INCEPTION REPORT

Assessing the Current State and Deploying a Web-Based Integrated Information Management System for the Construction Permit System of RAJUK

URP/RAJUK/S-07

17 January 2019

Submitted by:

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Prepared for:

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January 17, 2019

Abdul Latif Helaly

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Subject: Submission of Inception Report for Contract No. URP/RAJUK/S-07; Credit No.: 55990 Assessing the Current State and Deploying a Web-based Integrated Information Management System for the Construction Permit System of RAJUK.

Dear Mr. Abdul Latif Helaly,

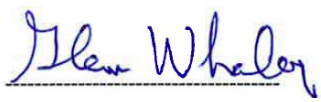
With reference to subject titled contract dated 3 October 2018, RTI International, USA (Research Triangle Institute) is pleased to submit a revised Inception Report for the *Assessing the Current State and Deploying a Web-based Integrated Information Management System for the Construction Permit System of RAJUK* project.

During the inception phase, RTI has been mobilizing key team personnel and partners, finalizing consulting and sub-contracting agreements, and settling into an office located within the premises of Dohatec, one of the project's sub-contractors. In addition, a second field mission occurred in December, allowing for significant stakeholder engagement and data collection in preparation of the next ECP project milestone: the construction permitting assessment and report.

This version of the Inception Report integrates the most prevalent comments conveyed by the World Bank through the addition of new sections: Stakeholder Mapping (section 3.2.2); Lifecycle of a Construction Case across Permitting Stages (section 3.2.3); Situation Analysis (section 4); Presentation of Improvements (section 5.1); and Workflow Diagrams of To-Be Processes (section 5.2). Most other comments have been integrated in the text where applicable. Outstanding requests for changes will be addressed in the subsequent CP Assessment Report and Strategic Plan Report.

We appreciate your acceptance of this report.

Very truly yours,



Glenn Whaley
Program Director (RAJUK/URP/S7 Operationalizing the URU in RAJUK)
RTI International, USA (Research Triangle Institute)

Assessing the Current State and Deploying a Web-Based Integrated Information Management System for the Construction Permit System of RAJUK

(URP/RAJUK/S-07)

Inception Report

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Prepared by:

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Rajdhani Unnayan Kartripakkha

Contents

Executive Summary

This Inception Report outlines the project structure and methodology of the World Bank-financed *Assessing the Current State and Deploying a Web-based Integrated Information Management System for the Construction Permit System of RAJUK* project (RAJUK/URP/S-07). It includes the following chapters: Project Background, Stakeholder Engagement and Outcomes, Data Collection, Situational Analysis, Proposed Improvements, Project Management and Organization, Technical Activities, Project Schedule and Workplan.

RTI has engaged a full-time In-country Program Director, Glenn Whaley, to be based in Dhaka for the overall management of the activities and technical experts. The technical content and quality of the deliverables will be ensured by Team Leader, Dr. Eric Mousset, for all the major deliverables starting from submission of this Inception Report on 16 November 2018 through submission of the Final Report.

The primary objectives of the project are to design and implement an electronic construction permitting (ECP) system and assist RAJUK in streamlining the permitting process. It is expected that the project will require 24 months for the assessment, design, and initial implementation activities, with follow-on IT support available as requested.

This Inception Report highlights the Inception Phase activities and outcomes. During the Inception Phase, RTI held a kickoff meeting with the Urban Resilience Project (URP) Director and his team, and facilitated a kickoff workshop with more than 50 participants from RAJUK and its URP team, relevant stakeholders, government agencies, civil society, academicians, the private sector, and donor agencies. Additionally, RTI held a series of stakeholder meetings and focus group discussions. Key findings from the Inception Phase, such as the immediate and sustained need for stakeholder and consultant coordination and training platforms, were noted and incorporated into the project plan.

This Inception Report also summarizes the technical approach and methodology, which utilizes four steps within the three main phases of the project: 1) assessment and design, 2) ECP system deployment and testing, and 3) ECP system deployment. Successful completion of this project will benefit RAJUK by reducing permitting time; improve record keeping and archiving of permitting decisions; enhance communication with applicants and other municipal departments; foster higher quality plan submissions and customer service; and improve municipal staff efficiency with less duplication of effort.

A situational analysis of the general context and of “As-Is” processes is presented, that was prepared on the basis of data collected thus far. High-level recommendations of improvements are also included, as well as workflow diagrams of “To-Be” processes.

1 Project Background

1.1 Project Motivation

Construction permit applicants in Dhaka currently undertake a challenging and complicated process. As a result, the permitting process is vulnerable to circumvention, including noncompliant construction, corruption, and illegal permit manipulations. City revenue is diminished from incomplete, incorrect, or absent permitting applications, and from businesses lured to other cities with shorter and less complicated permitting systems. Furthermore, poor compliance increases the risk of critical building failures during extreme events such as floods, earthquakes, and fires.

As part of the activities funded under the World Bank-cofinanced Urban Resilience Project (URP), the Government of Bangladesh has requested an integrated electronic construction permitting (ECP) system to:

- Computerize and simplify the building permit application and processing system
- Improve coordination and provide training to building permitting officials
- Reduce permitting approval times and provide transparency to the process
- House all building permits in one system for easy retrieval and assessment for cumulative impacts.

This Inception Report provides a reference and initial plan for the "Assessing the Current State and Deploying a Web-based Integrated Information Management System for the Construction Permit System of RAJUK" project, which is led by RTI International financed under World Bank Project P149493. This project focuses on the assessment, selection, and implementation of an ECP system for building construction. The project considers all stages of ECP system development, including analysis of the current permitting system and authorities, development and review of electronic permitting options, design and customization of the system, testing, knowledge transfer and training, deployment, and maintenance. The Terms of Reference for the project are presented in **Annex A**.

1.2 Project Objectives

The main objectives of this project are to:

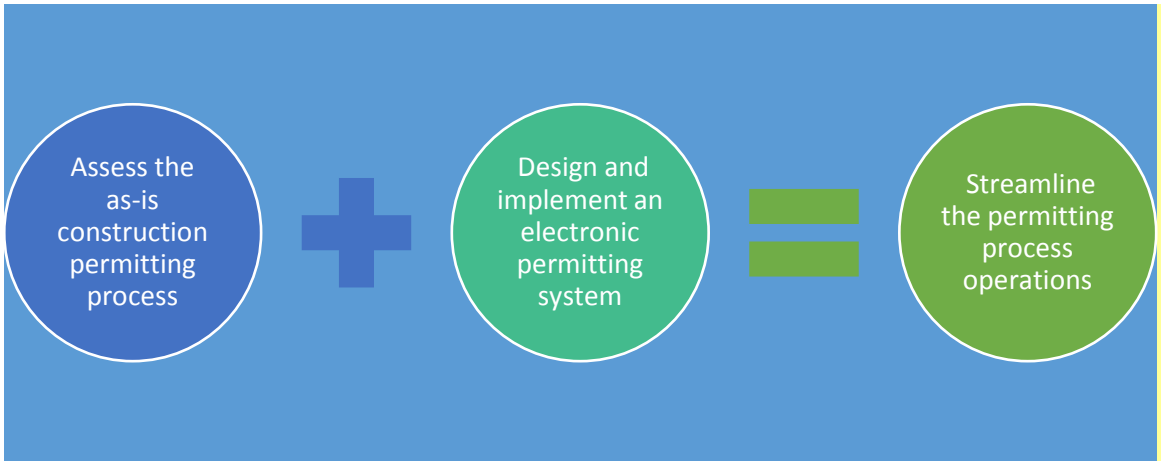
1) Streamline the building construction permitting process
2) Design and implement an ECP system.

These objectives will be achieved by conducting a gap analysis and an assessment of international best management practices, defining the opportunities for streamlining and permitting process improvements, developing and deploying the ECP system, and providing training to users and relevant stakeholders. Frequently asked questions about ECP systems are included in Annex C.

The project team will leverage our international experience and consensus-driven approach to understand the current building construction permitting process and gather feedback on the benefits and trade-offs of various system design options to be considered in the context of Dhaka's system. The approach will require a development framework with a defined iterative design process, such that any changes and their impacts and implications can be considered by RAJUK, stakeholder agencies, and experts familiar with the requirements of developers, engineers, construction companies, and residents.

Outcomes will include recommended improvements to the permitting process, system design options, training techniques, and maintenance/update cycles. Deliverables and outputs are detailed in **Section 7**.

Project Objectives



1.3 Project Staffing

The assessment, design, and implementation of the ECP system will be conducted by RTI, in association with DotGov, Dohatec, Bangladesh University of Engineering and Technology (BUET), Miyamoto International, and Smart Development Engineering (SDE). RTI and its team have vast experience managing development sector projects internationally, with each team member contributing the following expertise:

- **RTI** will lead the project team as well as provide subject matter expertise and technical assistance for regulatory analysis, system development, and urban planning-related tasks
- **DotGov** will provide support for the system prototyping and development, as well as in-house and user acceptance testing activities
- **Dohatec** will provide in-country support for the assessment, system development, user acceptance testing, system deployment, training, and operational acceptance testing activities
- **BUET** will provide testing and knowledge management services
- **Miyamoto International** will support the assessment and strategic planning activities
- **SDE** will provide general logistics support for the coordination of local activities.

RTI's key and non-key (intermittent) project personnel are listed in **Tables 1** and **2**.

Table 1. Key Personnel

Staff Role Number	Name of Staff	Role	Organization
K-1	Eric Mousset	Team Leader (Intl)	RTI
K-2	Razib Mohammad Imran	Project Manager (Natl)	Dohatec
K-3	Sergiu Tarigradschi	Software Development Specialist 1 (Intl)	DotGov
K-4	Mostofa Fahmida Akter	Software Development Specialist 2 (Natl)	Dohatec
K-5	Alexandr Iacovlev	Information Management Specialist (Intl)	DotGov
K-6	Mamunur Rahman	System Security Analyst (Natl)	Dohatec
K-7	Nazmul Islam Bhuiyan	System Analyst/Database Admin (Natl)	Dohatec
K-8	Salekul Islam	Software Engineer 1 (Natl)	Dohatec
K-9	Masudur Rahman Sr.	Software Engineer 2 (Natl)	Dohatec
K-10	Taslima Akter	Training and Knowledge Management Coordinator (Natl)	Dohatec
K-11	Md. Masudur Rahman	Quality Assurance Specialist/Tester 1 (Natl)	Dohatec
K-12	Mohammad M. Rahman	Quality Assurance Specialist/Tester 2 (Natl)	Dohatec
K-13	Tushar Kanti Barua	Network Administrator (Natl)	Dohatec

Table 2. Non-Key (Intermittent) Personnel

Staff Role Number	Name of Staff	Role	Organization
N-1	Glenn Whaley/ Keith Weitz	Project Director	RTI
N-2	Jenn Richkus	Project Coordinator	RTI
N-3	Steven Segerlin	Urban Planner	RTI
N-4	Megan Tulloch	IT Director	RTI
N-5	Jennifer Lloyd	Manager - Quality Assurance	RTI
N-6	Linda Andrews	Database Developer	RTI
N-7	Candis Edwards	Systems/Business Analyst	RTI
N-8	Caitlin Hulsey	Application Developer	RTI
N-9	Nneka Ubaka-Blackmoore	Quality Assurance	RTI
N-10	Jennifer Wellard	Application Developer	RTI
N-11	Anne Marie Miller	GIS Developer	RTI
N-12	Dan Reid	Systems Administrator	RTI
N-13	Bea Jackson	Quality Assurance/Tester	RTI
N-14	Nicole Jacobs	Trainings Coordinator	RTI
N-15	Kit Miyamoto	Earthquake/Disaster Risk Specialist	Miyamoto
N-16	Multiple	Civil-Structural Engineer	SDE
N-17	Multiple	Construction Surveyor	SDE
N-18	Multiple	Construction Inspector	SDE
N-19	Multiple	CAD Document Control Analyst	Dohatec
N-20	Multiple	Data Collection Coordinator	SDE
N-21	Multiple	Permit Reviewer	SDE
N-22	Multiple	Survey Enumerator	SDE
N-23	Multiple	Assessment/ Design Support	Dohatec
N-24	Multiple	Development/Deployment Support	RTI & Dohatec

1.4 Project Oversight

Management of the project will be provided by the Oversight Committee (OC). The OC will facilitate the smooth and expedient design of the ECP system, coordination and review by stakeholders, and implementation of the system and knowledge transfer plan. It is anticipated that RAJUK will identify and select appropriate and relevant agencies and stakeholders.

1.5 Project Phasing

The inception phase has included the following steps:

- Kickoff meeting
  - Review Terms of References
  - General discussion of approach
  - Inception outline review
- RAJUK office walk-through
  - Detailed assessment of current permitting process
  - Identification of key stakeholders
  - Discussions of risks and risk management
- Stakeholder introductions:
  - Development of key contact lists
  - Overview of project objectives and benefits
  - Identification of event space
- Work plan development
  - Coordination with RAJUK and OC
  - Draft and final work plans.

By completion of the Inception Phase, a detailed work plan has been established (presented in Figure 1).

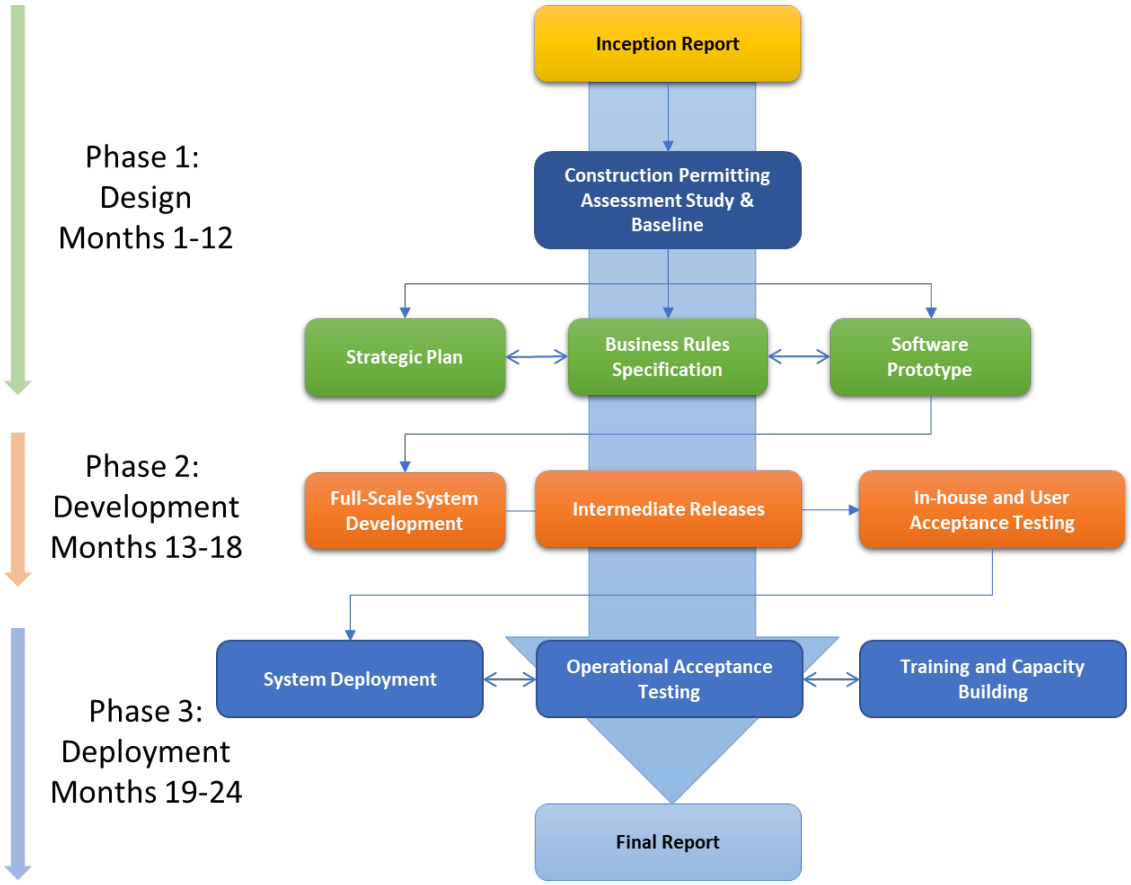


Figure 1. ECP Project Phasing

2 Stakeholder Engagement and Outcomes

2.1 Project Kickoff Meeting

The project kickoff meeting occurred on 03 November 2018. The meeting attendees are listed in Table 3.

During the meeting, RTI presented an overview presentation of key staff, anticipated project schedules, deliverables and communication plan, data needs, and recent accomplishments (e.g., stakeholder meeting with Fire Service and Civil Defense, delivery of memos). RTI provided Mr. Mahboob with Letters of Availability for key personnel and reviewed the current status of the data collection process and upcoming deliverables. The meeting also included a discussion of the World Bank Mission Trip and Workshop scheduled for 3–5 December 2018.

The project kickoff meeting also included a conference call among URP unit, RTI, and Mehmet Emin Akdogan, the World Bank Technical Advisor. The call included a summary of project accomplishments to date, upcoming activities, and instructions for the World Bank Mission and Workshop.

Table 3. Kickoff Meeting Attendees

Name	Designation
Abdul Latif Helaly	RAJUK Director
Mahboob Hassan	RAJUK Procurement
Glenn Whaley	RTI Project Director
Keith Weitz	RTI HQ Project Director
Rafi Alam	RTI Client Manager
Jennifer Richkus	RTI Project Coordinator
Eric Mousset	Project Team Leader
Shafiul Alam	National Project Coordinator
Engr. Emdadul Islam	Technical Advisor

2.2 Inception Stakeholder Engagement Workshop

URP management and the RTI team facilitated an inception stakeholder kickoff on 1 November 2018 at the Spectra Center in Dhaka. Following an introduction and presentation on disaster risk management by Mr. Helaly, RTI presented the scope, schedule, and key staff for the two contracted projects (URP/RAJUK/S-06 and URP/RAJUK/S-07). The event included an open forum to receive feedback and recommendations from all participants on the way forward. The participant list is provided in **Annex B**. The key outcomes, requests, and action items of the meeting are reported below.

Key comments provided by stakeholders in the workshop:

- As-is system

  - Getting a pre-approval within 45 days is not possible under the current manual system. An organized one-stop shop for data and evaluation criteria is needed.
  - RAJUK is responsible for permitting building retrofits and demolition but these efforts not currently captured in the process.
- To-be system
  - Data security must be well-considered, especially given the access points needed for other agencies and the large amounts of data stored.
  - Academia has expressed an interest in accessing permitting data for research purposes.
  - Socio-economic context must be considered thoroughly prior to permitting, e.g., zoning or Non-Objection Certificates (NOC) delivered by third-party agencies.
  - The benefits to each stakeholder group must be made clear to help ease the transition to the new system (a stakeholder map is presented in Section 3.2.2).
  - Workflow transparency and application tracking are important.
  - Architects are the maker of the city and the liaison between builders and agencies, therefore input from this group is critical to the Urban Resilience Unit (URU)/ECP system development.
  - A universal training platform for all relevant stakeholders is needed.

2.3 Complementary Stakeholder Meetings

A series of complementary meetings were held during the inception phase in November 2018 and involved the joint participation of RTI's S-06/URU and S-07/ECP project teams. A comprehensive list of meetings is presented in Sections 2.7 and 2.8 of the Inception Report for the "Consultancy Services for Operationalizing the Urban Resilience Unit (URU) of RAJUK" project (URP/RAJUK/S-06). The information on those meetings is not repeated in this report.

2.4 Summary of Outcomes

2.4.1 Scope Clarification for ECP Project

The kickoff and stakeholder meetings helped refine the scope of the URP/RAJUK/S-07 project component as described in **Table 4**.

Table 4. Scope Clarification Results

INCLUDED IN SCOPE	NOT IN SCOPE
Preparing a listing of computer hardware, software, hosting services, and other information and communication technology (ICT) infrastructure that will be required for developing and operating the ECP system.	Procuring computer hardware or software for RAJUK and other relevant agencies.
Training staff from RAJUK and other relevant agencies on the use of the ECP system.	Training staff from RAJUK and other relevant agencies on basic computer literacy.

2.4.2 Recommendations from Stakeholders

Recommendations expressed by stakeholders during the meetings are summarized as follows:

- This ECP project should identify approaches for incorporating spatial datasets such as risk sensitive land use and disaster risk management (DRM) into the ECP system to aid reviewers in the technical evaluation of the permit.
- The ECP system should enable workflow transparency to show relevant parties the status of each permit application. Within the ECP system, a tracking and reminder feature will be necessary to (1) notify relevant parties when delays are imminent or occurring, and (2) allow RAJUK to quickly recognize and address areas with frequent delays.
- This ECP project should ensure that data security is well-considered, especially given the access points needed for other agencies and the large amount of data to be stored.
- The ECP project team should ensure continued stakeholder engagement and increasingly and clearly emphasize the benefits to each stakeholder group to help ease the transition and encourage adoption of the new ECP system.
- This ECP project should diversify knowledge transfer and training options, including classroom-based, e-learning, on-the-job learning, and others.
- This ECP project should consider permitting building retrofits and demolition as part of the permitting process.
- This ECP project should develop standard operating procedures (SOPs) and checklists outlining the evaluation tasks and procedures associated with construction types that are needed to build efficiency and expertise into the permitting process (e.g., industrial, multi-use, high density residential, commercial).
- The ECP project team should collect inputs from the architect society, because architects are the makers of the city and the liaison between builders and agencies.

2.4.3 Key Success Factors

The following factors were identified as particularly pivotal to the success of the project:

- Obtaining buy-in from all stakeholders, including the NOC agencies
- Strengthening digital literacy skills and confidence with use of e-Government systems
- Collecting inputs from the architect society.

2.4.4 Needs from RAJUK, Stakeholders, and Other URP Components

Stakeholders emphasized a variety of needs, as follows.

- RAJUK
  - Access to key documents (e.g., building codes, laws, regulations) and data
  - Access to staff involved in permit approvals processes
- Stakeholders
  - Access to key documents and data
  - Access to NOC agencies' staff
- Other URP activities
  - Building code updates.

2.4.5 Requests by RAJUK

RAJUK formulated a variety of requests. Descriptions and responses are presented in **Table 5**.

Table 5. RAJUK Requests and Current Status

REQUESTS	STATUS TO DATE
ECP project team to provide a listing and cost estimate of computer hardware, software, and ICT infrastructure by December 2018, so that RAJUK could initiate the procurement process.	The requested listing and cost estimate was submitted to Mr. Abdul Latif Helaly, URP Director, and Mr. Mahboob Hassan, URP Procurement Specialist, on 3 December 2018 and validated by Mr. Mehmet Emin Akdogan, World Bank Technical Advisor on 5 December 2018.
RTI to provide clarifications regarding the scope and schedule of operation and maintenance reporting in years 1 and 2.	Such clarification will be discussed during the January 2019 mission.
Functional scope of ECP system to also cover retrofitting and demolition permitting.	ECP project team has taken note of the request and will integrate it to the ECP system requirements and specification.
RTI to arrange an office for the ECP project team.	Such arrangements were effective by end of December 2018.

3 Data Collection

The extensive data collection effort required for this ECP project began during the Inception Phase and is due for completion during the next phase (Construction Permitting Assessment). This section includes the methodology and resulting outcomes thus far.

3.1 Data Collection — Methodology

A significant data collection and review effort is required to ensure that the current functions and key needs of RAJUK and relevant stakeholders are understood and aligned with the Dhaka regulatory structure.

In addition to document collection and literature review efforts, RTI has developed stakeholder questionnaires and requested assistance from RAJUK in organizing on-the-job observational periods. The questionnaires have been developed for internal and external stakeholders to understand their respective roles in the permitting process and capture recommendations for efficiency improvements.

Identified and requested data and documents are selected to inform the following subject areas:

- Permitting-related processes, as per current operational settings (also referred to as “As-Is processes” in the remainder of this report)
- Existing legal and regulatory environment
- Existing ICT environment
- Existing spatial and technical resources
- Existing manpower and technical capabilities
- International best practice for ECP design and implementation.

RTI is gathering feedback by interviewing relevant RAJUK staff and external stakeholders, facilitating semistructured discussions, and distributing structured questionnaires for further comment and clarifications where needed. The data and documents collected will be catalogued, housed, and managed in the information management system for future recollection and review.

RTI will also observe office and field staff to better understand the roles, responsibilities, and functions in the permitting process workflow. Observations that will be documented include equipment, user needs, potential points of failure, duration of process activities, and others. One or more relevant permitting staff from the field and in the office will be monitored, including urban planners, architects, engineers, permit reviewers, management, inspectors, surveyors, and samplers.

3.2 Data Collection — Outcomes to Date

3.2.1 Progress Status

A variety of data has already been collected to date, covering the following areas:

- Bangladesh legal and regulatory framework
- Presentation of daily permitting operations by RAJUK zonal offices

- Presentation of as-is processes for land use clearance, construction permitting, and occupancy certification by URP management and RAJUK head office
- Sequence of NOCs delivered by other government agencies or commodity providers
- ICT capacity of RAJUK headquarters
- Documentation on ICT regulatory framework and support by the Government of Bangladesh.

Additional documents have also been collected as listed in Table 6 below.

Table 6. Document and Information Collection Outcomes to Date

Requested Data Type	Document/Info	Source/ Requested Agency	FINDINGS
URBAN PLANNING DOCUMENTS	Greater Dhaka Structure Plan	RAJUK	Document is not finalized.
	Updated Detailed Area Plan	RAJUK	Online image is from 2008. Further investigation required.
	Risk Sensitive Land Use Plan	World Bank	2014 version — to be linked with output of other URP components especially RSLUP, HVRA assessment, professional accreditation program, BNBC enforcement and implementation.
	Plot-Based Land Record System (WPLRS)	RAJUK	ECP project team was provided a demonstration of WPLRS by RAJUK MIS manager in December 2018.
	IFC Construction Permit Process Simplification Study	RAJUK	Received and complete.
SPATIAL DATASETS	Ongoing		
REGULATORY DOCUMENTS	Bangladesh National Building Code (BNBC)		BNBC is currently undergoing updates.
	Environmental Legislation		
	RAJUK Workflows	RAJUK	Received and complete
	Town Improvement Act, 1953	RAJUK	Received and complete
	Building Construction Act, 1952	RAJUK	Obtained paper copy in Bengali, now translated to English
	Construction Guidelines (Bidhimala), 2008		Now translated to English
	Workflow diagrams describing as-is processes	RAJUK	Received and complete

	for: 1. Land use clearance (standard/large/special projects) 2. Land use clearance — appeals (to Nagar Unnayan Committee / Chairman / Board) 3. Land use clearance — renewal 4. Plinth-level completion notice 5. Construction starting notice 6. Construction permit 7. Construction permit — appeal to chairman 8. Occupancy certificate 9. Occupancy certificate — renewal		
ICT CAPACITY AND INFRASTRUCTURE INVENTORY	Obtain comprehensive information on networking, security, application servers, personal computing equipment, mission-centric software and experiential aspects of ICT capacity of RAJUK.	RAJUK headquarters and zonal offices	To be initiated in January 2019 and completed in March 2019.
STAKEHOLDER INFORMATION	Contact information and introductions to key staff at stakeholder agencies and organizations. The following entities have been identified as potential stakeholders: DoE, DESA, WASA, TITAS Gas, DMP Traffic, DTCB, UDD, DCC, FSCD, DTCA, Civil Aviation Authority Bangladesh, NHA, PWD, Department of Land Record and Survey, Local Government Engineering Department, BIWTA, Roads and Highways.	RAJUK	Two meetings have already been held between FSCD and ECP Project Team. Meetings with the other 10 NOC agencies are scheduled for the January 2019 mission. Meetings with other stakeholder are scheduled for February and March 2019.

3.2.2 Stakeholder Mapping

Multiple stakeholders are involved at various stages of the permitting process. A synoptic diagram is presented in **Figure 2**.

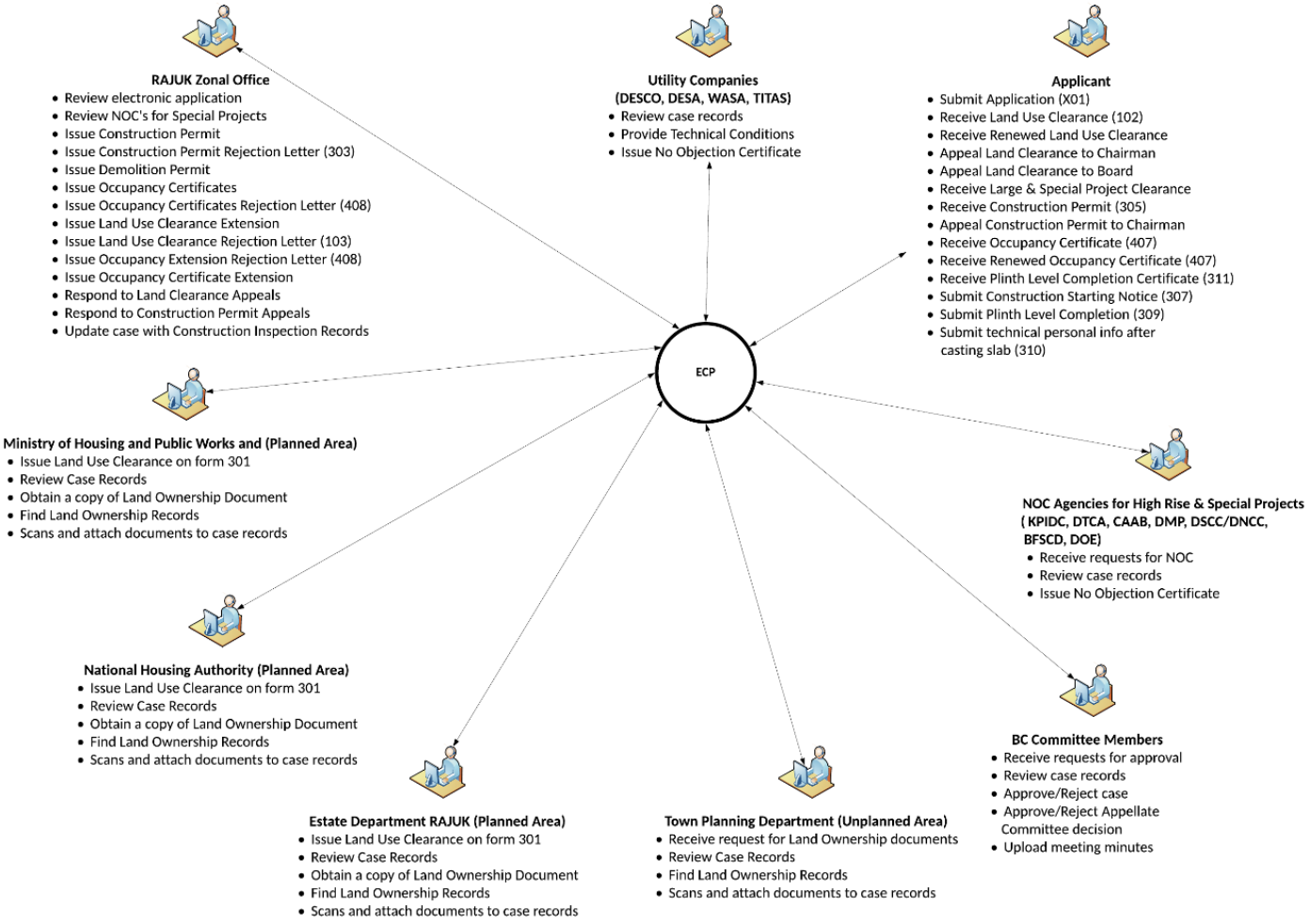


Figure 2. Stakeholder Diagram and Anticipated Capabilities of the Future ECP System

3.2.3 Lifecycle of a Construction Case across Permitting Stages

The lifecycle of a construction case and related permitting steps is depicted in **Figure 3**.

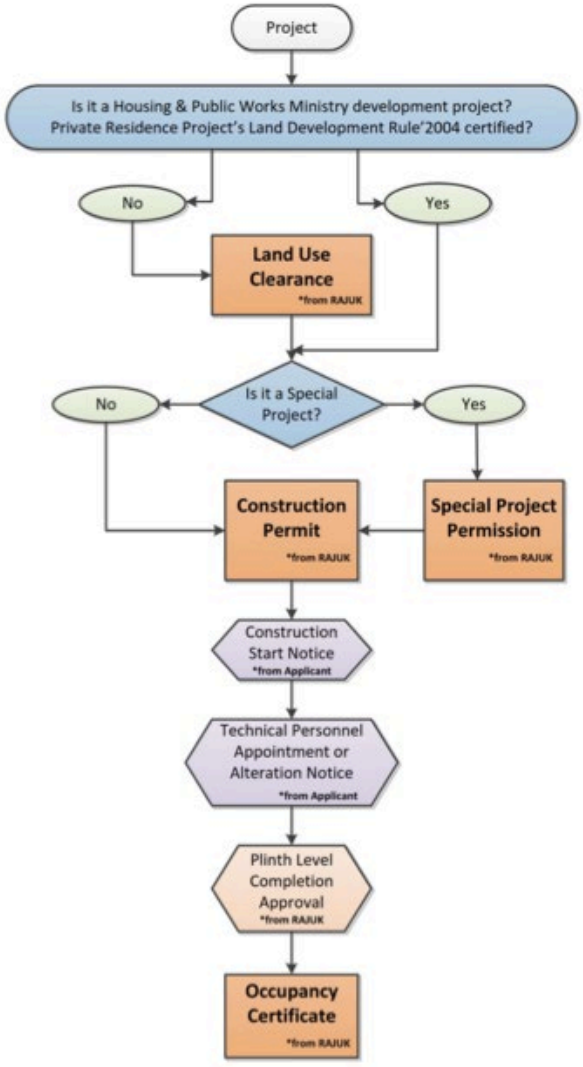


Figure 3. Lifecyle of a Construction Case from Land Use to Occupancy Certificate

3.2.4 Description of Existing Permitting Processes (As-Is)

A comprehensive collection of workflow diagrams shared by URP management and presenting as-is processes is available at https://goo.gl/ztGkFz.

A complementary view resulting from the Bangladesh Tax Administration and IFC project named "Construction Permit Process Simplification Study Project" (BTASP) and dated 2012 is available at https://goo.gl/F7XYCC.

3.2.5 ICT Environment — National Level

The Government of Bangladesh has established a master plan for ICT development named Digital Bangladesh as part of a broader strategic planning initiative named Vision 2021.

In the present ICT environment, the government's Bangladesh Computer Council (BCC) sets out guidelines for the development of e-Government systems and services, among which the National Enterprise Architecture plays a pivotal role (http://nea.bcc.gov.bd/pages/standards.php). Examples of other important standards include the e-Government Interoperability Framework (e-GIF) and guidelines and purposeful middleware named National e-Service Bus. In addition, BCC's offering to other government agencies includes cloud services.

3.2.6 ICT Environment — RAJUK Management Information Systems

This Inception Phase also included a visit to the Management Information Systems (MIS) department of RAJUK. MIS is responsible for ICT for RAJUK headquarters and zonal offices. It is staffed as follows:

- 1 manager
- 1 senior system analyst
- 1 system analyst
- 2 programmers
- 3 computer operators
- 1 data entry operator
- 4 administrative support staff.

The RAJUK MIS department also operates its own data center on premises, hosting various databases and applications. During that initial visit to RAJUK MIS department and zonal offices, RAJUK ICT managers demonstrated the following applications:

- Land plot database — allows GIS-based visualization
- Online construction permitting application — developed by a local firm named TechnoHaven, currently piloted for RAJUK zones #4 and #5, but lacking integration with 11 NOC agencies.

A comprehensive ICT assessment will be conducted as part of the next ECP project phase and its results will be presented in the Construction Permitting (CP) Assessment Report.

3.2.7 Other Stakeholders Involved in Permitting Processes

RTI team members met with stakeholders during this initial phase of the project to gather local knowledge and feedback on elements of the construction permitting process and proposed tools. **Table 7** presents the stakeholder name and date of the consultation.

Table 7. Stakeholder Consultation Meetings

No.	Stakeholder	Consultation Date
1	Fire Service and Civil Defense	29 October 2018 and 12 December 2018
2	BUET-JIDPUS	31 October 2018 and 3 December 2018
3	Department of Civil Engineering, BUET	31 October 2018
4	Department of Architecture, BUET	31 October 2018
5	JICA Bangladesh Office	5 November 2018
6	Dhaka North City Corporation	13 November 2018
7	Bangladesh Association of Construction Industry	4 December 2018
8	Association of Engineers of Bangladesh	5 December 2018
9	Institute of Architects Bangladesh	5 December 2018
10	Bangladesh Computer Council	05 December 2018
11	TechnoHaven	12 December 2018

4 Situational Analysis

This section presents a preliminary situation analysis focusing on the subset of RAJUK activities to be empowered by the deployment of the ECP system in 2020. The legal and regulatory context is considered. Additional considerations include the adequacy of the as-Is processes (i.e., the processes existing in 2018) with respect to RAJUK's development control mission, along with their consistency, efficiency, and effectiveness. Related challenges are highlighted and presented as improvement opportunities for producing revised versions of processes (also referred to as "to-be processes").

However, this analysis was prepared on the basis of data collected during the Inception Phase. The overall data collection effort is planned to continue into the next phase, the CP Assessment. Consequently, a situational analysis of greater depth and extent will be shared as part of the next main deliverable, the CP Assessment Report.

4.1 Incidences of the Legal and Regulatory Context

4.1.1 Town Improvement Act of 1953

RAJUK was created by the Town Improvement Act of 1953. This Act establishes that RAJUK will consist of a Chairman and five Members, all of whom are appointed by the Government. The Chairman and Members have the power to exercise "such functions as may be prescribed, or as may be assigned to them by the Government from time to time."

RAJUK may engage officers, employees, experts and consultants as needed to perform its functions, as long as provisions are made in the approved budget and prior approval is received for creation of a post with a salary above a certain level.

RAJUK was instructed to prepare a Master Plan as soon as possible after this law came into effect. All public and private future development is to comply with this Master Plan. If someone wants to use land in a way that does not comply with the Master Plan, they must take permission. In other words, taking a land use clearance should not be necessary *at all* if proper land use plans are in place as contemplated by the Act. This means that if proper planning is done, it is possible to eliminate the land use clearance step from the construction approval process.

The Government has the authority to make rules necessary to carry out this act. RAJUK can make rules not inconsistent with the Government's rules for carrying out the Act. This latter power includes the ability to impose fines for violation of the rules.

4.1.2 Building Construction Act of 1952

A primary purpose of the Building Construction Act of 1952 was to prevent the haphazard construction of buildings that would interfere with proper land use planning.

Authority of Authorized Officer and Committee

Primary authority under the Act rests with Authorized Officers, who are appointed by the Government. Notice of the appointment must be published in the Official Gazette. The authority of the Authorized Officer is limited to that which is granted by this Act.

The Government, through notice in the Official Gazette, can delegate the Authorized Officer's authority to a Building Construction Committee. The scope of the Committee's authority is limited to the area specified in the notice. Once this notice is given and authority delegated to the Committee for a specific area, the Authorized Officer can no longer exercise authority over this area.

Requirement for a Permit

No person may construct, reconstruct, or make any addition or alteration to any building, or conduct an excavation, without the approval of an Authorized Officer. The permission granted by the Authorized Officer may be "subject to such terms and conditions as the Authorized Officer may think fit to impose."

No permission is required for normal repairs to existing buildings.
Permissions granted by the Authorized Officer are good for three years. After that, the applicant must reapply, unless the building has been built up to four feet above plinth level.

Enforcement Powers

A building's use must comply with (1) the use allowed by the Master Plan, and (2) the use approved in the building permit (unless the Authorized Officer gives permission to modify the use). If a use does not comply, the Authorized Officer can order that use be discontinued and the building be vacated and removed.

Similarly, if a construction, reconstruction, addition, alteration or excavation has been done without permission or in breach of the terms of the permit, the Authorized Officer can order that the building be vacated and removed.

If the deviation can be brought into compliance by altering the building, this will be allowed if the builder pays a fine, obtains approval, makes the correction, and pays ten times the normal fee as a penalty for noncompliance.

Additionally, criminal penalties of up to seven years in jail and/or at least 50,000 daka fine can be imposed for:

1. Building without a permit;
2. Failing to comply with an enforcement order of the Authorized Officer of the Committee;
3. Designing, approving, or implementing a building construction plan contrary to any provision of the Bangladesh National Building Code;
4. Constructing a building contrary to any provision of the Bangladesh National Building Code.

Criminal complaints can only be made by the Authorized Officer, Committee, or person working on their behalf.

Immunity

No suit or legal proceeding can be brought against the Government with respect to anything which is, in good faith, done or intended to be done, under this Act.

No suit, prosecution or legal proceeding can be brought against any person with respect to anything which is in good faith, done or intended to be done, under this Act.

4.1.3 Construction Guidelines (known as "Bidhimala"), 2008

The Construction Guidelines set the process for applying for a construction permit.

There are four potential steps to obtaining project clearance:

1. Land Use Clearance (in certain circumstances);
2. Special Project Clearance (for certain types of buildings);
3. Construction Permit (required in all cases);
4. Occupancy Certificate (required in all cases).

Land Use Clearance

If property is within the administrative control of RAJUK, but is outside of areas covered by spatial plans, the applicant first must seek land use clearance. If this does not apply, the applicant proceeds to the next step.

The following are required to be submitted for land use clearance:

1. Application (Form 101) – 3 copies, signed by the applicant;
2. Survey map of the site (drawn to the scale of either 1 : 5000 or 1 : 10000) – 3 copies;
3. Fee.

RAJUK must act on this application within 30 days. It can approve the application, imposing any necessary conditions (Form 102), or it can deny the request (Form 103).

If the application is denied, the applicant has rights to appeal.

The land use clearance is valid 24 months from the date of approval. It can be renewed for 12 months.

Special Project Clearance

Some constructions are considered high-risk and require special approval. These are:

a. Construction of a residential building having more than 40 (forty) residential units.
b. Any project having a total floor area of more than 7,500 (seven thousand five hundred) square metres (under FAR).
c. A shopping complex having a total floor area of 5,000 (five thousand) square metres (under FAR).
d. Any project having a direct connection with the national or regional highway or main road.
e. Any industry or factory including brickfields dangerous or causing atmospheric pollution.
f. Any construction or development work within 250 (two hundred fifty) metres of any architecturally or historically important building or area.
g. Any construction or development work within 250 (two hundred fifty) metres of any area having natural beauty.
h. Any construction or development work within 50 (fifty) metres of any hilly region, any land visible as a hill or any such land.
i. Any construction or development work within 250 (two hundred fifty) metres of any bank of a river.

The application for Special Project Clearance must include:

1. Document showing applicant's ownership of the land – 1 copy; and
2. Information on the building - 11 (eleven) copies of the following:
    a. Copy of Land Use Clearance or No Objection Certificate (as applicable).
    b. Ownership, Holding Number, CS/RS, City Survey or latest published survey, Daag Number, Location identification in the case of a planned area and any other document specified by the authority, Porcha (settlement record), schedule, etc.

c. Approximate total number of floors and total floor-area in the proposed building.
d. Approximate floor-area in each floor.
e. Total number of residential units, if applicable.
f. Calculation of FAR.
g. Approximate requirement of water necessary for the proposed development work, its source and its supply system.
h. Approximate requirement of electricity for the proposed development work, its source and its supply system.
i. Sequence of activities associated with the construction work, its starting time and estimated period of time it will take to complete the construction work.

3. 11 (eleven) sets of Conceptual Drawing (drawn to a minimum scale of 1 : 1000) including or indicating:
    a. Boundary of the site, adjacent land under the ownership of the applicant (if any) and measurements of road.
    b. Mark showing the North side of the site.
    c. Name of the adjacent road of the site, or if the site is adjacent to the road under the ownership of any individual, the name of the road from which the road under the ownership of any individual has originated.
    d. Mouja, holding number, plot and road numbers of the proposed site for the project.
    e. Width of all roads adjacent to the site and also width and location of the footpath (if any).
    f. Average height of the plot with reference to the attached road.
    g. Location and use of the existing or proposed buildings or other structures on the site, showing external measurements and distance from the boundary of the site.
    h. Approximate locations, heights and distance from the boundary of the site of buildings and structures attached to the site.
    i. Locations of the entrance and exit in the site for the vehicles and pedestrians.
    j. All the road-side drains, natural water drainage channels, flow of water and the proposed water drainage system attached to the site.
    k. Existing electrical lines, water supply lines, location and proposed connection of the sewerage system (if any).
    l. Proposed garbage collection spot inside the site and in the case of an industrial area waste removal management.
    m. Locations of all natural elements (water reservoir, open space, garden, hill, etc.) and historic buildings within 250 (two hundred fifty) metres of the site and location of the site.

The applicant and at least one architect and one civil engineer enlisted as per Rule-41 of these regulations and empowered as per the type of the project are required to sign the Conceptual Drawing and the application.

A Special Projects Approval Committee has 45 days to decide on special projects clearance.

Public notice may be required if the project is related to a national interest or could cause adverse effects on the environment.

A Special Project Clearance is valid for 24 months and cannot be renewed.

Applicant have rights to appeal if the request for special project clearance is denied.

It is important to note that no technical structural designs are specifically required by the rules, even though these buildings are deemed to require special clearance. There is nothing stated in the rules about the criteria that should be used when deciding on a special project permit.

Construction Permit

Required construction drawings for construction permits only include architectural plans, drainage info, possibly a soils report if required in Special Project Permit, fire safety info, parking plan, and elevations. No structural plans are required.

The rules do not set forth criteria to use when deciding on a construction permit application.

Applications for construction permits require:

a. Copies of Land Use Certificate and Special Project Permit as applicable.
b. Receipt showing the fee was paid.
c. Documents showing legal ownership of the applicant on the land or building to be used for the proposed development work.
d. As instructed in the Special Project Permit, Soil Test Report prepared by the qualified technical personnel, in the cases where it is applicable.
e. In the case of an apartment building, total number of residential units per floor.
f. Area of the plot, calculation of FAR, covered land, measurements of the place for set-back and total number of floors.
g. For construction of deep foundation, piling, basement or underground floor, as the case may be, compensation bond signed by the applicant, and
h. As a proof of experience of the architect engaged in the project, a copy of the certificate issued by his professional institute mentioning that the architect is enlisted with them as a technical person.
i. Construction drawings, which must include:
    i. Name, address, phone number (if any) and unprinted signature of the applicant alongwith title of the drawing.
    ii. Name, address, phone number (if any) and unprinted signature of the concerned planner, architect or engineer together with their membership numbers and registration numbers of relevant professional institutions.
    iii. Reference number and date of approving the lay-out drawing alongwith name and address of the allottee of a plot or holding, name of the road or area in the cases of lands or plots planned and developed by the government, and name and address of the owner of a plot or holding, name of the road or area in the cases of plots developed by any non-government organization.
    iv. Holding number, name of the road or area together with reference number and date of Land Use Certificate where applicable, in the case of an individual or others.
    v. Reasons for construction and proposed use, and
    vi. Name of the thana (Police Station) under which the site falls, alongwith name of the Mouja, and CS/RS/SA, daag number or plot number.
j. The Site Plan or drawing of the area shall be drawn to the minimum scale of 1 : 4000, which must include the following information:
    i. The mouja (meaning : a group of villages regarded as an administrative unit) wherein the site is located, the CS map of the site including its location, and if needed, parts of RS or SA map or in the case of project developed by the government or by any authorized non-government organization, parts of drawing of the project area including location of the site, and
    ii. Indicator of daag (meaning : bounded plot of land bearing an official number) of the site or plot, and location of daag of the neighbouring areas or plots.
k. The lay-out drawings must be drawn to the scale of 1 : 200, which must include the following information :
    i. Boundary and measurements of each side of the site.

ii. Where applicable, the perimeter of the buildings situated on the site, measurements of the external parts of the buildings, height, number of floors and measurements of compulsory open spaces.
iii. Where applicable, locations of the buildings and structures ---- both proposed and existing ---- on the site, locations of ponds / water reservoirs, gardens, other areas, low lands, open grasslands, forest areas, etc.
iv. Names of the areas and roads.
v. Indication of directions of the site and plot with respect to the adjacent roads, width of the roads attached to the site, and in the case of private roads or own roads length and width of the entire road.
vi. Location of the Gate at the entrance and exit of the site from the road.
vii. Location of drains (if any) alongwith indication of water-flow direction surrounding the proposed and existing buildings.
viii. Locations of connections (if any) with the underground water reservoir, septic tank and soak pit, sewerage line, and
ix. Location of waste/refuse matter collection place inside the site.
x. In the case of a large project containing more than one buildings, other structures and installations, a key-plan shall have to be made wherein locations and perimeters of all the buildings or structures, lay-outs of roads, all objects on the land and all geographical elements such as trees, hills, ponds or water reservoirs, earth excavations or earth-fillings, etc. shall be exhibited.
xi. Floor-plans of all the floors including the underground and mezzanine floors of a building shall have to be made on the map of a 1 : 100 scale, wherein the following matters shall have to be included :
xii. Measurements, shapes, locations and use of all the rooms and spaces including locations of the doors and windows.
xiii. Where applicable, locations and measurements of stair-room, lift-core, ramp, emergency exit stairs.
xiv. Drawing of the roof showing roof-water drainage system, terrace (if any), lift machine room (where applicable), roof of the stair-room, permanent water reservoir at roof (if any) and water outlet.
xv. Parking plan showing entrance, exit, driveway and parking place and location of security post.
xvi. Location of the Electrical & Mechanical Room (if applicable), and
xvii. In the case of a Complex having more than one buildings or installations, entrance for vehicles and pedestrians, places for the passengers to get down from the car and get in the car and movement of vehicles.

l. At least two sections (lengthwise and crosswise) shall have to be made with the measurements of important parts following the scale 1 : 100, of which at least one section must cut the stair-room and in the diagram of cutting the following matters must be shown :
    i. Height of each floor including the mezzanine floor (where applicable), Loft, Water Reservoir at the top (if any), Lift Machine Room (if any), height of Parapet, existing Land, maximum height of the Building with respect to road and footpath.
    ii. Measurements of various parts whose external sides are extended from the walls (balcony, sunshed, etc.), and
    iii. Existing and proposed levels of floor-surface.
m. Elevation drawings of all the sides of the Building including maximum height of the Building and its important measurements must be made following the scale 1 : 100.

RAJUK has 45 days total to decide on an application for construction permit. If additional information is requested, it must be done within the first 15 days. RAJUK has 30 days thereafter to make a decision.

During construction, the applicant is responsible for:

- ensuring that the construction work is supervised by "technically efficient personnel" (with qualifications specified in an Annex - basically, the professional organizations determine who is qualified);
- ensure that the approved technical person prepares all the structural, electrical and mechanical designs and drawings including necessary calculations;
- "bring to the knowledge of the authority" the architectural, structural, electrical and mechanical designs of the Project and the names, addresses and consent of all the technical persons responsible for supervising the Project [*not specified what "bring to the knowledge of the authority" means*]
- inform the authority that the work is completed up to plinth level. The authority is then supposed to inspect it [*not specified what the inspection will consist of]*. If authority doesn't inspect within 7 days, construction may continue.

The technical person's responsibilities are described as follows:

> "An act of a technical person responsible for a Building shall be treated as his negligence under these rules & regulations if without any valid reason he----
>
> (a) provides wrong information or conceals any information regarding any important matter or description associated with any particular design and specifications.
>
> (b) provides wrong information about structural design, fire extinguisher or other security arrangements, or skips such matters."

Occupancy Certificate

An applicant must submit a completion report, as-built architectural drawings, structural designs, all drawings related to building services, and confirmation from technical persons that building was completed under their supervision. Occupancy certificate can be denied if the building was not constructed in conformance with approved drawings.

The Government is supposed to inspect within 15 days after request for Occupancy Certificate to determine if the building was built per approved drawings [*note that "approved drawings" do not include any technical drawings]*

> ***"All responsibilities of design adequacy and design suitability of all designs mentioned in by-law (2) shall fall on the shoulders of the professionals (architects and engineers) associated with the drawings."***

There is a mechanism for getting approval for changes during construction. This is important to note because many people interviewed indicated that the reason for noncompliance with the occupancy certificate requirement is because modifications were made during construction - as is typical in any construction project - and they know that they cannot show compliance with approved designs.

Multiple sources estimated that only two percent (2%) of all buildings apply for occupancy certificates. Notwithstanding these assertions by the interlocutors, there is, in fact, a mechanism stated by the rules to request that modifications be approved. This mechanism should be reviewed carefully to determine if changes can be made to make it more accessible.

Inspection, Duties & Responsibilities of Authority

The authority or any officer empowered by the authority can inspect the construction work of a Building or the Project anytime from sunrise to sunset and can check if the work is being carried out as per approved design, report and specifications.

The Authority can stop work, order corrections, or demolish if work is being performed in violation of approved drawings or special project clearance, or work is a threat to environment, life, or property.

The Committee has authority to supervise conformity of construction with building construction rules.

4.2 Known Challenges

RAJUK's processes were originally designed and implemented at a time when Dhaka's population and the total number of construction permit applications were significantly lower, and when the information and communication technologies were less advanced. Dhaka's population, housing needs, and construction permit applications have increased significantly with time, as well as the number of potential deviations in structure or in use. Consequently, the ability for RAJUK to meet regulatory obligations—especially the 45-calendar-day limit in overall processing time—has been increasingly challenged. In addition, the inherent complexity of construction projects under scrutiny appears to be variable. Construction projects in planned development areas are less complex to process, while projects in unplanned areas, such as the old Dhaka City, are significantly more complex.

Recognized challenges include:

- **Coverage of support is uneven**—Gaps exist in the capacity of the as-is processes to support the overall development control mandate. While some areas such as land use clearance and construction permitting seem well supported, others such as construction monitoring and BNBC enforcement appear to be supported rather weakly. Also, structural engineering checks, remote sensing, and similar activities that could contribute significantly to the development control mandate, are currently not supported by as-is processes.
- **Monitoring activities are challenged**—Site inspections are facing a range of challenges. Lack of adequate funding induces limitations or challenges such as:
    - Limitations in mobility—Building inspectors are not compensated for travel costs around Dhaka and its congested road traffic.
    - Limitations in productivity—Lack of adequate measuring devices while on site and adequate computing equipment while in the office.
    - Challenges in communication—Building inspectors need to rely on their own devices and need to cover costs of professional communications from their personal funds.
    - Challenges in authority—Building inspectors report increasing cases of construction projects where on-site project staff make threats or physical resistance, or where project owners initiate legal action against RAJUK.
- **Operational efficiency is limited**—Due to a generalized lack of adequate computerization, information processing largely relies on paper-based workflows. Observations of actual

workflows performed during the Inception Phase showed that information is handled in a manner that is thorough and meticulous. However, the paper-based nature of workflows induces unavoidable constraints in terms of storage and sharing or formatting of information. This results in unavoidable bottlenecks that limit operational efficiency. Examples of adequate ICT support, such as the existing land plot database, are rare. Another consequence of the lack of adequate computerization is inconsistency in information processing. Regardless of how thoroughly and meticulously information is handled, consistency and transparency remain inherently at risk.

5 Proposed Improvements

This section shares a preliminary presentation of recommended improvements regarding Construction Permitting (CP) processes from the point of view of technical capacity, streamlining, and ICT infrastructure. It is based on data collected during the Inception Phase of this project. A complete and detailed presentation will be provided as part of the CP Assessment Report.

5.1 Summary of Recommended Improvements

Single-window data entry for applicants—The ECP system will provide applicants with the ability to enter the entirety of CP data on a single e-form. Upon completion of data entry, the ECP system will automatically distribute subsets of data to relevant third parties, such as the NOC agencies. Such an improvement will bring significant benefits in terms of data consistency and process efficiency.

Electronic fund transfer—It is recommended that ECP system allow electronic fund transfer on two levels. Applicants will be provided with an online payment facility, akin to online payment facilities already implemented for other e-Government services in Bangladesh. Such facility will help aggregate the payment of application fees to RAJUK and NOC agencies into a single payment. The ECP system will also include an automated fund transfer capability from RAJUK to each NOC agency, so as to transfer fees collected in behalf of each NOC agency where applicable.

Electronic/Digital signatures[1]—This ECP project will ensure that the legal and regulatory provisions adequately support electronic signatures and digitally signing of documents for the ECP system. Benefits of electronic signatures include (1) increased convenience for RAJUK Authorized Officers and Committee Members; (2) ensured data integrity for documents actually signed; and (3) enhanced accountability.

Automated notifications to applicants—The ECP system will allow applicants to track the progress of their application along the main stages of CP processes. Such a capability will bring a range of benefits including increased convenience for applicants and increased trust in RAJUK.

Improvement in applying for general construction permit applications—Improvements in the ECP system and the to-be CP processes will include:

- Requiring submittal of the structural plan as part of the application process
- Eliminating the number of permit review steps (tracer, inspector, chief inspector) and thereby realigning responsibilities to allow for additional monitoring activities
- Instituting the use of a review checklist and Fast Automated Structural Plan (FASP) tool as a resource for the assistant authorized officer and authorized officer to facilitate structural checks

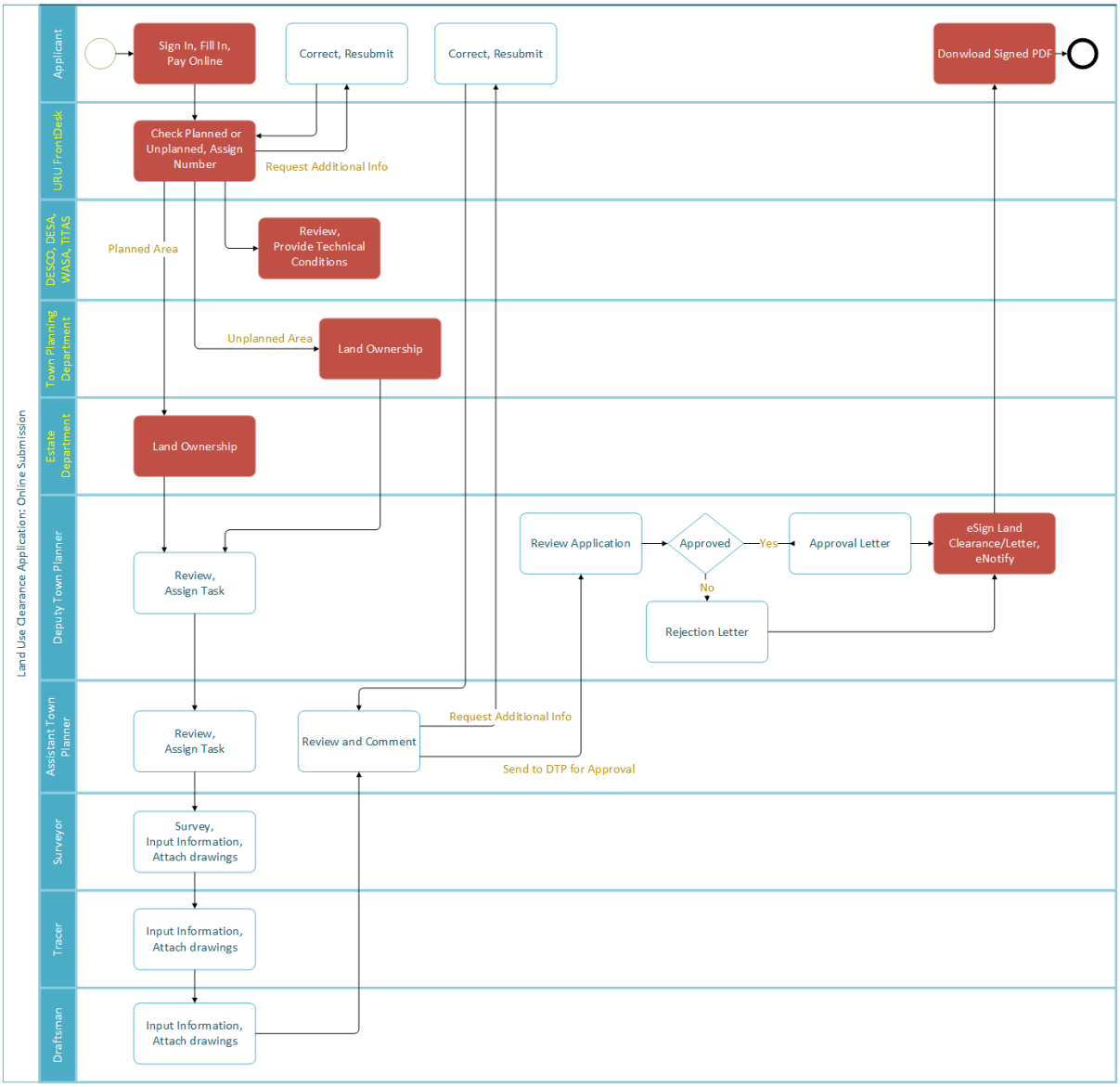
[1] Technological support for digitally signing of documents is commonly referred to as “digital signature” in the literature. The ability to apply digital signature technology for establishing a legally binding link between a signature and the person intentionally signing is commonly referred to as “electronic signature” in the literature.

- Allowing the Building Committee to conduct initial review and approval online for simple cases.

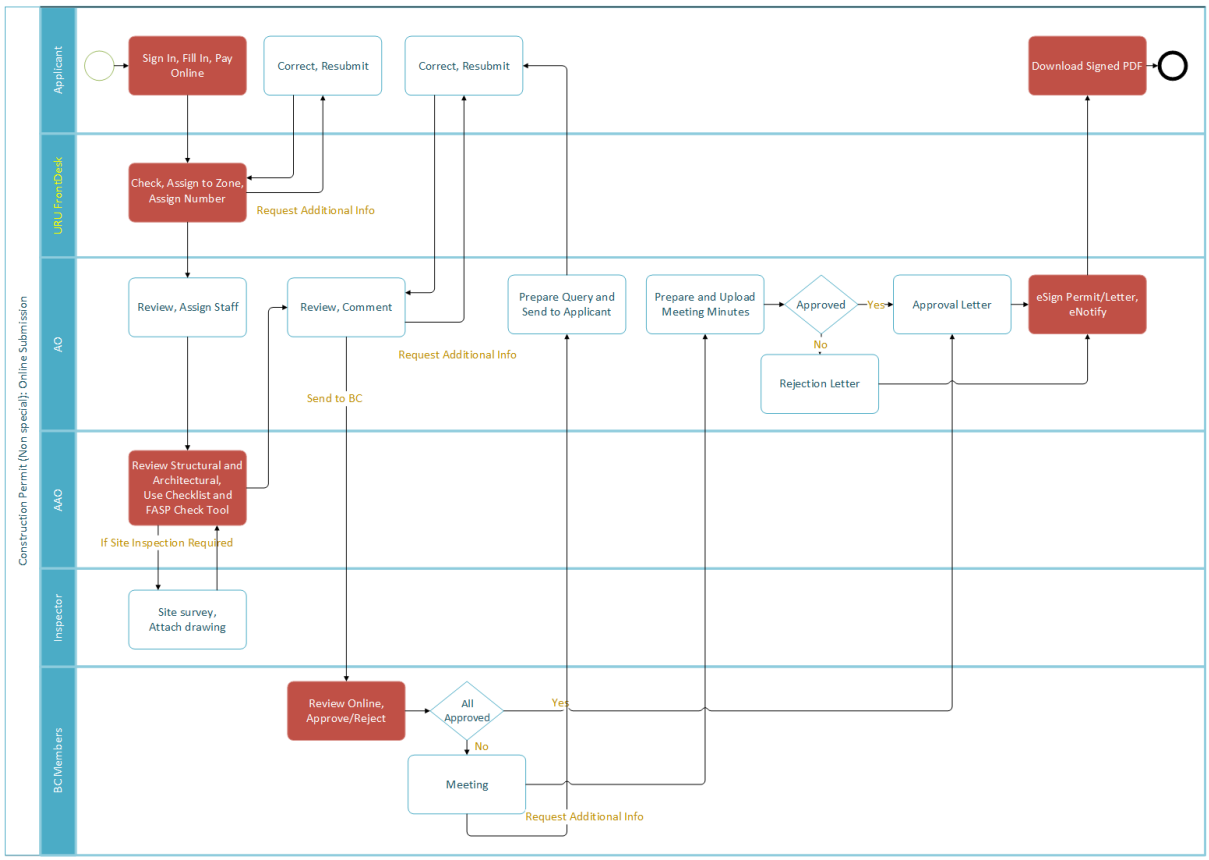
5.2 Workflow Diagrams of To-Be Processes

This section provides examples of to-be processes and related improvements (highlighted as red color boxes). A complete and detailed presentation of definitive to-be processes will be provided as part of the Strategic Plan Report.

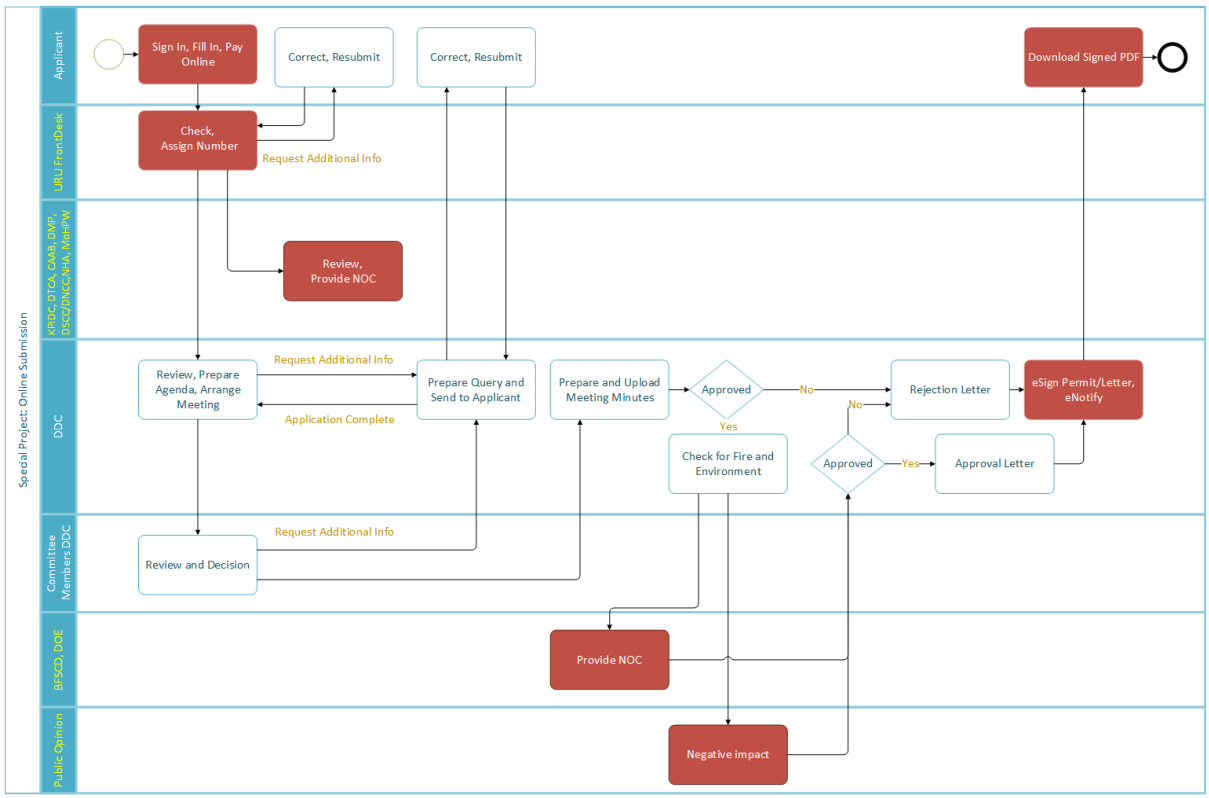
5.2.1 Land Use Clearance



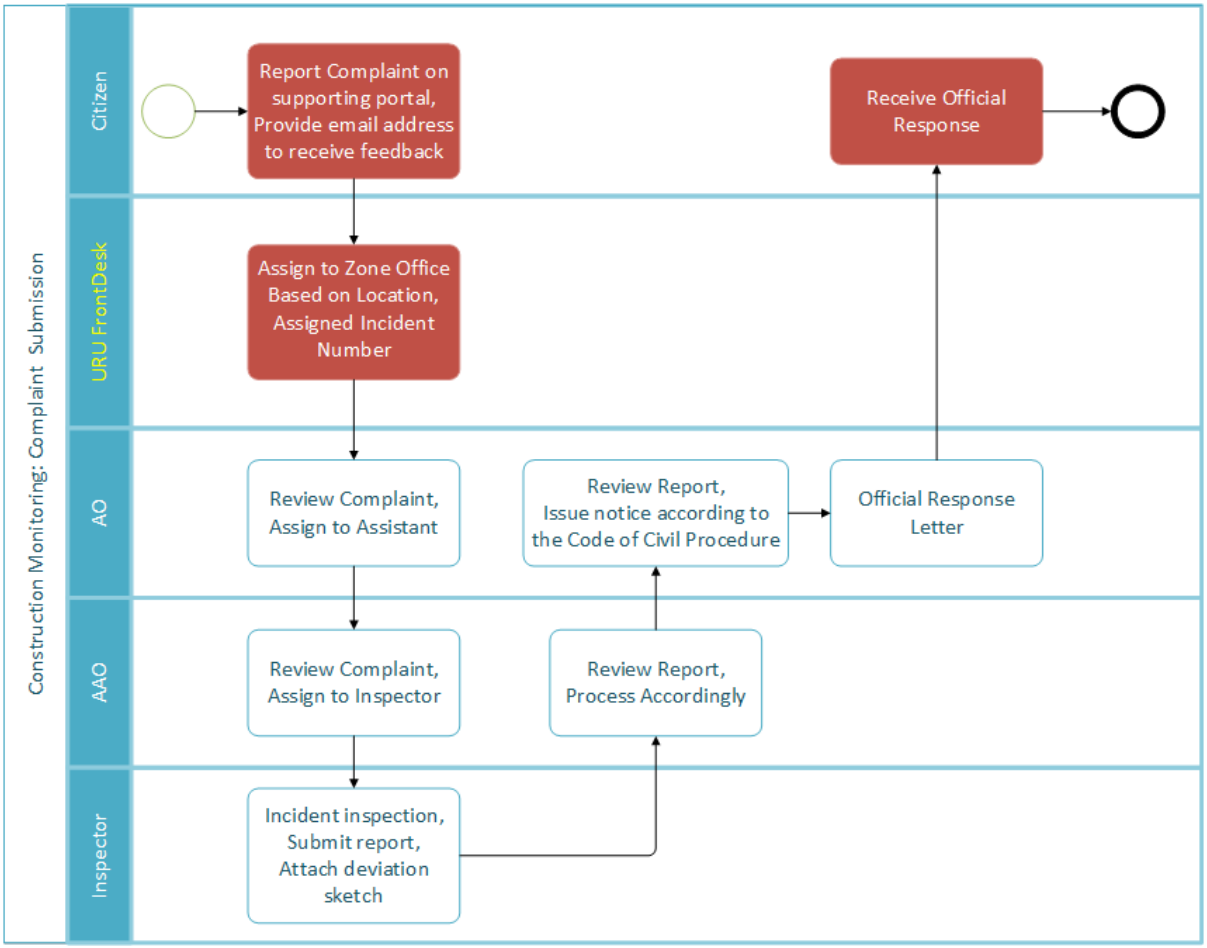
5.2.2 Construction Permitting (standard projects)



5.2.3 Construction Permitting (special projects)



5.2.4 Complaint Management (Construction Monitoring)



5.3 Proposed ICT Infrastructure

This section presents foundational principles for the proposed ICT infrastructure. Complementary data will be collected during the CP Assessment Phase of the project. This will include a comprehensive ICT inventory. Results will be provided in the CP Assessment Report, and a complete and detailed description of the proposed ICT infrastructure will be part of the Strategic Plan Report.

Foundational principles include:

- Using the cloud computing infrastructure of the BCC for hosting and operating the ECP system and database
- Installing a high-speed, optic fiber, leased connection between the RAJUK headquarters office and the BCC data center
- Installing a high-speed, optic fiber, leased connection between each of the RAJUK zonal offices and the BCC data center;
- Equipping the RAJUK headquarters office and each RAJUK zonal office with a broadband Internet connection;
- Considering DotGov's opensource business process automation platform as a foundation for the development of the ECP system

- Considering BCC's National e-Service Bus as middleware for data exchange between RAJUK, NOC agencies, and third parties
- Considering BCC's National Enterprise Architecture to guide architectural choices underlying the development of the ECP system.

6 Project Management and Organization

The following section describes the structure of the project team and its managerial procedures.

6.1 Project Schedule

The terms of reference (TOR) requested a 24-month implementation schedule, with support for operations and maintenance extending past the 24-month schedule.

The contract was signed with the project team on 3 October 2018 with commencement of services within 7 days. The project is expected to conclude by September 2020. A detailed work schedule is in **Section 8**.

6.2 Role of Stakeholders and Decision Making

Stakeholders will be a key component of the design and implementation of the project through the development of the inception stakeholder workshop and consultation with stakeholders during the assessment of current permitting processes.

It is anticipated that RAJUK will facilitate formal introductions of the project team to stakeholders at relevant agencies, including RAJUK, DoE, DESA, WASA, TITAS Gas, DMP Traffic, DCC, and the Civil Aviation Authority.

6.2.1 Oversight Committee

The OC will consist of members from relevant agencies and stakeholder types to provide insight on stakeholder needs and facilitate coordination among stakeholders during the performance criteria and training development processes. The committee is expected to provide comments on deliverables, participate in stakeholder workshops and surveys, and assist in decision making for the design of the ECP system.

6.2.2 Stakeholder Consultations

The project team will meet with stakeholders during the assessment, design, testing, and deployment phases of the project to gather local knowledge and feedback on elements of the construction permitting process and proposed tools.

A preliminary list of government agencies, utilities, and other stakeholders that will be consulted is presented in **Table 8**. RAJUK and the World Bank are expected to facilitate the introductions and maintain a role in stakeholder coordination to ensure visibility and long-term engagement in the transition to ECP process.

Table 8. Preliminary List of Agencies for Stakeholder Consultations

1.	**RAJUK**
2.	**RAJUK, URP Team**
3.	**Ministry of Public Works & Housing**
4.	**Department Head, Geography & Environment, Dhaka University**
5.	**Planning Commission**
6.	**BUET-JIDPUS**
7.	**Dhaka North City Corporation (DNCC)**
8.	**Dhaka South City Corporation (DSCC)**
9.	**Urban Development Directorate (UDD)**
10.	**Housing and Building Research Institute (HBRI)**
11.	**BUET Civil Department**
12.	**BUET Architecture Department**
13.	**BUET CSE Department**
14.	**Civil Aviation Authority (CAA)**
15.	**Fire Service and Civil Defense (FSCD)**
16.	**Department of Environment (DOE)**
17.	**Institute of Engineers Bangladesh (IEB)**
18.	**DESA**
19.	**WASA**
20.	**TITAS Gas**
21.	**DMP Traffic**
22.	**DDM**
23.	**Dhaka Power Distribution Company (DESCO)**
24.	**Bangladesh Meteorological Department**
25.	**JICA**
26.	**World Bank**

6.3 Quality Assurance

Quality assurance is critical for effective and successful project management and delivery. The objective of quality assurance is to ensure that objectives, deliverables, communication procedures, and risks of the project are clearly defined and stated at the inception of the project.

6.3.1 Communications Procedure

The delivery of this project will require a close partnership and involvement of the World Bank, RAJUK, and the OC. RAJUK is expected to devote the time needed to provide relevant data and documents, as well as facilitate and participate in meetings as needed to support the information and outreach requirements for the development and deployment of the ECP system. The project team will take primary responsibility for posting of meetings and providing minutes.

The project team will employ the communications schedule listed in **Table 9** to ensure regular and consistent coordination and communications.

Table 9. Communications Schedule

FREQUENCY	FORMAT	GENERAL AGENDA / CONTENT
Daily	• Informal communication and correspondence (office conversation, email, telephone, Slack team management facility, etc.)	• Progress updates • Issues resolution queries • Customized interface and data sets • Work progress status update (by activity) program review • Review of outstanding issues/QC update
Weekly and Monthly	• Real-time reporting systems (Web module) • Weekly progress reports	• Executive summary • Narrative description of works completed in previous month • Forecast of major work elements in coming month and requirements for RAJUK support
Quarterly	• Overall performance review commission	• Project risk assessment registry • Review of schedule • Client-consultant review of progress, performance, risks, and implementation strategy, and adjustments as necessary • Requirements outlined in the delivery of products or services payment schedule
Milestones	• Project deliverable reports	

The In-Country Program Manager (Glenn Whaley) will be the primary communication point of contact for the project. RTI will be responsible for arranging the contact and communications between the client and RTI team members, and RTI and RAJUK will coordinate to arrange points of contact and communication pathways between the RTI team and external stakeholders.

6.3.2 Timely Feedback and Issue Resolution

Target response times for communication are as follows:

- Day-to-day communications within 12 hours of contact unless point of contact is on planned vacation or emergency leave.
- Strategic decisions within five business days unless otherwise specified.

6.3.3 Project Language

- English

6.3.4 Evaluation of Project Risks

NO.	COMMON PROJECT RISKS WITH DEVELOPMENT OF ECP SOFTWARE	PROBABILITY/ IMPACT	MITIGATION STRATEGY
1	ECP system software requirements are too ambiguous. ECP system software requirements lack detail and specificity for effective implementation.	P = medium I = severe	The RTI project team will ensure that functional and system requirements will specify what the system must do, how it will be used, and what constraints and limitations apply to its development, implementation, and use. RTI will ensure that changes are well documented and controlled.
2	Requirements inflate. Changes or late additions to requirements affect project.	P = medium I = severe	The development team will schedule trade-off discussions about features and estimates at every iteration boundary. Trade-off areas include scope, timeline, quality assurance, and allocation of project budget. Prioritization sessions will be scheduled that allow worthwhile changes to proceed and initially envisioned features to be superseded (assuming authorization from the client).
3	Changes in regulatory / agency structure.	P = medium I = severe	RTI will seek RAJUK's support with entering into renewed agreements.
4	ICT infrastructure required (i.e., third-party hardware, software, other services) to support the product is not acquired. ICT infrastructure required is not properly configured.	P = medium I = severe	Third-party software, libraries, or algorithms used in software developed by RTI will be documented and investigated to ensure all software dependencies are known and properly licensed and that their use conforms with project and business unit goals for developed software.
5	Deployments are not well coordinated. The production environment is not configured to support the software product.	P = medium I = severe	The RTI project team will develop documentation that supports the development effort, demonstrates that the system as developed meets the intended purpose and client requirements, and provides insight into the system design and way the system is intended to be used (including any significant limitations). In case the development, test, and production environments cannot be kept in exact sync, the RTI project team will maintain a list of known risks across environments (e.g., differences in platform, operating system, operating system version, third-party software version, firewalls).
6	Limitations in client availability potentially compromises the quality of project outputs.	P = medium I = medium	The team leader will work with the client to identify what the client is attempting to achieve in the near and long term. User needs and scenarios defining how the user will interact with the system will be identified.
7	Requirements of government standards such as the National Enterprise Architecture (NEA) are unclear. Reference	P = medium I = medium	Architectural and design choices for the ECP system will seek to adhere as closely as possible to the NEA. The team leader will seek support from national stakeholders such as Dohatec and BUET to

	implementations are not available.		advocate the case to the government agency in charge (i.e., BCC).
8	Weakness of digital literacy and other reasons induce higher resistance than expected to the adoption of the ECP system.	P = medium I = medium	The project will ensure effective coordination between the ECP and URU sub-projects, in order to ascertain that URU builds sufficient capacity to overcome resistance.
9	Lack of verifiable sample data potentially affect the ability of the primary external stakeholder to validate the end product.	P = low I = severe	Sample data provided by the client will be used in design mockups, demonstrations, and testing to validate the product.
10	Inadequate testing fails to identify flaws in the product.	P = low I = severe	The RTI development team will implement a defined testing methodology, which could include the use of formal test plans, feature review in JIRA, and code reviews. Testing will be well documented and completed by members external to the software development team.
11	Lack of financial resources to support testing at each phase of development lead to insufficient testing efforts.	P = low I = severe	RTI technical staff (IT experts, developers) should be involved as early as possible in the software development process to ensure that technical specifications are feasible and appropriate and that allocated budgets are realistic.
12	Description of data-related risks is unclear.	P = low I = medium	The RTI development team will assess the amount of risk related to the project and develop testing strategies and risk mitigation measures, as appropriate. Risk will be based on the purpose of the application and data, intended audience, sensitivity of data, and deployment environment.

RTI will maintain a risk registry that will be updated and reviewed with the client periodically.

6.3.5 Requirements of the Counterpart Government

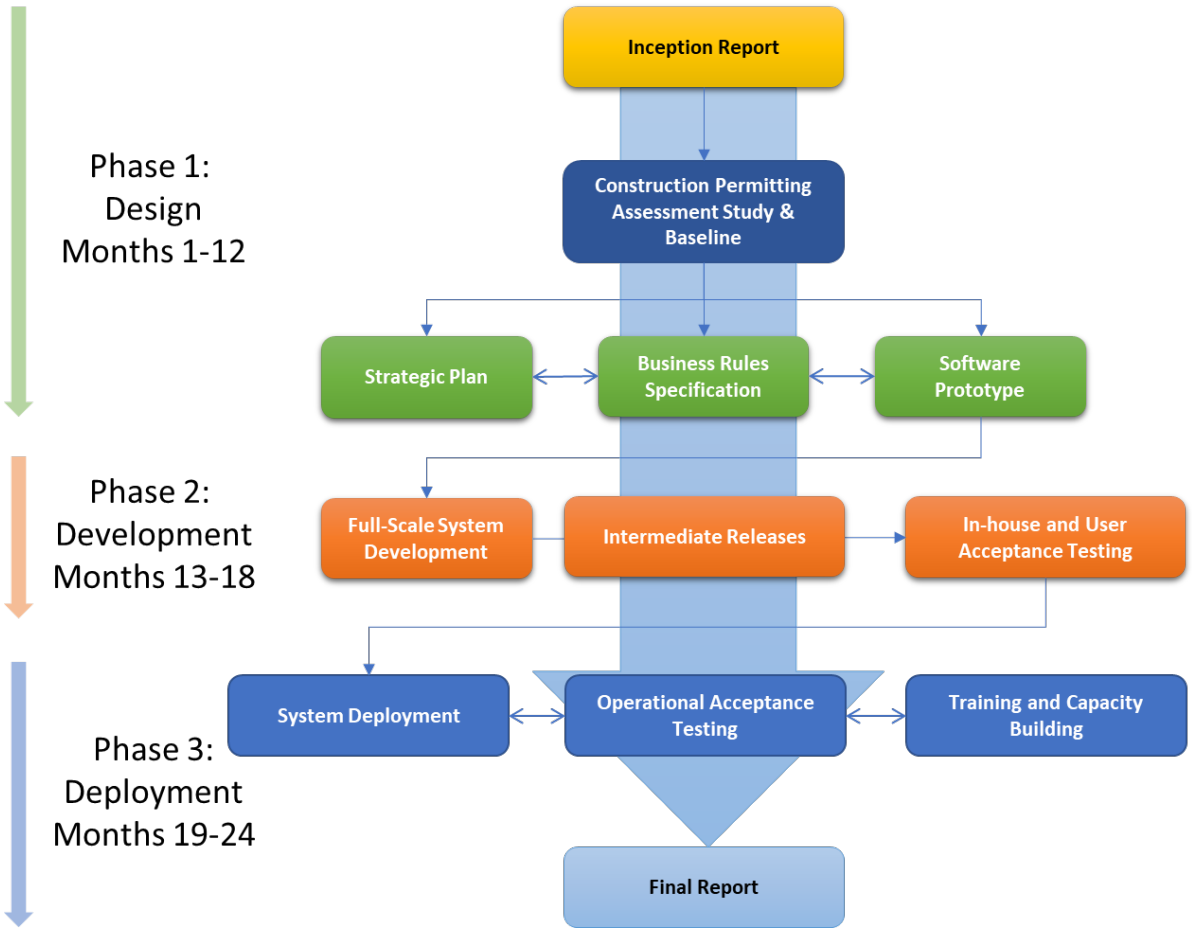
The project team requests the following support from the national and local governments of Bangladesh to facilitate the smooth and expedient production of the master plan and associated analysis and deliverables:

- Establish a focal point to liaise with the project team as required to facilitate project tasks
- Provide data, documents, and information as requested
- Provide letters, credentials, and permits (as needed) to authorize the project team to conduct surveys and engage with stakeholders
- Provide invitation letters and facilitate issuance of business visas as needed
- Organize personnel support from RAJUK for establishing trainers and help desk support
- Organize and liaise with stakeholders to participate in focus groups, technical committee meetings, and OC workshops
- Provide space/rooms for focus groups, technical committee meetings, and OC workshops.

7 Technical Activities

There are 3 phases and 10 overarching tasks in this project that proceed from assessment of the current CP system to operation and maintenance of the ECP system. **Figure 4** provides a high-level overview of the tasks.

Figure 4. Overview of Project Phases and Tasks



This section has been organized by project phase and task, with objectives and the following subsections for each task:

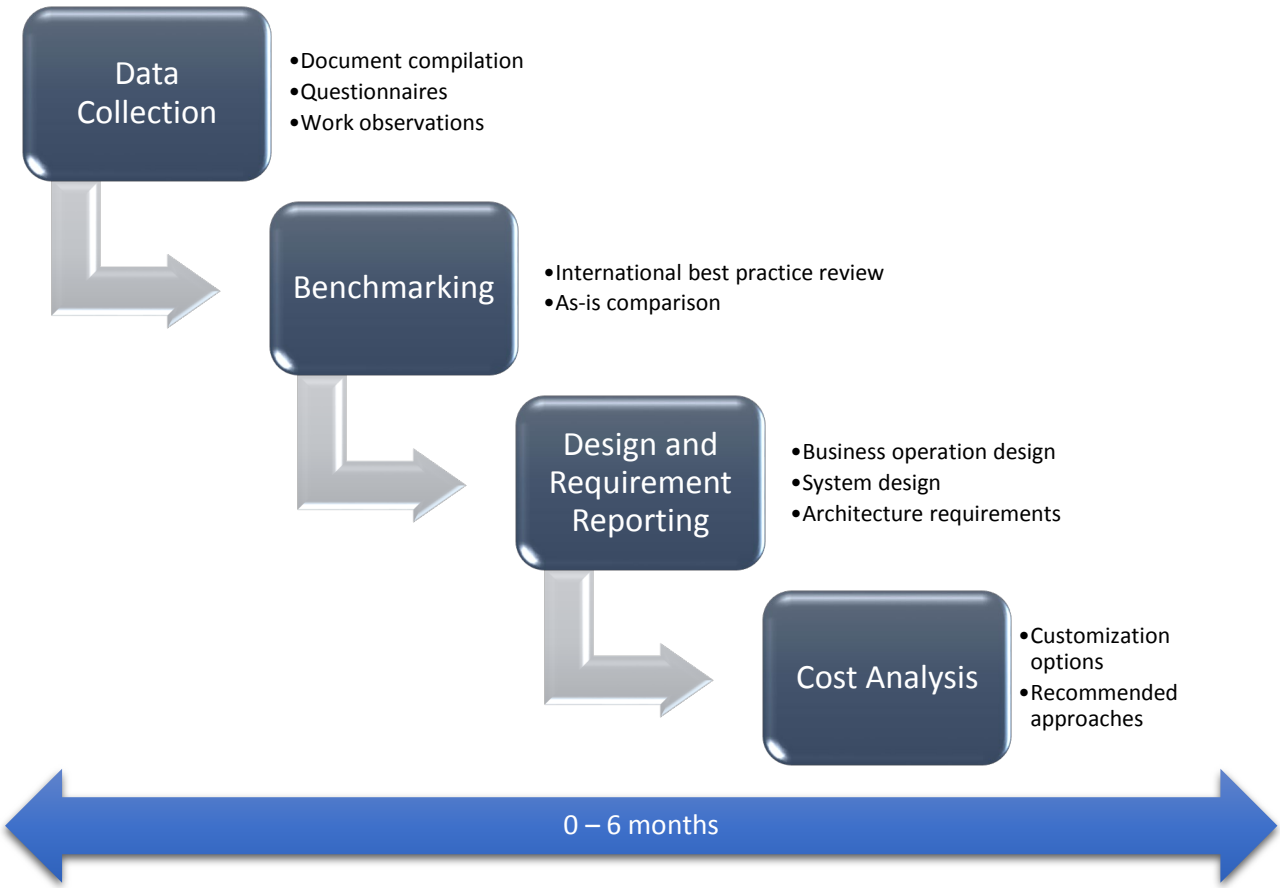
- Data collection
- Key meetings and workshops
- Task outcomes and deliverables.

7.1 PHASE 1: ECP SYSTEM ASSESSMENT AND DESIGN

7.1.1 Construction Permitting Assessment Study and Baseline

The first task of the project requires an assessment of the as-is processes, legal and regulatory environment, ICT status, and human resources capacity to inform the strategic plan and to-be framework. **Figure 5** illustrates the steps required to complete the baseline assessment.

Figure 5. Baseline Assessment Components



7.1.1.1 Data Collection

As discussed in Section 3.1 the data collection efforts required to inform the situational analysis and baseline assessment is extensive. An overview of required key information is below.

- Regulatory and policy documents
  - Bangladesh National Building Code (BNBC) 2015 and draft BNBC
  - Building Construction Act 1952
  - Building Construction Rules 2008
  - Town Improvement Act 1953
  - Greater Dhaka Approved Master Plan
  - Greater Dhaka Structure Plan
  - Updated Detailed Area Plan

  - Risk Sensitive Land Use Plan
  - Strategic Transportation Plan
  - Civil Aviation Height Restriction Plan
  - Comprehensive Disaster Management Program Risk Assessment
  - Permitting regulations
  - Emergency safety plans
  - Environmental legislation
  - Permit application template
  - Permit approval process guidance documents
  - Large and special project permitting guidance
  - Construction inspection guidance
  - Permitting fee calculation
  - Key point installation instruments
  - Any laws related to planning and construction
  - Any laws or policies related to data security and electronic information signatures
- Data needs
  - Permitted buildings and permit conditions
  - Inspection reports
  - Contractor licensing
  - Protected areas
  - Land use
  - Zoning
  - Permit fee payment data
  - Urban transportation network
  - Administrative boundaries
  - Settlements and population
  - Electrical grid
  - Water and sewerage infrastructure
  - Watershed boundaries
  - Risk sensitive land use data
  - Hardware inventory
  - Software inventory
  - Software licenses
- Stakeholder information
  - Contact information for key staff

Results from the baseline assessment data and document collection effort will be housed and managed in the information management system for assessment. The information collected in this baseline task will be used to inform the preliminary ECP system design elements, such as:

- Business rule specifications
- Conformance to Bangladesh regulatory structure

- Business operational design and workflow diagram
- Required coordination with departments and stakeholders
- Design and architecture requirements
- Cost analysis
- Data and documents to be entered into the ECP system by applicants and reviewers
- Interface requirements for user operability
- Potential hardware requirements
- Security requirements.

Table 6 (in Section 3) lists the documents requested and received to date.

7.1.1.2 Key Meetings and Workshops

The RTI team has organized stakeholder engagement activities, including targeted presentations and workshops. Activities will be documented and saved as minutes in the information management system.

Following collection of stakeholder comments and meeting takeaways, RTI will organize a meeting with RAJUK to review the feedback register to discuss and decide what comments should be accepted for the ECP system design and what comments require no further action. A final presentation will be then delivered to the OC.

The anticipated meeting and workshop inventory, including discussion topics and key participants is below. Members of the RTI team will be present at each event.

- Meetings
  - RAJUK – stakeholder lists, document and data needs
  - RAJUK – questionnaire development
  - RAJUK – office and field observations, benchmarking results
  - RAJUK – business operational design
  - RAJUK – business rule specifications
  - RAJUK – cost analysis
  - RAJUK and World Bank Trade & Competitiveness (T&C) – OC development
  - OC – review of progress
  - OC – presentation of benchmarking results
  - OC – presentation of cost analysis
  - RAJUK and agency stakeholders – Introduction and overview of project
- Workshop
  - Stakeholders – understanding of current process and needs
  - Stakeholders – office and field observations
  - RAJUK and stakeholders – benchmarking evaluation, request for feedback
  - RAJUK and stakeholders – proposed work plan, request for feedback on coordination

7.1.1.3 Task Outcomes and Deliverables

Within two months of the approval and payment of this inception report, RTI will submit a draft of the Construction Permitting Assessment Report for review and comments and/or approval by RAJUK. The anticipated contents of the Construction Permitting Assessment Report include:

- Summary of process
  - Overview of subtasks
  - Schedule of meetings and sub-deliverables
  - Key messages from outreach and coordination events
- Baseline assessment and benchmarking findings
  - Review of best practices
  - Summary of current practices
  - Strengths-Weaknesses-Opportunities-Challenges (SWOC) analysis
  - Scoring/evaluation summary
- Business operational design report
  - Case studies of key issues and challenges
  - Workflow diagrams
- Proposed system design and architecture requirements
  - Proposed business rule specifications
  - Recommendations — A recommended list of hardware, software, cloud services, and other infrastructure items will be provided to RAJUK for review once the (1) System Design and Architecture Requirements are finalized and (2) the ICT assessment is completed. Procurement is anticipated to cover a broad range of needs and areas: (a) hosting, data storage, and backup needs (i.e., public cloud, private cloud, data centre, or in-house server room); (b) computing equipment for application reviewers (e.g., laptops); (c) computing equipment for inspectors (e.g., tablets, convertible laptops); (d) third-party software applications for application reviewers (e.g., data analysis, statistics, visualization software tools); (e) standard office productivity software (e.g., word processing, spreadsheet, presentation, collaboration software). Complementary items and categories will be added for review and comment during Task 3.2 (Strategic Plan).
- Results of cost analysis and follow-on discussions
  - Description and cost estimates for basic, intermediate, and detail customized ECP packages
  - Recommended approach
- Next steps and timelines.

Any questions or comments on the draft version of the Task 1 Construction Permitting Assessment Report that are submitted to RTI will be addressed and compiled as a response to comments document. Responses to the questions or comments will be submitted by RTI to RAJUK within two weeks of receipt along with any necessary revisions to the assessment report. A final version of the report will be submitted as the Task 1 report deliverable and trigger a milestone payment. RTI will also provide minutes from meetings, response to comments documents, and presentations as part of the data and documents collection.

7.1.2 Strategic Plan

The strategic planning task is intended to ensure engagement, buy-in, and commitment from government, private, and public stakeholders involved with the ECP process. RAJUK and stakeholder agencies will be required to integrate with new management methods to implement the ECP system. Although the ECP system will improve transparency and streamline the permitting process, it will require a comprehensive strategy to transfer workforce knowledge, transition workflows, and implement the new system. This task provides guidance for administration, monitoring and evaluation, legal reform, fiscal sustainability, training, communication, and long-term management of the ECP system. Additionally, the task will inform the user interface structure and establish metrics with which to evaluate the ECP system and permitting program's progress toward streamlining. Example metrics for evaluating the effectiveness of the ECP system are provided in **Figure 6**.

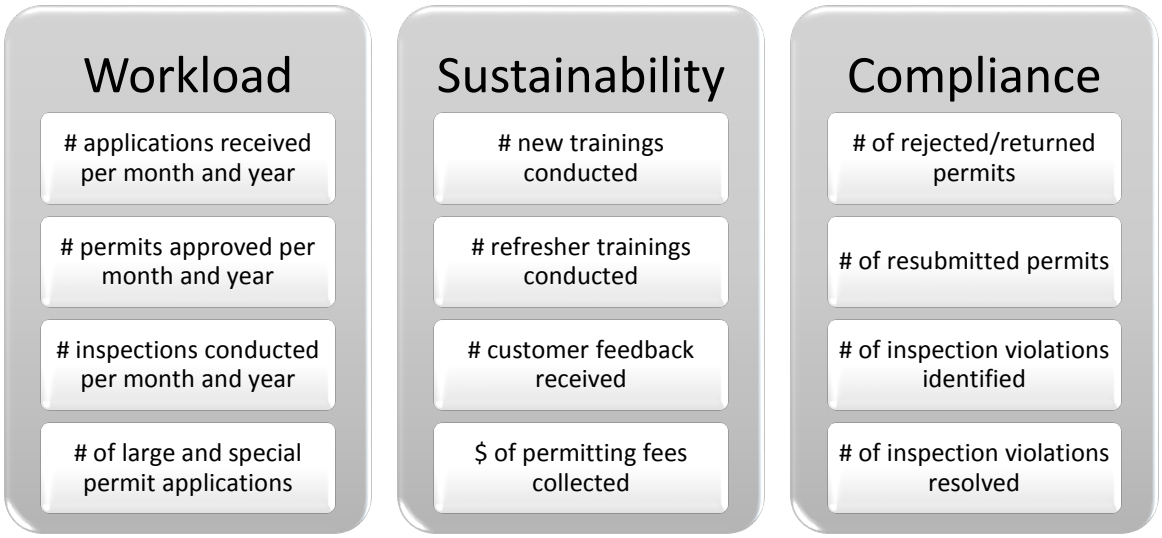


Figure 6. Excerpted Proposed Metrics for ECP Streamlining

7.1.2.1 Data Collection

Information requests for the strategic plan are intended to guide monitoring and evaluation, assessment of compliance with regulatory structures, fiscal sustainability, communication plans and products, capacity-building efforts, and long-term management of the ECP system. Data to be collected will include:

- Current operating budget
- Number of permit applicants, evaluated permits, approved permits, and inspections
- Average number of meetings with permit applicants per permit
- Complaints and disputes register
- Institutional capacity and education levels of key permitting staff
  - IT staff
  - GIS analysts
  - Finance operations

  - Inspectors
  - Engineers
  - Construction impact analysts
- Typical construction compliance issues
- Internal auditing processes relevant to construction permitting
- Agency coordination agreements
- Customer service policies
- Legal reform process information
- Consultant/outsourcing policies for permitting assessment

RTI will work with the OC, RAJUK, and relevant stakeholders to gather and incorporate the information collected into the strategic plan. The information will be compiled to evaluate optimal fee structures and workforce capacities and ensure operational sustainability across the construction permitting processes. Furthermore, the information will be used to recommend future initiatives to improve construction and city administration practices in Dhaka.

7.1.2.2 Key Meetings and Workshops

RTI will organize two public workshops to be held at numerous venues across Dhaka to achieve the buy-in and support of external stakeholders. At these events, RTI will present the core elements of the ECP system and how private companies and residents will submit their construction permit applications electronically. These meetings will focus on any new requirements for data, documents, or drawings that were not previously requested under the old CP system.

In addition, RTI will hold a meeting with RAJUK, the OC, and representatives from relevant stakeholder agencies and groups to present the draft strategic plan and receive feedback. The anticipated key participants and discussion topics for the meeting and public workshops are below. Members of the RTI team will be present at each event.

- Stakeholders Workshops
  - Stakeholders and public – multiple workshops
    - Presentation of project objectives and strategy
    - Core elements of electronic permitting system
    - Requests for feedback.
- Agency Meeting
  - RAJUK – workshop development, document, and data needs
  - RAJUK – workflow designs for the applicant, ECP, reviewers, and approvers
  - RAJUK – draft strategic plan presentation (e.g., workforce capacity, proposed fee structure, program evaluation metrics)
  - RAJUK and agency stakeholders – draft strategic plan presentation
  - OC – review of progress
  - OC – regulatory requirement compliance and updates
  - OC – presentation of draft strategic plan

Comments from the meetings and workshops will be compiled into meeting minutes and saved in the document repository.

7.1.2.3 Task Outcomes and Deliverables

The project team will submit a draft strategic plan report for RAJUK review and comment within two months of the approval and payment for the assessment report. Outcomes of this task will include:

- Workflow diagrams
  - Roles and responsibilities
  - Educational levels and training
- Proposed metrics for program evaluation
  - Workload (e.g., number of permits approved, inspections conducted on a monthly/annual basis, number of special and large projects reviewed)
  - Sustainability (e.g., workforce turnover, number of refresher and introductory trainings conducted, complaints received, positive feedback received)
  - Compliance (e.g., number of rejected and resubmitted permits, number of inspection violations, scope and depth of internal audit trails, average time spent per internal audit case, number of internal audit incidents uncovered)
- Legal analysis and recommendations
  - Evaluation of system constraints and limitations under current legal framework
  - Recommended updates
- Fee structure and workforce economic balance assessment
  - Near-term fee structure requirements to meet operational needs
  - Long-term forecast
- Proposed system design changes
  - Tentative user interfaces
  - Tentative signatory schedule
  - Summary of changes to address feedback
- Strategic objectives
  - Human resource and portfolio management
  - Legal sustainability
  - Knowledge management and recordkeeping
  - Long-term operability
- Implementation plan
  - Revisions to proposed system
  - Key performance initiatives and metrics
  - Next steps and timelines.

Any questions or comments on the draft version of the Task 2 strategic plan report that are submitted to RTI will be addressed and compiled as a response to comments document. Responses to the questions or comments will be submitted by RTI to RAJUK within two weeks of receipt along with any necessary revisions to the assessment report. RTI will also provide minutes from meetings, response to comments documents, and presentations as part of the data and documents collection. A final

version of the report will be submitted as the Task 2 report deliverable and trigger a milestone payment.

7.2 PHASE 2: ECP SYSTEM DEVELOPMENT AND CUSTOMIZATION

7.2.1 Software Prototyping

Task 3 will provide an initial demonstration of the core capabilities and included business requirements of the ECP system. The prototype will be designed to showcase the user interfaces and ability of the ECP system to act as the unified system from permit application to permit approval to permit management.

7.2.1.1 Data Collection and Business Analysis

RTI will work with RAJUK and other agencies to compile the information needed to develop the prototype. In general, requested data and documents will be related to comments and suggested updates to the prototype. For example, approved permit applications, approval chains, and utilities documents may be requested to help guide the development.

RTI will gather feedback by facilitating a semistructured discussion or brainstorm session with the participants and whiteboarding their comments and suggestions in real time. RTI will also distribute structured questionnaires for further comment and clarifications.

The data and documents received during the prototype task will be catalogued as part of the system development archive.

Basic business analysis will ensue, so as to inform the actual prototyping activity.

7.2.1.2 Key Meetings and Workshops

RTI will organize two workshops with RAJUK and other related agencies. The first workshop will include a presentation of the basic features of the system. Additionally, RTI will invite participants to explore the prototype functionalities and user interface individually for a more detailed assessment. RTI will then review the suggested feedback and work with RAJUK to revise the prototype accordingly.

A second workshop will be held for RAJUK and other stakeholders once revisions to the prototype have been completed. Participants will be invited to walk through the prototype individually, provide in-workshop feedback, and complete a survey for any additional feedback stakeholders would like to provide. The anticipated key participants and discussion topics for the workshops are detailed below. Members of the RTI team will be present at each event.

- Workshop 1
  - RAJUK – workshop development, document and data needs
  - RAJUK – draft prototype presentation
  - OC – review of progress
  - OC – draft prototype presentation

- Workshop 2
  - RAJUK – presentation of prototype
  - Stakeholders – presentation of prototype
  - Individual users – walk-through of prototype
  - Requests for feedback

Comments from the meetings and workshops will be documented in the meeting minutes.

7.2.1.3 Task Outcomes and Deliverables

Within two months of the approval and payment of the strategic plan report, RTI will submit a draft version of the system prototype report for review and comments and/or approval by RAJUK. Outcomes of this task will include:

- Summary of process
  - Draft prototype description
  - Permit types
  - Workshop key takeaways
  - Revised prototype description
  - Workshop
- Implementation plan
  - Revisions to proposed system
  - Next steps and timelines

RTI will also provide minutes from meetings, response to comments documents, and presentations as part of the data and documents collection.

7.2.2 Business Rules Specification (BRS)

Task 4 will provide an iterative framework for RTI to work with RAJUK and relevant stakeholders to define the types of data that will be required and allowed as part of the ECP system. The task will be developed while working closely with the infrastructure IT group selected by RAJUK to host the ECP system. BRS will provide explicit documentation of:

- User access control (who has access and at what level for each part of the system)
- Policy implementation (workflow, sign-offs, and transitions within the system)
- Permitting requirements (required information for each permit type)
- Construction specifications (zoning, infrastructure, and building code requirements for each permit type)
- Key performance indicators (KPIs).

7.2.2.1 Data Collection

As with Task 2, BRS development will be an iterative process that will require a review of documents and data from the baseline assessment (Task 1) as well as any new documents that become known during meetings and workshops with RAJUK and relevant stakeholders. Regular coordination will be needed to discern:

- Allowed permit types
- Required and optional design and construction data
- Required and optional transportation and utilities information and approvals
- Required and optional underground construction data and information
- Required risk sensitive land use data
- Required and optional cumulative impact assessment data
- Required and optional stormwater and environmental management and compliance data.

Prospective ECP system users and RAJUK IT staff will be expected to provide feedback at multiple stages of BRS development. RTI will collect the data and documents received during BRS development and catalogue them as part of the system development archive.

7.2.2.2 Key Meetings and Workshops

RTI will meet with the OC, RAJUK, and relevant stakeholders to discuss the draft business rules and the use cases developed to help clarify and organize the business rules. The anticipated key participants and discussion topics for the BRS meeting are provided below. Members of the RTI team will be present at the event.

- BRS Meeting
  - RAJUK – workshop development, document and data needs
  - RAJUK – draft business rules and user access/security
  - RAJUK – draft business rule inputs and workflow review
  - RAJUK – KPIs
  - OC – review of progress
  - OC – draft business rules
  - OC – KPIs
  - Stakeholder agencies–review of business rule development and data needs
  - Stakeholders agencies– presentation of business rule development and KPIs.

Comments from the meetings will documented in the meeting minutes.

7.2.2.3 Task Outcomes and Deliverables

Within one month of the approval and payment of the system prototype report, RTI will submit a draft BRS report for review and comments and/or approval by RAJUK. Elements of the BRS report will include:

- BRS general structure
  - Primary and child rules
  - Rule inputs
  - Property options of each rule
  - Rule statements
- Accounts, roles, user access, and security
  - Account management

  - Defined user roles
  - Access levels for each role
  - Remote access
  - Data security
  - Data storage, backup, and business continuity requirements
- Workflow
  - Routing and notifications
  - Approvals and reminders
- Development of overarching business rule sets
  - Conditions and limitation of permits
    - Permit types
    - Permit durations
    - Owner/developer statements
    - Debt clearances
  - Contractor requirements
    - License requirements for architects, structural engineers, contractors, etc.
  - Construction plan requirements
    - Construction drawings
    - Applicable file types
    - Appropriate signatures and approvals
  - Applicable standards, specifications, and adopted guidance
    - Building codes
    - Electrical codes
    - Plumbing codes
    - Fire protection codes
    - Mechanical inspection
    - Elevator codes
    - Storm water codes
    - Energy conservation codes
    - Ventilation codes
    - General land use and zoning conditions
    - Risk sensitive land use
  - Design requirements
    - Structural calculations and load criteria
  - Utility connections and resource planning
    - Approved services available for water, sewer, stormwater, solid waste, and electricity
  - Design elements
    - Landscape guidance
  - Survey requirements
  - Inspection services

- Record keeping requirements
- Selection of rule inputs
- KPIs
- Use cases.

Any questions or comments on the draft version of the Task 3 BRS report that are submitted to RTI will be addressed and compiled as a response to comments document. Responses to the questions or comments will be submitted by RTI to RAJUK within two weeks of receipt along with any necessary revisions to the BRS report. RTI will also provide minutes from meetings, response to comments documents, and presentations as part of the data and documents collection. A final version of the report will be submitted as the Task 4 report deliverable and trigger a milestone payment.

7.2.3 Full-Scale System Development

Task 5 captures the key inputs from the previous tasks to construct the ECP system. System development will include initial architectural choices, initial technology choices, initial design choices, customization, buildout of the application, programming, quality assurance, version management, and stakeholder engagement.

7.2.3.1 Data Collection

RTI will request the permitting data needed as system inputs that were not available at earlier stages, if applicable. Potential data requests include:

- IT and regulatory constraints
  - GIS software and technical capabilities
  - Specific security settings such as firewall settings, virtual private network (VPN) settings, network segmentation, and related domain name settings
  - Registration and licensing data
  - Technical capacity for programming
- Permitting fee documentation and constraints
  - Maintenance and security of fee collection
- Agency coordination agreements.

The data and documents received during system development will be catalogued as part of the system development archive.

7.2.3.2 Key Meetings and Workshops

Two meetings with RAJUK, the OC, and relevant stakeholders are anticipated to discuss system development progress, showcase and receive comments on the developing system, and convene to present any updates to the system as a result of stakeholder feedback. The anticipated key participants and discussion topics for these meetings are provided below. Members of the RTI team will be present at each event.

- Meetings

- RAJUK – system deployment schedule, document and data needs, system requirements (e.g., remote access needs, security controls)
- RAJUK – programming process overview
- RAJUK – draft deployment presentation
- RAJUK and stakeholders – review of schedule and data needs
- RAJUK and stakeholders – presentation of draft deployment
- RAJUK and stakeholders – revised deployment presentation
- RAJUK and OC– revised deployment presentation
- OC – review of progress
- OC – draft deployment presentation.

Comments from the meetings will be compiled into a feedback register.

7.2.3.3 Task Outcomes and Deliverables

Within two months of the approval and payment of the BRS report, RTI will submit a draft version of the system development report for review and comments and/or approval by RAJUK. Outcomes will include:

- Summary of process
  - Draft system description
  - Key takeaways from workshops
  - Revised system descriptions
- Implementation plan
  - Revisions to draft system
  - Deployment schedule
  - Next steps and timelines.

Any questions or comments will be addressed and compiled as a response to comments document. RTI will also provide minutes from meetings, response to comments documents, and presentations as part of the data and documents collection.

7.2.4 In-House Testing and User Acceptance Testing

Under this task, RTI will work with RAJUK and stakeholders to conduct the in-house and user acceptance testing to ensure that the ECP system is functioning per the requirements and specifications. This task will include alpha and beta testing phases, development of issue reporting and resolution processes, and creation of a change request protocol.

7.2.4.1 Data Collection

RTI will require significant feedback from system users during the testing phase. IT staff, prospective ECP users, and relevant stakeholders will be expected to provide feedback on:

- System components
- User interface
- User applicability and functionality

  - Data input options
  - Review and analytic capabilities
  - Inspection details
  - Project tracking and reporting elements
  - Record keeping and archiving
- Data and system security
- Other non-functional requirements.

The data and documents received during the testing phases will be catalogued as part of the system development archive.

7.2.4.2 Key Meetings and Workshops

RTI will engage RAJUK's IT staff, prospective ECP users, and relevant stakeholders frequently during the testing phase; however, no large meetings and workshops are anticipated for this task outside of reporting to RAJUK and OC on the results of the testing phase. RTI will document the participants, list of issues logged, resolutions, and change request protocols. Comments from the meetings will be documented in the minutes.

7.2.4.3 Task Outcomes and Deliverables

Within two months of the approval and payment of the system development report, RTI will submit a draft version of the in-house testing and user acceptance testing report for review and comments and/or approval by RAJUK. Outcomes will include:

- Summary of process
  - Alpha and beta testing
  - User Acceptance Testing (UAT) testing
  - Issue reporting and resolution
  - Change request protocol
- Appendices
  - Minutes from meetings
  - Presentations
  - Interim report deliverables.

Any questions or comments on the draft version of the Task 6 testing report that are submitted to RTI will be addressed and compiled as a response to comments document. Response to the questions or comments will be submitted by RTI to RAJUK within two weeks of receipt along with any necessary revisions to the testing report. A final version of the report will then be submitted to trigger the fifth milestone payment.

7.3 PHASE 3: ECP SYSTEM DEPLOYMENT AND DOCUMENTATION

7.3.1 System Deployment

System deployment will require close coordination with RAJUK to instruct the agency on the hardware, software, and licenses needed to fully launch the ECP system. Once the system requirements have been reviewed and approved by RAJUK and the OC, RTI will work with RAJUK to acquire the components and conduct a soft launch of the ECP prior to operational acceptance testing. The team will deploy the ECP system within the 24 RAJUK offices and the URU office.

7.3.1.1 Data Collection

No document requests beyond those collected in the previous tasks are envisioned. However, RTI will continue to collect information and data from stakeholders as needed throughout this task. The data and documents received during deployment will be catalogued as part of the system development archive.

7.3.1.2 Key Meetings and Workshops

RTI will meet with RAJUK, the OC, and key stakeholder agencies to provide an overview of the hardware, software, and licenses required to successfully deploy the ECP system. The anticipated key participants and discussion topics for the meeting are provided below. Members of the RTI team will be present at each event.

- IT Meeting
  - RAJUK – system deployment requirements and proposed schedule
  - RAJUK – soft launch review
  - OC – system deployment requirements and proposed schedule
  - OC – soft launch review
  - RAJUK and OC– results of soft launch
  - RAJUK and stakeholders – deployment schedule and activities.

Comments from the meetings will be compiled into a feedback register.

7.3.1.3 Task Outcomes and Deliverables

Within two months of the approval and payment of the in-house testing and user acceptance testing report, RTI will submit a draft version of the system deployment report for review and comments and/or approval by RAJUK.

Outcomes will include:

- Summary of process
  - Review and approval of system requirements
  - Installation
  - Soft launch

- Issues encountered and resolutions.

Any questions or comments on the draft version of the Task 7 system deployment report that are submitted to RTI will be addressed and compiled as a response to comments document. Response to the questions or comments will be submitted by RTI to RAJUK within two weeks of receipt along with any necessary revisions to the system deployment report. A final version of the report will then be submitted to trigger the seventh report deliverable and sixth milestone payment.

7.3.2 Training and Capacity Building

The objective of the training and capacity-building program is for participants to gain the technical and administrative knowledge to operate independently and effectively.

7.3.2.1 Data Collection

RTI will require assistance in identifying staff and stakeholders that will receive training and continue to collect information and data from stakeholders as needed, such as additional training and capacity requests, throughout this task. The data and documents received during deployment will be catalogued as part of the system development archive.

7.3.2.2 Key Meetings and Workshops

RTI will organize a series of two or three user training events to be held at RAJUK and two or three field-based trainings that will allow ECP system users to learn the components of the ECP system. Information presented in the training sessions will be tailored to each of the user roles and responsibilities based on participants invited. Additionally, RTI will work closely with staff identified to become ECP system trainers and technical support staff to successfully transfer system knowledge at the user and administrator levels.

The anticipated meeting and workshop inventory, including discussion topics and key participants is below. Members of the RTI team will be present at each event.

- User Training Workshops
  - RAJUK – in-house training (2 or 3 training events)
  - RAJUK – field training (2 or 3 training events).

RAJUK and the OC will assist RTI in defining training requirements, proposed trainings, training staff, locations, and schedule. We anticipate training workshops to include:

- ECP system use
- Mentoring
- Trainer training
- Technical support team
- Online help desk.

Comments from the meetings will be documented in the minutes.

7.3.2.3 Task Outcomes and Deliverables

Within two months of the approval and payment of the system deployment report, RTI will submit a draft version of the training report for review and comments and/or approval by RAJUK. Outcomes will include:

- Summary of process
  - In-house training
  - Field training
  - Mentoring
  - Trainer training
  - Establishment of technical support team
  - Establishment of online help desk
  - Manuals and guides
    - Detailed manuals (e.g., system, administrator, operations, maintenance)
    - Simple step-by-step user manual
    - Online user guide
    - User knowledge check and evaluation exam form.

RTI will also prepare a change management plan and certification program manual complete with testing material to ensure the government staff are able to use and train users on the ECP system.

Any questions or comments on the draft version of the Task 8 training report that are submitted to RTI will be addressed and compiled as a response to comments document. Response to the questions or comments will be submitted by RTI to RAJUK within two weeks of receipt along with any necessary revisions to the report. A final version of the report will then be submitted to trigger the report deliverable and seventh milestone payment.

7.3.3 Operational Acceptance Testing (OAT)

This activity is one of the final stages of the quality assurance scheme and is the last opportunity to identify problems before live operations. RTI will evaluate the success of the ECP system through a series of tests on data reliability, performance, and security.

7.3.3.1 Data Collection

No document requests in addition to those collected in the previous tasks are envisioned. However, RTI will continue to collect information and data from stakeholders as needed throughout this task. The data and documents received during deployment will be catalogued as part of the system development archive.

7.3.3.2 Key Meetings and Workshops

Following the OAT, RTI will manage the public launch of the ECP system, which will be accompanied by press releases and public seminars to educate residents, engineers, construction companies, and private developers on how to use the ECP system. The anticipated meeting and workshop inventory, including discussion topics and key participants is below. Members of the RTI team will be present at each event.

- Internal launch meeting
  - RAJUK/OC – public launch requirements and proposed schedule
- External launch workshop
  - Public, RAJUK and stakeholders – launch.

Comments from the meetings will be compiled into a feedback register.

7.3.3.3 Task Outcomes and Deliverables

- Summary of OAT process
  - OAT framework
  - User knowledge check and evaluation exam
  - Mentoring exercises
  - Finalize hosting environment
  - Final system troubleshooting
- OAT testing results.

Any questions or comments on the draft Task 9 OAT report that are submitted to RTI will be addressed and compiled as a response to comments document. Response to the questions or comments will be submitted by RTI to RAJUK within two weeks of receipt along with any necessary revisions to the OAT report. A final version of the report will then be submitted to trigger the ninth report deliverable and milestone payment.

7.3.4 Final Report

7.3.4.1 Data Collection

No document requests in addition to those collected in the previous tasks are envisioned. However, RTI will continue to collect information and data from stakeholders as needed throughout this task. All data and documents received during deployment will be catalogued as part of the system development archive.

7.3.4.2 Key Meetings and Workshops

RTI will meet with RAJUK and the OC to summarize the accomplishments, discuss future priorities, and lessons learned.

7.3.4.3 Table of Contents of Task Deliverable

Within 30 days of approval and payment of the OAT Report, RTI will submit a draft version of the final report for review and comments and/or approval by RAJUK. **Table 10** presents a representative structure for the table of contents of the final report.

Table 10. Representative Structure for the Table of Contents of the Final Report

Table of Contents
Chapter 1 **Introduction and overview – detailed summary of activities**
Chapter 2 **Final outputs, results and outcomes**
Chapter 3 **Lessons learned during the assignment**
Chapter 4 **Sustainability of the system**
Chapter 5 **maintenance, update, & upgrade program**
Chapter 6 **Service Level Agreement (SLA) metrics**
Chapter 7 **Recommendations**

Any questions or comments on the draft version of the Task 10 final report that are submitted to RTI will be addressed and compiled as a response to comments document. Response to the questions or comments will be submitted by RTI to RAJUK within two weeks of receipt along with any necessary revisions to the final report. A final version of the report will then be submitted to trigger the tenth report deliverable and milestone payment.

8 Project Schedule / Work Plan

The project to assess, design, and develop an ECP system for RAJUK began 3 October 2018 and will end on 2 October 2020. The project will consist of three phases: (1) Assessment and Design, (2) Development and Customization, and (3) Deployment and Documentation of the ECP system. The three phases will generally be completed in sequential order but there will be cases where the phases overlap, such as the Phase 1 business operations design and Phase 2 business rules specification since each will inform the ECP system design. A rough schematic of the phases is shown in **Figure 7**.

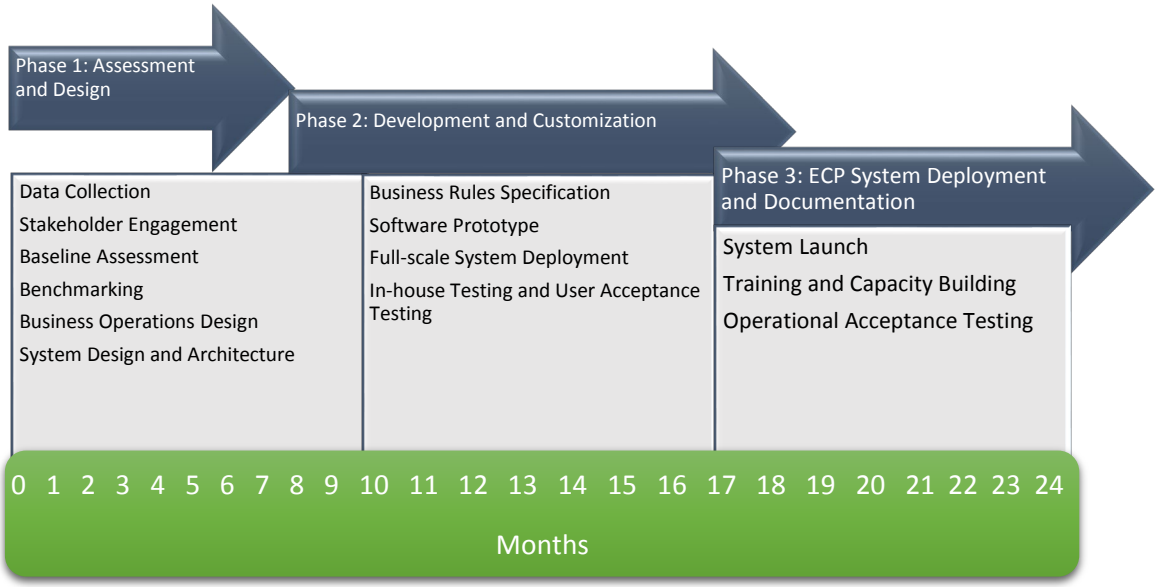


Figure 7. Schematic of Project Phases

In Phase 1 (6 months duration), the RTI team will focus on the following activities that will assess and identify options to streamline and enhance the quality of the construction permitting review process and the design of the ECP system that will be used as technical and management tools by RAJUK to ensure consistency in the application of the rules and regulation for the approval of CP applications.

In Phase 2 (10–11 months duration), the RTI team will develop the ECP system and all its front-end and back-end modules and front modules or work desks. The team will also conduct all the necessary alpha, beta, and user acceptance testing to ensure the ECP system is functioning properly without bugs and that the user interface is intuitive and simple for the government staffs and administrators, but also for the external agencies, private sector, and public.

In Phase 3 (6–7 months duration), the RTI team will deploy the ECP system within the 24 RAJUK offices and the URU office, which includes the acquisition and installation of all the necessary hardware, software licenses, Web domains, physical or cloud-based server storage space, and networks supporting the hosting environment of the ECP system.

The deliverable schedule is summarized in **Table 11**. A detailed project schedule is provided later in this section.

Table 11. Deliverables Schedule

DELIVERABLE NUMBER	DELIVERABLE DESCRIPTION	ANTICIPATED DELIVERY DATE
1	Construction Permitting Assessment Report	March 2019
2	Strategic Plan Report	April 2019
3	Business Rules Specification (BRS) Report	June 2019
4	In-House Testing (IHT) & User Acceptance Testing (UAT) Report	April 2020
5	Operational Acceptance (OAT) Report	August 2020
	Final Report	September 2020

RTI will prepare a series of hard copy, digital, and online knowledge products to describe how to use and maintain the systems, such as manuals, guides, and tutorial presentations. These will be supplemented by a human-based technical support team and online help desk, and the production of a training, examination, and certification program to ensure the government staff are able to use the ECP system.

Finally, following the OAT, the RTI team will manage the public launch of the ECP system, which will be accompanied by press releases and public seminars to educate residents, engineers, construction companies, and private developers on how to use the new system.

The RTI team will also outline a comprehensive program for continuing operations and maintenance.

No.	Deliverables	Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A	WORK SCHEDULE																								
	Phase 1 – System Design																								
0	Inception & Project Set-Up																								
0-0	ACTIVITY PAYMENT #1 -- Contract Signing (10% of Contract Amount)	◆																							
0-1	Project Kickoff Meeting (RAJUK PIU, PIC & OC)																								
0-2	Stakeholder Engagement & Introductions (Who's Who & Objective of the Assignment)																								
0-3	Establishment of Working Space in RAJUK																								
0-4	Finalization of Methodology & Work Plan																								
0-5	Submission of Existing Data & Information Request Letter																								
0-6	Inception Report																								
0-6.1	Prepare & Submit Draft Version																								
0-6.2	Review & Feedback Workshop for Draft Version																								
0-6.3	Adjust & Submit Final Version		▲																						
1	Construction Permitting (CP) Assessment Study & Development of Baseline																								
1-1	Data & Information Collection																								
1-1.1	Inventory of Existing ICT Hardware & Equipment																								
1-1.2	Inventory of Existing Software Systems Used																								
1-1.3	Inventory of Historical CP Applications & Documents																								
1-1.4	Inventory of Existing Planning Documents (Cadaster Maps, Land Use Plans, Infrastructure, Building Codes, etc.)																								
1-2	Stakeholder Engagements																								
1-2.1	Questionnaires																								
1-2.2	Key Informant Interviews																								
1-2.3	Focus Groups																								
1-2.4	On-The-Job Work Observation																								

No.	Deliverables	Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1-2.4.1	- Office																								
1-2.4.2	- Field																								
1-3	Study of Current Practice Rules & Regulations																								
1-3.1	Legal, Regulatory & Policy Regime for Construction Permitting (CP) Process																								
1-3.1.1	- Town Planning Act																								
1-3.1.2	- Land Use Plans																								
1-3.1.3	- Infrastructure Plans																								
1-3.1.4	- Building Codes																								
1-3.2	Institutional Arrangements for CP Process																								
1-3.3	Administrative Arrangements for CP Process																								
1-3.3.1	- Hardware & Equipment																								
1-3.3.2	- Software																								
1-3.3.3	- Human Resourcing/Staffing																								
1-3.4	Regulatory Checks																								
1-3.4.1	- Land Use & Building Use																								
1-3.4.2	- Building Form & Design																								
1-3.4.3	- Structural Engineering Design & Integrity																								
1-3.4.4	- Mechanical, Electrical & Plumbing (MEP) Systems																								
1-3.4.5	- Environmental, Utilities & Traffic Impacts																								
1-3.5	Schedule for CP Application Reviews																								
1-3.6	CP Applicant Tracking Mechanisms																								
1-3.7	Conflict Resolution between Agencies																								
1-3.8	Enforcement Instruments																								
1-3.8.1	- Legislative																								
1-3.8.2	- Inspections Policy																								
1-3.8.3	- Inspection Practice																								
1-4	Testing of Existing Permitting System																								
1-4.1	Transparency																								
1-4.2	Effectiveness																								

No.	Deliverables	Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1-4.3	Other Criteria																								
1-5	Business Operational Design (BOD)																								
1-5.1	As-Is Mapping																								
1-5.1.1	- Task-Flow Diagram																								
1-5.1.2	- Detailed Schedule																								
1-5.1.3	- Critical Path Analysis																								
1-5.1.4	- Cases Studies of Common Problems & Reasons in CP Application Review & Approval Process																								
1-5.1.4.1	----- Delays during CP Application Review & Approval (RAJUK & External Government Agencies)																								
1-5.1.4.2	----- Causes of Failed/Denied CP Applications																								
1-5.1.4.3	----- Causes of Errors in CP Application Review																								
1-5.1.4.4	----- Limitations during Structural Engineering Analysis in CP Application Review																								
1-5.1.4.5	----- Limitations for Quality Assurance/Quality Control (QA/QC) in CP Application Review																								
1-5.1.4.6	----- Experiences with Corruption																								
1-5.1.5	- Scoring Against Performance Criteria																								
1-5.2	To-Be Mapping																								
1-5.2.1	- Opportunities for Optimization & Streamlining of Permitting Process																								
1-5.2.2	- Task-Flow Diagram																								
1-5.2.3	- Detailed Schedule																								
1-5.2.4	- Critical Path Analysis																								
1-5.2.5	- Scoring Against Performance Criteria																								
1-6	Proposed/Concept System Design & Architecture																								
1-6.1	Administrative (Process, Human Resourcing)																								
1-6.2	Technical (Rules, Software, Data Storage, Hardware/Equipment, Integration with Other Programs)																								
1-6.3	Monitoring (QA-QC)																								
1-6.4	Maintenance																								

No.	Deliverables	Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1-6.5	Sustainability (Knowledge Management, Cost Recovery, Future Upgrades)																								
1-6.6	Costs Impact Analysis of Proposed/Concept System																								
1-6.7	Presentation to Oversight Committee																								
1-7	Construction Permitting (CP) Assessment Report																								
1-7.1	Prepare & Submit Draft Version																								
1-7.2	Review & Feedback Workshop for Draft Version																								
1-7.3	Adjust & Submit Final Version																								
1-8	ACTIVITY PAYMENT #2 -- Construction Permitting (CP) Assessment Report (10% of Contract Amount)																								
2	**Strategic Plan**																								
2-1	E-Permit Strategy																								
2-1.1	Description of Proposed/Concept System Design & Architecture																								
2-1.2	Workflow																								
2-1.3	Business Rules Specification (BRS)																								
2-1.4	Software & Customization																								
2-1.5	Data Storage and Hosting																								
2-1.6	Data Migration																								
2-1.7	Hardware & Equipment																								
2-1.8	Human Resourcing																								
2-1.9	Description of Approach to Core Process Improvements																								
2-1.9.1	- Reduced Turnaround Time for Permit Application Review & Approval Process																								
2-1.9.2	- Reduced Failures/Denials in Permit Application Review & Approval Process																								
2-1.9.3	- Reduced Errors in Permit Application Review & Approval Process																								

No.	Deliverables	Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
2-1.9.4	- Enhanced Structural Analysis during Permit Application Review & Approval Process																								
2-1.9.5	- Enhanced QA-QC in Permit Application Review & Approval Process																								
2-1.9.6	- Reduced Frequency of Corruption in Permit Application Review & Approval Process																								
2-1.9.7	- Other Improvements																								
2-1.10	Stakeholder Engagement Plan																								
2-1.10.1	- Objective (Review Assessment Findings & Proposed/Concept System Design)																								
2-1.10.2	- Approach																								
2-1.10.3	- Framework																								
2-2	E-Permit Implementation Action Plan																								
2-2.1	Software Acquisition																								
2-2.2	Software Customization																								
2-2.3	Software Prototype/Demonstration																								
2-2.4	Requirements for Legal/Regulatory/Policy Changes																								
2-2.5	Hardware Acquisition																								
2-2.6	Key Milestones																								
2-2.7	Schedule																								
2-3	International Observation Field Trip																								
2-4	Stakeholder Engagement & Feedback																								
2-4.1	Internal RAJUK Workshops																								
2-4.2	External Consultations																								
2-4.3	Other Government Agencies																								
2-4.4	Applicants																								
2-4.4.1	- Large Private Developers																								
2-4.4.2	- Small & Medium Construction Companies																								
2-4.4.3	- Residents																								
2-5	Recommendations to Revise Proposed/Concept System Design																								

No.	Deliverables	Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
2-6	Strategic Plan Report																								
2-6.1	Prepare & Submit Draft Version																								
2-6.2	Review & Feedback Workshop for Draft Version																								
2-6.3	Adjust & Submit Final Version																								
2-7	ACTIVITY PAYMENT #3 -- Strategic Plan Report (10% of Contract Amount)																								
	PHASE 2 -- SYSTEM DEVELOPMENT																								
3	Software Prototype & Demonstration																								
3-1	Preparation of Prototype																								
3-2	Demonstration & Feedback Workshop of Prototype																								
3-3	Approval of Revised Prototype																								
4	Business Rules Specification (BRS)																								
4-1	Prepare & Submit Draft Version																								
4-2	Review & Feedback Workshop for Draft Version																								
4-3	Adjust & Submit Final Version																								
4-5	ACTIVITY PAYMENT #4 -- Business Rules Specification (BRS) Report (20% of Contract Amount)																								
5	Full-Scale CP System Development																								
5-1	Programming																								
5-2	Customization																								

No.	Deliverables	Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
6	In-House Testing (IHT) & User Acceptance Testing (UAT)																								
6-1	Alpha Testing																								
6-2	Beta Testing																								
6-3	Ticket Log Sheet & Findings Report																								
6-4	System Corrections & Ticket Resolution																								
6-5	SA & UI Design																								
6-5.1	Preparation																								
6-5.2	Presentation & Feedback Workshop																								
6-5.3	Approval																								
6-6	IHT & UAT Testing Report																								
6-6.1	Prepare & Submit Draft Version																								
6-6.2	Review & Feedback Workshop for Draft Version																								
6-6.3	Adjust & Submit Final Version																								
6-7	ACTIVITY PAYMENT #5 -- In-House Testing (IHT) & User Acceptance Testing (UAT) Report (20% Contract Value)																								
	PHASE 3 -- SYSTEM DEPLOYMENT & DOCUMENTATION																								
7	Deployment																								
7-1	Hardware																								
7-1.1	Acquisition (server, computers, printers, plotters, scanners, field handsets, other, etc.)																								
7-1.2	Installation																								
7-2	Software																								
7-2.1	Acquisition (25 licenses total = 24 Authorized Offices + 1 URU Main Office)																								
7-2.2	Installation																								
7-3	Soft Launch																								

No.	Deliverables	Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
7-4	Deployment Report																								
7-4.1	Prepare & Submit Draft Version																								
7-4.2	Review & Feedback Workshop for Draft Version																								
7-4.3	Adjust & Submit Final Version																								
8	**Training & Capacity Building**																								
8-1	Preparation of Training Documents																								
8-1.1	Detailed System Manual																								
8-1.2	Detailed Administrator Manual																								
8-1.3	Detailed Operational Manual																								
8-1.4	Detailed Maintenance Manual																								
8-1.5	Simple Step-by-Step User Manual																								
8-1.6	User Presentation																								
8-1.7	Online User Guide																								
8-1.8	User Knowledge Check & Evaluation Exam Form																								
8-2	User Trainings																								
8-2.1	Classroom-based Trainings																								
8-2.2	Field-based Trainings																								
8-2.3	International Observation Field Trip																								
8-3	Establishment of Technical Support Team																								
8-3.1	Trainings																								
8-3.2	Deployment																								
8-4	Establishment of Online Help Desk																								
8-4.1	Set-Up																								
8-4.2	Launch																								
8-5	Change Management Plan																								
8-5	Trainings Report																								

No.	Deliverables	Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
8-6.1	Prepare & Submit Draft Version																								
8-6.2	Review & Feedback Workshop for Draft Version																								
8-6.3	Adjust & Submit Final Version																								
9	**Operational Acceptance Testing (OAT)**																								
9-1	Hands-on Mentoring/Practice Sessions																								
9-2	User Knowledge Check & Evaluation Exam																								
9-3	Finalize Hosting Environment																								
9-4	Operational Acceptance Test (OAT)																								
9-4.1	Data Integrity																								
9-4.2	Performance																								
9-4.3	Security Tests																								
9-5	Final System Troubleshooting																								
9-6	OAT Report																								
9-6.1	Prepare & Submit Draft Version																								
9-6.2	Review & Feedback Workshop for Draft Version																								
9-6.3	Adjust & Submit Final Version																								
9-7	Public Launch																								
9-8	ACTIVITY PAYMENT #5 -- Operational Acceptance Testing (OAT) Report (10% of Contract Amount)																								
10	**Final Report**																								
10-1	Narration from Beginning to "Go Live" (Public Launch)																								
10-2	Future Recommendations																								
10-2.1	Lessons Learned																								
10-2.2	Sustainability																								
10-3	Maintenance, Update & Upgrade Program																								

No.	Deliverables	Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
10-3.1	Plan																								
10-3.2	Estimated Budget																								
10-4	SLA Metrics																								
10-5	Final Report																							▲	
10-5.1	Prepare & Submit Draft Version																								
10-5.2	Review & Feedback Workshop for Draft Version																							◆	
10-5.3	Adjust & Submit Final Version																								
10-6	ACTIVITY PAYMENT #6 -- Final Report (10% of Contract Value)																								
11	**Operations & Maintenance - Year 1**																								
												◆													
11-1	Ongoing (During Contract Period; Not Post-Contract Period)																								
11-2	ACTIVITY PAYMENT #7 -- Operations & Maintenance (10% of Contract Value)																								
12	**Operations & Maintenance - Year 2**																								
																								◆	
12-1	Ongoing (During Contract Period; Not Post-Contract Period)																								
12-2	ACTIVITY PAYMENT #8 -- Operations & Maintenance (10% of Contract Value)																								

No.	Deliverables	Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
B	PAYMENT DELIVERABLES																								
1	Contract Signing -- **10%**																								
2	Report #1: Construction Permitting Assessment Report -- **10%**																								
3	Report #2: Strategic Plan Report -- **10%**																								
4	Report #3: Business Rules Specification (BRS) Report -- **20%**																								
5	Report #4: In-House Testing (IHT) & User Acceptance Testing (UAT) Report -- **20%**																								
8	Report #5: Operational Acceptance (OAT) Report -- **10%**																								
9	Report #6: Final Report -- **10%**																								

Annex A. Terms of Reference

Electronic Permitting System - Subcomponent C2

Assessing the Current State and Deploying a Web-based Integrated Information Management System for the Construction Permit System of RAJUK

i. CONTEXT

In recent years Bangladesh has reformed its approach to cyclone and flood risk management and preparedness. Triggered by major loss of life and assets, notably during the cyclones of 1970 and 1991 that killed over 300,000 and 140,000 people respectively, the Government of Bangladesh (GoB), civil society, and international development partners have demonstrated that investment in the systems and structures of flood risk management and cyclone preparedness saves lives, reduces economic loss, and protects development gains. As such, Bangladesh is cited often in the rationale for investment in disaster risk management (DRM) activities globally.

The threat of an earthquake, however, is less visible but significant given that Bangladesh lies on the seismically active Indian plate. Earthquake awareness is absent as these events occur less regularly and are relatively absent from the living memory of the country's inhabitants and leaders. Studies by the Geological Survey of Bangladesh divide the country into three seismic zones, which show that earthquake risk is medium to high throughout the country and increases towards the north and east of the country. Although there is some uncertainty, research suggests that an earthquake of up to magnitude 7.5 is possible, and the nearest fault line runs just 60 km. from the nation's capital.

Given a lack of recent earthquake events, an understanding of earthquake risk and corresponding strategies to mitigate the impact of such events is lacking. A National Plan on Disaster Management (2010-2015) includes an Earthquake Management Plan and a National Earthquake Contingency Plan, which have been developed under the Ministry of Food and Disaster Management. These plans identify response and risk reduction activities with corresponding lead and support agencies. However, the plans lack the comprehensive vision of a national earthquake strategy, and a convincing demonstration of benefits, implementation, and controls. Furthermore, the institutional structure for multi-stakeholder engagement to deal with a problem as complex as urban earthquake risk is also lacking and the existing plans do not engage agencies and organizations in a sustainable way.

To respond to this critical gap in the management of disaster risk in Bangladesh, this project represents the second phase of a multi-phase national DRM program to build institutional capacity to mitigate the impact of earthquakes in the rapidly urbanizing cities of Bangladesh. The objective of the overall engagement is to develop a comprehensive approach to managing earthquake risk through a structured process of knowledge development, education, and planning that involves a wide range of stakeholders to increase engagement and ownership.

ii. BACKGROUND

Currently, the planning permitting process for building construction had been described as lengthy and complicated for building applicants. Illegal broker fees are known to be paid in order for applicants

to shortcut the process[2]. In addition to be open to interventions and bribes, the current system reduces compliance with building control. This results in reducing Dhaka's quality of urban living by eroding public confidence in institutions and in opening the door to violations, thereby increasing vulnerability to disasters.

The permitting process for building construction in greater Dhaka is administered by RAJUK, the capital development authority of Bangladesh, had been described as lengthy and complicated RAJUK (Rajdhani Unnayan Kartripakkha), established in 1956 under the provision of the 'Town Improvement Act -1953' (TI Act 1953) and reformed later in 1987, being the legitimate approving authority for any building construction, has in the past been unable to cope with the demands of rapid building construction due to lack of qualified manpower, resources, and effective internal mechanisms to enforce the building construction provisions. Realizing RAJUK's utmost requirement of an automated system to ensure the transparency, accountability and better administration over construction permit issuance/renewal process, Trade & Competitiveness (T&C) team of World Bank Group supported RAJUK to develop an automated web-based workflow management system for construction permit issuance, renewal, land use clearance, related appeals, inspection processes and occupancy certification. The support also includes required capacity building of RAJUK officials to administer a change management plan.

The T&C team in Dhaka has worked with the RAJUK to prepare detailed process maps of the construction permit processes. The mapping exercise detailed all the AS-IS related processes and also proposed the TO-BE ones. The automated workflow management system of land use and construction permit processes were then developed based on the approved TO-BE processes. It is noteworthy to mention here that issuance of a construction permit by RAJUK requires prior approvals / no objections from other agencies such as DoE, DESA, WASA, TITAS Gas, DMP Traffic, DCC, and the Civil Aviation Authority as applicable.

The *e*-permit will create incentives for government, developers and owners to observe development control regulation, thus resulting in greater safety, increased efficiency, improved transparency, and progress for the construction industry and the government.

RAJUK, being the legitimate approving authority for any building construction, has in the past been unable to cope with the demands of rapid building construction due to lack of qualified manpower, resources, and effective internal mechanisms to enforce the building construction provisions. Several problems and conflicts need to be addressed in the building permitting process:

- Disregard for deadlines and timelines for delivering permits, thus fostering interventions and illicit deals;
- Delays and negligence in duties in inspection, enforcement and reporting;
- Lack of accountability and oversight;
- Complexity and opacity for getting clearances and non-objections. RAJUK demands clearance certificates from the following satellite agencies DoE, DESA, WASA, TITAS Gas,

[2]Mahmud, A. (2007). *Corruption in Plan Permission Process in RAJUK: A Study of Violations and Proposals.* Transparency International Bangladesh.

DMP Traffic, DCC, Civil Aviation Authority Bangladesh prior to considering issuance of building permits;

- Lack of automation.

iii. SCOPE OF SERVICES

This engagement will fund the analysis of the current situation, design, development and implementation of an electronic permitting and monitoring system (e-permit) for managing construction permit applications from the initial step, when the application is deposited, to the final step, where the building permit is delivered including monitoring and supervision processed during construction and post construction occupancy permits. Activities associated will include but not limited to:

i) Assessment

a. Assessment of the current construction permitting system
b. Prepare the strategic plan for the Purchaser

ii) Business Operation Design (BOD)

a. Define the intra and inter-procedures of the agencies and stakeholders
b. Prepare the business rules specification for the purchaser
c. Prepare the construction monitoring mechanism
d. Link with output of other consultancy services such as RSLUP, HVRA assessment, Professional accreditation program and BNBC enforcement and implementation.
e. Also need to link with other organizations such as DoE, DESA, WASA, TITAS Gas, DMP Traffic, DCC, FSCD, DTCA, Civil Aviation Authority Bangladesh etc prior to considering issuance of building permits

iii) Software Architecture Design

a. Defining the application ecosystem
b. Software application architecture
c. Interconnection to/integration of other related (public/private) agencies and entities

iv) System Architecture

a. Servers (Physical and Cloud), Load balances and storage
b. Operating software (Environmental software)
c. Database Software (Environmental Software)
d. Switches, Routers
e. WAN Optimizers (if needed)
f. Cyber security appliances and software
g. Any other hardware for the IT infrastructure needed to run the above software solution

v) Customization

a. Customization of any commercial solution for CP
b. Developing the modules' specifications
c. User's Interface (UI) design
d. databases, design

e. Interoperability design

vi) Software testing

a. Optimization of the codes of the solution
b. Software test documentation before the testing
c. Software test report after the testing of the solution at the Purchaser's and/or stakeholder's premises
d. User Acceptance Test

vii) Training

a. To cover all the users such as RAJUK officials, other interconnecting agencies/departments and system administrators at least 200 persons

viii) Deployment

a. Deployment planning and tests
b. Operational Acceptance Test and official system start-up ('Go Live')

ix) Data input and operations

a. 18 months of data input and operations to be provided by the Supplier.

x) Maintenance

a. Necessary bug removals, updates and upgrades
b. 2 years of maintenance to be provided by the Supplier

The main objective is to make construction permitting solution more efficient and transparent. All phases will be documented in detail by the Supplier and seek approval from the Purchaser, RAJUK and the OC.

iv. DELIVERABLES

1-System Design

The design of the e-permit system will need to take into consideration the regulatory regime, the legislative enforcement instruments, the institutional and administrative arrangements of the permitting process and put these parameters to the tests of transparency and effectiveness. It shall incorporate requirements for RAJUK and satellite agencies that regulate and enforce building safety, fire safety, traffic management, utilities distribution, waste management and environmental protection. The mandate and authority of RAJUK as the responsible agency to coordinate and integrate these requirements internally and thru effective inter-agency collaboration with external agencies. RAJUK should be placed both as a gatekeeper and an enabler of the e-permit system.

To ensure multi-stakeholder and multi-agency collaboration, an Oversight Committee (OC) shall be created to support and oversee the deployment of the e-permit system. The role of the OC is twofold:

i) Support the Supplier (The contractor company) in reaching an agreement among the stakeholders on the core parameters that would facilitate an integrated seamless and transparent construction permitting process. These parameters will then dictate the design of the e-permit platform;

ii) Define the performance criteria for the e-permit system (i.e., act as a quality control body.)

2- Assessment Study and Development of Baseline

The Supplier shall undertake an assessment study of the e-permit system which includes, *inter alia*, the following activities:

- Interacting with key stakeholders including relevant ministries and agencies: i.e., planning, infrastructure, housing, public works, environment, utilities, etc.
- Study the institutional arrangements (e.g. government-to-government, government-to-industry; government-to-public) in current permitting system.
- Collect the most updated data to **create a complete and linked database for incorporation into the new system for e-permitting practice** at minimum for following:
    - Greater Dhaka Approved Master Plan
    - Greater Dhaka Structure Plan
    - Updated Detailed Area Plan
    - Risk Sensitive Land Use Plan
    - Strategic Transportation Plan
    - Civil Aviation Height Restriction Plan
    - Other Relevant Authorities` databases for specific and large scale projects (at least 11 departments and ministries such as , Water, Gas, Electricity, Traffic, Land …etc.)
    - Other similar database and software applications provided (such as A2I (Access to Information…etc.)
- Study the current practice rules and regulations of the permitting system in detail and make a comparison with the best used international practices for at least following stages:
    - Application Process
    - Land Use Clearance
    - Approval of all design and construction documents process
    - Large and Special Projects implementation process
    - Development Permission/Permit
    - Construction supervision and QA/QC during the Construction period (The Contractor is required to provide a Guidance document to this stage reflecting the best international successful processes and a way forward action plan document for RAJUK)
    - KPI (Key Point Installation) specific rules such as KPIDC (Key Point Installation Development Control)
    - Post Construction Control and Supervision and Occupancy Certificate

- Assess the ICT infrastructure including hardware, COTS software as well as any software solutions used.
- Undertake a conceptual design and specify the process and criteria for instituting an electronic permitting system, including administrative, technical, monitoring, maintenance, and sustainability.
- Establish and define the following: rules for conflict resolution between agencies; schedule for permit application reviews; applicant tracking mechanism; regulatory checks; and mechanisms of enforcement.
- Identify critical path in the construction permitting process and re-engineer and optimize the processes to improve the over-all turnaround time in plan approval
- Develop conceptual system architecture and specifications of key functionalities related to various users (i.e., builders, inspectors, plan reviewers, supervisors, etc.)
- Define cost of deployment, maintenance and future updates.
- Submit Customization an Assessment Report to RAJUK for review
- Provide the approval from RAJUK and All other relevant Authorities before commission to next phases.

3-Strategic Plan

Once the Assessment Report is accepted by RAJUK and the Oversight committee, the Supplier shall prepare an e-permit strategy and action plan with relevant documentation. It will support and guide the OC to conduct a series of workshops and consultations to discuss the findings and recommendations of the Assessment Report and to seek stakeholders input on the core parameters that would define the functionality of the e-permit system. The strategic plan should state the objectives, approach, and framework for the consultations with the stakeholders. The consultations and workshops should involve all the relevant stakeholders including the concerned RAJUK business units, developers, designers, contractors, practitioners, regulators, experts and lawyers. The aim is to forge consensus by promoting efficiency, transparency and a citizen-centric innovation in support of the e-permit system but also taking into consideration the reality on-the-ground that would make the system viable and sustainable. While the stakeholders must understand that business as usual is no more acceptable, their concerns and interests must be carefully understood and taken into consideration. Change must be accepted but change must also endorse a rigorous process not a content-empty electronic stamping.

All inputs from the stakeholders shall be collected, discussed with the OC and with RAJUK's PIU for final resolution. An updated Strategic Plan report should be submitted as a deliverable.

CP Software Selection, BRS and Customization: Based on the Strategic Plan the consultant shall choose a CP software and demonstrate to OC. Then they shall prepare a thorough Business Rules Specification (BRS) and submit that for approved by RAJUK. The approved BRS shall be the basis of customization of the CP application.

4-Testing

After in-house testing is over and the Supplier is ready to test the solution in the field, Systematic Alpha and Beta testing shall be performed with selected potential users representing all stakeholders. All testing findings should be entered into a log sheet and a schedule for completing all entered tickets shall be developed and communicated to the OC and to RAJUK PIU. SA and UI designs should be presented and approved by OC and RAJUK PIU and PIC. Results and findings from the alpha and beta testing should also be summarized and discussed with OC and RAJUK PIU and PIC. A final UAT report shall be documented and submitted as a deliverable.

5-UAT & Deployment

Upon approval by RAJUK and the OC of the final UAT, the e-permit shall be implemented. This includes a sizing of the hardware, environmental software, and other necessary equipment (for Urban Resiliency Unit) to run the system for successful implementation. Furthermore, the consultant shall provide a required list of the Hardware and their specifications to be able use the software for 24 Authorized Offices and URU main Office. These hardware specifications need to be provided at minimum for following for each sub-zone and URU**:**

1- Server
2- Computers
3- Printers
4- Plotters
5- Scanners
6- Handsets for Inspectors
7- Software License
8- Any Other Hardware/Software Requirements

The system shall be accessible from all agencies involved in e-permit system.

6-Training

Trainings shall be conducted nationally and internationally for RAJUK and other related government officials, building developers, engineers, architects and other professionals who are concerned with requesting building permit. An online guide should be made available to all users that easily and intuitively guide the user through the process. An on-line help system as well as a technical support team should be trained and deployed to be available on extended office hours to facilitate the use of the e-permit.

7-Operational Acceptance Test (OAT)

Training should be organized and provided with hands-on sessions, knowledge checks and evaluation. All agencies should pass the knowledge checks. Training also includes the development of the various manuals including System Manual, Administrator Manual and User Manual. After the training sessions are completed RAJUK the Consultant shall arrange the proper CP application hosting environment and carry out Operational Acceptance Test (OAT). The OAT shall include data integrity, performance and security tests. After OAT the CP system will be formally launched for use by the public.

8-Final report

Final report to contain, lessons learned and sustainability recommendation to be submitted upon system go live. The report shall contain:

1) All narration from beginning to “go live”

2) Future recommendations for sustainable operation3) Maintenance, Update and Upgrade Plan and SLA

A series of SLA metrics, to be agreed between the consultant and RAJUK, to be followed over the first two years. A maintenance and update program with an estimated budget shall be provided as part of the Final Report. The goal is to ensure the long-term sustainability of the program.

Maintenance Annual Report

1) Year 1

2) Year 2

Schedule of Deliverables

Deliverables and corresponding payments after the official approval of the Purchaser will be as following:

1) CP Assessment Report 10%

2) Strategic Plan 10%

3) BRS Report 10%

4) UAT Report 20%

5) Operational Acceptance Report 20%

6) Final Report 10%

7) Operation and Maintenance (O&M)

Year 1 - 10%

Year 2 – 10%

v. IMPLEMENTATION ARRANGEMENTS

The Consulting Firm will work closely with RAJUK’s PIU-PIC and all concerned government ministries and agencies to coordinate activities, collect data, and conduct workshops and consultation. These agencies as well as the broader body of users and concerned stakeholders (i.e., developers, contractors, architects, engineers, and others) should be organized in a Project Working Group (PWG), which should meet at least once a quarter. The PWG should be used as the mechanism for stakeholders’ involvement, data collection, validation, consensus building and advocacy. Meetings with the PWG should be carefully organized and documented.

After the inception stage the Consulting Firm shall prepare a detailed schedule and task-flow diagram, which depicts the interrelationship of various tasks in the assignment which lead to the completion works and mechanism of coordination with the client and other related entities. This would be kept and update throughout the Project duration.

A focal point will be identified at inception that would be the lead representative of Consulting Firm responsible for coordination and all interfaces with the Consulting Firm. The Team Leader of

Consulting Firm will be the principal contact and will be expected to be readily available during project implementation. The Consulting Firm shall be responsible for all aspects of performance of services as set forth in the preceding sections of this TOR.

The extent of technical support needed by RAJUK's internal as well as external users of the system should be determined and accordingly the required number of supporting hands should be trained and the help desk should be deployed to be available on extended office hours to facilitate the use of the e-permit. Electronic construction permit system will go live after approving by RAJUK and the OC of the final system design, the e-permit shall be implemented. This includes a scaling of the hardware, software, and necessary equipment to run the system. The system shall be installed at all agencies involved in e-permit system. Training should be organized and provided with hands-on sessions, knowledge checks and evaluation. All agencies should pass the knowledge checks. For final report, maintenance and updates the consultant will be responsible for deployment and supervision for the first two years. A final report will be delivered to RAJUK after the first two years of operation of the system. A series of metrics, to be agreed between the consultant and RAJUK, will be followed over the first two years and reported upon in the final report. A maintenance and update program with an estimated budget should be provided as part of the Final Report. The goal is to ensure the long-term sustainability of the program.

vi. SELECTION PROCEDURE AND FORM OF CONTRACT

The Supplier (Contractor Company) will be selected following the World Bank's Guidelines: Selection and Use of Consultants by the World Bank for Operational Purposes and form of contract would be Complex Lump Sum Contract.

Minimum qualifications of the firm to be selected for the required assignment include:

- The firm main business should be in developing business software applications, with a minimum of ten (10) years of experience, including developing software application for government entities in developing countries.
- Previous experience in developing e-permitting system for national or local government entities is a strong plus. At the minimum, the firm must have experience with translating complex government processes into web-based applications; so any database connectivity, large integration projects even not related to e-permitting will be a strong plus.
- Experience working in Bangladesh is desired. If not, the Supplier should partner with a local integrator or a software development company for the full duration of the project.
- Demonstrated track record and knowledge of institutional structures of complex urban planning processes and procedures.
- Stable and well-established internal documentation processes and business relationships.
- At least one of the JV partners shall have CMMi Level 3 or above, ISO 27001 (Information Security) and ISO 20000 (IT Service Management) certificates.

vii. DURATION OF THE ASSIGNMENT

Duration of the contract would be 24 months excluding maintenance starting from mobilization. The first 6 months will involve assessment studies and interface design and specifications; 18 months for

system customization testing, and deployment. O&M support shall be provided after completion of the final report for 2 years. The Consultant is encouraged to provide a detailed methodology for O&M.

Staffing Requirements

Composition of Consultant Team (indicative)

It is deemed that the consultant shall have to deploy following professionals during the contract to facilitate carrying out the task smoothly:

KEY STAFF				
Sl	**Position**	**Qualification**	**# of Staff**	**Man-Month**
1.	Team Leader (International)	Masters or PhD in Computer Science & Engineering, Software Development having 25 years of general experience with 20 years of specific experience.	1	24
2.	Project Manager cum DTL(International/National)	Master's or higher degree in Computer Science & Engineering, having 20 years of general experience with 25 years of specific experience in Software Development.	1	24
3.	Practice Leader: Software Development Specialist (one international and one national)	Master's or Higher Degree in Computer Science or Software Engineering having 15 years of general experience with 10 years of specific experience.	2	24
4.	Practice Leader: Information Management Specialist with Business Process Reengineering Experience (international)	Masters or higher degree in computer science or software engineering or other equivalent degree and experience in conducting software feasibility study, business process reengineering and developing complex workflow management architecture and software. At least 15 yrs of general experience where specific experience stands as 10 yrs.	1	12
5.	System Security Analyst (National)	Bachelor's degree in Computer Science & Engineering with relevant professional certification, must have at least 5 years' experience in working as an	1	12

		information security expert on ICT projects; General Experience : 15 years		
6.	System Analyst cum Database Administrator (National)	Master's or higher degree in computer science or software engineering or other equivalent degree, minimum of 10 years' experience in developing software applications including at least 4 years in development of business and/or government process software applications. General experience is 15 yrs.	1	24
7.	Senior Software Engineers (National)	Master's or Higher Degree in Computer Science or Software Engineering having 10 years of general experience with 5 years of specific experience.	2	36
8.	Practice Leader: Training and Knowledge Management Coordinator (National)	Master's degree in International Development, Engineering Construction Management, Architecture, Communication, Education or related field. Master degree in Database management is a plus. Experience leading training programs and managing knowledge databases in collaboration with various institutions. General Experience 15 yrs. Specific experience10 yrs	1	12
9.	Quality Assurance Specialist/Tester (National)	Bachelors or Higher Degree in Computer Science or Software Engineering having 7 years of general experience with 5 years of specific experience. Extensive specific experience in Quality Assurance and process in software testing. Must have experience with Systems, Functional, Web Services, Integration, and Backend testing	2	24

10.	Network Administrator (National)	Master's degree in Computer Science & Engineering with relevant professional certification, have experience in working as an expert networking components of ICT projects; General Experience 15 yrs. Specific Experience10 yrs	1	12
TOTAL			**13**	**204**

Note: The international key expert's time input in field (client country) shall be not less than 70% of their total time input as it would be proposed in the technical proposal.

SUPPORT STAFF

Sl	**Position**	**Qualification**	**# of Staff**	**Man-Month**
11.	Civil & Structural Engineer (National)	Masters in Civil & Structural/Earthquake Engineering, having 15 years of general experience with 10 years of specific experience.	1	12
12.	Practice Leader: Architect	Masters in Architecture having 15 years of general experience with 10 years of specific experience.	1	12
13.	Estimator		1	12
14.	Junior Software Engineers		3	72
15.	Application Support Specialist		2	48
16.	Surveyor		1	12
17.	AutoCAD Cum Computer Operator		1	12
18.	Office Accounts Cum Manager		1	48
19.	Office Assistant Cum Computer Operator		1	48
20.	Survey Assistant		1	12
21.	Technical Writer		1	12

The consulting Firms are encouraged to use the expertise available in Bangladesh to the extent possible. However, international experience is necessary to carry out the assignment. The Consulting Firms are free to propose a staffing plan and skill mix necessary to meet the objectives and scope of the services. However, a strong competency in the development of business management software is expected. If all the required skills are not available within the consulting firms, they are encouraged to make joint ventures with other firms.

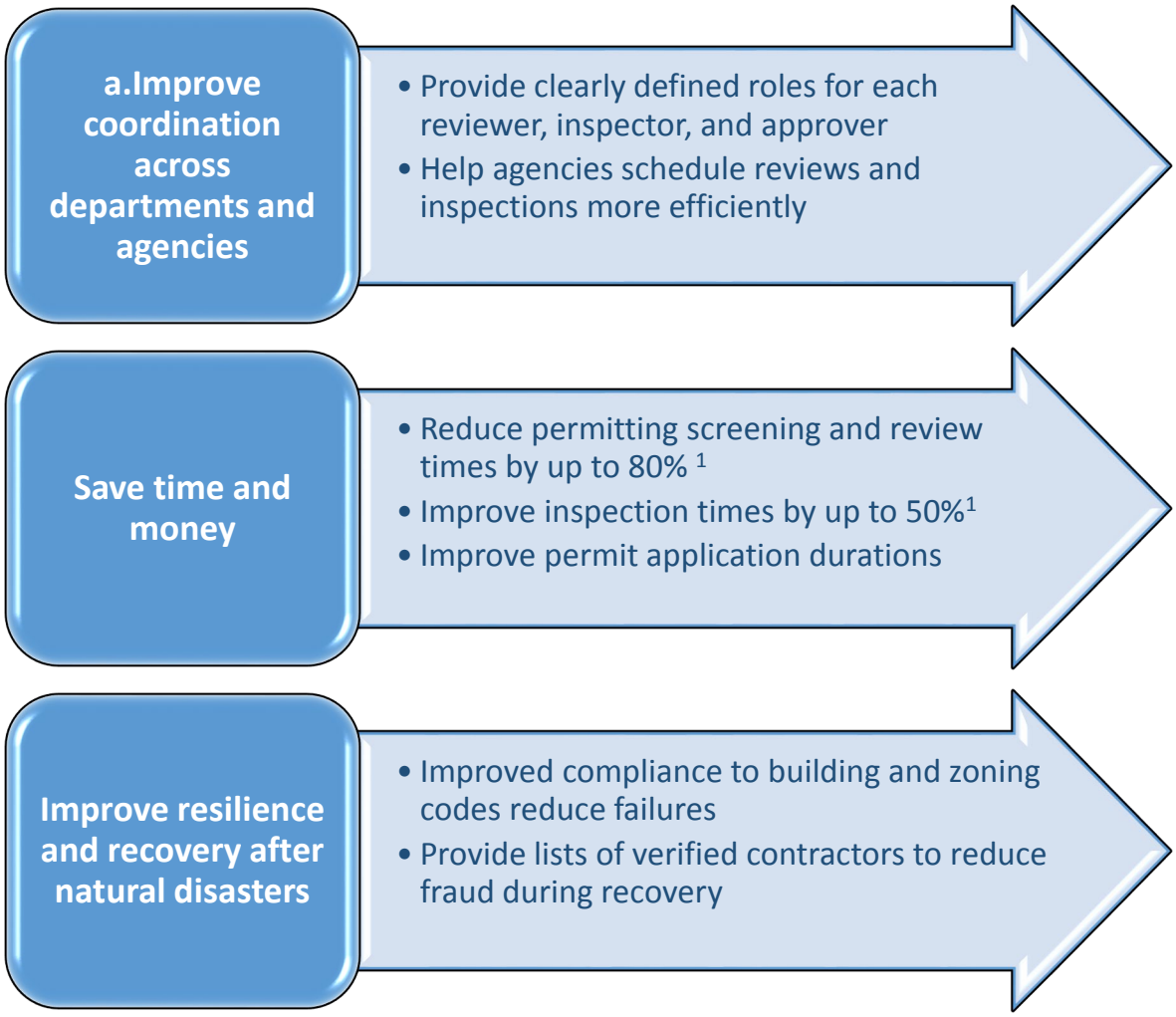
Annex B. Stakeholder Kickoff Meeting Attendees

Name	Organization Name
Fatema-Tuz-Zahura	Ahsanullah University of Science and Technology
B. M. Nural Absar	Asst. Engr. (Civil & Geotechnical), URP: RAJUK PART
Choudhury Ekramul Haque	BPERB
Dr Apurba k Podder	BUET
Ishtiaque Ahmed	BUET
Raquib Ahsan	BUET
Md. Aminul Islam	BUET-JIDPUS
Ishfaq Aziz	BUET-JIDPUS
Kazi Jannatul Ferdaous	Civil Aviation Authority of Bangladesh
Md Shamsuzzoha Bayzid	CSE, BUET
Dr Md. Sohrab Ali	Department of Environment
A K M Shamsudoha	Dohatec New Media
Md. Masudur Rahaman	Dohatec New Media
Mohsina Munir	Dohatec New Media
Md. Mustsfizur Rahman	EIMS Limited
Faisalur Rahman	Fire Service & Civil Defence
Engr Md Rafiqul Islam	IEB
Anisuzzaman Chowdhury	JICA
A.B.M. Shamsul Arefin	M&E URP. PCMU
Abdul Latif Helaly	RAJUK
Abdur Rahman Khan	RAJUK
B.S. Pushpendue Biswas	RAJUK
Bilash Kumar Ghosh	RAJUK
Engr. Md. Mostafa Kaml	RAJUK
Khandakar Md. Wahid Sadique	RAJUK
Maj(Engr) Shamsuddin Ahmed Chowdhury(retd)	RAJUK
Md Anwarul Kader	RAJUK
Md Musfiqur Rahman Bhuiya	RAJUK
Md. Nasif Hossain Imon	RAJUK
Md. Saifur Rahman Joarder	RAJUK
Md. Mahboob Hassan	RAJUK
Mohammad Hasan	RAJUK
Shovon Saha	RAJUK
Md. Abdus Samad Azad	RAJUK URP
Md. Shahadat Hossain	RAJUK URP
Pretom Sikder Joy	RAJUK/URP
S.M. Shafiquzzaman	RAJUK/URP
Glenn Whaley	RTI
Jennifer Richkus	RTI
Keith Weitz	RTI
Md. Emdadul Islam	RTI
M. Shafiul Alam	RTI

Dr Ahmadul Hassan	SDE
Iffat Huque	SDE
Md. Hasibuzzaman	SDE
Rubel	SDE
Abdul Siddik Hossan	SDE
Atiqur Rahman	SDE
Fathiya Zaman	SDE
Hasib Ahmed	SDE
Aliya Zaman	SDE
Dr. Md. Monjur hossain	SDE
Md Shajal Khan	SDE
Morshed Denar Alam Manna	SSIL, M&E, URP
Mahabubul hasan	URP RAJUK
Gazi Golam Sarwar	URP RAJUK
Md Razib Hasan	URP RAJUK
Nidalia Islam	URP RAJUK
Rakibuzzaman Sumon	URP RAJUK
Shadia Masud	URP RAJUK
Dewan Mohaddes-Al-Maher	URP RAJUK
Md. Maruf Hasan	URP RAJUK
Abu Hanif	URP RAJUK
Md. Maminul Islam shishir	URP RAJUK
Dr Tariq bin Yousuf	URP-DNCC part
Abul Khair	URP RAJUK PART
Tapan Kumar	URP RAJUK PART
Mohammad Rafiqul Islam	World Bank

Annex C: ECP Frequently Asked Questions

Why Create an ECP System?

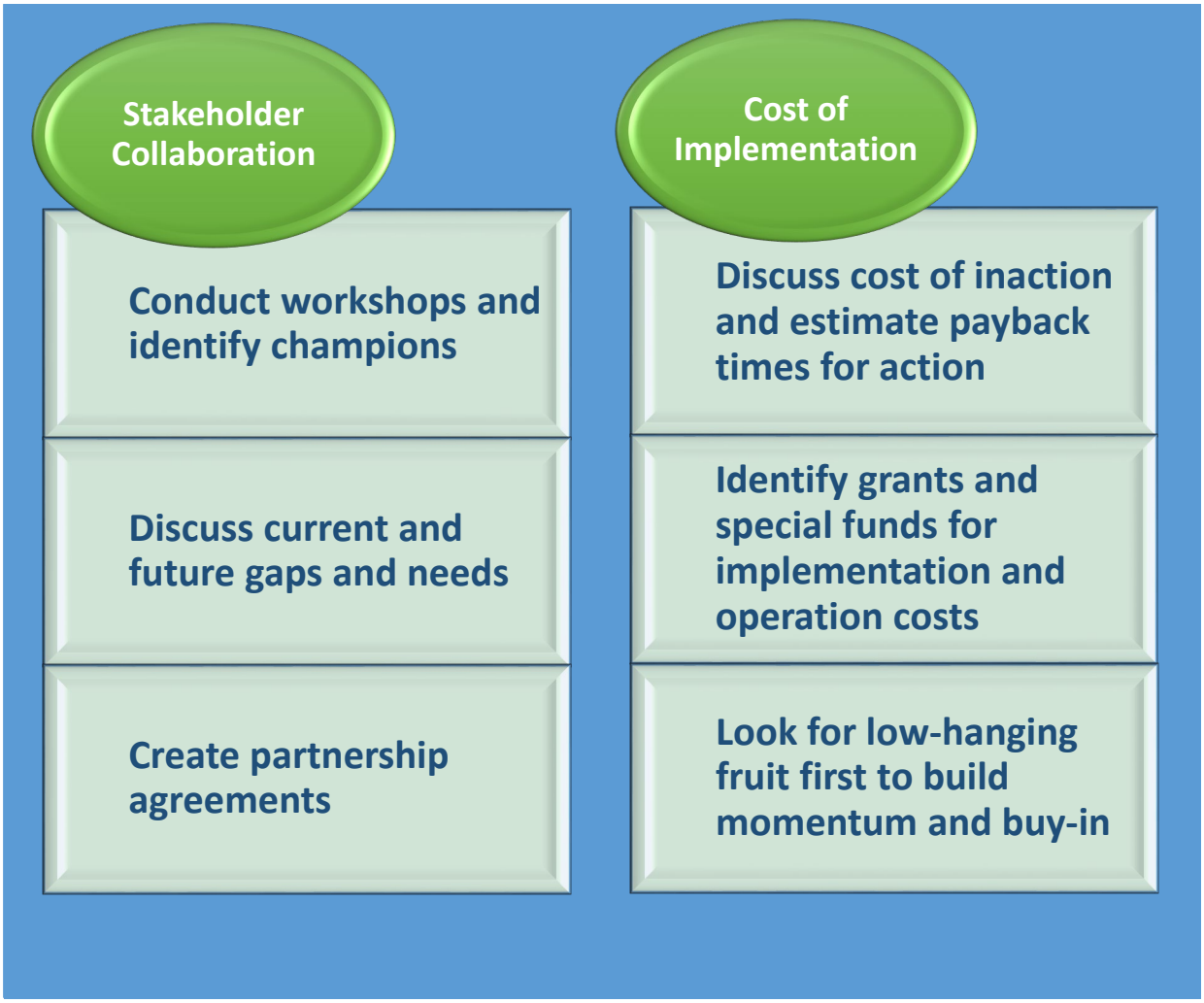


[1] Alliance and the National Conference of States on Building Codes and Standards, 2006. "The Costs and Savings from the Application of Information Technology to Building Codes Administration and Enforcement Processes."

Where to Begin? (Start with the End in Mind)

What Are the Typical Goals of an ECP System?

What Are the Typical Barriers to Implementing an ECP System and How Are They Overcome?



What Questions Should Be Asked When Reviewing the Proposed ECP System Plan?

⇨ Will the ECP system:

- Be used by applicants, reviewers, inspectors, and other agencies easily?
- Improve the effectiveness and efficiency of the program?

⇨ How much time:

- Will training take?
- Will be needed to recover the cost of implementation?

⇨ What kind of benefits:

- Can customers confidently expect?
- Will staff and other agencies experience?

⇨ Is the ECP system:

- Compatible with the regulatory system?
- Simpler to follow and complete than our current system?

Annex D: Data Collection Questionnaires

Permit Review – Screening Questionnaire

The following table presents a list of data collection areas, used as a guide for semi-structured interviews held during the inception phase. Specific target interview candidates are permitting authied officers from RAJUK headquarters or zonal offices. A comprehensive baseline data collection will be conducted during the next ECP project phase, and its results shared in the CP assessment report.

#	Data collection area
1	Number and percentage of permit applications under the following three categories: • new construction permits • retrofitting permits • demolition permits
2	Average number of permits processed per RAJUK zone and per month (estimate)
3	Percentage of applications rejected for missing materials or information (estimate)
4	Are applications with insufficient materials or information generally returned to the applicant during screening, or are simple gaps caught later in the review?
5	Availability of a review checklist for permit intake: - For RAJUK officers - For public applicants
6	On average, how many permits per month do you send for outside review of permit elements (e.g., environmental, transportation)? What entities do you most frequently engage?
7	On average, among permit applications which you process, how many applications require requesting additional information or work from the applicant?
8	Is there a coordinated schedule for review for each submission, or do the steps vary for each permit?
9	Is there any feedback system to the applicants?
10	If yes, how often are comments registered? What are the general topics?
11	Which kinds of improvement do you expect in your daily work thanks to the new Electronic Construction Permitting system? Increased speed of processing Increased quality of processing Easier data and document management Others? Please list.

Permit Review – Reviewer Questionnaire

The following table presents a list of data collection areas, used as a guide for semi-structured interviews held during the inception phase. Specific target interview candidates are permitting officers from RAJUK headquarters or zonal offices. A comprehensive baseline data collection will be conducted during the next ECP project phase and its results share in the CP assessment report.

#	Data collection area
1	Average number of new permits per officer, per role and per month (estimate)
2	Average number of staff available to review permits for (estimate):
	- Building code
	- Electrical review
	- Mechanical
	- Plumbing
3	Number of years of experience of staff in their current role (estimate)
4	Did you perceive an increase in workload compared with a year ago? 2 years ago? 5 years ago?
5	Have you attended trainings and received certifications to review permits? Any trainings at the time of code updates?
6	Is there a checklist for the various permit types that help the review process?
7	Do you work with other departments or agencies to complete the permit review? If so, what is the process?
	DoE
	DESA
	WASA
	DTCA
	TITAS Gas
	Others? Please list.
8	Do you have access to electronic maps of zoning, floodplains, earthquake risk, and nearby construction to assess the potential risks associated with the permit application? What maps do you use or have access to?
9	Do you consider matters such as social, economic and resilience factors in your review?
10	Do you use a computer to review permits? If yes, which types of applications/software/programs do you use?
	Email to receive permitting application/data
	GIS to review spatial permitting information
	Document or spreadsheet software (e.g., MS Word, MS Excel)
	Architectural drawing software (e.g., AutoCAD, CAD Viewer)
	Others? Please list.
11	Do you interact personally with the permit applicants? If yes, approximately how often and how (e.g., Text, email, phone, in person)?) What is the general nature of the meeting/discussion?
12	How often are applications rejected after review? Is it generally for missing application pieces, or quality issues? Other reasons? Please list. What is the correction process or penalty for those failing to comply?
13	Which kinds of improvement do you expect in your daily work thanks to the new Electronic Construction Permitting system?
	Increased speed of processing
	Increased quality of processing
	Easier data and document management
	Others? Please list.

Inspection Review – On-Site Inspector Questionnaire

The following table presents a list of data collection areas, used as a guide for semi-structured interviews held during the inception phase. Specific target interview candidates are on-site building

inspectors from RAJUK headquarters or zonal offices. A comprehensive baseline data collection will be conducted during the next ECP project phase and its results share in the CP assessment report.

#	Data collection area
1	How many inspections for new permits do you conduct: • per week, approximately? • per day, approximately?
3	What aspects of the inspection process are you responsible for?
	Building code
	Electrical review
	Mechanical
	Plumbing
	Others? Please list.
4	Approximately how long have you been conducting inspections?
5	Has the workload increased since you began conducting inspections?
6	Have you attended trainings and received certifications to conduct inspections? What kind of trainings? Do you need to pay? Are these inspectors individual consultants or RAJUK staff? Which documents that inspectors follow?
7	Is there a standardized compliance checklist for the various inspection types that you follow? Any manuals and training materials/opportunity available? Any special accreditation exists to be an inspector?
8	Do you work with other departments or agencies to conduct inspections? If so, what is the process? Please check the applicable agencies below.
	DoE
	DESA
	WASA
	DTCA
	TITAS Gas
	Others? Please list.
10	Do you have access to previous inspection reports and/or the permitting application to help conduct the inspection?
11	Do you use a tablet to record inspection checklist responses/observations?
12	How are inspection results transmitted to the permitting team? To the applicants?
	Email to receive permitting application/data
	GIS to review spatial permitting information
	Document or spreadsheet software (e.g., MS Word, MS Excel)
	Architectural drawing software (e.g., AutoCAD, CAD Viewer)
	Others? Please list.
13	Where and how is permit and inspection information stored?
14	How often are applications rejected after review? Is it generally for missing application pieces, or quality issues? Other reasons? Please list.
15	Which kinds of improvement do you expect in your daily work thanks to the new Electronic Construction Permitting system?
	Increased training
	Increased productivity
	Easier data and document management
	Others? Please list.

Approvals – Building Committee Questionnaire

The following table presents a list of data collection areas, used as a guide for semi-structured interviews held during the inception phase. Specific target interview candidates are members of the building committee responsible for approving applications. A comprehensive baseline data collection will be conducted during the next ECP project phase and its results share in the CP assessment report.

#	Question
1	What percentage of permits are issued within 14 days? 30 days?
2	In which document are building permit fees defined? Is this the actual fee required throughout the process? Or are there any other associated fee to achieve the full compliance?
3	Approximately what percentage of permits received are approved? Rejected? Unaccounted for?
5	How are approvals transmitted to applicants? To other agencies?
	Paper copies
	Emails
	Transmitted using some software/application/program
	Others? Please list.
6	How are approvals documented and tracked within RAJUK?
	Paper copies
	Emails
	Stored using some software/application/program
	Others? Please list.
7	Which kinds of improvement do you expect in your daily work thanks to the new Electronic Construction Permitting system?
	Increased training
	Increased productivity
	Easier data and document management
	Others? Please list.

Permit Application – Permit Applicant Questionnaire

The following table presents a list of data collection areas, to be used as a guide during the next ECP project phase i.e. CP assessment.

#	Question
1	Did you complete the application process online? Or did you require assistance from RAJUK staff to complete the application? From architects/engineers? Or from other third-parties?
2	How long did the approval process take?
3	What was the most challenging part of the application process?
4	Were you notified of the reviewer and inspection schedule?
5	Which kinds of improvement do you expect in your daily work thanks to the new Electronic Construction Permitting system?
6	Was the application process clear and understandable? Were the application forms clear and understandable? If not, what could be improved?