more time will be necessary to define, agree and on the roles. The timeline is proposed to be moved by about one year	31-Dec-20
4	**Financial flows**. Clarify all revenue collection, revenue-sharing arrangements/amounts and financial flows between CDCL and Phuentsholing	31-Dec-19	CDCL/Phuntsholing Thromde/MoWHS	Government consultant to provide recommendations Stakeholders to finalize	The project is at a early stage of implementation. We propose for the timeline to be	30-Jun-21

	(i.e. from fees, land tax, property tax, building permit fee, etc.). Determine mechanism and process for periodic review of financial related agreements.			through consultation meetings	shifted by one and half years.	
5	**Agreements.** Draft and sign MOU or appropriate agreement(s) between CDCL and Phuentsholing Thromde to clarify and confirm delineation of roles and responsibilities for township management and financial aspects; and seek endorsement from MoWHS.	31-Dec-19	CDCL/Phuntsholing Thromde/MoWHS		The Project is at an early stage of implementation. We propose for the Timeline to be shifted by one and half years.	30-Jun-21
6	**Operational systems.** Develop detailed plan to establish the required city management systems in the new township (e.g. computerized billing and accounting system, integrated property tax system, house numbering system, GIS, customer service center, etc.) Finalize detailed terms of reference for contract package CS-05: Sustainable township management capacity development. Finalize detailed terms of reference for contract package CS-05: Sustainable township management capacity development.	31-Jan-20	CDCL	Individual loan consultant recruited by CDCL	Given the stage of the implementation of the Project, it is proposed to change the timeline by one year	31-Dec-20
7	**Financial Sustainability.** Establishing volumetric water tariffs (including sewerage surcharge) and sustainable tariffs for other services (solid waste, power, and telecoms) targeting full cost recovery within 10 years of construction. This will include frameworks/ legal agreements for phased incremental tariff increases required for full cost recovery and achievement of near 100% tariff collection rates.	15-Jun-20	CDCL/Phuntsholing Thromde	CDCL internal budget with support/recommendations from CS-03 Consultant	The Project is an early stage of implementation. We propose this to be shifted by One and half years.	30-Jun-21
8	**Determine service standards.** CDCL to develop service standards it aims to achieve and maintain from 2027 onwards; the modalities to achieve these (e.g. service contracts, outsourcing, etc.); and monitoring mechanisms.	15-Jun-23	CDCL	CDCL internal budget with support/recommendations from CS-05 consultants		
Human Resources						

9	Determine CDCL staffing requirements and finalize recruitment plan for the first 5 years of township operations (i.e. 2022-2026)	30-Dec-21	CDCL	Individual Loan consultant		
10	Finalize recruitment of CDCL township management core staff	31-Mar-22	CDCL			
11	Develop detailed capacity building plan for CDCL and Phuentsholing Thromde19 and commence implementation	1-May-22	CDCL	CS-05		
12	Determine Phuentsholing Thromde staffing requirements to be effective in supporting the new township, and cope with increased volume of visitors expected	15-Apr-22	Phuntsholing Thromde	CS-05		
13	Finalize recruitment of additional Phuentsholing Thromde staff Note: recruitment takes about 6 months	15-Oct-22	Phuntsholing Thromde/MoWHS	Central Government		

H.2.1 Risk Management Plan

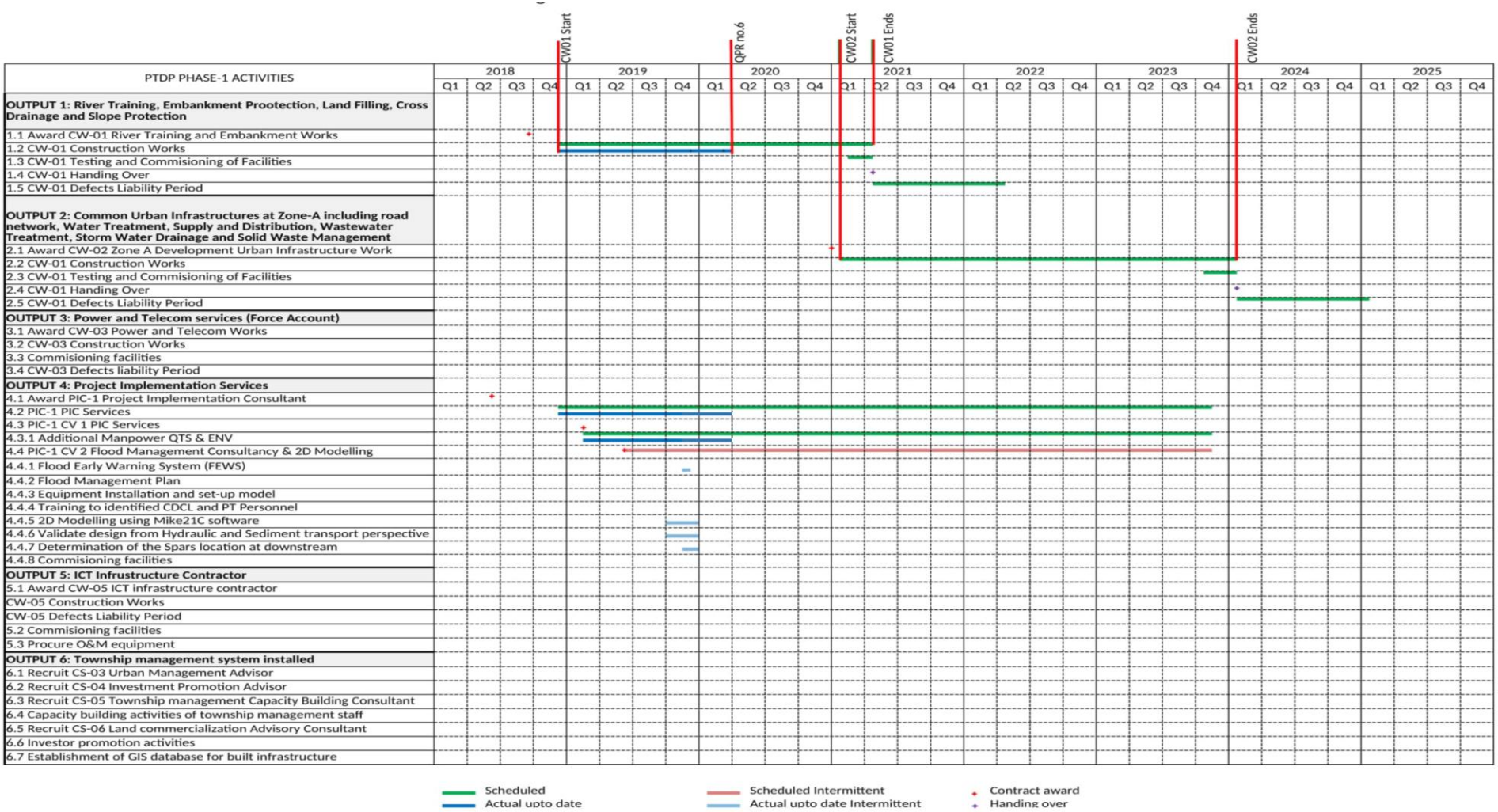
The Risk Management Plan (RMP) is updated every quarter, and has been submitted as part of the Quarterly Progress Report (QPR No. 6), for the period 01 January – 31 March 2020, attached in **Appendix 15**.

Appendix 1: Design and Monitoring Framework

	Indicator	Progress till 31st March 2020
Outcome Phuentsholing's urban area protected from floods and expanded with improved amenities and services	By 2026: a. Phuentsholing and reclaimed land protected from 100-year flood events in the Amochhu River (2018 baseline: Phuentsholing is protected from mean annual floods) b. At least 10% of fully serviced plots tendered for development (2018 baseline: NA)	a. First assessment of the progress of achievement when cast-in-situ wall achieved. Q2/2020. b. confirmation of tender scheduleQ2/2024
Outputs 1. Flood and erosion protection measures installed	By 2025: 1a. 4 km of climate and erosion-resilient river walls constructed to protect against 100-year probable flood (2018 baseline: 0) 1b. At least 66 ha of land reclaimed (2018 baseline: 0) 1c. A flood early warning system and community-based flood management plan established and operational (2018 baseline: NA)	1a. Construction of river protection started in Jan 2019. 74% Achieved. 1b. Construction of backfilling started in Feb 2019. 33 % Achieved. Land reclaimed when walkways finished. 1c. CW03-Not yet started. FEWS to be installed from Q2/2020 to Q4/2021
2. Municipal infrastructure constructed	2a. 10 km of roads with footpaths, landscaping, and streetlights planned with at least 30% female participation (2018 baseline: 0) 2b. Water treatment plant with a capacity of 4 MLD constructed (2018 baseline: none) 2c. 12 km of new primary and secondary water mains constructed (2018 baseline: 0) 2d. 9 km of new sewer mains and 9 km of new storm drains constructed (2018 baseline: 0) 2e. A sewerage treatment plant with a capacity of 3 MLD constructed (2018 baseline: 0) 2f. A resource recovery system for solid waste management installed (2018 baseline: 0) 2g. A 630 KVA grid substation constructed (2018 baseline: 0) 2h. 16 circuit-km of 415-volt power distribution lines installed (2018 baseline: 0) 2i. 11 circuit-km of telecommunication transmission cables installed (2018 baseline: 0)	To be started with CW-02, CW-03, CW-04 & CW-ti05 start. 2a. To be assessed from Q3/2021. 2b. To be assessed from Q3/2021 2c. To be assessed from Q3/2021 2d. To be assessed from Q3/2021 2e. To be assessed from Q3/2021 2f. To be assessed from Q3/2021 2g. To be assessed from Q2/2022 2h. To be assessed from Q2/2022 2h. To be assessed from Q2/2022
3. Township management systems installed	3a. At least 80% of township management staff reported improved knowledge of modern urban management (2018 baseline: NA) 3b. An asset management system established with 100% of project infrastructure and facilities geocoded in a database (2018 baseline: NA) 3c. At least 10 potential investors attended investor outreach campaigns (2018 baseline: NA)	3a. First assessment in the Year 2024 3b. To be assessed from Q2/2022 3a. To be assessed on Q3/2024

Appendix 2: Updated Implementation Schedule and Gantt Chart for CW-01

Appendix 2.1: Updated Implementation Schedule



Appendix 2.2: Revised Gantt Chart for Package CW01

Due to the datum level and COVID-19 issues, the projected completion timeline for CW-01 package, as of date, is projected as August, 2021. Contractor has put up the EoT, which is under review by PIC.

GANTT CHART FOR PACKAGE CW01, PHUENTSHOLING, BHUTAN

PROJECT COMPLETION AS PER BASELINE SCHEDULE

PROJECT COMPLETION AS PER EXPECTED EXTENSION

Sl. No.	Description/Activity	Scope	Completed	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Percentage Completed
A - River Training Works:																																				
1	Guide Wall	5094	4710																																	92%
2	Diaphragm Wall	849	587																																	69%
3	Cast In Situ Wall	9980	4564																																	46%
4	Dead Man Anchor	1949	20																																	1%
5	Anchor Slab	6585	0																																	0%
B - Embankment Works																																				
1	Ducted Outfalls	1020	0																																	0%
2	Open Outfalls	1179	79																																	7%
3	Retaining Walls	4424	93																																	2%
4	Filling Works	143009	16902																																	12%
5	Stone Wire Crates	39000	0																																	0%
C - General Earth Filling																																				
1	Filling Works	3089297	905574																																	29%
D - Promenade Finishing Works																																				
1	Lower Walkway	4500	0																																	0%
2	Upper Walkway	4500	0																																	0%
E - Irrigation and Landscape Works																																				
1	Landscape Works	4500	0																																	0%
2	Irrigation Works	4500	0																																	0%

The expected time extension considering below points

1. Ground level difference and change in Embankment height
2. Change and redesigning of Outfalls in order to match with PCR Design
3. Additional Work at along Omchu

Legend

Duration as per Contractor's Baseline Schedule

Expected Time Extension for completing the Project

Further possibilty of negative Impact for the completion of the Project

1. Covid 19 Pandamic negative impact on project logistcs and resources
2. Possible impact due to Monsoon

Appendix 3: PMU, PIU and PIC Staffing Details

STAFFS OF PHUENTSHOLING TOWNSHIP DEVELOPMENT PROJECT, CDCL

Project Management Unit (PMU), CDCL

Sl.No	Name	Function
1	Chief Executive Officer	Mr. Phuntsho Gyeltshen
2	Director, Department of Engineering and Construction	Mr. Reezang Wangdi (resigned), new to be recruited
2	General Manager, Finance and Investment Division	Ms. Dechen Wangmo
3	Project Director	Mr. Tshering Dupchu
4	Finance Manager	Mr. Phurba Dorji
5	Project Accountant	Mr. Lhaten Tshering (resigned, new to be recruited)
6	Urban Planner	Ms. Kamala Thapa
7	Legal Officer	Mr. Kinley Dorji
8	Human Resources Manager	Mr. Kencho Tshering

Project Implementation Unit (PIU), CDCL

Sl.No	Function	Name
1	Project Manager	Mr. Kamal Dhakal
2	Dy. Project Manager	Mr. Dawa Tshering
3	Environment Manager	Mr. Pemchung
4	Stakeholder Manager	Mr. D.B Ghalley
5	Adm.Officer (Document Control)	Ms. Tshering Pelden
6	Health and Safety Inspector	Mr. Yeshey Wangdi
7	Site Engineer	Ms. Kinley Dema
8	Asst. Document controller	Ms. Kezang Lhaden
9	Driver	Mr. Rinzin Dorji

Project Implementation Consultant (PIC)

Sl.No	Function	Name
1	Team Leader / Chief Resident Engineer	Mr. Mehmet Kahraman
2	Deputy Team Leader/RE	Mr.Edwin Aggrijatno
3	Construction Manager/QLE	Mr.Sonam Tobgay K
4	Material Engineer	Mr. Dwarika Gotamey
5	Quantity Surveyor	Mr. Karma Dezang
6	National Hydraulic Engineer/ FEMS Specialist	Mr. Chhimi Dorji
7	Safeguard and Communication Specialist	Mr. Megay Penjore
8	Environmentalist	Ms. Sonam Deki
9	Office Manager	Ms. Sangay Choizom
10	Accountant	Ms. Dorji Lhamo
11	Assistant Office Manager	Ms. Namgay Lhamo Tenzin
12	MIS/IT	Mr. Pema Namgay
13	AutoCAD	Mr. Phuntsho Namgyal
14	Site Inspector	Mr. Prem Kumar Ghalay
15	Site Inspector	Mr. Tashi Namgyel
16	Site Inspector	Mrs. Kencho wangmo
17	Site Inspector	Mr. Yeshi Jamtsho
18	Land Topography Surveyor	Mr. Namgay Wangchuk
19	Lab Technician	Ms. Yangchen Seldon
20	Land Topography Surveyor	Mr. Karma Wangchuk
21	Lab Technician	Ms. Tandin Wangmo

22	Assistant Surveyor	Mr. Drutuk Zangpo
23	Driver	Mr. Suresh Rai
24	Driver	Mr. Choki Dorji
25	Messenger	Ms. Yeshi Dolma
26	Office Guard	Mr. Jurmey Namgay

Intermittent key experts will be present as per their requirement.

Appendix 4: List of particular meetings, training/workshops and visits

Appendix 4.1 List of particular meetings from 1st January 2020 to 31st March 2020

Sl. No	Subject	Date	Location	Attendee
1	Coordination Meeting – 4 (PIU, PIC & CW01)	24th January 2020.	CW01 Conference Room	PIU PIC CW01
2	Dr. Lam (Independent Environmental Monitoring Expert) meeting with the PTDP Health Safety & Environment Team	03rd February 2020	PIU Meeting Room	PIU PIC CW01
3	MOWHS, PCR & PTDP Meeting	04th February 2020	PIU Meeting Room	PIU PIC CW01 MOWHS PCR PTDP
4	Interface Meeting between PTDP & PCR	19th February 2020	CW01 Conference Room	PIU PIC CW01 PCR
5	PIU/PIC & PCR Meeting	28th February 2020	PIU Meeting Room	PIU PIC PCR
6	ADB mission meeting at PTDP	16th March 2020 – 18th March 2020	PIU Meeting Room	PIU PIC ADB
7	PCR & PTDP Meeting	30th March 2020	PIU Meeting Room	PIU PIC PCR

Appendix 4.2 List of training and workshops from 1st January 2020 to 31st March 2020

Sl. No	Subject	Date	Location	Attendee
1	Presentation on Finishing Stone for Upper walkway by Nice & Natural Group	24th January 2020	CW01 Conference Room	PIU, PIC & CW01
2	Presentation on Finishing Stone for Upper Walkway by Nice & Natural Group attended by PIU, PIC & CW01	24th January 2020.	CW01 Conference Room	PIU PIC CW01
3	Safety Award by CW01	05th February 2020	CW01 Assembly Point	PIU PIC CW01
4	Health Awareness Program on COVID-19 by Phuentsholing General Hospital	07th February 2020	CW01 Conference Room	PIU PIC CW01
5	Body Temperature Checking by CW01 to all PTDP Personnel's	From 13th February 2020 (Ongoing)	Project Site	PIU PIC CW01
6	Safety Awards by CW01	06th March 2020	CW01 Assembly Point	PIU PIC CW01
7	Information Session on COVID-19, Menstrual Hygiene & HIV/AIDS by Phuentsholing General Hospital at PTDP	31st March 2020	CW01 Conference Room	PIU PIC CW01

Appendix 4.3 List of visits from 1st January 2020 to 31st March 2020

Sl. No	Subject	Date	Location	Attendee
1	International Border Visit with PIU, PIC, CW01 & Phuentsholing Thromde	10th January 2020	International Border	PIU PIC CW01 Phunstholing Thromde
2	Independent Environmental Monitoring Expert	20th January 2020	PIU Office	PIU PIC CW01
3	Terrestrial walkthrough by officials of PIU and PIC along with Independent Environmental Monitoring Expert at Zone C	23rd January 2020	Zone C	PIU PIC
4	National Land Commission &	13th February	International Boundary	PIU PIC CW01 NLC

	Phuentsholing Thromde Site Visit	2020		Phunstholing Thromde
5	STCBL, PMU & other stakeholders site visit	19th February 2020	Project Site	STCBL, PMU & other stakeholders
6	Royal Audit Authority at PTDP	10th March 2020 – 13th March 2020	Project Site	PIU RAA
7	ADB mission site visit at PTDP	16th March 2020 – 18th March 2020	Project Site	PIU PIC CW01 ADB
8	PTDP Health Safety & Environmental team visited Eco Lab Laboratory at Pasakha	18th March 2020	Pasakha, Phuntsholing	PIU PIC CW01 (HSE Team)
9	Royal Bhutan Army and other officials site visit	25th March 2020	Project Site	PIU PIC CW01 RBA & Other Officials

Appendix 5: Traffic study

The project has the Samtse-Phuentsholing highway running along its boundary and at the northern end of the project site lies a private quarry. This quarry has one of its approach road crossing the project diaphragm wall alignment. Every day heavy vehicles ply on this road which poses risk to the project vehicles as well as the project employees. Often heavy vehicles are seen speeding on this road that not only generates a lot of dust but also poses risk to the project workers. Despite speed breakers and speed limit signage that have been placed at strategic locations, the risk factor is still present.

After the road diversion works done on 1st March 2019, the approach road to the project office site is safe as compared to the months before that. Now it is mainly the project vehicles plying in and out of the site, small private vehicles dropping off individuals working in the project or heavy vehicles transporting construction materials to and from the project site. On 9th August 2019, another road was diverted at part 3, which is only accessible for project vehicles. This has drastically reduced the number of private vehicles plying at the project site, which has in return made it easier to monitor the speed limit.

To illustrate interference with third parties' vehicles, PIC asked the Contractor to conduct simple traffic counts to identify the vehicle type and origin. The traffic counts shown below are for the months from January – March 2020. **Table 1** below gives the traffic results, which shows that the road used by the project vehicles is minimal in comparison to third party vehicles.

Table 1: Traffic counts from January – March 2020

DAY								
Location / Date / Time	**Project LV**	**Project HV**	**Trailer**	**Project Total**	**Others LV**	**Others HV**	**Trailer**	**Others Total**
09/01/2020	285	285	8	**578**	1312	1104	55	**2526**
NIGHT								
Location / Date / Time	**Project LV**	**Project HV**	**Trailer**	**Project Total**	**Others LV**	**Others HV**	**Trailer**	**Others Total**
10/01/2020	24	3	0	**27**	379	211	6	**596**
DAY								
Location / Date / Time	**Project LV**	**Project HV**	**Trailer**	**Project Total**	**Others LV**	**Others HV**	**Trailer**	**Others Total**
25/02/2020	318	75	6	399	800	586	0	1386
NIGHT								
Location / Date / Time	**Project LV**	**Project HV**	**Trailer**	**Project Total**	**Others LV**	**Others HV**	**Trailer**	**Others Total**
26/02/2020	30	0	0	**30**	308	269	6	**583**
DAY								
Location / Date / Time	**Project LV**	**Project HV**	**Trailer**	**Project Total**	**Others LV**	**Others HV**	**Trailer**	**Others Total**
27/03/2020	212	70	5	**287**	625	552	0	**1177**
NIGHT								
27/03/2020	57	0	0	**57**	272	298	2	**572**

Result

- The day survey is conducted from 8:00 AM – 5:00 PM with a lunch gap of one hour
- The night survey is conducted from 8:00 PM – 8:00 AM

In comparison to past traffic survey, there has been a slight increase in project vehicles. Now that the monsoon season has ended and the project has resumed off at full swing where it left off. There are more locations they are working on, which has also increased the number of vehicles plying in and out with materials.

Appendix 6: Updated Procurement Plan and Contract Award Schedule

Phuentsholing Township Development Project

No.	Package	Procurement Plan Amount($ millions)		Note	Type	Implementation Period	Current Status of Designs/Bid Documents	Submission Date to CDCL	Submission Date to ADB for Clearance	Advertize Bid	Bids Submitted	Submission Date of TDER to ADB for clearance	Submission Date for FBER to ADB for Clearance	Target date of Contract Award	Start Date
Works & Goods															
1	CW-01	35	River training and land reclamation	1	ICB	Q4-2018 to Q2-2022			14-Mar-17	25-May-17				18-Jul-18	27-Aug-18
2	CW-02	11.2	Common Urban Infrastructure		ICB	Q3-2021 to Q2-2024		10-Dec-20	24-Dec-20	28-Jan-21	11-Mar-21	8-Apr-21	13-May-21	3-Jun-21	1-Jul-21
3	CW-03	0.2	Flood warning system		ICB Goods	Q2-2020 to Q3-2020		11-Nov-19	18-Nov-19				12-Feb-20	11-Mar-20	1-Apr-20
4	CW-04	0.5	Power transmission infrastructure		FA	Q1-2023 to Q2-2024									
5	CW-05	0.9	ICT infrastructure		FA	Q1-2023 to Q2-2024									

No.	Package	Procurement Plan Amount($ millions)		Note	Type	Implementation Period	Current Status of Designs/Bid Documents	Submission Date to CDCL	Submission Date to ADB for Clearance	Advertize Bid	Bids Submitted	Submission Date of TDER to ADB for clearance	Submission Date for FBER to ADB for Clearance	Target date of Contract Award	Start Date
Consultants															
1	CS-01	5.7	Project Implementation Consultant	2	QCBS 90:10	Q3-2018 to Q2-2025			6-Dec-16	21-Feb-17	15-May-17				29-Oct-18
2	CS-02	0.25	Independent environmental monitoring expert		ICS	Q4-2018 to Q2-2025		16-Sep-18	23-Sep-18	13-01-19	21-01-19	31-01-19		4th April 2019	15-Jul-19
3	CS-03	0.1	Urban management advisor		ICS	Q2-2022 to Q1-2025		18-Mar-22	25-Mar-22	29-Apr-22		3-Jun-22			1-Jul-22
4	CS-04	0.1	Investment promotion advisor		ICS	Q4-2022 to Q1-2025		18-Jun-22	25-Jun-22	30-Jul-22		3-Sep-22			1-Oct-22
5	CS-05	1.3	Sustainable township management capacity development		QCBS 90:10	Q1-2023 to Q2-2025		6-May-22	23-May-22	10-Jul-22	4-Sep-22	2-Oct-22	30-Oct-22	4-Dec-22	1-Jan-23
6	CS-06	1.1	Investor promotion and transaction advisory services		QCBS 90:10	Q3-2023 to Q2-2025		3-Nov-22	10-Nov-22	7-Jan-23	4-Mar-23	1-Apr-23	29-Apr-23	3-Jun-23	1-Jul-23

achieved
pending
overdue
actual dates

	Indicative Durations					
ICB Works	14	35	42	28	35	21	28
ICB Works	7			86	28		
NCB Goods	7			72	28		
QCBS	7	58	56	28	28	35	28
ICS	7	35		35			28

Notes:
1 Includes cross drainage structures, land formation, and about $250K for supply and
2 to include prov sum packages for traffice management study ($100K), preparation of emergency management plan ($200K), and

Details on Contract award process till date

Contract	Bid prep.	Bid period	Bid evaluation	Award & Negotiation	LTP
CW-01 River Training	Q1 2017	Q1& Q2 2017	Q2 2017	Q2 2018	12 Sep. 2018
CW-02 Common urban infrastructure	Q2& Q3 2019	Q2 & Q3 2020	Q4 2020 & Q1 2021	Q1 2021	Q2 2021
CW-03 Flood early warning system	Q1 2021				
CW-04 Power transmission infrastructure	Q1 2023				
CW-05 ICT infrastructure	Q1 2023				
CS-01 PIC	Q1 2017	Q2 & Q3 2017	Q3 2017	Q3 2017	17 Sep. 2018
CS-02 Environment monitoring expert.	Q4 2018	Q1 2019	Q1 2019	Q2 2019	4th April 2019

Appendix 7: Updated Investment Cost

Project Investment Plan

(in $ million / Assumption Nu.67.97=$1.00 as of 31 Dec.2016)

Sources	Amount / Share	
	Amount	%
Asian Development Bank[a]	**53.00**	**84.1**
Ordinary capital resources (concessional loan)	28.74	45.6
Special Funds resources (ADF grant)	24.26	38.5
Government	**10.00**	**15.9**
	63.00	**100.0**

*Disaster Risk Reduction Fund will finance $6.07 million equivalent of the concessional OCR loan and $6.07 million of the ADF grant.

Source: ADB – PAM May 2018

Investment costs from Loan and Grant agreements

(in $ million)

Investment costs	Total Amount (Taxes included)		ADB Loan		ADB Grant		Government*			
	Cur.	Amount	Amount	%	Amount	%	Costs	Taxes & duties	Total	%
Civil Works	USD	37.59	15.05	40	19.57	52	2.97		2.97	8
Consultancy Services (PIC)	USD	7.55	7.42	98				0.13	0.13	2
Recurrent Cost	USD	2.73					2.73		2.73	100
Contingencies	USD	14.07	6.27	45	4.69	33	3.11		3.11	22
Financial Charges	USD	1.05					1.05		1.05	100
	Total	**63.00**	**28.74**		**24.26**		**9.86**	**0.13**	**10**	**16**

Breakdown of Investment costs per Contracts and amounts used.

1st Quarter: January 2020 – March 2020

Investment costs	Contracts Amount (Taxes included)		Certified up to November 2019		Certified this Month*(December 2019)		Certified this Month*(January 2020)		Certified this Month*(February 2020)		Total Certified*	
	Cur;	Amount	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Civil Works Contracts (CW-01)	BTN	2,934,669,207	860,383,432	29.3	78,966,027	2.7	112,465,870	3.8	117,980,093	4.0	1,169,795,423	39.9
Consultancy Services (CS-01 PIC)	USD	4,138,144	608,394	14.7	96,392	2.3	43,152	1.0	45,739	1.1	793,677	19.2
	BTN	91,474,227	22,661,700	24.8	2,434,800	2.7	2,461,867	2.7	2,185,324	2.4	29,743,691	32.5
Independent Environmental Expert	BTN	5,425,417.25	154,670.0	2.85					456,725.0		611,395.0	11.27

**No disbursements in March*

** Amount of works and services billed in the table above excludes taxes and advances. The data are from invoice of December 2019 to January 2020

Appendix 8: Contract and disbursement S-Curve, ADB Loan and ADB Grant

Appendix 8.1 Status of Disbursement of Project Funds

Category	Description/ Name	Budget Allocation (mil. US$)	Contracts Awarded (mil. US$)	Uncontracted Balance (mil. US$)	Total Disbursed (mil. US$)	Undisbursed Amount (mil. US$)
		(a)	(b)	(c) = (a - b)	(d)	(e) = (a -d)
Loan	Civil Works	15.05	15.05	0	0	15.05
	Consulting services *(PIC)*	7.42	5.27	2.073	1.034	6.378
	Independent Environment Expert		0.077		0.008	
	Others	6.28	0	6.28	0	6.28
	Total	**28.74**	**20.397**	**8.353**	**1.042**	**27.62**
Grant	Civil Works (CW-01)	19.57	19.57	**0**	17.097	2.473
	Others	**4.69**	**4.69**	0	0	4.69
	Total	**24.26**	**24.26**	**-**	**17.097**	**7.433**
DHI	PMU and PIU Expenditures	1.67	N/A		0.212	1.458
	Training	0.21	0	0	0.043	0.167
	Operation and Maintenance	0.86	0	0	0.173	0.687
	Others	7.25	0		0.394	6.856
	Subtotal	**10.00**			**0.80**	**9.168**

Note* -

The disbursed values (d) are as per CDCL Finance Division statement for PTDP for 2020 first Qtr.

An Equivalent amount at signing date CW-01 Contract, Nu.2,934,669,207=41.63million$ and PIC Contract, 5,44 million$ at 1US$ = 70.5 BTN

For CW-01 Contract amount, 41.63million$, remaining balance from Loan, 15.05, Grant, 19.57 and DHI, 2.97 is 4.04million$. If affected on an equal proportion of Civil Works items (Loan, 40%, Grant, 52% and Gov., 8%) to Physical Contingencies. Loan and Grant remaining amounts insufficient.

Appendix 8.2 Schedule of contracts award and disbursement for Loan 3668-BHU

Exchange rate 1USD=70BTN

PTDP Loan: Contract Awards and Disbursement($Million)

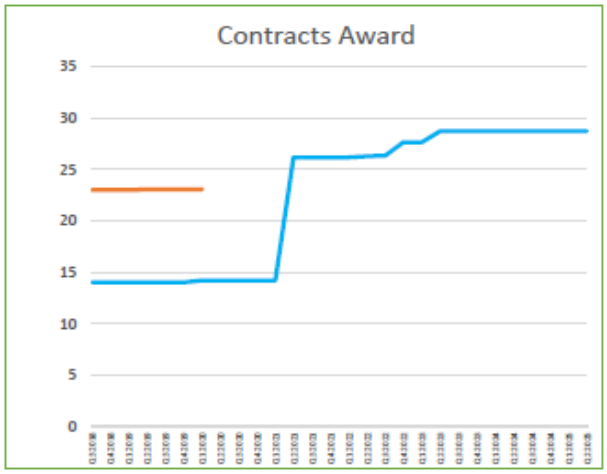
	Contract Awards($Million)					Disbursements($Million)				
Year	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2018			14.04		14.04				1.38	1.38
2019					0	0.64	0.64	0.64	0.65	2.57
2020	0.2				0.2	0.64	0.64	0.74	0.75	2.77
2021		11.94			11.94	0.64	0.64	0.64	1.84	3.76
2022		0.1	0.1	1.28	1.48	1.54	1.54	1.54	1.54	6.16
2023		1.08			1.08	1.1	1.22	1.22	1.36	4.9
2024					0	1.36	1.36	1.36	1.36	5.44
2025					0	0.46	1.3			1.76
	Total contract award				28.74	Total Disbursements				28.74

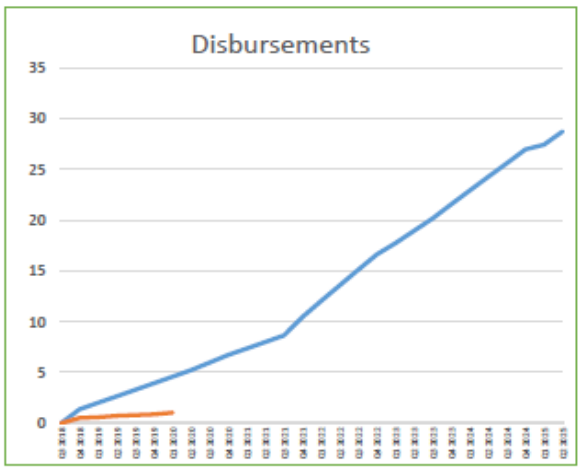
Loan conracts Award ($million)

	Target		Actual	
Quarter	Amount	Cumul.	Amount	Cumul.
Q3 2018	14.04	14.04	23.01	23.01
Q4 2018	0	14.04	0	23.01
Q1 2019	0	14.04	0	23.01
Q2 2019	0	14.04	0.077	23.087
Q3 2019	0	14.04	0	23.087
Q4 2019	0	14.04	0	23.087
Q1 2020	0.2	14.24	0	23.087
Q2 2020	0	14.24	0	23.087
Q3 2020	0	14.24	0	23.087
Q4 2020	0	14.24	0	23.087
Q1 2021	0	14.24	0	23.087
Q2 2021	11.94	26.18	0	23.087
Q3 2021	0	26.18	0	23.087
Q4 2021	0	26.18	0	23.087
Q1 2022	0	26.18	0	23.087
Q2 2022	0.1	26.28	0	23.087
Q3 2022	0.1	26.38	0	23.087
Q4 2022	1.28	27.66	0	23.087
Q1 2023	0	27.66	0	23.087
Q2 2023	1.08	28.74	0	23.087
Q3 2023	0	28.74	0	23.087
Q4 2023	0	28.74	0	23.087
Q1 2024	0	28.74	0	23.087
Q2 2024	0	28.74	0	23.087
Q3 2024	0	28.74	0	23.087
Q4 2024	0	28.74	0	23.087
Q1 2025	0	28.74	0	23.087
Q2 2025	0	28.74	0	23.087

Loan Disbursements ($million)

	Loan		Actual	
	Quarter	Cumul.	Quarter	Cumul.
Q3 2018	0	0	0	0
Q4 2018	1.38	1.38	0.516	0.516
Q1 2019	0.64	2.02	0.066	0.582
Q2 2019	0.64	2.66	0.161	0.743
Q3 2019	0.64	3.3	0.045	0.788
Q4 2019	0.65	3.95	0.098	0.886
Q1 2020	0.64	4.59	0.155	1.041
Q2 2020	0.64	5.23	0	1.041
Q3 2020	0.74	5.97	0	1.041
Q4 2020	0.75	6.72	0	1.041
Q1 2021	0.64	7.36	0	1.041
Q2 2021	0.64	8	0	1.041
Q3 2021	0.64	8.64	0	1.041
Q4 2021	1.84	10.48	0	1.041
Q1 2022	1.54	12.02	0	1.041
Q2 2022	1.54	13.56	0	1.041
Q3 2022	1.54	15.1	0	1.041
Q4 2022	1.54	16.64	0	1.041
Q1 2023	1.1	17.74	0	1.041
Q2 2023	1.22	18.96	0	1.041
Q3 2023	1.22	20.18	0	1.041
Q4 2023	1.36	21.54	0	1.041
Q1 2024	1.36	22.9	0	1.041
Q2 2024	1.36	24.26	0	1.041
Q3 2024	1.36	25.62	0	1.041
Q4 2024	1.36	26.98	0	1.041
Q1 2025	0.46	27.44	0	1.041
Q2 2025	1.3	28.74	0	1.041





Appendix 8.3 Schedule of contracts award and disbursement for Grant 0573-BHU (as per PAM)

PTDP Grant: Contract Awards and Disbursement($Million)

Exchange rate 1USD=70BTN

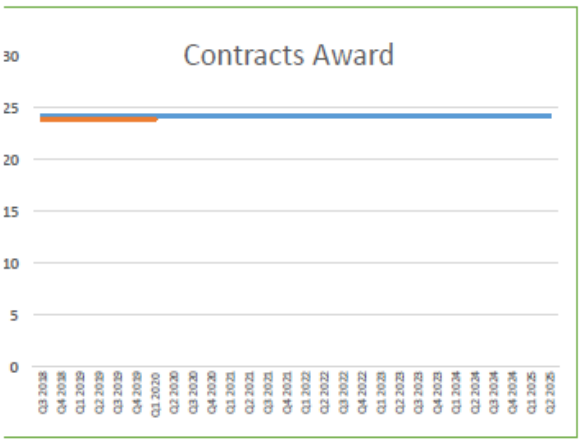
	Contract Awards($Million)					Disbursements($Million)				
Year	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2018			24.26		24.26				2.43	2.43
2019					0	1.37	1.37	1.37	1.37	5.46
2020					0	1.37	1.37	1.37	1.37	5.46
2021					0	1.37	1.37	1.37	1.37	5.46
2022					0	1.37	1.37	1.36	1.36	5.45
2023					0					0
2024					0					0
2025					0					0
	Total contract award				24.26	Total Disbursements				24.26

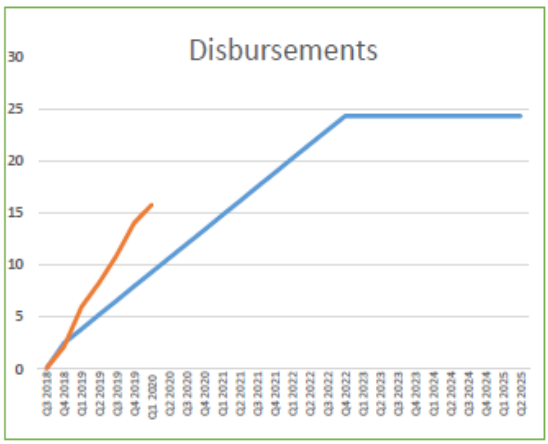
Grant conracts Award ($million)

	Target		Actual	
Quarter	Amount	Cumul.	Amount	Cumul.
Q3 2018	24.26	24.26	23.89	23.89
Q4 2018	0	24.26	0	23.89
Q1 2019	0	24.26	0	23.89
Q2 2019	0	24.26	0	23.89
Q3 2019	0	24.26	0	23.89
Q4 2019	0	24.26	0	23.89
Q1 2020	0	24.26	0	23.89
Q2 2020	0	24.26	0	23.89
Q3 2020	0	24.26	0	23.89
Q4 2020	0	24.26	0	23.89
Q1 2021	0	24.26	0	23.89
Q2 2021	0	24.26	0	23.89
Q3 2021	0	24.26	0	23.89
Q4 2021	0	24.26	0	23.89
Q1 2022	0	24.26	0	23.89
Q2 2022	0	24.26	0	23.89
Q3 2022	0	24.26	0	23.89
Q4 2022	0	24.26	0	23.89
Q1 2023	0	24.26	0	23.89
Q2 2023	0	24.26	0	23.89
Q3 2023	0	24.26	0	23.89
Q4 2023	0	24.26	0	23.89
Q1 2024	0	24.26	0	23.89
Q2 2024	0	24.26	0	23.89
Q3 2024	0	24.26	0	23.89
Q4 2024	0	24.26	0	23.89
Q1 2025	0	24.26	0	23.89
Q2 2025	0	24.26	0	23.89

Grant Disbursements ($million)

	Target		Actual	
Quarter	Amount	Cumul.	Quarter	Cumul.
Q3 2018	0	0	0	0
Q4 2018	2.43	2.43	2.07	2.07
Q1 2019	1.365	3.795	3.83	5.9
Q2 2019	1.365	5.16	2.33	8.23
Q3 2019	1.365	6.525	2.62	10.85
Q4 2019	1.365	7.89	3.14	13.99
Q1 2020	1.365	9.255	1.75	15.74
Q2 2020	1.365	10.62	0	15.74
Q3 2020	1.365	11.985	0	15.74
Q4 2020	1.365	13.35	0	15.74
Q1 2021	1.365	14.715	0	15.74
Q2 2021	1.365	16.08	0	15.74
Q3 2021	1.365	17.445	0	15.74
Q4 2021	1.365	18.81	0	15.74
Q1 2022	1.365	20.175	0	15.74
Q2 2022	1.365	21.54	0	15.74
Q3 2022	1.36	22.9	0	15.74
Q4 2022	1.36	24.26	0	15.74
Q1 2023	0	24.26	0	15.74
Q2 2023	0	24.26	0	15.74
Q3 2023	0	24.26	0	15.74
Q4 2023	0	24.26	0	15.74
Q1 2024	0	24.26	0	15.74
Q2 2024	0	24.26	0	15.74
Q3 2024	0	24.26	0	15.74
Q4 2024	0	24.26	0	15.74
Q1 2025	0	24.26	0	15.74
Q2 2025	0	24.26	0	15.74





Appendix 8.4: Reconciliation (by Withdrawal application) of projects records and ADB disbursement records (LFIS/GILFIS) for the fiscal year and cumulative

WA details			Per project records/APFS (Amount recorded in project Financial statements as reimbursement, direct payment, etc..)				Per ADB disbursement records LFIS/GFIS (actual paid			
Withdrawal application No (WA)	Disbursement method (reimbursement, direct payment, etc	Time period covered in the WA	Date	In local currency (as recorded in project records/financial statements)	Exchange rate	USD Equivalent (A)	Value date	in USD (B)	Difference (A-B)	
WA001	Direct Payment	Mobilisation Advance	30/11/2018	146,733,461.00		2,071,321.65	30/11/2018	2,071,321.65	-	Grant
WA002	Direct Payment	Mobilisation Advance	27/11/2018	27,827,135.28	70.74	393,372.00	27/11/2018	393,372.00	-	LOAN
WA003	Direct Payment	Mobilisation Advance	29/11/2018	8,695,540.00	70.37	123,568.85	29/11/2018	123,568.85	-	LOAN
WA004	Direct Payment								-	
WA005	Direct Payment	Invoice No. 2 for Oct & Nov 2018-Egis (BTN)	25/01/2019	981,568.00	71.15	13,795.75	25/01/2019	13,795.75	-	LOAN
WA006	Direct Payment	Invoice No. 2 for Oct & Nov 2018-Egis (US$)	23/01/2019	3,701,936.63	71.32	51,906.01	23/01/2019	51,906.01	-	LOAN
WA007	Direct Payment								-	
WA008	Direct Payment	IPC No. 2 for Nov 2018-Afcons	25/01/2019	107,927,884.53		1,515,128.20	25/01/2019	1,515,128.20	-	Grant
WA009	Direct Payment	IPC No. 3 for Dec 2018-Afcons	15/03/2019	13,128,683.40		188,770.19	15/03/2019	188,770.19	-	Grant
WA010	Direct Payment	Mobilisation Advance	29/03/2019	146,733,461.00		2,125,047.41	29/03/2019	2,125,047.41	-	Grant
WA011	Direct Payment	IPC No. 5 for Jan 2019-Afcons	16/04/2019	80,715,286.11		1,168,169.94	16/04/2019	1,168,169.94	-	Grant
WA012	Direct Payment	Invoice No. for Dec 2018-Feb 2019-Egis (US$)	10/4/2019	3,319,218.81	69.24	47,937.88	10/4/2019	47,937.88	-	LOAN
WA013	Direct Payment	Invoice No. for Dec 2018-Feb 2019-Egis (BTN)	18/04/2019	1,484,357.00	69.19	21,453.35	18/04/2019	21,453.35	-	LOAN

WA014	Direct Payment	IPC No. 6 for Feb 2019 and Material Advance-Afcons	25/04/2019	23,161,592.57		332,153.94	25/04/2019	332,153.94	-	Grant
WA015	Direct Payment	IPC No. 7 for Mar 2019-Afcons	28/05/2019	57,816,032.33		830,242.79	28/05/2019	830,242.79	-	Grant
WA016	Direct Payment	Invoice No. For Mar 2019-Apr 2019-Egis (USD)	27/06/2019	6,315,823.26	69.13	91,361.54	27/06/2019	91,361.54	-	LOAN
WA017	Direct Payment	Invoice No. For Mar 2019-Apr 2019-Egis (BTN)	1/7/2019	1,808,100.00	68.99	26,208.15	1/7/2019	26,208.15	-	LOAN
WA018	Direct Payment	IPC No. 8 for April 2019-Afcons	3/7/2019	78,701,370.66		1,141,322.41	3/7/2019	1,141,322.41	-	Grant
WA019	Direct Payment	Invoice No. For May 2019-Egis (USD)	19/07/2019	372,732.41	69.57	5,357.66	19/07/2019	5,357.66	-	LOAN
WA020	Direct Payment	Invoice No. For May 2019-Egis (BTN)	23/07/2019	953,719.66	68.78	13,866.24	23/07/2019	13,866.24	-	LOAN
WA021	Direct Payment	IPC No. 9 for May 2019-Afcons	8/8/2019	64,137,914.05		901,224.77	8/8/2019	901,224.77	-	Grant
WA022	Direct Payment	IPC No. 10 for June 2019-Afcons	9/9/2019	41,288,811.08		573,547.32	9/9/2019	573,547.32	-	Grant
WA023	Direct Payment	IPC No. 11 for July 2019-Afcons	2/10/2019	95,845,744.54		1,356,579.66	2/10/2019	1,356,579.66	-	Grant
WA024	Direct Payment	Invoice paid to Lam Dorji (Consultant)	8/11/2019	148,545.07	70.76	2,099.28	8/11/2019	2,099.28	-	LOAN
WA025	Direct Payment	Invoice No. For June-July 2019-Egis (BTN)	31/10/2019	2,703,264.66	70.7	38,235.71	31/10/2019	38,235.71	-	LOAN
WA026	Direct Payment	IPC No. 12 for August 2019-Afcons	8/11/2019	102,756,008.84		1,452,494.67	8/11/2019	1,452,494.67	-	Grant
WA027	Direct Payment	IPC No. 13 for September 2019-Afcons	9/12/2019	63,192,525.10		884,052.65	9/12/2019	884,052.65	-	Grant
WA028	Direct Payment	Invoice No. For Aug-Sept 2019-Egis (BTN)	9/12/2019	2,656,943.32	71.51	37,154.85	9/12/2019	37,154.85	-	LOAN
WA029	Direct Payment	IPC No. 14 for October 2019-Afcons	16/12/2019	57,106,381.97		807,100.30	16/12/2019	807,100.30	-	Grant
WA030	Direct Payment	Invoice No. For October 2019-Egis (BTN)	18/12/2019	1,439,080.99	70.51	20,409.60	18/12/2019	20,409.60	-	LOAN
				1,141,653,122.27		**16,233,882.77**		**16,233,882.77**		
WA031	Direct Payment	**IPC 15 for November 2019-Afcons**	11/2/2020	75,731,705.95		1,063,281.68	11/2/2020	1,063,281.68	-	Grant

WA032	Direct Payment	Invoice No. For November-Dec 2019 (USD)	7/2/2020	7,191,531.42	71.27	100,905.45	7/2/2020	100,905.45	-	LOAN
WA033	Direct Payment	Invoice No. For November-Dec 2019 (BTN)	10/2/2020	3,871,996.32	71.05	54,496.78	10/2/2020	54,496.78	-	LOAN
WA034	Direct Payment	**IPC 16 for December 2019-Afcons**	9/3/2020	50,508,806.70		686,699.48	9/3/2020	686,699.48	-	Grant
WA035	Direct Payment	**IPC 17 for January 2020-Afcons**	6/4/2020	88,459,320.74		1,155,047.60	6/4/2020	1,155,047.60	-	Grant
WA036	Direct Payment	Invoice No. For Janaury 2020 (USD)	17/04/2020	3,232,552.81	76.44	42,288.76	17/04/2020	42,288.76	-	LOAN
WA037	Direct Payment	Invoice No. For Janaury 2020 (BTN)	20/04/2020	2,412,629.34	76.16	31,678.43	20/04/2020	31,678.43	-	LOAN
WA038	Direct Payment	Invoice paid to Lam Dorji (Consultant)	15/04/2020	447,590.50	75.67	5,915.03	15/04/2020	5,915.03	-	LOAN
WA039	Direct Payment	**IPC 17 for February 2020-Afcons**	23/04/2020	71,154,069.18		928,704.25	23/04/2020	928,704.25	-	Grant
				303,010,202.97		**4,069,017.46**		**4,069,017.46**		
Total in Fiscal year to date				**303,010,202.97**	**-**	**4,069,017.46**	**-**	**4,069,017.46**		
Total Cumulative to date				**1,444,663,325.24**	**-**	**20,302,900.23**		**20,302,900.23**		

Appendix 8.5: Status of external audit observations – Cumulative from inception to end of reporting period

SN	Audit observation	external audit recommendation	Date of the recommend ation	Planned action to address the recommendation	Responsibility	Current Status of the planned action (pending /resolved)	Remarks
1	Excess Payment with Incorrect Application of Current Cost Index For Price Adjustment Nu.319,219,89	The justification furnished by the management is duly noted by the RRA. However, after further verification and recalculation based on the submission made by the management the RRA Team noted errors resulting into difference in computation of adjustment factors and consequently resulting into excess payment made to the contractor totaling to Nu.319,219,89.	April 2020	Project Management should adjust the excess payment of Nu.319,219.89 from the subsequent IPC of the contractor under intimation to the RAA.	Project Manager(PIU)& Project Director(PMU)	More clarification requested from RAA. Once clarified the amount will be adjusted in the next IPC	
2	Inadmissible Payment of BST from ADB instead from the equity portion (DHI) Nu.344,776.36	The justification furnished by the management that the inadmissible payment of BST amounting to Nu.344,766.36 was made due to oversight by the concerned official with inclusion of vehicles & bikes procurement as provisional sum under the PIC contract is duly noted.	April 2020	CDCL should strengthen control system to ensure that such inadmissible payment does not reoccur in the future and ensure that 98% of the consultancy cost is borne from the ADB Loan-3668/BHU while the remaining 2% of the consultancy and all tax components are covered from the equity contribution of DHI in line with contract Agreement.	Finance Manager(PMU), General Manager(FID)	Finance section adjusted the amount	
3	Excess payment to consultant (Egis International) for Procurement of Bikes for PIU Nu.49,672.08	The justification with the additional supporting documents furnished by the management is duly noted by the RAA.As exhibited by the management a total of US$ 699.39 equivalent to Nu.49.672.077(71.022*US$699.39) was paid in excess of the actual cost of the bikes to the consultant.	April 2020	The project management should adjust the above excess payment of US $699.399 equivalent to NU.49,672.077 from the subsequent IPCs of the consultant under intimation to the RAA. In addition the CDCL should institute strong internal controls to ensure that no payments are made in excess of the actual cost of the items.	Project Manager(PIU)& Project Director(PMU)	Will be adjusted in the next PIC Invoice	

4	No price Adjustment done for Payments made to the Consultant in Contravention to the contract Agreement	The justification furnished by the management is in the process of price adjustment is acknowledged. Once the price adjustments for the Egis international is processed and adjusted the RAA should be intimated accordingly.	April 2020	The Project Management for both the current and future price adjustment should abide by clause 42.3 of the special conditions of the Contract which stipulates that the Remuneration paid in foreign currency on the basis of the rates set forth in Appendix C shall be adjusted every 12 months(and the first time with effect for the remuneration earned in the 13th calendar month after the date of the contract effectiveness date).	Project Manager(PIU)& Project Director(PMU)	Under process of being implemented. PIC has put up the Invoice with revised rates	
5	Over-Payment of Salary Arrears Nu.6915.00	The justification furnished by the management is duly noted by the RAA. However, as agreed, the project management should recover the excess payment of salary arrears amounting to Nu.6915.00 from the concerned official and deposit into the Audit Recoveries Account.	April 2020	The Management should ensure that such excess payment on account of salary arrears are not made in the future.	HR Officer,General Manager(Hr)	HR section adjusted the same	
6	Direct award of work to M/s.Siacorian Construction works and supply Nu. 6,625,718.50	The justification furnished by the management for the direct award of above works totaling to Nu.6,625,718.50 with due approval from concerned authority is duly noted.	April 2020	The Project Management should strictly follow the relevant procurement methods for the given threshold levels as spelt out in the procurement Manual for works (2016) of CDCL (Clause 1.9.1) in line with PAM for PTDP.	Nil	For future reference	Observation
7	Excess payment due to Application of Metal Iron Component instead of Mild Steel-Long Products for Index of steel Reinforcement Nu.8,371,941.55	The justification furnished by the management that the price index of metal iron was appropriately used as contractually agreed and any change in the source of index will invite contractual issues with the contractor is accepted by the RAA.	April 2020	The Project Management should validate the indices submitted by the contractor in the future contract packages.	Nil	For future reference	Observation

8	Recruitment of Employees in Contravention to the CDCL's Service Rules.	The justification furnished by the management that the above stated section 4.17 of service rules(2016) applies to the external vacancies while positions in question were internal vacancies is duly noted.	April 2020	The CDCL should explicitly spell out in their service Manual on the internal recruitment and its requirements/Procedures.	Nil	For future reference	Observation
9	Huge Budget Variances indicating Non-Implementation of Activities as Scheduled.	The justification furnished by the management explaining under utilization of loan budgets, amongst others, was primarily due to the no-implementation of work activities like BMBMS & FMC and given reasons is duly noted.	April 2020	The project management in order to cutail such budget variances, the project should implement & budgeted the work activities as accordingly.	Nil	For future reference	Observation

Appendix 9: Environmental Monitoring Review for 6th Quarter (January – March 2020)

Introduction

This environmental aspect is prepared in compliance with the Contractors Environmental Management Plan (CEMP) for the Phuentsholing Township Development Project (PTDP). The project is financed with support from the Asian Development Bank (ADB) & Druk Holding and Investments (DHI). DHI is the Project Owner and the Executing Agency (EA) and Construction Development Corporation Limited (CDCL), is the Implementing Agency (IA). The Civil work contract of package CW-01 has been awarded to M/s AFCONS Infrastructural Limited, India. For supervising the Contractor's works, the CDCL has appointed M/s EGIS International as Engineer.

Purpose

Based on the Environmental monitoring carried out by PIC and PIU environment team and the Environmental monthly reports submitted by the contractor during the period January – March 2020, a summary of the environmental monitoring review has been prepared. The purpose of this section provides a review of the status of environmental safeguards and monitoring activity that is being adopted and supervised at the project site.

Project Update

Mobilization of manpower, equipment, construction of office and camp area, setup of basic amenities being completed, and the project is the first stage of construction activities for river training works, such as the start of construction diaphragm-wall, first outfalls construction and the start of backfilling construction

Works Progress

Works Progress are detailed in Chapter B3 "Implementation of physical works" of the present report.

Methodology for Environmental Monitoring

The monitoring methods used are visual inspection, informal interview of workers and residents and photographic documentation. Checklists for monitoring environmental compliances have also been developed jointly by PIC/PIU. The Environmental monitoring implementation plan had been developed as part of the CEMP and is shown as follows:

Environment Monitoring Implementation Plan					
Activities	**Locations**	**Numbers**	**Frequency**	**Remarks**	**Parameters**
Contractors Environmental Monthly Report	Zone A	12	12x /year	Contractor	As per the Outline
PIC monthly report	Zone A	12	12x /year	PIC	As per the Outline
Quarterly Report	Zone A	4	4x /year	PIC	As per the Outline
Semi-Annual Report	All PTDP Zones	2	2x /year	PIC	As per the Outline
Air Quality Monitoring	All PTDP Zones	6	2x /week	Based on site roster for each station	TSPM, PM2.5, PM10, SO2, NOX, CO
Noise	All PTDP Zones	6	Monthly	24 hours/ Work hours	Decibels- dB (A)
Noise	Zone A	3	Weekly	Instantaneous (1m, 3m, 5m)	Decibels- dB (A)
Water Quality Monitoring	All PTDP Zones	8	2x / year	April and October	pH, Color, Electrical conductivity, TDS, Turbidity,

Water Quality Monitoring	Zone A	2	Monthly	By 15th of each month	Ammonia Nitrogen, Ca, Mg, Na, K, Salinity, COD, BOD, Cl, Phenol, Sulphates, Nitrate, fluoride, DO, SAR, TSS, cyanide, heavy metals, total coliform and faecal coliform
Ground Water Quality	Zone A	2	2x / year	April and October	
Soil Testing/ Ground Contamination Monitoring	Zone A	1	Monthly	By 15th of each month	Visual observation of contamination from oil, grease and other foreign materials.
Meteorology	Zone A	1	1 hourly	Monthly Weather Report. By 15th of the following month	Wind speed, Wind Direction, Temperature, Relative Humidity, Rainfall
Ecology	All PTDP Zones	All Zones	4x / year	January, April, July, and October	Terrestrial flora and fauna, Zooplankton, Phytoplankton, Benthos & fishes
Biodiversity monitoring and benchmarking study (BMBMS)	All PTDP Zones	All	4x / year - for 3 years	January, April, July, and October. To be completed by External specialist. TOR prepared by PIC Environmental Specialist	Terrestrial flora and fauna, Zooplankton, Phytoplankton, Benthos & fishes

Environmental Monitoring schedule, activities and analysis

The comprehensive schedule of environmental monitoring activities carried out from January – March is enclosed here below:

Parameters	Location	Frequency	January 2020	February 2020	March 2020	Results / Comments
Contractors Environmental Monthly Report	Zone A	12x /year	05/02/2020 for January	09/03/2020 for February	04/04/2019 for March	Submitted by Contractor
PIC monthly report	Zone A	12x /year	20/02/2020 for January	21/03/2020 for February	Submission not required	Submitted by PIC. Submission of Monthly report is not required during QPR submission months.
Quarterly Report	Zone A	4x /year	Ø	Ø	Ø	Submitted by PIC
Semi-Annual Report	Zone A	2x /year	Ø	Ø	Ø	Submitted by PIC
Air quality	6 location	2x /week	01/03/2020-31/01/2020	01/02/2020-29/02/2020	01/03/2020-31/03/2020	Results have been submitted in the contractor's monthly report.
Noise – All PTDP zones	6	Once every month	01/03/2020-31/01/2020	01/02/2020-29/02/2020	01/03/2020-31/03/2020	Results have been submitted in the contractor's monthly report.
Surface Water quality – All PTDP zones	10	2x / year	Ø	Ø	20 – 21 March	SW01 – SW10 results have been submitted in the contractor's monthly report
Surface Water quality – Zone A	2	Monthly	21st January	21st February	20 – 21 March	Results SW04 & SW05 has been

						submitted in the contractor's monthly report
Groundwater quality	Zone A	2x / year	Ø	Ø	23-25 March	The 3rd groundwater quality was carried out in November 2019. 4th sampling to be carried in May 2020 but upon the request from ADB, ground water testing for the parameters like Iron, Arsenic and Manganese was conducted.
Soil Testing/ Ground Contamination	Zone A	Monthly	Ø	Ø	Ø	Visual observation has been submitted in the contractor's monthly report
Meteorology	Zone A	1 hourly	01-31 January 2020	01-29 Fabruary 2020	01-31 March 2020	Meteorology station setup place on 6th March 2019. The result has been submitted as part of the contractor's monthly report
Ecology	All PTDP Zones	4x / year	16th January 2020	18th February 2020	18th March 2020	Terrestrial walkthrough
Biodiversity monitoring and benchmarking study (BMBMS)	All PTDP Zones	4x / year - for 3 years	Ø	Ø	Ø	Awaiting a decision from Client to start work.

Based on the above environmental monitoring carried out, an in-depth analysis has been provided as follows;

Air Quality[1]

The ambient air quality monitoring is being carried out along six locations of the PTDP project premises. To ensure that the project does not cause or contributes towards the already existing pollution in Phuentsholing town, parameters like TSPM, PM 10, PM 2.5, NOX, SO2 and CO are being carried out at each station twice every week. Depending on the results of the monthly tests, mitigation measure is being strictly implemented.

The PTDP project site is situated along the main Phuentsholing-Samtse highway. The average for all six locations were within the permissible limit for the months of January – March, except for location AA06 where the TSPM and PM2.5 was recorded high.

[1]The air quality monitoring station (AA03 and AA06) has been shifted to NHDCL colony and near the Rigsar batching plant to assess impact on the project camp and lay down area at Zone A since Feb 2019.

The main cause of high pollution in location AA06 which is behind the project right next to the Rigsar batching plant is because

- A majority of the construction activities (boulder export) are taking place right along the AA06 station. The AA06 machine is stationed right near the road and near the weight bridge behind the project. There are multiple trucks plying along the unpaved road near the station carrying boulders and construction materials. With the extension granted to Rigsar and Yangkhil to remove their material by June 2020, the number of vehicles functioning at their sites and plying on the unpaved roads has increased. The number of trucks entering the weight bridge to weigh the aggregates being transported has also increased. There is also smoke which is released into the air from the Rigsar batching plant.

- There are also other factors which are all contributors to the high level of pollution in the vicinity. Construction activities such as D-wall construction and emission from the engaged vehicles, unpaved roads, and natural factor such as wind is blowing settled dust from miles of unpaved road into the air, which is another factor towards the rise in pollution.

Average Data From January – March 2020

Station Code		TSPM (µg/m3)	PM10 (µg/m3)	PM2.5 (µg/m3)	NO_X (µg/m3)	SO_2 (µg/m3)	CO (µg/m3)
	NEC Standard	**200**	**100**	**-**	**80**	**80**	**2000**
	IFC Standards	**-**	**150**	**75**	**125**	**200**	**160**
AA01 (Near B-Mobile Tower)	**Maximum**	189.96	76.60	61.57	BDL	BDL	BDL
	Minimum	22.89	13.10	4.27	BDL	BDL	BDL
	Average	87.91	41.52	20.41	BDL	BDL	BDL
AA02 (Near the STP plant)	**Maximum**	83.86	48.25	26.21	BDL	BDL	BDL
	Minimum	21.08	3.87	2.94	BDL	BDL	BDL
	Average	25.69	14.57	10.90	BDL	BDL	BDL
AA03 (NHDCL Colony)	**Maximum**	57.26	23.58	18.72	BDL	BDL	BDL
	Minimum	11.34	4.49	3.72	BDL	BDL	BDL
	Average	27.28	11.64	8.71	BDL	BDL	BDL
AA04 (Chamkuna Village)	**Maximum**	155.70	76.22	43.88	BDL	BDL	BDL
	Minimum	27.62	12.38	6.31	BDL	BDL	BDL
	Average	73.97	36.80	20.42	BDL	BDL	BDL
AA05 (Toorsa Tar Village)	**Maximum**	70.21	39.58	16.85	BDL	BDL	BDL
	Minimum	27.62	12.38	6.31	BDL	BDL	BDL
	Average	73.97	36.80	20.42	BDL	BDL	BDL
AA06	**Maximum**	288.29	98.64	98.74	BDL	BDL	BDL

(Near Rigsar's Batching Plant)	**Minimum**	43.94	22.79	11.16	BDL	BDL	BDL
	Average	122.06	49.82	37.65	BDL	BDL	BDL

Mitigation Measures

Although difficult, the project in its capacity has been continuously monitoring and ensuring strict compliance on this issue, some of which is described as follows:

- Deployment of sprinkler truck and speed bumps initiated by the contractors. However, due to external activities simultaneously occurring within the project vicinity, the project corridors are covered in dust causing continuous exposure of duct to workers.

- Recommendation to provide N95 nasal masks or equivalent mask, and eye protection gear to all workers as a preventive measure.

- Site Inspectors to ensure that all workers use the provided gears while at the site.

- Construction materials at the site or being transported by truck are well covered with tarpaulin.

- Use of Bulkers in place of cement bags for Batching plant, which is currently being supplied by Dungsam Cement Corporation Limited (DCCL)

- Dust suppression measures such as temporary Speed bumps have been built along the project area and cautionary signage (speed limit) have been erected along the project area to reduce the speed of huge trucks and commuters.

- A traffic survey is also conducted every month by the contractors to study the number of times the project vehicles are using the highway in comparison to third-party vehicles. This study is conducted to ensure that project vehicles are not a major contributor to pollution.

- Contracts are also ensuring that all construction materials at the site are covered in tarpaulin.

Noise

Noise quality monitoring is conducted every day over a period of 24 hours by Ecolab in six locations. The test is conducted once during the day and the other at night time. Noise test is conducted to ensure that the sound generated is not only produced from project activities but from natural factors as well as other undertakings occurring in the vicinity. The test is also to ensure that the noise generated from the project area is temporary and will not have any lasting impact after its completion. Once the noise data has been gathered any mitigation measures which need to be taken care are immediately and strictly implemented.

For the months of January 2020 NL02 during the day and night and NL06 during the night recorded noise pollution above the permissible limits. The other stations were all within the permissible limits.

For the month of February 2020 NL02, NL03, NL05 and NL06 during the day and NL02, and NL06 during the night recorded noise level above the NEC permissible limits. The other stations were all within the permissible limits for the month.

For the month of March 2020 NL02, NL03, NL04, NL05 & NL06 during the day and NL02 during the night recorded noise level above the NEC permissible limits. The other stations were all within the NEC permissible limits.

Apart from the PTDP project activities, there are other multiple external factors that are contributing towards the high level of noise pollution at the locations (NL02, NL03, NL04, NL05 & NL06):

- Firstly locations NL02 is away from the main PTDP project site. NL02 located behind the truck parking area in town. So high level of noise indicated are not due to the PTDP project but rather caused by other external factors and activities ongoing along the location. There is The Phuentsholing Chamkhuna road has started their work, and transporting of construction materials to and from the PCR site could be one of the reasons for the increase in noise level in the two locations. PCR has also started backfilling work, so noise from the machines could be another factor contributing to a high level of noise.

- The Phuentsholing Chamkhuna Road has started their work which is along the AA04 station. Over the past few months there has been a drastic increase in heavy vehicles plying along the unpaved road with construction materials, which are all contributing towards the increase of pollution in the area.

- The location of AA06, which is behind the project office site, has majority of the construction activities taking place. Rigsar and Yangkhil's boulder exporting company sites are also located near the AA06 location. Both the mentioned boulder exporting companies have been asked to complete their dredging work by the end of June 2020, the number of vehicles functioning at their sites and plying on the unpaved roads has increased. The number of trucks entering the weigh bridge to weigh the aggregates being transported has also increased. The noise from all the movement is one of the main cause for the increase in noise pollution and are the contributors towards an increase in air pollution in AA06 station.

- The noise generated during the testing are not permanent, and will not have any future impact.

Noise data from January – March 2020

Location		NL01	NL02	NL03	NL04	NL05	NL06
NEC	DAY	65					
	NIGHT	55					
IFC	DAY	55					
	NIGHT	45					
JANUARY	DAY	50.1	69.5	61.5	54.2	60.1	71.2
	NIGHT	41.8	65.3	51.9	38.7	55.1	65.2
FEBRUARY	DAY	56.1	79.1	66.7	61.1	69.5	75.1
	NIGHT	41.8	65.3	51.9	38.7	55.1	65.2
MARCH	DAY	55.5	77.9	68.1	65.3	72.4	78.8
	NIGHT	32.6	56.4	47.6	39.9	47.1	42.9
AVERAGE	DAY	**53.9**	**75.50**	**65.43**	**60.20**	**67.33**	**75.03**
	NIGHT	**39.73**	**61**	**50.60**	**39.97**	**48.33**	**54.73**

Mitigation Measures

There are many external factors contributing to the rise in noise pollution which cannot be controlled, but sounds generated from the PTDP project activities are monitored and controlled. Contractors are advised to complete all work which requires the use of heavy machinery, which could generate loud noise during

normal working hours. Contractors are also informed to ensure that all workers living in the camps do not create too much noise which could disturb the neighboring households. All project drivers are also prohibited from unnecessarily honking in the vicinity.

All workers at the site have been informed and encouraged to wear suitable gears and wear their earplugs at all times or while functioning machines which generate loud noise.

Surface Water Quality

The surface water test is conducted to ensure that the project does not pollute and impact the Amochhu River. Ten locations (SW01-SW10) have been identified to conduct the water quality test. Out of the ten locations, a monthly test is conducted for SW04 & SW05 which are points right above and below the project camp area. This is to monitor and ensure that any camp or project activities are not contributing towards any form of pollution along that stretch of the river. Whereas a pre and post-monsoon water quality test encompassing SW01-SW10 are conducted every six months.

The surface water test was conducted for SW04 & SW05 for the months from January – March 2020, and are within the permissible limits.

The surface water test for SW01 – SW10 was conducted from the 20th – 21st March 2020. Parameters for all ten locations SW01-SW10 are within the NEC permissible limits.

The level of DO (Dissolved Oxygen) is high in all locations, which is considered to be good especially for the aquatic life. DO in freshwater systems like the Omchhu and Amochhu River will vary depending on the season, location and water depth. Due to Phuentsholing town's geographical location at a lower altitude, the rivers are able to hold more dissolved oxygen in comparison to a higher altitude. In addition, cooler water can hold more dissolved oxygen than warm water.

High TSS was indicated for locations SW02, SW05, SW06. One of the main causes for high TSS for the last three months could be due to all the ongoing dredging and river diversion work, which is increasing the the river turbidity, causing increased siltation and sedimentation in the river. Other factors such as disposal of materials from construction sites along the Ammochhu and Omchhu, and industrial waste (from Karma steel) and settlements along the Omchhu are all factors contributing towards high TSS.

Surface Water Quality Data For SW04 & SW05 from January – March 2020

Sl. no.	Parameter	Unit	Ambient Water Quality Standards as per NEC			IFC standards	JANUARY		FEBRUARY		MARCH	
			A (Very Good)	B (Good)	C (Moderate)		SW04	SW05	SW04	SW05	SW04	SW05
1	pH		6.5-8.5	9-Jun	9-Jun	9-Jun	8.36	8.12	7.15	7.14	7.64	7.48
2	Conductivity	µs/cm	800	1000	2000	-	234	226	10.4	10.3	217.6	231.4
3	Total Dissolved Solid	mg/L	-	-	-	-	117	119	109	113	107.4	213.5
4	Temperature		-	-	-	-	13.79	14.29	16.5	16.7	17.88	18.15
5	Biochemical Oxygen Demand (BOD) at 27˚ C	mg/L	2	5	50	30	5.82	4.85	5.91	5.94	3.71	4.82
6	Chemical Oxygen Demand (COD)	mg/l	-	-	-	125	10.052	7.91	11.79	11.71	7.95	5.039
7	TSS	mg/l	25	100	-	50	72.3	63.8	59.8	42.7	76.83	128
9	Dissolved oxygen	mg/l	6	4	-	-	9.17	12.14	6.87	5.61	11.08	9.75
10	Salinity	mg/l	-	-	-	-	0.11	.11	0.23	0.15	.13	0.21
11	Phenol	mg/l	0.001	0.002	-	-	BDL	BDL	BDL	BDL	BDL	BDL
12	Sulphate	mg/l	25	100	-	-	0.651	0.681	BDL	BDL	1.548	2.708
13	Nitrate	mg/l	10	50	-	-	1.973	2.86	1.482	2.095	7.205	6.014
14	Fluoride	mg/l	1	2	-	-	BDL	BDL	BDL	BDL	BDL	BDL
15	SAR	Miliequa./L	-	-	26	-	0.37	0.39	0.34	0.28	1.37	1.402
16	Ammonical Nitrogen	mg/l	-	-	-	-	1.093	1.314	1.27	1.093	0.018	0.018
17	Magnesium	mg/l	-	-	-	-	BDL	BDL	BDL	BDL	1.726	2.061
18	Sodium	mg/l	-	-	-	-	4.87	4.81	3.891	4.17	5.037	8.052
19	Potassium	mg/l	-	-	-	-	1.051	1.062	1.207	1.081	0.931	1.095
20	Chloride	mg/l				-	2.17	2.921	2.61	2.79	2.083	7.04
21	Cyanide	mg/l	0.05	0.05	-	-	BDL	BDL	BDL	BDL	BDL	BDL

22	**Lead**	**mg/l**	0.002	0.02	-	-	BDL	BDL	BDL	BDL	BDL	BDL
23	**Total Coliform**	**MPN/100ml**	50	5000	10000	400	17	15	13	8	13	13
24	**Fecal coliform**	**MPN/100ml**	20	2000	5000	-	15	11	19	7	5	6
25	**Odour**	**-**	unobjectionable	unobjectionable	-	-	unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable
26	**Mineral Oil**	**-**	No Film	No Film	-	-	No Film	No Film	No Film	No Film	No Film	No Film

Table 6: Surface Water Data for SW01-SW10 For March 2020

SL. No.	Parameter	Unit	Ambient Water Quality Standards as per NEC			IFC standards	Surface Water Quality monitoring stations									
			A (Very Good)	B (Good)	C (Moderate)		SW01	SW02	SW03	SW04	SW05	SW06	SW07	SW08	SW09	SW10
1	**pH**		6.5-8.5	6-9	6-9	6-9	7.64	7.97	7.85	7.64	7.48	8.37	8.37	7.96	8.32	8.87
2	**Conductivity**	**µs/cm**	800	1000	2000	-	601	206	221	217.6	231.4	236.7	204	1053	224	589.6
3	**Total Dissolved Solid**	**mg/L**	-	-	-	-	298	104	111	107.4	213.5	113.6	103	524.6	113	299
4	**Temperature**		-	-	-	-	20.5	17.92	18.78	17.88	18.15	18.22	16.92	20.93	18.20	21.66
5	**Biochemical Oxygen Demand (BOD) at 27˚ C**	**mg/L**	2	5	50	30	5.072	3.89	3.281	3.71	4.82	13.08	3.061	3.021	6.093	9.08
6	**Chemical Oxygen Demand (COD)**	**mg/l**	-	-	-	125	7.021	7.541	5.093	7.95	5.039	23.07	5.807	4.809	13.78	18.76
7	**TSS**	**mg/l**	25	100	-	50	26.12	125.80	98.65	76.83	128	107.04	87.50	46.70	67.92	98.35
8	**Color**	**Hz**	5	50	-	-	0.05	0.23	0.34	0.41	0.53	0.52	0.30	0.03	0.43	0.41
9	**Dissolved oxygen**	**mg/l**	6	4	-	-	9.83	11.83	9.85	11.08	9.75	8.97	12.08	10.89	8.97	8.32

SL. No.	Parameter	Unit	Ambient Water Quality Standards as per NEC			IFC standards	Surface Water Quality monitoring stations									
			A (Very Good)	B (Good)	C (Moderate)		SW01	SW02	SW03	SW04	SW05	SW06	SW07	SW08	SW09	SW10
10	**Salinity**	**mg/l**	-	-	-	-	0.046	0.10	0.12	0.13	0.21	0.11	0.10	0.52	0.13	0.29
11	**Phenol**	**mg/l**	0.001	0.002	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12	**Sulphate**	**mg/l**	25	100	-	-	0.871	1.872	1.942	1.548	2.708	3.072	0.896	0.056	2.809	2.031
13	**Nitrate**	**mg/l**	10	50	-	-	4.719	7.310	7.025	7.205	6.014	6.083	7.106	4.033	4.066	3.063
14	**Fluoride**	**mg/l**	1.0	2.0	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	**SAR**	**Milieq ua./L**	-	-	26	-	1.83	1.052	2.004	1.37	1.402	2.230	2.032	1.092	2.105	0.964
16	**Ammonical Nitrogen**	**mg/l**	-	-	-	-	0.527	0.471	0.371	0.018	0.018	0.047	0.078	BDL	0.307	0.32
17	**Magnesium**	**mg/l**	-	-	-	-	0.920	2.613	1.864	1.726	2.061	2.373	2.495	3.081	2.017	2.803
18	**Sodium**	**mg/l**	-	-	-	-	2.685	5.081	2.803	5.037	8.052	5.077	1.893	3.27	5.22	3.504
19	**Potassium**	**mg/l**	-	-	-	-	1.973	1.640	1.53	0.931	1.095	2.210	0.839	0.063	1.974	0.097
20	**Chloride**	**mg/l**				-	0.872	3.016	3.081	2.083	7.04	5.026	2.045	10.40	6.081	9.509
21	**Cyanide**	**mg/l**	0.05	0.05	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	**Lead**	**mg/l**	0.002	0.02	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	**Total Coliform**	**MPN/100ml**	50	5000	10000	400	5	7	7	13	13	14	5	BDL	9	13

SL. No.	Parameter	Unit	Ambient Water Quality Standards as per NEC			IFC standards	Surface Water Quality monitoring stations									
			A (Very Good)	B (Good)	C (Moderate)		SW01	SW02	SW03	SW04	SW05	SW06	SW07	SW08	SW09	SW10
24	**Fecal coliform**	**MPN/100ml**	20	2000	5000	-	3	4	3	5	6	7	2	BDL	4	8
25	**Odour**		Unobjectionable	unobjectionable	-	-	Unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable	Unobjectionable	unobjectionable	unobjectionable	unobjectionable
26	**Mineral Oil**		No Film	No Film	-	-	No Film	No Film	No Film	No Film	No Film	No Film	No Film	No Film	No Film	No Film

Mitigation Measures

Since the cause of high TSS and DO are due to external and natural factors, the PTDP can only ensure that our project and camp activities are not contributing towards the pollution. This can be achieved by ensuring that camp or project sites are:

- Properly collecting and disposing of all waste
- No dumping of construction materials along the riverbed or in the river
- Ensure that all construction materials are well covered
- Ensure that all restrooms in the project and campsites are well maintained so that workers are discouraged from defecating around the project vicinity or near the river
- Making sure to service the septic system at the project site and camps
- Landscaping the project office and camps with native plants

Ground Water Quality Monitoring

Groundwater testing is done every six months at two tube wells which are used for drinking and domestic use in the stockyard and the campsite to prevent any form of contamination due to oil and grease spillage. Upon the request from ADB, ground water testing for following three parameters was conducted at two points GW01 and GW02 in the month of March 2020.

Ground water quality data for GW01 & GW02 for March 2020

Ground Water Test Result					Sampling Stations	
Parameters	**Units**	**Max.PL (WHO)**	**Max.PL (NECS)**	**Readings**	**GW01**	**GW02**
Iron (Fe)	Mg/L	1	< 0.3	Maximum	0.029	0.0481
				Minimum	0.024	0.0302
				Average	0.0266	0.0388
Manganese (Mn)	Mg/L	0.5	0.4	Maximum	BDL	BDL
				Minimum	BDL	BDL
				Average	BDL	BDL
Arsenic (As)	Mg/L	0.01	0.01	Maximum	BDL	BDL
				Minimum	BDL	BDL
				Average	BDL	BDL
**WHO: World Health Organization* **Max. PL: Maximum Permissible Limits*			**NECS: National Environment Commission Secretariat* **BDL: Below Detectable Limit*			

Meteorology

The metrological station was installed in March 2019. The average meteorological reading for the month of January – March are as follows:

Meteorological data for January 2020

Parameters	Rainfall (mm)	Relative Humidity (g/m^3)	Temperature (Degree Celsius)	Wind Speed (km/h)
Average readings	1.62	60.74	19.18	3.06
Minimum	0	27	11	0
Maximum	43	97.5	31	22.2

Meteorological data for February 2020

Parameters	Rainfall (mm)	Relative Humidity (g/m^3)	Temperature (Degree Celsius)	Wind Speed (km/h)
Average readings	1.89	57.09	20.85	4.19
Minimum	0	24.1	13.6	0
Maximum	28	90.5	32.4	29.3

Meteorological data for March 2020

Parameters	Rainfall (mm)	Relative Humidity (g/m^3)	Temperature (Degree Celsius)	Wind Speed (km/h)
Average readings	2.77	58.34	23.34	3.89
Minimum	0	21.5	17	0
Maximum	50.5	91	32.2	24.6

Water regime

The first Water Regime monitoring was conducted on 1st April 2019. Since then, pictures of the river has been taken by the contractors twice every week. This monitoring is being conducted, so that the project can record the change in waterways and water level, and examine and analyse the information to ensure that the project will not be impacted.

Below are images of the changes seen during the last three months from January – March 2020. With hardly any rainfall, the water is diverting back to its original course, becoming narrower and moving away from the river banks.

Water Level Monitoring

The first water level monitoring was conducted on 4th May 2019. Since then, the monitoring is carried out twice every week (Mondays and Saturdays) between part 5 & 6, where construction activities are currently ongoing. This monitoring is conducted to monitor the increase and decrease in the Amochhu water level. This monitoring is also another way to foresee any warning signs of flooding in the project area.

For the month of January an average water level change of 0.142m was noted since the initial measurement which was conducted on the 4th and the last test on the 27th of January 2020.

For the month of February an average water level change of – 0.113 m was noted since the initial measurement which was conducted on the 1st and the last test on the 29th of February 2020.

For the month of March water level change of – 0.774 m was noted since the initial measurement which was conducted on the 2nd and the last test on the 30th March 2020.

Due to no rainfall, the river is also changing its course to its original state, the river level less and becoming narrower.

Ground contamination

To prevent ground contamination while using oil and grease, a tray container is used to prevent ground contamination in addition to the already cemented floor in the workshop. Although the contractors are taking measures to ensure no ground contamination occurs by using tray containers to store unsealed barrels of oil and grease, there were several spots around the project sites where there was leakage of oil and grease in the ground. This could be from vehicles, spillage during movement of barrels or from overflowing of the tray containers.

Several strategies for remediation are:

- The encapsulation process to ensure that contaminants do not spread any further.
- Thermal soil process is by baking the contaminated soil so contaminants evaporate and then disposing of the soil.
- Excavate soil and take it to a disposal site away from ready pathways for human or sensitive ecosystem contact.
- Containment of the soil contaminants such as capping or paving over in place

Solid Waste Management

Colour-coded bins have been installed in the project and campsites. Blue for degradable and Green for biodegradable waste. The Phuentsholing Thromde Municipality makes a bi-weekly or monthly trip to collect waste from the project site. A monthly record is maintained by the contractors to understand the amount of waste generated.

Month	Degradable	Bio-Degradable
January	1.45 metric ton	1 metric ton
February	1.86 metric ton	1.4 metric ton
March	1.45 metric ton	1 metric ton

Ecological Study

The ecological study comprises of two components: Aquatic and Terrestrial survey. The study was proposed to be carried out every quarterly as per the CEMP. However, after the ADB mission visit on May 2019, the study was agreed to be carried out bi-annually with each study covering all 4 seasons. The study is being outsourced by AFONs to Ms. Ecolab Services.

The study is being conducted to comprehend the diversity of species (both aquatic and terrestrial) in the PTDP project area. For the month of January – March no Ecology survey was submitted.

On 16th January 2020, the fifth Terrestrial walkthrough was conducted by Ecolab with representative from PIU, PIC and AFCONs.

On 18th February 2020, the sixth Terrestrial walkthrough was conducted by Ecolab with attendance from PIU, PIC and AFCONs. The Terrestrial survey report was submitted on March 2020.

On 18th March 2020, the seventh Terrestrial walkthrough was conducted by Ecolab with attendance from PIU, PIC and AFCONs. The Terrestrial survey report was submitted on March 2020.

The Aquatic survey for the pre-monsoon season was conducted from the 26th – 27th March, 2020. The report will be submitted in April 2020.

PTDP will constantly monitor the aquatic and terrestrial ecology of the areas in and around the project site.

Appendix 10: Health and safety monitoring for 6th Quarter (January–March 2020)

Sl. No.	Monitoring activities	Refer Legend for appropriate marking	
A. OVERALL CONSTRUCTION SITES			
1	Equipment/ Machines in Proper condition and safe	0	Yes
2	First Aid and Medical facilities	0	Yes
3	Any Community / Social Concerns	0	No
4	No encroachment into the farm land/ Settlement	0	No
B. WORK STANDARDS			
1	General work area clean and tidy	0	Yes
2	Radio communications (emergency & general), call-up procedures adequate	0	Yes
3	Signage (PPE, safety & restricted access) visible, legible, good condition	0	Yes
4	Adequate signage at workshop yard entrance (e.g. Danger – Deep Excavation, Hazardous & Flammable materials, pressurized gasses, etc.)	0	Yes
C. WORK ENVIRONMENT			
1	Stockpiles & materials stacked and maintained in a safe condition	0	Yes
2	Adequate lighting on-site, covered storage areas, vehicle maintenance pit	0	Yes
3	Segregated work areas and signage adequate (direction, warnings)	0	Yes
4	Dust control measures adequate (water truck & sprinklers, if necessary)	0	Checklist of sprinkler truck deployment is maintained by the driver and submitted with EMR every month
D. HAZARDOUS SUBSTANCES OR DANGEROUS GOODS			
1	Fuel storage tank within sealed area & bonded (inside wall in case of a spill)	0	Sealed tanks are well stored, and unsealed tanks have trays or tarpaulin below
2	Workers exposed to hazardous substances trained, adequate instruction provided	0	Yes
3	Health/ Safety surveillance is undertaken where appropriate	0	Yes
4	Material safety data sheet available for hazardous substances		Yes
E. TOILETS AND KITCHEN			
1	Offices, Toilets, and washrooms maintained in a sanitary condition	0	
2	Toilets, Septic Tanks and Soak Pits being used properly and cleaned regularly	0	Yes. Tanks and soak pits at the workers camp and project office is being cleaned every month. Tanks at the project sites are being cleaned every week.
3	Properly labelled garbage bins installed around the kitchen & other areas and emptied regularly	0	Yes
4	Is the garbage in good management and disposed to the Thromde collection system?	0	Phuentsholing Thromde is called when garbage needs to be removed from the project site
5	Soak pits are proper, covered, with no overflow?	0	No overflow

Sl. No.	Monitoring activities	Refer Legend for appropriate marking	
6	Kitchen sewage/waste disposed of in infiltration pits, with ACF, closed system?	0	2 trips of sewage sludge are made by Phuentsholing Thromde in April 2020
7	Adequate water supply for washbasin & flush toilets?	0	Yes. Water tankers at project sites are refilled every morning and as and when needed.
F. DUST & SMOKE			
1	No visible dust clouds from excavation/levelling activity.	0	No
2	No burning of wastes	0	Not at the project site, but there was burning of tires near NHDCL colony from a workshop
3	Waste bins facilities are available at the site	0	Blue- Degradable and Green- Non-degradable
G. GENERAL HEALTH AND SAFETY DURING CONSTRUCTION			
1	All workers trained in safety and hygiene at work? (Records)	0	Yes
2	Site supervisors/ safety officer gives weekly toolbox talks to reinforce training to all the labourers?	0	Total of 53 toolbox talks conducted from January – March 2020
3	Equipment (backhoe etc.), machines, and vehicles are in proper condition with details of registration- emission certificate/ fitness certificates.	0	Yes
4	Workers equipped with PPE such as hard hats, eye and protection, ear protection, gloves, safety- shoes, and respirators	0	Contractors are handing out violation slips to workers who refuse to comply
5	High visibility clothing, including a vest to avoid “collision” in work area	0	Yes
6	Warning signs in place to shield workers from passing vehicle and segregation such as traffic cone and barrels	0	Yes
7	Fencing/ Markers installed on all areas such as excavation, concreting, and side of temporary work/pits greater than 1m deep	0	Yes
8	Information for workers and adequate awareness working near construction vehicles & equipment the operator/ driver knows where the persons are located?	0	Yes
9	Communicate with the driver using a radio, hand signals, etc.	0	Yes
10	Reversing siren, whistle, air-horn on vehicles or another device to warn fellow workers when they are in danger.	0	The alarm has been installed and a mock drill was conducted at the site on 27th June.
11	Flagmen in place with flags and radio fully equipped and completed training?	0	Yes
12	Proper Traffic Management Plan is available and adhered to	0	Yes. Traffic survey is being conducted.
13	Training and awareness meetings for HIV/AIDs (STI) including the prohibition of drugs/alcohol on construction site.	0	Sixth health briefing was conducted on 31st March 2020 by Gyeltshen Jigme from Phuentsholing General Hospital
14	First aid boxes are available and well stocked with bandages, antiseptic, etc. First Aid Register is available	0	Yes

Sl. No.	Monitoring activities	Refer Legend for appropriate marking	
15	Employee register with gender, nationality, skills maintained at the site	0	Yes
16	Visitor Card, Register, Briefing, and Management System adopted	0	Yes
H. ACCOMMODATION REQUIREMENTS			
1	Domestic animals controlled to avoid nuisance?	0	Yes. All construction materials are barricaded and well covered
2	Information board to employees/method notification in the campsite?	0	Yes
Sl. No.	**Monitoring activities**	**Refer Legend for appropriate marking**	
A. OVERALL CONSTRUCTION SITES			
1	Equipment/ Machines in Proper condition and safe	0	Yes
2	First Aid and Medical facilities	0	Yes
3	Any Community / Social Concerns	0	No
4	No encroachment into the farm land/ Settlement	0	No
B. WORK STANDARDS			
1	General work area clean and tidy	0	Yes
2	Radio communications (emergency & general), call-up procedures adequate	0	Yes
3	Signage (PPE, safety & restricted access) visible, legible, good condition	0	Yes
4	Adequate signage at workshop yard entrance (e.g. Danger – Deep Excavation, Hazardous & Flammable materials, pressurized gasses, etc)	0	Yes
C. WORK ENVIRONMENT			
1	Stockpiles & materials stacked and maintained in a safe condition	0	Yes
2	Adequate lighting on-site, covered storage areas, vehicle maintenance pit	0	Yes
3	Segregated work areas and signage adequate (direction, warnings)	0	Yes
4	Dust control measures adequate (water truck & sprinklers, if necessary)	0	Checklist of sprinkler truck deployment is maintained by the driver and submitted in the monthly EMR
D. HAZARDOUS SUBSTANCES OR DANGEROUS GOODS			
1	Fuel storage tank within sealed area & bonded (inside wall in case of a spill)	0	Sealed tanks are well stored, and unsealed tanks have trays or tarpaulin below
2	Workers exposed to hazardous substances trained, adequate instruction provided	0	Yes
3	Health/ Safety surveillance is undertaken where appropriate	0	Yes
4	Material safety data sheet available for hazardous substances		Yes
E. TOILETS AND KITCHEN			
1	Offices, Toilets, and washrooms maintained in a sanitary condition	0	Women's restrooms are installed with a waste bin for disposal of sanitary pads.
2	Toilets, Septic Tanks and Soak Pits being used properly and cleaned regularly	0	Yes. Tanks and soak pits at the workers camp and project office is being cleaned every month. Tanks at the project sites are being cleaned every week.
3	Properly labelled garbage bins installed around the kitchen & other areas and emptied regularly	0	Yes
4	Is the garbage in good management and disposed to the Thromde collection	0	Approx 3.7 Metric tons

Sl. No.	Monitoring activities	Refer Legend for appropriate marking	
	system?		of dry waste was generated from January – March 2020
5	Soak pits are proper, covered, with no overflow?	0	No overflow
6	Kitchen sewage/waste disposed of in infiltration pits, with ACF, closed system?	0	Approx 4.99 Metric tons of degradable waste was generated from January – March 2020
7	Adequate water supply for washbasin & flush toilets?	0	Yes. Water tankers at project sites are refilled every morning and as and when needed.
F. DUST & SMOKE			
1	No visible dust clouds from excavation/levelling activity.	0	No
2	No burning of wastes	0	Not at the project site, but there was burning of tires near NHDCL colony from a workshop
3	Waste bins facilities are available at the site	0	Blue- Degradable and Green- Non-degradable
G. GENERAL HEALTH AND SAFETY DURING CONSTRUCTION			
1	All workers trained in safety and hygiene at work? (Records)	0	Yes
2	Site supervisors/ safety officer gives weekly toolbox talks to reinforce training to all the labourers?	0	Total of 53 toolbox talks conducted from January – March 2020
3	Equipment (backhoe etc.), machines, and vehicles are in proper condition with details of registration- emission certificate/ fitness certificates.	0	Yes
4	Workers equipped with PPE such as hard hats, eye and protection, ear protection, gloves, safety- shoes, and respirators	0	Contractors are handing out violation slips to workers who refuse to comply
5	High visibility clothing, including a vest to avoid “collision” in work area	0	Yes
6	Warning signs in place to shield workers from passing vehicle and segregation such as traffic cone and barrels	0	Yes
7	Fencing/ Markers installed on all areas such as excavation, concreting, and side of temporary work/pits greater than 1m deep	0	Yes
8	Information for workers and adequate awareness working near construction vehicles & equipment the operator/ driver knows where the persons are located?	0	Yes
9	Communicate with the driver using a radio, hand signals, etc.	0	Yes
10	Reversing siren, whistle, air-horn on vehicles or another device to warn fellow workers when they are in danger.	0	The alarm has been installed and a mock drill was conducted at the site on 27th June.
11	Flagmen in place with flags and radio fully equipped and completed training?	0	Yes
12	Proper Traffic Management Plan is available and adhered to	0	Yes. Traffic survey is being conducted.
13	Training and awareness meetings for HIV/AIDs (STI) including the prohibition of drugs/alcohol on construction site.	0	Sixth health briefing was conducted on 31st March 2020 by Gyeltshen Jigme from Phuentsholing General Hospital
14	First aid boxes are available and well stocked with bandages, antiseptic, etc. First Aid Register is available	0	Yes
15	Employee register with gender, nationality, skills maintained at the site	0	Yes
16	Visitor Card, Register, Briefing, and Management System adopted	0	Yes
H. ACCOMMODATION REQUIREMENTS			

Sl. No.	Monitoring activities	Refer Legend for appropriate marking	
1	Domestic animals controlled to avoid nuisance?	0	Yes. All construction materials are barricaded and well covered
2	Information board to employees/method notification in the campsite?	0	Yes

Legend: 0– No significant concern; √ Environmental or Safety concern, action to be taken. Non-Conformance or Photo was taken: yes ☑ no☒

Appendix 11: Compliance with Loan and Grant Covenants

Reference Section	Covenant	Status of Compliance
Project agreement CDCL		
Section 2.04	CDCL shall carry out the Project in accordance with plans, design standards, specifications, work schedules and construction methods acceptable to ADB. CDCL shall furnish, or cause to be furnished, to ADB, promptly after their preparation, such plans, design standards, specifications and work schedules, and any material modifications subsequently made therein, in such detail as ADB shall reasonably request.	Being complied with
Section 2.08.	(a) CDCL shall (i) provide its annual financial statements prepared in accordance with financing reporting standards acceptable to ADB; (ii) have its financial statements audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with auditing standards acceptable to ADB; (iii) as part of each such audit, have the auditors prepare the auditors' opinion(s) on the financial statements; and (iv) furnish to ADB, no later than 1 month after approval by the relevant authority, copies of such audited financial statements and auditors' opinion(s), all in the English language, and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request.	Audited report form 2018 submitted to ADB on December, 2019. Audit report for 2019 will be submitted by June 2020.
Section 2.14.	CDCL shall promptly notify ADB of any proposal to amend, suspend or repeal any provision of its constitutional documents, which, if implemented, could adversely affect the carrying out of the Project or the operation of the Project facilities. CDCL shall afford ADB an adequate opportunity to comment on such a proposal prior to taking any affirmative action thereon.	Being complied with
Section 2.15.	Within 6 months after the Effectiveness Date, CDCL shall create a Project website to disclose information about various matters on the Project, including procurement. With regard to procurement, the website shall include information on the list of participating bidders, name of the winning bidder, basic details on bidding procedures adopted, amount of contract awarded, the list of goods/services procured, and the process for handling complaints related to contracts and procurement.	Being complied with
Project agreement DHI		
Section 2.04.	(a) DHI shall furnish to ADB all such reports and information as ADB shall reasonably request concerning (i) the Financings and the expenditure of the proceeds thereof; (ii) the items of expenditure financed out of such proceeds; (iii) the Project; (iv) the administration, operations and financial condition of DHI; and (v) any other matters relating to the purposes of the Financings. (b) Without limiting the generality of the foregoing, DHI shall furnish to ADB periodic reports on the execution of the Project and on the operation and management of the Project facilities. Such reports shall include updates on implementation of the SAP. Such reports shall be submitted in such form and in such detail and within such a period as ADB shall reasonably request, and shall indicate, among other things, progress made and problems encountered during the period under review, steps taken or proposed to be taken to remedy these problems, and proposed program of activities and expected progress during the following period.	Being complied with
Section 2.05	(a) DHI shall (i) maintain separate accounts and records for the Project; (ii) prepare annual financial statements for the Project in accordance with financial reporting standards acceptable to ADB; (iii) have such financial statements audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with auditing standards acceptable to ADB; (iv) as part of each such audit, have the auditors prepare a	Being complied with

	report, which includes the auditors' opinion(s) on the financial statements and the use of the Financings proceeds, and a management letter (which sets out the deficiencies in the internal control of the Project that were identified in the course of the audit, if any); and (v) furnish to ADB, no later than 6 months after the close of the fiscal year to which they relate, copies of such audited financial statements, audit report and management letter, all in the English language, and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request. (b) ADB shall disclose the annual audited financial statements for the Project and the opinion of the auditors on the financial statements within 14 days of the date of ADB's confirmation of their acceptability by posting them on ADB's website. (c) In addition to annual audited financial statements referred to in section (a) hereinabove, DHI shall (i) provide its annual financial statements prepared in accordance with financing reporting standards acceptable to ADB; (ii) have its financial statements audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with auditing standards acceptable to ADB; (iii) as part of each such audit, have the auditors prepare the auditors' opinion(s) on the financial statements; and (iv) furnish to ADB, no later than 1 month after approval by the relevant authority, copies of such audited financial statements and auditors' opinion(s), all in the English language, and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request. (d) DHI shall enable ADB, upon ADB's request, to discuss the financial statements for the Project and DHI and its financial affairs where they relate to the Project with the auditors appointed by DHI pursuant to subsections (a)(iii) and (c)(i) hereinabove, and shall authorize and require any representative of such auditors to participate in any such discussions requested by ADB. This is provided that such discussions shall be conducted only in the presence of an authorized officer of DHI unless DHI shall otherwise agree.	
Loan Agreement		
Section 3.01(b)	Loan to be applied exclusively to the financing of expenditures on the Project in accordance with the provisions of this Loan Agreement and the Project Agreement.	Being complied with
Section 3.03	The Borrower shall procure, or cause to be procured, the items of expenditure to be financed out of the proceeds of the Loan in accordance with the provisions of Schedule 4 to this Loan Agreement.	Being complied with
Section 4.03	The Borrower shall take all actions which shall be necessary on its part to enable DHI and CDCL to perform their respective obligations under the Project Agreements, and shall not take or permit any action which would interfere with the performance of such obligations.	Being complied with
Schedule 4, para. 2	Works shall be procured and Consulting Services shall be selected and engaged only on the basis of the procurement methods and the selection methods set forth below. These methods are subject to, among other things, the detailed arrangements and threshold values set forth in the Procurement Plan. The Borrower may only modify the procurement methods and the selection methods or threshold values with the prior agreement of ADB, and modifications must be set out in updates to the Procurement Plan.	Being complied with
Schedule 4, para. 5	DHI shall not award any Works contract which involves environmental impacts until: (a) The Borrower's National Environment Commission has granted the final approval of the EIA; and (b) DHI has incorporated the relevant provisions from the EMP into the Works contract.	Being complied with a) Being complied with, NEC approved the EIA b) C-EMP for CW-01 approved end January 2019.

Schedule 4, para. 10	Contracts procured under international competitive bidding procedures and contracts for Consulting Services shall be subject to prior review by ADB unless otherwise agreed between the Borrower and ADB and set forth in the Procurement Plan.	Being complied with
Schedule 5, para. 1	The Borrower, DHI and CDCL shall ensure that the Project is implemented in accordance with the detailed arrangements set forth in the PAM. Any subsequent change to the PAM shall become effective only after approval of such change by the Borrower and ADB. In the event of any discrepancy between the PAM and this Loan Agreement, the provisions of this Loan Agreement shall prevail.	Being complied with
Schedule 5, para. 2	The Borrower shall ensure that DHI and CDCL employ sufficient staff for the PMU and PIU for the duration of the project, with adequate and relevant expertise in the field of project management, financial management, engineering, procurement, and environmental and social safeguards implementation. The PMU Project Director and PIU Project Manager shall hold the position not less than the rank of Class 1 engineer, or equivalent, Officers, unless otherwise acceptable to ADB.	Being complied with
Schedule 5, para. 3	The Borrower, DHI and CDCL shall (a) ensure that the majority of counterpart staff assigned to the PMU and PIU are assigned to the Project on a full-time basis; and (b) undertake best efforts to ensure that they remain in their positions for a reasonable period of time, and that staff replacements do not unduly disrupt implementation of the Project. The Borrower, DHI and CDCL shall provide ADB reasonable opportunity to comment on any proposed appointment of persons to key positions in the PMU and PIU, including the Project Director for the PMU and the Project Directors for PIU.	Being complied with
Schedule 5, para. 4	The Borrower shall cause DHI and CDCL to give full, timely and efficient cooperation in issuing any licenses, permits or approvals required in connection with infrastructure work. The Borrower shall also ensure that Bhutan Power Corporation and Bhutan Telecom will provide the necessary connections in the developed areas.	Being complied with for CW-01 works To be complied with at end of the construction stage
Schedule 5, para. 5	Within 36 months of the Effective Date, the Borrower through DHI shall develop and finalize, and ensure approval by the relevant government agency and implementation of, the SAP, which shall include, among other matters: (i) the required legal, policy and operational frameworks for operation of the new township that will establish institutional arrangements for sustainable township management, including the required approval process, and the allocation of roles and responsibilities between the municipality and CDCL; (ii) the allocation of sufficient municipal and CDCL human resources; (iii) a plan on the development of the surrounding area adjacent to the newly developed township, including plans for raising grounds level for the protection for surface flooding; and (iv) a time-bound plan for the operation and maintenance of the newly developed township.	To be complied with for 2021 Q2
Schedule 5, para. 6 (Environment)	The Borrower shall ensure or cause DHI and CDCL 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 Recipient relating to environment, health and safety; (b) the Environmental Safeguards; and (c) all measures and requirements set forth in the EIA and the EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	Being complied with
Schedule 5, paras. 7 and 8 (Land Acquisition and Involuntary Resettlement)	The Borrower shall ensure that all land and all rights-of-way required for the Project are made available to the Works contractor in accordance with the schedule agreed under the related Works contract. The Borrower shall ensure that the Project does not involve any involuntary resettlement impacts within the meaning of the SPS. In the event the Project involves any such impacts, the Borrower shall take all steps required to ensure that the Project complies with the applicable laws and regulations of the Borrower and with the SPS.	Being complied with
Schedule 5, para. 9 (Indigenous Peoples)	The Borrower shall ensure that the Project does not involve any indigenous peoples' impacts within the meaning of the SPS. In the event the Project involves any such impacts, the Borrower shall take all steps required to ensure that the Project complies with the applicable laws and regulations of the Borrower and with the SPS.	Being complied with
Schedule 5, para. 10	The Borrower shall ensure that the core labor standards and the Borrower's applicable laws and regulations are complied with during Project implementation. The Borrower shall include specific provisions in the bidding documents and contracts financed by ADB under the Project requiring that the contractors, among other things: (a) comply with the Borrower's applicable labor law and regulations and incorporate applicable workplace occupational safety norms; (b)	Being complied with

	do not use child labor; (c) do not discriminate workers in respect of employment and occupation; (d) do not use forced labor; (e) allow freedom of association and effectively recognize the right to collective bargaining; and (f) disseminate, or engage appropriate service providers to disseminate, information on the risks of sexually transmitted diseases, including HIV/AIDS, to the employees of contractors engaged under the Project and to members of the local communities surrounding the Project area, particularly women. The Borrower shall strictly monitor compliance with the requirements set forth above and provide ADB with regular reports.	
Schedule 5, para. 11	The Borrower shall ensure that the principles of gender equality aimed at increasing Project benefits and impact on women in the Project area are followed during the implementation of the Project. These include (a) equal pay to men and women for work of equal value; (b) enabling working conditions for women workers, and (c) taking necessary actions to encourage women living in the Project area to participate in the design and implementation of Project activities.	Being complied with
Schedule 5, para. 12	The Borrower shall make available, or cause DHI and CDCL to make available, necessary budgetary and human resources to fully implement the EMP.	Being complied with
Schedule 5, para. 13	The Borrower shall ensure, or cause DHI and CDCL to ensure, that all bidding documents and contracts for Works contain provisions that require contractors to: (a) comply with the measures relevant to the contractor set forth in the EIA and the EMP (to the extent they concern impacts or affected people during construction), and any corrective or preventative actions set forth in a Safeguards Monitoring Report; (b) make available a budget for all such environmental and social measures; (c) provide the Borrower with written notice of any unanticipated environmental risks or impacts that arise during construction, implementation or operation of the Project that was not considered in the EIA and the EMP; (d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and (e) reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.	a) Being complied with b) Being complied with c) Being complied with d) Being complied with e) to comply and end of works (2021 Q1)
Schedule 5, para. 14	The Borrower shall do the following: (a) submit bi-annual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission; (b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that was not considered in the EIA and the EMP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; (c) no later than six months of the Effective Date, engage qualified and experienced external experts or qualified NGO[s] under a selection process and terms of reference acceptable to ADB, to verify information produced through the Project monitoring process, and facilitate the carrying out of any verification activities by such external experts; and (d) 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)Being complied with b) Being complied with c) Being complied with d) Being complied with
Schedule 5, para. 16	The Borrower through DHI will provide all counterpart funds, land and facilities required for timely and effective implementation of the Project, including without limitation, any funds required to (a) to meet any shortfall between cost and revenues for the operation and maintenance of the facilities developed under the Project, (b) to mitigate any unforeseen environmental and social impacts, and (c) to meet additional costs arising from design changes, price escalation in construction costs and/or unforeseen circumstances. The Borrower will make the resources thus required available on an annual basis for each fiscal year. In addition to the foregoing, the Borrower shall ensure that DHI and CDCL have sufficient funds to satisfy their liabilities arising from any Works and/or Consulting Services contract.	Being complied with
Schedule 5, para. 18	The Borrower, DHI and CDCL shall ensure that the anti-corruption provisions acceptable to ADB are included in all bidding documents and contracts, including provisions specifying the right of ADB to audit and examine the records and accounts of the executing and implementing agencies and all contractors, suppliers, consultants, and other service providers as they relate to the Project.	Complied with for CW-01. To comply with

		CW02, 03, 04 & 05
Schedule 5, para. 19	The Borrower shall develop and implement a program for regular and periodic maintenance of the facilities to be financed by the Project in accordance with international best practices acceptable to ADB, and make adequate resources available, through budgetary allocations or otherwise, for this purpose.	To be complied with one year before operating of every infrastructure
Grant Agreement		
Section 3.01	The Recipient shall make the proceeds of the Grant available to CDCL under the Subsidiary Financing Agreement upon terms and conditions satisfactory to ADB and shall ensure the smooth implementation of the Project and that such proceeds are applied to the financing of expenditures on the Project in accordance with the provisions of this Grant Agreement and the Project Agreements.	Being complied with
Section 4.02	The Recipient shall enable ADB's representatives to inspect the Project, the Goods and Works, and any relevant records and documents.	Being complied with

Appendix 12: Input Schedule for Independent Environmental Monitoring Expert

Provisional intermittent Input Schedule for Independent Environmental Monitoring Expert for the period July 2019 to July 2024

The schedule has been worked out as per contract agreement of 4 April 2019 signed between Construction Development Corporation Limited (CDCL) and Lam Dorji, Centre for Environment and Development

Intermittent input schedule

YEAR	MONTHS	
	January (Input days)	**July (Input days)**
2019	-	14 -31
2020	20 Jan – 3 Feb	15 -31
2021	15 - 31	15 -31
2022	15 - 31	15 -31
2023	15 - 31	15 -31
2024	15 - 31	15 -31

Total provision as per contract: 208 days

Provisional breakdown of each input:

Activities	Estimated Input (days)
Beginning of input meeting with PIU, PIC and Environment Officer; preparation and confirmation of schedule with Environment Officer, PIU	1
Field visits, inspections and Consultation/ meetings with concerned officials and stakeholders	5
Review and comments on recent SEMR	2
Environmental Audit Report writing	5
End of input meeting with PIU	1
Final Report: Incorporation of comments and feedback on Final Draft	1

Appendix 13: Photographs album

13.1: Visitors and Particular Occasions

Border area site visit with Thromde officials

Health and Safety awards

MoWHS, PCR and PTDP meeting

Health awareness on COVID - 19

Environmental observation report presentation by Independent Environmental Monitoring Expert Dr. Lam Dorji

International boundary survey and site visit PIC, Thromde and NLCS officials on 13/02/2020.

Meeting on “Explore a partnership to undertake flood mitigation works at PTDP site”, with officials from DHI, STCBL and NRDCL

Health and Safety awards

RBA officials site visit

ADB mission from Thimphu: meeting and site visits

Health information session on COVID-19 pandemic at CW01 meeting hall

Appendix 13.2: Work progress

- **Site laboratory Test**

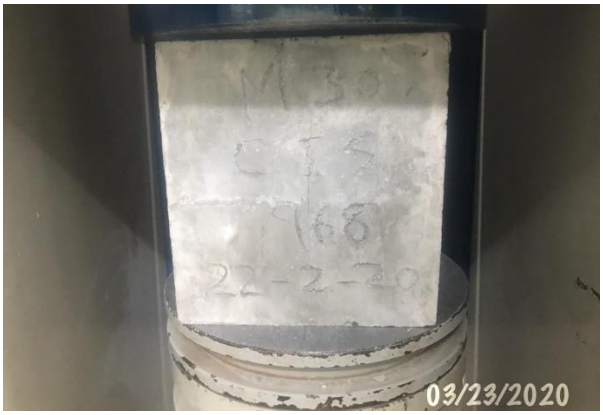
Initial and final setting time for cement

Silt content test

Coarse aggregate gradation test

Elongation and flakiness test

MDD test at site lab



Compressive strength test for cube blocks

- **Protection Wall Works**

Guide Wall

Guide wall: Top flange concreting

Diaphragm wall

D-Wall excavation

Sounding check

Bentonite density test

Bentonite viscosity test

Bentonite pH test

Stop end installation

Rebar cage and weep holes installation

Slump test

Concreting the D-wall panel

Concreting the D-Wall panel

Concrete finish level check

Cast in Situ Wall

Removal of contaminated concrete

Formwork and reinforcement installations

Rebar level check

Slump test for Cast in-situ wall

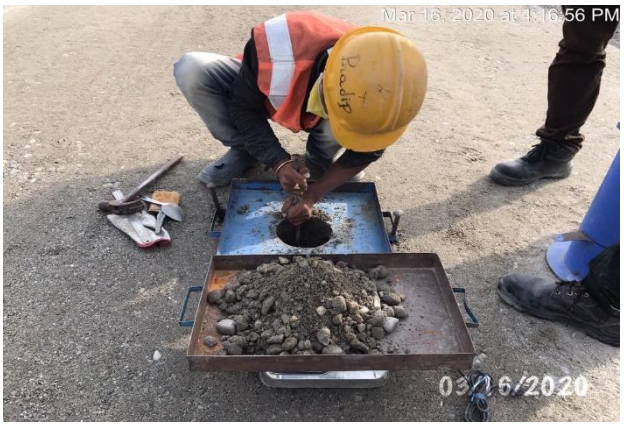
Concreting and compaction of concrete for cast-in situ

Concreted panel of cast in situ wall

- **Earth filling works**

Dumping and Spreading for earth filling work

Compacting the earth fill



OMC test after compaction

- **Production of Precast Grass Paver Blocks**

Mould preparation and concreting of grass paver blocks

Curing and stacking of grass paver precast blocks


Concreting and curing for tree pits

Precast for tree pit cover


Precast of channels

Precast of channels

Appendix 13.3: Health Safety and Environment

HEALTH AND SAFETY

Informed about the need of proper PPE while on work site

PPE training for site workers

Briefing on corona virus


Coronavirus: Body temperature check on daily basis


Instructed about the proper PPE

COVID-19 preventive measures

COVID-19 Awareness to cook and cook helpers

- **Environment**

Terrestrial walkthrough at Zone B

Terrestrial walkthrough at Zone C

Surface water testing at Amochhu river

Air monitoring devices

Instructed CW01 to sprinkle water


Terrestrial walkthrough at Zone B on 18-02-2020

Terrestrial walkthrough at Zone B on 18-03-2020

Dusty road nearby the project vicinity

Waste dumped at project area by third party

Surface Water quality testing

Air monitoring and Noise monitoring devices

Appendix 14

List of vehicles on hire by Afcons with respect to the Emission Test Validity Dates

The table below is representative of the list of vehicles with their Emission Test Certificates **renewed** respective to our last submission of the list of Vehicle Emission Certificates.

Sl. No	Name/Type of Vehicle	Vehicle Number	Validity
1	Bus	BP-2-A0062	13/09/2020
2	Transit Mixer	MH-40BG-8313	05/9/2020
3	Transit Mixer	MH-40BG-8154	05/03/2020
4	Transit Mixer	MH-40BB-7840	05/03/2020
5	Transit Mixer	MH-40BB-2905	05/09/2020
6	Dumper	BP-2-A8653	17/9/2020

The table below is representative of the list of vehicles with their Emission Test Certificate dates still valid respective to our last submission of the list of Vehicle Emission Certificates.

Sl. No	Name/Type of Vehicle	Vehicle Number	Validity
1	Bus	BP-2-A0059	15/07/2020
2	Camper	BP-2-B8531	17/01/2021
3	Camper	BP-2-B8334	21/01/2021
4	Camper	BP-2-B0893	24/07/2020
5	Bolero	WB-70-M-5155	15/05/2020
6	Innova	WB-70-L- 4483	27/05/2020
7	Ambulance	BP-1-3049	08/01/2021
8	Scorpio	BP-2-B9820	28/10/2020
9	Dumper	BP-2-A8512	18/07/2020
10	Dumper	BP-2-A8515	18/07/2020
11	Dumper	BP-2-A8172	21/07/2020
12	Dumper	BP-2-A8511	18/07/2020

Bus - 01

13210

YANGKI AUTOMOBILES
Govt. Approved Agent
YANGKI AUTOMOBILES
P. O. Box 384, Thimphu

VEHICLE EMISSION CERTIFICATE

Authorized by Royal Government of Bhutan vide letter No. RSTA/TM-12/2006/6568

Emission REF :		Tested Date :	13/09/20
Vehicle No. :	BP-2-1 0062	Registration Date :	2019
Make :	Bharat Benz	Type :	Bus
Frame No :		Engine # :	
		Fuel :	Diesel

Test Type	Test Value	Average Spread	RESULT	Validity	REMARKS
CO	24-8 29-9 30-4	29-6	PASS	13/09/20	

* Maximum permissible CO level = 4.5 < 2005 Model & 4.00 for 2005 > Model

YANGKI AUTOMOBILES
Light Vehicle Nu. 150/-
Taxi Nu. 100/-
Retest Fee Nu. 75/-

200/-

For queries contact @ 00975-2-321184 (O), 17177177, 17666333
E-mail : yangkiauto@gmail.com

TRANSIT MIXER-01

YANGKI AUTO EMISSION CENTER

Govt. Approved Agent

13139

YANGKI AUTOMOBILES

P. O. Box 384, Thimphu

VEHICLE EMISSION CERTIFICATE

Authorized by Royal Government of Bhutan vide letter No. RSTA/TM-12/2006/6568

Emission REF :		Tested Date :	5/3/2020
Vehicle No. :	MH-40 BG-8313	Registration Date :	
Make :	heavy.	Type :	heavy.
Frame No :		Engine # :	
		Fuel :	Diesel

Test Type	Test Value	Average Spread	RESULT	Validity	REMARKS
CO	39.1 39.1	38.1	Pass	5/9/2020	YANGKI EMISSION

200

* Maximum permissible CO level = 4.5 < 2005 Model & 4.00 for 2005 > Model

Light Vehicle Nu. 150/- ☐

Taxi Nu. 100/- ☐

Retest Fee Nu. 75/- ☐

For queries contact @ 00975-2-321184 (O), 17177177, 17666333
E-mail : yangkiauto@gmail.com

TRANSITMIXER-02

YANGKI AUTO EMISSION CENTER

Govt. Approved Agent

13196

YANGKI AUTOMOBILES

P. O. Box 384, Thimphu

VEHICLE EMISSION CERTIFICATE

Authorized by Royal Government of Bhutan vide letter No. RSTA/TM-12/2006/6568

Emission REF :		Tested Date :	5/8/20
Vehicle No. :	MH - 40 - BG. 8154	Registration Date :	
Make :	Heavy	Type :	Heavy
Frame No :		Engine # :	
		Fuel :	Dusel.

Test Type	Test Value	Average Spread	RESULT	Validity	REMARKS
CO	39.4 39.6	34.5	Pass	5/08/2020	VEHICLE EMISSION PHUENTSHOLING

* Maximum permissible CO level = 4.5 < 2005 Model & 4.00 for 2005 > Model

200

Light Vehicle Nu. 150/- ☐

Taxi Nu. 100/- ☐

Retest Fee Nu. 75/- ☐

For queries contact @ 00975-2-321184 (O), 17177177, 17666333
E-mail : yangkiauto@gmail.com

TRANSITMIXER -03

YANGKI AUTO EMISSION CENTER

Govt. Approved Agent

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YANGKI AUTOMOBILES

P. O. Box 384, Thimphu

VEHICLE EMISSION CERTIFICATE

Authorized by Royal Government of Bhutan vide letter No. RSTA/TM-12/2006/6568

Emission REF :		Tested Date :	5/3/22
Vehicle No. :	MH-40 BG-7840	Registration Date :	
Make :	heavy	Type :	heavy
Frame No :		Engine # :	
		Fuel :	Diesel

Test Type	Test Value	Average Spread	RESULT	Validity	REMARKS
CO	40.1 4241	43-5	Pass	5/9/2020	YANGKI AUTOMOBILES PHUENTSHOLING

* Maximum permissible CO level = 4.5 < 2005 Model & 4.00 for 2005 > Model

200

Light Vehicle Nu. 150/- ☐

Taxi Nu. 100/- ☐

Retest Fee Nu. 75/- ☐

For queries contact @ 00975-2-321184 (O), 17177177, 17666333
E-mail : yangkiauto@gmail.com

TRANSIT MIXER-04.

YANGKI AUTO EMISSION CENTER

Govt. Approved Agent

13197

YANGKI AUTOMOBILES

P. O. Box 384, Thimphu

VEHICLE EMISSION CERTIFICATE

Authorized by Royal Government of Bhutan vide letter No. RSTA/TM-12/2006/6568

Emission REF :		Tested Date :	5/8/20
Vehicle No. :	MH-46 BB 2905	Registration Date :	
Make :	heavy.	Type :	heavy.
Frame No :		Engine # :	
		Fuel :	Diesel.

Test Type	Test Value	Average Spread	RESULT	Validity	REMARKS
CO	38.4 4.4	4.25.	Pass	5/9/2020.	

* Maximum permissible CO level = 4.5 < 2005 Model & 4.00 for 2005 > Model

200.

Light Vehicle Nu. 150/- ☐

Taxi Nu. 100/- ☐

Retest Fee Nu. 75/- ☐

For queries contact @ 00975-2-321184 (O), 17177177, 17666333
E-mail : yangkiauto@gmail.com

3/17/2020

Dumper - 04

YANGKI AUTO EMISSION CENTER

Government Approved Agency

YANGKI AUTOMOBILES

P.O. Box 384

VEHICLE EMISSION CERTIFICATE

Authorized by Royal Government of Bhutan Vide letter No. RSTA/RS-12/2016/2231-36

EMISSION REF #	250388		Tested Date		17/03/2020
Vehicle #	BP-2-A8653		Registration Date		25/02/2016
Make	Man Force Pvt. Ltd		Type		Heavy Vehicle
Chassis #	MBRMC5AR1GN016065		Engine #		6DGA21769
			Fuel		Diesel
Test Type	**Test Value**	**Average/Spread**	**Result**	**Validity**	**Remarks**
T1	32.6				
T2	25.8	26.333333333333332	PASS	17/09/2020	
T3	22.0				
				Amount(Nu)	200.00

Maximum permissible HSU level = 75% for < 2005 Model & 70% for 2005 > Model

For queries contact @ 17666333 / 17177177, Email : yangkiauto@hotmail.com

Govt. Authorized
YANGKI EMISSION C.
PHUENTSHOLING

Authorized Signatory

Bus - 02

YANGKI AUTO EMISSION CENTER

Government Approved Agency

YANGKI AUTOMOBILES

P.O. Box 384

VEHICLE EMISSION CERTIFICATE

Authorized by Royal Government of Bhutan Vide letter No. RSTA/RS-12/2016/2231-36

EMISSION REF #	242757	Tested Date	15/01/2020
Vehicle #	BP-2-A0059	Registration Date	11/12/2018
Make	Eicher	Type	Heavy Bus
Chassis #	MC2ASHRTOHF376049	Engine #	E414CDHF150304
		Fuel	Diesel

Test Type	Test Value	Average/Spread	Result	Validity	Remarks
T1	23.6				
T2	23.2	22.333333333333332	PASS	15/07/2020	
T3	21.2				
			Amount (Nu)		200.00

Maximum permissible HSU level = 75% for < 2005 Model & 70% for 2005 > Model

For queries contact @ 17666333 / 17477177, Email : yangkiauto@hotmail.com

Authorized Signatory

CAMPER-01

YANGKI AUTO EMISSION CENTER

Government Approved Agency

YANGKI AUTOMOBILES

P.O. Box 384

VEHICLE EMISSION CERTIFICATE

Authorized by Royal Government of Bhutan Vide letter No. RSTA/RS-12/2016/2231-36

EMISSION REF #	243033	Tested Date	17/01/2020
Vehicle #	BP-2-B8531	Registration Date	06/10/2017
Make	Mahindra	Type	Light Vehicle
Chassis #	MA1RU4GHKH3B90909	Engine #	GHH4B60205
		Fuel	Diesel

Test Type	Test Value	Average/Spread	Result	Validity	Remarks
T1	97.7				
T2	35.3	56	PASS	17/01/2021	
T3	36.3				
				Amount (Nu)	150.00

Maximum permissible HSU level = 75% for < 2005 Model & 70% for 2005 > Model

For queries contact @ 17666333 / 17177177, Email : yangkiauto@hotmail.com

Authorized Signatory

Camper – 02

YANGKI AUTO EMISSION CENTER

Government Approved Agency

YANGKI AUTOMOBILES

P.O. Box 384

VEHICLE EMISSION CERTIFICATE

ized by Royal Government of Bhutan Vide letter No. RSTA/RS-12/2016/2231-36

	5	Tested Date	21/01/2020
	BP-2-B8334	Registration Date	28/07/2017
	Mahindra	Type	Light Vehicle
	MA1RU4GHKG3G99050	Engine #	GHG4G57075
		Fuel	Diesel

Test Type	Test Value	Average/Spread	Result	Validity	Remarks
T1	27.1				
T2	15.9	18.666666666666668	PASS	21/01/2021	
T3	14.9				
				Amount (Nu):	150.00

Maximum permissible HSU level = 75% for < 2005 Model & 70% for 2005 > Model

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Camper-03

Opacity
40.1
37.3
37.1
OS 38.0 (70.0)

Pass

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VEHICLE EMISSION CERTIFICATE

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EMISSION REF #	215108	Tested Date		24/07/2019	
Vehicle #	BP-2-B0893	Registration Date		17/06/2011	
Make	Mahindra	Type		Light Vehicle	
Chassis #	MA1SS2BKCB2E80375	Engine #		BKB4E11250	
		Fuel		Diesel	
Test Type	Test Value	Average/Spread	Result	Validity	Remarks
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T2	37.3				
T3	37.1				
				Amount (Nu)	150.00

Maximum permissible HSU level = 75% for < 2005 Model & 70% for 2005 > Model

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Bolero

Vehicle Registn. No. WB-70-M-5155 WB-01-D 6491843

Date of issue: 16-11-2019 Valid upto

Pollution Level

CO (%)	
HC (ppm)	
SD (HSU)	

WB70M5155

PUC Certificate issued by: AMIT AETC

License No. and Seal: APD38

Signature

Vehicle Class

WB-01-

POLLUTION UNDER CONTROL CERTIFICATE WB-01-D 6491843

(Under the West Bengal Motor Vehicles Rules, 1989)

Transport Department, Govt of West Bengal

AMIT AETC
N.S.ROAD, JAIGAON, ALIPURDUAR
PH: 9547359801

Label Code: WB Licence No:APD38 Test Station Code: 00

PUCC No.:	WB00000284	Vehicle Reg No:	WB-70-M-5155
Name:	MUKESH SHAH	Category:	Others
Address:	BIBARI	Make:	MAHINDRA
	ALIPURDUAR	Model:	BOLERO
	WEST BENGAL	Date of Reg.:	2019
Date:	16-11-2019	Speedo mtr Rdg:	0
Time:	07:59 AM	Engine No.:	AS PER RC
Fuel:	Diesel	Chassis No.:	AS PER RC

Flushing Cycle Mean: RPM Min:- RPM Max-

SNo.	RPM min	RPM max	K m-1	HSU %	OTP C
1	934	2535	1.060	40.00	40
2	968	2545	1.639	35.19	38
3	983	2715	2.100	45.73	36
Mean	957	2625	1.599/m	40.32%	038.00

Valid upto: 15-05-2020

Grade :

Test Fee : 100

This vehicle meets Emission Standards Prescribed under Rule 115(2) of Central Motor Vehicle Rule's 1989.

Seal of Testing Centre

Authorised Signatory

INDUS DiesX 2.00ND/0000-0000/1600

Vehicle Registn. No. | WB70L4483 | WB-01-D 5445850

Date of issue: 28-Nov-2019 | Valid upto 27-May-2020

Pollution Level	
CO (%)	34.7
HC (ppm)	
SD (HSU)	

WB 70 L 4483

AVL INDIA PRIVATE LTD

PUC Certificate issued by: | License No. and Seal: JAL-014

Signature

Jalgaon Pollution Control Centre For Diesel Vehicles Licence No. JAL/014

Vehical Pass Certificate WB-01-D 5445850

Jalgaon Pollution Control Centre

0 | 85 | 653

Innova

Result - Passed

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EMISSION REF #	241964		Tested Date		08/01/2020
Vehicle #	BP-1-3649		Registration Date		19/02/2003
Make	Tevota		Type		Light Vehicle
Chassis #	HZJ75-004869		Engine #		1HZ-0271828
			Fuel		Diesel
Test Type	Test Value	Average/Spread	Result	Validity	Remarks
T1	42.9				
T2	40.9	41.333333333333336	PASS	08/01/2021	
T3	42.9				
				Amount (Nu)	150.00

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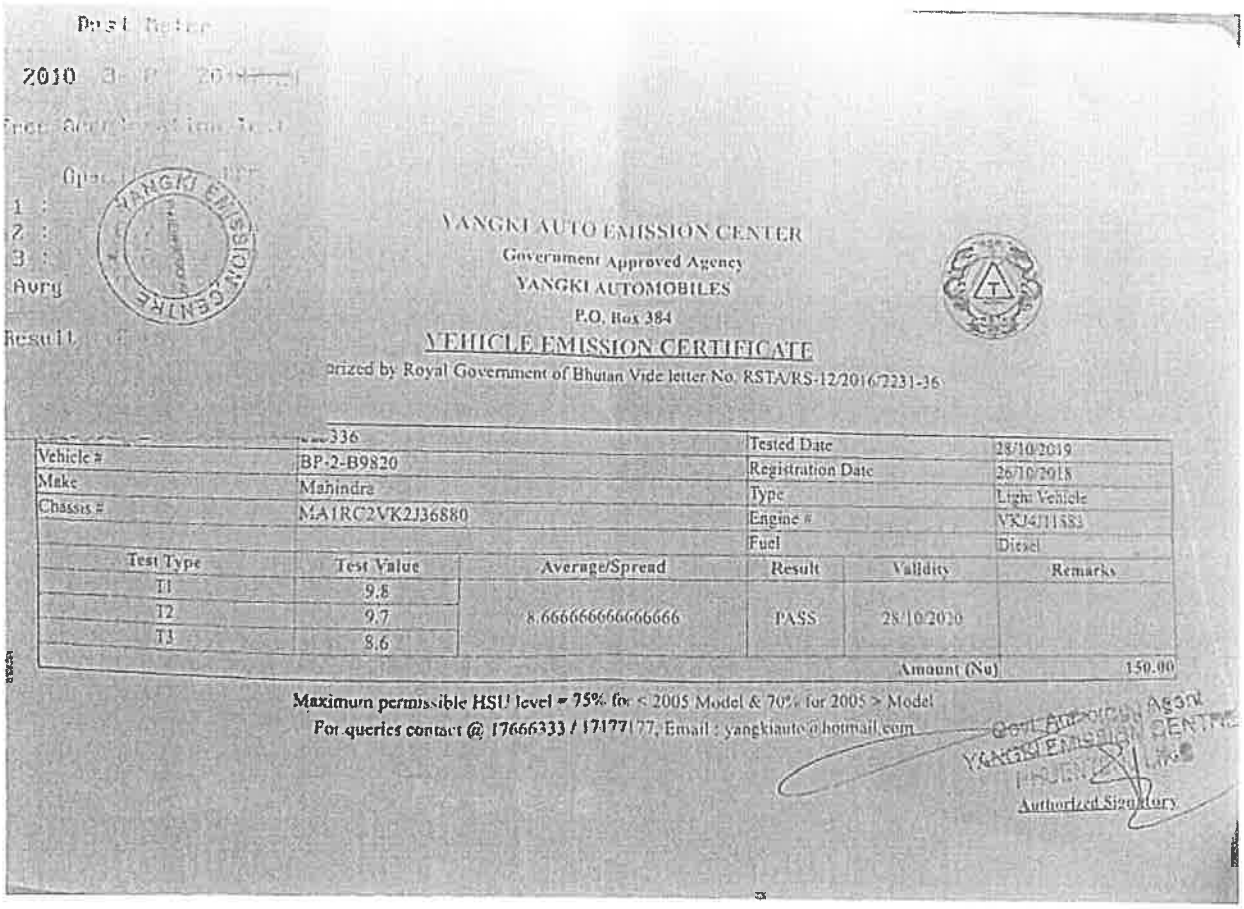
Ambulance

Scorpio



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	336	Tested Date	28/10/2019
Vehicle #	BP-2-B9820	Registration Date	26/10/2018
Make	Mahindra	Type	Light Vehicle
Chassis #	MA1RC2VK2J36880	Engine #	VKJ4J11583
		Fuel	Diesel

Test Type	Test Value	Average/Spread	Result	Validity	Remarks
T1	9.8	8.666666666666666	PASS	28/10/2020	
T2	9.7				
T3	8.6				
				Amount (Nu)	150.00

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EMISSION REF #	243174		Tested Date		18/01/2020
Vehicle #	BP-2-A8512		Registration Date		09/12/2015
Make	Tata		Type		Heavy Vehicle
Chassis #	MAT449029F2H13470		Engine #		3251H63461446
			Fuel		Diesel
Test Type	Test Value	Average/Spread	Result	Validity	Remarks
T1	19.7				
T2	20.3	19.666666666666668	PASS	18/07/2020	
T3	20.8				
				Amount (Nu)	200.00

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EMISSION REF #	243173		Tested Date		18/01/2020
Vehicle #	BP-2-A8515		Registration Date		09/12/2015
Make	Tata		Type		Heavy Vehicle
Chassis #	MAT449029F2K16602		Engine #		3251K63470475
			Fuel		Diesel
Test Type	Test Value	Average/Spread	Result	Validity	Remarks
T1	18.4				
T2	60.1	37.666666666666664	PASS	18/07/2020	
T3	35.6				
				Amount (Nu)	200.00

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EMISSION REF #	243633		Tested Date		21/01/2020
Vehicle #	BP-2-A8172		Registration Date		18/02/2015
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			Fuel		Diesel
Test Type	Test Value	Average/Spread	Result	Validity	Remarks
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T2	36.3	36	PASS	21/07/2020	
T3	36.3				
				Amount (Nu)	200.00

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EMISSION REF #	243176		Tested Date		18/01/2020
Vehicle #	BP-2-A8511		Registration Date		09/12/2015
Make	Tata		Type		Heavy Vehicle
Chassis #	MAT449029F2J15759		Engine #		325IJ63467907
			Fuel		Diesel
Test Type	Test Value	Average/Spread	Result	Validity	Remarks
T1	53.2				
T2	23.2	43	PASS	18/07/2020	
T3	53.4				
			Amount (Nu)		200.00

Maximum permissible HSU level = 75% for < 2005 Model & 70% for 2005 > Model
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Appendix 15

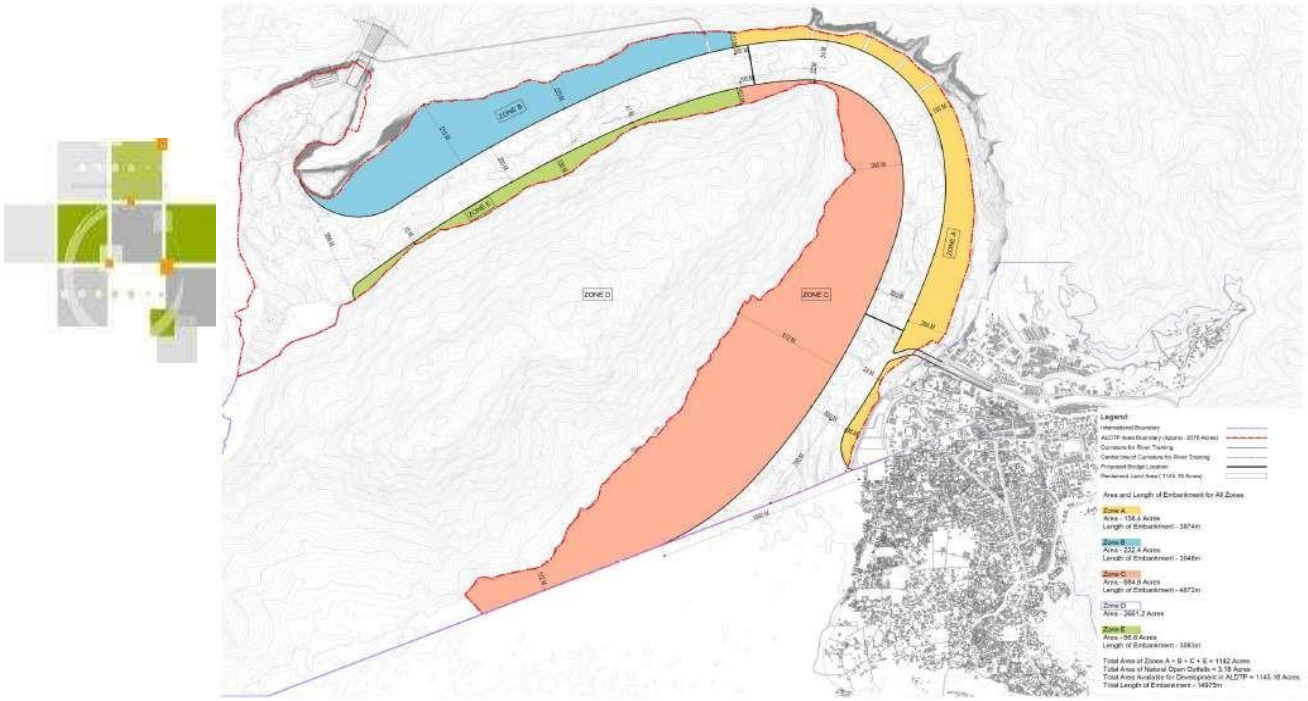
Asian Development Bank	(CDCL)	Kingdom of Bhutan

Phuentsholing Township Development Project

Project Number: 50165-002
Loan Number: 3668-BHU (COL)
Grant Number: 0573-BHU (SF)
Contract N°: PTDP-PIC-1

Risk Management Plan

[PIC Report Cataloguing N° PTDP - 046 – 31 March 2020]



Phuentsholing Township Development Project
Project Implementation Consultant
PIC Site Office, Near NHDCL Housing Colony
Amochu, Phuentsholing, Chukha

Document Quality Information

General Information

Author(s)	Mehmet Kahraman
Projects Name	Phuentsholing Township Development Project
Document Name	Risk Management Plan
Date	31 March 2020
Reference	Version 03

Addressee(s)

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Kamal Dhakal	Project Manager, PIU, CDCL	31 March 2020

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Name	**Organisation**	**Sent on (date):**
Nicolas Morrice	Project Director, Egis International	31 March 2020

History of modifications

Version	**Date**	**Written by**	**Approved by**
Version 01 (Draft)	20 May 2019	Robert Jeancenelle	
Version 02	15 January 2020	Mehmet Kahraman	
Version 03	31 March 2020	Mehmet Kahraman	

Contents

List of Tables

List of Figures

Abbreviations and Acronyms

ADB	Asian Development Bank
PTDP	Phuenthsoling Township Development Bank
CDCL	Construction Development Corporation Limited
DD	Detailed Design
DHI	Druk Holdings and Investments Ltd
DMF	Design and Monitoring Framework
C-EMP	Contractor – Environmental Management Plan
CW	Civil Works
EA	Executing Agency
FIDIC	Federation Internationale des Ingenieurs – Conseil
FMA	Financial Management Assessment
HSE	Health, Safety and Environment
IA	Implementing Agency
ICB	International Competitive Bidding
NCB	National Competitive Bidding
PAM	Project Administration Manual
PIC	Project Implementation Consultant
PIU	Project Implementation Unit
PPTA	Project Preparatory Technical Assistance
PRR	Project Risk Register
QAP	Quality Assurance Plan
RBS	Risks Breakdown Structure
RMP	Risk Management Plan
RSC	Risk Scoring Matrix
SSHP	Safety Security and Health Plan
TOR	Terms of Reference

1. Introduction & Objectives

1.1. Introduction

Construction Development Corporation Limited (CDCL), a subsidiary of Druk Holdings and Investments Ltd. (DHI) is currently managing the development and operations of the Phuentsholing Township Development Project (PTDP).

The Project aims to plan and develop 464 hectares (ha) of riparian land near Phuentsholing Thromde (Municipality) located along both sides of the Amochhu River on Bhutan's south – western border with India.

Implementation of Project will be phased in accordance with demand for Development. Egis International was awarded the contract for the Project Implementation Consultant (PIC) services for Phase 1 of the project.

PTDP Zoning and Phasing is detailed in Table 1 hereafter.

Zones	Area (ha)		Riverbank Protection Length (m)	PIC Phase
A	**66 ha**		**3,974**	**PIC Phase 1**
B	94 ha		3,046	Other Phase
C	277 ha		4,872	
D	Kaileshwar Hill – Not included in the project for development			
E	27 ha		3,083	Other Phase

Table 1 - PTDP Zoning and Phasing

In accordance with the Terms of References (see in **Appendix 1** extract from scope of services), the PIC is required to provide a Risk Management Plan. This document sets out to meet this requirement and recommendations made during the ADB review mission in May 2019.

1.2. Objectives

As per TOR the objective of this document is to present a Risk Management Plan (RMP), as specified in the TOR which has been prepared in coordination with the PIU and Contractors, for this version n°01, with CW-01 AFCONS Contractor.

Risk can be defined as "an undesirable event, with a limited degree of certainty that could have a negative impact in terms of project's timing, procurement of resources, budget, quality, safety, performances or objectives".
Then the RMP considers:

a) Risk identification: Determining risks to be considered, and documenting the characteristics of each;
b) Risk quantification: Evaluating risks to assess the range of possible outcomes;
c) Risk responses: Defining enhancement steps for opportunities and responses to threats; and
d) Risk response control: Responding to changes in risk over the course of the project.

RMP will assist with proactively identifying potential risks and advising and assisting the PIU to take timely actions to enhance project performance and mitigate any adverse constraints.

The RMP focuses on the time period when PIC supports the PIU, i.e. for the PIC 60 months contract, and for the part of Project in which risk management is pertinent.

Therefore, this document is to be used for the risk management tasks associated with the PIC services:

i) Review of designs, preparation of last bid documents of Phase 1;
ii) Remaining (after PIC mobilization) procurement of civil works contracts for Phase 1;

iii) Additional studies and surveys (financed under provisional items);
iv) Works contracts to be implemented in Phase 1;
v) Preparation of Phase 2 of Project.

2. Risk Management Organization & Roles

2.1. Project Organization

The overall organization for the project is illustrated by Figure 1.

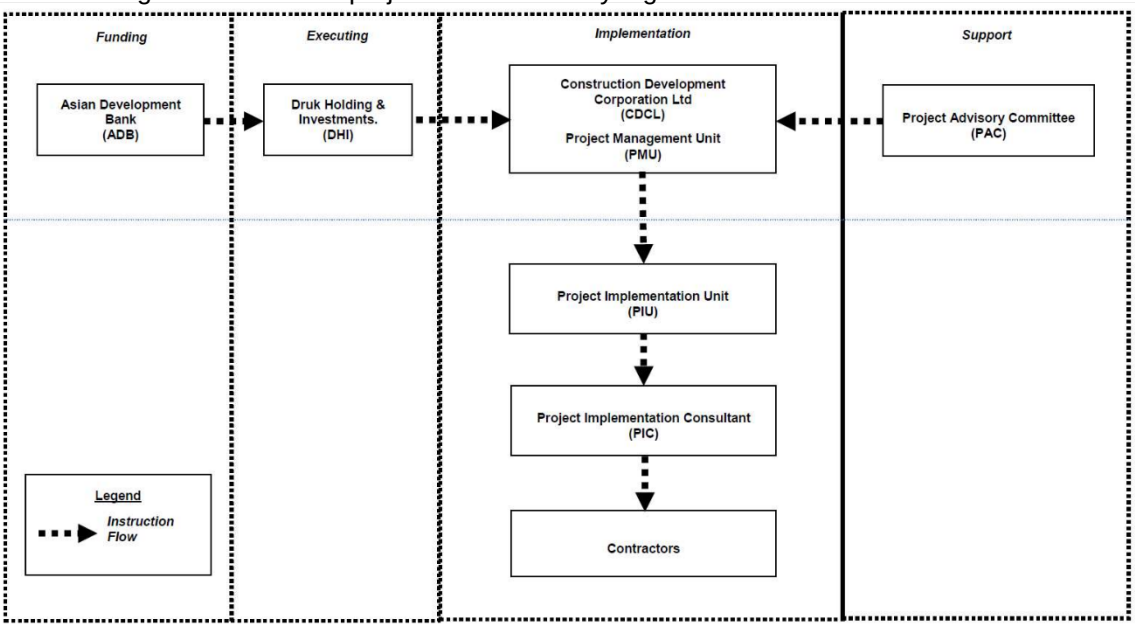

Figure 1 Project Implementation Arrangement

For more detailed references should be made to the Project Administration Manual (PAM).

2.2. Project Risk Management Organization

The project risk management organization is described by Figure 2.

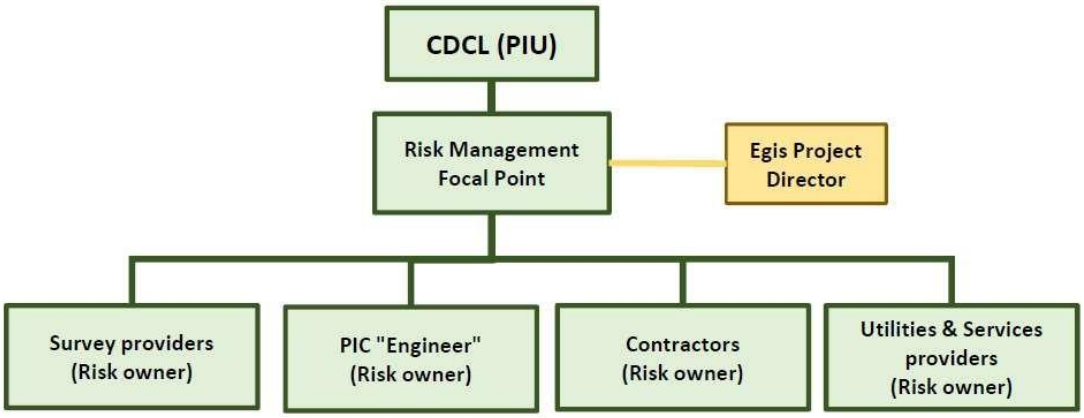

Figure 2, Project Implementation Arrangement

2.3. Egis Project Director

The role of the Project Director is to ensure the delivery of the Project. To this end he is responsible for ensuring that the project risk management procedures are properly implemented.

2.4. Egis Risk Management Focal Point

The role of the Egis Risk Management Focal Point is as follows:

- Establish and maintain the Project Risk Register for PIU and PIC;
- Organize and animate the risk reviews/workshops;
- Regular reporting on risk management issues;
- Monitor the implementation of mitigation and control strategies;
- Assist the risk owners in fulfilling their responsibilities;
- Follow up incident's management.

The Risk Management Focal Point will be managed by the PIC Team Leader

2.5. Risk Owners

Identified risk owners are:

- Borrower (DHI)
- Implementing Agency (CDCL with PIU/PMU)
- PIC (Egis)
- Contractors
- Other entities working on site (Surveys companies, utilities companies, experts and other service providers…)

During construction phase, the most critical risk owners, who must be closely monitored, are the Contractors.

PTDP Phase 1 development comprises four main civil works packages: CW-01, CW-02 (which could be split into several lots), CW-03 and CW-04, consequently the four (or more) Contractors, who are main actors, together with PIC, of Project Risk Management, are:

1. **CW-01 Contractor for River Training and Embankment Protection Components**
   A single contractor selected under an international competitive bidding (ICB) tendering process, for a sole "Construction package".

2. **CW-02 Contractor(s) for Common Urban Infrastructure Components**
   (water supply, sewerage, roads, solid waste treatments). It should as well a single contractor or several contractors, still selected under an ICB tendering process, butt for a "Design and built" package, or Construction packages based on Lump Sum or Ad Measurement Contracts.

3. **CW-03 Contractor civil works for Flood Early Warning System (FEWS)**
   Will be starting with the CW-02 Common Urban Infrastructures, supply and installation by Q12021

4. **CW-04 & CW-05 Contractor(s) for Power Supply and Telecommunications**
   At present stage, the type of contracts is still to be clarified as the TOR currently indicated that they are executed through force accounts and implemented by the respective agencies directly coordinated by the PIU.

2.6. Risk Owners

Risk owners are required to Monitor and report on their risks; and subsequently implement the agreed mitigation plans.

Every Risk Owners, in particular Contractors, are required to have a permanent available Risk Correspondent. Usually this task is assigned to the Health Safety and Environment Correspondent (HSE).

3. Risk Management Process

3.1. The Risk Management Process

Risk Management strategy is divided into 6 primary steps (see Figure 3):

- Context Description
- Risk Identification
- Qualitative Risk Analysis
- Quantitative Risk Analysis
- Risk Response Planning
- Risk Monitoring and Control

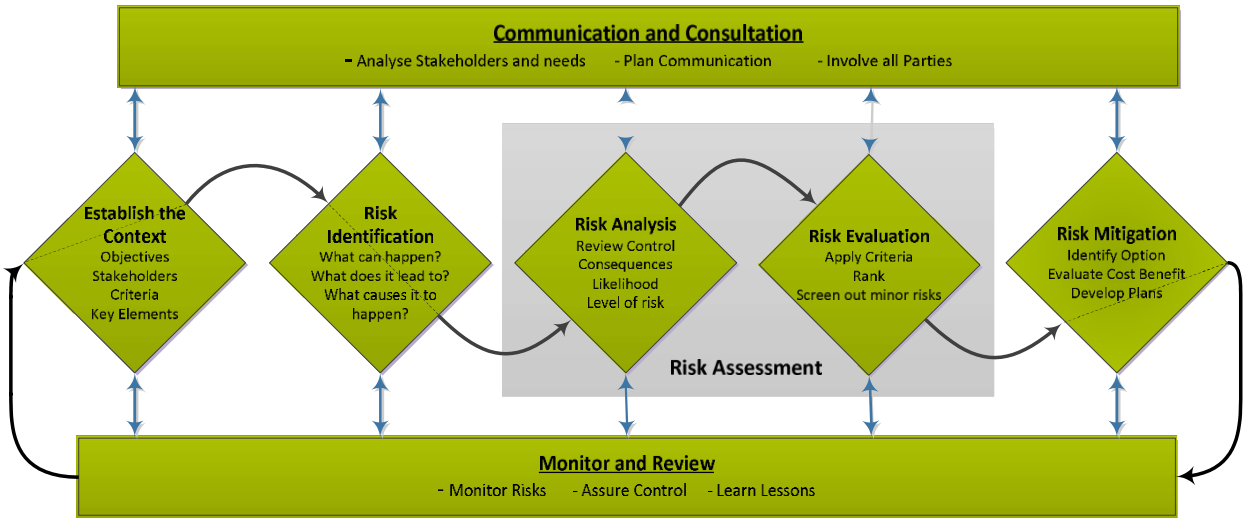

Figure 3 Egis Risk Assessment Process

3.2. Establish the Context

The significant elements of the project context are identified early in the project risk management process so as to provide the present baseline framework for the identification and assessment of risks. The context for the project includes the overall CDCL approach for the Project and Druk Holding and Investment strategic goals for area.

In terms of assessing and reporting on risks, the initial cost and programme baseline are to be those that are presently agreed with the Funding Agency (ADB).

Any changes in the overall context will require to be reflected in the on-going risk identification and monitoring efforts.

3.3. Risk Identification

The identification of potential risks is the key step in the commencement of the risk management process. The initial identification of risks is to be carried out and recorded through risk identification workshops, risk review meetings and observations reported by individuals. In present case initial risk identification has been assessed by PIC following exchanges with Employer and Contractor.

At inception stage, types of risks are grouped in major categories, the standard Risk Breakdown Structure (RBS). The proposed RBS for PTDP is included as **Appendix 2**. The RBS, along with other aids, is used to classify risks on the project.

Then, every identified risk are to be entered into the Project Risk Register (PRR, see **Appendix 4**). Other project reviews, such as design reviews, HSE reviews, and value engineering workshops will be conducted during the lifetime of the project. New critical risks identified during those sessions will be incorporated in the risk register.

Egis Team Leader is responsible to decide about the need to update the Project Risk register, and Egis Deputy Team Leader to implement.

It is to be noted that the identification, assessment and mitigation of Health, Safety and Environmental (HSE) risks, have their own project procedures and system.

But some risks, those which are assessed to have an impact on the overall project cost, programme, and quality, are nevertheless included within the risk management process.

3.4. Risk Analysis & Assessment - Scoring Matrices

Identified risks have been and for new ones, will be, analyzed and assessed, based on their possible impact on:

- Cost
- Programme
- Quality
- Major HSE risks

Guidance on how risks and opportunities are to be qualitatively assessed is provided in the table's support of the Risk Scoring Matrix (RSM).

When appropriate, quantitative assessment techniques may also be used to assess the cost and schedule impacts of identified risks. For quantitative assessments, the project baseline schedule and costs breakdown is used as the reporting benchmark.

The risk scoring and its tables support are included in **Appendix 3.**

3.5. Mitigation of Risks

Risk mitigation plans will be developed using the following possible strategies:

Table 2 - Risk Mitigation Strategies

Risk Mitigation Strategies	
Strategy	**Definition**
Avoidance	Refusing the risk consist in not performing the action that generates the risk to the project.
Mitigate the Risk	This Strategy includes three options: - Neutralize the risk source by preventive actions (Situation, behavior, technical changes...) - Reduce risk consequences by curative actions (Protect, insure.) - Change the probability by reducing exposure frequency and improving system reliability.
Transfer/Share the Risk	The risk can be transferred in whole or in part to the partner, a third party or an insurer.
Acceptance of the Risk	No specific action is defined for the risk other than monitoring.

The chosen strategy for major identified risks will be developed by way of a specific mitigation action plan. For minor identified risks, there is no specific mitigation plan, and straight forward mitigation measures are documented by way of entries in the Risk Register.

A project risk register is established to record, and track identified risks and mitigation strategies. The template for the risk register is included as **Appendix 4**. The risks are grouped into the categories listed within the Risks Breakdown Structure. For every mitigation measures proposed the entity in charge of implementing the measure is included.

The development of specific risk mitigation will take account of the need to consider the estimated cost of the mitigation action relative to the probable benefit from the resulting risk reduction.

3.6. Monitoring of Risks

Monitoring of identified risks and their mitigation plans will be carried out on an on–going basis by way of formal risk reviews, which will take place on a monthly basis during the monthly management meetings (PIU, PIC, Contractor).

General progress meetings, discipline reviews, value engineering workshops etc. will also be used as opportunities to monitor the evolution of risks and the implementation of mitigation measures.

4. Risk Review Meetings / Workshops

4.1. General.

The primary objectives of risk review meetings/workshops are:

- Discuss procedure matters pertaining to the risk management system.
- To bring together the relevant members of the overall project team so that they can review the project under the specific topic of risk.
- Identify, describe, categorize, rank and quantify risks.
- Allocate ownership of risks.
- Discuss possible mitigation / control strategies.
- Consider the costs associated with mitigation actions relative to the corresponding benefit from the reduction of the risk.
- Review and update the above points for risks that have already been identified.

It should be noted that it is not the intention that all of the above points are finalized for each identified risk during a specific risk review. The overall philosophy is that risk management discussions are to be open, allowing for the free exchange of information and viewpoints.

Risk reviews/workshops will be organized on a quarterly basis, or as otherwise agreed.

4.2. Attendees & Responsibilities

The key persons who may be required to attend risk reviews are as follows:

- The CDCL PIU Manager or the CDCL Risk Management Officer.
- The Project Risk Management Focal Point (Egis deputy Team Leader);
- Design Team & Contractor Risk Management Focal points (as appropriate);
- Contractors representatives (as appropriate);
- Third Party representative (as appropriate).

Individual attendees will be responsible for:

- Reviewing their areas of responsibility in advance with a view to ensuring that the appropriate staff members are present;
- Consulting other members of the project team regarding existing and newly identified risk;

- Providing a brief presentation at the commencement of each review to summarize the present status of their area of responsibility.

All other attendees will be required to actively and constructively engage with the workshops process.

5. Risk Reporting

5.1. Communication & Consult

Informal communication consultation on risk issues will be promoted through Project meetings, reports and communication channels.

5.2. Monthly Reporting

Risk Management will be included as a chapter in the overall Monthly report. The risk management chapter will deal with the following subjects:

- Schedule of items identified during risk reviews / workshops (if held during the month);
- Progress on resolving current risks;
- Review of any new incident (if any)
- Commentary on risks that have been closed;
- Risks that require to be elevated to the Client, Funding Agency, etc.;
- A summary of the top 10 risks;

The updated risk register will be included with the Monthly report.

5.3. Reporting on Risk Workshops

The outcomes of risk workshops (see previous chapter) will be reported by:

- An update of the Risk Register;
- A summary of actions for each risk owner;
- Minutes of the relevant workshops;
- Additional information and commentary as necessary.

5.4. Recording the Outcomes of Risk Reviews

During reviews, individual risk sheets shall be filled out for each newly identified risk and for the updated of previously identified risks. The template for risk record sheet included as **Appendix 5** must be used.

The Project Risk register (s) will be updated after each risk review.

5.5. Reporting on major HSE incident

Specific reporting on major HSE incident, which for example will require to take into account a new risk, will be made. A template of record and follow-up of incident is provided in **Appendix 6**

Then, for consistent newly identified risk, the Risk Record Sheet will be filled and the Risk Register sheet updated.

Appendix 1: Extracts from Terms of References

PIC Terms of references of services mention the preparation of a Risk Management Plan (RMP): within the description of Scope of services:

3.1 Task 1: Project Management

17. Project Administration

"vii) Preparing a Risk Management Plan (RMP) in coordination with the PIU and contractors. The RMP will consider: (a) risk identification : determining risks that may affect the Project , and documenting the characteristics of each; (b) risk quantification : evaluating Risks and risk interactions to assess the range of possible outcomes; (c) risk response : defining enhancement steps for opportunities and responses to threats ; and (d) risk response control: responding to changes in risk over the course of the Project .RMP will assist with proactively identifying potential risks and opportunities and advising and assisting the PIU to take timely actions to enhance project performance and mitigate any adverse constraints;"

And only within the part dedicated to reporting requirements: see extract of Table 4: List of Main Deliverables and Indicative Number of reports:

N°	*Item*	*Description*	*Due Time*
1.3	*MEM, QAP and RMP*	*The monitoring and evaluation manual (MEM) will set out how the Project will be monitored and evaluated. This supports preparation of the PPMES. It includes the QAP and RMP and will be updated regularly as necessary.*	*4th month, updated routinely*

Besides this RMP is not mentioned, for example, no Risk Expert is mentioned in the PIC staffing.

Appendix 2: Risk Breakdown Structure

For PTDP, the risks are grouped into the following 9 major categories:

1. Project Concept and Design
2. Project Financing
3. Procurement Plan
4. Recruitment of Consultants
5. Site Availability
6. Works or Goods Procurement
7. Contract Execution and Implementation
8. Works Supervision
9. Commissioning / Handing Over

Appendix 3: Risk Scoring Matrix

A Standard Risk Scoring Matrix shows in X- axis the Impact or Severity of the risk, and in Y-axis, the likelihood of the risk.

For every axis, it is proposed to classified risks impact severity and likelihood, only into three subdivisions like low, medium, high. Then the limits between each class have to be defined.

Note: The Risk scoring matrix or project risk exposure could be more detailed in dividing likelihood and Severity in more levels, like "very low, low, medium, high and very high", but this would not change its functionality.

1. X – Axis Severity

For the Impact – severity of Consequence line, usually a "Impact & Risk Type Assessment Table" is prepared, and the probability column, just rating are given.

A draft of the "Impact & Risk Type Assessment Table" customized to PTDP is shown here-after.

Table "Impact & Risk Assessment"

		Cost	Time	Quality	HSE Problem
Impact Threshold Definitions	**High**	>=10% of Budget	Delay 4 months or more	Failure of key elements which required rework	Death or hospitable more than 6 months
	Medium	2.0% to 10% of Budget	Delay 1 to 3 months	Moderate impact on Quality which required rework	Hospitable less than 6 months Medical aid Injury
	Low	< 2.0% of Budget	Delay 1 month or less	Minor impact on Quality, which just required repair	First aid injury

Risk type

2. Y – Axis – Likelihood

Rating of probability could be either a percentage on the overall duration of project, or a frequency. A proposal is shown here after in the Table "Likelihood & Probability correspondence"

Table "Likelihood & Probability correspondence"

	Probability		
Likelihood		**% on the overall Project Life**	**Possible frequency**
	High	More than 50%	Once every month or less
	Medium	25% to 50%	Less than once every month, more than once every semester
	Low	Less than 25%	Less than once every semester

3. Risk Scoring Matrix

It is recommended as well not to debate on all risk classification but rather focusing on the ones which are not acceptable and undesirable, in order to have practical solutions to mitigate risks.

The proposed here below matrix, with 9 blocks, of which 6 scores risks as unacceptable and acceptable with mitigation, is already sufficiently detailed to prepare an efficient Risk Management plan

Risk Scoring Matrix

likelihood	High	3	4	5	6
	Medium	2	3	4	5
	Low	1	2	3	4
Unacceptable			1	2	3
Acceptable with mitigation			Low	Medium	High
Acceptable			Impact – Severity of Consequence		

Appendix 4: Project Risk Register

Project Phase	Risk Nº	Risk Description	Likelihood	Impact	Initial rating	Mitigation	Responsible	Final Ratin
1. Project Concept and Design	1.01	Change management Team	1	3		DHI and CDCL Board member nominator for long-term period	DHI	
	1.02	Internal conflict within Management Team	2	2		Autonomy of General Manager for executive team member designation	DHI	
	1.03	Weakness of design Team	2	3		Be strict on team composition and CV description, and deliverables quality	DHI	
	1.04	Non availability of data	2	3		Comprehensive TOR for surveys and strict quality control of surveyor by design team	PMU	
	1.05	Changes in the basic design	2	2		Request commitment of Agency to Project program	DHI	
	1.06	Incorrect cost estimate	2	3		Quantities to be audited and prices to be in accordance with market. External Audit of Design Team cost estimate.	PMU	
	1.07	Complexity of project architecture	1	2		No change to project arrangements. When possible split Project into basic and functional tranches. For utilities, as far as possible, transfer construction of tertiary equipment to buyers.	PMU	
2. Project Financing	2.01	Change of financial scheme, in particular for primary infrastructure funding	1	3		Have sufficient margin on project contingencies to absorb a limited financial drift and technical adaptation (especially impacting on primary infrastructures costs)	DHI	
	2.02	Developed land market week	2	3		Make pre-commitment with possible private buyers and/or with institutional investors.	DHI	
	2.03	Increase development costs	2	2		Have strict control on investment costs and avoiding any unnecessary additional costly expense.	DHI	

3. Procurement Plan	3.01	Packaging inconsistent with possible Contractors financial capacities	2	2		Prior packaging, make assessment of local and regional financial Contractors capacities	PMU	
	3.02	Packaging inconsistent with possible Contractors technical capacities	2	3		Prior packaging, make assessment of local and regional technical contractors capacities	PMU	
	3.03	Procurement schedule incoherent with anticipated Project implementation progress	1	3		Procurement plan to be adapted in case of revised schedule of progress of works, and services to be provided. Needs coordination for works packages progression.	PMU	
	3.04	Schedule of Procurement Plan have been affected by the COVID-19	2	2		Revised Schedule of Procurement Plan to be adapted in case of work progress and services to be provided with coordination for work packages progression.	PMU	
4. Recruitment of Consultants	4.01	Non-compliance with ADB guidelines	1	3		Regularly consult ADB on required Guidelines to be followed. Keep documents which received NOL	PMU	
	4.02	Delayed in shortlisting consultants	1	3		RFI be sufficiently detailed in order to be able to prepare proposal for shortlisting	PMU	
	4.03	Delayed preparation of terms of reference and request for proposals	1	2		Be pro-active in preparing biddings documents	PIU	
	4.04	Delayed evaluation of consultant proposals	2	2		Recruit adequate staff to prepare Bid Analysis Report	DHI PMU	
	4.05	Delayed award of consultant's contract	2	2		Avoid external interference in the selection process.	PMU	
5. Site Availability	5.01	Unavailability of land	2	3		Have margin to negotiate compensation to stake-holders, or split Project in additional execution tranche in order not to block overall implementation of Project	DHI	
	5.02	Obstruction to master plan, project program	1	3		Request upstream commitment of Local Authorities to Master plan, Project program and taking over core infrastructure	DHI	
	5.03	Change in local government policy	1	3		Be persuasive upon Project Goals and details, and make frequent update, permanently involve Authorities with Project progress.	PMU	

	5.04	Project limits not precisely determined	2	2		Coordination with others adjacent Projects, limits at each stage of Project (design, construction, marketing, maintenance) clearly defined	PIU	
	5.05	Conflict with riparian activities	2	2		Implement a communication plan, involving near-by stakeholders	PIU	
	5.06	Un-planned third party occupying the project site impacted by the COVID-19	1	2		The Government providing temporary accommodation for the people due to the lockdown of COVID-19 pandemic. To minimize the disturbance for the execution of project.	DHI	
6. Works or Goods Procurement	6.01	Bidding documents non-complying with ADB's standard bidding documents	1	3		Regularly consult ADB on required Guidelines to be followed. Follow documents which received NOL	PMU	
	6.02	Unclear, incorrect, and incomplete and/or restrictive specification	2	2		Checking carefully specifications produced by design team	PIU	
	6.03	Restrictive financial and technical evaluation criteria	2	2		Criteria selection fitted for works, but as open as possible to widen competition	PMU	
	6.04	Unclear and/or incomplete special conditions of contracts	2	3		Be clear on fundamental PCC (securities, penalties, retention, price revision, works sectioning, safeguards, site availability,	PMU	
	6.05	Limited resources and capacities of the procurement unit/bid evaluation committee	1	2		Staff properly PMU and PIU	DHI	
	6.06	Bidders' complaints	2	2		Follow strictly bidding procedures and per bidding documents and ADB guidelines	PMU PIU	
	6.07	Constraints from local authorities	1	3		Be transparent about the Procurement process	PMU	
	6.08	Delays in award of Contracts	2	3		Detail comprehensively the various steps of procurement process, until Notice to Commence is given, and follow-up rigorously procedures.	PMU	
	6.09	Unsuccessful bidding	2	3		Have adequate budget for every procurement, have done proper analysis of possible interested Contractors capacity	DHI PMU	

7. Contract Execution and Implementation	7.01	Contract negotiations issues	2	3		Being clear on 6.2 and 6.4. Do not modify requested output and schedule	DHI	
	7.02	Delayed contract signing and effectiveness	2	3		Be strict on documentation and securities to be provided by Contractor prior negotiation. Confirm site availability, and financing plan completed and advance account in place	DHI PMU	
	7.03	Partial handing over of site	2	3		Be clear about time of Site constraints if any, and schedule of partial handing over	PMU PIU	
	7.04	Delayed Contractor's mobilization	2	3		Assist Contractor for documentation (taxes, customs, labor laws...). Notice warning if delay continues	PIU PIC	
	7.05	Contractors un-respective of Conditions of Contract	1	3		Remind regularly Contractor about his obligations, and when necessary give training on General Conditions of Contract. Notice warning as per GCC.	PIC	
	7.06	Lack of Contractor's cash flow	2	2		Pay Contactor IPC on time as per conditions of Contract	PMU PIC	
	7.07	Subcontractors defaults	2	2		Be vigilant on Subcontractors capacities and qualifications, before approval	PMU PIC	
	7.08	Materials non-availability	2	2		Check availability of resources before acceptance of Contractor programme	PIU PIC	
	7.09	Adverse climatic conditions	2	3		If possible, develop alert system to detect adverse condition, and give instruction to mitigate damage to infrastructure and Contractors installation	PIU PIC	
	7.10	Increase of logistic costs	3	1		When unexpected costs are suffered by Contractor, accept Variation Order to compensate extra costs	PMU PIC	
	7.11	Change in ground conditions	2	2		When unexpected costs are suffered by Contractor, accept Variation Order to compensate extra costs, and possibly increase construction time.	PMU PIC	
	7.12	Poorly qualified manpower	2	3		Engineer to force Contractor to fulfill his staffing obligation, and when necessary train or request personnel replacement.	PIC	
	7.13	Contractor Unsafe execution method	2	3		Engineer to force Contractor to prepare sound HSE management plan and to be firm on follow-up of plan	PIC	

	7.14	Contractors not-environmentally friendly	1	3		Engineer to force Contractor to prepare sound C-EMP management plan and to be firm on follow-up of plan	PIC	
	7.15	Third party disturbance	2	2		Avoid use of site by third parties during construction. Or give strict conditions for temporary use of site (time frame, location, HSE and environmental obligations)	PIU PIC	
	7.16	Risk impact of uncontrolled third-party activity in the vicinity of project site	2	2		Continues coordination with the parties in a positive, constructive manner / approach to give clear understanding of the potential risk during monsoon season and be prepared with the required emergency evacuation plan as well as risk mitigation measures are in place.	PIU PIC	
	7.17	Negative impact of COVID-19 on progress of PTDP	2	2		Clear strategy for transparent communication with all project stakeholders, focusing on the most critical materials, equipment, resources, preparing for legal and financial implications, working together to mitigate the unprecedented impact of the pandemic on progress of PTDP.	PMU PIU PIC	
8. Works Supervision	8.01	Inadequate supervision team composition and qualification	2	3		Prepare adequate TOR and adapt it for type of works and contract to be supervised, in terms of qualifications, number of staff and time input of supervision team	PMU	
	8.02	Weakness of supervision team individuals	2	2		Observe strict compliance with personnel qualification requirements for Key Staff.	PIU PIC	
	8.03	Insufficient Equipment and Logistic means of supervision team	2	2		Provide sufficient means for Supervision team to be able to perform his duties (Equipment, transport and office facilities).	PMU	
	8.04	Potential Conflict of interest	2	3		Barre any personnel having direct link with Government official or implementing agency and Contractor who may be able to exercise any influence over the contract and project.	PMU PIU PIC	
	8.05	Expert unavailable as per needs	2	2		Be firm on Construction Supervision Company to fulfill his commitment on quality and availability of personnel.	PIU	
9. Commissioning and handover	9.01	Unpreparedness of local authorities to be transferred the infrastructures	2	3		Make pre-agreement of transfer prior construction and at major step of construction, in particular completion testing, involve local authorities' representatives. Conduct Capacity development	PMU PIU	

	9.02	Unpreparedness of utilities companies	2	3		Make pre-agreement of transfer prior construction and at major step of construction, in particular completion testing, involve utilities companies' representatives	PMU PIU	
	9.03	Weakness of as-built documents	3	2		Engineer's to make clear on deliverable documentation and be strict on acceptance prior issuance of taking-over certificate	PIC	
	9.04	Delay due to lack of financial capacities of land buyers	2	2		Promote Project for capable Investors. When possible transfer risk to groups of buyers, and possibly adapt program. Make provision for financial charges, if marketing takes longer than expected.	DHI	

Appendix 5: Risk Record Sheet (for new identified risk)

Risk Identification Record Sheet						
Project Name:			Date:			
Project Phase:			Location:			
Project No:			Recorded by:			

Risk Characteristics
Description of Identified Risk:
Cause of the Risk:
Potential Impact of the Risk on the Project:

Initial Analysis of the Risk (without mitigation or control)							
Impact Level							
Cost		**Time**		**Quality**		**HSE**	
H		H		H		H	
M		M		M		M	
L		L		L		L	

Probability		Impact Probability Score	
Very Rare			
Possible			
Very Likely			

Mitigation / Control Measures			
Risk Owner:		Target date:	

Appendix 6: HSE Incident Management

	INCIDENT REPORT PTDP				**Document number**	
					Egis – RMP-0xxx	
	Revision	01	**Date**		Page	21
Prepared by:	Reviewed by:				Approved by:	
GENERAL INFORMATION						
COMPANY: SUPERVISOR:	LOCATION OF INCIDENT:					
DATE:	TIME:					
NAME OF INJURED: OCCUPATION: WITNESS:						
TYPE OF INCIDENT						
INJURY OR PROFESSIONAL ILLNESS	**ENVIRONMENTAL**				**EQUIPMENT DAMAGE**	
☐ Death ☐ Injury with sick leave ☐ Injury with modified tasks ☐ Medical treatment ☐ First Aid	Type and quantity of substance tipped out:				Equipment damaged:	
Part of body injured:	Area affected (m^2):					
INCIDENT DETAILS						
OCCUPATIONAL AT TIME OF INJURY:						
DESCRIPTION:						
INTERVENTION / TREATMENT ADMINISTRED ET CORRECTIVE ACTION TAKEN: Works stopped….						
RETURN AT WORK THE SAME DAY: ☐ Yes ☒no APPOINTMENT TASK: ☒Original ☐modified/limited ☐ not appointed						
ANALYSIS OF THE CAUSES						

BASIC CAUSES: ☐ Non recognition of risk ☐ Noncompliance with the procedures of safety ☐ Lack of Knowledge ☐ Inadequate leadership / supervision ☐ State of equipment	☐ PPE not wared ☐ Inadequate / improper protective equipment ☒ State of site ☐ Weather ☐ Other
CORRECTIVE ACTION TO BE TAKEN:	
COMPLETED BY: POSITION:	DATE:
FOLLOW UP OF CORRECTIVE ACTIONS	
Corrective actions implemented: ☐ Yes ☐ No Details / comments:	
FOLLOW UP OF THE INVOLVED PERSON	
Medical report: ☐yes ☒ no Date of return to work: Number of sick leave days: Number of modified tasks days:	

Appendix 16

Technical Note

Prepared by	:	**Mehmet Kahraman** **Position: Team Leader**
To	:	**CDCL / PIU**
Date	:	**20 May 2019**
Reference	:	**TN n° 12**
Revision 02	:	**Updated on 20th April 2020**

Subject : **Project Performance Management Evaluation Method**

This technical note aims to present a method to conduct regular Project Performance Management Evaluation, and it is one of the deliverables as per PIC Contract Terms of Reference, see Table 4" List of main deliverables and indicative number of reports", item D – 1.5.

1. Description in the TOR

As per TOR point 17." Project Administration" bullet (iii), PIC shall develop:

"The design and establishment of a project performance management evaluation system (PPMES) that will allow PIU to (a) monitor and evaluate implementation of the project; (b) identify performance constraints; and (c) formulate and implement practical measures to address shortcomings. Frequent performance evaluations will be carried out based on assessment of the project. It should include secure financial management and accounting reporting, and be accessible to the PIU and ADB".

As per TOR Table 4, listing and deliverables:

"Design of the PPMES appropriate for the project. The content of the PPMES should be discussed in the inception report and agreed with the PIU and ADB prior to developing the system. The system should be flexible to allow routine changes as necessary and it should be accessible from the PIU and client's project offices. A manual will be prepared that shows users how to update and use the system".

2. Comments and Proposal

A Project Performance Management Evaluation System is usually developed to detail the Project monitoring indicators as listed is the Design and Monitoring Framework (DMF), and when there are several components and numerous implementation activities (several simultaneous civil works contracts, procurements of goods and services contracts) to weight each of them, to be able to produce a global figure showing the performance, practically the progress of Project. Therefore, the PPMES is mostly used for complex and multi components Projects, for which the Borrower needs to have a system that guides him in the global evolution of the Project. Usually a Project Management Expert is also mobilized to design the system, and assist Borrower to weight Project components, and prepare the baseline anticipated progress data.

In PDTP case, the DMF performance indicators are quite clear, immediately quantifiable and could be directly organized in types of output and weighted. Moreover, there are just sequential activities (CW-03 &

CW 04 works which follow CW-02 works which follow CW-01 works…), hence the development of a PPMES will just be a trivial development of the DMF.

The purpose of the PPMES in the PTDP context, which is a linear and sequential Project is not clear. Indicators have already been developed and detailed in the DMF, it is therefore proposed to waive the development of PPME system, but to follow up progress of Project Implementation based directly on weighted indicators as listed in the DMF Outputs.

DFM indicators, as per the Project Output are listed in **Annex- 1.**

However, to DMF indicators, it is proposed to add two types of major component of the Project Progress specific of any land development project:

- Implementing Agency capacity, and;
- Site possession,

which are necessary conditions to achieve the goal of an urban project.
On the other hand, consultancy services are usually not considered, since being just a support to the Implementing Agency. Then progress of consultancy services is not considered as representative of the Project progress.

Progress of Project could then be assessed through the weighting of the Project components, which are detailed, hence itemized and at last by the estimate of the progress of every item.
It is hereby proposed to regroup the Project components into the following 5 major components/outputs, together with the proposed weight for each of them:

- Implementing agency capacity: 5%;
- Site possession: 5%;
- Output 1 - Flood and erosion protection measures installed: 40%;
- Output 2 - Municipal infrastructure constructed: 40%;
- Output 3 - Township management systems installed: 10%.

For every component, indicators have been, either proposed, or extracted from the DMF and for each of them a weight assigned in percent in order to get a total of 100% when Project is completed. A tentative PPMES table is presented in **Annex- 2**, as example.

3. Project Performance Management Monitoring

After Implementing Agency has been confirmed the list and weights of every PPME indicators, a baseline forecast value of every indicator can be assessed from start to end of Project, for example, per quarter from Q3 2018 to Q2 2025, as per the Project Administration Manual. Actual progress can therefore be compared to the one scheduled on quarterly basis.

Therefore; it is suggested to update regularly the synthetic table, at least once every quarter, in order to include it within the Quarterly Progress Report.

As per the proposed components and indicators as above, the progress of the project's performance till Q6 (March 2020) is indicated in **Annex- 3**.

Annex - 1: Project Outcome and Outputs from Design and Monitoring Framework

	Indicator	Progress till 31st March 2020
Outcome Phuentsholing urban area protected from floods and expanded with improved amenities and services	By 2026: a. Phuentsholing and reclaimed land protected from 100-year flood events in the Amochhu River (2018 baseline: Phuentsholing is protected from mean annual floods) b. At least 10% of fully serviced plots tendered for development (2018 baseline: NA)	a. First assessment of the progress of achievement when cast-in-situ wall achieved. Q2/2020. b. Confirmation of tender scheduleQ2/2024
Outputs 1. Flood and erosion protection measures installed	By 2025: 1a. 4.7 km of climate and erosion-resilient river walls constructed to protect against 100-year probable flood (2018 baseline: 0) 1b. At least 66 ha of land reclaimed (2018 baseline: 0) 1c. CW03- A flood early warning system (FEWS) and community-based flood management plan established and operational (2018 baseline: NA)	1a. Construction of river protection started in Jan 2019 and 74% achieved. 1b. Construction of backfilling started in Feb 2019 and 33% achieved. Land reclaimed when walkways finished. 1c. CW03-Not yet started. FEWS to be installed from Q2/2020 to Q4/2021
2. Municipal infrastructure constructed	2a. 10 km of roads with footpaths, landscaping, and streetlights planned with at least 30% female participation (2018 baseline: 0) 2b. Water treatment plant with a capacity of 4 MLD constructed (2018 baseline: none) 2c. 12 km of new primary and secondary water mains constructed (2018 baseline: 0) 2d. 9 km of new sewer mains and 9 km of new storm drains constructed (2018 baseline: 0) 2e. A sewerage treatment plant with a capacity of 3 MLD constructed (2018 baseline: 0) 2f. A resource recovery system for solid waste management installed (2018 baseline: 0) 2g. A 630 KVA grid substation constructed (2018 baseline: 0) 2h. 16 circuit-km of 415-volt power distribution lines installed (2018 baseline: 0) 2i. 11 circuit-km of telecommunication transmission cables installed (2018 baseline: 0)	To be started with CW-02, CW-04 & CW-05. 2a. To be assessed from Q3/2021 2b. To be assessed from Q3/2021 2c. To be assessed from Q3/2021 2d. To be assessed from Q3/2021 2e. To be assessed from Q3/2021 2f. To be assessed from Q3/2021 2g. To be assessed from Q2/2022 2h. To be assessed from Q2/2022 2i. To be assessed from Q2/2022
3. Township management systems installed	3a. At least 80% of township management staff reported improved knowledge of modern urban management (2018 baseline: NA) 3b. An asset management system established with 100% of project infrastructure and facilities geocoded in a database (2018 baseline: NA) 3c. At least 10 potential investors attended investor outreach campaigns (2018 baseline: NA)	3a. First assessment in the Year 2024 3b. To be assessed from Q2/2022 3a. To be assessed on Q3/2024

Annex - 2: PTDP Proposal for Project Performance Indicators

Components / Outputs	Target quantity / Value (US$)	Proposed Weight
Implementing agency capacity		**5.0%**
Establish PMU/PIU		*3.0%*
PMU/PIU Staff training and development		*2.0%*
Site possession		**5.0%**
Site possession legal documents		*4.0%*
Third parties activities cessation		*1.0%*
Output 1 Flood protection measures installed		**40.0%**
1a. River training works on 4.5km	*4,500m*	*20.0%*
1b. Land reclamation on 66ha	*66ha*	*15.0%*
1c. Flood early warning system installed	*130,500$*	*5.0%*
Output 2 Municipal infrastructure installed		**40.0%**
2a. 10 km of urban roads built	*10,000m*	*10.0%*
2b. Water treatment plant constructed	*xxx$*	*5.0%*
2c. 12km of water distribution pipes constructed	*12,000m*	*5.0%*
2d. 9km of sewage pipes and 9 km of storm drains constructed	*18,000m*	*5.0%*
2e. Sewage treatment plant constructed	*xxx$*	*5.0%*
2f. System for solid waste management installed	*xxx$*	*2.0%*
2g. 630kva grid substation constructed	*xxx$*	*2.0%*
2h. 16km of HV power distribution lines installed	*16,000m*	*3.0%*
2i. 11 km of telecom cables installed	*11,000m*	*3.0%*
Output 3 Township management systems installed		**10.0%**
3a. Township management staff improved knowledge of urban management	*80% of staff*	*5.0%*
3b. Asset management system installed	*100% of infra*	*4.0%*
3c. Potential investors to attend investor outreach campaign	*10 investors*	*1.0%*
Overall Project Progress		**100.00%**

Annex -3: PTDP overall progress as of Q6 2020, compared to scheduled

Components / Outputs	Target quantity / Value (US$)	Proposed Weight	Schedule Progress (Qty)	Scheduled Progress (%)	Weighted Scheduled Progress	Actual Progress (Qty)	Actual Progress (%)	Weighted Actual Progress
Implementing agency capacity		**5.00%**			**3.00%**			**3.20%**
Establish PMU/PIU		*3.00%*	*3.00%*	*100%*	*3.00%*		*100%*	*3.00%*
PMU/PIU Staff training and development		*2.00%*	*0.00%*	*0%*	*0.00%*		*10%*	*0.20%*
Site possession		**5.00%**			**5.00%**			**4.70%**
Site possession legal documents		*4.00%*	*4.00%*	*100%*	*4.00%*		*100%*	*4.00%*
Third parties activities cessation		*1.00%*	*1.00%*	*100%*	*1.00%*		*70%*	*0.70%*
Output 1 Flood protection measures installed		**40.00%**			**18.08%**			**14.82%**
1a. River training works on 4.752km	*4,752m*	*20.00%*	*4296m*	*90.4%*	*18.08%*	*3522m*	*74.11%*	*14.82%*
1b. Land reclamation on 66ha	*66ha*	*15.00%*	*0ha*	*0.00%*	*0.00%*	*0ha*	*0.00%*	*0.00%*
1c. Flood early warning system installed	*130,500$*	*5.00%*	*0$*	*0.00%*	*0.00%*	*0$*	*0.00%*	*0.00%*
Output 2 Municipal infrastructure installed		**40.00%**			**0.00%**			**0.00%**
2a. 10 km of urban roads built	*10,000m*	*10.00%*	*0m*	*0.00%*	*0.00%*	*0m*	*0.00%*	*0.00%*
2b. Water treatment plant constructed	*xxx$*	*5.00%*	*0$*	*0.00%*	*0.00%*	*0$*	*0.00%*	*0.00%*
2c. 12km of water distribution pipes constructed	*12,000m*	*5.00%*	*0m*	*0.00%*	*0.00%*	*0m*	*0.00%*	*0.00%*
2d. 9km of sewage pipes and 9 km of storm drains constructed	*18,000m*	*5.00%*	*0m*	*0.00%*	*0.00%*	*0m*	*0.00%*	*0.00%*
2e. Sewage treatment plant constructed	*xxx$*	*5.00%*	*0$*	*0.00%*	*0.00%*	*0$*	*0.00%*	*0.00%*
2f. System for solid waste management installed	*xxx$*	*2.00%*	*0$*	*0.00%*	*0.00%*	*0$*	*0.00%*	*0.00%*
2g. 630kva grid substation constructed	*xxx$*	*2.00%*	*0$*	*0.00%*	*0.00%*	*0$*	*0.00%*	*0.00%*
2h. 16km of HV power distribution lines installed	*16,000m*	*3.00%*	*0m*	*0.00%*	*0.00%*	*0m*	*0.00%*	*0.00%*
2i. 11 km of telecom cables installed	*11,000m*	*3.00%*	*0m*	*0.00%*	*0.00%*	*0m*	*0.00%*	*0.00%*
Output 3 Township management systems installed		**10.00%**			**0.00%**			**0.00%**
3a. Township management staff improved knowledge of urban management	*80% of staff*	*5.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
3b. Asset management system installed	*100% of infra*	*4.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
3c. Potential investors to attend investor outreach campaign	*10 investors*	*1.00%*	*0*	*0.00%*	*0.00%*	*0*	*0.00%*	*0.00%*
Overall Project Progress		**100.00%**	**100.00%**		**19.61%**			**19.06%**