

Project Administration Manual

Project Number: 50165-002
Loan and Grant Number(s): {LXXXX; GXXXX}
May 2018

Kingdom of Bhutan: Phuentsholing Township
Development Project

ABBREVIATIONS

ADB	–	Asian Development Bank
ALDTP	–	Amochhu Land Development and Township Project
BPC	–	Bhutan Power Corporation
BT	–	Bhutan Telecom Ltd.
CDCL	–	Construction Development Corporation Ltd.
CSO	–	Community Society Organisation
CUI	–	Common Urban Infrastructure
DHI	–	Druk Holdings and Investment Ltd.
DMEA	–	Department of Macroeconomic Affairs
DPA	–	Department of Public Accounts
EA	–	executing agency
EIA	-	environmental impact assessment
IA	–	implementing agency
ICB	–	international competitive bidding
IDPR	–	integrated detailed project report
LAP	–	Local area plan
MOF	–	Ministry of Finance
MOWHS	–	Ministry of Works and Human Settlements
NCB	–	national competitive bidding
NCWC	–	National Council for Women and Children
NEC	–	National Environment Commission
Nu	–	Ngultrum
PAC	–	Project Advisory Committee
PT	–	Phuentsholing Thromde (city council)
PIC	–	Project Implementation Consultant
PIU	–	Project Implementation Unit
PMU	–	Project Management Unit
RGOB	–	Royal Government of Bhutan
RMA	–	Royal Monetary Authority of Bhutan
PTDP	–	Phuentsholing Township Development Project
STP	–	sewage treatment plant
SWM	–	solid waste management
TA	–	technical assistance
TOR	–	terms of reference

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Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with the policies and procedures of the government and Asian Development Bank (ADB). The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

Druk Holding and Investments Limited (DHI, executing agency) and Construction Development Corporation Limited (CDCL, implementing agency) are wholly responsible for the implementation of ADB-financed projects, as agreed jointly between the borrower and ADB, and in accordance with the policies and procedures of the government and ADB. ADB staff is responsible for supporting implementation including compliance by DHI and CDCL of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At loan and grant negotiations, the borrower and ADB shall agree to the PAM and ensure consistency with the loan/grant agreement. Such agreement shall be reflected in the minutes of the loan negotiations. In the event of any discrepancy or contradiction between the PAM and the loan/grant agreement, the provisions of the loan/grant agreements shall prevail.

After ADB Board approval of the project's Report and Recommendations of the President (RRP), changes in implementation arrangements are subject to agreement and approval pursuant to relevant government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval, they will be subsequently incorporated in the PAM.

I. PROJECT DESCRIPTION

1. The project will construct river walls and raise ground levels that will protect Phuentsholing township from floods and riverbank erosion. It will also develop common infrastructure for about 66 hectares (ha) of new urban land for safe and sustainable expansion of human settlements and commercial activities. It will also support capacity development for improved flood risk management and delivery of urban services.
2. The project is aligned with the following impacts: (i) balanced and sustainable development of human settlements ensured;¹ and (ii) smart growth principles applied in planning and development.² The project will have the following outcome: Phuentsholing's urban area protected from floods and expanded with improved amenities and services.³ The project outputs are:

Output 1: Flood and erosion protection measures installed. The riverbank protection works will protect Phuentsholing from flooding and erosion. Specifically, the project will (i) construct 4 kilometers (km) of erosion-resilient river walls to protect against 100-year probable flood; (ii) raise ground levels behind the new walls to reclaim at least 66 ha of flood-protected land for urban development; and (iii) establish and operationalize a flood early warning system and flood management plan in consultation with the community.

Output 2: Municipal infrastructure constructed. The project will provide serviced plots of land by constructing common urban infrastructure comprising (i) about 10 km of roads with footpaths, landscaping, and streetlights, which are planned in consultation with women; (ii) modern drinking water supply and distribution systems, and wastewater collection and treatment systems that service the new township and adjoining areas; (iii) a resource recovery system for managing solid waste in both the new and old townships; and (iv) power distribution and telecommunication systems throughout the new township. The plots will be leased to residential and commercial investors as prescribed by the Amochhu Development Master Plan, which emphasizes principles of sustainable urban design such as maximum walkability, greenery, and open spaces.

Output 3: Township management systems installed. The project will (i) establish asset management systems, (ii) build the capacity of township staff to ensure sustainable and effective urban management, and (iii) initiate investor promotion activities.

3. The project will develop Zone A of the government's much larger Amochhu Land Development and Township Project (ALDTP) which is divided into five zones: A to E. Zone D represents Kaileshwar Hill and is not included for development. The remaining four zones comprise developing Amochhu River riparian land that will ultimately require about 15 km of new riverbank protection and the installation of about 464 ha of new common urban infrastructure (roads, water supply, waste water management, municipal solid waste management, power and telecommunications). At its completion, ALDTP will support habitation for up to 50,000 people. The allocation of land and riverbank protection for the ALDTP's four development zones are shown in Table 1.

¹ Government of Bhutan. 2013. *Eleventh Five Year Plan, 2014–2018*. Thimphu.

² Ministry of Works and Human Settlements. 2013. *Phuentsholing Structure Plan 2013-2028*. Thimphu.

³ The design and monitoring framework is in Appendix A.

Table 1: Allocation of Land and Riverbank Protection

Zones	Area (ha)	Riverbank Protection Length (m)
A	66	3,974
B	94	3,046
C	277	4,872
E	27	3,083
Total	464	14,975

4. Implementation of ALDTP will be phased in relation to the scale and demand for development. The Phuentsholing Township Development Project (PTDP) is the first phase of ALDTP and will finance ALDTP's Zone A and support the preparation of subsequent zones that will be developed in the future under separate financing.
5. The project mainly comprises the following five works packages and six consulting packages as described in Section 3:
- (i) **CW-01: River training and land reclamation.** This package includes construction of river training, embankment protection, land filling, cross drainage, slope stabilization and river promenade finishing.
 - (ii) **CW-02: Common urban infrastructure.** This package includes the construction and 5 years operations and maintenance (O&M) of roads, footpaths, street lighting, drains, water supply infrastructure, sanitation infrastructure, and solid waste management sorting and transfer station.⁴ A supervisory control and data acquisition (SCADA) system will be installed at the water production facilities and bulk meters and at the sewage treatment plant, with the option to expand SCADA in the future to increasingly cover more assets linked into city management system. The package also includes landscaping and park development, and maintenance of greenery and the construction of CDCL's office building⁵ within the new township. The contractor shall provide as-built digital drawings of all new assets. The contractor shall also prepare an O&M manual for the new assets and provide related training to Phuentsholing Thromde staff.
 - (iii) **CW-03: Flood early warning system.** This package will install a flow monitoring system on the Amochhu River upstream of Phuentsholing that is integrated into Bhutan's existing flood early warning system.
 - (iv) **CW-04: Power transmission infrastructure.** This package includes the installation of the power transmission and distribution network and will be implemented by Bhutan Power Corporation. It will be fully financed by the government.
 - (v) **CW-05: ICT infrastructure.** This package includes the installation of the information and communications technology infrastructure to be implemented by Bhutan Telecommunications. It will be fully financed by the government.

⁴ ADB financing will cover the first year of O&M costs; and the remaining 4 years will be borne by CDCL.

⁵ The design of the building shall be energy-efficient and inclusive for women and differently abled people.

II. IMPLEMENTATION PLAN

A. Project Readiness Activities

Table 2: Project Readiness Activities

	2017												2018					Responsible
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	
Indicative Activities																		Agency
Advance contracting actions:	X																	CDCL
(i) PIC Recruitment:	X																	CDCL
a) Issuing RFP	X																	CDCL
b) Submission of proposal and evaluation				X	X	X	X	x	X									CDCL
c) Negotiations and award										X	X	X	X	X	X			CDCL
d) Mobilize and implementation																X	X	CDCL
(ii) Procurement of Works Package CW-01:			X															CDCL
a) Bid advertisement			X															CDCL
b) Bid submission and evaluation					X	X	X	X	X	X	X	X	X	X				CDCL
c) Award and mobilize															X	X	X	CDCL
Establish project implementation arrangements	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	DHI/CDCL
Approval of EIA							X											NEC
ADB Board approval																X		ADB
Loan/ grant signing											X						X	ADB/DHI/MOF
Government legal opinion provided																	X	RGOB
Government budget inclusion	X																	DHI
Loan/ grant effectiveness																	X	ADB/ MOF

ADB = Asian Development Bank, CDCL = Construction Development Corporation Limited, DHI = Druk Holding and Investments Limited, EIA = Environmental Impact Assessment, MOF = Ministry of Finance, NEC = National Environment Commission, PIC = Project Implementation Consultants, RGOB = Royal Government of Bhutan, RFP = request for proposal
Source: PPTA.

B. Overall Project Implementation Plan

- The project is expected to be approved in June 2018. After loan effectiveness, anticipated in July 2018, the project implementation period is 7 years. The project is expected to be physically completed by June 2025. Monitoring of the project performance and outcome will be until June 2026, including preparation of the project completion report. The project's overall implementation plan is in Appendix B.

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations: Roles and Responsibilities

Table 3: Project Implementation Organizations: Roles and Responsibilities

Project Implementation Organizations	Management Roles and Responsibilities
Ministry of Finance (MOF)	<ul style="list-style-type: none"> ➤ Manages the advance accounts each for the ADB loan and grant established in Royal Monetary Authority (RMA) of Bhutan. ➤ Processes requests from CDCL for release of funds from the advance accounts to the project's subaccounts (replenishment or reimbursement). ➤ Through the Department of Macroeconomic Affairs (DMEA), obtains account statements of advance accounts, reconciles advance accounts with the project subaccounts, and submits withdrawal applications to the Asian Development Bank (ADB).
Project Advisory Committee (PAC)	<ul style="list-style-type: none"> ➤ Chaired by DHI CEO and members are shown in Appendix C. It will meet at least biannually, or more regularly as required. ➤ Provides policy guidance based on performance reviews of project ➤ Ensures collaboration among central and district level agencies. ➤ Monitors the progress and addresses relevant issues for smooth implementation of the project
Executing agency: Druk Holding and Investments Ltd. (DHI)	<ul style="list-style-type: none"> ➤ Executes the project. ➤ Makes timely decisions on all matters relating to project implementation. ➤ Takes full responsibility for operation and maintenance of project facilities. ➤ Leads interagency coordination. ➤ Ensures adequacy of overall project financing and secures annual budget allocations for implementation. ➤ Overall responsibility for compliance with loan and grant covenants, environmental safeguards, and facilitates corrective actions as required. ➤ Coordinate and ensure that Bhutan Power Corporation and Bhutan Telecom provide the necessary connections for the project, as described below.
Implementing agency: Construction Development Corporation Ltd. (CDCL)	<ul style="list-style-type: none"> ➤ Overall responsibility for ensuring the project is implemented according to time, quality and budget. ➤ Ensures full staffing and timely mobilization of project management unit and project implementation unit. ➤ Ensures minimum staff turnover of project management unit and project implementation unit. ➤ Monitors compliance with loan and grant covenants, environmental safeguards, and facilitates corrective actions as required. ➤ Opens and manages project subaccounts. ➤ Reviewing the withdrawal applications, obtaining project account statements, and submitting them to DMEA.
Project Management Unit (PMU)	<ul style="list-style-type: none"> ➤ The PMU will be established by CDCL and accommodated within CDCL offices in Thimphu (See staff schedule in Appendix D)

Project Implementation Organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> ➤ The PMU will be led by a project director who will be responsible for overall implementation management of the project. The project director will serve as the focal contact with ADB. ➤ Prepares reports advising the PAC. ➤ Maintains project documents, and submits reports (quarterly progress reports and project completion report) in a timely manner. ➤ Consolidates accounts and submits draft withdrawal applications to CDCL. ➤ Submits all audited project accounts and financial statements pertaining to the project within six months of the end of each fiscal year. ➤ The PMU will be responsible for: <ul style="list-style-type: none"> ○ Preparing implementation plans, annual budgets, and disbursement projections. ○ Overseeing the overall implementation of the project ○ Liaising and corresponding with ADB on all issues relating to the project ○ Coordinating with government agencies to resolve any departmental issues ○ Approving all planning, design and contract documents associated with the project ○ Leading implementation of the project by (i) procuring and evaluating services, works and goods; (ii) obtaining all necessary government approvals and right-of-way clearances from state departments and private land owners ○ Overall management of the Project Implementation Consultant (PIC) ○ Recruiting and managing the (i) independent environmental monitoring expert; (ii) urban management advisor; (iii) investment promotion advisor; (iv) sustainable township management capacity development; and (v) investor promotion and transaction advisory services consultant services packages ○ Acting as the “Employer” for all civil works packages ○ Overseeing and managing the procurement of services, works and goods by the PIU ○ Monitoring the activities of the PIU and advising as necessary ○ Maintaining project accounts and comprehensive loan financial records, and submitting consolidated quarterly reports ○ Establishing and maintaining a project performance monitoring and evaluation system (PPMES) for each package, output and outcome levels ○ Monitoring physical and non-physical investment activities under the project; obtaining necessary data for establishing baselines, maintaining and updating the PPMES ○ Preparing (i) reports to the EA for consideration and approval; (ii) periodic progress reports on each investment activities; (iii) disbursement projections; (iv) requesting budgetary allocations for counterpart funds; (v) collecting supporting documents and preparing withdrawal applications; (vi) audit reports; and (vii) reports mandated under the loan, grant and project agreements

Project Implementation Organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> ○ Monthly reconciliation of the project accounts and provision of supporting documents for withdrawal applications to ADB for liquidation or replenishment of each project account. ○ Reviewing, approving and transferring of PIU's request for payments ○ Approving media information and the project's communications plan prepared by PIU ➤ Updating and monitoring of the satisfactory implementation of the environment management plans (EMPs), and any correction action plans for additional facilities such as access roads and camps, consistent with safeguards requirements and ADB's Safeguards Policy Statement (2009), and submitting updated safeguards and monitoring reports for review and disclosure.
Project Implementation Unit (PIU)	<ul style="list-style-type: none"> ➤ Under the PMU, CDCL will establish a PIU in Phuentsholing near the project area. The PIU will be led by a project manager (See staff schedule in Appendix D). ➤ Supervises and manages the project implementation to ensure timely completion of the project within the approved budget. ➤ Updates and implements the procurement plan and implements the procurement in accordance with the plan. ➤ The PIU will be responsible for: <ul style="list-style-type: none"> ○ Preparing, reviewing and approving services, works and goods packages ○ Supporting PMU with implementation of the project by: (i) implementing the Environment Management Plan in compliance with ADB's and NEC policies; (ii) monitoring the implementation of social dimensions of the project including adherence to the labor law and core labor standards; and (iii) managing contracts awarded under the project. ○ Preparing and submitting to the PMU monthly safeguards progress reports, with complaint-grievances status included, and implementation of labor law and core labor standard for the preparation of biannual safeguards monitoring reports ○ acting as focal point, with support from the PMU, for the implementation of grievance and redress mechanism and complaint resolutions ○ Oversee, supervise and manage the PIC at the project level ○ Preparing work and procurement plans, budgets, monitoring plans, and accounts ○ Submission of request for payments to PMU for prior approval ○ Undertaking day-to-day project and safeguards management ○ Coordination with the field staff of concerned line departments ○ Coordination with Phuentsholing Thromde and any other village or community affected by the project implementation ○ Implementing safeguards actions following the relevant plans ○ Preparing project progress reports and safeguards monitoring reports ➤ Maintaining project accounts and financial records

Project Implementation Organizations	Management Roles and Responsibilities
Project Implementation Consultant (PIC) (CS-01)	<ul style="list-style-type: none"> ➤ Review and confirm designs and finalize bid documents of remaining civil works, goods and services contract packages to be awarded under Phase 1; ➤ Providing overall project management and administration support on reporting, financial management, and monitoring and evaluation ➤ Supporting the PMU and PIUs with establishing and maintaining the PPMES ➤ Procure, mobilize, manage and supervise all contracts and act as the “Engineer” for Phase 1 ➤ Ensuring implementation of the project per the approved plans, designs and cost estimates ➤ Undertaking any necessary additional surveys and investigations to support designs and implementation; ➤ Prepare detailed terms of reference, and assist PIU to recruit, mobilize, and manage studies and surveys under provisional sum items including the FEWS and BMBMS consultant services; ➤ Prepare ADB financing and other necessary documents for Phase 2 investments; ➤ Provide technical and management advice, as required; ➤ Manage and administer the project financing; ➤ Prepare routine reporting requirements of ADB; ➤ Knowledge transfer to the PIU, township management, and Phuentsholing Thromde. ➤ Assist PIU with preparations, logistics and reporting for missions fielded by ADB, as necessary. ➤ Report directly to PIU for all matters related to implementation of the project ➤ Support all necessary activities for finalizing activities for ALDTP Phase 2 during the contract period. ➤ Preparing due diligence reports (technical, economic, financial, safeguards) and draft ADB board documents for possible financing of Phase 2 ➤ Supporting commissioning and operation of the investments, including preparing management, operation and maintenance manuals
Independent Environmental Monitor (CS-02)	<ul style="list-style-type: none"> ➤ To independently monitor the implementation of the project’s environmental management plan (EMP) related to the approved environmental impact assessment (EIA) in compliance with ADB SPS (2009) and advise PMU and ADB accordingly.
Urban management advisor (CS-03)	<ul style="list-style-type: none"> ➤ The advisor shall prepare a training program for township management staff, ➤ prepare terms of reference for the “sustainable township management capacity development” services package to be recruited separately by CDCL, ➤ provide advice to DHI and CDCL management on urban management requirements, and review key outputs of the capacity building firm and further develop the "Strategic Action Plan for Sustainable Township Management" (reference Appendix E)

Project Implementation Organizations	Management Roles and Responsibilities
Investment promotion advisor (CS-04)	<ul style="list-style-type: none"> ➤ The advisor shall prepare terms of reference for the “investment promotion and transaction advisory” services package to be recruited separately by CDCL, ➤ provide advice to CDCL management on investment promotion issues and review key outputs of the investment promotion firm.
Sustainable township management capacity development (CS-05)	<ul style="list-style-type: none"> ➤ The consultant shall establish business processes and standard operating procedures for high-quality and inclusive township management. ➤ The consultant shall provide classroom and on the job training to township management staff, and exposure to good global practices in city management. A study tour will be organized and facilitated to a relevant city. The township staff should be equipped and prepared to guide the township’s development while delivering high-quality, inclusive services and ensuring environmental protection. ➤ The consultant shall support integration with existing Phuentsholing Thromde. ➤ The consultant will also procure, install and train staff on a computerized accounting and billing system; and procure computer and other office equipment.
Investor promotion and transaction advisory services (CS-06)	<ul style="list-style-type: none"> ➤ Develop criteria for identifying high-quality developers and anchor tenants to be targeted. ➤ Prepare detailed marketing plan, including resource requirements, key performance indicators and annual targets. ➤ Prepare marketing materials ➤ Implement detailed marketing plan (through road shows, digital platforms, and other channels). ➤ Prepare investor documents (e.g. permits, applications, clearances, transaction documents, etc.) ➤ Support day-to-day operations of the investment promotion office. ➤ Build capacity of DHI and CDCL staff for investor promotion.
ADB	<ul style="list-style-type: none"> ➤ Monitor and reviewing overall project implementation. ➤ Fields review missions, midterm review mission, and project completion review mission to assess project implementation progress and compliance with loan covenants. ➤ Reviews PMU’s submissions for procurement of goods, civil works, and services. ➤ Timely disbursement of loan and grant funds subject to CDCL’s submission of withdrawal applications.

Source: Asian Development Bank.

B. Key Persons Involved in Implementation

Executing Agency

Druk Holding and Investments Ltd.

Officer's Name: Mr. Chenko Tshering Namgay
Position: Associated Director, Department of Finance
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Office Address: Thori Lam Upper Motithang,
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Implementing Agency

Construction Development
Corporation Ltd.

Officer's Name: Mr. Tshering Dupchu
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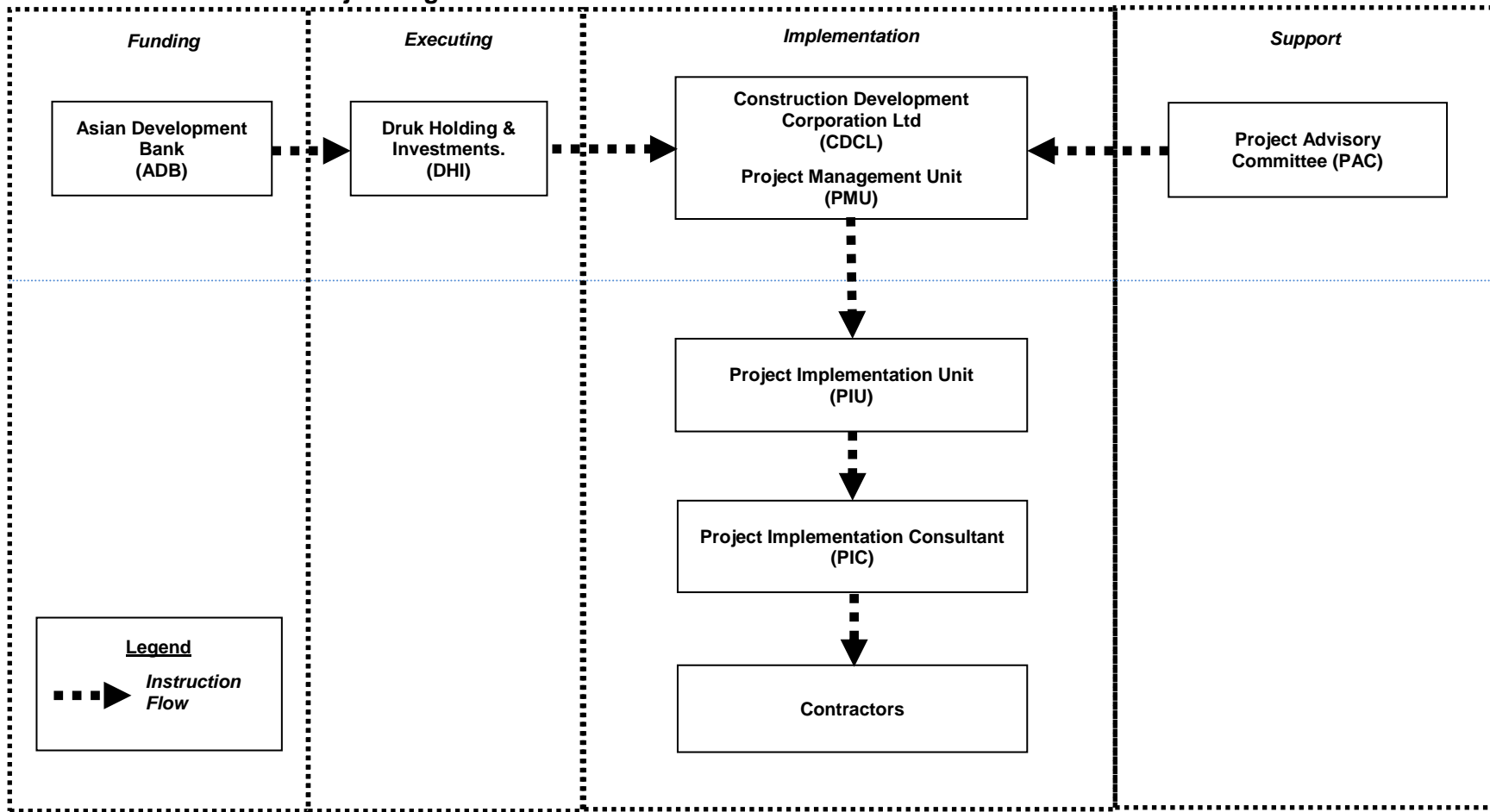
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C. Project Organization Structure



IV. COSTS AND FINANCING

7. The cost of the project is estimated at \$63.00 million, inclusive of taxes and duties, and financing charges during implementation. The ADB grant will be used exclusively to finance civil works. The ADB loan will finance (i) part of the civil works cost; and (ii) the cost of consulting services. The government will (i) provide exemptions of taxes and duties on import of construction materials, plant and machinery, and capital goods forming direct inputs to the project, and (ii) cover financing charges on the ADB loan during implementation. The government will also ensure that DHI provides contributions equivalent to cover (i) remaining taxes and duties; (ii) salaries and running costs of PMU and PIU; (iii) part of the civil works costs; and (iv) training.

Table 4: Project Investment Plan
(\$ million)

Item	Amount ^a
A. Base Cost ^b	
1. Flood and erosion protection measures installed	33.24
2. Municipal infrastructure constructed	11.90
3. Township management systems installed	2.74
Subtotal (A)	47.88
B. Contingencies ^c	14.07
C. Financing Charges During Implementation ^d	1.05
Total (A+B+C)	63.00

^a Includes taxes and duties of \$0.13 million. Such amount does not represent an excessive share of the project cost. The government will finance taxes and duties of \$0.13 million in the form of a cash contribution. The government will also exempt import duties on civil works contracts to be financed by the project; the value of this exemption is estimated to be \$2.43 million.

^b In March 2017 prices.

^c Physical contingencies computed at 10% for civil works and equipment. Price contingencies computed at average of 0.3%-1.5% on foreign exchange costs and 4.0%-5.0% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest and commitment charges. Interest during construction for the OCR loan has been computed at the applicable interest rate during the grace period (1.0% per annum).

Source: Asian Development Bank estimates.

8. The government has requested (i) a concessional loan in an amount of \$28.74 million from ADB's ordinary capital resources, and (ii) a grant not exceeding \$24.26 million from ADB's Special Funds resources (Asian Development Fund), both to help finance part of the project. The concession loan will have a 32-year term, including a grace period of 8 years; an interest rate of 1.0% per year during the grace period and 1.5% per year thereafter; and such other terms and conditions set forth in the draft loan and project agreements. The loan proceeds will be provided by the government to DHI as a subsidiary loan. The subsidiary loan will have repayment terms of 32 years, including a grace period of 8 years, interest rate at 1% interest per annum during the grace period, and 2.55% thereafter. The grant will be provided as grant to DHI.
9. The summary financing plan is in Table 5. ADB will finance the expenditures in relation to civil works and consulting services.

Table 5: Financing Plan

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.

ADF = Asian Development Fund

Source: Asian Development Bank.

A. Cost Estimates Preparation and Revisions

10. Cost estimates were prepared by ADB in consultation with CDCL. Cost estimates for civil works and equipment were based on estimates prepared by the CDCL consultant, which were in turn based on the Bhutan Schedule of Rates for 2016. During implementation, the PIU will be responsible for updating cost estimates, subject to approval by the PMU. Revisions to planned withdrawal allocations will require prior approval from ADB.

B. Key Assumptions

11. The following key assumptions underpin the cost estimates and financing plan:

- (i) Exchange rate: Nu.67.97 = \$1.00 (as of 31 December 2016).
- (ii) Price contingencies based on expected cumulative inflation over the implementation period are as shown in Table 6.

Table 6: Escalation Rates for Price Contingency Calculation

Item	2016	2017	2018	2019	2020	2021 and after
Foreign rate of price inflation	1.5%	1.4%	1.5%	1.5%	1.5%	1.5%
Domestic rate of price inflation	4.0%	5.0%	5.0%	5.0%	5.0%	5.0%

Sources: Asian Development Bank staff estimates based on MUV Index (foreign rate of price inflation), Asian Development Outlook 2016 (domestic rate of price inflation).

C. Detailed Cost Estimates by Expenditure Category

Item	Amount (\$ million)			% of Total Base Cost
	Foreign Exchange	Local Currency	Total Cost	
A. Investment Costs				
1. Civil works ^a	7.52	30.07	37.59	78.52
2. Consulting services	5.21	2.34	7.55	15.77
Subtotal (A)	12.73	32.41	45.14	94.29
B. Recurrent Costs				
1. PMU and PIU expenditures	-	1.67	1.67	3.49
2. Training	-	0.21	0.21	0.43
3. Operation and maintenance	-	0.86	0.86	1.79
Subtotal (B)	-	2.73	2.73	5.71
Total Base Cost	12.73	35.14	47.88	100.00
C. Contingencies				
1. Physical	1.66	3.46	5.12	10.69
2. Price	0.87	8.09	8.95	18.70
Subtotal (C)	2.53	11.55	14.07	29.40
D. Financing Charges During Implementation	1.05	-	1.05	2.19
Total Project Cost (A+B+C+D) ^b	16.31	46.69	63.00	131.59

^a The government will exempt the cost of the civil works packages from customs duties, sales and service taxes. The estimated value of these exemptions is \$2.43 million and this amount is not reflected in the cost tables.

Source: Asian Development Bank estimates.

D. Allocation and Withdrawal of Loan and Grant Proceeds

12. The use of the grant proceeds will be prioritized vis-à-vis the use of the loan proceeds for civil works.

Allocation and Withdrawal of ADB Loan Proceeds ^a				
Number	Item	Amount Allocated \$		Percentage and Basis for Withdrawal from the Loan Account
		Category	%	
1	Civil Works	10,360,000	57	percent of total expenditure claimed ^b
2	Consulting services	7,420,000	98	percent of total expenditure claimed
3	Unallocated	10,960,000		
	Total	28,740,000		

^a Disaster Risk Reduction Fund will finance \$6.07 million equivalent of the ADB concessional OCR loan (COL).

^b The government will exempt the cost of the civil works packages from customs duties and sales taxes. The total estimated value of these exemptions for both loan and grant is \$2.43 million and this amount is not reflected in the cost tables.

Allocation and Withdrawal of ADB Grant Proceeds ^a				
Number	Item	Amount Allocated \$		Percentage and Basis for Withdrawal from the Grant Account
		Category	%	
1	Civil Works	24,260,000	100	percent of total expenditure claimed ^b
	Total	24,260,000		

^a Disaster Risk Reduction Fund will finance \$6.07 million of the ADF grant.

^b The government will exempt the cost of the civil works packages from customs duties and sales taxes. The total estimated value of these exemptions for both loan and grant is \$2.43 million and this amount is not reflected in the cost tables.

E. Detailed Cost Estimates by Financier (\$ million)

Item	<u>Total</u>	<u>ADB Loan</u> ^a		<u>ADB Grant</u> ^b		Costs	<u>Government</u> ^c		
	Amount	Amount	%	Amount	%		Taxes and Duties	Total	%
A. Investment Costs									
1. Civil works	37.59	15.05	40	19.57	52	2.97	-	2.97	8
2. Consulting services	7.55	7.42	98	-	-	-	0.13	0.13	2
Subtotal (A)	45.14	22.47	50	19.57	43	2.97	0.13	3.11	7
B. Recurrent Costs									
1. PMU and PIU expenditures	1.67	-	-	-	-	1.67	-	1.67	100
2. Training ^d	0.21	-	-	-	-	0.21	-	0.21	100
3. Operation and maintenance	0.86	-	-	-	-	0.86	-	0.86	100
Subtotal (B)	2.73	-	-	-	-	2.73	-	2.73	100
Total Base Cost	47.88	22.47	47	19.57	41	5.71	0.13	5.84	12
C. Contingencies									
1. Physical	5.12	1.46	28	1.96	38	1.70	-	1.70	33
2. Price	8.95	4.82	54	2.73	31	1.40	-	1.40	16
Subtotal (C)	14.07	6.27	45	4.69	33	3.11	-	3.11	22
D. Financing Charges During Implementation	1.05	-	-	-	-	1.05	-	1.05	100
Total Project Cost (A+B+C+D)	63.00	28.74	46	24.26	38	9.87	0.13	10.00	16

^a Disaster Risk Reduction (DRR) Fund will finance \$6.07 million equivalent of the ADB concessional OCR loan (COL).

^b DRR funds will finance \$6.07 million of the ADB grant. The use of the grant proceeds will be prioritized vis-à-vis the use of the loan proceeds.

^c The government will exempt the cost of the civil works packages from customs duties, sales and service taxes. The total estimated value of these exemptions for both loan and grant is \$2.43 million and this amount is not reflected in the cost tables. Audit costs is included in as part of the government cost.

^d Training will comprise attending courses on contract management, construction supervision, ADB recruitment and procurement procedures, ADB disbursement procedures, among other topics.

Source: Asian Development Bank estimates.

F. Detailed Cost Estimates by Component

Item	Cost	1. Flood and erosion protection measures installed		2. Municipal infrastructure constructed		3. Township management systems installed	
		\$million	%	\$million	%	\$million	%
A. Investment Costs							
1. Civil works ^a	37.59	28.06	75	9.37	25	0.16	0
2. Consulting services	7.55	5.18	69	-	-	2.37	31
Subtotal (A)	45.14	33.24	74	9.37	21	2.53	6
B. Recurrent Costs							
1. PMU and PIU expenditures	1.67	-	-	1.67	100	-	-
2. Training	0.21	-	-	-	-	0.21	100
3. Operation and maintenance	0.86	-	-	0.86	100	-	-
Subtotal (B)	2.73	-	-	2.53	92	0.21	8
Total Base Cost	47.88	33.24	69	11.90	25	2.74	6
C. Contingencies							
1. Physical	5.12	4.21	82	0.89	17	0.02	0
2. Price	8.95	4.73	53	3.68	41	0.55	6
Subtotal (C)	14.07	8.94	64	4.57	32	0.56	4
D. Financing Charges During Implementation	1.05	0.73	69	0.26	25	0.06	6
Total Project Cost (A+B+C+D)	63.00	42.91	68	16.73	27	3.36	5

^a The government will exempt the cost of the civil works packages from customs duties, sales and service taxes. The estimated value of these exemptions is \$2.43 million and this amount is not reflected in the cost tables.

Source: Asian Development Bank estimates.

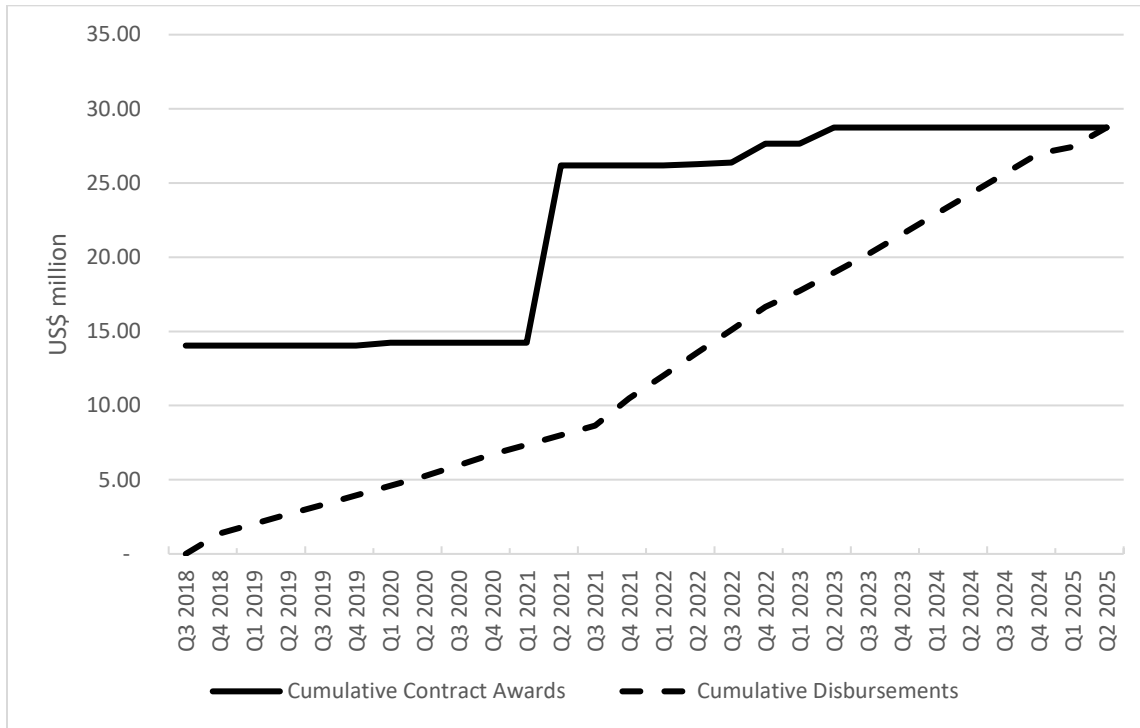
G. Detailed Cost Estimates by Year

Item	(\$ million)								
	Total	2018	2019	2020	2021	2022	2023	2024	2025
A. Investment Costs									
1. Civil works ^a	37.59	2.73	14.62	11.32	1.94	3.51	3.01	0.48	-
2. Consulting services	7.55	0.59	1.11	1.08	1.05	1.22	1.23	0.59	0.69
Subtotal (A)	45.14	3.32	15.72	12.40	2.99	4.72	4.24	1.07	0.69
B. Recurrent Costs									
1. PMU and PIU expenditures	1.67	0.13	0.25	0.25	0.24	0.23	0.22	0.22	0.13
2. Training	0.21	0.02	0.04	0.04	0.04	0.04	0.02	-	-
3. Operation and maintenance	0.86	0.07	0.13	0.13	0.12	0.12	0.11	0.11	0.07
Subtotal (B)	2.73	0.22	0.43	0.41	0.40	0.39	0.36	0.33	0.20
Total Base Cost	47.88	3.54	16.15	12.81	3.39	5.11	4.60	1.40	0.89
C. Contingencies									
1. Physical	5.12	0.27	1.46	0.86	0.19	0.35	1.00	0.70	0.27
2. Price	8.95	0.30	2.25	1.90	0.74	1.43	1.55	0.48	0.30
Subtotal (C)	14.07	0.57	3.71	2.76	0.94	1.78	2.56	1.18	0.57
D. Financing Charges During Implementation	1.05	0.01	0.04	0.10	0.14	0.19	0.29	0.29	-
Subtotal (D)									
Total Project Cost (A+B+C+D)	63.00	4.12	19.90	15.66	4.47	7.08	7.44	2.87	1.46
%Total Project Cost	100.00	6.54	31.59	24.86	7.10	11.23	11.81	4.55	2.32

^a The government will exempt the cost of the civil works packages from customs duties, sales and service taxes. The estimated value of these exemptions is \$2.43 million and this amount is not reflected in the cost tables.

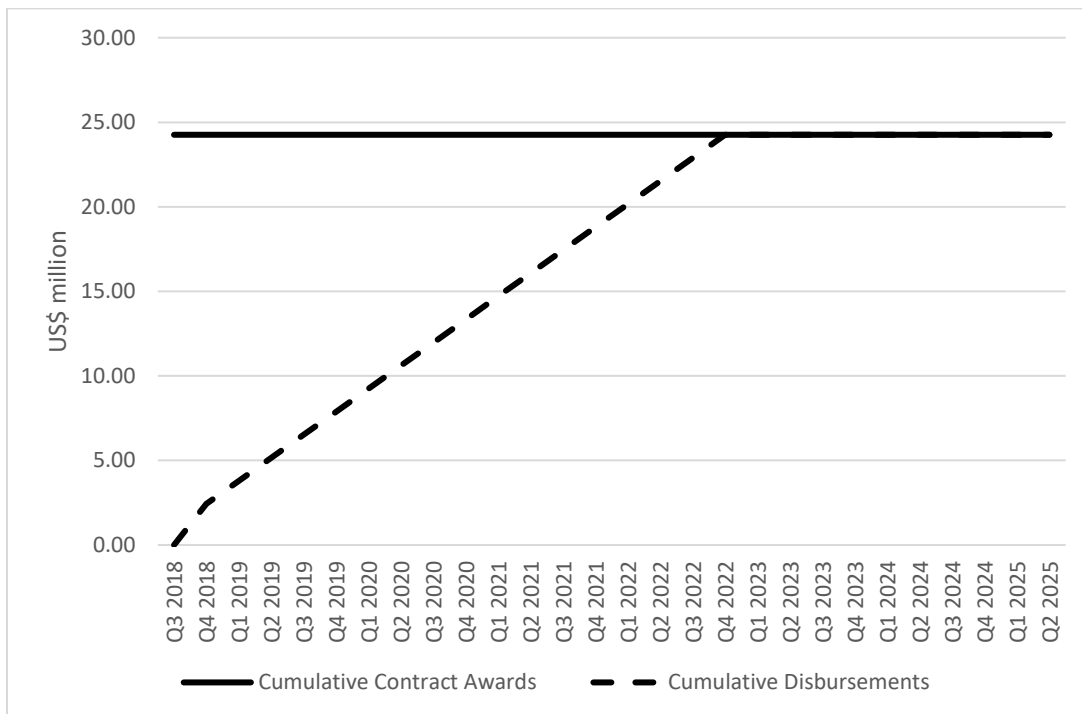
Source: Asian Development Bank estimates.

H. Contract and Disbursement S-Curve, ADB Loan



Source: Asian Development Bank estimates.

Contract and Disbursement S-Curve, ADB Grant



Source: Asian Development Bank estimates.

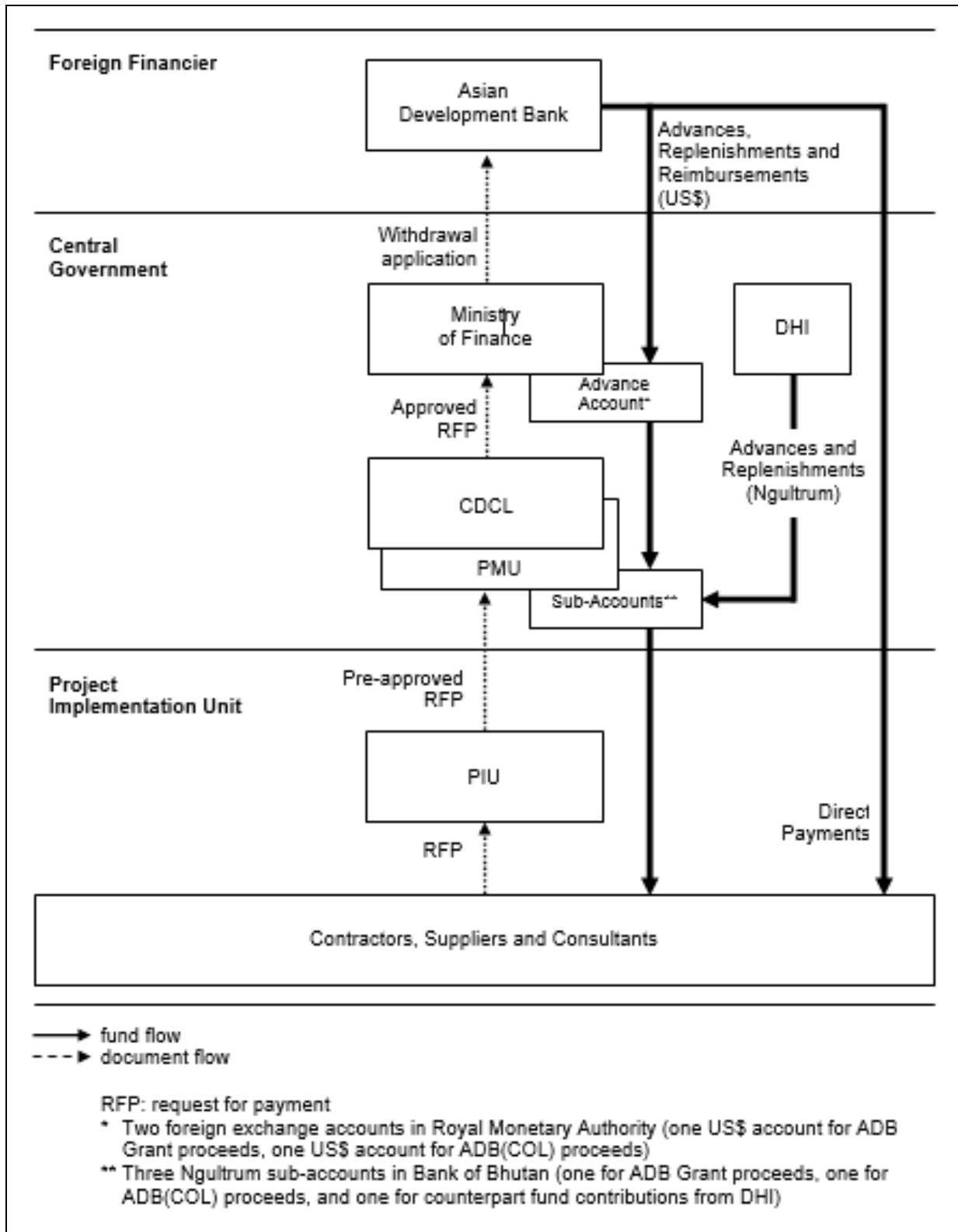
PTDP LOAN: Contract Awards and Disbursements (\$ million)

Year	Contract Awards (\$ million)					Disbursements (\$ million)				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2018	-	-	14.04	-	14.04	-	-	-	1.38	1.38
2019	-	-	-	-	-	0.64	0.64	0.64	0.64	2.57
2020	0.20	-	-	-	-	0.64	0.64	0.74	0.74	2.77
2021	-	11.94	-	-	11.94	0.64	0.64	0.64	1.84	3.76
2022	-	0.10	0.10	1.28	1.48	1.54	1.54	1.54	1.55	6.16
2023	-	1.08	-	-	1.08	1.10	1.22	1.22	1.36	4.90
2024	-	-	-	-	-	1.36	1.36	1.36	1.36	5.44
2025	-	-	-	-	-	0.46	1.30	-	-	1.76
Total Contract Awards					28.74	Total Disbursements				28.74

PTDP GRANT: Contract Awards and Disbursements (\$ million)

Year	Contract Awards (\$ million)					Disbursements (\$ million)				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2018	-	-	24.26	-	24.26	-	-	-	2.43	2.43
2019	-	-	-	-	-	1.36	1.36	1.36	1.36	5.46
2020	-	-	-	-	-	1.36	1.36	1.36	1.36	5.46
2021	-	-	-	-	-	1.36	1.36	1.36	1.36	5.46
2022	-	-	-	-	-	1.36	1.36	1.36	1.36	5.46
2023	-	-	-	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-	-	-	-
Total Contract Awards					24.26	Total Disbursements				24.26

I. Fund Flow Diagram



Source: Asian Development Bank.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

13. The financial management assessment (FMA) was carried out from September 2016 to January 2017 in accordance with ADB's *Guidelines for the Financial Management and Analysis of Projects and the Financial Due Diligence: A Methodology Note*. The FMA considered the capacity of CDCL including funds flow arrangements, staffing, accounting and financial reporting systems, financial information systems, and internal and external auditing arrangements. Based on the assessment, the key financial management risks identified are:

- (i) Entity-Specific Risks: CDCL has no direct expertise in implementing ADB projects.
- (ii) Funds Flow Risk: potential delays in reconciliation of project account with advance accounts, resulting in delayed preparation of withdrawal applications.
- (iii) Internal Audit Risk: Internal Audit Section in CDCL is relatively new (set up in 2015) and small (one full-time employee)

14. It is concluded that the overall pre-mitigation financial management risk of CDCL is low. DHI and CDCL have agreed to implement an action plan as key measures to address the deficiencies. The financial management action plan is provided in Table 7.

Table 7: Proposed Action Plan to Address Financial Management Issues

Potential Risk Event	Suggested Action	Target Date for Implementation	Responsibility
Funds Flow Arrangements			
If MOF will on-lend the ADB loan to DHI in \$ instead of Ngultrum it will reduce the project's limited financial viability.	MOF to confirm that it will take on foreign exchange rate risks by on-lending ADB loan to DHI in Ngultrum instead of US dollar.	Not applicable. MOF has confirmed that it will on-lend the ADB loan to DHI in Ngultrum.	MOF
Delays in reconciliation of project account with advance accounts, resulting in delayed withdrawal applications	MOF to confirm that DMEA will be in charge of reconciling project accounts with advance accounts at RMA.	Not applicable. MOF has confirmed that DMEA will be responsible for reconciling project accounts.	MOF
Staffing			
Proposed PMU is not familiar with ADB procedures	Consultants to provide training to PMU and CDCL staff on ADB procedures	31 December 2017	ADB, CDCL
Financial management staff of CDCL is not familiar with ADB disbursement procedures	Recruit an accountant for the PMU or assign a dedicated accountant from CDCL staff	31 December 2017	ADB, CDCL
Budgeting			
Potential delays in the provision of counterpart funds reserved for the project if DHI unexpected requests these	DHI counterpart fund contributions to PTDP may not be diverted to other purposes after having been approved.	31 December of every year	DHI

Potential Risk Event	Suggested Action	Target Date for Implementation	Responsibility
funds for other government projects.			
Auditing			
Internal Audit Section is relatively new	Include PTDP during project implementation in the work plan of the Internal Audit Section	Within six months of the end of CDCL's financial year	CDCL
Delay in the submission of audited project financial statements	MOF to request RAA that external audit of PTDP to be included in its annual work plan.	Within six months of DHI's/CDCL's financial year	MOF

ADB = Asian Development Bank, CDCL = Construction Development Corporation Limited, DHI = Druk Holding and Investments Limited, DMEA = Department of Macroeconomic Affairs, MOF = Ministry of Finance, RAA = Royal Audit Authority, PTDP = Phuentsholing Township Development Project

Source: ADB, based on discussions with CDCL (2016).

B. Disbursement

1. Disbursement Arrangements for ADB Funds

15. The loan and grant proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2015, as amended from time to time), and detailed arrangements agreed upon between the government and ADB. Online training for project staff on disbursement policies and procedures is available.⁶ Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.
16. **Channeling of loan and grant proceeds.** The proposed ADB loan and grant would be channeled to the government in US Dollar, and the government will on-lend the loan and pass on the grant to DHI. The subsidiary loan will have a 32-year term, including an 8-year grace period. The subsidiary loan will have an interest rate at 1% during the grace period and 2.55% thereafter. The subsidiary loan will be provided in Ngultrum and the government will bear the exchange rate risk. DHI would provide funds from the ADB loan and grant, and from DHI equity, to CDCL for the project.
17. **Advance fund procedure.** Separate advance accounts will be established and maintained by the Royal Monetary Authority (RMA) for each funding source. The currency of the advance accounts is the US dollar. The advance accounts are to be used exclusively for ADB's share of eligible expenditures. The advance funds will then be transferred to three project sub-accounts maintained by CDCL at the Bank of Bhutan, the country's most reputable commercial bank (one account for loan proceeds, one for grant proceeds, and one for counterpart fund contributions). The RMA will establish the advance accounts in the Department of Macroeconomic Affairs' (DMEA's) name, and DMEA will be accountable and responsible for proper use of advances to the advance accounts including advances to the project's sub-accounts. The project sub-accounts will be for the exclusive use of the project, and receive and funds from ADB and the government through DMEA, following Bhutan's country system, which is well-established and robust. DMEA will advise the Department of Public Account (DPA) for the release of funds to the respective project accounts. The PMU will be responsible for monthly reconciliation of the project accounts

⁶ Disbursement eLearning. http://wpqr4.adb.org/disbursement_elearning

and provision of supporting documents for withdrawal applications to ADB for liquidation or replenishment of each project account. DMEA is responsible for the reconciliation of the advance accounts with project accounts before submitting withdrawal applications to ADB.

18. The total outstanding advance to each advance account should not exceed the estimate of ADB's share of expenditures to be paid through the advance account for the forthcoming 6 months. CDCL may request initial and additional advances to the advance account based on an estimate of expenditure sheet setting out the estimated expenditures to be financed through the account for the forthcoming 6 months.⁷ Supporting documents should be submitted to ADB or retained by the borrower in accordance with ADB's Loan Disbursement Handbook (2017, as amended from time to time) when liquidating or replenishing the advance account.
19. **Project sub-accounts.** Three separate project sub-accounts will be established and maintained by CDCL for each funding source. The project sub-accounts are to be used exclusively for ADB's share of eligible expenditures. CDCL shall ensure that every liquidation and replenishment of each project sub-account is supported by sufficient documentation in accordance with ADB's Loan Disbursement Handbook.
20. **Applicable disbursement procedures.** The use of advance account procedures have been adopted for previous ADB-funded projects in the country, following the established government budget and fund management system, with which the Executing Agency is familiar.
21. **Statement of expenditure procedure.**⁸ The SOE procedure may be used for reimbursement of eligible expenditures or liquidation of advances to the advance account(s). The ceiling of the SOE procedure is the equivalent of \$100,000 per individual payment. Supporting documents and records for the expenditures claimed under the SOE should be maintained and made readily available for review by ADB's disbursement and review missions, upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit. Reimbursement and liquidation of individual payments in excess of the SOE ceiling should be supported by full documentation when submitting the withdrawal application to ADB.
22. Before the submission of the first withdrawal application, the borrower should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the government, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is \$100,000 equivalent. Individual payments below this amount should be paid through the advance fund procedure, unless otherwise accepted by ADB. The borrower should ensure sufficient category and contract balances before requesting disbursements.
23. Withdrawal applications and supporting documents will demonstrate, among other things that the goods, and/or services were produced in or from ADB members, and are eligible for ADB financing.

2. Disbursement Arrangements for Counterpart Fund

⁷ ADB. 2015. Loan Disbursement Handbook. Appendix 10B.

⁸ SOE forms are available in Appendix 7B and 7D of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

24. Government counterpart funds will be provided to PMU and PIU under CDCL, from DHI and kept in project accounts of PMU and PIU. PMU and PIU will prepare the disbursement projections and transmit to the government, to earmark the required funds for budgeting purposes.
25. CDCL will submit to ADB, annual contract awards and disbursement projections before the start of each calendar year using the ADB's standard templates. CDCL is responsible for (i) requesting budgetary allocations for counterpart funds; (ii) collecting supporting documents for the project; and (iii) preparing and sending withdrawal applications to ADB.

C. Accounting

26. CDCL will maintain, or cause to be maintained, separate books and records by funding source for all expenditures incurred on the project following accrual-based accounting following the International Financial Reporting Standards. CDCL will prepare project financial statements in accordance with the government's accounting laws and regulations which are consistent with international accounting principles and practices.

D. Auditing and Public Disclosure

27. CDCL will cause the detailed project financial statements to be audited in accordance with International Standards on Auditing, by an independent auditor acceptable to ADB. The audited project financial statements together with the auditor's opinion will be presented in the English language to ADB within 6 months from the end of each fiscal year by CDCL.
28. The audited entity financial statements, together with the auditor's report and management letter, will be submitted in the English language to ADB within 1 month after their approval by the relevant authority.
29. The audit report for the project financial statements will include a management letter and auditor's opinions, which cover (i) whether the project financial statements present an accurate and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting standards; (ii) whether the proceeds of the loan and grant were used only for the purpose(s) of the project; and (iii) whether the borrower or executing agency was in compliance with the financial covenants contained in the legal agreements (where applicable).
30. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.
31. The government, DHI and CDCL have been made aware of ADB's approach to delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.⁹ ADB reserves the right to require a change in the auditor (in a

⁹ ADB's approach and procedures regarding delayed submission of audited project financial statements:

- (i) When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (a) the audit documents are overdue; and (b) if they are not received within the next 6 months, requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.
- (ii) When audited project financial statements are not received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters. ADB will (a) inform the

manner consistent with the constitution of the borrower), or for additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

32. Public disclosure of the audited project financial statements, including the auditor's opinion on the project financial statements, will be guided by ADB's Public Communications Policy 2011.¹⁰ After the review, ADB will disclose the audited project financial statements and the opinion of the auditors on the project financial statements no later than 14 days after ADB's confirmation of their acceptability by posting them on ADB's website. The management letter, additional auditor's opinions, and audited entity financial statements will not be disclosed.¹¹

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

33. All advance contracting and retroactive financing will be undertaken in conformity with ADB Procurement Guidelines (2015, as amended from time to time) and ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The issuance of invitations to bid under advance contracting and retroactive financing will be subject to ADB approval. The borrower, DHI and CDCL have been advised that approval of advance contracting and retroactive financing does not commit ADB to finance the project.
34. **Advance contracting.** The works and services packages to be financed by the project through advance contracting are (i) Civil works CW-01 (River training, cross drainage and land reclamation); and (ii) Consulting services CS-01 (Project Implementation Consultant). Eligible PMU and PIU setting up expenses (office equipment, vehicles, and personnel) may also be part of advance contracting and retroactive financing. Table 8 indicates the schedule for advance contracting, for CS-01 and CW-01, including status for each activity.
35. **Retroactive financing.** Retroactive financing is allowed for reimbursement of eligible expenses against civil works and consulting services up to a maximum amount equivalent to 20% of the total ADB loan and grant, incurred before loan effectiveness, but not more than 12 months before the signing of the loan agreement.

executing agency of ADB's actions; and (b) advise that the loan may be suspended if the audit documents are not received within the next 6 months.

- (iii) When audited project financial statements are not received within 12 months after the due date, ADB may suspend the loan.

¹⁰ Public Communications Policy: <http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications>.

¹¹ This type of information would generally fall under public communications policy exceptions to disclosure. ADB. 2011. *Public Communications Policy*. Paragraph 97(iv) and/or 97(v).

Table 8: Advance Actions

Activity	Responsible	Due date	Comment
CS-01 (Project Implementation Consultant) Schedule			
Preparation and submission of S-0 to ADB	CDCL	8 Dec 2016	Actual
Short listing and submission S-1	CDCL	21 Feb 2017	Actual
RFP issued to short listed firms	CDCL	24 Mar 2017	Actual
Receipt of RFP	CDCL	15 May 2017	Actual
Technical proposal evaluation and submission S-2	CDCL	19 Jul 2017	Actual
Technical and price evaluation, Submission S-3	CDCL	14 Aug 2017	Actual
Submission of S-4	CDCL	13 Sep 2017	Actual
Consultant mobilization	CDCL	1 Jun 2018	

Activity	Responsible	Due date	Comment
CW-01 (River training, cross drainage and land reclamation) Schedule			
Submission bid document to ADB	CDCL	14 Mar 2017	Actual
Advertise Bid Notice	CDCL	25 May 2017	Actual
Receipt of bids	CDCL	31 Jul 2017	Actual
Technical bid evaluation report submission to ADB	CDCL	17 Aug 2017	Actual
Price bid evaluation report submission to ADB	CDCL	21 Sep 2017	Actual
Issue of contract acceptance letter / award	CDCL	15 May 2018	
CW-01 Start date	CDCL	15 Jun 2018	

ADB = Asian Development Bank, CDCL = Construction Development Corporation Limited, CS = consulting services, CW = civil works, RFP = request for proposal

B. Procurement of Goods, Works, and Consulting Services

36. All procurement of goods and works will be undertaken in accordance with ADB's Procurement Guidelines (2015, as amended from time to time).
37. International competitive bidding (ICB) procedures will be used for civil works contracts estimated to cost \$3,000,000 or more, and goods contracts valued at \$1,000,000 or higher. Shopping will be used for procurement of works and goods worth less than \$100,000.
38. When and if any national competitive bidding (NCB) is proposed, ADB and the government will review the public procurement laws of the government to ensure consistency with ADB's Procurement Guidelines (2015, as amended from time to time), before the start of any procurement. Threshold for NCB shall be below that of ICB. Works by government-owned entities (for activities which are not suitable for competitive bidding) shall be done through force account method. Small service contracts (works considered non-competitive in nature i.e., excavation of small channels, earth shifting, turfing, tree planting and other misc. works in the project area) may be directly contracted as per ADB guidelines for community participation in procurement for works, with a limit of \$20,000 per package.

C. Procurement Plan

39. An 18-month procurement plan indicating threshold and review procedures, goods, works, and consulting service contract packages and national competitive bidding guidelines is in Appendix F. The procurement plan, as approved by ADB, describes all procurement of

goods and works to be undertaken by the project. ADB will review documents and submissions related to procurement at all major milestones prior to proceeding with the procurement process. PMU will be supported by procurement specialist from the PPTA and PIC in bid document preparation and evaluation. This will be supplemented by regular training on procurement for PMU staff.

D. Consultant's Terms of Reference

40. All consultants will be recruited according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). An estimated 371 person-months (207 international, 164 national)¹² of consulting services are required to facilitate project management and implementation. Three consulting firms will be engaged using the quality-and cost-based selection (QCBS) method with a standard quality–cost ratio of 90:10. Individual consultants will be engaged using the individual consultant selection method. The terms of reference for the Project Implementation Consultant is in Appendix G-1. The outline terms of reference for: (i) independent environmental monitoring expert; (ii) urban management advisor; (iii) investment promotion advisor; (iv) sustainable township management capacity development; and (v) investor promotion and transaction advisory services are provided in Appendix G-2 to G-6 respectively.

VII. SAFEGUARDS

41. The safeguard category for environment is 'A', for involuntary resettlement 'C', and for indigenous peoples 'C'. Resettlement and indigenous peoples' plans are not required.

A. Environment

42. The environmental management plan (EMP) contained in the EIA report is the strategic document to provide direction to the implementation of the environmental safeguards requirements of the Project. The EMP has been developed following basic environmental management principals and it outlines the main environmental impacts of the project, proposed mitigations measures, and the proposed design mitigations to ensure inclusion in the bidding documents, standard construction mitigation measures, monitoring and a proposed institutional arrangement for further implementation of environmental management during the construction phase. It also details the implementation arrangements and the roles and responsibilities of each of the main stakeholders. It discusses the grievance redress mechanism for community feedback and complaints and a summary of the proposed mitigation and monitoring matrix showing how the contractor should mitigate the identified impact and reduce risk. The mitigation and management principles set out in the EMP provide advice to all Contractors when preparing subproject site-specific contractor's environmental management plans (CEMP's), which will be implemented in accordance with the relevant provisions of the Contract.

B. Institutional roles and responsibilities

43. The key stakeholders in the implementation of environmental safeguards are as follows:

¹² PIC=145 international and 95 national; environmental monitor=8 international; urban management advisor=3 international; investment promotion advisor=3 international; Sustainable Township Management Capacity Development=31 international and 25 national; and Investor Promotion and Transaction Advisory Consultant= 17 international and 44 national person-months.

- (i) The proponent and implementing agency - the Construction Development Corporation Limited
- (ii) The National Environment Commission of Bhutan
- (iii) DHI as the project's executing agency.
- (iv) The PTDP project management unit (PMU)
- (v) The Project Implementation Unit (PIU)
- (vi) The Contractor(s)
- (vii) Phuentsholing municipality and the affected village communities in the projects area of influence
- (viii) The Asian Development Bank

44. **National Environment Commission (NEC):** The proponent's environmental assessment document is the Environmental Impact Assessment (EIA) prepared in accordance with the Environmental Assessment Act (2000) and regulations. This legislation establishes procedures for assessing the potential impacts of plans, policies, programs and projects and give approvals using an Environmental Clearance (EC) which may have conditions attached which lasts for a period of five years. The NEC is the national body primarily responsible for environmental management of proposed and ongoing development. The NEC is responsible for administering the Act and to review the EIA and decide whether an Environmental Clearance can be issued. The NEC is also legally responsible for monitoring the implementation of the EIA and EMP of the ongoing project.
45. **Project Management Unit (PMU)** The Project Director (PMU) will be supported by an Environmental Manager (PMU) and PIU environmental staff. They will oversee implementation of environmental safeguards work under the project. They will also: (i) continue updating the EMP if necessary throughout project implementation in accordance with ADB's Safeguards Policy Statement (SPS, 2009) and the Environmental Assessment Act (2000), and submit to ADB for review, final approval, and disclosure prior to commencement of works; (ii) before expiry of the initial EIA after five years, review and revise (if necessary) the EIA and undertake necessary actions as required, to obtain NEC and ADB continued approval; and (iii) liaise with the relevant authorities to obtain all required clearances and environmental permits in a timely manner prior to construction;
46. **Project Implementation Unit (PIU)** The Environment Officer in the PIU, assisted by the environmental specialist on the PIC team, will oversee implementation of environmental safeguards work under the project, including the following activities: (i) facilitate and confirm overall compliance with Government of Bhutan rules, oversee timely preparation and finalization of CEMP by contractors, and assist in obtaining all required clearances and environmental permits in a timely manner prior to construction; (ii) monitor CEMP implementation by the contractors during construction including all mitigation measures and environmental parameters (air and water quality, noise, etc.) and taking corrective actions where necessary; (iii) address and record grievances through the Grievance Redress Mechanism in a timely manner, and taking quick corrective actions where necessary; (iv) ensure that all required environmental study (e.g. biodiversity studies on aquatic ecosystem and elephant social behavior) are professionally and comprehensively carried out; (v) ensure that all environmental quality monitoring required for the project are comprehensively done; and (vi) review monthly environmental monitoring reports submitted to PIU by contractors and consultants, and preparing and submitting semi-annual environmental monitoring reports to ADB on behalf of the PMU. All semi-annual monitoring reports submitted to ADB will be disclosed on ADB's website, as per ADB safeguards and communication policies.

47. **Project Implementation Consultant (PIC)** The PIC will support PIU in design review, construction supervision and monitoring and evaluation. The role of the PIC safeguards team is to oversee overall implementation of the EMP and CEMP, and prepare and implement ongoing ambient monitoring at the monitoring sites used for the completion of the EIA. It will also advise the overall project engineer on addressing environmental and social management issues.
48. **Contractors.** Contractors play a critical role in implementing environmental safeguards including the following activities: (i) prepare and obtain approval of the CEMP, based on the EIA/EMP and outline CEMP prepared during detailed designs and comply with *ADB's SPS 2009 and the EMP*. This will be done during the mobilization phase after contract award. The PIC environmental safeguards specialist will approve the CEMP on behalf of PIU before any construction work commences; (ii) carry out all environmental mitigation measures in the approved CEMPs during construction including regular testing and monitoring of environmental parameters outlined; (iii) address public grievances by taking quick corrective actions and reporting status of grievances and redress to PIU/PMU; (iv) undertake its own monitoring of project related impacts and prepare an environmental section of the monthly report to CDCL environment team and PIC; (v) the contractor is responsible for implementing all environmental, health and safety actions included in the CEMP and relevant clauses in the bidding documents; and (vi) the contractor is required to assign an Environmental Safety Officer whose responsibilities will include:
- Coordinating with the PIC during preparation and approval of the CEMP.
 - Ensuring that the contractor engages a suitable expert as a resource person or organization to undertake STIs/ HIV/ AIDS briefings and awareness raising amongst the contractor's employees and neighboring communities with follow-up upon request.
 - Coordinating with PIU and PIC in respect of community consultation.
 - Participating in monitoring and coordinating with PIC to ensure that environmental management activities are reported as required.
 - Ensuring that the contractor does not commence construction activities until requisite approvals have been received from NEC and/or other Government permitting agencies such as the Department of Mining responsible for quarries.
 - Assigning a Community Liaison Officer (CLO) who would coordinate and communicate with the PIC as required, to facilitate consultation with the affected villages, various stakeholders, and ensuring smooth implementation of the subproject.
49. Provision will be made in the bidding documents of each package for the costs of environmental management and monitoring including preparation of the CEMP.
50. **Phuentsholing Thromde and Village Communities:** The Thromde and Village leaders and organizations will assist in arranging meetings, facilitating consultation and providing information about affected communities and environmental impacts of construction. Documentation of issues that arise is an integral part of the internal monitoring report prepared by the Contractor. The Consultation process will be set out and agreed with PIU for the preparation of the project CCP which will be prepared and implemented by the PIC social team. If issues arise during construction, the local communities can provide input and advice to the Contractor's CLO or use the GRM directly for issues and grievances which have not been satisfactorily resolved.
51. **ADB Role:** ADB's safeguard due diligence emphasizes planning, environmental and social

impact assessments and safeguard documentation. Through such due diligence and review, ADB will confirm (i) that all key potential social and environmental impacts and risks of a project are identified; (ii) that effective measures to avoid, minimize, mitigate, or compensate for the adverse impacts are incorporated into the safeguard plans and project design; (iii) that the borrower/client understands ADB's safeguard policy principles and requirements and has the necessary commitment and capacity to manage the risks adequately; (iv) that, as required, the role of third parties is appropriately defined in the safeguard plans; and (v) that consultations with affected people are conducted in accordance with ADB's requirements.

C. Grievance Redress Mechanism

52. The project is required to have a mechanism to give avenue for peoples who affected by the project to submit their grievances and a mechanism for the project to resolve a grievance received from affected people.
53. Two tier mechanisms will be adopted by the project. The first tier, will be in the field PIU level. Secretariat of GRM will be established in the PIU office, with PIC health and safety consultant acting as the secretary. At the first level GRM, the team called as Grievance Redress Committee will be established at the PIU level and consist of the PIU head as the lead of GRC, with the following permanent member: (i) the Environment Officer of PIU, and (ii) the PIC consultants (social development, environment, and health and safety), (iii) representative of local leader, (iv) representative from District office, (v) representative from reputable community based organization, and (vi) members on call basis based on the nature of grievance representing relevant section of district office, contractor, and other PIU staff e.g. engineer. There are four options of complaint/grievances received: (i) PIU office, (ii) Contractor office, (iii) local leader office, and (iv) Thromde office, and 1 GRM first level secretariat that will in the PIU office. The secretariat will actively check with other grievance receivers and record submitted grievance, date, concerns/ grievance type. The secretariat will call a regular meeting to invite all member, and conduct special meetings if receive any grievance. The secretariat will responsible to review the grievance, identify potential solutions, and call the meetings with relevant party. Meeting to resolve a grievance should involve the person who submit the grievance. The time to resolve the grievance at the first level will be maximum 14 days. If the first GRM level could not resolve the grievance it will go to second level/tier GRM.
54. The second level/tier GRM will be led by the PMU head with member from PIU and relevant PMU staff, and relevant Department at the central government level, as well as reputable community-based organization. All grievance should be resolved at this level. The total time required will not be more than 30 days after PIU receiving the grievance. Depending on the severity of the case, an additional time my agreed by the complainant to resolve the grievances. The meeting to resolve a grievance will be held by involving also the people who submit the grievance.
55. The PMU will develop detail a standard operation procedure for GRM. The GRM is not replacing the court system, so complainants can still bring the complaint/grievance to the court while the Project grievance handling the complaint.

D. Health and safety

56. The project will be required to provide workers with a safe and healthy working environment,

taking into account inherent risks, any hazards in the work areas, including physical, chemical, biological, and radiological hazards. The SPS also requires that the government, through the implementing agency, will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work. ADB will review that the PMU and PIU ensures that the project adheres to government health and safety requirements and employs international good practices, as reflected in internationally recognized standards such as the World Bank Group's Environmental Health and Safety Guidelines.

E. Prohibited investment activities

57. Pursuant to ADB's Safeguard Policy Statement (2009), ADB funds may not be applied to the activities described in the ADB Prohibited Investment Activities List set forth in Appendix 5 of the Safeguard Policy Statement (2009).

VIII. GENDER AND SOCIAL DIMENSIONS

58. A summary poverty reduction and social strategy (SPRSS) has been prepared. The PMU/PIU should ensure that all stakeholders' consultation meetings invite women and women organizations as well as activists/organization concerns with the project especially of developing urban facilities and developing the flood early warning system. The PMU/PIU should also ensure that measures have been taken to raise public awareness of the risks of HIV/AIDS and other sexually transmitted infections, drug and human trafficking. The PMU/PIU will identify important parties including women organizations and women as individuals to be key agents involved with preparing and implementing the flood early warning system, and ensure these parties and women are invited to all trainings and community discussions. The civil works contractors are to take measures to protect construction workers from the risks of HIV/AIDS and other sexually transmitted infections, and for the testing and treatment of construction workers. Contract bidding documents to provide clauses designed to ensure that all civil works contractors comply with applicable labor laws, do not employ child labor, encourage the employment of the poor, particularly women, and do not offer different wages to men and women and has to provide equal pay for equal work. Dialogue and communication (both written and verbal) with stakeholders will be carried out in a specific and culturally sensitive manner and in local languages, and continue to conduct public consultations throughout project implementation to ensure that stakeholders including affected people aware on the progress project achievement and requirements. The quarterly progress report will also include a record of women participation in all consultation meetings, with disaggregation for meetings related to preparing and implementing the FEWS and FMP.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION

A. Project Design and Monitoring Framework

59. The design and monitoring framework (DMF) of the project is in Appendix A.

B. Monitoring

60. Both government and ADB have their own separate monitoring responsibilities. The extent of monitoring activities, including their scope and periodicity, will be commensurate with the

project's risks and impacts. Governments, through the implementing agency, are required to implement safeguard measures and relevant safeguard plans, as provided in the legal agreements, and to submit periodic monitoring reports on their implementation performance. Monitoring and supervising of social and environmental safeguards is integrated into the project performance management system (PPMS).

61. **Project performance monitoring.** Within 12 months of loan effectiveness, the PMU will establish a PPMS using the targets, indicators, assumptions, and risks in the DMF. The PPMS will take into account the important monitoring parameters in addition to those included in the DMF. The baseline data corresponding to indicators and targets set out in the DMF and PPMS will be determined from the detailed design reports. Disaggregated baseline data for output and outcome indicators gathered will be updated and reported quarterly through the quarterly progress reports and after each ADB review mission. These quarterly reports will provide information necessary to update ADB's project performance reporting system. Results of a comprehensive completion survey will be included in the project completion report.
62. **Compliance monitoring.** PMU will monitor and ensure the compliance of loan covenants—policy, legal, financial, economic, environmental, and others. All non-compliance issues, if any, will be updated in quarterly progress reports together with remedial actions. Each ADB review mission (at least two times a year) will also monitor the status of compliance with loan assurances and raise the non-compliance issues with DHI and agree on remedial actions.
63. **Safeguards monitoring.** The supervision, quality control and enforcement of contract provisions is the responsibility of the PMU/PIU Environment Team and the PIC (Engineer to the Contract). The responsibility for preparation and implementation of the CEMP is with the Contractor.
64. The PIC is responsible for the preparation and implementation of ongoing ambient environmental quality monitoring using the same or a sample of the location of the monitoring sites used for the collection of baseline data in the EIA.
65. On behalf of the NEC, it will also provide quality assurance and random auditing, in order to ensure that the agreed procedures are in place and being operated in a satisfactory manner and in accordance with the national environmental regulations and specific contract provisions. If possible, personnel from the NEC will arrange to carry out these audits jointly at an agreed schedule.
66. The outcomes of the monitoring will be included in the overall safeguards monitoring progress reports to be submitted to NEC. These will also be consolidated and submitted to ADB for disclosure on a semi-annual basis.
67. For internal project related impact monitoring, a daily and/or weekly monitoring checklist will be required by the Contractor and a monthly report by the Contractor will incorporate these checklists. Any issues relating to routine compliance and reporting of any incidents / complaints that have occurred and the progress of their resolution.
68. The CEMP for each package will detail the contents of the monthly environmental report which at a minimum will include:
 - Routine non-compliances

- Checklists for monitoring of all sub plans of the CEMP.
- Reporting status for implementation of each CEMP component/activity and each level of non-compliance and proposed contract enforcement
- Incident and complaint classification with required reporting timeframes and status of resolution
- Reporting of the results of regular community update / progress meetings including use of local labor (gender disaggregated)

69. ADB will also monitor the project externally with an independent panel on an ongoing basis until a project completion report is issued.

70. The monitoring reports will be prepared by the PIC safeguards specialists, with inputs from the contractors, where relevant. The status of safeguard implementation, issues, grievances received and resolved, and corrective actions are to be clearly reported to ADB. The PMU will submit separate semi-annual environmental monitoring reports to ADB, which will be disclosed on ADB's website. The status of safeguards implementation will also be discussed at each ADB review mission and with necessary issues and agreed actions recorded in Aide Memoires.

71. **Gender and social dimensions monitoring.** Ensure that women through their local community organizations are invited to the public consultations to provide inputs to take into account the needs of women especially in designing and planning of public facilities such as street lighting, public toilet, and recreation areas. Women from project areas should also participate in all training and outreach activities on HIV/STD, and also on hygienic training as part of development water supply and sanitation facilities. The PIU will conduct public awareness program on the opportunities for communities to work in the project, and will also urge the recruitment of women to work in the project if the required skills are met, and equal pay will be enforced. The bidding documents provide clauses designed to ensure that all civil works contractors comply with applicable labor laws; do not employ child labor or forced labor; encourage the employment of the poor, particularly women, with equal pay for equal work.

C. Evaluation

72. The DHI and ADB will jointly review the project at least twice a year. This includes (i) the performance of the PMU, PIU, consultants and contractors; (ii) physical progress of the project, effectiveness of safeguards; (iii) compliance with loan assurances; and (iv) assessment of operational sustainability in technical and financial terms, including land leasing and utility tariff determination. In addition to the regular loan reviews, the DHI and ADB will undertake a comprehensive midterm review in the third year of project implementation to identify problems and constraints encountered and suggest measures to address them. Specific items to be reviewed will include: (i) appropriateness of scope, design, implementation arrangements, and schedule of activities; (ii) assessment of implementation progress against project indicators; (iii) capacity development of CDCL for ensuring sustainability; (iv) compliance with safeguard measures; (v) extent to which the activities to provide some gender benefits have been undertaken; (vi) lessons learned, good practices, and corrective actions; and (vii) changes recommended. Within 6 months of physical completion of the Project PMU will submit a project completion report to ADB.¹³

¹³ Project completion report format is available at: <http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar>

D. Reporting

73. CDCL, the implementing agency, will provide ADB with (i) quarterly progress reports in a format consistent with ADB's project performance reporting system; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions, (c) updated procurement plan, and (d) updated implementation plan for the next 12 months; (iii) Environmental monitoring, which cover report on progress in implementing environmental management plan, monitoring environmental quality, and reporting any activities related with effort to address environmental concerns of the project, in semi-annual basis, starting after 6 months of loan effectiveness, and (iv) a project completion report within 6 months of physical completion of the project. To ensure that projects will continue to be both viable and sustainable, project accounts and the executing agency audited financial statement together with the associated auditor's report should be adequately reviewed.

E. Stakeholder Communication Strategy

74. The PIU, supported by the PIC, will manage communications during implementation of the Project Phase 1 and preparation of Phase 2. Main activities, amongst other will be to:
- i) Develop, implement and manage an effective public relations plan for promoting the benefits of the Project and disseminating information to associated project stakeholders, general public and non-government organizations (NGOs) on how well social and environmental aspects are taken care of and what benefits are attributed to the poor community;
 - ii) Proactively organizing public relations events as required;
 - iii) Developing and maintaining a Project website to disseminate information and implementation progress, and also provide a feedback and communication system for stakeholders and general public; and
 - iv) Preparing a photographic and video diary of the construction works throughout the entire duration of the Project to show construction activities, progress, and interviews with DHI, PIU, PIC, contractors, government and Thromde staff, and stakeholders. It will be prepared to a high professional standard.
75. Details of the stakeholder communications strategy, including information disclosure and responsible parties, the key message to stakeholders and primary audience with frequency are provided in Table 9.

Table 9: Stakeholder Communication Strategy

Project information to be communicated	Means of Communication	Responsible Agency	Audience(s)	Frequency
Report and Recommendation of the President	ADB Website (linked documents)	ADB	ADB, DHI, CSOs, beneficiaries and Govt of Bhutan	Once
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	During the procurement period
Construction	The selected construction	PIU	ADB, DHI, CDCL,	During the

Project information to be communicated	Means of Communication	Responsible Agency	Audience(s)	Frequency
	company(s) will ensure that the construction areas will have signage boards with their contact information		Stakeholders	construction period
Progress status during construction works and construction issues	Signage boards on site	PIU	General Public	Over the construction period
Project performance reports	ADB and DHI Websites	ADB and DHI	Beneficiaries, stakeholders and Govt of Bhutan,	Quarterly reports
Safeguards monitoring (Environment and social monitoring reports)	ADB websites	ADB and CDCL	ADB, DHI, CSOs, beneficiaries and Govt of Bhutan	Quarterly reports
Project Completion Report	ADB Website	ADB and CDCL	ADB, DHI	After Project

X. ANTICORRUPTION POLICY

76. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.¹⁴ All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all project contractors, suppliers, consultants, and other service providers. Individuals and/or entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.¹⁵
77. To support these efforts, relevant provisions are included in the loan and grant agreements and the bidding documents for the project.

XI. ACCOUNTABILITY MECHANISM

78. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make an effort in good faith to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.¹⁶
79. The project will establish a Grievance Redress Mechanism to ensure greater accountability. Within 12 months of loan effectiveness, the PMU will prepare a Grievance Redress Mechanism, acceptable to ADB, and establish a special committee to receive and resolve complaints/grievances or act upon reports from stakeholders on misuse of funds and other

¹⁴ Anticorruption Policy: <https://www.adb.org/documents/integrity-principles-and-guidelines>

¹⁵ ADB's Integrity Office web site: <https://www.adb.org/site/integrity/main>

¹⁶ Accountability Mechanism. <https://www.adb.org/site/accountability-mechanism/main>

irregularities, including grievances due to resettlement. The special committee will (i) make public of the existence of this Grievance Redress Mechanism; (ii) review and address grievances of stakeholders of the project, in relation to either the project, any of the service providers, or any person responsible for carrying out any aspect of the project; and (iii) proactively and constructively responding to them.

XII. RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL

80. All revisions and/or updates during the course of implementation should be retained in this section to provide a chronological history of changes to implemented arrangements recorded in the PAM, including revision to contract awards and disbursement s-curves.

DESIGN AND MONITORING FRAMEWORK

Impacts the Project is Aligned with			
<p>a. Balanced and sustainable development of human settlements ensured (Eleventh Five Year Plan, 2014–2018)^a</p> <p>b. Smart growth principles applied in planning and development (Phuentsholing Structure Plan 2013–2028)^b</p>			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
<p>Outcome Phuentsholing's urban area protected from floods and expanded with improved amenities and services</p>	<p>By 2026:</p> <p>a. Phuentsholing and reclaimed land protected from 100-year flood events in the Amochhu River (2018 baseline: Phuentsholing is protected from mean annual floods)</p> <p>b. At least 10% of fully serviced plots tendered for development (2018 baseline: NA)</p>	<p>a. Hydrology report at project completion</p> <p>b. Annual reports of DHI and the CDCL</p>	<p>Lower than expected demand for leasable land</p>
<p>Outputs 1. Flood and erosion protection measures installed</p>	<p>By 2025:</p> <p>1a. 4 km of climate- and erosion-resilient river walls constructed to protect against 100-year probable flood (2018 baseline: 0)</p> <p>1b. At least 66 ha of land reclaimed (2018 baseline: 0)</p> <p>1c. A flood early warning system and community-based flood management plan established and operational (2018 baseline: NA)</p>	<p>1a–c. Annual project progress reports</p>	<p>Disasters triggered by natural hazards and extreme weather conditions lead to implementation delays.</p>
<p>2. Municipal infrastructure constructed</p>	<p>2a. 10 km of roads with footpaths, landscaping, and streetlights planned with at least 30% female participation (2018 baseline: 0)</p> <p>2b. Water treatment plant with a capacity of 4 MLD constructed (2018 baseline: none)</p> <p>2c. 12 km of new primary and secondary water mains constructed (2018 baseline: 0)</p> <p>2d. 9 km of new sewer mains and 9 km of new storm drains constructed (2018 baseline: 0)</p>	<p>2a–i. Annual project progress reports</p>	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
	<p>2e. A sewerage treatment plant with a capacity of 3 MLD constructed (2018 baseline: 0)</p> <p>2f. A resource recovery system for solid waste management installed (2018 baseline: 0)</p> <p>2g. A 630 KVA grid substation constructed (2018 baseline: 0)</p> <p>2h. 16 circuit-km of 415-volt power distribution lines installed (2018 baseline: 0)</p> <p>2i. 11 circuit-km of telecommunication transmission cables installed (2018 baseline: 0)</p>		
<p>3. Township management systems installed</p>	<p>3a. At least 80% of township management staff reported improved knowledge of modern urban management (2018 baseline: NA)</p> <p>3b. An asset management system established with 100% of project infrastructure and facilities geocoded in a database (2018 baseline: NA)</p> <p>3c. At least 10 potential investors attended investor outreach campaigns (2018 baseline: NA)</p>	<p>3a–c. Annual project progress reports</p>	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
<p>Key Activities with Milestones</p> <p>1. Flood and erosion protection measures installed</p> <p>1.1 Award works contract for constructing river walls and land reclamation (June 2018)</p> <p>1.2 Award contract for flood early warning system (March 2020)</p> <p>1.3 Operationalize flood management plan (December 2021)</p> <p>1.4 Complete and commission all facilities (June 2022)</p> <p>2. Municipal infrastructure constructed</p> <p>2.1 Award works contract for constructing roads, water supply, and sanitation systems (June 2021)</p> <p>2.2 Complete and commission all facilities (June 2024)</p> <p>2.3 Procure O&M equipment (March 2025)</p> <p>2.4 Complete first year of 5-year operation contract (June 2025)</p> <p>3. Township management systems installed</p> <p>3.1 Recruit urban management advisor (March 2022)</p> <p>3.2 Recruit investment promotion advisor (September 2022)</p> <p>3.3 Recruit sustainable township management capacity development consultant (December 2022)</p> <p>3.4 Initiate activities to build the capacity of township management staff (January 2023)</p> <p>3.5 Recruit investor promotion and transaction advisory services consultant (June 2023)</p> <p>3.6 Initiate investor promotion activities (July 2023)</p> <p>3.7 Establish GIS database for built infrastructure (September 2024)</p>			
<p>Project Management Activities</p> <p>Mobilize project implementation consultant (June 2018)</p> <p>ADB undertakes biannual review missions</p>			
<p>Inputs</p> <p>ADB: \$28.74 million (concessional OCR loan) and \$24.26 million (ADF grant)</p> <p>Government: \$10 million</p>			
<p>Assumptions for Partner Financing</p> <p>NA</p>			

ADB = Asian Development Bank, ADF = Asian Development Fund, CDCL = Construction Development Corporation Limited, DHI = Druk Holding and Investments Limited, GIS = geographic information system, ha = hectare, km = kilometer, KVA = kilovolt-ampere, MLD = million liters per day, NA = not applicable, OCR = ordinary capital resources, O&M = operation and maintenance.

^a Government of Bhutan. 2013. *Eleventh Five Year Plan, 2014–2018*. Thimphu.

^b Government of Bhutan, Ministry of Works and Human Settlements. 2013. *Phuentsholing Structure Plan 2013–2028 (Vol. 01)*. Thimphu.

Source: ADB.

PAM Appendix B: Implementation Program

Indicative Activities	2017				2018				2019				2020				2021				2022				2023				2024				2025	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
Output 1: Flood and erosion protection measures installed																																		
1.1 Award CW-01 river training and land reclamation contractor																																		
CW-01 Construction works																																		
CW-01 Defects and maintenance period																																		
1.2 Award CW-03 flood early warning system contract																																		
CW-03 Construction works																																		
CW-03 Defects and maintenance period																																		
1.3 Operationalise flood management plan																																		
Preparation of community-based flood management plan (by CS-01 consultant)																																		
1.4 Complete and commission all facilities																																		
Output 2: Municipal infrastructure constructed																																		
2.1 Award works contract for constructing roads, water supply, and sanitation systems																																		
2.2 Complete and commission all facilities																																		
2.2.1 Mobilize CW-02 common urban infrastructure contractor																																		
CW-02 Construction works																																		
CW-02 Defects and maintenance period																																		
2.2.2 Mobilize CW-04 power transmission infrastructure contractor																																		
CW-04 Construction works																																		
CW-04 Defects and maintenance period																																		
2.2.3 Mobilize CW-05 ICT infrastructure contractor																																		
CW-05 Construction works																																		
CW-05 Defects and maintenance period																																		
2.3 Procure O&M equipment																																		
2.4 Complete first year of 5-year operation contract																																		

Indicative Activities	2017				2018				2019				2020				2021				2022				2023				2024				2025		
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	
Communication strategy key activities							x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Biannual and midterm review								x		x		x		x		x		x		x		x		x		x		x		x		x		x	
Project completion report																																			x

DMF = design and monitoring framework, CW = civil works; ME = mechanical and electrical; CS = consulting services

Source: Asian Development Bank.

PAM Appendix C: Project Advisory Committee

Ref.	Designation / Organisation
1	CEO, DHI as chair
2	DHI Nominee Director
3	Executive Secretary or Chief Urban Planner from Phuentsholing Thromde
4	Chief Urban Planner, Ministry of Works & Human Settlement
5	Chief level, Department of Hydrology, Ministry of Economic Affairs
6	Chief level, Ministry of Finance
7	CEO, CDCL
8	Project Director, CDCL as member secretary
9	Other specific invitees as required

PAM Appendix D: PMU and PIU Staffing Cadre

Project Management Unit

Ref	Position	Type
1	Chief Executive Officer	Part time
2	Director, Dept of Engineering & Construction	Part time
3	Finance General Manager	Part time
4	Project Director	Full time
5	Project Accountant	Full time
6	Urban Planner	Part time
7	Environment Manager	Part time
8	Procurement and Contracts Manager	Part time
9	Civil Engineer	Part time
10	Legal Officer	Part time
11	Human Resources Manager	Part time

Project Implementation Unit

Ref	Position	Type
1	Project Manager	Full time
2	Deputy Project Manager	Full time
3	Assistant Accountant	Full time
4	Site Logistics and Services Manager	Full time
5	Document Control Manager	Full time
6	Document Control Assistant	Full time
7	Procurement and Contracts Manager	Full time
8	Stakeholder, Community & Public Relations Manager	Full time
9	Environment Officer	Full time
10	Health & Safety Inspector	Full time
11	Materials/ Geotechnical Engineer	Full time
12	Civil Engineer	Full time
13	Civil Works Inspector (1)	Full time
14	Civil Works Inspector (2)	Full time
15	Senior Survey (1)	Full time
16	Surveyor (1)	Full time
17	Surveyor (2)	Full time
18	Assistant Surveyor/CAD/GIS (1)	Full time
19	Assistant Surveyor/CAD/GIS (2)	Full time
20	Concrete Engineer	Full time
21	Mechanical Engineer	Part time
22	Electrical Engineer	Part time

PAM Appendix E: Strategic Action Plan for Sustainable Township Management

1. **Overview.** One of the fundamental aspects of the project is to ensure high-quality municipal services in the new township to secure return on investment. It is envisaged that the developer, CDCL, will be responsible for operations and maintenance (O&M) of the township's infrastructure through a Special Development Authority ('the Authority'), and be the main service provider.¹⁷ However, CDCL shall have agreements with the Phuentsholing Thromde to specify roles and responsibilities, sharing of any facilities or services, and revenue sharing arrangements.

2. The Authority shall function as an autonomous body appointed by the government. Among other things, it will be responsible for ensuring compliance with the planning regulations and procedural regulations. After preliminary review, the Authority would forward developer's applications to the Phuentsholing Thromde to ensure adherence to Common Building Regulations related to structural safety, seismic safety, fire safety, and consistency with Bhutanese architecture guidelines, etc. The Authority would operate under special development control regulations, which are likely to differ from existing regulations largely in terms of setbacks and height controls, for example.¹⁸

3. **Implementation and monitoring.** The proposed arrangement of a Development Authority and special planning area is new to Bhutan. There is still several policy, legal, financial, institutional and human resources issues to be resolved to clarify the institutional framework for the township's management. The roadmap below was agreed in principle with the government and will need to be updated from time to time. Its implementation and reporting on progress will be included as a loan covenant. ADB review missions shall monitor the implementation of the roadmap closely. The Roadmap includes timelines, responsibilities and sources of funding, where required, to support the achievement of each action.

Table 1 Roadmap

No	Action/activity	Timeline	Responsibility	Source of funding/package
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 Jun 2017	ADB/ CDCL	Legal expert mobilized through ADB RETA No. 9050

¹⁷ Package CW-02: *Common Urban Infrastructure* includes O&M of urban infrastructure by the private sector for 5 years.

¹⁸ The development control regulations for the Phuentsholing Township Development Project are in draft form and have not yet been approved.

No	Action/activity	Timeline	Responsibility	Source of funding/package
2	<p>Legal or policy framework. Initiate approval for necessary policies or regulations - e.g. development control regulations</p> <p>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).</p>	31 Dec 2019	CDCL	
Institutional				
3	<p>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.</p> <p>(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</p>	31 Dec 2019	CDCL/ Phuentsholing Thromde/ MWHS	Government consultant to provide recommendations.
4	<p>Financial flows. Clarify all revenue collection, revenue-sharing arrangements/amounts and financial flows between CDCL and Phuentsholing (i.e. from fees, land tax, property tax, building permit fee, etc.). Determine mechanism and process for periodic review of financial related agreements.</p>	31 Dec 2019	CDCL/ Phuentsholing Thromde/ MWHS	Government consultant to provide initial recommendations. Stakeholders to finalize through consultation meetings.
5	<p>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.</p>	31 Dec 2019	CDCL/ Phuentsholing Thromde/ MWHS	
6	<p>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.)</p> <p>Finalize detailed terms of reference for contract package CS-05: <i>Sustainable township management capacity development.</i></p>	31 Jan 2020	CDCL	Individual loan consultant recruited by CDCL

No	Action/activity	Timeline	Responsibility	Source of funding/package
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 June 2020	CDCL/ Phuentsholing Thromde	CDCL internal budget with support/ recommendations from CS-03 consultant.
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 June 2023	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 2021	CDCL	Individual loan consultant
10	Finalize recruitment of CDCL township management core staff	31 Mar 2022	CDCL	
11	Develop detailed capacity building plan for CDCL and Phuentsholing Thromde ¹⁹ and commence implementation	1 May 2022	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 2022	Phuentsholing Thromde	CS-05
13	Finalize recruitment of additional Phuentsholing Thromde staff Note: recruitment takes about 6 months	15 Oct 2022	Phuentsholing Thromde/ MOWHS	Central government

ADB = Asian Development Bank, CDCL = Construction Development Corporation Limited, CS = consultancy services, GIS = geographic information systems, MOU = memorandum of understanding, MWHS = Ministry of Works and Human Settlements, O&M = operations and maintenance

¹⁹ Thromde may require support for its role on enforcement of development control regulations; and landfill management (among others).

PROCUREMENT PLAN

Basic Data

Project Name: Phuentsholing Township Development Project	
Project Number: 50165-002	Approval Number:
Country: Bhutan	Executing Agency: Druk Holding and Investments Limited
Project Procurement Classification: B	Implementing Agency: Construction Development Corporation Limited
Project Procurement Risk: Moderate	
Project Financing Amount: US\$ 63,000,000 ADB Financing: US\$ 53,000,000 Cofinancing (ADB Administered): Non-ADB Financing: US\$ 10,000,000	Project Closing Date: 31 December 2025
Date of First Procurement Plan: 7 February 2017	Date of this Procurement Plan: May 2018

A. Methods, Thresholds, Review and 18-Month Procurement Plan

1. Procurement and Consulting Methods and Thresholds

Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works		
Method	Threshold	Comments
International Competitive Bidding for Goods	US\$ 1,000,000 and Above	
National Competitive Bidding for Goods	Between US\$ 100,001 and US\$ 999,999	The first NCB is subject to prior review, thereafter post review.
Shopping for Goods	Up to US\$ 100,000	
International Competitive Bidding for Works	US\$ 3,000,000 and Above	
National Competitive Bidding for Works	Between US\$ 100,001 and US\$ 2,999,999	The first NCB is subject to prior review, thereafter post review.
Shopping for Works	Up to US\$ 100,000	
Community Participation in Procurement for Works	Up to US\$ 20,000	Small service contracts may be directly contracted. Works considered non-competitive in nature (i.e., excavation of small channels, earth shifting, turfing, tree planting and other misc. works in adjoining areas).

Consulting Services	
Method	Comments
Quality- and Cost-Based Selection for Consulting Firm	
Individual Consultants Selection for Individual Consultant	

2. Goods and Works Contracts Estimated to Cost \$1 Million or More

The following table lists goods and works contracts for which the procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
CW-1	River training and land reclamation	36,000,000.00	ICB	Prior	1S2E	Q2 / 2017	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: Y Bidding Document: Large Works

3. Consulting Services Contracts Estimated to Cost \$100,000 or More

The following table lists consulting services contracts for which the recruitment activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
CS-01	Project implementation consultant	5,710,000.00	QCBS	Prior	Q4 / 2016	FTP	Assignment: International Quality-Cost Ratio: 90:10 Advance Contracting: Y Comments: As agreed during the PPTA inception mission. Contract amount includes taxes.
CS-02	Independent environmental monitoring expert	250,000.00	ICS	Prior	Q3 / 2018		Assignment: International Expertise: environmental monitoring Advance Contracting: N

4. Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000 (Smaller Value Contracts)

The following table lists smaller-value goods, works and consulting services contracts for which the activity is either ongoing or expected to commence within the next 18 months.

Goods and Works								
Package Number	General Description	Estimated Value	Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
None								

Consulting Services								
Package Number	General Description	Estimated Value	Number of Contracts	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
None								

B. Indicative List of Packages Required Under the Project

The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period).

Goods and Works							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Comments
CW-02	Common urban infrastructure	11,940,000.00	1	ICB	Prior	1S2E	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Large Works
CW-03	Flood early warning system	200,000.00	1	ICB	Prior	1S1E	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods

Consulting Services							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Review (Prior/Post)	Type of Proposal	Comments
CS-03	Urban management advisor	100,000.00	1	ICS	Prior		Assignment: International Expertise: urban management
CS-04	Investment promotion advisor	100,000.00	1	ICS	Prior		Assignment: International Expertise: investment promotion

Consulting Services							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Review (Prior/Post)	Type of Proposal	Comments
CS-05	Sustainable township management capacity development	1,300,000.00	1	QCBS	Prior	FTP	Assignment: International Quality-Cost Ratio: 90:10 Comments: Ratio is as agreed at fact-finding
CS-06	Investor promotion and transaction advisory services	1,100,000.00	1	QCBS	Prior	FTP	Assignment: International Quality-Cost Ratio: 90:10 Comments: Ratio is as agreed at fact-finding

Project Administration Manual

Appendix - G

Terms of Reference and Scope of Work for Consultant Packages

- CS-01: Project Implementation Consultant**
- CS-02: Independent environmental monitoring expert**
- CS-03: Urban management advisor**
- CS-04: Investment promotion advisor**
- CS-05: Sustainable township management capacity development**
- CS-06: Investor promotion and transaction advisory services**

Appendix G-1: Project Implementation Consultant (CS-01)

Terms of Reference

Phuentsholing Township Development Project Project Implementation Consultant

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 - 1.1 Project Purpose
 - 1.2 Project Phasing
 - 1.3 ALDTP Phase 1 Investment
 - 1.4 ALDTP Phase 2 Investments
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Attachments

Attachment 1: Indicative works for Phase 1

Attachment 2: PTDP (Phase 1) Implementation Arrangements

Attachment 3: Indicative Scope of Work for other Project Support Consultants

1. BACKGROUND

1.1 Project Purpose

1. These terms of reference (TOR) outline the scope of works, deliverables and work program for the Program Implementation Consultant (PIC). The PIC will be responsible for assisting Construction Development Corporation Limited (CDCL), a subsidiary company of Druk Holdings and Investment Ltd. (DHI) which is a Royal Government of Bhutan owned company, with implementing the Phuentsholing Township Development Project (PTDP) (the “Project”).

2. Bhutan’s annual urban population growth rate from 2000 to 2010 was 5.7%, the highest in South Asia. This rapid growth has created severe pressure on existing facilities leading to problems of water shortages and under capacity sanitation and waste disposal facilities. The Government is addressing these problems with urban development programs, particularly in Thimphu and Phuentsholing. However rural-urban migration continues causing encroachment onto either valuable irrigated agricultural land or unstable steep terrain. In Phuentsholing, recent expansion has encroached onto the unsafe riverbanks of the Amochhu River which threatens the city from floods and erosion. The government desires that future urban growth happens in a planned manner, and it be concentrated in proximity to established economic centres to have the highest potential for providing employment and economic growth opportunities.

3. Phuentsholing is the country’s largest commercial and industrial hub and main trading gateway with India. The city is also located on two trading corridors that have been developed under the framework of the South Asia Subregional Economic Cooperation. The Government has a vision to develop Phuentsholing to be an economically vibrant, ecologically sustainable, and energy efficient centre that will support economic diversification, employment creation, and income generation. There is strong demand for an expansion of Phuentsholing with the new township because of the continuous high rate of rural-urban migration. Due to the limited space for housing, about 5,600 Bhutanese live nearby in Indian territory and commute daily across the border to work in Phuentsholing.

4. The proposed PTDP is the first phase of the government’s larger development plan called “Amochhu Land Development and Township Project” (ALDTP) that will develop 464 hectares (ha) of riparian land near Phuentsholing Thromde (Municipality) located along both sides the Amochhu River on Bhutan’s south-western border with India. ALDTP will provide protection from floods and erosion, and construct smart urban infrastructure to allow phased urban expansion. A modern township will be developed on sustainable principles of equity, liveability, and competitiveness, and it will be integrated into the fabric of the existing municipality and preserve Bhutan’s unique architectural heritage. The project will also protect the existing and new town from floods and riverbank erosion which currently threatens lives and livelihoods and disrupts connectivity with nearby communities.

5. The new township development also provides space for public services such as health facilities and schools, and commercial businesses. This will contribute to expansion of the country’s services sector and diversify the economy from heavy reliance on hydropower.

1.2 Project Phasing

6. ALDTP is divided into five zones; A to E. of which PTDP will development Zone A only. Zone D represents Kaileshwar Hill and is not included in the project for development. The remaining 4 zones comprise of land development on Amochhu riparian land will require about 15km of riverbank protection with new common urban infrastructure (roads, 2 bridges each of 340m span, water supply, waste water management, municipal solid waste management, power and telecommunications) to support habitation for up to 50,000 people. The allocation of land and riverbank protection for the project's four development zones is:

Zones	Area (ha)	Riverbank Protection Length (m)
A	66	3,974
B	94	3,046
C	277	4,872
E	27	3,083
Total	464	14,975

7. Implementation of the project will be phased in relation to the scale and demand for the development. Phase 1 will develop Zone A while subsequent phases will develop the remaining zones. Phase 1 will also support sustainable township management capacity development, investor promotion and transaction advisory services. Phase 1 is financed with the support of the Asian Development Bank (ADB), subject to ADB's Board approval.

1.3 PTDP (Phase 1) Investment

8. PTDP (Phase 1) investment will comprise packages for civil works, goods, and consulting services for the 66 hectare Zone A. It will also integrate urban infrastructure services with a local planning area (LAP) of the existing town. The main construction activities tentatively comprise of four main civil works packages.

- Civil work contract CW-01: construction duration October 2017- June 2020 (33 months) plus 365 days defects period. River training, embankment protection, land filling, cross drainage and slope stabilization.

Detailed engineering designs for construction of this package are near completion, tender documents have been prepared, and the international competitive bidding (ICB) tendering process is due to commence.

- Civil work contract CW-02: Construction duration October 2019-September 2022 (36 months) plus 365 days defects period. Common urban infrastructure including Zone A road network, bulk water supply and distribution, wastewater collection and treatment, stormwater drainage, and solid waste management, and related facilities and systems, including township management office building, infrastructure mapping, and SCADA for water supply and sewerage.

Detailed engineering designs for construction of this ICB 'Build and Operate' package with tender documents are near completion.

- Civil work contracts CW-03 & 04: duration October 2020-January 2022 (15 months) Power and telecom services executed through force accounts and implemented by the respective agencies directly coordinated by the PIU.

Detailed engineering designs for these are near completion.

9. Other main packages included in Phase 1 are: (i) this consulting package for PIC; (ii) individual consulting services for (a) an individual environment safeguard monitor; (b) an urban management advisor; (c) investment promotion advisor; (iii) consulting service packages for (a) sustainable township management capacity development and (b) investor promotion and transaction advisory services. Indicative information is in **Attachment 1** showing the extent of the proposed civil work contracts. **Attachment 3** provides Indicative Scope of Work for other Project Support Consultants.

1.4 ALDTP Phase 2 Investments

10. Phase 2 investments will comprise at least the development of Zone C with common urban infrastructure services which will comprise packages for civil works, goods, and consulting services. CDCL is currently preparing the master plan and detailed designs for construction. Implementation of Phase 2 will be subsequent to Phase 1 subject to government and ADB approvals.

1.5 Implementation Arrangements

11. The executing agency of the project will be Druk Holding and Investments Limited (DHI), a government owned enterprise. The implementing agency will be the Construction Development Corporation Limited (CDCL), a subsidiary of DHI specializing in urban and infrastructure development.

12. CDCL will establish 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 will be headed by a Project Manager and appropriately staffed. The PIC will report to the Project Manager and support PIU. **Attachment 2** indicates the overall implementation arrangements.

13. The PIC will assist the PIU and its other advisory sections comprising: (i) a committee that will comprise inter-department or government staff who will review designs and documents, and advise as necessary; (ii) an environment safeguards and social Monitoring and Evaluation Section (SMES) that will monitor, evaluate and report on required safeguard and social activities; (iii) an Accounts and Finance Section (AFS) that will be responsible for effective accounts and financial management; (iv) a Communications Section who will lead communication activities; and (v) a Procurement Section that will be responsible for obtaining approvals and issuing bid documents, managing bidding processes and bid evaluation until package award, and contract management including contract variations playing the role of the “Employer” during implementation. The PIC will furnish PIU and its advisory sections with the relevant project-related information. On the advice of the PIU, the PIC will correct, revise, update, and improve its services and outputs comprise this consulting assignment.

2. OBJECTIVE OF CONSULTING SERVICES

14. The PIC will support the PIU for 60 months and the contract will be signed for the same period. Time extensions to PIC contract are possible depending on civil works implementation performance and with prior approval by the EA and ADB. The PIC will be responsible for assisting the PIU to: (i) review and confirm designs and finalize bid documents of remaining contract packages to be awarded under Phase 1; (ii) procure, mobilize, manage and supervise all contracts and act as the “Engineer” for Phase 1; (iii) prepare detailed terms of reference, and assist PIU to recruit, mobilize, and manage studies and surveys under provisional sum items, (iv) prepare ADB financing and other necessary documents for Phase 2 investments; (v) provide technical and management advice, as required; (vi) manage and administer the project financing; (vii) prepare routine reporting requirements of ADB; and (viii) knowledge transfer to the PIU, township management, and Phuentsholing Thromde. The PIC will also assist PIU with preparations, logistics and reporting for missions fielded by ADB, as necessary. While the PIC will be financed from Phase 1, it will also support all necessary activities for finalizing activities for ALDTP Phase 2 during the contract period.

3. SCOPE OF SERVICES

15. The PIC has a number of main tasks which are explained in the following paragraphs.

3.1 Task 1: Project Management

16. The PIC will work under the PIU to ensure the effective and timely delivery of the project outputs to the highest standard. The PIC will assist with the overall project coordination and management through the relevant agencies at national, regional and local levels. The PIC will maintain liaison with DHI through PIU, and with ADB. Other main activities related to project management will include, but not be limited to:

17. Project Administration

- i) Working with PIU to identify project management needs, planning, strategies and schedules for execution;
- ii) 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.
- iii) Preparing a Quality Assurance Plan (QAP) that will assist the PIC and PIU with overall quality assurance. Essential elements of quality assurance for the investment program shall be controlled by the Engineer to ensure quality products are provided in a cost-efficient and timely manner. It will encompass all aspects of the investment program, including control of contractors and sub-contractors, in-process inspections, receiving inspections, production and special process controls, functional testings, control of nonconformities, drawing control, corrective actions, configuration controls, quality assurance records, audits, shipping inspections, and

other quality specifications and requirements to meet the needs of the Project. Contractors' quality assurance operations shall be subject to the Engineer's verification at any time.

- iv) Preparing briefing materials on progress and issues, and providing general support to the PAC to effectively guide the Project's implementation;
- v) Maintaining regular communications with all stakeholders to ensure implementation of the Project (Phase 1) and planning for Phase 2 investments so that it follows a participative and integrated planning and management approach;
- vi) Ensuring the actual implementation schedule reflects the design of the Project and intended implementation schedule. Note that, the Government's objective is to expedite completion of the PTDP. The PIC shall identify the critical paths of Project activities; critical activities include the planning, tendering, award and implementation timing and sequence of packages; consider opportunities for expediting the implementation schedule and recommend improvements wherever possible.
- 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;
- viii) Advising and assisting the PIU on establishing and maintaining the most appropriate and effective organizational, fiscal, implementation and management arrangements to ensure successful project implementation;
- ix) Advising and assisting the PIU and ADB in the efficient coordination of the various packages. Ensure that the PIU is adequately assisted by its services such that all project activities and particularly construction contracts are implemented in a timely and cost effective manner while maintaining the highest standards;
- x) Assisting and advising the PIU to enhance human resources management to provide capacity development;
- xi) Assisting with general project administration, performance and monitoring, and preparation of project reports;
- xii) Assisting PIU and ADB prepare the project and loan documents for Phase 2 including reviewing the detailed design for Phase 2 and advising on improvements;
- xiii) Ensuring timely mobilization and fielding of PIC staff, and when necessary, quick replacement of staff following PIU and ADB requirements;
- xiv) Finalizing the Request of Proposal (including terms of reference) for other project support consultants and supporting the PIU by providing guidance, reviewing their outputs, and recommending improvements, whenever necessary;
- xv) Assisting the PIU to recruit/tender and evaluate contracts;

- xvi) Assisting the PIU with planning and implementing any other activity related to design, construction and commissioning the investments, for example and not limited to: (a) review of planning and establishment of contractor camps with access, utilities etc.; (b) supervising and ensuring compliance of health and safety requirements; and (c) supervising and ensuring compliance of environmental safeguards and social measures, etc.;
- xvii) Preparing a Project Completion Report (PCR) for Phase 1 in a manner satisfactory to the PIU and ADB, including major project events, performance of Contractors, operation of Phase 1, actual and price inflated (to completion year) project cost (foreign and local costs separately) by implementation year, and labor employed by skilled/unskilled and foreign/local categories in person-years. The PCR should follow prescribed ADB format and cover, among other items: (a) the relative successes (problems) in the implementation of each package; (b) an assessment of the impact of the project on the economy and social aspects of the beneficiary areas; (c) "as-built" drawings; and (d) detailed description of all the works by items of technical and non-technical matters;
- xviii) Updating PTDP investment program documents as required; and,
- xix) Supporting visiting missions from ADB or others.
- xx) Support the PIC with preparing bid documents for Phase 2 and advice on improvements as necessary.

18. Communications

The PIC will support PIU with managing communications during implementation of the Project Phase 1 and preparation of Phase 2. Main activities, amongst other will be:

- v) Assisting and advising PIU to develop and manage an effective public relations plan and to implement such developed plan, Support the PIU with communication activities as necessary;
- vi) Promoting the benefits of the Project and disseminating information to associated project stakeholders, general public and non-government organizations (NGOs) on how well social and environmental aspects are taken care of and what benefits are attributed to the poor community;
- vii) Proactively organizing public relations events as required;
- viii) Assisting PIU with developing and maintaining a Project website to disseminate information and implementation progress, and also provide a feedback and communication system for stakeholders and general public; and
- ix) Preparing a photographic and video diary of the construction works throughout the entire duration of the Project. This should show construction activities, progress, and interviews with DHI, PIU, PIC, contractors, government and Thromde staff, and stakeholders. It will be prepared to a high professional standard.

3.2 Task 2: Contract Management and Construction Supervision

19. The PIC will assist PIU with overall contract management and administration, construction supervision, and quality control. This includes assisting and advising the PIU with smooth execution of all works under the Project for its timely and successful completion without having cost overruns. This applies to supervising all goods, works, surveys, field studies, investigations, training, and consulting services packages under the Project. The PIC shall be responsible for documenting all the design drawings, reports, as-built drawings,²⁰ and construction monitoring and quality certificates. The PIC shall develop an appropriate documentation plan for this purpose. Based on the documentation plan, the PIC shall also carry out the actual documentation and filing of the design drawings, reports, any events, as built drawings and quality monitoring certificates.

20. The PIC shall act in the capacity of “the Engineer” and represent the Client in the construction contracts. Accordingly, the PIC shall have full responsibility and authority for the professional quality and sufficiency of the supervision with respect to progress, quality of materials and work, measurements of quantities, costs, and legal aspects related to the contract. As “the Engineer”, the PIC will ensure timely progress of the works, initiate laboratory as well as in-situ tests as necessary, enforce specified materials, workmanship requirements and construction methods, and control the overall quality of construction. This includes the assessment of programs, materials, labor, construction methods, and monitoring compliance with specified construction methods. The PIC will carry out acceptance tests of equipment in the factory (if necessary) and on-site, including installation and commissioning. It also comprises supervision of contractors’ programs, rates of progress, performance testing, compliance with specifications and drawings, and health, safety and environmental requirements. In case of anticipated cost overruns, the PIC shall immediately inform the client and suggest mitigation measures wherever possible. Supervision shall be carried out on all sites where works are underway. Prior approval of the Employer is to be obtained by the PIC for taking any action under a civil works contract designating the Consultant as “Engineer”, for which action, pursuant to such civil works contract, the written approval of the Client as “Employer” is required. Other specific activities will include, but are not limited to:

- i) Establishing a data transfer system for all documents and drawings, including geo-referenced data;
- ii) Assisting the PIU with preparation of procurement documents, bid evaluation and contract negotiations, as necessary, and in accordance with ADB Guidelines;
- iii) Undertaking day-to-day construction supervision and monitoring, collection and checking of documentation, quality control, application of quality assurance procedures, checking the adequacy of contractor’s designs, drawings, and method statements, and preparation of progress and other reports;
- iv) Carrying out regular inspections, including sample testing where required, of all materials and workmanship to ensure compliance with the design specifications;
- v) Surveying each of the constructed components to evaluate physical and financial progress of each item;

²⁰ To be supplied by the contractors. This must be included within the scope of the employer’s requirements for each tender document.

- vi) Maintaining a photographic and written record of all construction activities and progress;
- vii) Approving design of concrete mixes performed by contractor for concrete works as per technical specifications;
- viii) Conducting site investigations of construction materials and geotechnical investigations including laboratory testing and analyze investigation results;
- ix) Monitoring the construction works and laboratories for quality assurance;
- x) Ensuring that works are being implemented as per the contract specifications;
- xi) Providing sound and timely advice to resolve problems that arise during construction;
- xii) Holding regular site meetings with PIU and Contractors and preparing minutes of such meetings (based on agreed standardized format), and proactively managing the execution of agreed actions;
- xiii) Instructing the Contractors to submit corrective measures or revised programs, as necessary, to keep pace with the anticipated progress and construction standards, and inform the PIU on measures adopted;
- xiv) Providing designs services for works during construction in order to completely and efficiently respond to meet changing site and ground conditions as construction work progresses. Issuance of instructions and additional or modified drawings and specifications to the Contractors which may be necessary for the execution of the works and remedying of any defects, and inform the PIU accordingly;
- xv) Issuing interim payment certificates after final measurements for consideration to PIU;
- xvi) Examining contractor's claims on justification and quantities; deciding on claims that fall within the authority of the Engineer; making recommendations for the claims to be considered by the PIU;
- xvii) Examining the need for contract variations; deciding on contract variations with the delegated authority of the Engineer, and for all other variations make recommendations to the PIU;
- xviii) Monitoring compliance of environmental management plans (EMPs) by the contractors. This will include: (a) monitoring the Contractor performance on meeting provisions of tender documents and approved EMP; (b) monitoring the effectiveness of the mitigation measures; and (c) instructing the Contractors on needed actions and corrective measures to comply with the EMP;
- xix) Monitoring compliance of health and safety plans for all activities related to implementation of the Project;
- xx) Monitoring the preparation and timely submission of as-built drawings as well as final reports by contractors;
- xxi) Preparing partial, substantial and final completion certificates for consideration by the PIU; and
- xxii) Preparing regular progress reports highlighting the current progress, problems encountered, tests conducted, corrective measures adopted and estimate of likely completion time.

3.3 Task 3: Management of Environmental and Social Impacts

- i) Ensure that all recommendations from the environmental impact assessment (EIA) report are incorporated in the design and civil work specifications prepared for implementation under the Project;
- ii) Review of all Bidding documents issued by PIU to ensure that all ADB safeguard requirements and the conditions of EIA report approval by the National Environment Commission (NEC) are met;
- iii) Ensure that the Contractor mobilizes their senior environmental and social safety officers within two weeks of the mobilization of the Contractors' Chief Construction officer so that there is adequate time to prepare the contractors' environmental management plan (CEMP) and safety security and health plan (SSHP);
- iv) Ensure that all contractors' contract documents include requirements to manage and monitor impacts associated with construction works and other works to support the contractors' activities;
- v) Agree with the contractors on the responsibilities for routine monitoring at agreed locations between the PIU responsibility outside the designated contractors' area and those within the Contractors' area and clarify where responsibility may be unclear;
- vi) Ensure that both PIU and the Contractor carry out baseline monitoring of agreed variables at the agreed locations during the mobilization period;
- vii) Review and recommend additional mitigating measures to PIU for approval of the CEMP and SSHP prepared by contractors to ensure that all contractors prepare comprehensive plans to address all environmental and social impacts associated with construction works and other works to support the contractors' activities. The CEMP and SSHP should not only address obligations to implement mitigation measures by the main contractor, but should include the obligation of all sub-contractors. The CEMP and SSHP should also include monitoring requirements in relation to performance and the provision of required monitoring data that should be done by the contractors and their sub-contractors;
- viii) Supervision by the Supervising engineer guided by the environmental and social specialists to ensure quality control of monthly progress reports and enforce penalty provisions for persistent non-conformance;
- ix) Supervise the implementation of CEMP and SSHP and ensure claims on costs for implementing the CEMP and SSHP are well documented and recorded in the Project GIS;
- x) Conduct site visits to monitor implementation of the CEMP and SSHP and recommend contractor on updating CEMPs and SSHPs based on changing field conditions and accordingly inform relevant agencies and field staff;
- xi) Prepare biannual monitoring report to be submitted by PIU to ADB. The report should be based on: a) contractor's monthly report; b) site monitoring on implementation of recommendation from EIA report on both social and environmental impacts related with the project; and c) findings from routine

- consultation. The monitoring report should also provide recommendations to improve and strengthen the CEMP and SSHP;
- xii) Lead problem solving in close coordination with other PIC team members, PIU or Contractors on any incident, grievance or complaint due to civil works and other activities related with civil works;
 - xiii) In case of an incident involving unexpected environmental impact, prepare remedial actions in close coordination with contractors, and prepare necessary reports that will be submitted by PIU to DHI, relevant government agencies and ADB;
 - xiv) Conduct routine public consultations throughout the project implementation: a) to inform public on potential environmental impacts and social impacts (e.g. health related with pollution, HIV, human trafficking, forced labor), the planned mitigation measures as well as mitigation measures that have taken place; b) to gather public concerns and discuss how to effectively address their concerns; and c) to encourage participation of women in operation and maintenance activities of completed works;
 - xv) Supervision of the Biodiversity Monitoring and Bench Marking Study (BMBMS). The baseline study of flora & fauna of the entire project site has been completed. Only the baseline data of elephant migration within Zone C has to be collected. Indicative scope of work is shown in Attachment 3;
 - xvi) Assist PIU in establishing and operating a central Grievance Redress Mechanism within the PIU to respond to stakeholder enquiries, supervising implementation of a Communications and Community Relations Plan, and in managing incidents and grievances reported by the community;
 - xvii) Supervise and monitor the implementation of gender action plan (GAP), if any, as well as prepare routine report on implementation of the GAP;
 - xviii) Conducting on-the-job training for PIU staff on improving integration of social and gender mainstreaming features into future project design and implementation of infrastructure and operation and maintenance aspects of sites and services; and
 - xix) Providing on-the-job or on-site advice and training to contractors where necessary (such as when there are changes in personnel of contractors or when CEMP or SSHP is not being followed properly) to ensure proper implementation of the overall EMP.

3.4 Task 4: Financial Management and Monitoring

- (i) Establishing and maintaining appropriate fiscal management and monitoring systems and assist PIU in fiscal management and monitoring project expenditures and disbursements;
- (ii) Assisting PMU in maintaining the project accounts with all ledgers and control systems;
- (iii) Supporting the PMU staff on ADB disbursement and reporting procedures;
- (iv) Helping PMU in preparation of annual budget, accounting and audit reports;
- (v) Generating different account reports and financial statements;
- (vi) Assisting PMU in ensuring smooth fund flows from ADB and the government;
- (vii) Supporting the PMU in obtaining reimbursements from ADB;

- (viii) Providing inputs to the quarterly and annual progress reports to be submitted to ADB; and,
- (ix) Submitting inputs to the project completion report as per ADB's format.

3.5 Task 5: Commissioning, Operation and Defects Liability

21. The PIC will assist PIU with commissioning and operation phases. It will involve building capacity within CDCL to manage the project facilities. Commissioning covers initial operation to identify and rectify any construction faults prior to the contractor's official handover of completed systems to CDCL. Commissioning will be progressive over the final year of individual contract implementation. The PIC, with the contractor/ supplier, will identify specific facilities needed, expertise and staffing requirements, and prepare detailed management, operation and maintenance (MOM) procedures, including those relating to minimizing social and environmental impacts of all infrastructure developed under the Project. The MOM procedures should be developed in consultation with all stakeholders.

During the defect liability period for each package, the PIC will carry out the following functions: (i) monitoring the functional as well as structural performance of the investments and report to the PIU; (ii) preparation of the inventory of the defects/damages rectification/repair works, if any, to be done by the Contractors as per the provisions of their contracts; (iii) evaluation of the design, drawings and construction methodology for rectification/repair works proposed by the Contractors and make recommendations to the PIU; (iv) supervision and checking of the quality of the defect/damage rectification/repair works; and (v) assisting the PIU with contract management and finance related issues related to the individual works contracts.

4. CONSULTANT TEAM AND QUALIFICATIONS

4.1 Team Composition

22. The Project Implementation Consultant (PIC) will be contracted over a period of 60 months from October 2017 to September 2022. Recruitment will be undertaken in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).²¹ Firms will be recruited using quality-and cost-based selection (QBCS) method with a 90:10 quality-to-cost ratio. This ratio is justified as the priorities for the PIC are high-quality outputs including supervising the construction of specialized river training and urban infrastructure investments in challenging environment. A full technical proposal is required.

23. The PIC shall have extensive experience with planning, designing and supervising the construction of large scale civil engineering works comprising river training and land reclamation as well as common urban infrastructure. The PIC shall also have extensive experience in preparing contract documents, supervising construction works, and administering contracts under the International Federation of Consulting Engineers (FIDIC) Conditions of Contract for Construction for Building and Engineering Works designed by the Employer.²²

²¹ Available at: <http://www.adb.org/Documents/Guidelines/Consulting/Guidelines-Consultants.pdf>.

²² Multilateral Development Bank Harmonized Edition, June 2010

24. The PIC will be engaged under a time-based contract. The engagement and time period for the key and non-key experts will have to be approved by the PIU/PMU prior to their engagement. Payment will be made upon submission of Monthly Progress Reports by the PIC that will include detailed time-sheets for the individual specialists and summary of activities undertaken; the content of the Monthly Progress Reports will be agreed during the inception period of the assignment.²³

25. The required inputs for international key experts will be 121.5 person-months (pm), for national key experts will be 95pm. The international non-key experts will be indicatively 23.5pm. The majority of the non-key experts are to support CW-2/3/4 common urban infrastructure package implementation which will be procured later in the Project. The cost of non-key experts must be included in the financial proposal. However, their CVs are not required in the technical proposal since they will not form part of the technical evaluation. CVs for non-key experts will be evaluated during contract negotiations with the highest-ranked firm and they will be accepted on a pass or fail basis.²⁴ Table 1 provides a list of key and non-key specialists required to undertake all 4 tasks of the PIC's scope of work.

Table 1: PIC Professional Staffing (Indicative Person months)

CV Ref:	Position	Inputs International	Inputs National
	Key Staff		
1	Chief Resident Engineer / Team Leader	34.0	-
2	Senior Civil Engineer/ Deputy Team Leader	40.0	-
3	Material Engineer/ Engineering Geologist	25.0	-
4	Contract Specialist	04.0	-
5	Environmental Specialist	10.0	-
6	Financial Management Specialist	06.0	-
7	Hydrology/Sediment Specialist	02.5	-
8	Quality Control/ Construction Manager	-	40.0
9	Geotechnical Engineer	-	40.0
10	Safeguards and Communications Specialist	-	15.0
	sub-total	121.5	95.0
	Non Key Staff		
11	Geotechnical Engineer	7.0	-
12	Structural Engineer	4.0	-
13	Roads Engineer	3.5	-
14	Water Supply/ Sewerage/Hydraulics Engineer	2.5	-
15	Water Treatment Process Specialist	2.0	-
16	Solid Waste Management Specialist	2.0	-
17	Electro-Mechanical Engineer	2.5	-
	sub-total	23.5	-

²³ Site access & works might be affected during the monsoon period (July –September)

²⁴ Non-key experts should be budgeted under the remuneration section of the financial proposal.

CV Ref:	Position	Inputs International	Inputs National
	Grand Total person months	145.0	95.0

4.2 Key Staff Qualifications

26. **CV-1: Chief Resident Engineer (CRE)/ Team Leader - International, 34 PM):** The expert must be an experienced civil engineer, preferably with a Master's degree and 20 years of work experience out of which about 10 years should be related to project management of large construction projects similar to the Project that include multiple concurrent works activities and construction of river training works, land development and urban infrastructure including bulk water supply and distribution, wastewater collection and treatment, storm water drainage, power distribution and roads. The expert should have demonstrated experience of leading implementation teams, and working in complex projects in similar geographical and topographical settings. The expert should be competent in contract management, quality assurance and quality control, safety, compliance with safeguards, etc. pertaining to construction of similar projects. The expert will have excellent verbal and written communication skills in English. The expert will also have prior experience of leading similar projects in countries with similar geographic conditions. The expert will be responsible for leading and contributing to all tasks and for undertaking the following activities, among others:

- (i) Having overall responsibility for the timely delivery and quality of all outputs, including those listed in Table 4, in formats that are acceptable to PIU and ADB;
- (ii) Managing the relationships with the PIU, ADB, and all other stakeholders;
- (iii) Setting-up an effective organizational structure for the PIC. Preparing and implementing all administrative systems and procedures needed to ensure the effective contract management and construction supervision of the contract works in accordance with the scope of works with acceptable international standards;
- (iv) Being responsible for overall direction of the PIC team, coordination of inputs, and management of individual specialists;
- (v) Being responsible for the overall management of the engineering team and their activities. Providing expert advice as required. Review and ensure outputs are complete, well prepared using consistent formats, and their content is prepared to the highest standard;
- (vi) Carrying out a comprehensive review of the detailed designs done to-date and draw attention to changes which may have become necessary since their preparation;
- (vii) Advising on construction and contracting methods, and performing a comparative analysis of options, benefits, risks, mobilization, and implementation schedules;
- (viii) Assisting the PIU to prepare invitation for tender; preparing bid evaluation criteria, initially evaluating and providing advice to the PIU on alternative proposals, and elaborating on recommendations with a ranking of all contractors concluding with a suggestion of the technically and economically qualified bidder;
- (ix) Identifying important technical and managerial issues which affect progress, safety, quality and compliance with safeguards;
- (x) Reviewing the construction schedule and recommending actions to avoid delays;
- (xi) Reviewing mobilization of the Contractor's resources (experience of the personnel, equipment, machines, quality and quantity of materials, funds, etc.) and recommending additional resources to be mobilized;

- (xii) Guiding, coordinating and supporting Project activities and providing overall guidance and direction and ensure that the PIC works in harmony with other ongoing and planned projects;
- (xiii) Advising the PIU in coordinating the planning, management, monitoring and reporting of all Project activities including supporting the development and implementation of progress monitoring systems;
- (xiv) Advising the PIU in planning, and coordinating inputs;
- (xv) Planning and coordinating design reviews and other requirements for subsequent ALDTP phases in accordance with ADB's requirements. These should all be based on relevant international and regional experiences and best practices;
- (xvi) Supporting PIU with packaging contracts and finalizing tender documents;
- (xvii) Coordinating with and assisting PIU on any relevant Project activity;
- (xviii) Supporting visiting missions from ADB and co-financiers; and
- (xix) Supporting PIU with preparing periodic financing requests for the Project.
- (xx) Being responsible for the preparing the loan documents for Phase 2 of the project (project, loan, and bid documents), including reviewing the detailed designs for Phase 2 and advising on improvements by using PIC expert inputs appropriately.

27. **CV-2: Senior Civil Engineer/ Deputy Team Leader – International, 40 PM:** The expert must be an experienced civil engineer with a Bachelor's degree, preferably with a Master's degree and 15 years of work experience out of which about 8 years should be related to construction management of large construction projects that include multiple concurrent works activities and construction of river training works, land development and urban infrastructure. The expert should have demonstrated proficient qualities on similar sized implementation projects for international agencies, such as ADB, and worked on complex projects in similar geographical and topographical settings and using similar construction methods. The expert should be competent in quality assurance and quality control, safety, compliance with safeguards, pertaining to construction of similar projects. The expert must have knowledge of project management software such as PRIMAVERA (or similar) as well as excellent verbal and written communication skills in English. They will be responsible for, among other activities:

- (i) Supporting the chief resident engineer and construction manager as required and coordinating with the PIU and key stakeholders.
- (ii) Reviewing the civil work detailed design aspects including of the temporary works, river training works, earthworks, cross drainage structures, roads, water distribution, sewerage, storm water drainage, etc.;
- (iii) Examining the preparedness of the contractors for project construction works and suggest ways to expedite the activities with quality;
- (iv) Undertaking daily construction supervision and monitoring of quality control;
- (v) Checking of materials for quality and quantity and ensure they meet specifications;
- (vi) Supporting the Contracts Specialist with examining contractor claims and providing advice to the PIU as necessary;
- (vii) Examining the need for contract variations;
- (viii) Supporting the PIU in monitoring compliance with environment management plans;
- (ix) Monitoring preparation of as-built drawings;
- (x) Supervising and monitoring contractors;
- (xi) Assist with testing and commissioning; and
- (xii) On the job training of PIU staff.

- (xiii) Assisting and advising PIU to develop and manage an effective public relations plan and to implement such developed plan, Support the PIU with communication activities as necessary;
- (xiv) Promoting the benefits of the Project and disseminating information to associated project stakeholders, general public and non-government organizations (NGOs) on how well social and environmental aspects are taken care of and what benefits are attributed to the poor community;
- (xv) Proactively organizing public relations events as required;
- (xvi) Assisting PIU with developing and maintaining a Project website to disseminate information and implementation progress, and provide a feedback and communication system for stakeholders and general public; and
- (xvii) Preparing a photographic and video diary of the construction works throughout the entire duration of the Project. This should show construction activities, progress, and interviews with DHI, PIU, PIC, contractors, government and Thromde staff, and stakeholders. It will be prepared to a high professional standard.

28. CV-3: Material Engineer/ Engineering Geologist– International, 25 PM: The expert will preferably have a Master's degree in engineering geology or equivalent and 15 years of work experience in design and construction of earthworks, heavy civil construction, and other similar civil structures related to this project. Experience shall include planning, implementing and analyzing the results of geotechnical sampling/drilling/testing investigations for earthworks, drainage and slope stability projects. They will be familiar with sourcing and testing materials from borrow areas. Preferably, the international expert will have experience of working in countries with similar geographic conditions. The expert shall have excellent verbal and written communication skills in English. The expert will be responsible for planning any additional investigations for Phase 2, supervision of their execution and evaluation of the findings. As such, the expert will lead and execute all the activities related to geology. The expert will be responsible for, among other activities:

- (i) Managing and control of the in-situ investigations;
- (ii) Logging of drill holes and trenches to international best practice standards;
- (iii) Inspecting, photographing and ensuring proper storage of drilled cores;
- (iv) Selecting drilled core samples to undergo laboratory testing;
- (v) Supervising in-situ testing;
- (vi) Evaluating and commenting on the results of laboratory and in-situ tests;
- (vii) Deciding when the required maximum drilling depth has been reached;
- (viii) Mapping rock outcrops with tectonic logging of discontinuity planes;
- (ix) Evaluating all findings and establishing geological sections for each structure with the results of tectonic logging and permeability testing;
- (x) Carrying out geological and geotechnical mapping and analysis;
- (xi) Incorporating the results of geophysical exploration (if any) into the geological sections;
- (xii) Drawing conclusions and writing a final report about the geotechnical conditions;
- (xiii) Evaluating and commenting on Contractor's tender documents with respect to geotechnical aspects, i.e. foundation levels, dewatering, quality and quantity of construction materials, slope stability etc.;
- (xiv) Assisting the Geotechnical Engineer(s) in the design review for permanent works and review of Contractor's temporary support proposals;
- (xv) Recording rock and soil conditions as the work progresses;

- (xvi) Monitoring all instrumentation and testing activities, as required;
- (xvii) Regularly review the geological and geotechnical conditions at the sites; and
- (xviii) Supporting the preparation of Phase 2 investments by advising on the results of the borehole investigations, in-situ and laboratory tests, for the planned works.

29. **CV-4: Contracts Specialist – International, 4 PM:** The expert to have a degree in Civil Engineering and additional procurement qualification or equivalent with preferably 8 years of experience on similar development projects. The expert will be responsible for advising on procurement under ADB/ Royal Government of Bhutan's procurement Act and regulations and procurement guidelines. Expected to have in depth knowledge and understanding of technical, commercial and legal aspects of procurement in development projects. Specialized knowledge of and significant experience in substantive areas/aspects of procurement advantageous. Experience with procurement processes for externally-financed projects, mainly those funded by ADB or World Bank in preparing bid documents, evaluation of bids desirable. Skills in communicating with authorities and other stakeholders and demonstrated capabilities in report writing needed. The expert's main activities include, but are not limited to:

- (i) Assisting the PIU with procurement of Phase 1 contracts;
- (ii) Preparing detailed procurement plan for Phase 2 incorporating the procurement requirements for all necessary goods, works, consulting services packages, etc.;
- (iii) Advising on procurement strategies in accordance with the government's and ADB's Procurement Guidelines (2013, as amended from time to time);
- (iv) Assisting PIU to prepare necessary Phase 2 procurement and bid documents;
- (v) Assisting PIU with advance procurement where necessary. This applies to packages under Phase 2 should it proceed during the time of this consulting package;
- (vi) Preparing standard criteria and checklists for evaluation of the tenders and assist PIU in preparation of the bid evaluation reports;
- (vii) Supporting PIU with all procurement activities for national competitive bidding (NCB), international competitive bidding (ICB), shopping for goods and works, use of force accounts, and selection of consultants according to the ADB's guidelines and government regulations;
- (viii) Assisting PIU with contract negotiations, preparation of contracts and contract awards;
- (ix) Supporting specific actions for integrity, ease of fund flow, and transparency;
- (x) Examining consultant and contractor claims and support the construction supervision specialists, and PIU with determination of need for contract variations, etc.;
- (xi) Preparing and delivering on-the-job training related to procurement, and contracts;
- (xii) Provide inputs for standardizing components of monthly reports related to procurement and contract awards, contract management and performance of each contract package;
- (xiii) Providing advice as required helping resolve contractual matters; and
- (xiv) Supporting preparation of Phase 2 by: (a) updating the Procurement Capacity Assessment of CDCL and national contractors; (b) preparing the procurement plans for the Phase 2 investments; and (c) advising on procurement arrangements and formats of the bid documents, taking into consideration lessons learned during implementation of Phase 1.

30. **CV-5: Environmental Specialist – International, 10 PM:** The specialist will preferably have a Master's degree in environmental sciences, environmental engineering, or similar and 10

years of experience undertaking similar assignments, preferably in countries with similar geographic conditions, financed by ADB or other multilateral agencies. The specialist will have skills in communicating with authorities and other stakeholders and demonstrated capabilities in report writing. The specific tasks of the specialist will be, among other activities;

- (i) Review the EIA, SIA and EMP and the conditions of Approval of NEC;
- (ii) Closely liaise and coordinate with PIU's environmental manager and NEC personnel to ensure that roles and responsibilities are clear and documented;
- (iii) Review bidding documents prepared for each contractor in Zone A and ensure that all safeguards requirements from the EIA and NEC approval are included;
- (iv) Ensure that each contractor has suitably experienced personnel in the key environmental safeguards positions;
- (v) Ensure that these personnel are mobilized within one month of Contract Award;
- (vi) Supervise and approve the preparation of each main contractor's EMP in Zone A and in close coordination with the National Safeguards specialist supervise and approve SSHP of each contractor before any construction work commences;
- (vii) In consultation with each contractor in Zone A prepare an agreement on baseline monitoring locations and responsibility for collection and input to the Project GIS;
- (viii) Supervise the implementation of each CEMP and SSHP to ensure that contractors submit monthly report on implementation of CEMP and SSHP to the PIU;
- (ix) Check and clear contractor's claims for all costs to address environmental impacts;
- (x) Prepare semi-annual reports on overall implementation of EMP to be submitted to ADB by the EA;
- (xi) Prepare a detailed TOR for the proposed baseline study and monitoring BMBMS of flora and fauna ecosystems in Zone C;
- (xii) Supervise the implementation of the baseline study in Zone C;
- (xiii) Ensure that all "critical" and/or "natural habitat" (defined in ADB Safeguards Policy Statement, 2009) are identified and using the results of the study prepare a Zone C Environmental Management Plan and any necessary review of the EIA for further approval by NEC;
- (xiv) In case unexpected impacts occur during construction time, work closely with other PIU team and contractors to prepare remedial measures to manage those impacts;
- (xv) Make recommendations to improve or correct environmental management and monitoring for all other zones and other project components such as management of solid waste;
- (xvi) Work closely with other PIU team members to ensure that all outputs under task 3 are delivered.

31. CV-6: Financial Management Specialist – International, 6 PM: The expert must be an experienced financial management specialist/accountant with at least a Master's degree and about 15 years of work experience, out of which about 10 years of experience in managing projects of similar nature preferably ADB-financed projects. The specialist will support the PMU Financial Officer during project start-up to set up the accounts and manage finances for the project meeting ADB's requirements. The specialist will train the PMU staff on ADB procedures and reporting requirements. Tasks will also include, but not be limited to:

- (i) Assisting PMU in maintaining the project accounts with all ledgers and control systems;
- (ii) Supporting the PMU staff on ADB disbursement and reporting procedures;
- (iii) Helping PMU in preparation of annual budget, accounting and audit reports;
- (iv) Generating different account reports and financial statements;
- (v) Assisting PMU in ensuring smooth fund flows from ADB and the government;

- (vi) Supporting the PMU in obtaining reimbursements from ADB;
- (vii) Providing inputs to the quarterly and annual progress reports to be submitted to ADB; and,
- (viii) Submitting inputs to the project completion report as per ADB's format

32. **CV-7: Hydrology/Sediment Specialist – International, 2.5 PM:** The expert must be an experienced civil engineer, preferably with a Master's degree and 15 years of work experience out of which about 10 years should be related to water resources and river engineering. The expert should have demonstrated experience of design and implementation, and working in complex projects in similar geographical and topographical settings. The expert should be competent in planning, analysis, design and incorporating climate change impacts into their analyses and designs. The expert must have excellent verbal and written communication skills in English. The expert will be responsible for contributing to all tasks related to hydrology and sediment and for undertaking the following activities, among others:

- (i) Review the flood estimates, climate change analyses and impact mitigation measures;
- (ii) Review the sediment studies and river morphology studies undertaken in support of the detailed designs;
- (iii) Review the planned flood early warning systems and recommend improvements as necessary for implementation;
- (iv) Support the other PIC design experts with reviewing, and if warranted improving, detailed designs for the river training works, cross drainage structures and other hydraulic structures;
- (v) Finalize the TOR and assist with preparing bid documents for the support consultants to undertake the flood management plan and flood early warning system;
- (vi) Supporting preparation of MOM manuals

33. **CV-8: Quality Control/ Construction Manager–National, 40 PM:** The expert must be an experienced civil engineer with a Bachelor's degree, preferably with a Master's degree and 15 years of work experience out of which about 10 years should be related to construction management of large construction projects that include multiple concurrent works activities and construction of river training works, land development and urban infrastructure. The expert should have demonstrated experience of leading implementation teams, and working on complex projects in similar geographical and topographical settings. The expert would be competent in contract management, safety, compliance with safeguards, risk management, project controlling, claim management, etc., pertaining to construction of similar projects. The expert must have extensive knowledge of data processing and project management information systems (MIS) and software like PRIMAVERA (or similar) as well as excellent verbal and written communication skills in English. Reporting to the CRE, the expert will have overall responsibility for supervising and monitoring construction activities and leadership of the construction supervision team and contractors. The expert will be responsible for, among other activities:

- (i) Undertaking daily construction supervision with quality assurance and quality control monitoring and control on site;
- (ii) Checking of materials for quality and quantity and ensure they meet specifications;
- (iii) Identifying the important technical and managerial issues in construction of the works which are affecting the progress, safety, quality and compliance with safeguards;
- (iv) Examining the preparedness of the contractor for the project construction works and suggest ways to expedite the activities with quality;
- (v) Reviewing the mobilization of the contractor's resources (personnel, equipment, machines, materials, funds, etc.) and recommending additional resources to be

- mobilized to complete the works according to the implementation schedules and to the required specifications;
- (vi) Responsible for the operation of the project management information system (MIS);
 - (vii) Assisting with preparation of interim payment certificates;
 - (viii) Supporting the Procurement and Contracts Specialist with examining contractor claims and providing advice to the PIU as necessary;
 - (ix) Examining the needs for contract variations;
 - (x) Supporting the PIU in monitoring compliance with environment management plans;
 - (xi) Monitoring preparation of as-built drawings;
 - (xii) Assisting with preparation of partial, substantial and final completion certificates;
 - (xiii) Supervising and monitoring of the contractors; and
 - (xiv) Having regular meetings with the Contractor, the Engineer and the PIU to operationalize all recommendations in an efficient and effective manner.

34. **CV-9: Geotechnical Engineer–National, 40 PM:** The expert must be an experienced civil engineer / engineering geologist with a Bachelor's degree, preferably with a Master's degree and 12 years of work experience out of which about 8 years should be related to geotechnical engineering of large construction projects including river training works, land development and urban infrastructure. The expert should have demonstrated experience of implementation, and working in complex projects in similar geographical and topographical settings. The expert should be competent in design and construction of similar projects. The expert must have excellent verbal and written communication skills in English. The expert must also be familiar with the various types of construction materials, their parameters, occurrence and exploitability as well as their treatment on the site, mode of compaction and monitoring of their behaviour before and after impounding. The expert will be responsible for all geotechnical tasks and for undertaking the following activities, among others:

- (i) Supporting the Construction Manager, Materials Engineer / Engineering Geologist and Senior Civil Engineer, as necessary;
- (ii) Reviewing the available detailed designs, stability and seismic hazard analyses, and comment on the various types of construction materials including concrete mixes. If necessary, undertake additional stability analyses and improve the design for technical and/or financial reasons;
- (iii) Working with the Material Engineer / Engineering Geologist, establish the need for foundation treatment measures and the availability of suitable local construction materials and review the appropriate material parameters to be applied in the analysis and design of the works;
- (iv) Establishing a mass balance for construction materials to be exploited from borrow areas or quarries with regard to the quantities required for construction. Search for sufficient materials for each type and make sure that at least 150% of the required material is exploitable. Supervise laboratory and in-situ compaction tests for both concrete mixes and fill materials, and determine the density at optimum water content for each fill material;
- (v) Ensure that the Contractor provides adequate quantities of material for construction;
- (vi) Review details including the foundation treatments, embankment design and zoning, seepage control measures, etc.;
- (vii) Checking the Contractor's equipment, machines and personnel and recommend additional resources as needed;
- (viii) Checking the Contractor's screening plant on proper grain size gradations and high efficiency, as well as sufficient storage facilities;

- (ix) Ensuring that the Contractor keeps the fill material at optimum moisture content before and during filling and compacting;
- (x) Checking the obtained densities after compaction in regular intervals and guiding the Contractor to correct their process, if the specified criteria are not obtained; and
- (xi) Monitoring preparation of as-built drawings.

35. CV-10: Safeguards and Communications Specialist–National, 15 PM: The Safeguards and Communications Specialist will work in close coordination with the PIU and the PIC to ensure that PTDP civil works comply with ADB's Safeguard Policy Statement 2009, and other ADB's policy on social aspects such as gender, labour relations, public participation and public grievances. The consultant must have demonstrated experience of working with municipalities and other government officials. The Specialist will support the PIU in providing the necessary expert advice in all matters relating to social development, gender and communications issues. The specialist should preferably have a Master's degree in relevant field with 10years of experience undertaking similar assignments, preferably financed by the ADB or other multilateral agencies. The main activities of the specialist will include but not be limited to the following:

- (i) Review bidding documents prepared for each contractor and ensure that all safeguards requirements, if any, from SIA are included;
- (ii) Ensure that each contractor has suitably experienced personnel in the key social and gender position;
- (iii) Prepare and implement an overall Communications & Consultation Plan (CCP) for Zone A which includes sub plans on community relations, labour and employment and project induced in-migration (PIIM) also referred to as Influx;
- (iv) In close consultation with each contractor in Zone A prepare an agreement on social monitoring locations and responsibility for collection and input to the Project GIS;
- (v) Prepare and implement a Social Monitoring Plan for Zone A in close consultation with the contractors and their sub-contractors and ensure all on-going results are documented in the Project GIS;
- (vi) Ensure roles and responsibilities for collection of social monitoring data is agreed between PIU and each contractor and their sub-contractors;
- (vii) Assist supervise the preparation and implementation of a Security Safety and Health Plan (SSHP) which includes a sub plan on Construction Camp Management by the main Contractors;
- (viii) Monitor, report and advice on social issues, including relevant gender components, HIV/AIDS, human trafficking and core labour standards and equal payment for equal work provisions in the civil works contracts;
- (ix) Work closely with international specialist to assist him/her in undertaking field monitoring on implementation of CEMP and SSHP and provide inputs on the preparation of semi-annual report for implementing EMP;
- (x) Prepare semi-annual social and monitoring reports for review and approval by PIU for submission to ADB for disclosure;
- (xi) Ensure compliance with social impact mitigation requirements of civil works contracts, and providing information to PIU on those processes in the monthly progress reports;
- (xii) Lead the implementation of Grievance Redress Mechanism for the project by developing systematic recording claim, organizing meeting to resolve grievances
- (xiii) Organize and coordinate gender awareness training for the PIU;
- (xiv) Coordinate with PIU to conduct awareness programs amongst key stakeholders.

- (xv) Assisting and advising PIU to develop and manage an effective public relations plan and to implement such developed plan, Support the PIU with communication activities as necessary;
- (xvi) Promoting the benefits of the Project and disseminating information to associated project stakeholders, general public and non-government organizations (NGOs) on how well social and environmental aspects are taken care of and what benefits are attributed to the poor community;
- (xvii) Assisting in organizing public relations events as required;
- (xviii) Assisting PIU with developing and maintaining a Project website to disseminate information and implementation progress, and also provide a feedback and communication system for stakeholders and general public; and
- (xix) Assisting in preparing a photographic and video diary of the construction works throughout the entire duration of the Project. This should show construction activities, progress, and interviews with DHI, PIU, PIC, contractors, government and Thromde staff, and stakeholders.

4.3 Non-Key Staff Qualifications, Indicative Tasks and Inputs

36. **CV-11: Geotechnical Engineer – International, 7 PM:** The expert must be an experienced civil engineer, preferably with a Master's degree and 15 years of work experience out of which about 10 years should be related to geotechnical engineering of large construction projects including river training works, land development and urban infrastructure. The expert should have demonstrated experience of implementation, and working in complex projects in similar geographical and topographical settings. The expert should be competent in design and construction of similar projects. The expert must have excellent verbal and written communication skills in English. The expert must also be familiar with the various types of construction materials, their parameters, occurrence and exploitability as well as their treatment on the site, mode of compaction and monitoring of their behaviour before and after impounding. The expert will be responsible for all geotechnical tasks and for undertaking the following activities, among others:

- (i) Supporting the Geotechnical Engineer (National), as necessary;
- (ii) Reviewing the available detailed designs, stability and seismic hazard analyses, and comment on the various types of construction materials. If necessary, undertake additional stability analyses and improve the design for technical and/or financial reasons;
- (iii) Working with the Material Engineer / Engineering Geologist, establish the need for foundation treatment measures and the availability of suitable local construction materials and review the appropriate material parameters to be applied in the analysis and design of the works; and
- (iv) Training of PIU staff.

37. **CV-12: Structural Engineer– International, 4 PM:** The expert must be an experienced structural engineer, preferably with a Master's degree and 15 years of work experience out of which about 10 years should be related to design and construction of retaining walls, revetments, culverts, hydraulic and road structures in similar geographical and topographical settings. The expert must have excellent verbal and written communication skills in English. The activities, will include, but are not limited to:

- (i) Reviewing and advising on, and undertaking if necessary, stability calculations for all structures to be constructed under the project in Phase 1 and planned in Phase 2. Indicative structures include, concrete diaphragm walls, drainage culverts, elevated water retaining structures, river crossing road bridges (phase 2);
- (ii) With the other engineers for the river training works and cross drainage works finding the most economical solution for each structure;
- (iii) Reviewing and advising on, and detailing if necessary, the reinforcement of all the structures, as necessary;
- (iv) Supporting as necessary the Engineering Geologist and the Geotechnical and other engineers and specialists for reviewing the works;
- (v) Providing periodic representation during the construction of the river training works, cross drainage, and other major civil and urban infrastructure structures;
- (vi) Checking the Contractor's fabrication and shop drawings, including structural design, as and when needed;
- (vii) Reviewing modifications to the structural design as a result of changes in ground and other conditions;
- (viii) Regularly reviewing the structural engineering aspects of the works and report accordingly; and
- (ix) Reviewing and reporting on any contractor initiated proposals for modification of the structural designs.

38. **CV-13: Roads Engineer – International, 3.5 PM:** The Roads Engineer will preferably have a degree in Civil Engineering with additional qualifications in project management or equivalent, will preferably have 10 years of international experience in roads construction, and will be fluent in English. Shall have demonstrated experience of working in implementation teams, and working on complex projects in similar geographical settings. The expert should be competent in contract management, construction, quality assurance and quality control, safety compliance etc. pertaining to roads construction and related structures. The expert will work closely with other team members in PIC/PIU. The main tasks of the specialist will include:

- (i) To support the project in all aspects of road construction work of the project;
- (ii) Take full responsibility for the effective quality and safety systems;
- (iii) Ensuring roads construction program is implemented according to project schedule;
- (iv) Contributing to training and capacity building of PIU staff;
- (v) Take full responsibility for coordination and integrated action between field units, other consultants, various government institutions, project beneficiaries, Phuentsholing Thromde, PIU and provide clear directions and decisions on all aspects of roads construction;
- (vi) Examining and commenting on contractor claims; and
- (vii) Be responsible for roads construction component reports preparation.

39. **CV-14: Water Supply/ Sewerage/ Hydraulics Engineer – International, 2.5 PM:** The expert must be an experienced civil engineer, preferably with a Master's degree and 15 years of work experience of which about 10 years should be related to water supply, drainage and sewerage systems and hydraulic structures. A practical knowledge of SCADA would be an advantage. The expert should have demonstrated experience of design and implementation, and working in complex projects in similar geographical and topographical settings. The expert to be competent in planning, design, safety, and compliance with safeguards pertaining to construction of similar projects. The expert must have excellent verbal and written communication skills in English. The expert's responsibilities include contributing to all tasks related to hydraulics and for undertaking the following activities, among others:

- (i) Review the hydraulic analyses for water supply, drainage and sewerage undertaken in support of the detailed designs;
- (ii) Support the other PIC design experts with reviewing, and if warranted improving, detailed designs for all hydraulic structures systems (i.e. water supply, drainage, sewerage) to ensure they convey the required design flows, pass the design sediment loads, are low maintenance, and are safe. This applies to the river training works, cross drainage and flow control structures and related urban infrastructure.
- (iii) Support the PIC with finalizing bid documents for Phase 2;
- (iv) Assist with testing and commissioning; if necessary and
- (v) Supporting preparation of MOM manuals

40. **CV-15: Water Treatment Process Specialist– International, 2 PM:** The expert must be an experienced engineer, preferably with Master’s degree in civil, environmental or public health engineering. Shall preferably have 10 years of experience in the detailed engineering design of water supply and wastewater treatment processes and management including the use of SCADA. Experience with large multilateral funded projects such as ADB projects is desirable. Have demonstrated ability to work within a multi-disciplinary consulting team and others project stakeholders; to review designs for quality and efficiency and suggest means by which errors can be rectified and designs improved. The expert’s responsibilities will include, but not be limited to, the following, at each stage of project implementation, ensure all designs and construction is of quality acceptable to PIU.

- (i) Reviewing and finalizing all engineering designs and cost estimates and other relevant tasks related to both raw water and waste water treatment processes.
- (ii) Review and provide proposals to improve engineering design and tender documents;
- (iii) Procurement: Tender documents should be checked to confirm that technical specifications are complete and correct;
- (iv) Design and Construction Supervision: Ensure all designs and construction are of quality acceptable to PIU;
- (v) Carry out design checks to ensure the quality of outputs by contractors for each stage; and
- (vi) Prepare practical tests to assess operation staff in operating water supply and wastewater treatment systems. Suggest training focus areas and needs to PIU.

41. **CV-16: Solid Waste Management Specialist – International, 2 PM:** The expert shall preferably have Master’s degree in urban environmental management or public health engineering and 8years of experience in solid waste management projects. Have demonstrated ability to work within a multi-disciplinary consulting team with counterparts and others project stakeholders. Experience with large multilateral funded projects such as ADB projects is desirable. Skills in communicating with authorities and other stakeholders and demonstrated capabilities in report writing. The expert’s responsibilities will include, but not be limited to, the following:

- (i) Reviewing and ensuring all plans, engineering designs and cost estimates related to solid waste management are adequate;
- (ii) Technical supervision of the implementation of waste treatment facilities (aerobic and anaerobic digestion plant) and final disposal sites (sanitary landfill site) including leachate treatment;
- (iii) Preparing a solid waste management strategy and implementation plan;

- (iv) Preparation of solid waste management technical guidelines and operational manuals for the 3R's (Reduce, Recycle and Re-use) and the entire collection and disposal cycle.

42. **CV-17: Electro-Mechanical Engineer – International, 2.5 PM:** The expert must be an experienced electro-mechanical engineer, preferably with a Master's degree and 10 years of work experience, out of which about 7 years should be related to electro-mechanical aspects of urban infrastructure. The expert should have demonstrated experience of working in implementation teams, and working on complex projects in similar geographical settings. The expert should be competent in planning, design, tendering, contract management, quality assurance and quality control, safety compliance etc. pertaining to construction of similar projects. The expert must have excellent verbal and written communication skills in English. The expert will be responsible leading and contributing to all tasks related to electro-mechanical engineering and for undertaking the following activities, among others:

- (i) Reviewing the detailed designs for mechanical aspects of the urban infrastructure including water supply and sewage pumps, pumping stations, sludge dewatering, and, raw water and wastewater treatment process equipment.
- (ii) Reviewing the detailed designs for electrical aspects of the urban infrastructure including substations, distribution infrastructure, site lighting, SCADA control systems and communications;
- (iii) Reviewing the existing power transmission/distribution systems within the vicinity of the PTDP be required;
- (iv) Review the bidding documents for the electro-mechanical aspects under the project;
- (v) Carrying out acceptance tests with the manufacturer(s);
- (vi) Assist with testing and commissioning; and
- (vii) Supporting preparation of MOM manuals for all electro-mechanical items installed or that are associated with the project.

4.4 Support Staff and Logistical Arrangements

43. The PIC shall provide the administrative and support staff needed to carry out their services. An adequate number of suitably skilled office support staff will be required to meet the needs of the Phuentsholing field office, and all associated logistics of the consulting assignment. Suggested positions, qualifications, and number of office support staff in each position are shown in **Table 2**. However, the positions and actual numbers shall be at the discretion of the PIC who will cost them accordingly as out-of-pocket, fixed-rate expenses in their financial proposal. The PIC is not required to submit CVs for office support staff as part of their technical proposal since they will not be evaluated as part of the expert team.

Table 2: Indicative Technical and Office Support Staff

Position	Indicative No.	Qualification/Experience	Activities
Office Support			
Office Manager	1	Preferably, 10 years of good office management experience preferably with an international company for international development projects	Office management, team logistics, support for field trips, preparation of workshops,

Accountant	1	Degree in accounting, or equivalent with 5 years book keeping experience. Preferably will have similar experience working on ADB projects.	Maintaining project financial statements and submission of invoices and payment requests to the PIU according to government and ADB's standards.
Assistant Office Manager / Secretary	1	Good English and national languages and computing skills (with appropriate certificate)	Office support, computer data entry, preparing letters, organizing printing.
Computer Operators/ CAD/ MIS/ GIS	3	Good English and national languages, computing skills (with appropriate certificate)	Support technical staff with maintaining MIS/ GIS and project web site.
Office Assistant / Messenger / Guard	2	Good English and national languages and previous experience	Maintaining the office, carrying messages, and other minor tasks.
Drivers	2	Good English, and national languages, driver's license, with 10 years of driving experience, an advantage	Driving within the project area and between Phuentsholing and Thimphu.

44. Other out-of-pocket expenses the PIC will be responsible to include: (i) all other necessary facilities and logistic support for its staff including living accommodation and per diems; (ii) international and national travel, and miscellaneous transportation; (iii) day-to-day office communications, utilities and other miscellaneous costs which may be required for carrying out the services as per the requirement of the Contract; and (iv) printing, publishing and transmittal of all reports and deliverables (excluding specific communication outputs related to Task 4, which shall be funded under provisional items).

4.5 Procurement of Additional Studies, Equipment and Training

45. Consultants for additional studies will be recruited in accordance with ADB's Guidelines on the Use of Consultants (August 2013, as amended from time to time). Goods and works for ADB-financed contracts will be procured in accordance with ADB's Procurement Guidelines (August 2013, as amended from time to time). Provisional sums have been included in the consultancy agreement for procurement of various requirements that will support the project. The PIC will be responsible for preparing the exact implementation arrangements, TORs, specifications, and detailed cost estimates of the procurement which will be approved by the Project Manager before initiating procurement. Procurement procedures will follow ADB's Procurement Guidelines. The tentative scopes of provisional items are summarized in **Table 3**.

Table 3: Indicative Provisional Items

Item	Description
Vehicles	Up to 2 vehicles shall be purchased for national transport needs between project office, construction sites, and for meetings in Thimphu, including O & M (running & Maintenance) of the vehicles. The vehicle should be 4WD, engine capacity of 2500-3000 cc
Surveys and Studies	Supporting surveys and specific studies including topographic surveys, geotechnical investigations, laboratory tests, and socioeconomic surveys. Tentatively this includes: a) a Biodiversity Monitoring and Benchmarking Survey (Attachment 3-1) and (b) preparation of a Flood Management Plan (Attachment 3-2)

Office Equipment	Procurement of office equipment including computers, software, printers, photocopiers, furniture, GPS power inverter, etc. for field office using the shopping procurement method. ²⁵
Meetings, workshops and training	For routine meetings, workshops and training sessions convened by the PIC or PIU.
Communication Materials	Publishing of communication materials and media including the video diary of the investment program and development and hosting of the website.

5. REPORTING REQUIREMENTS AND TIME SCHEDULE FOR DELIVERABLES

46. Unless otherwise agreed, all deliverables are to be submitted as drafts for review and comment by the PIU and ADB, and thereafter amended and submitted as final versions. Other occasional deliverables maybe required from time to time on an informal basis. PIC assist PIU to maintain an electronic safe backup of all contract related documentation and submit one electronic version of every report listed in **Table 4**.

²⁵ All PIC key and non-key experts are responsible for providing their own computers or be supplied by the PIC firm. This provisional item is only for providing computers for the office support staff and providing general office IT equipment.

Table 4: List of Main Deliverables and Indicative Number of Reports

No.	Item	Description	Due Time a	Number of copies for PIU	Number of copies for ADB b
Task 1 – Program Management					
1.1	Inception Report	The inception report will: (i) confirm, elaborate on, and adjust as necessary the consultant's approach, methodology and work plan based on information received during the inception phase; (ii) provide a detailed plan of the consultant's activities and confirmation and adjustment to the tasks of each expert with further elaboration as required; (iii) provide a detailed implementation plan for the project's activities; (iv) discuss any issues identified during the inception phase; (v) outline the planned implementation of the provisional items with scopes and costs; (vi) the contents of the PPMES and the MIS; and(vii) phase 2 loan documents	1st month	4	2
1.2	TOR and RFP for BMBMS and FMP/FEW Consultants	Prepare the TOR for the BMBMS and FMP/FEWS support consultants prepare "request for proposal" documents necessary to meet ADB requirements.	3rd month	2	2
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 routinely as necessary.	4th month, updated routinely	4	2
1.4	MIS	The MIS will detail how all information related to the Project will be structured, managed, and secured. It will include a secure filing system for printed material and a secure and backed up server for electronic material. It will be accessible from the PIU and client's project offices. The MIS will also include the public website for the PTDP.	6th month	4	2
1.5	PPMES	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	6th month	4	2

No.	Item	Description	Due Time a	Number of copies for PIU	Number of copies for ADB b
		manual will be prepared that shows users how to update and use the system.			
1.6	Mid-term Report (the number of versions of this report will depend on how many mid-term review missions are fielded by ADB)	Scheduled approximately half way through the consultancy period and should be produced prior to the ADB mid-term mission (note that the number and schedule of missions may vary). The contents would include, but not be limited to: (i) summary of the progress including issues, confirmation elaboration and/adjustments to the consultants program; (ii) progress against the financing and the DMF; (iii) updated detailed implementation plan; (iv) status of loan covenants; (v) updated PAM; and (vi) summary and discussion of all specialist aspects of the project including construction, capacity building, social grievances and environmental safeguards, together with conclusions and any recommendations for adjustment. The content of the report will be agreed with the PIU and ADB prior to its preparation.	25th month, however timing and number to be agreed with PIU and ADB	4	2
1.7	Final Report	The Final Report will be submitted one month after issue of the Performance Certificate for the last civil works contract. The Final Report will present a summary of all aspects of project implementation and comparison with the expectations of the financing (or as subsequently adjusted) and of the DMF. The report will summarize and discuss the results of specialist aspects of the project including construction, capacity building, social grievances and environmental safeguards, together with conclusions, recommendations and lessons learned for future projects. The content of the report will be agreed with the PIU and ADB prior to its preparation.	60th month	4	2
1.8	Monthly Reports	Concise mainly tabular report with 4-page maximum summarizing monthly progress of the project, implementation status and highlighting any critical issues that require client or ADB support with resolving. On	Monthly, by the 7th day of each following month	4	2

No.	Item	Description	Due Time a	Number of copies for PIU	Number of copies for ADB b
		agreement with the PIU and ADB, these may be submitted electronically only.			
1.9	Quarterly Reports	Concise reports giving more details of the project and key issues. For every year, the first two reports will be incremental reports detailing activities, progress and issues during the previous trimester, and planned activities for the next trimester. These reports must present all the findings related to procurement and to monitoring requirements identified in the DMF, including progress on delivering the outputs. The reports will also summarize the results of relevant data collected. The fourth report (which will become the Annual Report) will be cumulative for the full year period. The Quarterly Report is to include that month's Monthly Report (no separate monthly report).	Quarterly, by the 15th day of the following month	4	2
1.10	Briefing Reports	Special briefing reports as requested by the PIU and/or ADB.	As required	4	2
1.11	Special Reports	The PIC will prepare and submit any other report related to the Project as requested by the PIU and ADB.	As required	4	2
1.12	PCR	The contents of the report shall be as agreed between the PIU, PIC and ADB. It will focus on the individual contracts and generally it will follow standard ADB format.	Last month of loan/grant closure for the project	2	2
1.13	Phase 2 loan documents	Prepare Phase 2 loan documents and bid documents	50th month	4	2
Communications					
1.14	Updated Communications Strategy and Plan	Reviewing, improving and routinely updating the Project's communications strategy and plan.	3rd month, annual revisions every year	4	2
1.15	Media publications	As requested by the PIU and ADB. This applies to all forms of media. Drafts must be reviewed and approved by the PIU and ADB prior to release.	As necessary	4	2
1.16	Website	Professional and user friendly website where all project reports, information, photos and video links are available to users. Website to be routinely updated as required.	Operational by 6th month	-	-

No.	Item	Description	Due Time a	Number of copies for PIU	Number of copies for ADB b
1.17	Video presentation	Maintain a video diary of the implementation of the Project. Annually, prepare an edited highlight of physical progress snippets and capacity building initiatives (workshop, training, consultation, communication etc.) of approximately 1 hour duration with footage of construction activities and interviews with stakeholders, as necessary. The production will be prepared to the highest professional standards.	Annually	4	2
Task 2 – Contract Management and Construction Supervision					
2.1	Construction Supervision Manual	The Manual will outline the PIC's approach to contract management and construction supervision. The format and contents of the Manual will be discussed and agreed with the PIU and ADB however in general it will show the management and reporting structure, team organizations, logistical arrangements, report and certificate templates, etc. It will be updated from time-to-time to suit the needs of the Project program.	2nd month	4	2
2.2	Health and Safety Manual	The Health and Safety Manual will include guidelines, requirements, procedures and protocols, etc. that will guide and support safe practices on all construction sites, camps, offices and transport routes. It will be agreed by all Contractors and updated every year.	3rd month		
2.3	Shift Reports	To be prepared for each contract by the senior civil engineer. It shall include, among others, relevant information as deemed necessary, the weather conditions, crews and equipment working, works executed and tentative quantities, resource allocation, compliance with approved procedures, and any special or unusual occurrences experienced in each shift.	Per Shift	4	-
2.4	Weekly Reports	To be prepared for each contract by the senior civil engineer. It shall summarize the shift reports highlighting progress during the week, resource allocation, problems or hindrances, any specific problems encountered, action taken and any other matter deemed necessary.	Weekly	4	-
2.5	Monthly Progress Reports	The monthly report shall be prepared by the Chief Resident Engineer, within one week of the end of the	Monthly	4	2

No.	Item	Description	Due Time a	Number of copies for PIU	Number of copies for ADB b
		report period. It shall provide, among other items: (i) progress during the month on a quantitative and cost basis with appropriate graphical presentations comparing progress with program and giving reasons for any discrepancies with proposed remedial measures; (ii) cumulative expenditure record and estimated quantity at completion of each BOQ item, variation order and claim for the construction and equipment contracts; (iii) record of variation orders issued and being prepared; (iv) claims received, under consideration and settled; (v) comments on the quality of the month's work; (vi) a record of climatic conditions, and if appropriate, river flow conditions; (vii) any other matters which are deemed necessary by the PIU, PIC and contractors; and (viii) details of non-conformance works, recommendations and actions taken for rectifications.			
2.6	Annual Progress Reports	Highlighting the main features of the construction activities and other activities under consulting services contracts, in the previous fiscal year. The PIC shall prepare and submit the annual report within fifteen days of the end of the Fiscal Year.	Annually	4	2
2.7	Health and Safety Reports	Specifically report every health and safety incident (including near misses), provide recommendations for improvements, and document responses of project management (Contractors, PIU and PIC) to control and contain them.	Monthly	4	-
2.8	Claim Reports	For every claim, individual claim reports will include an analysis of the claim, the Engineer's recommendation as to whether the claim should be accepted, partly accepted, or rejected and the Contractor's entitlement under the contract.	Every claim	4	-
2.9	Technical Review Reports	The PIC will prepare and submit review reports on design reports submitted by Contractors, such as for the design and assembly of the diaphragm wall design and construction method and other electro-mechanical equipment, etc. The review report shall be submitted	As required	4	2

No.	Item	Description	Due Time a	Number of copies for PIU	Number of copies for ADB b
		within the period mutually agreed between the PIU and PIC.			
2.10	MOM manuals	For each project contract, a MOM manual will be prepared that includes information from the contractors and suppliers. It will contain sections describing, among others which will be agreed with the PIU: (i) the operation of the common infrastructure systems to ensure the desired services are provided as planned and designed; (ii) the operation of the system in the event of anomalies (floods, droughts, power failures, etc.); (iii) routine and infrequent system maintenance; (iv) system trouble shooting; and (v) required O&M staffing and annual expenditures.	48th month	4	2
2.11	Tender Documents	To be reviewed or prepared for all outstanding works and goods packages under the Project following PIU and ADB procurement requirements and formats.	As required to meet the implementation schedule	4	2
2.12	Special Reports	The PIC will prepare and submit any other report related to contract management and construction supervision as requested by the PIU and ADB.	As required	4	2
Task 3: Management of Environmental and Social Impacts					
3.1	Environmental Monitoring Reports	Requirements are described in the EMP document. Generally, the reports are to: (i) capture any environmental safeguards issues and their resolution; (ii) the compliance by contractors of EMPs (CEMP) are to be reported; and (iii) a summary of environmental parameters monitoring to be presented.	Submit semi-annual monitoring reports as per guidance provided in the EMP	4	2
3.2	Social, Gender and Grievance Monitoring and Evaluation Reports	Generally, the reports will discuss the quality and progress of gender action plan implementation, and any issues and remedies suggested to be presented. Status of any grievances including physical progress and financial expenditure to be stated.	Initially submit reports every 3 months for first year and then every 6 months thereafter	4	2
Task 4: Financial Management and Monitoring					

No.	Item	Description	Due Time a	Number of copies for PIU	Number of copies for ADB b
4.1	Financial Management & Monitoring Reports	Providing inputs to the quarterly and annual progress reports to be submitted to ADB.	Quarterly, by the 15th day of the following month	4	2
Task 4 - Commissioning and Operation					
4.1	Contract Completion Reports	This shall be prepared at the end of each works / goods contract. The report shall incorporate as-built records and drawings, details of construction methodology, concrete quality, hydrological, sedimentation, geological, and geotechnical condition, etc. The report will also include: a record of changes of design criteria or of design with reasons, records of labor used, and progress records for different types of works. The contents of the report shall be as per the standard for this type of the contract and as agreed between the PIU and PIC.	Completion of each works contract	4	2
4.2	Certificates	These will include the Statement of Completion Certificates, Taking Over Certificates, and Performance Certificates.	As required	4	2
4.3	Final Reports	The Final Report will be submitted one month after the issue of the Performance Certificate for each civil works contract. The report will contain details of remedial works carried out by the Contractors to rectify defects found during the Defects Liability Period. The report will also contain a summary of Final Statements.	Completion of each works contract's Defects Liability Period	4	2

ADB = Asian Development Bank, BOQ = bill of quantities, DMF = design and monitoring framework, EIA = environmental impact assessment, EMP = environmental management plan, PAM = project administration manual, MEM = Monitoring and Evaluation Manual, MIS = Management Information System, MOM = management, operation and maintenance, O&M = operation and maintenance, PCR = project completion report, PFR = periodic financing request, PIU = project implementation unit, PIC = project implementation consultant, PPMES = Project Performance Monitoring and Evaluation System, QAP = Quality Assurance Plan, RFP = request for proposal, RMP = risk management plan, TOR = terms of reference

a The due date applies to submission of draft versions for those reports which require both draft and final versions.

b For the ADB reports, one copy is to be delivered to the ADB Bhutan Resident Mission and one copy sent to ADB Headquarters in Manila.

6. CLIENT'S INPUT AND COUNTERPART PERSONNEL

47. The PIU shall provide the PIC with all documents, drawings, maps and other contract related documents that are available and at the disposal of the Project. All the requirements needed to carry out the consulting services, unless otherwise mentioned in these TOR, shall be the responsibility of the PIC. While no client staff will be deployed to work under PIC at Phuentsholing, adequate PIU counterpart staff will be in place to work with PIC. A complete list of PIU positions will be available to short-listed firms. All the equipment, vehicles, goods and materials procured under the consulting services contract are the property of the Project and shall be returned to the client after the completion of the services in good working condition. Basic furnished working office spaces will be provided by the PIU in Phuentsholing office. The PIC shall take responsibility for office maintenance, vehicle maintenance, consumables and upkeep. The PIC will be responsible for providing appropriate living accommodation for the PIC staff.

7. AVAILABLE DATA FOR PROPOSAL PREPARATION

48. The client and ADB have prepared documents and drawings to support the preparation of this Project. Shortlisted firms may review the reports and all available information, at the client's office in Thimphu with prior appointment. Similarly, shortlisted firms may also download copies of available digital reports and documents of the project which are accessible through CDCL website. Further details on the available reports and download website will be provided to the shortlisted firms.

8. SPECIFIC REQUESTS FOR PROPOSAL INFORMATION

49. In addition to the information required by the Request for Proposal, and any other relevant information the firm wishes to submit, the proposals for the PIC should also ideally provide the following information:

- (i) The lead firm's experience with: (a) supervising multiple construction packages being implemented concurrently; (b) managing multidisciplinary teams; (c) assisting the executing agencies with implementing environmental and social measures, ensuring safeguard policies/ requirements of the government and ADB are met; and (d) having overall responsibility for project implementation management.
- (ii) The firms' experience with supervising the construction of large-scale civil works contracts (i.e. larger than \$20 million in capital budget) as the 'Engineer' under FIDIC contracts. The works preferably to have included: (a) river training works and associated embankment wall construction; (b) land reclamation and slope stabilization; and (c) construction of common integrated urban infrastructure. If the lead firm does not have experience in any particular types of works then there could be a joint venture agreement with the suitably experienced partner firm.
- (iii) The firms' experience in undertaking ADB project preparatory technical assistance projects (or similar) in the water resources and/or urban development sectors. This applies particularly for planned river training and/or urban development projects. This includes preparing and supervising site investigations, surveys and studies, and preparing ADB's or other multilateral development bank loan documents.
- (iv) The lead firm's experience of undertaking similar projects with river training and/or urban development components in Bhutan or in similar geographic region should be highlighted. However, for the lead and joint-venture partner firms, similar experience in other developing countries (including Africa and Americas) should also be

- highlighted, along with any other particular experience relevant to the nature of the proposed investment plan in developed countries.
- (v) Practical recommendations for expediting the overall implementation schedule for the Project.
 - (vi) Submission of CVs in Tech-6 of the technical proposal: please ensure they are presented in the same order as the positions listed in Table 1.

Attachment 1: Indicative works for Phase 1**Contract CW-01: River Training and Embankment Protection Components**

Description	Quantities (approximate)
<u>River Training, Bank Protection & Embankment</u>	
Diaphragm wall with dead man anchor	18,300 m ²
Diaphragm wall with anchor slab	16,300 m ²
Cast in situ wall above diaphragm wall, up to lower promenade level	9,150 m ²
Cutting/filling for uniform bed level and embankment filling	683,100 m ³
Placement of boulders at diaphragm wall level	31,800 m ³
Stone in wire crates	34,000 m ³
Reinforced concrete retaining wall	1,900 m
<u>Land Reclamation and Promenade Finishing</u>	
Filling to achieve proposed bed level and embankment levels	2,440,000 m ³
Precast concrete below stone in wire crates	2,500 m ³
Finishing works on lower promenade level	31,800 m ²
Finishing on stone pitching	10,500 m ²
Finishing on upper promenade level with concrete slab	19,900 m ²
Railing on upper promenade level	4,000 m
<u>Others</u>	
Cross drainage – 8 No. culverts (total length)	1650m
Cross drainage – 4 No. open channels (total length)	700 m
Slope stabilization	1500 m

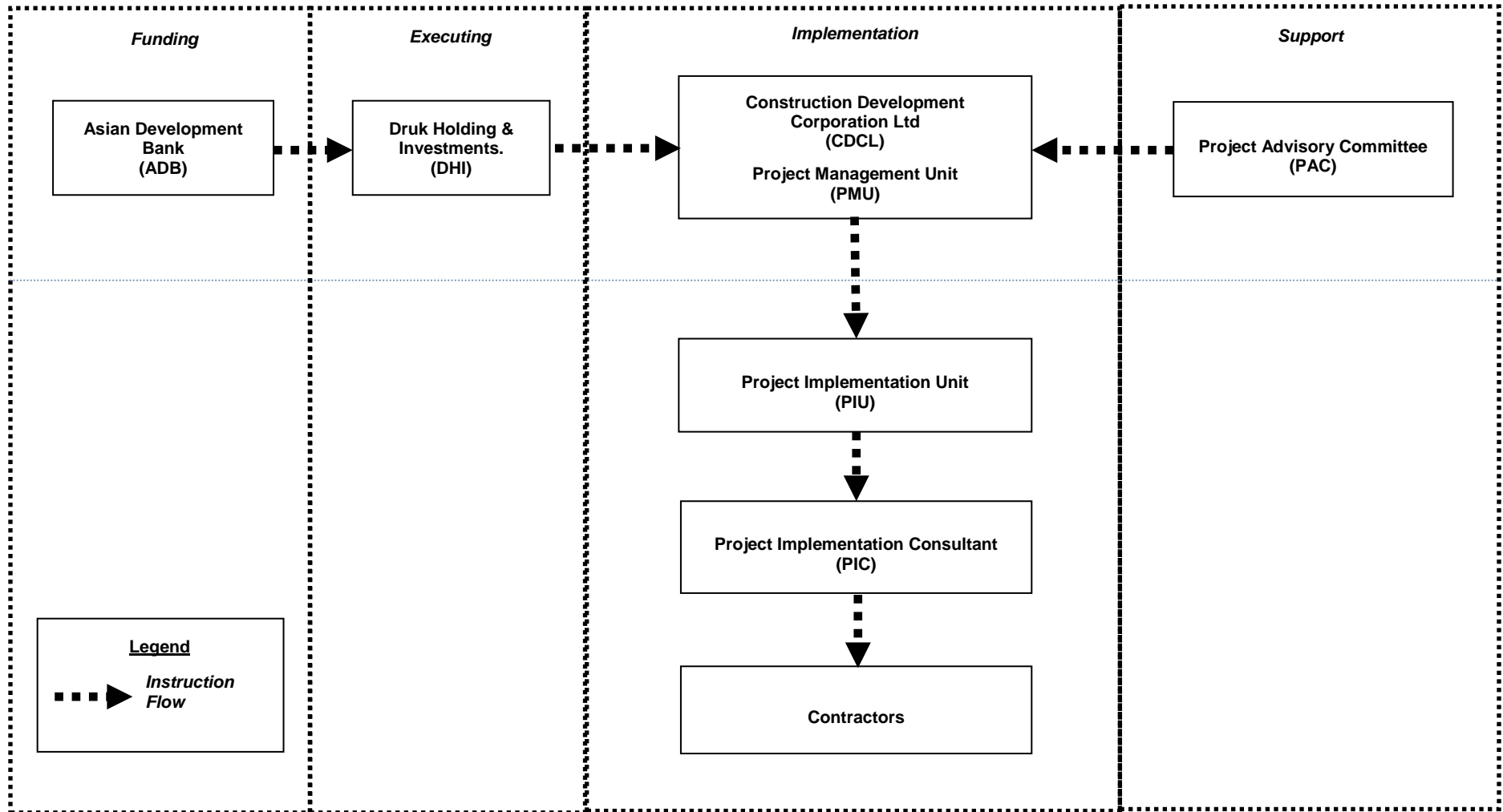
Contract CW-02: Common Urban Infrastructure Components

Description	Indicative Quantity
Water supply (3Nos. 300mm Dia. bore wells)	3 No.
Water treatment plant (3.1 MLD)	1 No.
Water supply distribution (80-200mm dia.)	12 km.
Sewerage (150-400mm dia.)	9 km.
Sewage treatment plant (3.0 MLD)	1 No.
Roads	10km.
Surface Water Drainage (450-900mm dia.)	9 km.
Solid Waste Management (Equipment, segregation, composting & landfill site)	complete system

Contract CW-03& 04: Power supply and Telecommunications

Description	Indicative Quantity
HT and LT transformers, transmission mains and street lighting	system
The optical fibre network in DWC pipe conduits with feeder pillars	system

Attachment 2: PTDP Implementation Arrangements



Attachment 3: Indicative Scope of Work for Studies and Surveys under Provisional Items

3-1. Biodiversity Monitoring and Bench Marking Study (BMBMS)

A. Background

A draft EIA has been prepared by the project preparation consultants which identifies the Zone C area as being within 1km of the Jaldapara National Park across the adjacent border with India. It is described as having an extensive range of flora and fauna such as Elephant, Indian Leopard, Rhino and many others. The land use inventory also shows extensive areas of similar and suitable habitat for such animals (more than 850 Ha of riverine grassland) within the proposed Zone C. There has been one rapid assessment of one week conducted for the preparation of the draft EIA. There has also been very limited monitoring of water quality within the Zone C area. The area of zone C and Zone D exhibits characteristics of what the ADB describes as “natural habitat” - Land and water areas where the biological communities are formed largely by native plant and animal species, and where human activity has not essentially modified the area’s primary ecological functions.

Given there is adequate time before Zone C is developed and the lack of information supplied in the draft EIA for this area, a baseline biodiversity will be conducted by a specialist Local Biodiversity consultant reporting to the PIC.

B. Issues

The issues subject to further investigation include:

- Current elephant movement pattern, social behavior, including feeding, breeding, roaming and its attachment factor to the project affected areas.
- Current distribution of other important species in the project and affected areas. These important species may include Indian Leopard, the Indian Rhino and Barking Deer, reptiles, amphibians, and avifauna especially species under critically endangered (CR) and vulnerable (V) category of IUCN such Bengal Florian
- Current distribution of important aquatic species and its breeding and spawning habitat.
- Habitat assessment especially Zone C which would support such species.
- human activities that may affect the ecological behavior, nice and habitat of these species.

C. Activities

- Identify and agree with PIU the baseline biodiversity study boundary which recognizes relevant ecological relationships.
- Identify and agree with PIU on a three-year study design over two seasons per year.
- With PIU oversight conduct the necessary Government liaison for the various protocols required to carry out the study.
- Implement the surveys in close coordination with the PIU.
- Prepare interim reports on each field visit.

- Ensure that all “critical” and/or “natural habitat” (defined in ADB SPS, 2009) are identified.

D. Outputs

- Prepare a final Report summarizing the results of the three-year study.
- Using the results of the study and in close cooperation with the PIC make recommendations concerning a Zone C Environmental Management Plan to be prepared by the PIC and any necessary review of the Master Plan for further approval by the NEC.
- Make recommendations for the preparation of Zone C on overall environmental safeguards, monitoring and management requirements.

All data observations to be stored in the project GIS database.

3-2. Flood Management Consultancy

Position titles: Flood Warning Specialist, Flood Management Specialist, Hydrologist/Hydraulic Engineer

A. Background

ADB plans to support the Phuentsholing Township Development Project (PTDP) in Bhutan, aiming to develop 66 hectares of riparian land adjacent to the Amochhu River near the city of Phuentsholing on Bhutan's southwestern border with India. The project will provide protection to the new township from floods and erosion, and construct smart urban infrastructure to allow phased urban expansion. The project will also protect the existing town of Phuentsholing from floods and riverbank erosion associated with the Amochhu²⁶, which currently threatens lives and livelihoods and disrupts connectivity with nearby communities.

The PTDP flood and bank protection works²⁷ are designed to protect the new development from an Amochhu flood with an annual exceedance probability of 1% in any one year (referred to as the 1 in 100-year flood). Nonetheless, flooding of the new and existing towns by the Amochhu will still be possible, with resulting risk to life and property, due to floods that are greater than the design event and/or due to inadequate in-river maintenance. In recognition of the residual risks, a Flood Early Warning System (FEWS) and a community-based Flood Management Plan (FMP) are included as part of the PTDP.

A Flood Warning Specialist, Flood Management Specialist and Hydrologist/Hydraulic Engineer are required to provide advisory services to CDCL on establishing the FEWS and FMP.

B. Outline of the Concept

The FEWS and FMP will broadly comprise the following components:

- Rainfall and water level sensors at selected locations.
- Data loggers for the rainfall and water level data.
- Satellite based transmission of the rainfall and water level data.
- Reception of the satellite transmissions at the DHMS control centre in Thimphu.
- A computer based system to monitor the status of the rainfall and water levels, with a range of alert levels.
- A flood forecasting model to be utilized when a trigger alert level is raised.
- Reception of the data, alert levels and flood forecasting results at Thromde operations centre in Phuentsholing.
- A procedure for warning dissemination via various media to reach the end user and

²⁶ Phuentsholing is exposed to flood risk from a number of sources. There is existing fluvial flood risk due to the Amochhu itself, the Amochhu left bank tributaries (referred to as 'cross drainage') which drain across the Amochhu LAP, as well as the Omchhu which passes through the town, and pluvial flooding (local rainfall-runoff that exceeds the capacity of the local stormwater system). The annual exceedance probabilities and consequences of each flood source are different. The PTDP flood protection works will mitigate Amochhu-related flood risks in the existing town, provided certain conditions are met. No works are included in the PTDP to mitigate the risks associated with the Omchhu or pluvial flooding.

²⁷ The cross-drainage works will be designed to have the same standard of flood protection, including a freeboard of 1m.

meet different needs of men and women.

- Procedures for action by the emergency services and the public.

Development of the FEWS and FMP will require close coordination with the Department of Disaster Management (DDM), Department of Hydromet Services (DHMS) and Phuentsholing Thromde, amongst others. DDM has an overview role as set out in the Disaster Management Act of Bhutan 2013. DHMS currently provides flood early warning services for other locations in Bhutan and will need to be closely involved throughout specification, installation and commissioning of the FEWS. Phuentsholing Thromde will be integral to the FMP execution and will host the operations centre in Phuentsholing.

FEWS equipment (supply and install) will be procured by CDCL through an international competitive bidding process in accordance with ADB procedures as a goods package (ME-01). CDCL will retain ownership of the field, communications and control centre equipment. DHMS will enter into a services contract with CDCL to operate and maintain the FEWS.

All data from the field equipment will be sent in quasi real-time to DHMS's office in Thimphu where the flood forecasting will be carried out. All data from the control centre will be sent in quasi real-time to a dedicated room (the operations centre) in Phuentsholing. The operations centre will be used to direct responses of the various agencies and stakeholders, in accordance with the FMP.

C. Activities

The activities, will include, but are not limited to:

- review available information related to PTDP, DDM, DHMS, and Phuentsholing Thromde, including site visits and meetings
- undertake a needs assessment of the FEWS and FMP. This should include a GIS-based geospatial risk assessment of the project area and Phuentsholing, culminating in preparation of flood hazard maps²⁸, highlighting existing and future²⁹ levels of exposure³⁰ and vulnerability³¹.
- plan, design and specify the FEWS equipment³² in close consultation with DHMS, taking account of the risk mapping/assessment
- assist the PIU with procurement of the goods package (CW-03) including tender evaluation
- assist the PIU with supervision of installation and commissioning for the field equipment, communications equipment, and the equipment for the control centre and operations centre
- plan, develop, calibrate and operationalize a flood forecasting model in close consultation with DHMS

²⁸ Flood data for the Amochhu should utilise the 2D hydraulic model developed for CDCL by HCP. Flood data for the Omchhu will require hydrological and hydraulic modelling carried out as part of this task.

²⁹ Including population growth and climate change projections.

³⁰ Proximity to the river/source, water velocity, flood elevation. Highlight critical infrastructure and other public assets.

³¹ Condition of housing and informal settlements, for example. The poor, children, elderly, disabled, and women headed household.

³² Includes field equipment, communications between the field installation and the control centre, control centre, communications between control centre and operations centre, as well as the operations centre and the authorities and the public.

- prepare a combined FMP³³ for PTDP and Phuentsholing in close consultation with DDM, DHMS and Phuentsholing Thromde as well as local communities. The FMP should include prevention and recovery along with preparedness and response.
- undertake readiness training and testing of the FEWS and FMP in close consultation with DDM, DHMS and Phuentsholing Thromde, and ensure the participation of women as the impacts of flood on men and women are different
- prepare a Completion Report.

D. Outputs

- Needs Assessment Report
- Specifications for FEWS
- Tender Evaluation Report
- Flood forecasting model
- Community-based Flood Management Plan
- Completion Report

The experts would work intermittently from Q3 2018 to Q3 2019.

E. Qualifications

The Flood Warning Specialist must be an experienced hydrologist or civil/hydraulic engineer, preferably with a Master's degree, with a minimum of 15 years of work experience out of which about 7 years should be related to design and installation of flood warning systems. The specialist must have excellent verbal and written communication skills in English.

The Flood Management Specialist must be an experienced civil engineer, preferably with a Master's degree, with a minimum of 15 years of work experience out of which about 7 years should be related to development of flood management plans for municipal areas. The specialist must have excellent verbal and written communication skills in English.

The Hydrologist/Hydraulic Engineer must be an experienced hydrologist or civil/hydraulic engineer, with a minimum of 8 years of work experience out of which about 4 years should be related to flood studies for municipal areas. The specialist must have a good standard of verbal and written communication skills in English and be capable of working with GIS data and models.

³³ The community-based Flood Management Plan will form part of the Emergency Management Plan currently being considered for implementation by DDM and the Thromde. The EMP will cover other hazards such as earthquakes, landslides, fires etc.

Appendix G-2: Independent Environmental Monitoring Expert (CS-02) Individual (international, 8 person-months)

A. Objective of the consultancy

The objective of the consultancy is to monitor the implementation of the project's environmental management plan (EMP) related to the approved Environmental Impact Assessment (EIA) in compliance with ADB SPS (2009) and the NEPA (2007). The specialist will report to the Project Management Unit (PMU) and ADB.

B. Scope of work

- The main tasks and responsibilities will be to review the Environmental Impact Assessment (EIA) and Project Environmental Management Plan (EMP) as well as the contractors' environmental management plan (CEMP) to understand the environmental issues associated with the project area. Consult with Project Implementation Consultant (PIC) to identify if there are any changes in the project sites of baseline environmental condition, if changes are made review and assess the outcome and advise updating the EMP;
- Review the EMP of contractor (CEMP) is in line with Project EMP;
- Verify that the public awareness campaign on EMP implementation is carried out among residents near construction sites, and that all complaints are promptly resolved in accordance with EMP policy;
- Advise PIC in coordinating the GRM and coordination consultation with local stakeholders, define corrective actions for updating the environmental monitoring report as needed;
- Review bidding documents and contractor materials to make sure that all environmental obligations are implemented in accordance with the EMP;
- Provide support to PIU in evaluating all document related with the implementation of EMP and assist in improving the quality of environment monitoring report;
- Review monthly EMP implementation report of contractor and its compliance with reality;
- Submit the EMP progress report to PMU and ADB bi-annually which should include project implementation, monitoring result, challenges and measures to be proposed or taken, and action plan until next monitoring;
- Conduct and implement environmental auditing, and include measures to be taken.
- Assist PMU before expiry of the initial EIA after 5 years, to review and revise (if necessary) to obtain NEC continued approval.

C. Qualifications

The expert shall preferably have a university degree in environmental engineering or similar field. He/she will have 10 years of work experience with state, public or private organizations in environmental safeguards and public consultations. It would be advantageous if he/she is familiar with Bhutan regulations and procedures and ADB policies on environmental impact assessment, environmental management and public consultation.

The Advisor would work intermittently from Q1 2018 to Q1 2024.

**Appendix G-3: Urban Management Advisor (CS-03)
Individual (international, 3 person-months)**

A. Objective of the consultancy

The objective of the consultancy is to provide advisory services to CDCL on establishing a comprehensive and effective township management system. This will cover human resources, financial management, public relations (including consultations, particularly with women and vulnerable groups), O&M of infrastructure, environmental protection, ICT, civic services (e.g. permits, records and licenses), social services (e.g. targeted assistance and community participation), planning (e.g. inspections and enforcement of regulations) and public safety.

B. Scope of work

The advisor shall prepare an outline training program for township management staff and Phuentsholing Thromde staff, prepare terms of reference for the capacity building firm to be recruited separately by CDCL, provide advice to CDCL management on urban management requirements including institutionalizing public participation,³⁴ and review key outputs of the capacity building firm.

C. Qualifications

The advisor shall have at least 15 years of experience in city and/or utility management. Demonstrated experience on human resources and financial management is required. Experience in Asia is preferred.

The Advisor would work intermittently from Q1 2021 to Q1 2024.

³⁴ This will include undertaking participation with women and vulnerable groups.

**Appendix G-4: Investment Promotion Advisor (CS-04)
Individual (international, 3 person-months)****A. Objective of the consultancy**

The objective of the consultancy is to provide advisory services to CDCL on investment promotion strategy and implementation.

B. Scope of work

The advisor shall prepare terms of reference for the investment promotion firm, provide advice to CDCL management on investment promotion issues, and review key outputs of the investment promotion firm to be recruited separately by CDCL.

C. Qualifications

The advisor shall have at least 15 years of experience in real estate, and at least 5 years experience on marketing and investment promotion of greenfield developments. Experience in Asia is preferred.

The Advisor would work intermittently from Q4 2021 to Q3 2024.

Appendix G-5: Sustainable Township Management Capacity Development (CS-05)

A. Objective of the consultancy

The objective of the consultancy is to support the future CDCL Development Authority to establish a comprehensive and effective township management system in line with the agreed roadmap for sustainable township management. The support will cover human resources, financial management, public relations (including consultations, particularly with women and vulnerable groups), O&M of infrastructure, environmental protection, information technology systems, civic services (e.g. permits, records and licenses), social services (e.g. targeted assistance and community participation), planning (e.g. inspections and enforcement of applications and regulations), public safety and contract management (e.g. for outsourcing). The consultancy will also build capacity of Phuentsholing Thromde staff in key areas that support the township, such as review of building applications, and solid waste management.

B. Scope of work

The consultant shall establish business processes and standard operating procedures for high-quality and inclusive township management that ensures environmental protection. The consultant shall provide classroom and on the job training to township management and Thromde staff, and exposure to good global practices in city management. A study tour will be organized and facilitated to a relevant city. The consultant will also procure, install and train staff on a computerized accounting and billing system; and procure computer and other office equipment.

C. Experts

Position	Inputs (person-months)
Team Leader/City Management Expert (international)	5
Human resources specialist (international)	3
Governance expert (international)	3
Municipal finance expert (international)	3
Financial management expert (national)	6
Town planning expert (international)	3
Deputy Team Leader / Town planning expert (national)	6
Urban infrastructure/O&M expert (international)	3
Asset management expert (international)	3
Communications expert (international)	1
ICT expert (national)	3
Urban environmental expert (international)	1
Unallocated (international)	6
Unallocated (national)	10
Non-key experts	48

Total inputs required are 56 person-months (31 international person-months; 25 national person-months). The assignment would be implemented from Q1 2022 – Q1 2023.

Appendix G-6: Investor Promotion and Transaction Advisory Consultant (CS-06)

A. Background

As described in the Integrated Detailed Project Report (IDPR), the financial feasibility of ALDTP heavily relies on the ability of the project owner to generate sufficient demand for land. This is especially important for development of Zone C, which will provide 60% of the total land area to be supplied by the project. To help ensure sufficient demand for land, it is essential to (i) implement policy reforms aimed at improving the attractiveness of the project to potential investors, and (ii) actively market the project.

B. Objective of the consultancy

The objective is to provide advisory, implementation and transaction services to CDCL on investor promotion to attract a critical mass of developers, including high-quality developers and anchor tenants that are ready to invest. It is expected that the services will help to maximize lease rates and up-take, and overall profile and success of the land development initiative.

C. Scope of work

To achieve the objective the Consultant will:

- Develop criteria for identifying high-quality developers and anchor tenants to be targeted (including but not limited to past experience in developing similar projects, financial capacity, and ability to generate employment).
- Prepare detailed marketing plan, including resource requirements, key performance indicators and annual targets.
- Prepare marketing materials
- Implement detailed marketing plan (through roadshows, digital platforms, and other channels).
- Prepare investor documents (e.g. permits, applications, clearances, transaction documents, etc...).
- Support day-to-day operations of the investment promotion office.
- Build capacity of CDCL staff for investor promotion.

D. Experts

Position	Inputs (person-months)
Team Leader/ Investment Promotion Expert - international	4
Financial Expert – international	2
Marketing Expert (Real Estate) – international	3
Marketing Expert(s)– national	24
Lawyer - international	1
Lawyer - national	6
Unallocated - international	6
Unallocated - national	15
Non-key staff (e.g. customer service representatives, office assistants, etc.)	48

Total inputs of key experts required are 61 person-months (17 international person-months; 44 national person-months). The assignment would be implemented from Q1 2022 – Q2 2024.