Business Process Re-engineering Report
Gelephu and Samdrup Jongkhar Thromdes

Municipal Finance and Management Component
Bhutan Second Urban Development Project (BUDP-2)

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1.   Introduction

In any organization where there are changing needs, multiple stakeholders and increased service expectations there are various reasons why an organization would embark on a Business Process Re-engineering process. Municipalities fit into this category. Municipalities have to respond to constrained resources such as fiscal or budgetary pressures. Mostly, there are three reasons for municipalities to embark on BPR activity viz. financial constraints, the need to reduce cost and identify efficiencies, and improved customer service. Another aspect is the need to focus on strategic goals and BPR provides a change mechanism to align service delivery with strategic goals. The sincere desire on the part of municipalities to improve efficiencies and effectiveness is a strong motivator for embarking on the BPR process. Change is a common motivator for BPR whether it is internal or external to the organization.

Key components of BPR can be best summarized as:

- System Philosophy – Process Based
- Vision Led – Champion Driven
- Radical Transformation in some cases
- People and Technology Focus
- High Investment in some cases
- Radical Improvement in Cost, Quality, Service and Speed
- Integrated Change
- Focus on End Customer
- Citizen centered (quality service)
- Participative leadership (shared decision making)
- People centered (empowering)
- Change Oriented (continuous improvement)
- Result oriented (accountability)
- Decentralization
- Revenue driven (full cost recovery)

Process improvement is the lowest degree of BPR implementation. It involves improvement of that part of a process, which falls within a function, rather than improvement of the entire end-to-end process. The focus is to streamline the tasks that are performed, which involves looking for opportunities to reduce redundancy, duplication and process cycle times, and simplify forms.

Process redesign involve the total redesign of an end-to-end process, and can provide process improvement in terms of cost, quality and time. This requires an analysis of the processes model at the higher levels of the organizational hierarchy as well as to identify where IT could be used to entirely eliminate some of the activities in the process. Process redesign requires senior management support.

Organizational transformation is the highest degree of implementation of BPR as its goal is to change the structure and culture of the organization itself in order to improve its processes. It starts with a fundamental self-evaluation of the organization by asking why the organization exists and what it is trying to achieve.

2.   Thromdes' Visions

A clear and precise vision statement that reflects the future to be created. The Thromde staff are clearly aware of the vision statement.

Gelephu Thromde's vision statement:

"To be a vibrant regional growth center with access to economic avenues and a recreational hub with amble of interlinked green open spaces for leisure and sports"

Gelephu Thromde's vision requires it to execute the mandates as follows:

- Function as democratic and accountable government for local communities;
- Ensure that services are provided in sustainable manner;
- Encourage the involvement of communities and community organization in matters of local governance, citizen engagement;
- Discharge any other responsibilities as may be prescribed by the laws made by the Parliament
- Revenue assessment and collection

Samdrup Jongkhar Thromde's vision Statement:

"A vibrant and inclusive city balancing the three realms of Environment, Economy and Society"

Among others, Samdrup Jongkhar Thromdes is mandated to provide services to the residents of Samdrup Jongkhar and execute internal operations.

- Coordination among different divisions
- Coordination with external agencies
- Maintain records of activities and share information with different stakeholders
- Operation and maintenance of Thromde Infrastructure assets – water supply, sewerage, roads, footpaths, etc.
- Revenue assessment and collection
- Urban Planning and development
- Environmental services

3.   Assumptions

This step involved answering questions such as why change is needed; what the consequence are to remain with the status quo; who demanded the changes; and what are the required changes.

The most important question is why change is needed. As the Thromdes are growing Thromdes are facing pressure to do more with less. Service level expectation of the residents is ever increasing, and other sectors are rapidly embracing technology to become effective and efficiency. Thromdes are required to interact and collaborate with institutions and organization that are lean and efficient. Hence change is required to be in pace with collaborating

institutions. Further, internal efficiency saves cost. BPR is one aspect that allows Thromdes to explore cost reduction through elimination of redundant processes and adoption of technology.

In the same way that sewers, roads and bridges serve as the infrastructure to support the movement of goods, people and the delivery of essential services, Thromde's IT infrastructure supports the people, processes and technology required to deliver services.

When properly planned and implemented, technology can bring substantial benefits in terms of service improvement and efficiencies. Initiatives and building blocks are identified with wide-reaching implications that affect every Thromde division/section and align with priorities by:

- Implementing technology solutions that supports service excellence;
- Modernizing the network and telecommunications infrastructure and computing environment by implementing virtualized servers, desktops and other networking solutions;
- Consolidating data storage with proper business continuity coverage;
- Implementing multi-function devices shared in network to reduce cost and lower energy consumption;
- Establishing a secure mobile technology platform and infrastructure for those services that the in the field and require access to information assets; and
- Replacing/upgrading legacy applications and hardware to reduce the cost of supporting older, unsupported technology and minimize the risk of failure or loss of service.

To implement full technology solutions, realize savings and continue to deliver services, significant investment is required in four key areas:

- Specific technology required to enable service excellence initiatives;
- Foundational technology required to support service excellence initiatives and reduce risk of service interruption by modernizing infrastructure;
- Initiatives designed to optimize opportunities to achieve internal efficiencies of the IT environment; and
- Ongoing technology to support daily operations.

Technology is not the only component when developing cost effective and optimized business solutions and services. In order for technology to deliver to its true potential it must be coupled with the right processes and people with the right skills.

Technology tools merely facilitate and accelerate processes, applying tools to bad process can result in just doing bad things faster. It is the proper confluence of people, process and technology that truly drives innovation.

It is evident that substantial investment is required. However, remaining status-quo has its own down side. Current manual and heavy processes are inefficient to execute as well as residents have moved to different level in terms of expectation. People are on the move, so they expect engagement with the Thromde using latest technology and with speed. Status-quo is not at par with residents' expectation. Also, it will be expensive to operate when there is difference in

level of efficiency with the collaborating agencies. It will require larger human resource pool than using technologies.

4.   Current Challenges

Status-quo possess several challenges:

Office	Challenges
Revenue/Accounts Section	• Revenue section does not have a complete view of a taxpayer's liability • There is limited communication with other divisions on the demand generation • Search and retrieve mechanism are time consuming activity • Reporting and reconciliation are a time-consuming activity • Dishonoured cheque from citizens is difficult to track and recover • Cash collection systems are prone to human errors in counting • There is no system to provide receipts or functionality to track errors made for online transfers • There is no provision for security of collection office • There is no notification system for citizens to inform them on demands • Data is maintained in excel sheets which may be accidentally edited/deleted
Water billing Unit	• Shortage of billing team staff. There are currently limited team members who are handling data entry, bill generation and collection • Reports are not accurate owing to data quality. • There is no UPS backup for computers resulting in loss of effort during data entry All data needs to be entered and then submitted • As per policy, all non-functioning meters are required to be replaced after 3 months which is difficult to track. This activity is dependent on the meter readers. • Collection and data entry are prone to human errors. This leads to loss of revenue. • The billing unit is dependent on paper usage (meter reading sheets, bills and receipts) • Tracking dishonoured cheque is difficult and time-consuming activity. • Billing consumes a life-cycle of a month (maximum) owing to redundant activities and legacy systems • Results in delay in revenue realization due to lack of proper report generation • No provision for targeted communication to possible delinquent accounts • The UBS used for water billing requires Windows XP which is a phased-out product of Microsoft
Survey and Land Division	• There is no system to store and search physical copies of documents • There is no system catering to sharing information on tax amounts with Revenue section

	• Identification of due payments and defaulters is time consuming process
	• Tracking land status (freehold, leasehold, frozen) is error prone and difficult in manual cadastral maps
	• Information exists in silos with the team members
	• Tracking and scheduling of tasks is time consuming and subject to errors and omissions
	• Manual verification and validation of data is time consuming
	• Evaluation of applications requires experience considering the tolerance levels of different systems (GPS and DGPS)
	• Coordination with NLCS (sharing geo-spatial data and approval) requires efforts in terms of tracking and follow up
	• Physical copies for land are to be submitted and requires meetings (physical presence required) which requires time
	• All the documents are maintained in paper form which poses challenges in terms of preservation and discovery
Urban Planning Division	• It is difficult to track the work schedule and activities of the team manually
	• Unavailability of a common urban planning map database. Currently the division uses Auto Cad desktop version.
	• Different rates are applicable for precincts which may result in human errors
	• It is difficult to issue notifications and track land owners and issue reminders
	• Work related information is in siloes with team members
	• The division does not have access to National Cadastral data of National Land Commission
	• Urban Planning Division involves interaction with citizens and other Thromde divisions. Interactions result in reduced time for team to work on their tasks.
	• Issuance of site plans is difficult (as email) as the file size is heavy (approximately 4 mb file)
	• All the documents are maintained in paper form which poses challenges in terms of preservation and discovery
Development Regulation Division	• Unavailability of data on legacy constructions
	• There is loss of revenue due unavailability of complete database
	• Permanent and semi-permanent building life span regulations tracking, and forecasting is time consuming due to manual checks
	• There is no system to enable notification to citizens
	• Scheduling and tracking of team activities is difficult and time consuming
	• Survey of building area is difficult without the availability of DGPS equipment
	• Field visits require redundant efforts as the team is required to note field visit data manually and then enter the data in the reports (spread sheets)
	• There are ad-hoc requests for which planning is not possible and changes are required to the existing schedule
	• Lack of manpower of building inspectors for monitoring building/irregularities.

	• All the documents are maintained in paper form which poses challenges in terms of preservation and discovery
GIS section	• Information is in siloes due to ESRI ArcGIS desktop versions. It is difficult to coordinate with stakeholders to manage data. • Creating a single source of truth requires frequent merging of data • Satellite imagery procurement is expensive so 2011 images from Digital Globe is being used. • There is no existing dedicated GIS team.

5.   Global Leading Practices

The global leading practices was undertaken through secondary research based on materials available on the public domain or based on the project experiences of the team. Some of the areas wherein detailed research was presented as a part of the workshop includes:

- trends in similar organizations (city governments) in Government sectors
- ICT sourcing trends
- delivery of ICT projects in Government
- role of ICT in Government sector
- Gartner hype cycle for emerging technologies
- Government enterprise architecture and CIO trends survey

Some of the key takeaways from the global leading practices research as a part of the discussions in the workshop include:

Takeaway	Description
Strengthening of the collection centres	• Collection Office require robust systems to facilitate fast and responsive transactions • Automated notifications through SMS and email for demand and receipts • Multi-channel payment systems including online payment gateways • Secured infrastructure (multi-factor authentication)
Establish ICT standards and policies	• Increase in ICT adoption requires a robust foundation of policies and procedures as per international standards on enterprise architecture, information security, service delivery and business continuity
Implement a centralized ICT team	• Consolidation of the existing ICT team helps to leverage the people experience and manage/govern outsourced activities and systems
Effective reporting	• Provide tools for the planning and strategic divisions to forecast future trends and budgeting requirements and plug revenue leakages
Delivery of IT projects	• Identify market (Government user) requirements for ICT • Constitute a centralized T Steering Committee to review, assess and prioritize investments
Define role of ICT in Government sector	• Proactive engagement with stakeholders • Transform to a service and advisory based organization • Lead research and innovations in technology field

	• High quality and responsive service delivery
Infrastructure and Security	• Usage of Government National Data Centers, WAN, Office Productivity tools (HR, Payroll, Finance) • Requires implementation of security features to safeguard digital footprint of the systems like multi-factor authentication systems and UTMs / Firewalls • Shifting to cloud technologies as and when offered through the Government Data Centers
Gartner Hype cycle for emerging technologies	• Short & medium term (0-3 years) considerations may include biometric authentication, cloud computing (DC), handheld devices and GIS. • Key consideration for a long term (3-5 years) strategy may include Big Data, In-Memory Computing and Predictive analytics.

6. Guiding Principles

The Information Technology Office is guided by a set of principles that inform the outlook and approach to the deployment of IT resources. While the operational planning may be dynamic, the following guiding principles remain the same and are the basis for key decision:

- Technology investments should focus on large-scale initiatives capitalizing on existing investments wherever possible, thus yielding the largest return on investment and transforming the way the Thromde's business is done. Prioritize IT investments across the enterprise based on alignment with corporate strategies and plans.
- Continuously improve and optimize the network, application and hardware infrastructure, within the financial framework, to achieve a fast, flexible, cost effective and sustainable computing environment that meets the service delivery needs, and to reduce the risk of disruptions to Thromde services and impacts on citizens.
- Provide IT services and capabilities where the workers are, including at the office, in the field, or on the move.
- Provide access to information in a secure manner and protect personal information.
- Evolve a standards-based technology architecture that is integrated with Thromde operation, enabling cost-effective evolution of services and infrastructure and connectivity with Thromde residents and business partners.
- Use strategic sourcing, such as commercial-off-the-shelf applications, Application Service Providers, Software as a Service, Open Source, Managed Services and Contracted Services, to reduce labour and support cost.
- Leverage and capitalize on existing investments over introduction of new business applications
- Emphasize data integration and sharing as primary strategy for supporting business objectives and containing costs.
- Greater use of electronic information to conduct day-to-day business and reduce the Thromde's dependency on papers.

7. Key Drivers

Key drivers that were considered to conduct BPR and derive technology roadmap are depicted below.

Business / Financial	• Constantly changing business environment; • Budget Constraints and fiscal realities; and • Heavy reliance on technology solutions to achieve savings and efficiencies
Technology	• Fast pace of technology change; • Technology solutions increasingly inter-connected, interdependent and complex; • Cyclical cost burst for essential IT assets; and • Increased importance for security and privacy
People	• Recruitment, retention and re-grooming of skills to support and maintain technology; • Demographics of work force; and • Specialized skill requirement demanding appropriate compensation

8.   BPR Goals and Objectives

Business processes are the building blocks of organizations, government agencies and institutions, the more efficient the process the stronger the competitive advantage. In reengineering and automation of business processes the municipality would need to create and capture correct information, define business rules and routing (which is role based) and implement process control.

The advantage of technology in Business Process Redesign is amongst others:

- To eliminate process bottlenecks;
- Enables Thromde to respond to changing environment;
- To increase process control, accountability and ensure flexibility;
- To leverage and extend existing back office systems;

Business Process Re-engineering Goals of Gelephu and Samdrup Jongkhar Thromdes:

- Develop systems and processes that will ensure effective & efficient service delivery
- Transform administrative systems to achieve the desired impact
- Build people capacity to deliver in line with service delivery standards
- Develop mechanisms that ensure ongoing integration of systems and processes in service delivery
- Develop a business framework that will support service delivery
- Transform the administrative systems culture to become customer orientated and service delivery

9. Services

9.1. Services Gelephu Thromde

Division / Section	Service	Service Process	Service Turnaround Time	Collaborating Stakeholders
Census Section	Process Census Registration (New) to DCRC	1. Individuals submit a dully filled Application along with these documents (Parent's CID copy, Birth Document, Health Card, Parent court marriage certificate if not statement from concerned Tshogpa)	1 day	Applicant
		2. Census officer/official receives the application and verifies documents through the online DCRC system for verification from the DCRC	1 day	Census Section of Thromde
		3. Parent Department (DCRC) will further verify and process the registration process and complete their part	Varies	DCRC, MoHCA
		4. Census section completes the final procedure for birth registration	1 day	Census section of Thromde
	Process Citizenship Identity Card (new) to DCRC	1. Individuals submit a dully filled Application along with these documents (2.5cm x 3.0cm passport sized photograph, in case the applicant is applying for CID for the first time along with Parents CID copy and Birth Document.	1 day	Applicants
		2. Census section verifies and captures applicant's image & Finger print for recording into the system and submits the registration details to DCRC online	1 day	Census Section of Thromde
		3. Parent Department (DCRC) would further verify and process the registration process and complete their part.	Varies	DCRC, MoHCA
		4. Census section completes the final procedure for processing new CID	1 day	Census Section of Thromde
		1. Individuals submit a dully filled Application along with these documents (acceptance letter from Thromde, Land/Property	1 day	Applicant

	Processing Census Transfer to Gelephu Thromde	ownership certificate, relieving form from concerned Dzongkhag)		
		2. Census section verifies the details of the applicants and then submits the application further to DCRC	1 day	Census Section of Thromde
		3. Parent Department (DCRC) would further verify and process the application process and complete the final verification.	Varies	DCRC, MoHCA
		4. Census section completes the final procedure for census transfer.	1 day	Census Section of Thromde
	Processing Census Transfer to other Dzongkhags from Gelephu Thromde	1. Individuals submit a dully filled Application along with these documents (acceptance letter from Thromde, Lagthram copy)	1 day	Applicant
		2. Census section verifies the details of the applicants and then submits the application further to DCRC.	1 day	Census Section of Thromde
		3. Parent Department (DCRC) would further verify and process the application process and completes the final verification.	varies	DCRC, MoHCA
		4. Census section completes the final procedure and issues a clearance letter for the Census Transfer.	1 day	Census Section of Thromde
	Processing Changes in Census Details – For Civil Servants / Corporate Employees / Armed Forces	1. Individuals submit a dully filled Application along with these documents (Recommendation letter from concerned organization/RCSC/Court verdict, copy of first page of the services book record supplemented by academic transcription as per their qualification)	1 Day	Applicant
		2. Census section forwards the application further to the DCRC	1 Day	Census Section of Thromde
		3. DCRC verification and processes for necessary changes.	Varies	DCRC, MoHCA
	Processing Changes in Census Details – For Students	1. Individuals submit a dully filled Application along with these documents (Recommendation letter from head of school/institution, academic transcription, health Card, birth certificate, *Ketsee*.	1 Day	Applicant
		2. Census section verifies and signs to forward the application for approval by DCRC through online.	1 Day	Census Section of Thromde
		3. DCRC verification and processes for necessary changes.	Varies	DCRC, MoHCA

	Processing Changes in Census Details – For Others	1. Individuals submit a dully filled Application along with these documents (Recommendation letter from concerned Mitsi Tshogpa/ Thromde Tshogpa, health card, birth certificate, *Ketsee*)	1 Day	Applicant
		2. Census section forwards the application further to the DCRC	1 day	Census Section of Thromde
		3. DCRC verification and processes for necessary changes.	Varies	DCRC, MoHCA
	Processing Death Registration	1. Individuals submit a dully filled Application along with these documents (Death certificate from Hospital/BHU, Report from concerned Thromde Thuemi/Tshogpa, applicants CID Copy)	1 Day	Applicant
		2. Census section verifies and process for updating through online system.	1 Day	Census Section of Thromde
Accounts and Revenue Section	Settlement of Bills for procurement of goods and works	1. Concerned division/section/official submits the bill to the accounts section after verification.	On the spot	Division head / concerned official / procurement officer
		2. Accounts section verifies and passes the bills.	9 days	Accounts Section of Thromde
	Processing of TA/DA for Employees	1. Individual submits the approved TA/DA bill to accounts section.	On the spot	Individuals / Officials
		2. Accounts section verifies the submitted TA/DA bill accordingly and prepares for payment.	9 days	Accounts Section
	Processing of Monthly Payments for Employees	1. Accounts section prepares and completes the monthly salary and remittances for employees.	On or before 25th of Every Month	Accounts Section
		2. Accounts section sends the prepared salary remittances the concerned Financial Institutions for payment to respective employee's bank account.	On or before 30th of every month	Accounts Section

	Revenue Collection	1. Taxpayers visit the revenue office with bills (for all sources except property tax). For property tax taxpayers provide property identifier or taxpayer identification number 2. Revenue staff searches the bill or the property 3. Revenue staff accesses the demand 4. Revenue staff records collection and issues receipt	10 minutes	Revenue Office
	Deposit of Revenue Money	Concerned revenue official deposits the revenue money into the Thromde Revenue Account on daily basis	Daily Basis	Revenue Staff
	Report on the Progress of Revenue Money	Revenue section report on the revenue aspects on monthly basis. Revenue report is updated every day	1 Day. Preparation time varies	Revenue Staff
ICT / GIS Section	Updating of Website information	1. Respective divisions/sections submit the information to be updated for their service delivery.	On the Spot. Preparation time varies.	Divisions / Sections
		2. Web master prepares the format for updating the given information as per the web portal format and updates the information	1 Day	ICT Section
	Updating of NIT / Tender Documents onto Website	1. Procurement Section/Concerned Section/division/official submit the scanned copy of the NIT/Tender to ICT section.	On the spot. Preparation time varies	Divisions / Sections
		2. ICT section official prepares the documents to be updated as per the format for the web portal and then updates according to the mentioned dates.	2 Days	ICT Section
	Troubleshooting with the Inter Networks and LAN	1. Checks the status of the Internet Connectivity and find necessary faults in the networking devices like switches, routers, access points, LAN ports, and Modems. 2. User report internet issues using online reporting form	On the Spot	Users
		3. Access the internet issues log 4. Identifying the problems and troubleshooting the issues	3 days	ICT Section
	Trouble shooting of the ICT Equipment	1. Respective official/section/divisions submits requisition for the necessary help/ rectification of the problems associated with their computers (desktop/laptops) equipment, devices.	On the Spot	Users

		2. ICT section official visits the concerned offices/individual chamber for seeing the necessary problems/issues pertaining to the computers (laptops & desktops), and devices, along with software troubleshooting	3 Days	ICT Section
	Preparation of technical Specifications	1. Respective official/section/divisions submits requirement of specific devices/equipment as per their work requirement.	On the Spot. Planning time varies	Divisions / Sections
		2. ICT section official prepares the necessary technical specification for the devices based on the requirement of the concerned individual/sections/divisions	Depends on the requirement	ICT Section
	Verification of Technical Specification	1. Respective official/section/divisions submits requirement of specific devices/equipment as per their work requirement.	On the spot	Procurement Section
		2. ICT section official prepares the necessary technical specification for the devices based on the requirement of the concerned individual/sections/divisions	4 Days	ICT Section
HR Section	Processing and Finalization of Promotion (January and July Promotion Period)	1. Issue of promotion notification letter	1 Day	HRO
		2. Upon receiving promotion proposals from the Division/Sections/Schools, HR Section compiles and verifies promotion proposals in accordance with promotion rules & regulations	30 days	HRO and Admin Assistant
		3. Reviewing and approving of promotion proposal in the HRC, and thereafter, drafting of HRC minutes and circulation to the HRC Members	3 days	HRO
		4. Issuance of promotion orders and updating the promotion record in the CSIS and personal file	2 days	HRO and Admin Assistant
	Short Term Training Administration	1. HR Section receives the training proposals and further consult with concerned division head and individual staff if need arises	1 Day	HRO
		2. HR Section discusses with Executive Secretary and fix HRC Meeting with prior approval from the ES	1 Day	HRO

		3. Conducting of HRC Meeting, drafting & issuing of Minutes of the meeting and circulating to the HRC Members	4 Days	HRO
		4. Issuance of approval or rejection letter	1 Day	HRO
	Issuance of reliving/training order	1. Upon receiving training offer letters from the Central Agencies, HRS issues relieving order of a civil servant with prior consultations with the ES and concerned head of division/section	1 Day	HRO and Admin Assistant
	Update HR Actions in CSIS and regular PE ratings	1. Notifying concerned division/section head and staffs via email or letters for submission of Annual PE Forms, (general civil servant: every 15th July, for Educational/Schools: every 15th January)	1 Day	HRO
		2. Receiving of PE forms, after completing the filing & signing part of HRO and submitting to the ES for endorsement of the PE ratings	5 Days	Admin Assistant
		3. Update PE Ratings on the CSIS	15 Days	HRO and Admin Assistant
	Voluntary Resignation/Early Retirement Scheme	1. Receiving of resignation letters duly marked by the Head of the Agency for VRS/ERS except for superannuation HRS issues notice letters one month ahead	1 Day	HRO
		2. HRS verifies service obligation in line with BCSR 2018 and consults RCSC, concerned Parent Ministry for issuance or processing on non-service obligation part	1 Week	HRO and Admin Assistant
		3. Issuing Acceptance order upon receiving service obligation	1 Day	Admin Assistant
		4. Upon receiving of handing taking over charges, relieving order is issued	1 Day	Admin Assistant
		5. Processing of retirement benefits, forwarding forms to NPPF & GIS, and updating of the separation status in the CSIS and Personal File.	8 Days	HRO and Admin Assistant
	Processing LTC/ Increment/Encashment order pay fixation	1. Compiling of LTC/Increment/Encashment order by the end of June for July cycle and end of December of January cycle.	1 week in each case	Sr. Admin Assistant

	Leave Administration	1. Earned Leave/Casual Leave/Bereavement Leave: Receiving and verification of leave applications and issuing office order for Earned leave Order	1 Day	Admin Assistant
		2. Medical/Escort Leave: Upon receiving leave applications/medical certificates, HRC meeting is conducted to review and approve the leave. Then, HRS issues office order and update in the personal file.	1 Day	HRO and Admin Assistant
		3. Study Leave (long term training): Upon receiving study leave proposal along with all supporting documents, HRC meeting is conducted to review and recommend study leave. 4. Upon receiving endorsement from the HRC, study leave application is forwarded to the concerned parent Agency. 5. Updating of leave records in the personal file and CSIS	2 Days 1 Day 1 Day	HRO Admin Assistant Admin Assistant
	Dedicated Service Awards	1. Upon receiving letters from the RCSC, HRS submits the forms to concerned Heads of Divisions/Sections/Schools	On the Spot	HRO / Admin Assistant
		2. Division/Section Heads and Schools consult their respective subordinate staff and submit the list to HRS	10 Days	Divisions / Sections / Schools
		3. HRS further submits the finalized list to divisions/sections heads and schools for final verification	3 Days	HRO / Admin Assistant
		4. HRS seeks endorsement from HRC and submits the list to RCSC	1 Day	HRO / Admin Assistant
	Issuance of HR Action Office orders	1. Upon receiving letters (transfer order, etc.) and instruction/directives from the Executive Secretary, HRS prepares letters and issues letters/orders upon approval from the Executive Secretary. Letters and Orders are issued in relation to Transfer, appointment, contract extension, recruitment, employee grievances, other general administration & management related letters and correspondences.	On the spot	HRO
	Management of Personal Files	1. Based on the HR actions and other actions on the staff, personal files are updated with required copies of letters and	Continuous Process	HRO and Admin Assistant

		orders, service books, records and updating of decentralized CV information in the CSIS and in personal file and signing in the personal file.		
	New Employee Induction	1. Joining order is issued upon receiving joining letters from the new recruits, transferees, intern candidates, and they are inducted in the agency	1 Day	HRO
		2. Probationers and interns are attached with various division/section to gain work experience, knowledge and information and familiarize themselves with the division/section's policy and objectives, for a duration of one month	1 Day	HRO
Administration Section	Generation Administration & Support Services	1. Uploading and maintaining of Attendance Register and reporting the status to the Executive Secretary	On Daily Basis	Admin Officer
		2. Issuance of office order for travel other than training and any other orders/letters as per the directive of Executive Secretary	On the Spot	Admin Officer
		3. Coordinate and initiate staff welfare services viz. offering of condolences during death of staff or their direct dependents	As and when situation / need arises	Admin Officer
		4. Safeguarding the office premises and ensuring that office decorum has been maintained at all times	On annual basis / quarterly basis	Admin Officer
		5. Coordinate General Staff meeting	On Annual basis	Admin Officer
	Culture and Chadri Support Services	1. Coordinate *Chadri* Activities: *Marchang* offering during various occasions, convening of Tshogde Meeting, protocol support service during VIP Visits and official event such as meetings, etc.	Need Basis	Sr. Admin Assistant
		2. Organize Office gathering (staff farewell event, staff picnic, etc.), award ceremony (medal award), office *Rimdro* if needed be, any other services as per need of the Agency	Need Basis	Sr. Admin Assistant

	Motor Vehicle Fleet Management	1. Issuance of vehicle movement order upon receiving vehicle requisition forms	On the Spot	MTO
		2. Timely maintenance and updating of vehicle log/fuel book/History Book/Registration and Fitness / Renewal	Daily Basis	MTO
		3. Keeping proper care and carrying out of pool vehicles	Need Basis	MTO
	Customer Care Services (for General case)	1. Attending to customer problems, guiding and directing them to appropriate/correct officials, section, division, etc.	On the Spot	Admin Officer
Legal Section	Tenancy Dispute Resolution	1. Filing of Petition/compliant	On the Spot	Public
		2. Legal Officer study the case based on the tenancy agreement and then review the subject of dispute in detail to be forwarded to the dispute committee	2 Days	Legal Officer
		3. The committee deliberates on the issue in absence of the petitioner. Having understood the case, the petitioners are summoned to be briefed on the aspects of Tenancy Act 2004. Then the parties are asked to put forward their arguments or grievances on person in front of the dispute settlement committee	1 Day	Legal Officer
		4. The committee reviews the arguments, grievances and their supporting documents and accordingly pass the decisions	1 Day	Thromde Dispute settlement committee
		5. Drafting of the decision/judgment	2 Days	Legal Officer
		6. Copy of the decision/judgment circulated to both parties and Dispute Settlement Committee members	1 Day	Legal Officer
		7. If any one of the parties are not satisfied with the decision of the DSC, the aggrieved party may report to Thromde Office for further appeal to the Royal Court of Justice.	2 Days	Thromde Dispute settlement Committee
	Land Dispute Settlement	1. Petitioners file the case to the Land Records section. The land records section compiles the documents. TLRO notifies the	2 Days	TLRO

		parties to report to the Thromde for dispute settlement on specified date		
		2. TLRO submits the case to the dispute settlement committee for review and resolution. The committee deliberates on the issue in absence of the petitioners. Having understood the case, the petitioners are summoned to the briefed on the aspects of relevant laws. Then the parties are asked to put forward their arguments and grievances in person in front of the dispute settlement committee. In the meeting the legal officer studies the case and gives legal opinion as per the existing laws in force with regard to the case and its legitimacy. The committee reviews the arguments, grievances and their supporting documents and accordingly passes the decisions.	1 Day	TLRO, Legal Officer & Thromde Dispute Settlement Committee
		3. Drafting of the decision and forwarded the case to the Royal Court of Justice if in case the case parties to the inheritance right, Sale / purchase, etc. and Committee could not settle the dispute amicably. If the case is with regard to the discrepancy in the *Thram*, map and boundary dispute, the case is forwarded to the Center Dispute Settlement Committee, NLCS, for review	1 Day	TLRO and Legal Officer
		4. Copy of the decision/judgment is circulated to both parties and Dispute Settlement Committee Members	2 Days	Legal Officer
	Drafting Thromde Tshogde Meeting Minutes	1. Drafting, sharing and record keeping of Thromde Tshogde Meeting minutes and submission to Executive Secretary	7 Days	Legal Officer
Procurement Section	Procurement of Goods	1. Issue notification to Division and Section Heads for Yearly Quotation	1 Day	Procurement Officer
		2. Compilation and submission of annual indentation	5 Days	Division / Section heads
		3. Preparation Tender documents	5 Days	Procurement Officer

		4. Floating of Notice Inviting Tender (NIT)	1 Day	Procurement Officer
		5. Sale of Tender Documents	30 Days	Revenue Counter / ICT Section
		6. Submission of Quotations	1 Day	Bidders
		7. Opening of Tenders	1 Day	Procurement Officer
		8. Evaluation of Tenders	5 Days	Procurement Officer
		9. Intend of Award (Cooling Period)	10 Days	Thromde Tender Committee
		10. Award and Issue of Work Order	1 Day	Procurement Officer
		11. Ensuring the delivery of goods by the supplier	30 days	Procurement officer, Store Officer
		12. Receipt of Goods and Distribution	1 day	Procurement Officer & Store Officer
Education Section	New Admission	1. Applicant submit duly filled form along with application and supporting document to TEO before fixed deadline	On the Spot	Applicant and TEO
		2. Forwarding of the document for verification of supporting document (DoB) of the student by Census Section and further endorsement by TEO	2 Days	TEO & Census Officer
		3. Forwarding of Document to Principal	1 Day	Admin Assistant
		4. Scheduling of Admission Test	2 Days	Principal
		5. Compilation of Result and Declaration of Results based on available of slot	2 Days	Principal
	Transfer Case Admission	1. Applicant submits duly filled form along with application and supporting document to TEO	On the Spot	Applicant, TEO, Admin Assistant

		2. Verification of supporting document and endorsement based on the availability of slots	2 Days	TEO
		3. Forwarding of Document to Principal	1 Day	Admin Assistant
Policy & Planning Section	Preparation of Quarterly Progress Report (QPR)	1. Issue notification to division/section heads to prepare QPR	1 Day	TPO
		2. Division/Section Heads compile and submit QPR to Policy and Planning Section	8 days	Division / Section Heads
		3. Policy and Planning Section compiles QPR	1 Day	TPO
	Submission of Annual Report to MoWHS	1. Preparation of annual report as per the MoWHS format	7 Days	TPO
		2. Report submission to MoWHS	1 Day	TPO
	Submission of annual report on capital expenditure to GNHC	1. Get capital expenditure related data from Accounts section	1 week	TPO
		2. Preparation of annual report on capital expenditure using information provided by account section	1 Day	TPO
		3. Submit the annual capital expenditure report to GNHC	1 Day	TPO
	Preparation of Annual Performance Agreement (APA)	1. Issue notification to division heads / section heads to prepare annual plan activities according to the budget proposal	1 day	TPO
		2. Division heads/section heads prepare the annual plan activities according to the format and submit to policy and planning division	4 Days	Division / Section Heads
		3. Prepare annual performance agreement using activities plan provided by Division / Section heads and submit to MoWHS and GNHC	15 Days	TPO
	Preparation of Project Proposal	1. Receive notification from funding agencies	1 Day	TPO
		2. Discuss with Executive Secretary and division heads for project proposal	1 Day	ES, Division / Section Heads, TPO
		3. Preparation of project proposal according to the format issued	15 Days	TPO
		4. Proposal submission to the funding agency	1 Day	TPO
	Project Monitoring and Evaluation	1. Receive notification from funding agency	1 Day	TPO
		2. Issue notification to the divisions/sections/individuals concerned to prepare the progress report	1 Day	TPO

		3. Divisions/Sections/individuals prepare and submit the progress report to Policy & Planning Section	5 Days	Divisions / Sections / Individuals
		4. Review and further submit the progress report to the funding agency	2 Days	TPO
	Review and monitoring Thromde Five Year Plan	1. Receive notification from LDD, GNHC	1 Day	TPO
		2. Discuss with Executive Secretary, divisions/sections on the progress status and reprioritization of activities if necessary	2 days	ES, Division / Sections, TPO
		3. Submit the outcome of discussion to LDD, GNHC	1 Day	TPO
	Preparation of Thromde Five Year Plan	1. Receive notification from LDD, GNHC to identify the Thromde Key Result Areas (TKRAs) depending on the National Key Result Areas (NKRAs)	90 Days	TPO
		2. Discuss with Executive Secretary and Division Heads to prepare TKRAs		ES, Division Heads, TPO
		3. Present to Thromde Tshogde for endorsement		Thromde Tshogde
		4. Submit to GNHC with a copy to MoWHS		TPO
Infrastructure Development Division	New Water Connection	1. Applicant submits duly filled for along with Occupancy certificate to Infrastructure Development Division, Water Supply Section	On the spot	Applicant, Division head
		2. Field staff verifies the feasibility and reports back to section head for endorsement	2 Days	Section head, water supply
		3. The Division Head and the head of the agency accord the approval	1 day	Division Head & Head of Agency
		4. Upon approval, applicant pays the connection fees to revenue section as per the invoice provided by the water section	On the spot	Applicant, revenue section
		5. Technician provide the connection	1 Day	Water supply section
	Temporary Water connection	1. Applicant submits dully filled for along with necessary document to Infrastructure Development Division, Water supply section	On the Spot	Applicant, Division head

		2. Field staff verifies the feasibility and reports back to section head for endorsement	2 Days	Section head, water supply
		3. The Division Head and the head of the agency accord the approval	1 day	Division Head & Head of Agency
		4. Upon approval, applicant pays the connection fees to revenue section as per the invoice provided by the water section	On the spot	Applicant, revenue section
		5. Technician provide the connection	1 Day	Water supply section
	Water Reconnection	1. Applicant submits dully filled for along with necessary document to Infrastructure Development Division, Water supply section	On the Spot	Applicant, Division head
		2. Field staff verifies the feasibility and reports back to section head for endorsement	2 Days	Section head, water supply
		3. The Division Head and the head of the agency accord the approval	1 day	Division Head & Head of Agency
		4. Upon approval, applicant pays the connection fees to revenue section as per the invoice provided by the water section	On the spot	Applicant, revenue section
		5. Technician provide the connection	1 Day	Water supply section
	Water Supply Compliant	1. Receive Complaint and maintain complaint register	1 Day	Water supply section
		2. Attend the complaints	1 Day	Demkhong wise plumbers
	Streetlight complaints	1. Receive complaints and maintain complaint register	1 Day	Section Head
		2. Attend to the complaint	1 Day	Technician, Electrician
	Infrastructure complaint	1. Receive complaints and maintain complaint register	1 Day	Section Head
		2. Attend to the complaint	1 Day	Concerned Engineer

New Sewer Connection	1. Applicant submits dully filled for along with necessary document to Infrastructure Development Division, Water supply section	On the spot	Division Head, Applicant
	2. Field staff verifies the feasibility and reports back to section head for endorsement	2 Days	Section Head, Sewerage
	3. The Division Head and the head of the agency accord the approval	1 Day	Division Head, Agency head
	4. Upon approval, applicant pays the connection fees to revenue section as per the invoice provided by the water section	On the spot	Applicant, Revenue Section
Clearing of Bill	1. Applicant submits joint measurement bill to the head of division	On the spot	Applicant, Head IDD
	2. Concerned site engineer shall verify the bill, check and process and make entry in measurement book for payments and put up to head of division	20 Days	Site Engineer
	3. Verify the bill	1 Day	Site Engineer
Road Cutting for service Utility	1. Applicant submits joint measurement bill to the head of division	On the spot	Applicant, Division Head
	2. Field staff verifies the feasibility and reports back to section head and prepare estimate and get approval	2 Days	Section Head, Sewerage
	3. The Division Head and the head of the agency accord the approval	1 Day	Division Head and Agency Head
	4. Upon approval, applicant pays the charges to Revenue section and carry out accordingly	On spot	Applicant, Revenue Section
Materials Requisition	1. Fill the requisition form and submit to Head of Division & Head of Agency for approval	On the spot	Head of Agency / Head of Division
	2. Pass to store to follow up with Procurement Section	1 Day	Store
	3. Get the materials and issue to individuals accordingly	1 Day	Store
Procurement of Works, Road, Water Supply, Sewerage,	1. Preliminary Survey	1 Day	Site Engineer
	2. Design, drawing, estimation	30 days	Site Engineer
	3. Technical Sanction	1 Day	Chief Engineer

	Building Construction, Streetlight	4. Notice Inviting Tender	1 Day	Site Engineer
		5. Preparation of tender documents	5 Days	Site Engineer
		6. Sale of Tender documents	30 Days	Site Engineer
		7. Opening of tender	1 Day	Opening Committee members
		8. Evaluation of tender	15 Days	Evaluation Committee
		9. Intent of award (Cooling Period), appeal period	10 Days	Evaluation Committee
		10. Award and Agreement signing, performance bank guarantee submission	15 days	Evaluation Committee
		11. Issue of work order	1 Day	Evaluation Committee
	Maintenance of Infrastructure, road, water, sewerage network, street light building	1. Preliminary Survey	1 Day	Site Engineer
		2. Design, drawing, estimation	30 days	Site Engineer
		3. Technical Sanction	1 Day	Chief Engineer
		4. Notice Inviting Tender	1 Day	Site Engineer
		5. Preparation of tender documents	5 Days	Site Engineer
		6. Sale of Tender documents	30 Days	Site Engineer
		7. Opening of tender	1 Day	Opening Committee members
		8. Evaluation of tender	15 Days	Evaluation Committee
		9. Intent of award (Cooling Period), appeal period	10 Days	Evaluation Committee
		10. Award and Agreement signing, performance bank guarantee submission	15 days	Evaluation Committee
		11. Issue of work order	1 Day	Evaluation Committee

Development Regulation Division	Construction for Planned Areas	1. Applicant submits dully filled building application form along with two sets of building drawing as per the checklist	On the spot	Assistant Engineer, DRD
		2. Building Drawing Scrutiny – Architectural	10 Days	Architect, DRD
		3. Building Drawing Scrutiny – Structural	10 Days	Civil Engineer, DRD
		4. Building Drawing Scrutiny – Electrical	10 Days	Electrical Engineer, IDD
		5. Building Drawing Scrutiny – Water Supply and sewerage	10 Days	Architect, DRD
		6. Preparation of note sheet, signing of construction agreement, issue bills and receipts for scrutiny fee and final issuance of approval	5 Days	ES, Head DRD, Engineer DRD
	Valuation of Building	1. The proponent submits building valuation or application for preparation for building valuation	5 Days	Applicant
		2. Structural engineer visits the site, scrutinizes/prepare the valuation as per the urban norms		Structural Engineer
		3. Engineer along with the proponent endorse the valuation		Applicant, Structural Engineer
	Major Renovation approvals	1. Applicant submits the application along with proposed drawings	7 Days	Applicant
		2. Site Verification and inspection		Architect, Structural Engineer, Building Inspector
		3. Drawing scrutiny and approval		
	Construction Monitoring	1. Verify building layout plan before starting the construction works	Routine Inspection (1 Day)	Building Inspector
		2. Check for reinforcement and casting on footings and columns		
		3. Check and verify for reinforcement and casting on plinth beams as per approved drawings		

		4. Check and verify slab casting for each floor including staircase		
	Issue of Occupancy Certificate	1. Building owners submit dully filled application form along with completion certificate form	7 Days	Applicant, DRD officials
		2. DRD and the owner jointly verify the completed building for issuance of occupancy certificate		
	Location Clearance for Trade License	1. Applicant submits Trade License form, DRD verifies Land use and issues approval if complies with the Rules and Regulations	1 Day	Building Inspector
	Issuance of Entertainment License	1. Applicant submits the dully filled application for establishment of Entertainment place to The Chairman, Entertainment License Committee (ELC)	7 Days	Member Secretary (ELC), Head DRD
		2. ELC verifies the location and informs the client on the feasibility of the proposed location		
		3. If the location found feasible, the applicant is informed to carry out re-modification of the existing place as per the Rules governing Places and Programmes of Entertainment, BICMA.	1 Day	Member Secretary (ELC), Head DRD
		4. Upon completion of the modification report will be submitted by the applicant. ELC, GT verifies the proposed entertainment place and if found feasible the application is forwarded to BICMA for issuance of License.	2 Days	ELC, GT
	Erection of Banner	1. The proponent submits an application for installation/erection of banner/sign board	2 Days	Building Inspector, Applicant
		2. Building inspector visits the site and submits report to Head, DRD		
		3. DRD head verifies the site visit report and issues approval if it complies with Rules and Regulation		Head DRD
	Procurement of Consultancy Services	1. Planning for procurement of services as per the approved budget		
		2. Preparation of bidding document for the project	2 Days	DRD
		3. Discussion on TOR for setting up the selection criteria	3 Days	

		4. Floating of EOI in the media	30 Days	
		5. Consultants submit the proposal as time lined in the TOR	1 Day	Bidders
		6. Shortlisting of Consultancy Firm for technical evaluation	1 Day	DRD
		7. Financial Opening for the selected consultants	1 Day	
		8. Selection of the winning bidder	1 Day	
		9. Intent of Award (Cooling period)	10 Days	
		10. Award of procurement for consultancy services	1 Day	
Urban Planning Division	Plot Demarcation	1. Upon receipt of the application, Planning and Land Records Section verifies the plot and pass on to survey section	1 Day	Urban Planner / TLRO
		2. Surveyor verifies the plot on the map and checks the nearest survey station and take out the coordinates of the plot to be surveyed	1 Day	Surveyor
		3. Upon verification of money receipt, (demarcation fee), surveyor visit the site and demarcate the plot	1 Day	Surveyor
	Official Site Plan	1. Upon receipt of the application, Urban Planning Section prepare official site plan	1 Day	Urban Planner
		2. Land Record and Survey section verifies the land details and coordinates respectively	1 Day	TLRO / Surveyor
		3. Head of the agency approves, and the site plan is issued upon production of revenue receipt	1 Day	Executive Secretary
	Land Transaction – Inheritance, Sale, Purchase, Gift, Donation, Exchange	1. The parties involved in the transaction submit dully filled land conveyance form	1 Day	TLRO
		2. Verification of the land conveyance form by the Land Records section	1 Day	TLRO
		3. Public notification	30 Days	TLRO / ICTO
		4. Parcel fragmentation/demarcation/preparation of survey report and site plan / uploading in e-Citizen Portal system	15 days	Planner / Surveyor
		5. Map verification, mapping and approving transaction and issue Lagthram	14 Days	NLCS
	Thram and Plot Correction	1. Citizens submit application to the Thromde	1 Day	Applicant, Land Records, UPD

		2. Verification of Documents	1	TLRO
		3. Preparation of verification report and uploading in e-Citizen Portal system	7 Days	TLRO
		4. Map/Thram verification and approving transaction and issue Lagthram	14	NLCS
	Preparation of Local Area Plans	1. Prefeasibility study of the LAP is based on existing scenarios and baseline data, proposal submission to Thromde Tshogde for endorsement	10 Days	Urban Planner
		2. Surveying and updating of structures and other physical features of the declared LAP on the map	30 Days	Surveyor
		3. Finalization of the base map of the LAP	5 Days	Urban Planner
		4. In-depth studies and analysis of the plots, built-up areas, population projections, within the LAP	10 Days	Urban Planner
		5. Drawing of draft road layout plan, TOR, working out indicative land pooling percentage.	30 Days	Urban Planner
		6. Issue of public notification, 10 days in advance for the consultation meeting	1 Day	Head, UPD
		7. Conduct 1st public Consultative meeting	1 Day	Urban Planning Division
		8. Carry out detailed plotting activity	120 Days	Urban Planner
		9. Issue of public notification 10 days in advance for the consultation meeting on draft final plan	1 Day	Head UPD
		10. Presentation of final draft plan to the public for review and endorsement	1 Day	Urban Planning Division
		11. Incorporation of changes and finalization of the draft plan	10 Days	Urban Planner
		12. Endorsement by Thromde Tshogde	1 Day	Urban Planning Division, Thromde Tshogde
		13. Submission of final plan to NLCS for Thram validation	1 Day	Urban Planner, TLRO

		14. Demarcation of plot, handing taking over of plots	70 Days	TLRO, Surveyor, Urban Planner
	Mortgage	1. Applicant submit the documents to Head of Agency and passed to Land Records section for Noting of Mortgage	On the Spot	TLRO
	Land Lease	1. Submission of application to the Thromde	1 Day	Land Record Section, UPD
		2. Preparation of background paper and discussion in Thromde Land Lease committee meeting	30 Days	TLRO
		3. Submission of report and proposal to NLCS	7 days	TLRO
		4. Review of proposal, conveying approval/rejection by NLCS	15 Days	NLCS
		5. Execution of lease agreement and demarcation	7 Days	Land record section, UPD
	State / Private Land Acquisition	1. Submission of application to the Thromde by the acquiring agency / institution	1 Day	Applicant, Land Records Section, UPD
		2. Preparation of background paper and discussion in Thromde Land Acquisition and Allotment Committee/Prepare preliminary report and submit to NLCS	30 Days	TLRO
		3. Conveying of preliminary approval by NLC	14 Days	NLCS
		4. Preparation and submission of detailed report	30 Days	TLRO
		5. Review of report, conveying approval/rejection by NLCS	30 Days	NLCS
		6. Transaction/land substitution/cash compensation to the affected land owners	30 Days	TLRO, Thromde Accounts
Environment Division	Issue of Environmental Clearance	1. Applicant submits the application along with Site Plan to head of Environment Division and passed to Environment Officer	On the spot	Applicant, Head of Division / Environment Officer
		2. Verification of records, site visits, and accord approval upon receipt of Revenue Receipt	1 Day	Environment Officer, Revenue

				Section, Applicant
Solid Waste Management	1. Monitoring the cleanliness and proper collection of solid waste by the Refuse Collector vehicle and team	Daily	EO
	2. Compaction and covering of Land Fill site	As Needed	EO and Team
	3. Providing and fixing of waste bins	As needed	EO and Team
Emptying Common Collection Bins	1. Common bins must be emptied on daily basis by the collection refuse collector vehicle team	Daily	Environment Division
Operation & Cleaning Services	1. Sanitary Inspector has to monitor the cleanliness within the specified area as per contract documents		Environment Division
	2. Ensure that the roads are swept and clean	Daily	Sanitary inspector
	3. Ensure that grass is trimmed and kept short	Daily	Sanitary inspector
	4. Verification of monthly bills for cleaning service provider	Monthly	Sanitary Inspector, EO, Division Head, Agency Head
Advocacy on waste and sanitation	1. Waste Segregation and other awareness	4 times a year	EO
Maintenance of Sewerage Network (Minor)	1. Execution of work – hiring, execution, verification, payment	3 Days	Division Head, EO, inspectors
Maintenance of Sewerage Network (Major)	1. Initiate the activates		
	2. Engineering Design for the major maintenance of sewerage network	45 Days	Site Engineer
	3. Preparation of Drawing required for the maintenance	15 Days	Site Engineer
	4. Estimation	10 Days	Site Engineer
	5. Technical Sanction	1 Day	Chief Engineer
	6. Notice Inviting Tender	1 Day	Site Engineer / ICT

	7. Preparation of tender documents	5 Days	Site Engineer
	8. Sale of documents	30 Days	Site Engineer
	9. Opening of tender documents	1 Day	Opening Committee
	10. Evaluation of Tender	30 Days	Evaluation Committee
	11. Cooling Period	10 Days	Evaluation Committee
	12. Notice for award	10 Days	Evaluation Committee
	13. Agreement signing, performance bank guarantee submission	15 Days	Evaluation Committee
	14. Issue of Work order	1 Day	Evaluation Committee
Attending Complaints for sewerage block	1. Receive Complaints	On the Spot	EO
	2. Attend Compliant	1 Day	Sanitary Inspectors

9.2. Gelephu Thromde Service Delivery Data

Division	Section	Team Size	Services	Transactions (per day / per week / per month)	Actual Turn Around Time
Development Regulation Division		Structure Engineer - 1, Architect -1, Chief Development Control Officer-1, Building Inspectors - 3	Construction Approval	3/month	15 days
			Building Valuation	2/month	-
			Building Inspection	daily	daily
			Occupancy Certificate Issue	2/month	7days
Urban Planning Division		principle engineer-1, urban planner-2, survey			
	Urban Planning		Issue of Site plan	3/week	3days

	Survey Section	engineer-1, surveyor-2, survey field assisstant-4, land record officer-1, Land record assistant - 1,	Plot Demarcation	7/week	1-3days
	Land Records Section		Land Transaction		
			Thram and plot correction		
			Land Lease		
			State / Private Land Acquisition		
	Urban Design Section		Preparation of LAPs	-	2 years
Infrastructure Development Division (IDD)		Engineers-8, Technicians-12, WCT-1	Procurement of works		
	Water Supply Section		New Water Connection	3/day	2 days
			Temporary water connection	3/month	2 days
			Water Reconnection	1/month	2 days
			Water Supply Complaint Management	3/day	
			Water Meter Reading, Reading Updates and Bill Generation	1/month	5 days
			Distribution of Water Bills	1/ month	10 days
			Collection of water tariff	1/ month	25 days
	Urban Roads & Parking Service		Handle infrastructure related complaint	1 /month	2-3 days
			Maintenance of urban roads	-	-
	Electrical Section		Handle street light complaints	2 fitting daily	2 days
			Development of Thromde wide electrical infrastructure	Additional in street light new laps	100 manually
			Maintenance of street lighting	daily	2 days

	Civil Works Section		Urban infrastructure development	-	-
			Clearing of bill	1-2 months	21 days
	Sewerage Section		New Sewer line connection	1-2 months	max- 5 days
			maintenance of sewerage infrastructure		
Customer Care Division					
	Public Relations Section				
	Demkhong / Zone Service Section				
	Revenue & Billing Section		Collection of different revenue based on the demand presented		
			Deposit of Revenue Money		
			Report on the Progress of Revenue Money		
	Census & Civil Registration Section	Sr. Adm Asst.-1, Thuemi-6, Accountant-1, Technicians-2, CRCO-1, Adm Asst.-2	Processing Census Registration (New) to DCRC	3-5 per month	10-15 mins
			Processing Citizenship Identity Card (New) to DCRC	80-100 per week	15-25 mins
			Processing Census Transfer to Thromde	3-5 per week	10 mins
			Processing Census Transfer to other Dzongkhags from Gelephu Thromde	1-3 per month	10 mins
			Processing Changes in Census Details	5-8 per month	10 mins
			Processing Death Registration	1-3 per month	5-10 mins

			Issue of Environment Clearance		
Environment Division					
	Sanitation Section		Attend complaint for sewerage block		
	Waste Management	Env. Officer-1, Sanitary Inpector-2	Waste Management		
			Emptying common collection bins		
			Operation and cleaning services		
	Disaster Management				
	Urban Forestry Section				
	City Beautification & Landscaping				
Administration and Finance Division					
	General ADM Section	Executive Secretary-1, Adm. Officer-1, HRO-1, Adm. Asst-2, Sr. Accounts Officer-1, Accounts Asst.-2, Sr. ICTO-1, Asst. ICTO, Procurement Officer-1, Store Asst.-1	Generation Administration Support Services	daily	-
			Cultural and Chadri Support Services	when required	min-1 day & max-2 weeks
			Motor Vehicle Transport Services	everyday	daily
	Human Resource Section		HR Action processing	everyday	1 day
			HR capacity Development activities	when required	1 day
			Separation activates	when required	3 days
			Leave Administration	everyday	1 day
			HR Records management	everyday	1 day
	Accounts Section		Settlement of Bills for Procurement of goods and Services	when required	1 day
			Processing of TA/DA for Employees	everyday	1 day

			Processing of Monthly Payments for Employees	every end of month	1 day
	ICT Section		Updating of website information	weekly	
			Updating of NIT/Tender documents onto website	4/15/50	30 mins
			Troubleshooting with the Inter Networks and LAN	1/4/12	1 -2 hrs.
			ICT equipment Troubleshooting	2/10/30	1-2 hrs.
			Preparation of technical specification		
			Verification of technical specification		
	Procurement Section		Procurement of Goods	when required	30 days or as per the delivery date mentioned in tender document
	Dzongkha Section				

9.3. Samdrup Jongkhar Thromde Services

Division/Section	Service	Procedure	Service Turnaround Time	Collaborating Stakeholders
Civil Registration and Census Section	Birth Registration	1. The applicant submits the application with all required documents 2. G2C system operator verifies, scans the documents and submits application on behalf of the applicant using G2C service system 3. TCRCO verifies the documents submitted by the operator and forward to DCRC	1 Day for Thromde Activities	G2C System Operator Thromde Civil Registration and Census Officer DCRC

		4. DCRC does final verification and update census record		
	Death Registration	1. Applicant submits application with all required documents 2. Operator verifies the documents, scans the documents and submits the applicant on behalf of applicant in the G2C system 3. TCRCO further verifies the application and the documents and forwards to DCRC. 4. DCRC conducts final verification and updates the death	1 Day for Thromde Activities	G2C System Operator Thromde Civil Registration and Census Officer DCRC
	Census Transfer	1. Applicant submits application with all required documents 2. Operator verifies the documents, scans the documents and submits the applicant on behalf of applicant in the G2C system 3. TCRCO further verifies the application and the documents and forwards to DCRC. 4. DCRC conducts final verification and updates the death	1 Day for Thromde Activities	G2C System Operator Thromde Civil Registration and Census Officer DCRC
	New CID / SRP Issue	1. Applicant submits the dully filled form with required documents 2. Verification of the information with records in BCRS and the application form 3. Capture biometric information of the applicant 4. Operator scans required documents and upload the documents along with application form information and biometric data in the G2C system to DCRC 5. DCRC reviews the information and proceeds with printing of card 6. The applicant is informed once the Card reaches the Thromde Office from DCRC	30 Minutes for Activities at the Thromde. Time required by DCRC depends	G2C System Operator Thromde Civil Registration and Census Officer DCRC
	Replacement of CID / SRP	1. Applicant submits the dully filled form with required documents	30 Minutes for Activities at the Thromde.	G2C System Operator

		2. Verification of the information with records in BCRS and the application form 3. Capture biometric information of the applicant 4. Operator scans required documents and upload the documents along with application form information and biometric data in the G2C system to DCRC 5. DCRC reviews the information and proceeds with printing of card 6. The applicant is informed once the Card reaches the Thromde Office from DCRC	Time required by DCRC depends	Thromde Civil Registration and Census Officer DCRC
	Issuance of nationality certificate and Household information	1. Applicant submits the request as dully filled application form available in the Thromde website 2. G2C system operator creates the application in the system and generates the required certificate 3. G2C system operator prints the certificate and issues to the applicant	5 Minutes	Applicant, G2C System Operator
	Change of Head of Household	1. Applicant submits the request with all required documents and the dully filled change of HoH form available in the Thromde Website 2. G2C system operator scans the document and submits the application in G2C system 3. TCRCO verifies the application and forwards to DCRC 4. DCRC completes the change of HoH request	1 Day	G2C System Operator Thromde Civil Registration and Census Officer DCRC
	Name Change and DoB Correction	1. Applicant submits dully filled name change/DoB Correction form along with required documents 2. G2C system operator creates the application in G2C system. Scan of documents are uploaded in the system 3. DCRC completes the Name Change/DoB correction activity	1 Day	G2C System Operator, DCRC
	Census Drop Out	1. Applicant Submits dully completed application form available in the Thromde Website with all required documents	3 Days	TCRC Office, DCRC

		2. Thromde census officials conduct verification of the documents submitted 3. House hold visits may be organized 4. Upon completion of verification, application with all documents and verification report is forwarded to DCRC 5. DCRC conducts verification and communicates the decision to Thromde 6. Thromde conveys the decision to the applicant. 7. If approved census records will be updated		
Procurement Section	Verification of bills	1. Receive the bills from suppliers 2. Verify the bills and forward to Accounts Section	2 Days	Procurement
Legal Section	Tenancy Dispute Resolution	1. Parties submit the petition/compliant to customer care service 2. Customer care service forwards the petition to Legal section 3. Legal officer reviews the case and puts up to tenancy dispute resolution committee for deliberation 4. The decision of the committee is delivered to the parties	14 Days	Customer care service, legal officer, dispute resolution committee
Customer Care Services	Customer Care services (General)	1. Receive customer complaints from citizens 2. Forward the customer complaints to respective divisions/sections 3. Inform and issue approvals, permits, clearances to the customers after compiling from Divisions and Sections 4. Provide vacuum tanker and water tanker services on the receipt of dully filled service request form and payment receipt (if applicable)	1 Day	Customer Service, Field staff of relevant divisions and revenue
Human Resource Section	Superannuation / Voluntary resignation / early retirement scheme	1. Generate list of employees who would be superannuating in the next one year 2. Issue notification to the employees 3. Compile list and include in HRC agenda for approval 4. Issue separation order for individual to obtain clearances for retirement benefits	12 Days	HR Section

		5. Update CSIS for civil servants 6. Issue relieving order 7. Process retirement benefits 8. Implement Royal Civil Service Award and certificate of appreciation by the head of the agency		
Survey and Land Services	Demarcation of Plot	1. Applicant submits plot demarcation service request along with copy of ownership certificate to Customer Care Service section 2. Customer care service forwards the application to relevant section 3. Surveyor verifies the plots on the map, checks the nearest survey station and takes out the coordinates of the plot to be surveyed 4. Applicant makes the payment for service 5. Upon verification of the money receipt, surveyor visits the site and demarcates the plot	7 Days	Customer care services, Land and Survey Services
	Official Site Plan	1. Applicant submit official site plan request application along with copy of ownership certificate to Customer Care Service section 2. Customer care service section forwards the application to relevant sections for processing 3. Land Records and Survey Section prepares the site plan 4. The site plan is verified by the Urban Planning Division 5. Head of the agency approves the official site plan 6. Applicant makes the payment at revenue section 7. Upon production of the receipt, site plan is issued to the applicant	7 Days	Customer care services, Land and Survey Services
	Land Transaction – inheritance, sale / purchase,	1. Applicant submits relevant dully filled land conveyance forms available in NLCS website along with required documents 2. Land Records verifies the document 3. Land record issues Public Notification	61 Days	Applicant, Land Records, NLCS

	gift, donation, exchange	4. Land records and survey section conducts executes required activities (fragmentation, demarcation), and preparation of report 5. Update the transaction along with required documents to e-Citizen Portal 6. Verification and approval of the transaction by LSS, DRD and Revenue Section in e-Citizen Portal 7. Review and approval/rejection of transaction by NLCS 8. Inform the applicant once the Lagthram reaches Thromde 9. Applicant pays the transfer fees and Lagthram is issued to the parties		
	Thram and Plot Correction	1. Applicant submits the application to Customer Service section 2. Customer Service section forward the application to relevant sections 3. Land Records and Survey section conduct verification of documents and survey (if required) 4. Preparation of verification of report and update the in e-citizen portal 5. NLCS reviews and approves/reject the transaction 6. Once approved by NLCS, applicant is informed	14 Days	Applicant, Customer service, Land Records, NLCS
	Mortgage	1. Applicant submits the documents to Customer Care service section 2. Customer Care service forwards the application to land Records section 3. Land Records section records the mortgage details	2 Days	Applicant, Customer service, Land Records
	Land Lease	1. Applicant submits application with required documents to Customer Care Service section 2. Customer Care Service section forwards the application to Land Records section	60 Days	Customer Service, Land Records, Applicant, NLCS

		3. TLRO prepares background paper and discuss in Thromde Land lease committee and then Thromde Tshogde 4. Land Records submits the report and the proposal NLCS 5. NLCS reviews and approves/rejects proposal 6. Thromde and applicant sign lease agreement for approved proposals		
	Government / Private Land Acquisition	1. The acquiring agency/institution submits the proposal to Customer Services section 2. Customer services section forwards the application to Land Records section 3. TLRO prepares background paper and discusses with TLC and prepares preliminary report 4. TLRO submit the application, proposal and preliminary report to NLCS 5. NLCS reviews application and preliminary report and approves/rejects the application 6. TLRO prepares detailed report for approved applications 7. TLRO submits detailed report to NLCS 8. Upon receipt of approval from NLCS, transaction/land substitution/cash compensation is processed for the affected land owners	59 Days	Applicant, Customer Service, Land Records and NLCS
Environment Division	Tree Felling within Thromde	1. Applicant submits dully filled Tree Felling Form to Customer Care Service section 2. Customer Care Service section forwards the application to Environment Division 3. Upon receipt of the application Environment Services reviews applicant and site visit may be done 4. Output of the assessment is forwarded to Customer service to be communicated to Forest Range Office & NRDCL or the applicant	3 days	Applicant, Customer Service Division, Environment Services, Forest Range Office, NRDCL

	Disposal of Construction and demolition waste	1. Applicant submits written application to Customer Care Services 2. Customer Care Services forwards the application to Environment Services 3. Applicant deposits the security deposit 4. Upon receipt of security deposit, environment services identify and allocates the disposal site 5. Upon completion of activities, environment services complete verification of site 6. Once verified by environment services, security deposit is refunded to the applicant	4 Days	Applicant, Customer Care Services, Environment Services
	Issuance / Renewal of Environment Clearance	1. Applicant submits a written application or dully filled Initial Environment Examination form available at www.nec.gov.bt or www.sjthromde.gov.bt to the Customer Care Service 2. Customer care service forwards the application to Environment Services 3. Environment Officer verifies the site and determines terms and conditions 4. Proponent makes payment at revenue section 5. Upon production of revenue receipt, environment clearance is issued to the proponent	10 Days	Applicant, customer care services, Environment services
	Issuance of Administrative Approval	1. Applicant submits written application to Customer care services 2. Customer care services forwards the application to Environment Services 3. Environment officer reviews the application and conducts site visits (if necessary) 4. Environment officer holds consultation with other divisions and sections	3 Days	Applicant, customer care services, Environment services, other relevant divisions and sections

		5. Based on the outcome of site visit, consultation with other offices administrative approval will be accorded or rejected.		
Infrastructure Development Division	New Water Meter connection	1. Applicant submits dully filled application form available at www.sjthromde.gov.bt or Customer Care Service to Customer Care service 2. Customer care service records the application in the G2C system 3. Application is processed based on the G2C system workflow 4. Required payment is made at revenue section	5 Days	Applicant, Customer Care Service, Water Supply Section, IDD
	Temporary Water Connection	1. Applicant submits dully filled application form available at www.sjthromde.gov.bt or Customer Care Service to Customer Care service 2. Customer care service records the application in the G2C system 3. Application is processed based on the G2C system workflow 4. Required payment is made at revenue section	5 Days	Applicant, Customer Care Service, Water Supply Section, IDD
	Water Connection	1. Applicant submits dully filled application form available at www.sjthromde.gov.bt or Customer Care Service to Customer Care service 2. Customer care service records the application in the G2C system 3. Application is processed based on the G2C system workflow 4. Required payment is made at revenue section	5 Days	Applicant, Customer Care Service, Water Supply Section, IDD
	New Sewer Connection	1. Applicant submits dully filled application form available at www.sjthromde.gov.bt or Customer Care Service to Customer Care service 2. Customer care service records the application in the G2C system	5 Days	Applicant, Customer Care Service, Sewer Section, IDD

		3. Application is processed based on the G2C system workflow 4. Required payment is made at revenue section		
Development Regulation Division	Construction Permit (Major)	1. Plot owners submit construction approval form available at Thromde Website (www.sjthromde.gov.bt) with required documents 2. Customer Care registers the application and issue application ID. Upon registration of application, application is queued in the G2C system workflow 3. DRD makes site visits to verify site conditions 4. Drawing scrutiny is done as per the sequence in G2C system process flow 5. Upon on completion of scrutiny, applicant is provided with invoice to make payment 6. Applicant makes payment at revenue section 7. Approved copy of drawings is issued to the applicant upon production of payment receipt	30 Days	Applicant, Customer Care Service, DRD, Other sections
	Construction Permit (Minor)	1. Building owners submit construction approval form available at Thromde Website (www.sjthromde.gov.bt) with required documents 2. DRD makes site visits to verify site conditions 3. New drawings are scrutinized by DRD and other relevant sections 4. Upon on completion of scrutiny, applicant is provided with invoice to make payment (if required) or approval letter is used if payment is not required. 5. Applicant makes payment at revenue section 6. Approved copy of drawings is issued to the applicant upon production of payment receipt	5 Days	Applicant, DRD, Other relevant sections
	Green Channel for Building Permit	1. Plot owner submit the application with required documents	14 Days	Applicant, power authority, DRD,

		2. DRD Checks setback, plot coverage, building height and land use 3. Relevant sections check drawings for compliance 4. Applicant submits power clearance for electrical drawing 5. DRD reviews all documents submitted and communicates approval status 6. If approved, applicant makes 50 % of permit fees 7. Applicant can collect permit from Customer Care Service section		Customer Care Service
	Location Clearance	1. Applicant submits dully filled application form with details of establishment and consent letter from the building owner and other required documents to customer care service 2. Customer care service forwards the application to DRD for processing 3. DRD makes site visit to verify site conditions 4. Check land use in the Thromde structural plan and approve if the site and establishment is compatible with the plan 5. Applicant makes payment if required and collect clearance from Customer care service	2 Days	Applicant, regulating agency in relation to type of establishment, DRD, Customer Care Service
	Temporary Permit	1. Applicant submits dully filled application along with other required documents to Customer Care service 2. Customer Care service forwards the application to DRD for processing 3. DRD makes site visit to verify site conditions 4. DRD conducts scrutiny safety and comfort and if acceptable issues approval 5. Applicant makes payment, if required and collects the approval from Customer Care Service	3 Days	Applicant, Customer Care Service, DRD

	Renewal of Construction Permit	1. Applicant submits dully filled application form with required documents to customer care service 2. Customer care service forwards the application to DRD for processing 3. DRD makes site visit to verify site conditions 4. DRD conducts scrutiny to verify if there any changes in DCR and other rules. If everything is OK then approves the renewal 5. Applicant makes payment if required and collect approval letter from Customer care service	5 Days	Applicant, Customer Care Service, DRD
	Change of Use	1. Applicant submits dully filled application form with required documents to customer care service 2. Customer care service forwards the application to DRD for processing 3. DRD makes site visit to verify site conditions 4. DRD conducts scrutiny to verify if there any changes in DCR and other rules. If everything is OK then approves the change of use. 5. Applicant makes payment if required and collect approval letter from Customer care service	2 Days	Applicant, Customer Care Service, DRD
	Change of Building Colour	1. Applicant submits dully filled application form with required documents to customer care service 2. Customer care service forwards the application to DRD for processing 3. DRD conducts scrutiny to verify with the standard colour code. If everything is OK then approves change of colour. 4. Applicant makes payment if required and collect approval letter from Customer care service	2 Days	Applicant, Customer Care Service, DRD
	Demolition permit	1. Applicant submits dully filled application form with required documents to customer care service 2. Customer care service forwards the application to DRD for processing	2 Days	Applicant, Customer Care Service, DRD, Environment Services

		3. DRD issues permit with copy to adjacent owners and Thuemi 4. Applicant processes for demolition waste disposal permit from Environment Services		
	Building Layout and Foundation Evacuation	1. Applicant seeks appointment with concerned building inspector by submitting written application to Customer Care Service Section 2. Customer Care Service forwards the application to Building Section 3. Building inspector will visit the site and issue progress certificate 4. Applicant processes for approval to dispose construction waste with Environment Services	3 Days	Applicant, Customer Care Service, DRD, Environment Services
	Footing Inspection	1. Applicant seeks appointment with concerned building inspector by submitting written application to Customer Care Service Section 2. Customer Care Service forwards the application to Building Section 3. Building inspector will visit the site and issue progress certificate	3 Days	Applicant, Customer Care Service, DRD
	Basement floor inspection	1. Applicant seeks appointment with concerned building inspector by submitting written application to Customer Care Service Section 2. Customer Care Service forwards the application to Building Section 3. Building inspector will visit the site to inspect and ensure that the construction is as per the approved drawings and issue progress certificate	3 Days	Applicant, Customer Care Service, DRD
	Floor and Slab Inspection	1. Applicant seeks appointment with concerned building inspector by submitting written application to Customer Care Service Section	3 Days	Applicant, Customer Care Service, DRD

		2. Customer Care Service forwards the application to Building Section 3. Building inspector will visit the site to inspect and ensure that the construction (slab and reinforcement) is as per the approved drawings and issue progress certificate		
	Jamthog floor inspection	1. Applicant seeks appointment with concerned building inspector by submitting written application to Customer Care Service Section 2. Customer Care Service forwards the application to Building Section 3. Building inspector will visit the site to inspect and ensure that the construction is as per the approved drawings and issue progress certificate	3 Days	Applicant, Customer Care Service, DRD
	Roof layout and Truss inspection	1. Applicant seeks appointment with concerned building inspector by submitting written application to Customer Care Service Section 2. Customer Care Service forwards the application to Building Section 3. Building inspector will visit the site to inspect and ensure that the roof, truss, layout, height, slope and projection is as per the approved drawings and issue progress certificate	3 Days	Applicant, Customer Care Service, DRD
	Occupancy Certificate	1. Applicant applies for Occupancy certificate from G2C online services along with completion certificate 2. DRD organizes site visit to verify the progress 3. If there are any acceptable deviations, then the DRD team records the deviation 4. DRD validates the building as per the occupancy checklist 5. If everything is OK, applicant makes the payment for occupancy certificate at revenue section	7 Days	Applicant, Customer Care Service, DRD, Revenue

		6. Applicant collects occupancy certificate from Customer Care Services upon production of revenue receipt		
Finance Division	Settlement of bills for procurement of goods and services	1. Concerned divisions/section receive bills/invoices from suppliers/contractor/ consultants 2. Concerned divisions/section verify bills/invoices from suppliers/contractor/consultants and forward to Accounts section 3. Finance Division verifies and passes the bills 4. Suppliers/Contractors/Consultants receive payment	2 Days	Suppliers/Contractors/Consultants, Divisions/Sections, Accounts Section

Stakeholder Analysis

Stakeholder analysis is the identification of key stakeholders, an assessment of their interest and the ways in which these interests affect the initiatives, and the expectation of the stakeholders. It is an accepted paradigm that e-Governance interventions should bear its inception from the needs of the stakeholders. Stakeholder analysis contributes to intervention design, and helps to identify appropriate forms of stakeholder participation.

It is an accepted paradigm that ICT intervention and e-Governance should bear its inception from the needs of the stakeholders. The major stakeholder in the Thromdes is the citizens and residents who have to interact with the Thromdes for availing services and tax payment. As a result, all efforts of streamlining the processes of the Thromdes to improve the service standards through IT enablement should take due cognizance of the expectations of the stakeholders. The other dimension of ICT intervention and e-Governance is the G2G element where the Thromdes aim to benefit from ICT intervention and e-Governance by increasing its own efficiency and competency to elevate its service delivery standards.

Primary stakeholders are those ultimately affected, either positively (beneficiaries) or negatively. Secondary stakeholders are the intermediaries in the aid to service delivery process. Key stakeholders are those who can significantly influence, or are important to the success.

The major stakeholders and the interest are given below:

Stakeholder	Stakeholder Type	Key Interests
Citizens/Residents/ Community	Primary	• Should be informed about services available, taxes, etc. in the Thromdes • Should have access to schemes, rules and regulations • Participate in defining policies through interaction with the Thromdes using available feedback mechanism and engagement platforms • Should receive communication related taxation, tax invoices in SMS, email, etc. • Help identify their needs and expectations from Thromdes • Should have channels to make tax payment and be informed on the payment status • Use the grievance redressal mechanism to bring to notice the loop-holes or downfall in the system • Single and integrate view of the citizen relationship across all divisions and services • Simplified decision cycles • Electronic exchange of information

Thromde Management/Division Heads/Policy Makers	Primary	• Inform citizens about the available benefits, procedure and policies • Liaise with other government agencies whose services link with Thromdes • Liaise with other level of government that provide funding for development initiatives • Review community plans and schemes • Involve citizens in policy making • Develop planning frameworks and guidelines • Provide leadership • Ensure compliance by citizens with respect to taxation, rules and regulations
Employees	Secondary	• Reduce the workload of the employees, who need to perform the same tasks repeatedly • Decision making based on data and reduce burden of redundant tasks • Better MIS system for improving the internal efficiency of the Thromdes
Business	Primary	• Single and integrated view of the business relationship across all divisions and services. Business expects the Thromde divisions to take consolidated view of their transactions across all divisions. Business should no longer be required to provide the same information repeatedly and follow up transactions across divisions • Simplified decision cycles. Business require the Thromde services to be supported by simplified decision cycles to facilitate faster turnaround times • Electronic exchange of information with other governmental organizations. Business requires the Thromde to integrate electronically with other government organizations. This would help minimize the time required for compiling, endorsing and validating official documents from other agencies.

10. As-Is Scenario

AS-IS assessment was done to understand the functional of Thromdes, operational and organizational hierarchy, roles & responsibilities, services provided, issues faced, IT infrastructure availability, etc. As-Is assessment has been prepared in cognizance with Thromde's performance based on certain parameters.

Information

- Information flow within the Thromdes
- Availability of real time, relevant and reliable information to the senior management to enable informed decision making
- Complete visibility across all levels

Technology

- Use of ICT to improve service delivery standards within the Thromdes
- Provide network connectivity
- Maintenance of beneficiary databases and eliminating data redundancy
- Generation of real time MIS reports to highlight areas of concern

Processes

Major findings of the As-Is study can be summed up as:

- Processes are well defined through appropriate policies, guidelines, acts, rules and internal regulations, and directives
- Existing processes show variations based on the local conditions, interpretations, etc. but at the same time maintaining the nuance of the standard procedures as defined through appropriate legal instruments
- Process captured are hybrid (manual & workflow-based IT) also paper driven

There are number of duplications and repetitive activities:

- Island of information existed in isolation within departmental functions but the same is not being shared commonly across departments creating redundancy from administrative perspective
- Although hardware is provided to users but still, they are not used for achieving efficiency and effectiveness
- The number of inputs for process initiation is quite high and they differ in different divisions and sections
- Same information is collected at different stages of service delivery
- G2C Online Services System and BAS are the applications used in Samdrup Jongkhar Thromde and Gelephu Thromde uses G2C Online Services System, Taxation System and BAS application. All the systems require further development in order to scale up the services and the operation process. PEMS is used for management expenditure related to schools and CSIS is used to manage information on civil servants serving the Thromdes.
- The systems are based on fragmented databases serving some aspects in the Service Delivery and Thromde Operations
- Ensure citizen facing processes are made simple and customer friendly
- Reduce Turn Around Time for each transaction
- Reduce the number of touch points for each transaction
- Complete traceability across the entire process cycle

Staffing & Skills

- Whether the staff of the Department has the required number of staffs for fulfilling its responsibilities
- Whether the Thromde personnel has the required training and skill sets in utilizing ICT tools

Other Resources

- Proposals/Plans to implement e-Governance initiatives to improve overall efficiency of the Thromdes
- Whether there are adequate sources of funds to carry out e-Governance initiatives
- Availability of Project and Program Management expertise to implement these projects

Dimension	Current Scenario
Information	- Information is currently collected manually from each level through paper formats, collated centrally and MIS reports are prepared for conducting reviews and decision making - Information systems are just for recording of data - Real time visibility across multiple levels is not available - Decision making is based on historical data and relies one the experience of the senior employees - No defined guidelines are available for communication and data sharing
Technology	- ICT infrastructure is somewhat adequately developed with leased line connectivity and Local Area Networks mostly for internet connection - Recent initiative of IT clustering has made the Thromdes as central agency to manage and maintain ICT infrastructure within the Thromde jurisdiction - Multiple information systems are used to record data but lacks consolidated reporting and integration of systems. Systems used are Public Expenditure Management System (PEMS) of MOF, Budget and Accounting System (BAS), G2C Online service Systems, Civil Service Information System (CSIS) to manage HR information, MAX, LFS, eCitizen Portal for land conveyance management and Government Performance Management System (GPMS).
Processes	- Citizen facing processes are mostly manual or direct digitization of manual processes. These processes need to be made citizen friendly - In certain cases, there is duplication like requirement of fill up online forms and submission of duly completed paper forms - Due to requirement to use multiple information systems, there is redundancy of activities requiring service providers to update multiple systems. System integration is of paramount importance.

	• The requirement to sign documents is still prevalent and practiced in most of the activities.
Staffing & Skills	• Some offices are under staffed to complete service delivery activities

As-Is Assessment

Criteria used for rating: Thromdes are rated as High, Medium or Low based on the following parameters:

- Level of Process Optimization achieved for key services
- Availability and Utilization of ICT in Thromde service delivery processes
- Capacity Building requirements for implementation and sustenance of e-Governance initiatives

High – Indicates that the Thromdes are advanced in terms of e-Governance initiatives.
Medium – Indicates the Thromdes has the potential to achieve e-Governance objectives through process re-engineering and implementation of ICT tools.
Low – Indicates that the Thromdes need to take immediate action to achieve e-Governance initiatives.

Parameter	Performance Indicator	Rating	Remarks
IT Infrastructure	Availability, Utilization & Maintenance of Software, Hardware, Network Connectivity, etc.	Medium	Thromdes have desktops/laptops for all the officials with good internet connectivity. Through IT clustering initiative high speed connectivity is available and Thromdes are positioned as distribution center for internet connectivity. Most of the OS and other platform (productivity software) software used are not genuine but are functional. Some discrete custom systems are used for service delivery and record keeping. Systems used include Taxation System (GT), PEMS, BAS, G2C Online Service Delivery Systems, CSIS, eCitizen Portal, and GPMS. State-of-the-art email system is used through subscription to G-Suite. The G-Suite is used for document sharing and communication. No enterprise grade anti-virus is installed, users use anti-virus of their choice.
Real Time Data/Information availability	Ease with which information can be accessed	Low	Majority of the information is currently maintained in paper files and retrieval is cumbersome. Reporting is mostly based on paper based However, internal communication and information sharing is also done using

			Google Drive which is very effective collaboration tool. However, this approach is based on personal memory as the documents shared is based on email. Institutional memory is purely based on information in papers.
Registration of Taxpayers and Properties	Integrity of Records and Lack of data duplication	Low	Taxpayer information is kept at multiple offices. This increases the task of collating information regarding the taxpayers and properties and thereby losing the integrity of revenue and service records. No process for file tracking and storing is seen.
Tracking of Taxpayer records	Ease of storage and retrieval	Medium	Records are mostly maintained on paper. GT has taxation system but it is not updated with changes in the taxpayer and property ownership information. Other systems are domain specific and citizen facing interfaces. All those systems require integration with back office system that comprises of taxpayers and properties. Duplication of records across divisions and it is difficult ascertain the credible source of truth. Information regarding taxpayers and properties can be retrieved only after collating information different divisions.
Accounting Information	Ease of tracking accounting transactions	Low	Currently BAS is used as main accounts record keeping system that is used to prepare budget and record expenses against budget heads. Revenue accounting is managed in MS Excel and expenses tracking of revenue required manual record keeping. Expenditure in education sector is managed in PEMS. It is difficult to generate financial statements from either of the systems.
MIS reporting	Ability to generate enterprise level reports for decision making	Low	Statistical information is collated manually and periodic reports are created using MS word and Excel and limited analysis is done. Reporting on Annual Performance Agreement (APA) is managed in MS word and Excel. Reports to be shared with other stakeholders is also prepared manually.
Information Dissemination and Engagement	Access points to Citizens	Medium	Thromde website is deployed to provide information but is mostly one direction. Features for citizen engagement is limited.

| | | | Personalized communication to taxpayers to provide tax related information is not available. Taxpayers are required to visit Thromde office to avail such information. |
| Thromde Administration | Internal efficiency and reduction in paper and stationary usage | Low | Information systems and work flow for Thromde administration is not implemented. Every administrative activity is signed paper based. Manual processing of payroll/use of DrukPay as silo system. |

11. GAPs

The process that involves the identification of gaps between the current state and the future or desired stat is the beginning point for implementation of the improvement process. The process of identifying gaps includes deep analysis of the external factors that have created the current state, the groundwork has been laid for improvement planning. The gap analysis process can be used to ensure that the improvement process does not jump from identification of problem areas to proposed solutions without understanding the conditions that created the current state. This section would identify the gaps between the Thromdes current scenario and the envisaged scenario. The envisaged scenario can be a scenario/compilation of scenarios which are considered to be best practice in the various municipalities or it could be a scenario designed specifically to suit the needs to Gelephu and Samdrup Jongkhar Thromdes.

Stakeholders Gap Analysis

This section will compare the services that should be offered and expected by the various stakeholders and actual services received by them.

Issue Addressed	Stakeholders	ICT intervention	Benefits to Stakeholder
Information Dissemination and Engagement	Citizens	Thromde Information Portal	Enable citizens in seamless access to variety of information regarding the Thromdes and its services. Online tracking of status of grievances, online submission of application for services, ability to print approvals, permits, authorizations, payment channel integration, etc. Features to enable engagement between citizens and Thromde.
Service Delivery System	Thromde Offices, Citizens, community	Integrated Thromde Service Delivery System	An integrated application that caters to the need to bring about a comprehensive Process level automation in the Thromdes for service delivery. Online communication channels like SMS and emails.

Administration and Departmental Functions	Citizens, Thromde employees, community	Integrated Thromde ERP	An integrated application that caters to the need to bring about a comprehensive process level automation in the Thromde administrative functions. Comprehensive MIS capability for decision making.
		Document Management and Archival System	Application system that can be used to manage documents generated in Thromdes during service delivery as well as administration function.
		GEO data platform	GIS application to digitize all geo spatial data of Thromde infrastructure and private properties.
		Taxation System	Custom application that allows assessment of revenue, collection and accounting of revenue. It integrates with communication channels like SMS and email, payment infrastructure (online, mobile, and custom banking applications)
		Enterprise Business Intelligence	Data analytics capability using data from multiple sources. Output in multiple formats.

Service Gap Analysis

There exist disparities between the visualized target and the existing state of service delivery and revenue administration. Service Gap analysis has been carried out from following perspectives:

- People perspective
- Process Perspective
- Technology perspective

Gaps were identified under each of these perspectives and a summary of key improvement areas identified to achieve the target outcome is provided below:

People Observations

An analysis of the present level of understanding of the employees in terms of IT automation scenario reveals low level of awareness among process executants on technology. Upon discussion with the employees at various levels few observations were made, which if addressed properly can help to further fulfill the capacity building needs. Following improvements areas were identified during the AS-IS process study:

- Limited availability of human resources with requisite skills to take up service delivery through Information Technology and low exposure in the usage of IT systems
- There isn't clarity on the role an individual performs
- Ineffective technical training facilities stands major hindrance to the technical capacity enhancement of the workforce
- No mechanism to record public feedback which does not get reflected while considering employee's performance
- No emphasis is given to building domain knowledge of employees in their respective domain and division

Process Observations

The process of service delivery with respect to application processing, record maintenance, data tracking, etc. is being done physically (i.e. no automation). During the AS-IS process mapping we have explored a scope for process engineering and identified following constraints / bottlenecks:

- In most of cases, the entire activities starting from the application submission till the document delivery takes place manually, which makes the lifecycle of the process time consuming and complicated
- There are certain redundant and non-value-added activities in the current process involved with service delivery in terms of the file movement, way of conducting verification, review & approval, which results in prolonged service levels
- For the services involving inter-departmental interaction, the process becomes highly complex and networked. Manual movement of file makes the process prone to delays
- There are no proper channels for dissemination of information about services to recipient and no facility for remote access to information on the same
- The beneficiaries have to make multiple visits to the concerned offices and the number of visits varies from case to case to avail the services

The entire data and records are maintained manually which makes the retrieval of data very difficult, hence delaying the decision-making process.

Technology Observations

The analysis of the AS-IS study reveals that optimum IT infrastructure is still not available at the concerned departments. Though many departments have computers and printers but they are not being used effectively. Due to the manual nature of the existing processes, benefits of IT enablement can be leveraged to improve and streamline the service delivery mechanism. Following improvement areas have been identified where technology intervention can help to achieve the objectives of the Thromdes.

- There is no application or a centralized database or any other mechanism for sharing data between the various divisions and the main office responsible for the service delivery, which is one of the major delays in the processes
- Not all services are in the G2C service delivery system hence tracking of status is possible for only some services

- Use of technology is limited. Wherever existing, it limits to usage for typing and entering the details at the clerical level.

12. Key Recommendations

To understand and operate the computerized systems in a new e-Governance environment requires different level of skill set. Following are some of the suggestions in relation to people perspective:

- Job descriptions need to be formulated for each post. Employee must be hired based on these job descriptions. Every employee must be given a clear set of roles and responsibilities. These can be modified in future based on the appraisals or when they are transferred / deputed to other offices, etc. Any change in the role must also be formally communicated to the employee. To deploy ICT applications, role clarity of officers in each office and access control needs to be identified.
- Every office needs to be in possession of training manuals covering all aspects of the employee training issues including software, hardware and soft skills. These manuals must be in language the employees are comfortable with.
- Every employee must be trained on domain expertise in their respective domain. Competency levels in usage of computer, familiarity of software, information security basics, basic hardware trouble shooting skills, awareness of rules and regulations, etc. needs to be defined by the administration and all the employees must be benchmarked and motivated to attain the minimal acceptable proficiency levels. Plans for continuity training of existing and new staff to be developed and suitably budgeted as an annual expenditure of the departments.
- To increase the employee motivation, Thromde management must analyze long term and short-term measures. Current approach to monitoring and evaluation is based on the IWP and APA. Monthly get-togethers and motivating good performers on these occasions through special mentions can be first steps. Appreciation letters, citations and public feedbacks can be incorporated while considering an employee's performance.
- To carry out effective service delivery, it is essential to have required personnel. Most of the divisions have inadequate manpower to carry out essential services due to which service delivery is affected.

The assessment of Business Processes is based on a generic framework which recognizes that there are a number of structural elements which needs to be in place for process management and for it to satisfy the overall intent and meet the needs of the citizens. Some of the recommendations from process perspective are:

- There should be facilities to track the status of the application for citizens and also to monitor the status of applications for the employees of the Thromdes
- Alternate service delivery points to be introduced
- Proper dissemination of information through the web portal and also through other service delivery channels need to be introduced
- The time taken for physical verification needs to be reduced and also proper database should be created in parallel so that physical verification can be eliminated as a later stage by matching the details provided with the information stored in the database

- The redundant and repetitive non-value adding activities should be eliminated through continuous re-engineering of processes and relevant legal changes should be made to carry out these processes in a more efficient and prompter manner
- Drawing up service levels to each of the activities and strict adherence to the same so that the overall service delivery time can be reduced
- Taxpayers, property and asset data should be digitized and proper MIS should be established to enable easy tracking

Some recommendations from technology perspective are:

- Overall IT architecture of the Thromdes must promote reduced complexity and enable integration and interoperability
- Total cost of Ownership, including consideration of costs and benefits across Thromdes, for applications and technologies (hardware and software) must balance development, support, disaster recovery and retirement cost along with the cost of flexibility, scalability, ease of use/support over the lifecycle of the technology or application
- All information must have defined 'authoritative sources. These sources will act as 'information stewards. Authorized data must be accessible and available to re-use by any entitled system and/or business process.
- ICT should support citizen delivery channel preferences in accessing services
- Implemented infrastructure must be robust, responsive and reliable, with appropriate redundancy to protect against system failure
- Facility to provide online payment and mobile payment system
- Enabling interdepartmental communication and citizen engagement using web portal and other channels
- Introducing an appropriate single window platform for monitoring and status tracking of citizen services
- An end to end application to manage the entire operation under the grievance, right from registration of the grievance to the resolution of the same with the facilities to produce MIS on various parameters.

Brief of stakeholder expectations and recommendations is provided as below:

Stakeholder Type	Expectations	What needs to be done to meet the expectations
Citizens	- Single and easy point of contact for Thromde services. Citizens should be able to quickly and easily learn about different services offered by the Thromdes and how to request such services. - Clear and accurate information about each service. Citizen should be able to use ICT channels to request, follow up and track the progress of their	- Develop single window information dissemination approach whereby citizens need not bother as to which office provides the service and need not visit the actual office that provides the service - Processes should be designed as per the channels and service request forms may be re-designed to make it easier for the citizens to demand and avail services

	transactions remotely and conveniently. • Efficient and effective resolution of complaints. Complaints should be resolved promptly and citizens must be kept abreast of the progress made in resolving their complaints. • Citizen oriented and transparent service delivery processes. Citizens should be shielded from the various internal operations and activities involved in delivering the service. Citizen should not be interfering in internal communications to expedite the processing of their transactions.	• Develop feedback mechanism so as to get constant feedback and adapt to citizen needs and demands • Increase the number of access channels to allow the citizens to demand and avail service at the time and place of their choice • Develop and follow standards / guidelines for internal data transfer to expedite flow of information between office involved in service delivery • Develop content in local as well as English Language • Create and follow format content management process to ensure that the content is regularly updated and correct • Establish single window multiple service counters • Service levels should be defined for every service to measure the quality of service delivery. A service level should be agreed upon by responsibility for each of measurable outcomes • Performance reporting should be formalized and report must be published regularly • Communicate about e-Governance initiatives and benefits. Incentives to promote channel shift could also be provided to citizens • Establish data privacy and protection laws and online transaction mechanisms to develop confidence and trust.
Businesses	• Single and integrated view of all business relationship across all offices of Thromde and services. Business expects the Thromde to take consolidated view of their transactions across all offices. Business should no longer be required to provide the same information repeatedly and follow up transactions	• The one stop information shop should have information required by the businesses. It should have details on procedures, requirements regarding approvals, clearance, authorizations, etc. • Make e-procurement for procuring items mandatory • Processes and forms should be designed to make it easier to demand and avail services as per the channels • Develop and follow standards/guidelines for internal data

		transfer to expediate flow of information between offices so that the businesses are not required to furnish the same information to multiple agencies
	• Simplified decision cycles. Businesses require the governance services to be supported by simplified decision cycles to facilitate faster turnaround times • Electronic exchange of information with other governmental agencies. Businesses require the Thromdes to integrate electronically with other agencies. This would help minimize the time required for compiling, endorsing and validating official documents collected from various other agencies.	• Establish data privacy and protection laws and online transaction mechanisms to develop confidence and trust
Employees	• Reduce the workload of the employees, who need to perform the same task repeatedly • Better MIS system for improving the internal efficiency of the Thromdes	• Computer and IT awareness training, project management and vendor management training • Develop a comprehensive HR Management System including portal for employees to monitor their benefits accrual, leave entitlement, etc. • Automate the routine task to facilitate the Thromde employees to undertake higher value work • Regular trainings and seminars for career development, skills addition, etc. to motivate employees and enhance their service delivery skills • Establish data privacy and protection

13. BPR Initiatives

After analyzing the challenges, AS-IS and recommendations BPR initiatives are designed to achieve the following:

- Service delivery quality
- Standardization
- Redundancy
- Transparency
- Accountability

13.1. Technical Interventions

13.1.1. Data Center Infrastructure

A data center is facility that houses IT equipment used for communication and data storage. Data center management can be done in a small server closet or in a large building. Besides housing IT equipment, a data center network connects servers, technology, and infrastructure needed to support processes in an organization. As enterprises increasingly switch to cloud based solutions, data centres have become even more critical component of an organization.

Data Center Infrastructure	Software solutions	GIS	Integration Layer
Service Delivery	Network Connectivity	Security	Database Management
Reporting tools	Asset Management	Communication systems	End User Infrastructure

Typically, a data center shall comprise of the following components:

Component	Description
Servers and Racks	The main purpose of setting up a data center is to house the servers needed to support client applications and websites as well as infrastructure management. Servers are arranged in racks. The racks can be placed in specific configuration within the managed hosting to optimize cooling.
Power	Power is needed to keep all the equipment up and running. Data centers usually have redundant electricity and often a backup generator to provide reliable power in case of power outage. An uninterruptible power supply (UPS) ensures that the quality remains constant even after outage. It compensates for frequency and voltage fluctuations to effectively protect sensitive electronic components and system. It also enables smart management of other component through clean shutdown of equipment during situations of longer time power outage.
Network Connectivity	Computers and systems are connected to internet connection to enable the access of IT solutions. Data is distributed to and from the server by and system of network switches.
Security System	Data centers usually have a range of security devices to limit access to the virtual environment and physical setup. The server room is protected by several technologies to mitigate damage from natural disasters, and fire safety systems to prevent damage from fire disasters.
Monitoring Systems	Data centers usually have several monitoring systems to help operators manage the working environment. Monitoring systems help monitor energy consumption, temperature, and relative humidity. Another aspect is to monitor the operational status of the equipment and components.

Cooling System	In a data center, computing equipment usually emit a considerable amount of heat. In this case, cooling systems help prevent overheating.
Policies and Procedures	Besides the above components, data center operators are guided by set of policies and procedures. This helps maintain efficiency with in the facility.

Through ICT clustering initiative, Thromdes have developed data center facility with most of the components in place. Procedures and policies are missing currently. IT control guidelines prepared under BUDP II can be used as procedures and policies for management of data center.

13.1.2. Software Solutions

To achieve efficiency in service delivery and internal operations, Thromdes would require software solutions. Software solution may be single integrated Enterprise Resource Planning systems for Thromdes or multiple systems but integrated for data transfer. Software solutions should cover all major operations of the Thromdes.

- Accounting and Financial Management
- Human Resource & Payroll Management
- Asset Management
- Procurement and Inventory management
- Revenue Management
- Document management and archival management
- Thromde spatial data infrastructure
- Constituency Management
- Business Intelligence
- Property Management
- Communication Systems – SMS, Email, etc.

13.1.3. GIS

Leverage GIS to improve the operation of utility networks, analyze the value of land and associated improvements, maintain right-of-way assets, develop and share public safety response plans, promote sustainable communities, etc. GIS includes set of maps, apps and best practices for Thromdes.

GIS is the key to better decision making; just about everything Thromde does whether in day-to-day operations or long-term planning is related to its geography. Many routine operations of business and government are tied to a location and rely on the use of geographic information to accomplish their goals. Some examples are:

- Land use planning
- Subdivision review
- Permit tracking
- Parcel/tax mapping
- Engineering design
- Road and utility maintenance
- Event (crime, fires, accidents)
- Reporting

- Emergency management
- Infrastructure assessment and development
- Green asset management
- Property management

13.1.4. Integration Layer

By nature of Thromdes and the function entrusted, several systems like service delivery channels, internal support systems, GIS, etc. To benefit from such situation, Thromdes must implement technologies that deal with the problems presented by current situation of using multiple systems:

Interoperability – The different systems/components use different operating systems, data formats, and programming languages, preventing connection via a standard interface.

Data Integration – in order to use all the systems and enable data exchange among the systems, a standard method of handling the flow of data between applications and systems to enforce consistency across the database is crucial.

Robustness, Stability and Scalability – Because they are the glue that holds together a modular infrastructure, integration solutions must be highly robust, stable and scalable.

The integration layer platform should have following capabilities:

- Transformation – the ability to convert requests/messages into a format that is usable by the consumer application.
- Protocol conversion – ability to accept requests/messages sent in all major protocols, and convert then to the format required by the end consumer application.
- Routing – ability to determine the appropriate end consumer application or consumer based on both -preconfigured rules and dynamically created requests.
- Enhancement – The ability to retrieve missing data in incoming requests, based on the existing request data, and append it to the request before delivery to its final destination
- Monitoring/Administration – provide easy method of monitoring the performance of the systems, the follow message and requests through the layer.
- Security – should ensure that the layer itself handles requests in a secure manner as well as the negotiation between the security assurance systems used by each of the systems that are integrated.

13.1.5. Service Delivery

To handle the service delivery requirement, Thromdes should have developed service delivery standards. The objective of having service delivery standard is to provide a common understanding of what is expected by the public, service users and service provider in ensuring provision of consistently high-quality service delivery. They should have monitoring framework and roadmap for improving the quality and reliability of Thromde services.

The application of the standards should improve transparency and accountability in service delivery, fairness and equity in service provision, building a culture of quality management, regulation, and management of expectations of service recipients.

The principles and core values of standards should be citizen focus, professionalism, transparency, accountability, efficiency, effectiveness, participation and equity.

Once the standards are developed, service delivery platform should be developed and deployed as per the standards.

13.1.6. Network Connectivity

In order to operate IT systems for service delivery and internal operations, it is important to have proper network connectivity for citizens to access the service channels and internal users to access the operational systems. Thromde office must have adequate Local Area Network (LAN) which is connected to Wide Area Network and the Internet.

Leased line internet should be available for users to access external systems and communication systems. Network connectivity should be used based on the content and systems hosting.

13.1.7. Enterprise Security Management

Data is accessed and manipulated from everywhere, not just through workstations and desktop computers in an office, but also on laptops at home, or even cell phones and in airports, cafes, and other public places. As the flexibility and robustness of digital devices continue to grow, security threats are also becoming more sophisticated. Hackers deploy bots to enact DDoS, and cause mayhem through pretexting, where they send email under the guise of an authority figure to infect vulnerable systems with Trojans, viruses, or other malware. Additionally, the prevalence of Internet of Things (IoT) devices opens pathways to database disaster.

With increase in digital data, it is important to secure Thromde's data. Thromde should ensure enterprise security which includes strategies, processes, and infrastructure needed to protect the physical and digital assets of the Thromdes. Enterprise security management is a systemic and integrated process for addressing concerns about unauthorized access through policy and judicious configuration of assets and security tools. As a holistic endeavor, enterprise security management applies security policies across the organization, including multiple platforms, infrastructure, and all security points products, devices, applications and business processes.

Enterprise security includes not only the assets and data that are stored and manipulated on site, but also transactions and information that reside on or pass through distributed services, private employee devices and the cloud. It reaches beyond physical and information security, and concerns internal and external threats, and intentional and unintended problems caused by employees.

13.1.8. Data Governance and Database Management

The amount of data that Thromdes must be able to handle and they can use to their benefit is growing with launching of information system. Also, there is huge volume of documents being

generated. Social media like FB messenger and WeChat is being used during service delivery. It is time that Thromde place data management high on their agenda.

Enterprise data management is the ability of an organization to precisely define, easily integrate and effectively retrieve data for both internal applications as external communications. It is concerned with the whole spectrum of activities directed toward the organization and proper usage of data aimed at the structured identification, classification, registration, modeling, unlocking, archiving, securing, and deletion of data owned by the Thromdes. Important components of Data Management include:

- Data Governance – Data governance refers to the policies and processes used to ensure the integrity, quality and security of data. It also includes data stewardship and encompasses the guidelines around policy enforcement, overall responsibility and governance authority.
- Data Integration – Data integration means moving and consolidating data into one, accessible format.
- Master Data Management – This refers to tools or applications and used as part of enterprise data management strategy to help create master version of data and provide a consistent view of scattered data.
- Data Security – Data security refers to measures in place to ensure data is protected at all points of its lifecycle including data at rest and data in transit.

Based on the requirement, appropriate Database Management Systems should be selected and used with the information systems. Thromde should also develop data governance strategy. Managing data in a way that supports business goals falls within the domain of data governance. Some of important requirement with regard to database management and data governance include:

- Selection of right database management technologies
- Standardization of master data so that all systems use same master data
- Planning and execution of DB tuning and DB backups
- Educating employees about the data management

13.1.9. Reporting Tools

Reporting tools is becoming needed by the top management of any organization to visualize, analyze and prepare strategic planning for the future. However, sometimes, the availability of proper tools, support on existing infrastructure (including software and hardware), usability, scalability, financial commitment and other parameters make it challenging for the Information Technology team to decide the right BI tool for the organization. When assessing any enterprise reporting tool, it is important to consider the following.

Report Design – Report design feature is to manage the initial stage of report creation. Data is extracted, organized and prepared for visualization. These features establish a based by preparing the information and creating a structure to build from. The filtering, sorting and grouping tools continually function throughout the lifecycle of reports, providing data management as user interact with the report. When the report is ready to export and share, pixel-perfect formatting ensures that the report looks good printed or on any device. Required features are:

- Pixel-perfect formatting
- Data filtering
- Data Sorting
- Data Grouping
- Data Blending

Report Elements – The elements available through reporting tools determine how report look and convey the information presented. Following report elements must be ensured in the selected reporting tool:

- Static and Dynamic Images
- Barcodes
- Tables
- Charts and Graphs
- Infographics
- Filters
- Widgets

Report Delivery – When it comes to share reports, delivery features ensure information is sent to the right place and can be easily interpreted and used by the recipient. This include adjustments for file type, digital format and language. Accessibility features let users control who can view reports, as well as where, when and how they can do so. Through the use of these customizations, the delivery of information through reports is simplified, individualized and secure. Mandatory features include:

- Formatting
- User Profiles
- Mobile Report Access
- Report Delivery Scheduling
- Access Restrictions and Security

Report Creation – Report creation features influence how a report comes together. Pre-programmed templates and customization abilities allow users to create reports in a way that is best for them. With templates, report creation is quick and simplified. Meanwhile, custom creation offers the functionality to build the exact report. Minimum features required are:

- Drag and Drop Creation
- Field Explorer
- Customization
- Templates
- Freehand SQL Command
- Real-time updates of data
- Layouts
- Themes

Report Viewing – The ability to export reports into different formats increases shareability. Converting a report into a more accessible format not only facilitate sending but also streamline embedding into programs or posting online through HTML and PDF formats. Required features are:

- Export to Microsoft Excel
- Export to Microsoft Word
- Export to PDF
- Export to HTML
- Report scheduling
- Embeddable Reports
- Mobility
- Multiple Users
- Access Levels

Report Types – The availability of different report types further expands option for report functionality and visualization. Required features are:

- OLAP (Online Analytical Processing) Reports
- Sub-reports
- Graph Reports
- Metrics Reports
- Invoices

13.1.10. IT Asset Management

IT Asset Management is a set of business practices that join financial, contractual, and inventory functions to support lifecycle management and strategic decision making of the IT environment. The fact that the IT infrastructure is changing each day is probably undeniable. Each day new users are being added, deleted, or moving and those changes affect the IT assets – hardware and software. Usually it's the responsibility of system admins to track and manage these assets. Potential IT issues could be resolved quickly, efficiently, and with better IT administration support, if there is good to excellent visibility into all the IT assets that exist in the organizational IT landscape – network, data center, remote sites, user workstations, etc.

Hardware Asset Management – Hardware asset management is the process of tracking and managing the physical components of computers and computer networks, from acquisition through disposal. The goals of hardware asset management are to account for all hardware asset on the IT infrastructure to provide comprehensive inventory visibility.

Software Asset Management – Software asset management is similar to hardware asset management, but focuses on software assets, including licenses, versions, and installed endpoints.

13.1.11. Communication Systems

The intensification of collaborative networking in enterprises, wise adoption of mobile applications and other progressive IT technologies, influence enterprise development. System should integrate multiple media capabilities including email, mobile, videoconferencing, content sharing, telephony, mobile office, and remote collaboration. The communication system for Thromdes should include the following:

Email – The basic requirement for any office to operate in today's IT enabled environment is use of email. Email should have ability to integrate with in-house business systems to generate notifications and alerts.

SMS Gateway – To reach wide range of citizen audience, Thromdes can leverage mobile communication network. Easiest way to communicate with citizens is using SMS channel.

Collaboration – The right enterprise collaboration improves efficiency and productivity. Another aspect of enterprise communication system is the ability to collaborate among the employees and with the citizens.

APIs – Internal business system should be able to integrate with the communication system like for sending email notification/alerts, SMS notifications / alerts. To achieve it, the communication system is required to provide standard API that can be consumed by the internal systems.

Contact Center – A contact center is very effective channel for citizens to interact and engage with the Thromdes. Contact center can be used to send information, citizens can seek clarifications as and when required, etc.

13.2. IT Solutions Roadmap

Sl. No.	Initiative	Indicative Investment (Nu. In million)	Time Line
1	Single MIS covering all revenue sources	Ongoing	2018
2	Asset register	Ongoing	2018
3	System with capability to generate Thromde Financial statements	Ongoing	2018
4	Data Quality	Ongoing – RMS & DAR	2018
5	Revenue and Asset Executive Dashboard	Ongoing	2018
6	SMS Gateway and integration	1.00	2019
7	Email Integration	0.50	2019
8	Online Payment Systems	0.50	2019
9	Barcode & QR Code based bills	0.50	2020
10	Document Management and Archival System	2.00	2021
11	Security Tools -- Anti-virus, firewalls, policies	0.50 (yearly)	2018
12	Physical Security for collection center (CCTV)	CCTV is installed	2018
13	GIS Integration	30.00	2023
14	Mobile apps for water meter reading, bill printing and distribution	0.60	2019
15	Integration with eCitizen Portal, G2C system	Ongoing	2019
16	Centralized Infrastructure for system hosting	2.00	2019
17	Integrated Reporting – Accounts and Revenue	2.00	2020
18	Bandwidth Augmentation	Ongoing – Thromde WAN	2018
19	ICT Controls and Governance mechanism	Ongoing	2018
20	Integrated ERP with BPM – Administration System	7.00	2024
21	Information Security Audit	1.5	2020
22	Multi-factor Authentication and Single Sign on	1.5	2024
23	Disaster Recovery Site – 4 Thromdes together	5.0	2020

| 24	Business Intelligence Tools, Enterprise wide reporting	2.00	2024
25	Citizen Engagement Platform	2.00	2020

14. ICT Initiatives Details

14.1. Revenue MIS

The Revenue management system is web enabled system which can be hosted in intranet setup as well as can be configured to be hosted in internet. The system consists of following modules:

- **Master Data Management Module** – Master Data Management module provides functions and features for capturing master data and parameter definition which will be used during system updates.
- **Tax Payer Profile Module** – this module will provide functions to capture and manage profile information of the tax payers. The profile information is recorded only once.
- **Property Update Module –** This module will have provision to update property information of tax payers as a result of several transactions.
- **Assessment Module –** The assessment module handles the computation of tax as per rules and regulations.
- **Collection / Payment Module** – This module will handle collection of taxes as per the assessment, issue of receipt and refund processing.
- **Revenue Collection Ledger** – This module will handle revenue Ledger functions like adjusting receivables, reconciliation with bank statements, update journals and ledgers.

The Revenue Management System covers functions for management of master data and parameters, management of tax payer profiles, property update transaction recording, and assessment of tax/fees/charge liability with updated property status, collection of taxes/fees/charges as per the assessment of tax/fees/charges and revenue accounting.

MIS reporting engine will allow the users to generate useful MIS reports as per the information captured into the system.
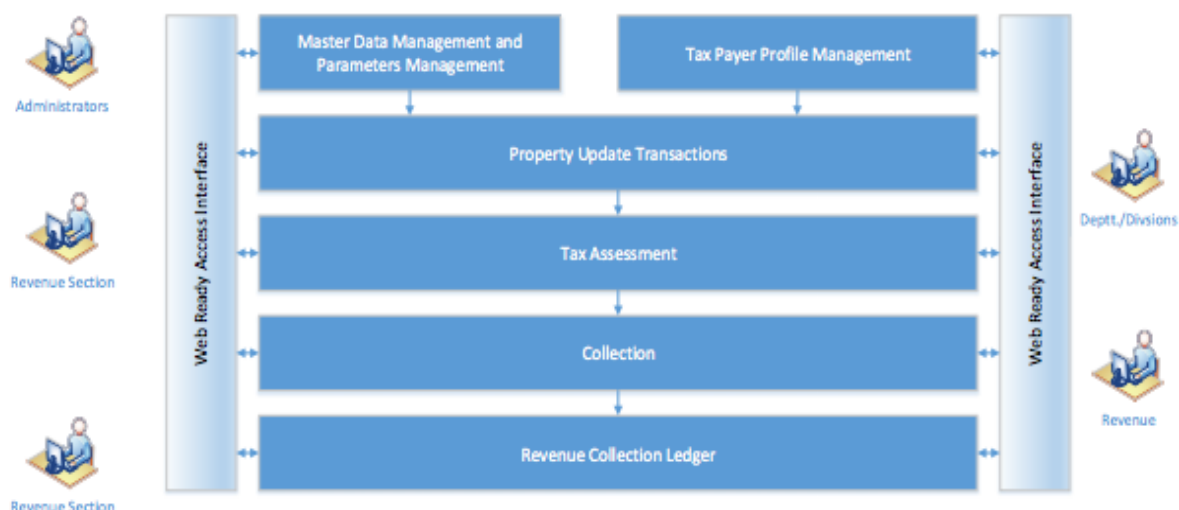
The Revenue Management system is web ready system which is developed using web technologies and can be hosting as web application in intranet setting as well as in internet setting.

The access control into the system is based on roles. Each role will be assigned with transactional pages. Users will be assigned with roles and users can access the features and functions as entitled to the role.

- Prepare and manage details of tax payers. Currently there is very limited information on tax payers and there is no complete database of tax payers in Thromdes resulting in many property owners not paying taxes
- Record and track the property updates of the tax payers and assess taxes as per the changes in the property transactions
- Assessment of taxes will be as per the updated property transaction records so that the tax payers pay and updated demand is generated
- Record collections as per the assessment including penalties for non-compliance. Refunds and surplus payment management
- Information exchange among different stakeholders during revenue collection cycle like status update of demand notice upon payment

RMS Modules

Modules	Functional Description
Master Data Management	The master data management modules will have functional features to manage master data and parameters used in other modules. Typical Master data includes: General Masters – this will allow capture and update of general masters like location, property types, departments, divisions, sections, units, etc. Tax/Revenue Source Masters – this will allow capture and configuration of tax/revenue sources and applicable rates and other parameters used for assessment

	Users and Roles – This will allow management of roles and users for accessing the system
Tax Payer Profile	Tax Payer profile will consist of information on the tax payers. Information on Tax payers will be obtained from Civil Registration once and uploaded in the system. User Interfaces will be available for entering tax payer information (both individuals and organizations) for updating the list of tax payers
Property Update Module	The changes in property ownership is captured in this module and appropriate demand notices are generated pertaining to each property update transaction. When payment is made for such demand notices status is updated accordingly
Assessment	The assessment module allows for computation of the tax liability of individual tax payers as per the parameters and property ownership of the tax payer.
Collection	The collection module provides mode of collection of tax liability as per the assessment and update collection records and initiate status update of payment status, and printing of receipts. Management of surplus payment and refund is available in the collection module
Revenue Ledger	The ledger records the data related to demand, collection and balance (DCB).
MIS Reporting	Management Information reporting module has the various reports used by the different departments, divisions, sections, units and the Thromde administration.

14.2. Asset Management System

Asset Management information system should cater to the functions of management of Asset Lifecycle for fixed Asset. The system should allow:

• Manage every asset from acquisition through disposal
• Capture all locations, organization, custodian, user and value change
• Apply depreciation schedule for assets
• Record maintenance event for each asset or group of assets
• Manage warranties and leases
• Track 5Ws (who, what, when, where and why) of all assets
• The life cycle of Fixed Asset is managed in three stages:

Asset Acquisition – Asset Acquisition allows departments/divisions/sections/units for planning for requirement of asset and send indent/request to central procurement division, consolidation of requisitions, prepare procurement plans and initiate procurement process by tendering. Information of vendors can be entered for future use, mark participating vendors for

particular tender, mark selected vendor. Once items are delivered capture item information, and invoice information.

Asset Use – This stage involves tracking of asset during use. Location information, organization information and user information are captured and used for tracking of asset. Process for asset transfer, asset inventory management and management of depreciation will be recorded and retrieved for use. Record maintenance records, post vouchers for maintenance cost and track warranties and leases and provide alerts on the periodical activities like lease renewals, maintenance schedules, etc.

Maintenance information can be captured to track the maintenance and plan for timely maintenance of assets.

Asset Disposal – Capture assessment report for disposal of asset based on the alerts, certify disposal of asset, record mechanism for disposal like auction, scrap collectors, etc.

History – Review a perpetual history record of every transaction for each asset. Auditable summary and detail will be available.

Reporting -- Report on current asset information, look back at a single point in time or trend the changes to organizational asset over time.

Depreciation – depreciation schedule can be applied to any asset as per the depreciation schedule adopted by Thromde or manual update of values calculated offline by Thromde officials.

14.3. Enterprise Accounting System

Thromde should implement enterprise level Accounting platform that is capable for holistic accounts management. Some the features that are mandatory include:

Accounts Payable – The Accounts payable module should be capable of efficient processing invoices and payments. It should be fully integrated, where applicable, to General ledger, Purchase Orders, Work Management and Fixed Assets.

- Budget checking for availability of funds that can be run at the fund, divisions/sections or line item level
- Configuration of TDS for automatic deductions
- Invoice processing based on invoice due date, accounts payable batch, etc.

Accounts Receivable – Should provide a flexible billing system for Miscellaneous Accounts Receivables integrated, where applicable, with General Ledger, Cash Receipting, and Property Information and Taxation.

Asset Management – Ability to records asset information, depreciation and value of assets with capability to generate comprehensive management reports on fixed asset.

Budgeting – Convenient budge preparation – activity-based budgeting, together with and activity or project based General Ledger.

- Ability to prepare budget using mix and match budgeting method – choosing line item budgeting for some areas and activity-based budgeting for other
- Ability to copy from one budget cycle to another and modify for a different budget year
- Budget reports to view variances in actual amount, percentages, comparisons with prior years, budget to actual, and multiple budget phase/revision comparisons

General ledger – All the modules should be tightly integrated with General Ledger. Ability to generate all inter-fund balancing journal entries from every transaction in every module.

- General ledger transaction to source transaction from all other modules should be accessible through drill downs
- Should provide ability to view current month, year-to-date, encumbrances, various budget cycles, budget to actual variances and prior years' information in a mouse click
- Comprehensive set of financial reports with complete control account ranges, page breaks, totals, dates, comparative budget cycles, summary or details, including zeros and other reporting options
- Templates for recurring journals entries reduce time spent in generating frequently occurring transactions.

Inventory – Ability to generate inventory status of the Thromdes.

Payroll – Ability to record leaves, attendance, earnings, deductions, arrears, advances, and loan installments. Automatic processing of pay slip using recorded information and automatic posting to accounts payables.

Integration – The Accounting system should have provision to use Service Oriented Architecture (SOA) or REST API based integration option with other Business Information Systems like Revenue Management System, Digitized Asset Register, G2C Online Service Systems.

14.4. Data Quality

With introduction of ICT systems, data availability and quality are a key concern. Data should be available and should be usable and validated, Thromdes are currently undergoing exercise on data quality improvement and upon completion of data collection and validation accuracy of data will be enhanced.

Bad data quality can lead to inaccurate and slow decision making. Data is of high quality when it satisfies the requirement of its intended use. If available data can be used to effectively communicate with the stakeholders, then the data is considered to be of good quality. Good quality data should satisfy the following:

- Accuracy – Accurate data conveys true information about the organization, and its stakeholders.
- Relevancy – Besides being accurate, data must be relevant to the needs and purposes of business.

- Completeness – Data quality is also defined by its completeness. As long as the data meets the expectations then the data is considered complete.
- Capable of being understood – Key to the data quality lies whether the data is understood.
- Consistency – consistency means data across all system reflect the same information and are in synch with each other across the Thromde.
- Conformity – Conformity means the data is following the set of standard data definitions like data type, size and format.
- Integrity –Integrity means validity of data across the relationships and ensures that all data in a database can be traced and connected to other data.

Without quality data availability, an ICT system does not function as intended. Along with investment in ICT systems, it is important to update the data quality to derive value from digitization and implementation of ICT systems.

14.5. Executive Dashboard

Executive dashboards, also sometimes referred to as strategic dashboards, are graphical interface using real-time data. The information allows management to get a big picture view of the organization against critical metrics, identify opportunities for expansion, and assess scope for improvements. Dashboards consolidate and arrange numbers, Key Performance Indicators (KPIs), and sometimes performance scorecards on a single screen, tailored for C-level executives and managers. The customizable interface must have the ability to pull real-time data from multiple sources like accounting system, asset management systems, revenue management, email system, or a website analytics program.

KPIs in the dashboard should be based on following criteria:

- The KPIs should relate directly to your organization's goals
- KPIs should be quantitative and quantifiable
- KPIs should be linked directly to the measurement of the Thromde's success

There are three main types of dashboards:

- Strategic/Executive Dashboard – Managers and executives at all levels of the organization can see the information they need to understand the health of the organization and identify potential opportunities for improvement. These dashboards do not provide all the detailed information needed to make complex decisions, but provide enough information to identify opportunities for further analysis.
- Analytical Dashboard – Data is used to understand trends by making comparisons across time and multiple variables. Analytical dashboards contain more information than strategic or operational dashboards. While analytical dashboards should facilitate interactions with data, include viewing the data in increasing details, it is important to maintain the ability to compare data across time and multiple variables.
- Operational Dashboard – These monitor operations in real time to alert users to deviations from the norm. Operational dashboards provide users with specific

alerts and provided them with exactly what information users need to quickly get operations back to normal.

14.6. SMS Gateway and Integration with RMS

Managing internal and external communication is often difficult task especially when there is a need to send messages to mass and also sometime personalized SMS. Thromdes need to send tax invoices based on the tax assessment to property owners and also mass information to the residents. An SMS gateway can solve these issues by bringing in a direct, reliable and universal communication channel.

An SMS gateway allows Thromdes to send and receive messages via a computer and automatic communication based on the configuration of business information systems. Some of the reasons for choosing SMS gateway as communication platform are:

- Speed – Delivering messages to citizen is one but it's important to do in a quick and timely manner. Reaches have established that 90 % of SMS messages are read within the first 3 minutes of being received. This ensures that the message is heard when it is required to be heard. SMS gateway also makes creating and sending messages a quick and easy task.
- Cost effective – SMS channel is cost-effective as compared to other channels with same level of effectiveness.
- Reliability – SMS is one of the most reliable communication channels. Email and mobile add continue to struggle against spam filters and ad-blocking. SMS is direct and consistent platform to communicate with stakeholders. SMS is also a reliable way create a true two-way conversation.
- Universal Platform – One of the reasons SMS is so effective is due to the widespread accessibility of mobile phones. Further, SMS services are also available on all mobile phones regardless of age or features.
- Integration – Thromdes use different software and processes. SMS gateways can be integrated with these systems through API integration. This allows Thromdes to seamlessly introduce SMS into existing taxation system and G2C online service systems.

Revenue Management System should be integrated with SMS gateway so that tax invoices can be sent to taxpayer as and when the demand is generated in the RMS. Appropriate trigger points in RMS should be identified and SMS will be sent when specified condition is met as per the trigger. Typically, SMS content shall identify the transaction and tax/fees/charges amount, date demand generation.

SMS gateway should have two-way communication channel where RMS can send SMS with dynamically generated information and citizens can fetch information using pre-defined "short codes".

Thromdes can use web-based interface to broadcast SMS information to multiple mobile numbers, schedule SMSs communication, use SMS templates, and so on.

14.7. Email Integration with RMS

Paper based bills require time for circulation and also require efforts of Thromde officers for billing including paper and other resources. Emails can be implemented as an alternative to SMS and paper-based bills will save time and money for Thromdes. The rationale for using email as communication channels are:

- Information from a Trusted Authority – Email represents permission-based communication. Individuals and entities will subscribe to receive content only from sources they trust. Citizens see their Thromde leaders as local authorities. Providing an avenue for citizens to receive information they want and need from the source they trust most is a powerful form of permission-based communication. Email is one of the mechanisms that bridges the gap between Thromde with information and the individuals who want to hear from them.
- Transparency of Information – Email communications also allow Thromde administration to prove their commitment to transparency and open dialogue. BY allowing residents the ability to subscribe to civic communications, it validates that leaders are accessible and they are committed to providing timely, essential local information.
- A Proactive Distribution of Information – Community members expect their leaders to provide then with information as soon as it has the potential to impact their lives. As the central hub to all local decision making, individuals not only expect their local government to provide valuable information but to do so timely. Email allows Thromdes to distribute information as soon as it is available.
- Integration – Email engines can be integrated with internal business engines to provide personalized information on areas like tax and other issues.

Revenue Management System should be integrated with Email Suite so that tax invoices can be sent to taxpayer as and when the demand is generated in the RMS. Appropriate trigger points in RMS should be identified and email will be sent when specified condition is met as per the trigger. Typically, email content shall identify the transaction and tax/fees/charges amount, date demand generation.

Thromdes can use web-based interface to broadcast email information to multiple email ids which can be fetched from Taxpayer database or mailing list managed in productivity tools like MS Excel.

14.8. Online Payment Option for RMS

Payment and collection center are one of the most critical business functions for the Thromdes. It has been discussed that towards end of year for tax and end of month for water tariff, there is heavy workload which results in human errors and loss of revenue. Also, citizen is required to travel to Thromde revenue counter every month for payment of water bill. This challenge can be addressed through integration of RMS with online payment channels (net banking, payment gateway and banking mobile apps).

Online payment system allows citizens to pay applicable taxes, fees and charges without having to visit the Thromde revenue counter. This could be using net banking, mobile payment apps of banks or any other payment Gateways.

Utility bills like power and telephone are paid using banking mobile apps in Bhutan. Similar services for collection of municipal revenue will enhance the compliance.

Integration with payment gateway, net banking and banking mobile apps is envisaged with due payment services as per the requirement for taxes, fees and charges. Citizen should be provided with functionality to make payment for all applicable taxes, fees and charges required by the Thromdes. Reconciliation modules should also be implemented to reduce effort and time consume for reporting the reconciliation activities.

14.9. Barcode & QR Code Enabled Bill Process

Bar-coded bills enable a user to uniquely identify a bill and avoid duplication. Barcodes are imprinted on the bills and require bar-code readers to identify numbers. Further, QR codes can be imprinted on the bills that will be read while using mobile based payment methods.

In absence of Barcode/QR code revenue staff is required to search bills using different parameter keeping room for error in selection or mistakes in enter the bill/demand numbers. Any typing error or mistake in selection leads to retrieval of incorrect bill and accrual om certain cases. Barcode or QR codes in bill and processing with use of such codes will reduce the manual errors.

This is especially useful is tax invoice is sent in emails, taxpayers can scan the code which will ensure that correct information is fetched from the system and payment will be made for the right account.

Bills will have to have barcode/QR code.

14.10. Document Management and Archival System

The document management and archival system should have the provision to capture paper documents manually or automatically via scanner, files, office documents, emails, images from various sources. Storing should be done centrally on a storage and records stored in database.

This guarantees long term compatibility and platform neutrality of documents.

- Automatic and/or manual capture of electronic and paper documents
- Effective searching via index, metadata and full text
- Automatic text recognition (OCR), manual full text entry option
- Audit proof archiving
- Efficient workflow system
- Automatic sorting and tagging
- Document sharing and document transportation
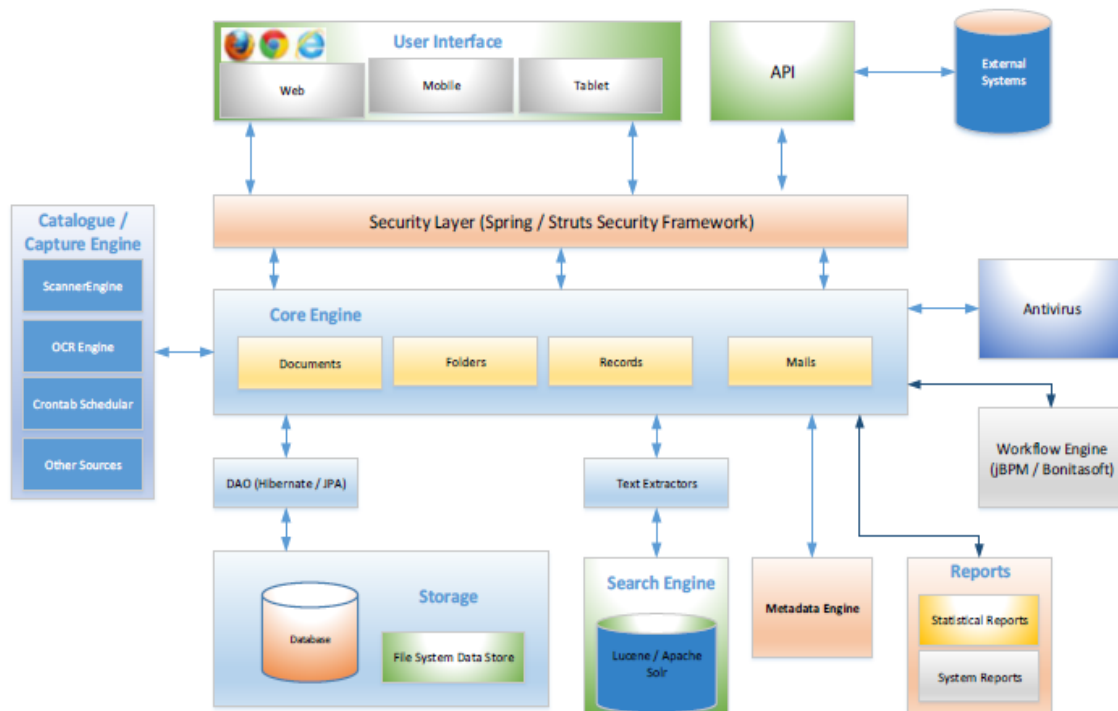
The solution that is to be customized / developed and implemented should comprise of the following essentials components:

- Import – Mechanism to bring new documents into the system, whether image scans or OCR scan of paper files or electronic files previously stored on a server or hard drive
- Storage – options to maintain system files via storage hardware, utilizing one or several distributed locations
- Identity – A scheme to index documents with discrete identities for accurate search and retrieval
- Export – A way to port and / or remove items from the system
- Security – Placement of password protection on certain files according to authorized user security controls

The stored documents should be allocated search terms and categorizations via manual tagging and/or automatic indexing and sorting, which are then stored in a database. Automatic indexing and tagging will be as per the tag inventory maintained. Once the document submitted, keywords in the tag library are scanned and all the words present in the document matching the words in tag library will be used for indexing. Generated tags for document are provided to user for review, modification and acceptance.

The system should provide document management functions, the storage capabilities for documents and data, and the central archival functionality. It should comprise of multiple services and processes, amongst which the Storage Manager, the Document Service, and the Administration function. The storage manager should have features for storing documents and data, whereas the document management functionality is the storage of metadata and other document properties. The entire communication should be enabled by the document service. Depending on the business processes, the document type and the storage options, the archive service should use appropriate techniques to store and access the documents. This will guarantee optimal data and storage resource management.

The system should be web-based as well as mobile based that can be restricted to LAN or user over internet or as hybrid. It should provide login interface to the user. Once the user credentials are entered, system menu based on the access control mechanism should be provided. All the features and menus should be provided based on the entitlements provided to logged-in users.

Document Search

- Search and retrieve documents using integrated document search technology. Search is based on tags (metadata) and full text search.
- Possibility of full text search of documents (MS Word, Excel, Power Point, PDFs and OCR content from scanned documents
- Find document instantly using a variety of search criteria. Instant search of recent documents and advanced search of document stored in the system for longer time period
- Search on user defined tags (meta data)
- Search on file information such as type, creation date, created by, date ranges, etc.

- Save options for custom searches so that they can be reused, and share saved searches
- Search across all categories/repositories using single unified search control

Proper search engine to access the documents will be implemented. Searching based on keywords which the tags and metadata and advance search will be available. Search results will provide documents based on the access privileges allowed by the owner of the document.

- Powerful searches available to easily locate documents and folders
- Profile Search, Date based search, Indexed Search and full text search
- Search for documents or folders on document or folder profile information such as name, title, created, modified or accessed times, keywords, owner etc.
- Search for documents/folders using user-defined data class index field values
- Ability to save search configuration for frequent search cases

Document Storage

The document storage will be based on rules configured in the system in-terms of retention, disposal, access, modification and sharing of documents. Document storage rules will be defined in the system based on the types of documents, document access records, and other parameters. Recent document will be accessible in instant search whereas those documents in the system for a longer period of time will have to be searched using advanced search option. For instance, documents of one-year age in the system will be accessible instantly and those greater than one year will have option for full system search.

- Store documents in categories and file structures
- Store document in file system with records management and encryption (AES)
- Define limits on document size and storage for categories, file structure and users
- Segregation of documents and recent documents and documents in the system for longer time period. Document residing the system for more than a year will not be accessible in instant search. If the document is not available in the instant search category then option for full system search will be provided to the users
- All the documents stored in the archival system will be encrypted using appropriate encryption infrastructure. Partial encryption of documents and completed encryption of records is proposed. However, encryption strategy will be finalized during the assessment phase of the project.

Some document may be required to be stored in multiple copies for easy access and records and audit information is updated for access of any of the copies.
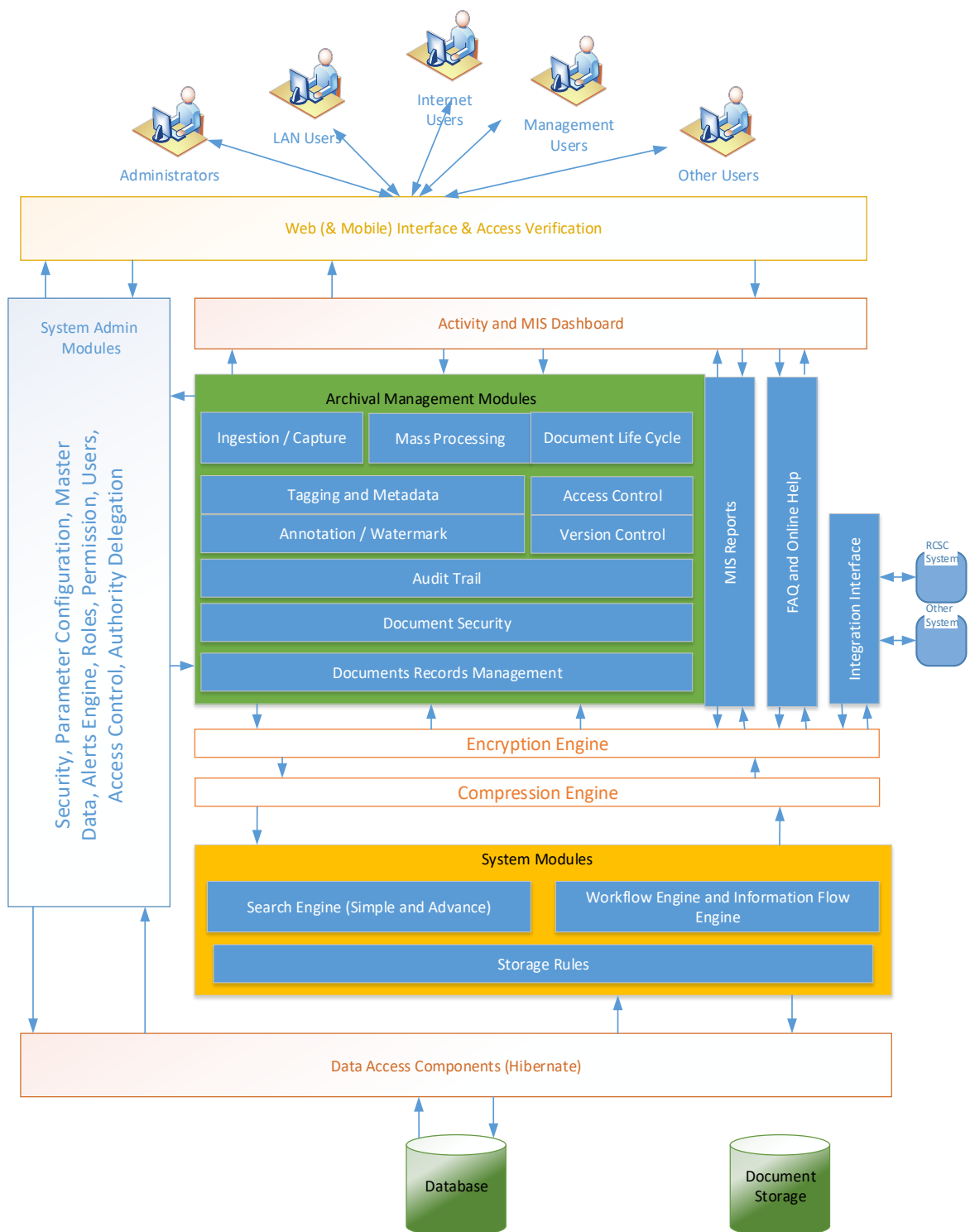
Document Indexing and Tagging

- Specification of standard Tags/Metadata as well as custom tags for any document category and the individual document.
- Creation of document attributes for document category. When user selects the document category attributes will be used to generate document capture form where attributes appear as form fields. Supported attributes are:

- String fields (For Example Sender Name, Sender address, etc.)
- Date Fields (For Example PO Date, registration date, hearing date, judgment date, Dispatch Date, etc.)
- Number Fields (For Example Amount, Account Number, etc.)

- Use of tag inventory feature to find documents that have the same tags
- Multiple tags/metadata
- Using the tag inventory and the content of the document system will automatically create the metadata and tags for the document submitted for archival
- The document tag generated by the system can be reviewed by the user and if felt necessary can be modified. The tag/metadata will be used while searching the document
- The system will offer rule based multiple possibilities to create document tags and metadata.

The application of metadata is central to the successful management of all records. Metadata is applied at different levels of the resources/document aggregation, at different times and for different purpose. Typically, metadata describes:

- Date and time of creation (ingestion) and registration of the record in the archival system
- Organizational context
- Original data format
- The use made of the documents over time including revisions (if any)
- Governance of creation, retention and disposal of the records
- History of actions on the document record
- Links to the universal resource indicator (URI) including information about version and date of link to specified URI

Document Scanning and Capture

One of the main components of the envisaged online archival system is the document capture and submission feature. Document capture component will have functional features to create repositories and archives. The repositories and archives will be presented with tree structure navigation.

- Direct upload of document from Scanning systems
- Capability to store different kinds of files, images and documents
- Data class/metadata/keyword association with documents, images and files
- Document can be arranged in required formats
- Support for hierarchical storage of documents by grouping of documents into folders and sub folders and indexing of documents for faster access

RCSC will have repositories and archives and while submitting the documents, it is required that relevant repositories are selected. Repositories and archives will be created by authorized user from the agency.

Repositories are created and users can be assigned to the repositories. Only those repositories that are assigned to the user is accessible to submit documents. Repositories can be created based on the file structures adopted in the agency.

- Complete browser-based document capture module
- Scan and upload document in single go
- Upload of digital documents like MS Word, Excel, PowerPoint, PDFs

Repository properties can be defined in terms of additional fields, assign users and assign standard rights to users. The additional fields are displayed during document submission by the users.

Users can capture document and submit to any of the entitled repositories. Document capture will be possible either directly by invoking the scanner if scanner is attached to the computer or upload of already scanned documents.

When user scan the document and upload the document in the system, uploaded document is displayed in the Preview section of the system. Page preview will display the content of the document. Once the document is reviewed and acceptable other information related to the document can be captured towards left of the document. Standard fields allow capturing of document attributes, links to document, manual keywords, etc. Full text option to be provided to allow review of OCR recognized text of the document of manual entry of text of the document. While creating the repository if any additional fields are specified then those additional fields are available to capture the values for the additional fields.

After capturing all the information required for the document, document can be submitted for archival. When the document is submitted, system will generate tags and metadata for the document.

Access Control

Document encryption is supported for business processes involving sensitive information. The system will use ACL templates for access control. ACL templates is a smart way to manage the system permission. Administrator can create various ACL Templates and assign rights to the templates for public, users, groups and roles associate with a document category.

- Users access only document that administrators want the users to access or the creator of document wants the user to access the document
- Simple and easy to use ACL templates
- Permission based individual document, document category or workflow process
- Granular level permission for access, create version, delete, print, check-in, check-out, download, email, etc.

When user successfully login apart from document capture and submission menu option users will also have menu for document access. Document access menu is also based on the repository access privileges. List of entitled repository are provided in tree style navigation structure. All the archives and repositories can be accessed based on the access control privileges.

When user selects any repository, all the documents in the selected repository will be listed. User can access any document as required. Access to document will be based on the authority provided by the document owner.

Document searching option will be using standard fields, full text searching and specific additional fields. Matching results will be displayed as list.

Version Control

- Check-in and checkout functions for tracking of documents
- Preservation of old versions
- Access to prior versions
- Option for version notes
- Revision history that includes usernames, timestamps and comments
- Version management for tracking documents revisions
- Support for image and electronic document versions
- Facility of version comments and search across versions
- Check-In and checkout support for sharing of documents
- Roll back and original document restore option

Document Sharing

- Sharing of documents using email directly from the archival systems
- Role based security for restricted access to documents
- Workflow for sharing documents
- Track details of the shared documents

Document sharing can also be achieved through management of permission on the document and also through configuration of workflow on the document.

Workflow

Document submission for archival will follow workflow where any document submitted for archival will be reviewed by competent authority and will require approval by the reviewer. Approving authority may review the document from content perspective, users to whom the document is shared, and other attributes of the document. Accordingly, submission could be approved or rejected.

Only upon approval the document can be accessed by the assigned users.

- Document routing and sharing
- Document approval
- Notifications, Alerts and Escalations

Full Text Searching

Standard search uses tag and metadata, users assigned to, date range of approved archive and links of documents. All matching documents will be displayed. Upon selecting particular document, the document is displayed.

- Full text tagging will happen using tag inventory for the document category
- Tagging using unique words and phrases into a database of tags
- OCR scanned document, MS Office and PDF documents will support full text searching

Apart from document preview, system will provide option to view the full text of the document, links related to the document and history of the document. Full text will be either the text recognized by OCR scanners or the full text entered by the user for those document normal scan documents. Document history will show activities like submission of document for archival, approval of submission, access of document, new versions, re-submissions, etc.

Bulk Upload Documents

- System will provide option to submit bulk of scanned documents that are already scanned with submission and approval process flow
- For those documents with several pages, adequate mechanism to identify the beginning and end of the document will be implemented using barcodes

Mass processing of documents will be possible. In this case, barcodes are used, which will be placed in the first page of the document. This will allow the system to recognize the beginning and ending of the documents and implement dividing, sorting and tagging automatically. Automatic scanning of large batches of documents with different items to be scanned can be realized this way. The allocation, sorting, tagging and even the distribution to the users will be automatically done.

- Multiple Upload of files
- Users must have Create (Add) permission enabled on Document Category and uploaded files / documents should not be associated with any workflow process. Documents can be searched after upload and assigned to workflow process

Annotation and Watermarks

- Annotation for highlighting, marking text, underlining, pointing arrows, putting sticky note on documents
- Annotate Text and image stamps on document to indicate signatures, approval seals, etc. without affecting the original document format.
- Print documents with or without annotations
- Strong version control
- Version Management for tracking document revisions
- Support image and electronic documents versions
- Facility of version comments and search across versions

System Activity Audit

Every activity in the system will be recorded with option to access and review. Some critical activities will be posted in system administrator's dashboard. Activities that require to be posted in system administrators' dashboard will be identified during assessment phase.

Records Management

Records capture all the transactions, official communication and processing that happens in an organization. Records act as a reference point for all the operations and activities in the organization. In addition, records are also necessary for external obligations mandated by law such as fulfilling compliance requirements and legal discovery requirements. Most, if not all, organizational activities result in creation of new records or updating of existing records.

Crunched under the massive volume of records, organizations are always on the lookout for record management solutions, which efficiently manage the records, both electronic and paper-based, in an organization and provide quick and easy access to these records. Records in an organization might exist in various formats such as MS Office documents (Excel, Word files), images, certificates designed in various graphic applications, e-mails, database, and so on. A records management solution must not only cater to records existing in various formats, but also manage the records that are often spread across departments, processes and functions.

Online Archival system will maintain records of documents stored in the system. Searching of document will be based on regular expressions on document records and the content of the documents.

- Information repository for document classification and organization
- Organizing document into cabinets, Folders, and Sub Folders for classification of information
- Creation of User defined data classes with multiple user defined indexes of various data types
- Association of data classes and keywords with documents and folders for easy indexing and retrieval
- Filing and indexing of documents for convenient retrieval
- Standard Move/Copy/Delete operations for folders and documents
- Linking of documents for cross referencing related documents
- Support for defining multiple level of access permissions on documents like read, create, modify, annotate, delete, print, etc.

Classification – The system will offer several options of document structure and classification of documents. Tree navigation will be possible to navigate the repositories. Repositories can be as per the organizational structure and file structure used by the organization.
Retention Management – Rule based retention of documents will be possible. Based on the rules specified format, location and copies of documents may be managed. Based on the retention rules documents may be disposed automatically by the system or system will notify the owner to review the document and process for disposal.
Disposal of Document – Manual disposal or disposal based on the rules will be possible in the system. For some documents/repositories automatic disposal can be configured. For other documents based on the rules in the system, document owner will be notified for disposal and user can process for disposal of the document. Document disposal will require approval from competent authority.

Storage Rules

The document storage will be based on rules configured in the system in-terms of retention, disposal, access, modification and sharing of documents. Document storage rules will be

defined in the system based on the types of documents, document access records, and other parameters. Recent document will be accessible in instant search whereas those documents in the system for a longer period of time will have to be searched using advanced search option. For instance, documents of one-year age in the system will be accessible instantly and those greater than one year will have option for full system search.

Some document may be required to be stored in multiple copies for easy access and records and audit information is updated for access of any of the copies.

Security

Apart from generic web application security, system will implement document security like use of timestamp, proof of submission, access audits, and encryption.

Access control will be based on the document sharing options configured by the document owner. Actions can be specified like access only records, view document, download document, submit new version, etc.

Tamper-proof Storage – System will implement recording of proof of submission, proof of approval and appropriate key infrastructure to ensure the documents are protected from tampering. Any unauthorized access will be recorded and document owner as well as and shared users will be notified regarding the access and tampering of document and the document information.

Access Control – Document access will be defined by the document owner with action permission like access, view, download, revision, etc. Further, system administrator and agency head can review the document access authorization and revoke access privileges. This will ensure only authorized users will have access the documents. Access privileges can be revoked or assigned any time on any document in the system.

Encryption – Documents and records will be adequately encrypted.

Controlled Deletion – Disposal will be strictly based on the rules configured in the system. Any manual deletion of documents will have to be approved by competent authority.

Auditing – Complete audit trail of the user activities will be maintained and certain critical activities will be marked for notification to system administrator and agency heads for immediate information.

The systems shall adhere to following security requirements:

- Information Management and Security Policy (IMSP) document during deployment.
- The software should provide audit trails and logs mechanism for content changes performed by system users.
- Maintain time series data so that certain information is not lost with passage of time and repeated updating.
- Include up-to-date CAPTCHA program as a remedy to stop spam and other intrusions wherever required.
- Handle Session Hijacking, session replay, etc.

- Input Validation to prevent attacks such as buffer overflows, cross-site scripting, SQL Injection, etc.

Security Implementation will include remedies to common vulnerabilities like the following:

- Cross Site Scripting
- Injection Flaws / SQL Injection
- Malicious File Execution
- Insecure Direct Object Reference
- Cross site Request Forgery
- Information leakage and Improper Error Handling
- Broken Authentication and Session Management
- Failure to Restrict URL Access

14.11. Security Tools

With increasing number hardware being used in operations which include mobile devices like tablets and mobile phones it important to have security tools in addition to basic firewall and virus protection. Some of the security tools required in addition to firewalls and virus protection are:

- Endpoint Protection – When the network grows in size of more than 10 devices, the endpoint protection software, which is also referred to as unified threat management software is recommended. Endpoint protection is installed on a central machine and delivered to clients via the network, providing firewall, port and device control as well as malware protection for PCs and tablets.
- Endpoint Detection and Response – Endpoint detection and response (EDR) technologies are more proactive then endpoint protection. Rather than providing basic protection, these technologies detect, investigate and contain security incidents.
- Identity Management – When Thromde reach a stage where employees have different permission level to access data and when citizens are allowed to create online accounts to avail services then identity management software is required. It initiates, captures, records and manages user and device identities. With use of mobile devices for water meter reading identity management is very important.