



# MAPANDAN WATER DISTRICT

OPERATIONS MANUAL

MAPANDAN WATER DISTRICT



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## I. INTRODUCTION

The Operations Manual of Mapandan Water District (MAWADI) contains the general information about the agency, its underlying function, mandates, operating procedures and organization.

The Manual aims to provide knowledge and understanding about the district's responsibilities and structures, water distribution system and the operational controls, to its readers especially the district's employees and concessionaires.

MAWADI Operations Manual is divided into several parts as follows:

General Information. It contains the company profile of the district, such as its history, mission, vision, service pledge, mandates and functions and areas of operation.

Organization and Responsibilities. This indicates the structure, duties and responsibilities of every section in the district.

Operational Control and Supervision. This part describes the powers of authority, supervisory and operational controls of the district.

Operating Procedures. This describes the step-by-step procedures and work instructions in narrative or with the use of activity flow charts including the flow of forms.

## II. DEFINITION OF TERMS and ACRONYMS

Category of LWD – The categorization is a two-stage process. The initial stage is categorization based on the Number of Active Service Connections. The second stage of categorization considers the following factors: Gross Revenues, Total Assets, Net Income before Interest and Depreciation, and Staff Productivity Index. These factors will determine the Point-Rating Category Points. The resulting Point- Rating Category is compared with the Service Connection Category; whichever is lower is the FINAL Category of the LWD.

COA-	Commission on Audit; responsible in the audit of the district's transaction
CSC-	Civil Service Commission; Administer and enforce the constitutional and statutory provisions on the merit system for all levels and ranks in the Civil Service
DBM-	Department of Budget and Management

ERC-	Energy Regulatory Commission; the agency where the district received its COC for the generator sets
LWUA-	Local Water Utilities Administration; with a specialized lending function mandated by law to promote and oversee the development of water supply systems in provincial cities and municipalities outside of Metropolitan Manila.
NWRB-	National Water Resources Board; the Policy-Making Body for the Philippine Water Sector.
PhilGEPS –	refers to Philippine Government Electronic Procurement System
SALN-	Statement of Assets, Liabilities and Net Worth and is submitted to the Office of the Ombudsman

### **III. GENERAL INFORMATION**

#### **Profile**

The Mapandan Water District, a Government Owned and Controlled Corporation, was established on August 1, 2006 when the Local Water Utilities Administration issued a Conditional Certificate of Conformance No. 612 on the same date. It started when the Sanguniang Bayan passed the SB Resolution no. 148 on April 26, 2006 upon the request of then Hon. Mayor JOSE FERDINAND Z. CALIMLIM, JR. and now Vice Governor of Pangasinan.

A public hearing was held upon the advice of LWUA for the purpose of forming the District wherein more than 250 sectoral and community attendees agreed for the immediate formation. Hence, MAWADI was born on August 1, 2006.

After creating the District, five (5) members of the Board of Directors and a General Manager were appointed. In 2007, the laying of pipes, transmission lines and construction of major facilities were implemented. And during this same year that MAWADI was one of the youngest water districts in the country.

MAWADI was initially categorized as Small Water District in October 2008, with almost 350 concessionaires after its actual operation began on April 2008 and served all 15 Barangays then eventually re-categorized as "D" on the year 2012. To date, the district has more than 4,482 active concessionaires which led to new category- Category C, effective September 2015. MAWADI is geographically located in the municipality of Mapandan, province of Pangasinan with a latitude and longitude of 6°1'37.65" N and 120°27'10.49" E respectively within the 3rd district of Pangasinan.

The District is headed by Engr. ISAGANI D. DACANAY as the General Manager. He is assisted by 22 regular personnel (including casual status) and 4 Job Order employees to be able to serve the public effectively and efficiently.

### **Mandate and Function**

Pursuant to Presidential Decree No. 198 (Provincial Water Utilities Act of 1973), Mapandan Water District was formed to perform the following duties:

- Acquiring, installing, improving, maintaining and operating water supply and distribution system for domestic, industrial, and agricultural uses for residents and lands within the boundaries of such districts;
- Providing, maintaining and operating wastewater collection, treatment, and disposal facilities; and
- Conducting such other functions and operations incidental to water resource development, utilization and disposal with such districts, as and necessary or incidental to said purpose.

### **Vision**

“Water for every Mapandanian.

### **Mission**

"To provide excellent services to ensure a clean, quality, potable water that will flow to every household.

### **Value Statement**

- S      erve with integrity
- E      nthusiastically and
- R      apidly or promptly respond to our
- V      alued conscessioners needs, requests and complaints with
- I      nnovations respect
- C      reativeness, courteousness, and
- E      xtreme demonstration of sensitivity, appropriate behavior and professionalism

- P provide adequate and accurate information, display fees and charges, make available feedback mechanism
- L level oneself in humility to everyone with pleasant, and
- E equal treatment to anybody, hence
- D develop, enhance and maintain
- G good camaraderie in the workplace among the
- E employees who are always in proper uniform and identification, available during office hours, consistent in applying rules and regulations, well disciplined, responsible, respectful, respectable, considerate, cheerful, cooperative, cohesive thus best assets of the office of Mapandan Water District which provide conducive facilities to work with, update gadgets, modern technologies. Provide comfortable waiting area and confectioneries for the concessioners.

### **Areas of Operation**

Since the start of the operation of the district in 2008, MAWADI has been serving the whole municipality of Mapandan, with 15 barangays namely:

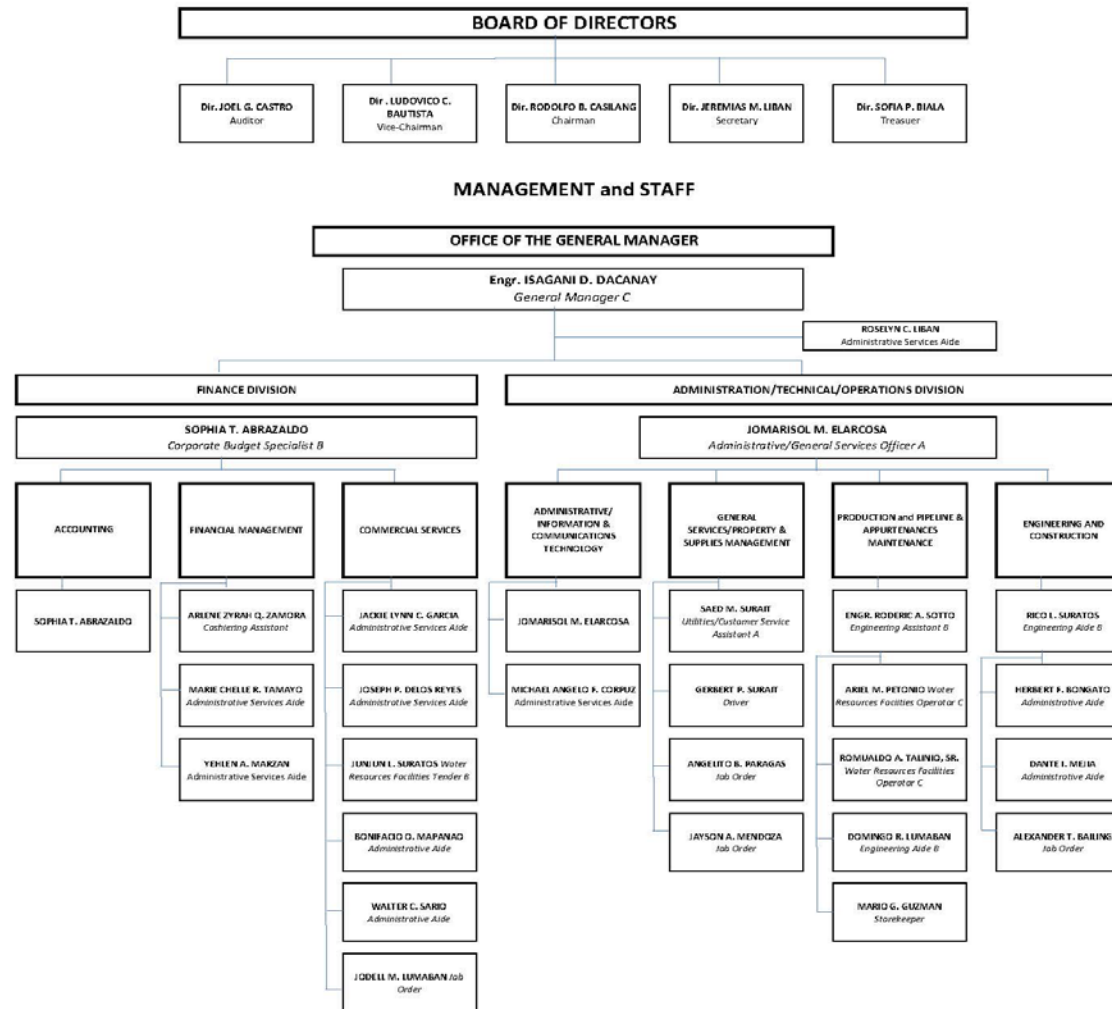
- |           |             |
|-----------|-------------|
| ▪Amanaoac | ▪Luyan      |
| ▪Apayay   | ▪Nilombot   |
| ▪Aserda   | ▪Pias       |
| ▪Baloling | ▪Poblacion  |
| ▪Coral    | ▪Primicias  |
| ▪Golden   | ▪Sta. Maria |
| ▪Jimenez  | ▪Torres     |
| ▪Lambayan |             |

## **IV. ORGANIZATION AND RESPONSIBILITIES**

### **Organizational Structure**

The organizational structure of Mapandan Water District is created in accordance with the Department of Budget and Management Revised Local Water District Manual on Categorization, Re-Categorization and Other Related Matters (LWD-MaCRO). It is with this same Manual that MAWADI was re-categorized from Category D in 2012 to Category C in 2015. To date, the district has a Staff Productivity Index of 166:1.

MAPANDAN WATER DISTRICT  
Mapandan, Pangasinan  
**ORGANIZATIONAL STRUCTURE**



## **Duties and Responsibilities**

- Board of Directors. The function of the Board shall be to establish policy. The Board shall not engage in the detailed management of the district. (Presidential Decree No. 198, Section 18)
  
- Office of the General Manager. The General Manager is in-charge of the overall administration of the District's operations; oversees personnel management; directs and sets forth procedures; execute duly established policies and guidelines relative to its services in order to attain organizational effective and efficiency. The General Manager acts as the authorized representative for various transaction of the district.
  
- Administrative/Technical/Operations Division. The Administrative/Technical/Operations Division is in- charge with the following:
  - a. Human Resource & Information & Communication Technology  

HR's functions are manpower planning and recruitment; personnel welfare; and training and development.

Information and Communication Technology is in-charge the systems development and maintenance; and systems application of the district.
  - b. General Services & Property and Supplies Management  

General Services makes sure that building and grounds are well-maintained and that motor vehicle and equipment are in good condition and always ready for deployment. Meanwhile, Property and Supplies Management takes charge of the materials and equipment quality control and property and warehousing.
  - c. Production and Pipeline & Appurtenances Maintenance  

This unit is in-charge with the water production; water quality; electro-mechanical; water distribution; restoration of service; pipelines and leakage control; and non-revenue water management.

It is in this division where the supply and quality of water is strictly monitored and maintained. As well as the maintenance of the pump, the pump station itself, and the transmission and distribution lines.
  - d. Engineering and Construction  

Engineering and Construction takes charge of the planning; design; mainlines expansion and rehabilitation (including new service connection); and general improvement and civil works.



It also provides oversight and review of technical reports, designs and approval/acceptance. It supervises and participates in the development and administration of the division's budget and directs the forecast of additional funds needed for equipment, materials and supplies. This unit also responds with emergency repairs of mainlines and the like.

The Admin/Technical/Operations Division also handles and processes permit applications from various agencies, such as from the National Water Resources Board and Energy Regulatory Commission. It also is in-charge with the transaction with the Civil Service Commission, Department of Budget and Management and the Office of the Ombudsman.

- *Finance Division.* The Finance Division oversees the district's needs in terms of its finance and commercial transactions. It has the over-all supervision of the following:

- a. Accounting

Accounting involves general accounting such as but not limited to the preparation of financial statements. It is also in-charge with the transaction with the Commission on Audit, DBM and Bureau of Internal Revenue, to name a few.

- b. Financial Management

Under Financial Management are Treasury; (Cash Management and Collection) and Budget.

- c. Commercial Services

Commercial Services duties and functions are billings (meter reading, disconnection and reconnection); consumer accounts maintenance; new service connection application; and customer care.

It also performs a variety of difficult and complex customer relations and office accounting support activities related to the maintenance of water service records and billing records.

## V. OPERATIONAL CONTROL and SUPERVISION

### Board of Directors

The Board of Directors are the policy-making body of the district.

### General Manager

The **General Manager** shall exercise operational control over the following duties:

- ☐ Participation in district's activities with other organizations.
- ☐ Regular conduct of staff and committee meetings;
- ☐ Preparation of agenda for Board Meeting;
- ☐ Implementation of agency's policies, rules and regulations;
- ☐ Approval of appointments/appointing authority

### Administrative/Technical/Operations Division

The **Administrative/Technical/Operations Division** shall exercise operational control over the following duties:

- ☐ Maintenance of Personnel Files such as 201 files, leave records, service records, and the like
- ☐ Preparation of appointment for employees and board of directors
- ☐ Review/Consolidation/Submission of the Statement of Assets, Liabilities and Net Worth to the Office of the Ombudsman
- ☐ Maintenance of cleanliness of office building and surroundings
- ☐ Review/Consolidation of Performance Ratings of employees
- ☐ Preparation of Payroll and various lawful deductions thereof
- ☐ Preparation and Implementation of Gender and Development Activities
- ☐ Issuance of Materials and Supplies
- ☐ Physical Count of Inventory
- ☐ Operation of Pump Controls and Appurtenances
- ☐ Preparation of Pump Operation Reports
- ☐ Maintenance of prescribed chlorine dose
- ☐ Operation of power generating set during power interruptions
- ☐ Maintenance of cleanliness of pump stations' perimeter and pump equipment
- ☐ Installation of new service connections
- ☐ Repair of leakages and other plumbing works such maintenance of in-house service lines and distribution mainlines and transmission

- ☐ Hydrant and blow off regular flushing

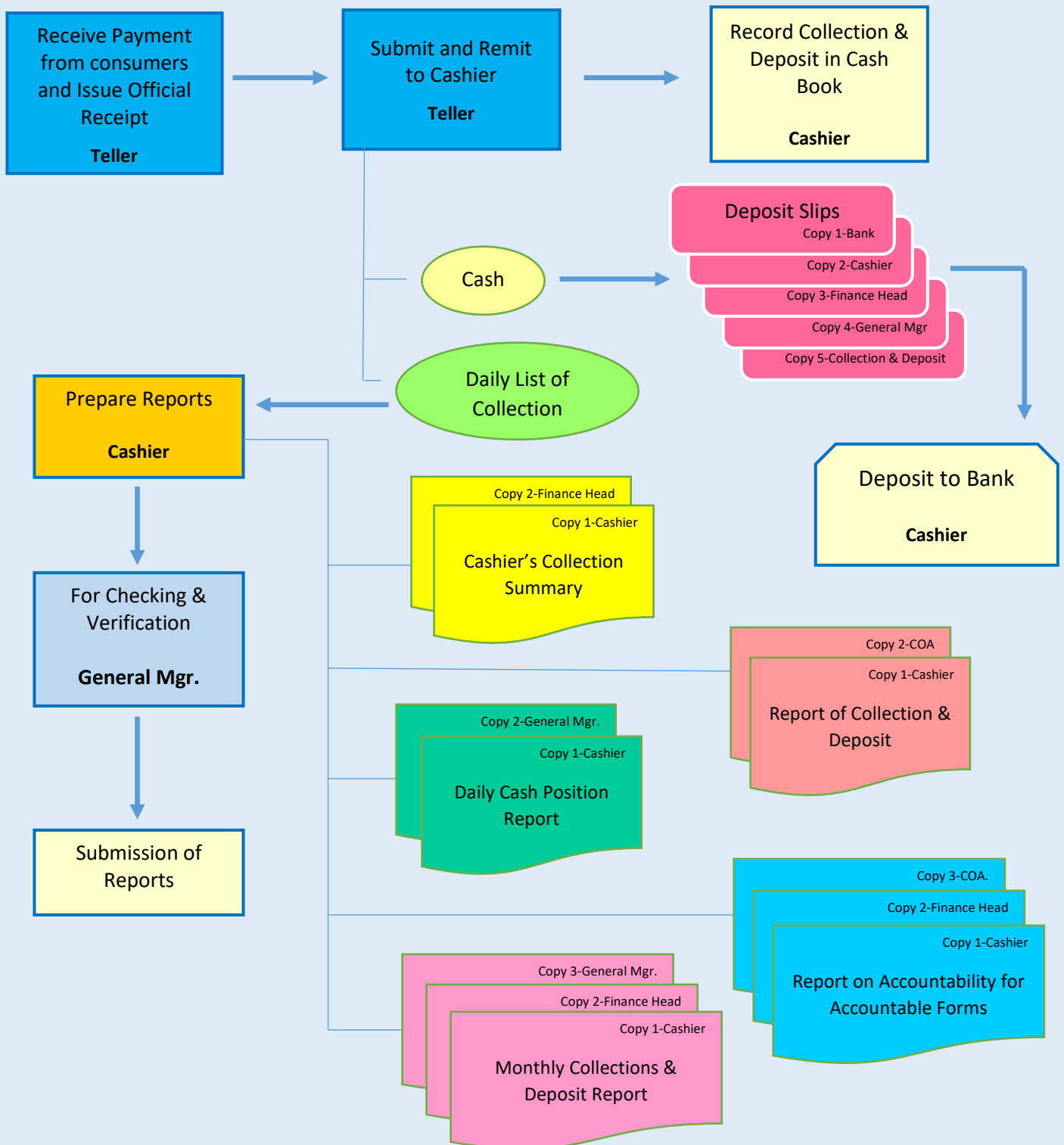
### **Finance Division**

The **Finance Division** shall exercise operational control over the following duties:

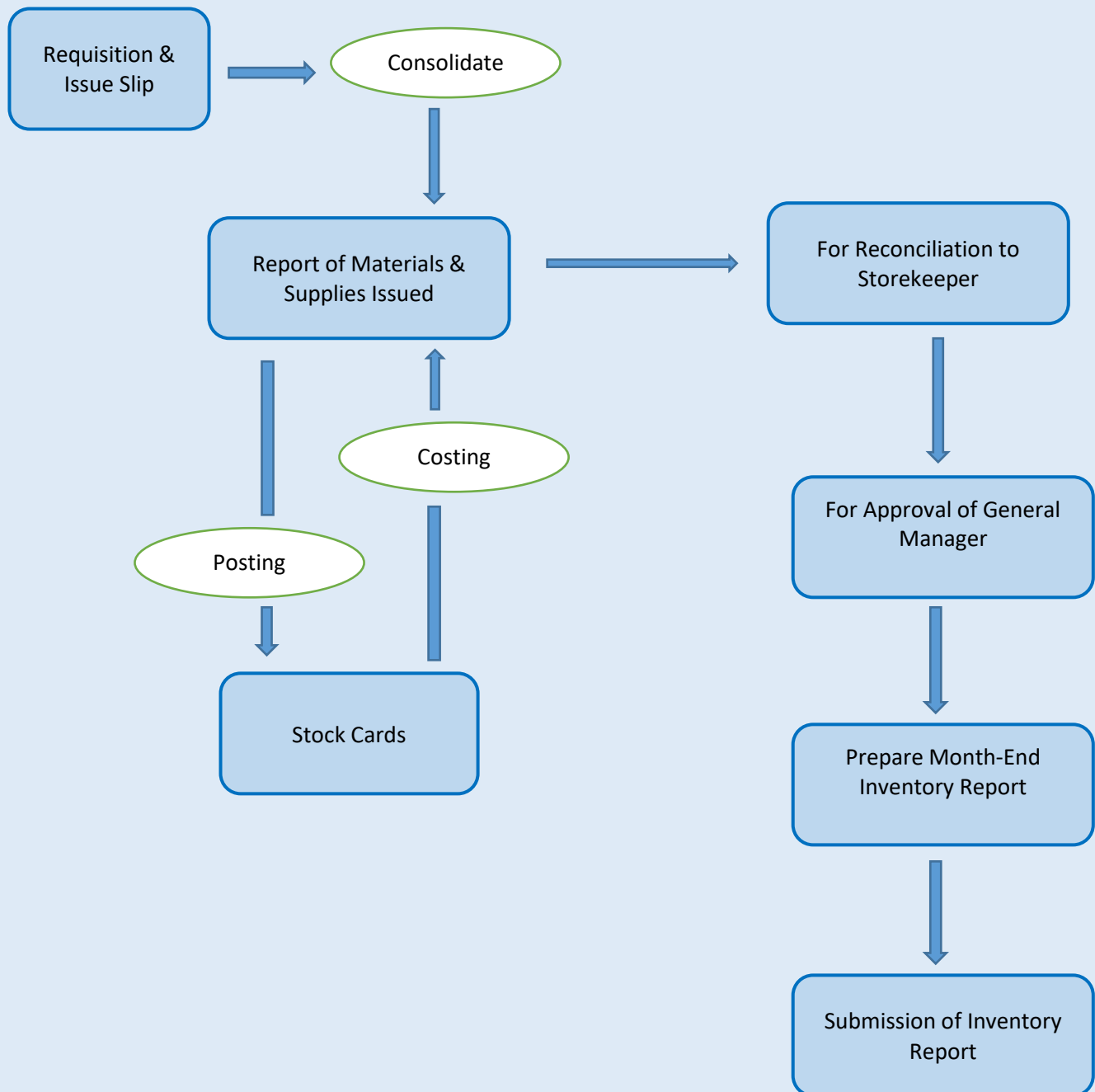
- ☐ Preparation of Financial Statement, Monthly Data Sheets and other financial reports
- ☐ Preparation of Disbursement Vouchers and related documents
- ☐ Update of Book of Accounts, General and Subsidiary ledgers
- ☐ Update of Stock Card
- ☐ Preparation of Bank Reconciliation Statement
- ☐ Preparation/Consolidation of Annual Budget and Annual Procurement Plan
- ☐ Preparation and Maintenance of Petty Cash Fund, Petty Cash Book, Cash Book, Check Book, Daily List of Collection, Cashier's Collection Summary, Daily Cash Receipts Record, Daily Cash Position Report, Monthly Report on Collection and Deposit and Monthly Report on Accountability of Accountable Forms
- ☐ Preparation of checks for payment to various obligations
- ☐ Deposit of collection and other related transactions with the depository bank
- ☐ Release of Payroll
- ☐ Preparation and Maintenance of Billing Report, Accountable Forms Report, and Ageing of Accounts Receivable Report
- ☐ Read and Record of water meter readings
- ☐ Delivery/Tendering of Water Bills
- ☐ Preparation of Service Contracts to new concessionaires
- ☐ Disconnection of water meter connection

## VI. OPERATING PROCEDURES

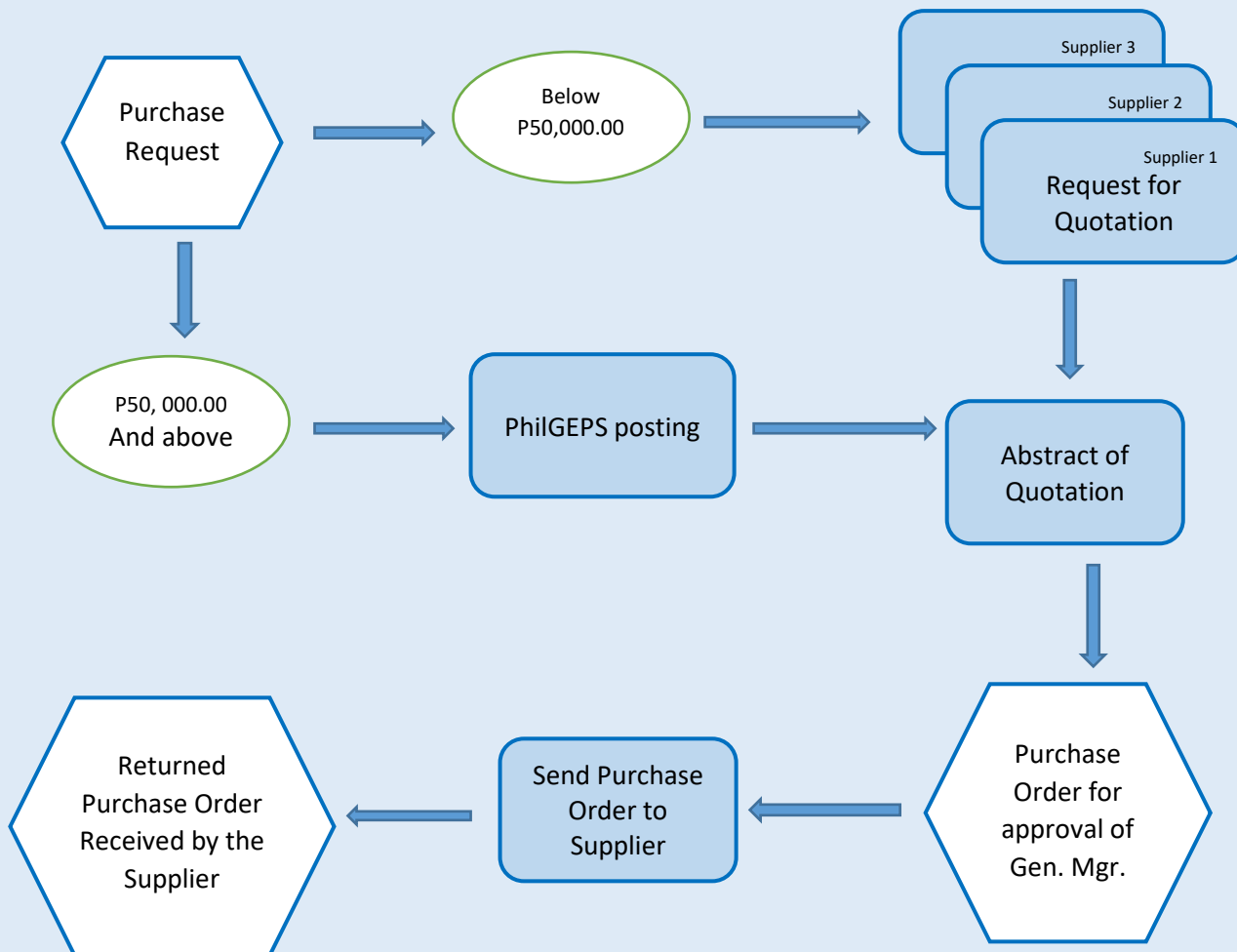
### CASH AND COLLECTION PROCESS FLOWCHART



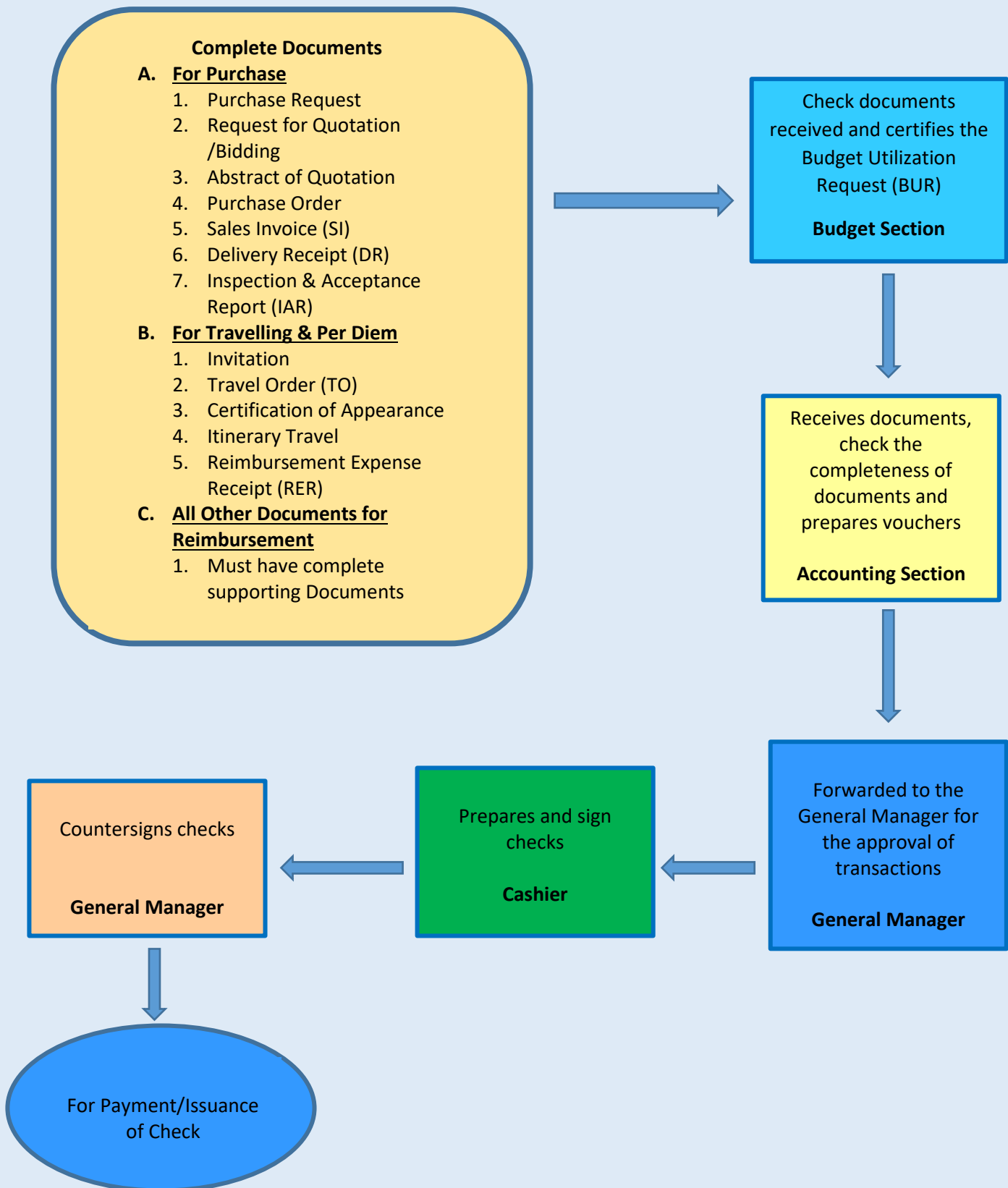
## INVENTORY COSTING PROCESS FLOWCHART



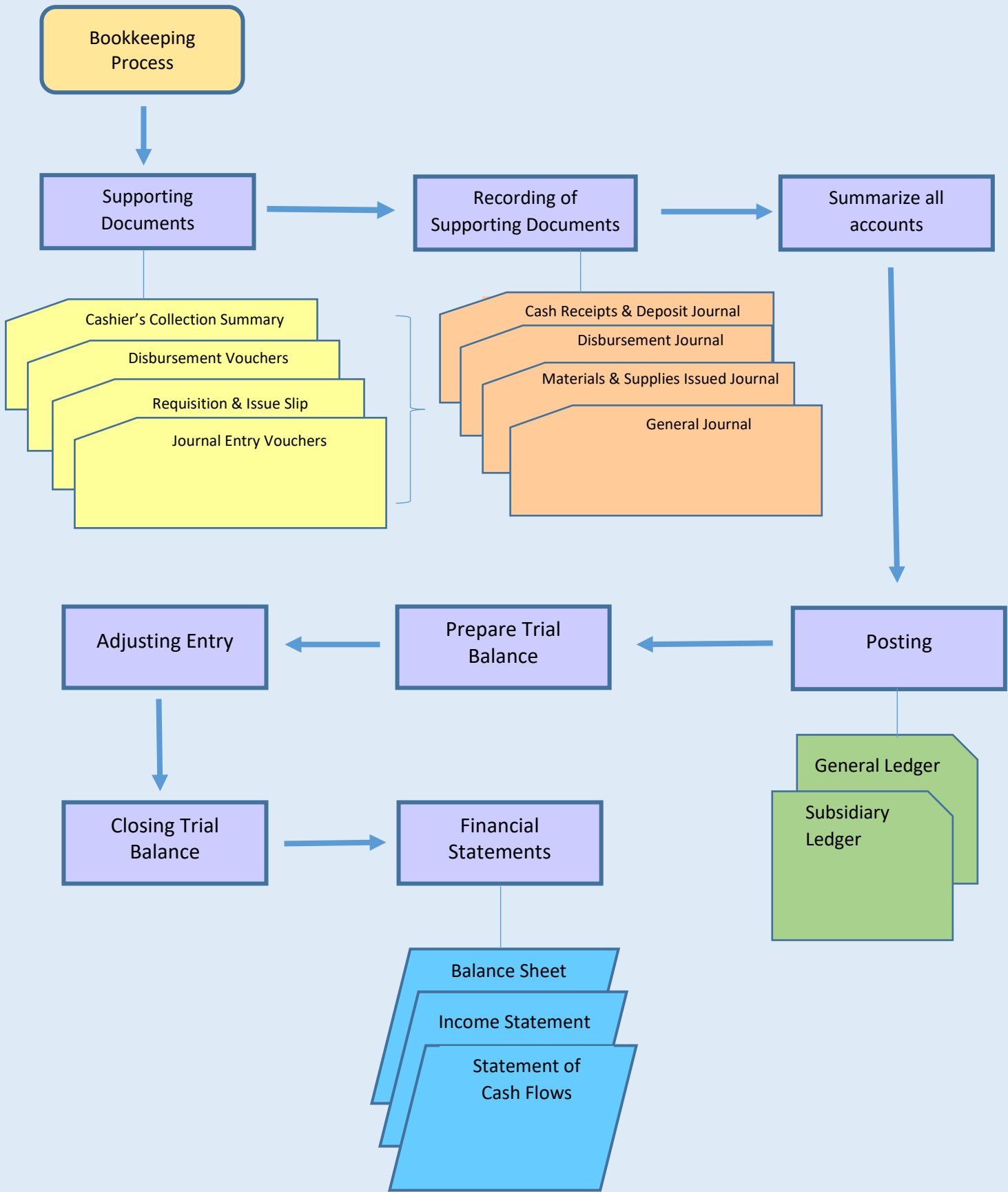
## PROCUREMENT PROCESS FLOWCHART FOR SHOPPING/ SMALL VALUE



## DISBURSEMENT PROCESS

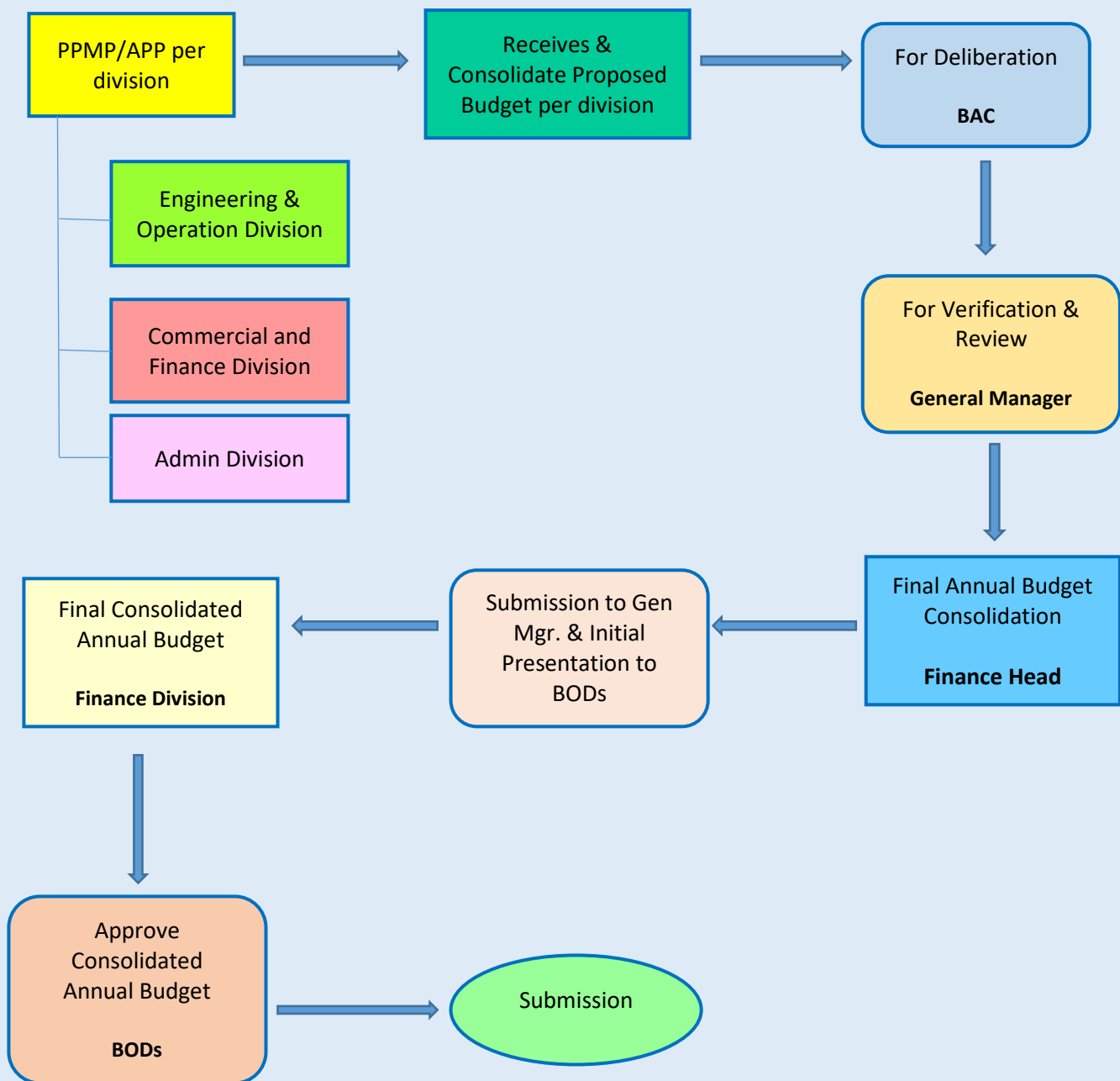


**FINANCIAL STATEMENT GENERATION PROCESS**

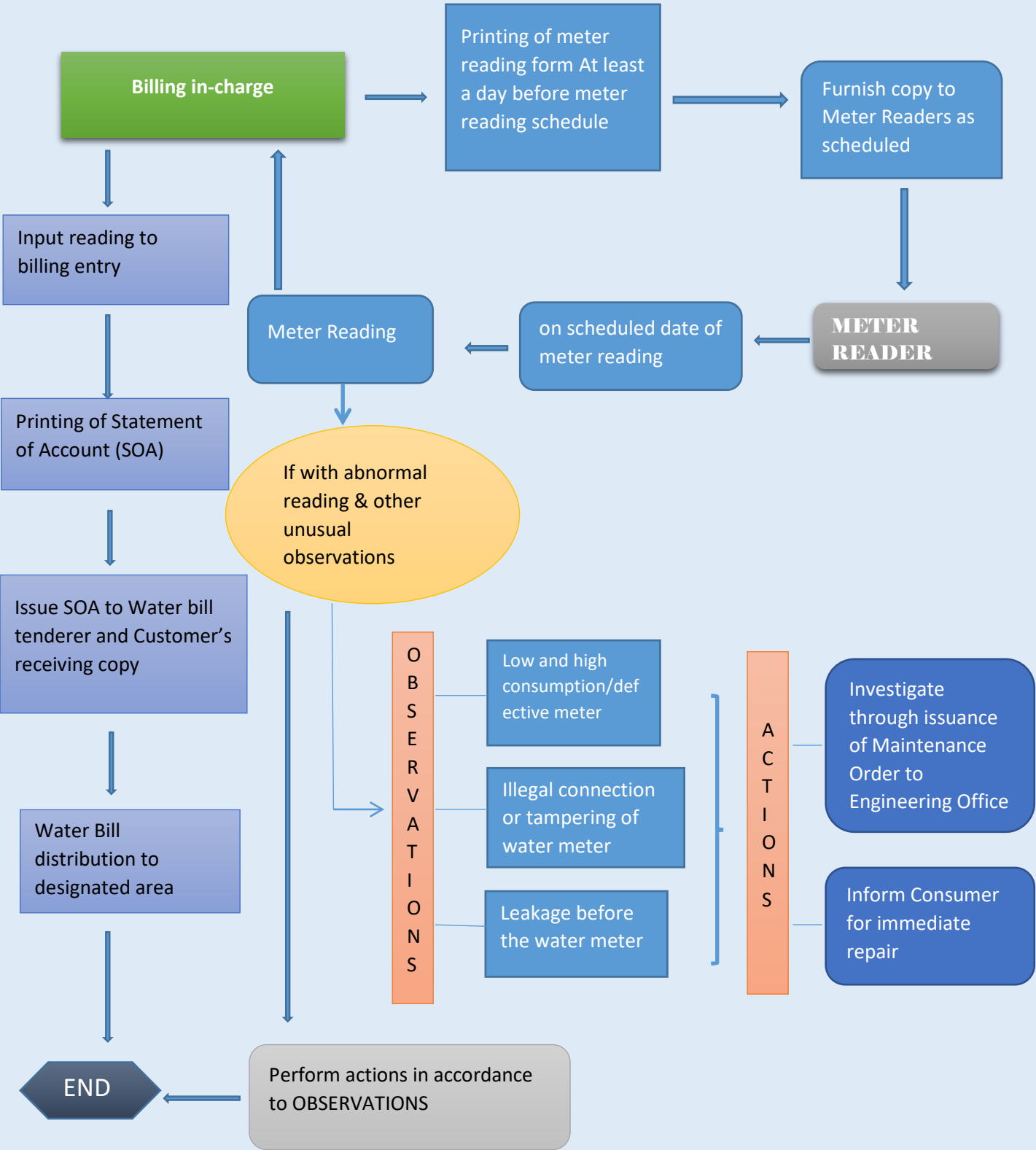




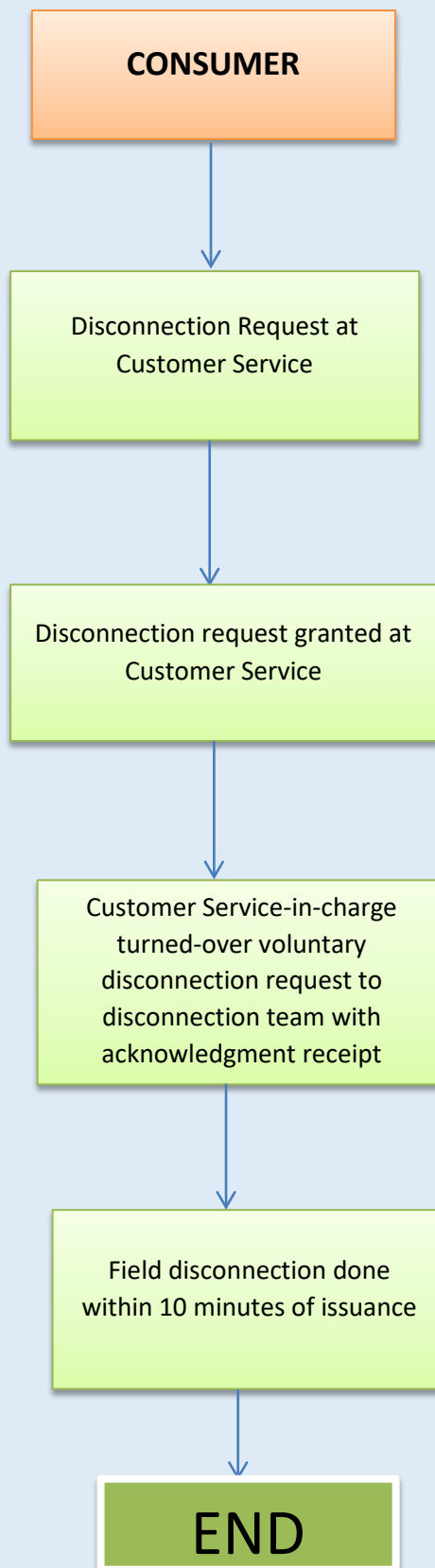
## CONSOLIDATION OF ANNUAL BUDGET



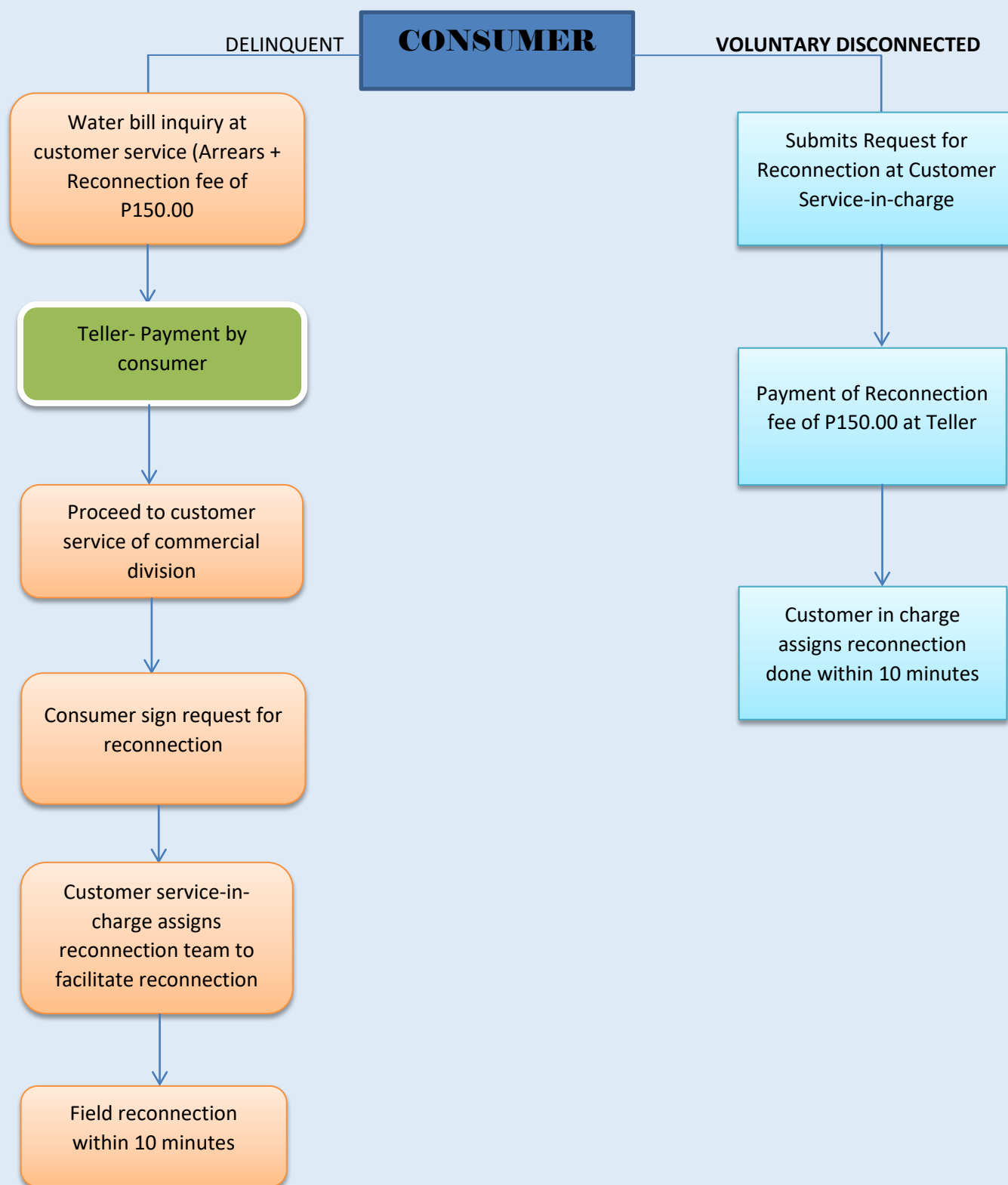
PROCESS FLOW OF METER READING & BILLING PREPARATION



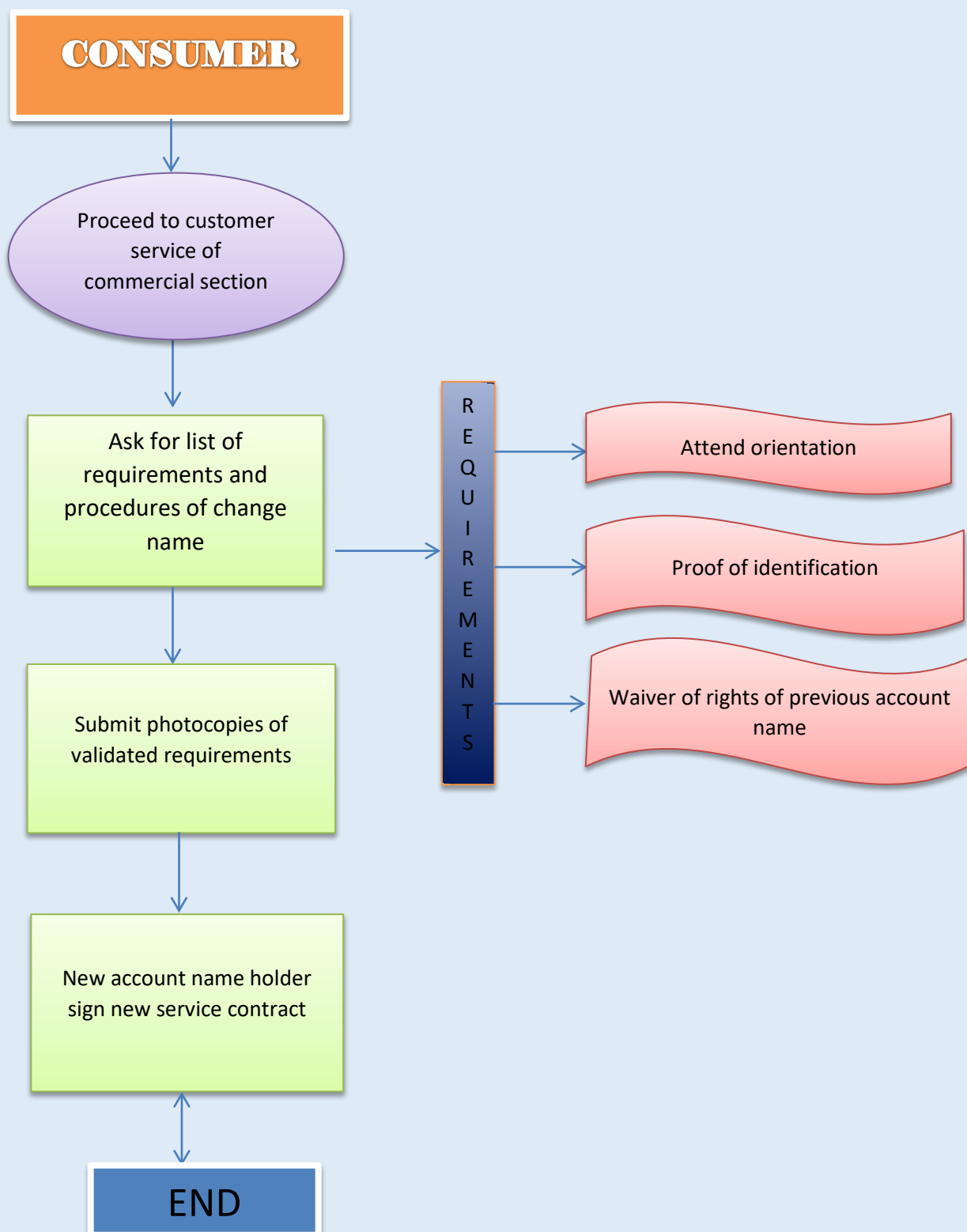
## VOLUNTARY DISCONNECTION



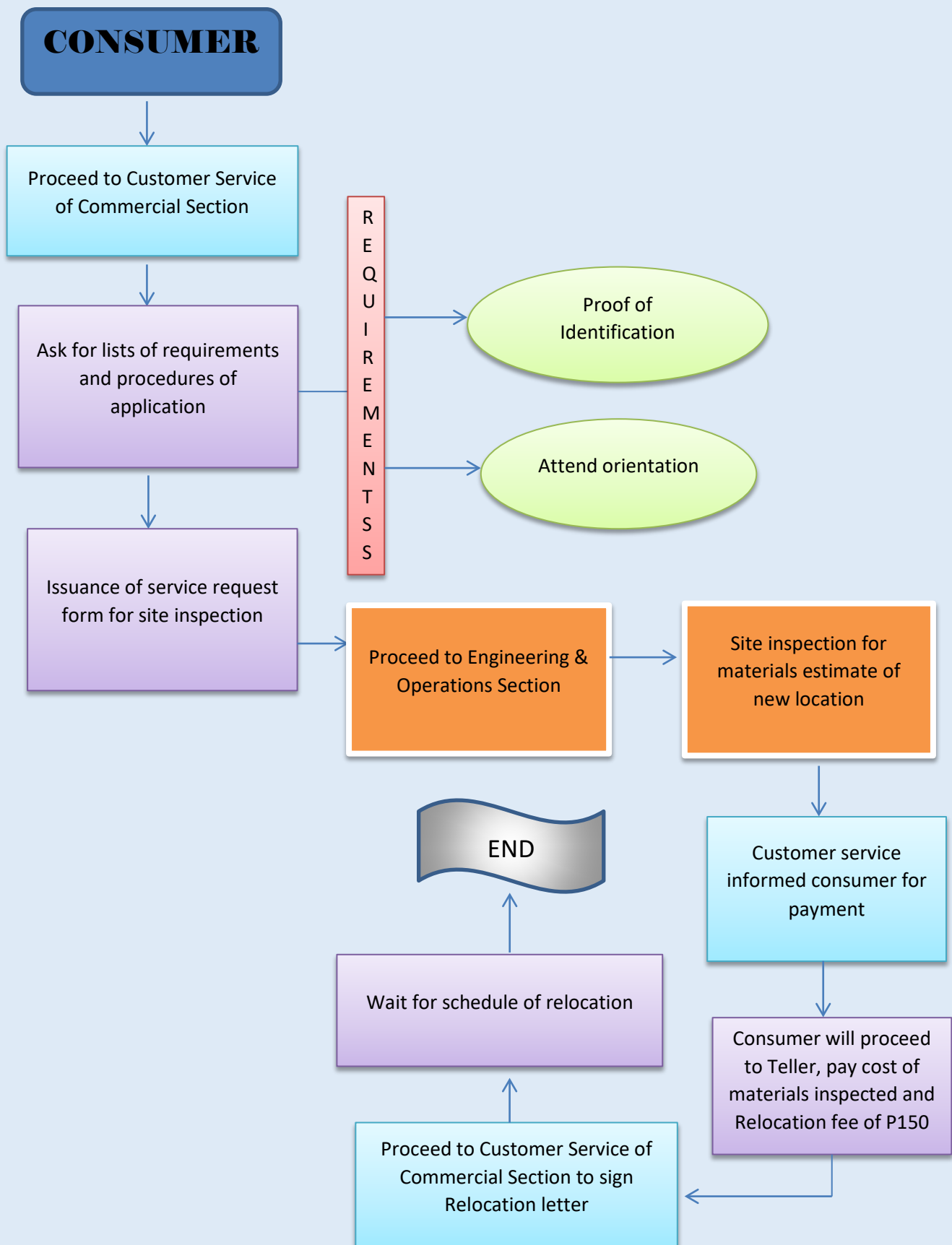
## RECONNECTION PROCESS FLOW



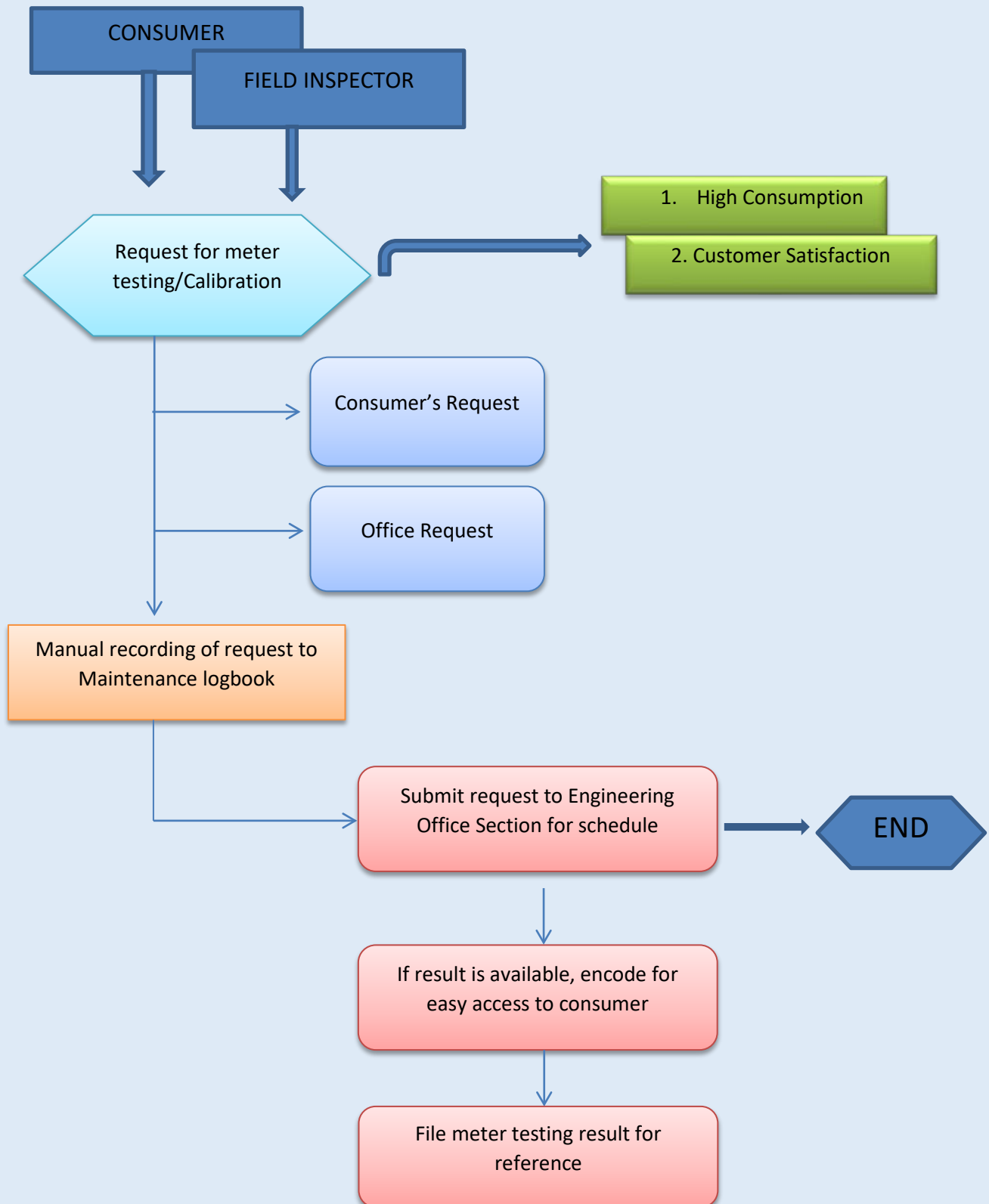
## APPLICATION FOR CHANGE OF ACCOUNT NAME



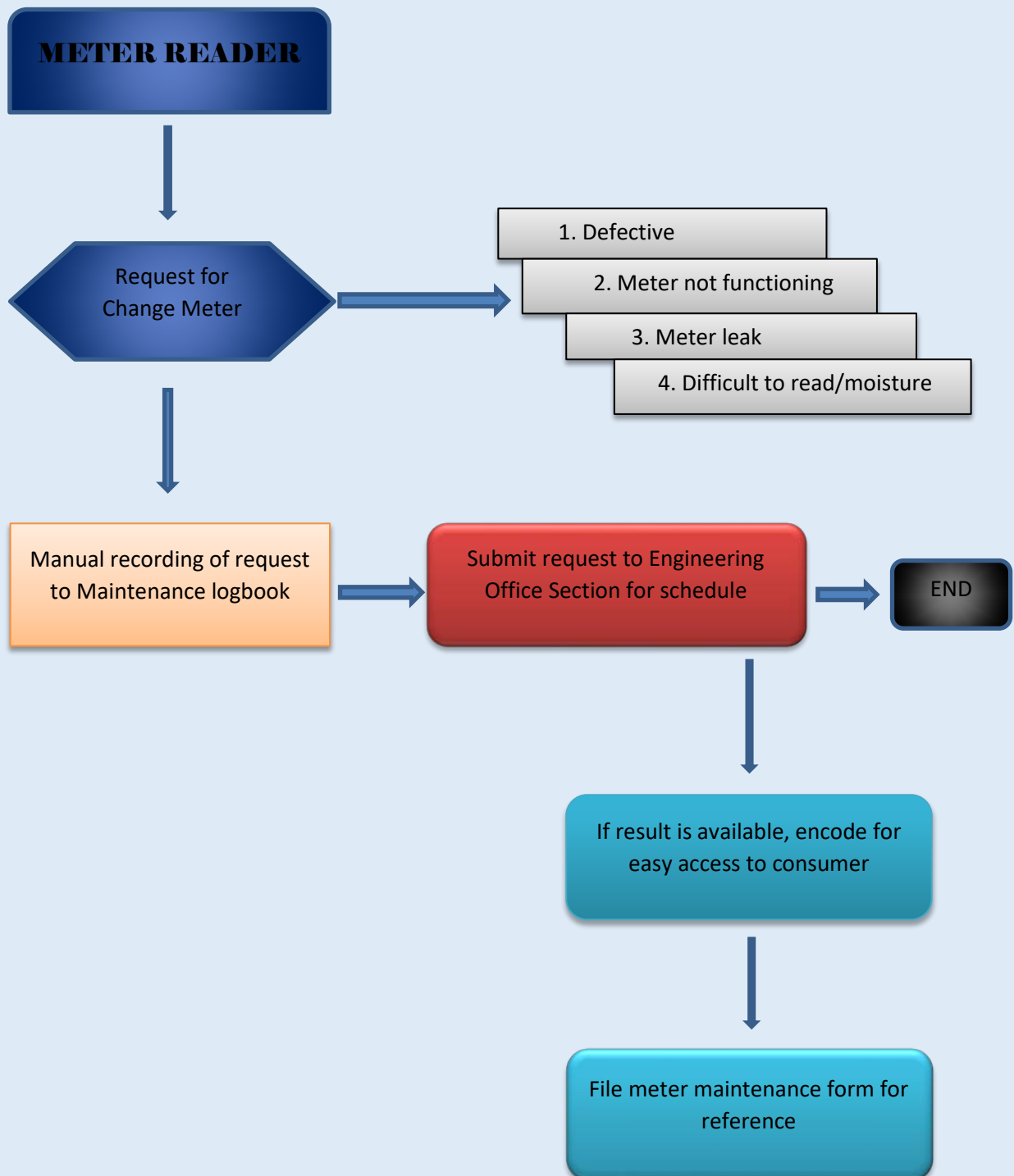
## APPLICATION FOR RELOCATION



## PROCESS FLOW FOR METER MAINTENACE REQUEST (METER TESTING/CALIBRATION)

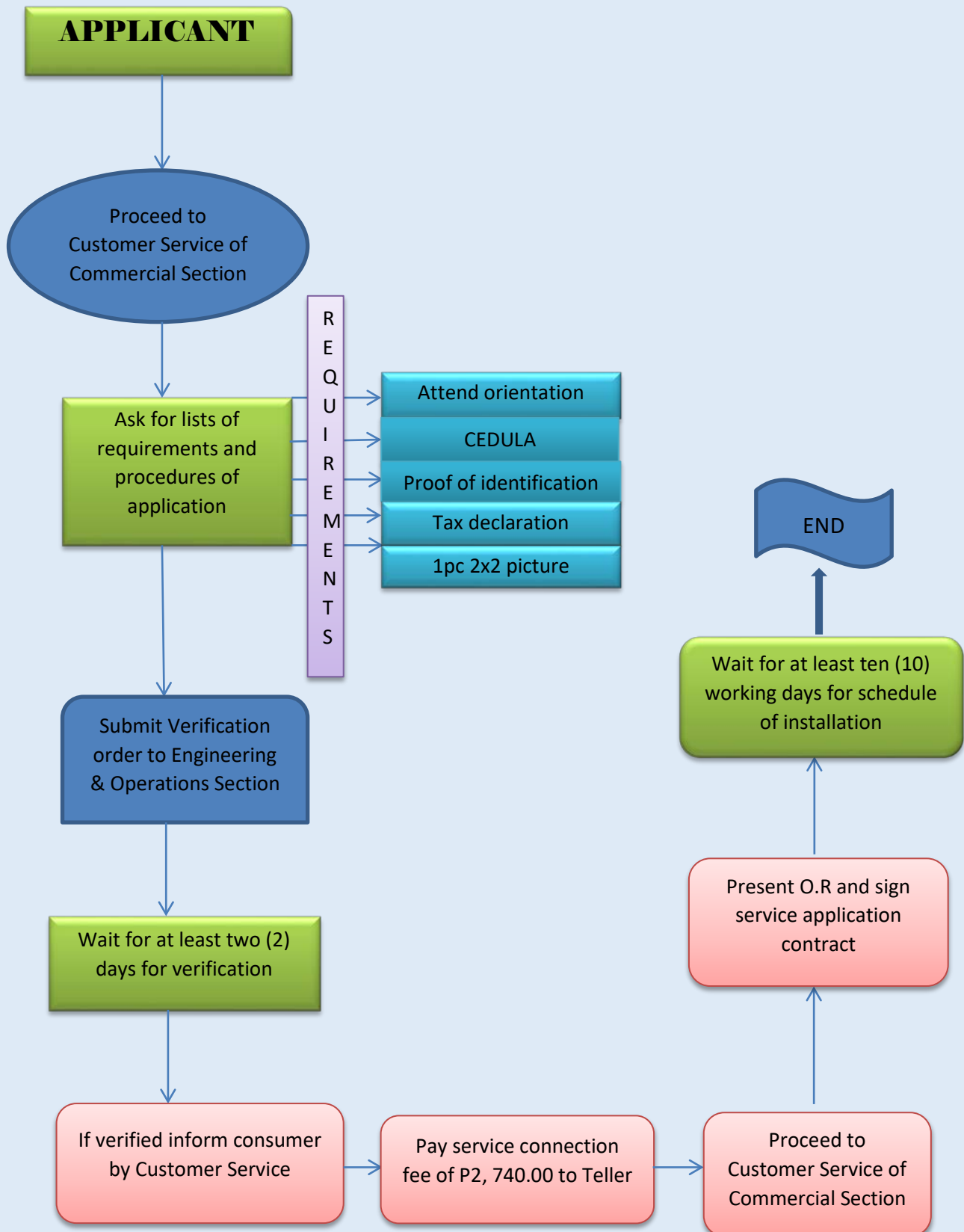


## PROCESS FLOW FOR METER MAINTENANCE REQUEST (CHANGE METER)

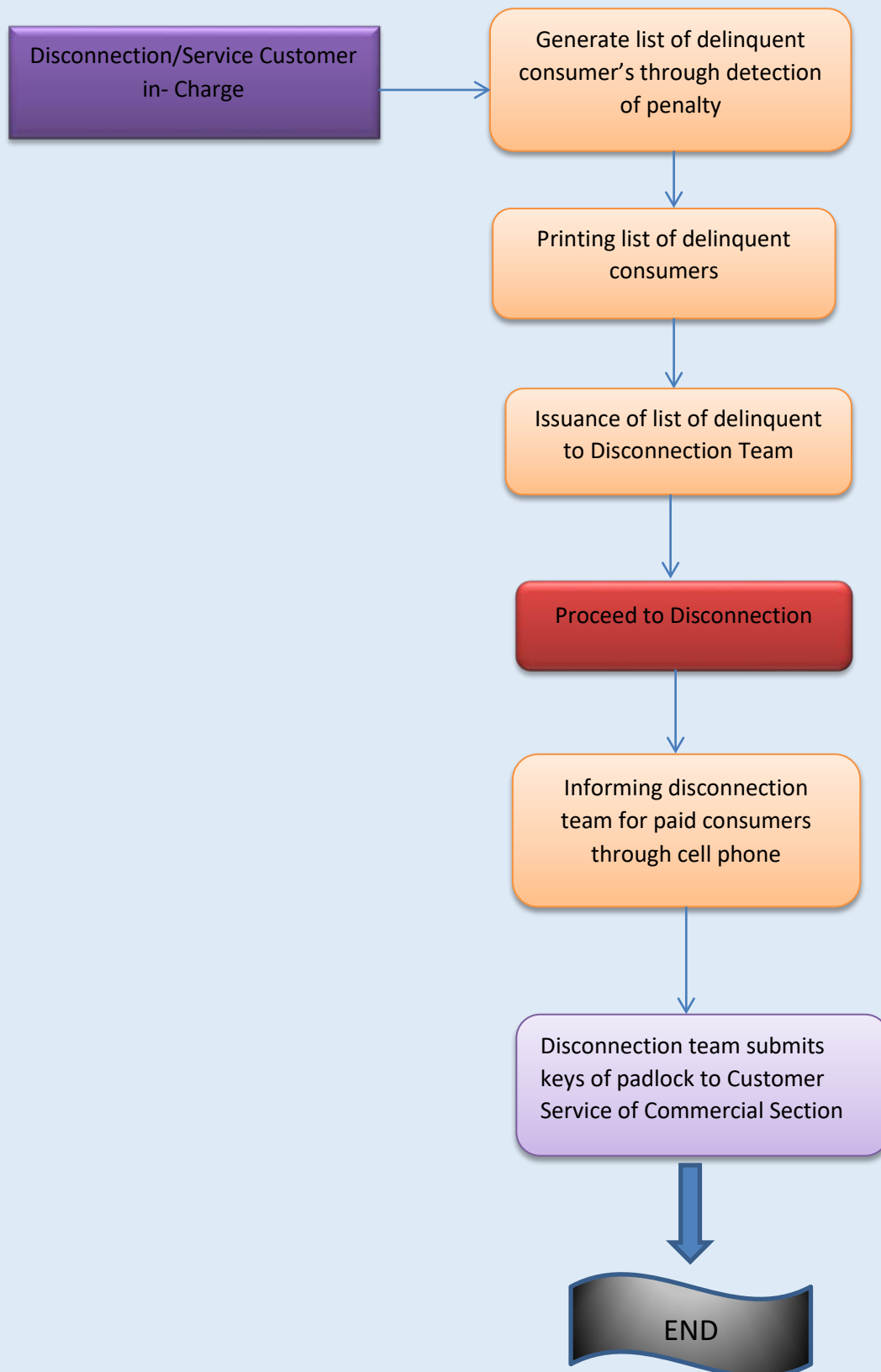




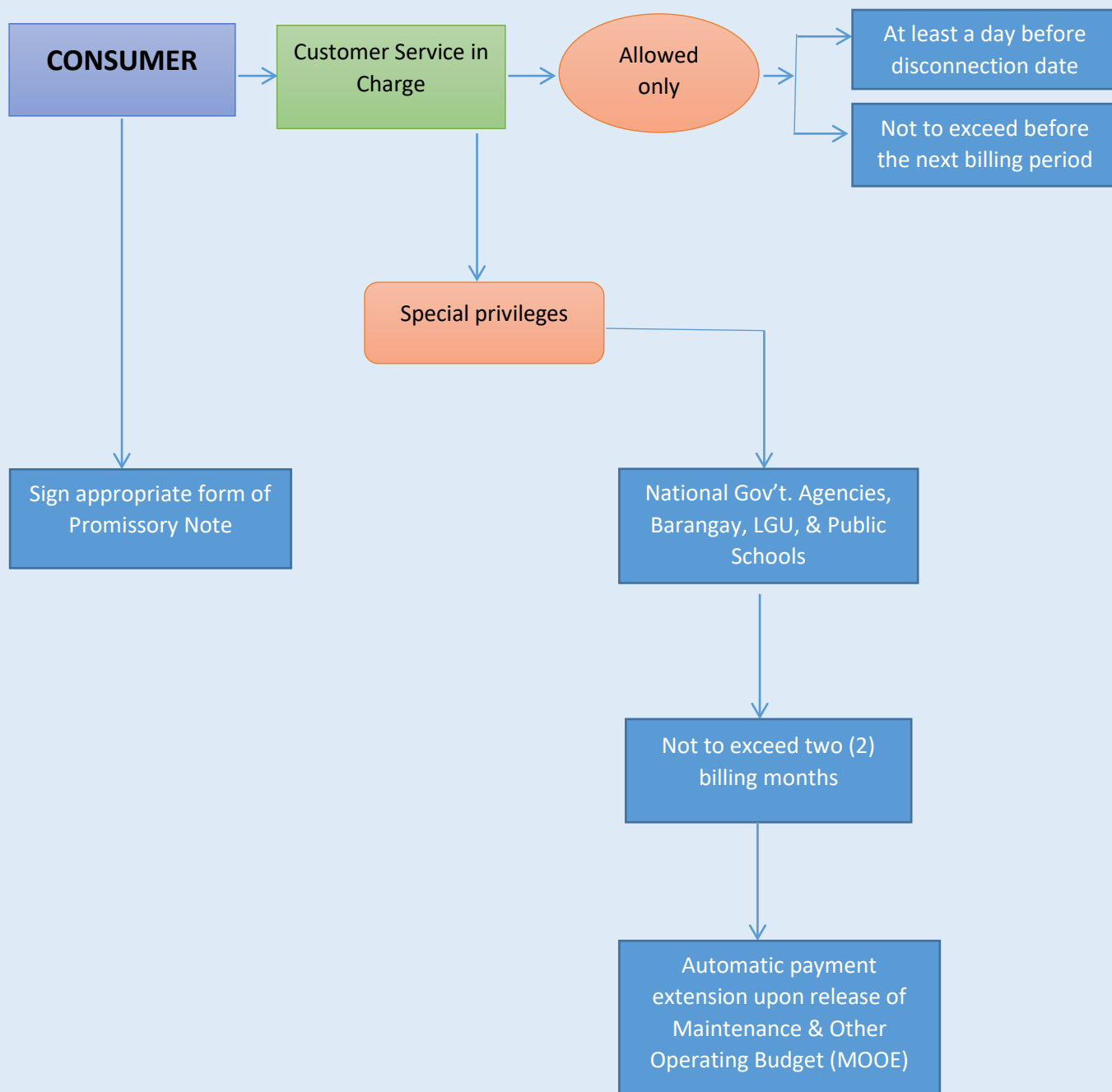
## APPLICATION FOR NEW SERVICE CONNECTION



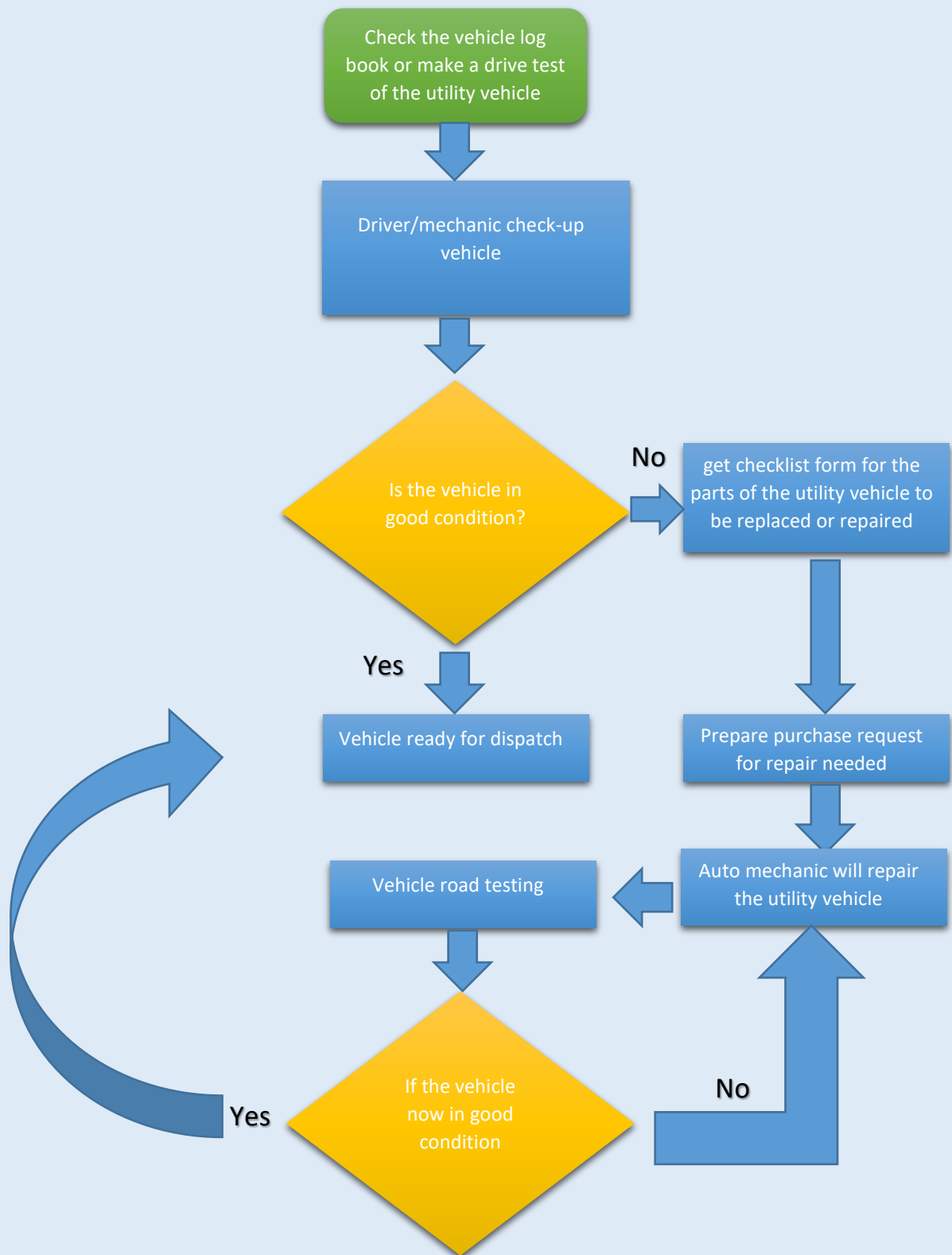
## DISCONNECTION OF DELINQUENT CONSUMERS



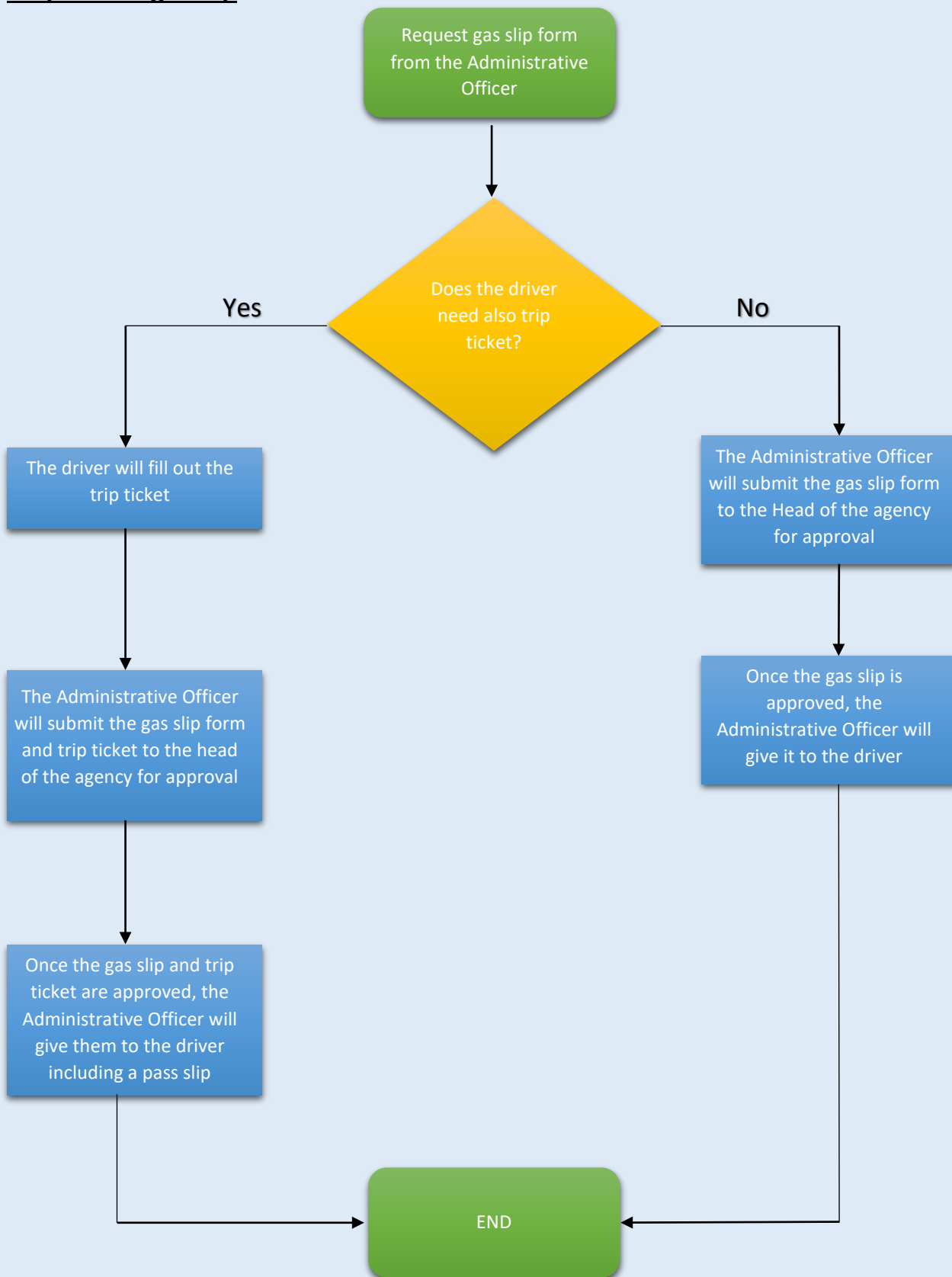
## GRANTING OF PROMISSORY NOTE



**Vehicle Maintenance**





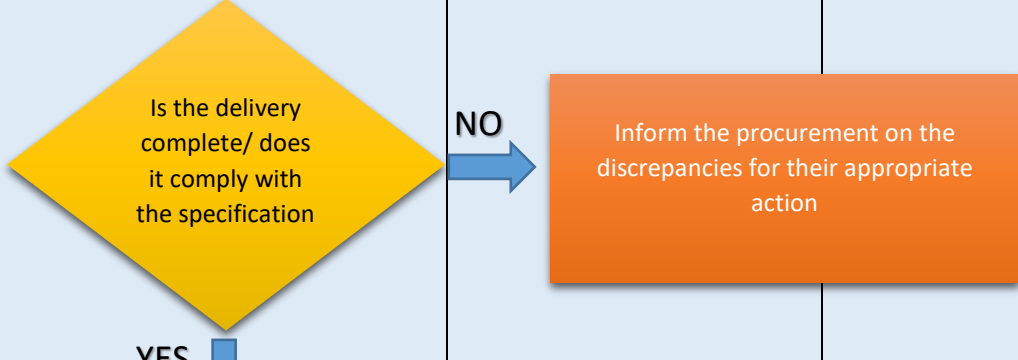
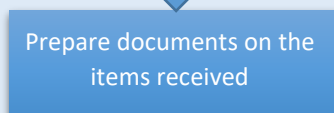
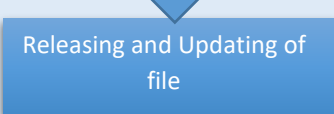
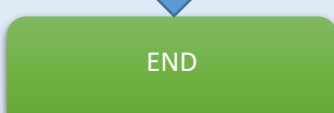
## Request for gas slip




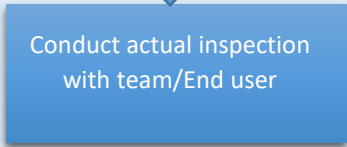

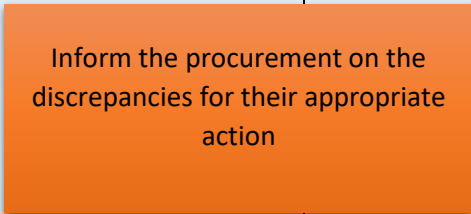
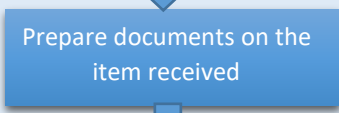
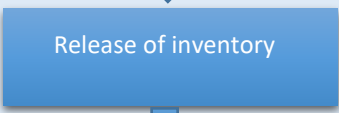
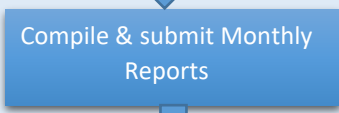
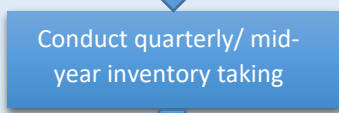


## Request for trip ticket



## Property Management

FLOWCHART	DETAILS	RESPONSIBILITY
	<ul style="list-style-type: none"> <li>Based on Purchase order</li> <li>Specification of the item</li> </ul>	Procurement Team/Storekeeper
	<ul style="list-style-type: none"> <li>Delivery receipt or sales invoice</li> </ul>	Inspection Team/End User
		
	<ul style="list-style-type: none"> <li>IAR-Inspection &amp; Acceptance Report</li> <li>PAR-Property Acknowledgement Receipt</li> </ul>	Storekeeper
	<ul style="list-style-type: none"> <li>PAR</li> </ul>	Storekeeper
		

## Inventory Management

FLOW CHART	DETAILS	RESPONSIBILITY
	<ul style="list-style-type: none"> <li>Based on purchase order.</li> <li>Specification of the item.</li> </ul>	Purchasing section/Storekeeper
	<ul style="list-style-type: none"> <li>Delivery receipt or sales invoice.</li> </ul>	Inspection team/ End User
	<div>NO</div> 	
<div>YES</div> 	<ul style="list-style-type: none"> <li>IAR-Inspection &amp; Acceptance Report.</li> </ul>	Storekeeper
	<ul style="list-style-type: none"> <li>Duly approved RIS- Requisition Issue Slip.</li> </ul>	Storekeeper/End User
	<ul style="list-style-type: none"> <li>Report of supplies &amp; materials issued(daily).</li> <li>Physical Inventory Report(Monthly).</li> </ul>	Storekeeper
	<ul style="list-style-type: none"> <li>Physical Inventory.</li> </ul>	Storekeeper
	<ul style="list-style-type: none"> <li>Physical Inventory Report.</li> </ul>	Storekeeper
		



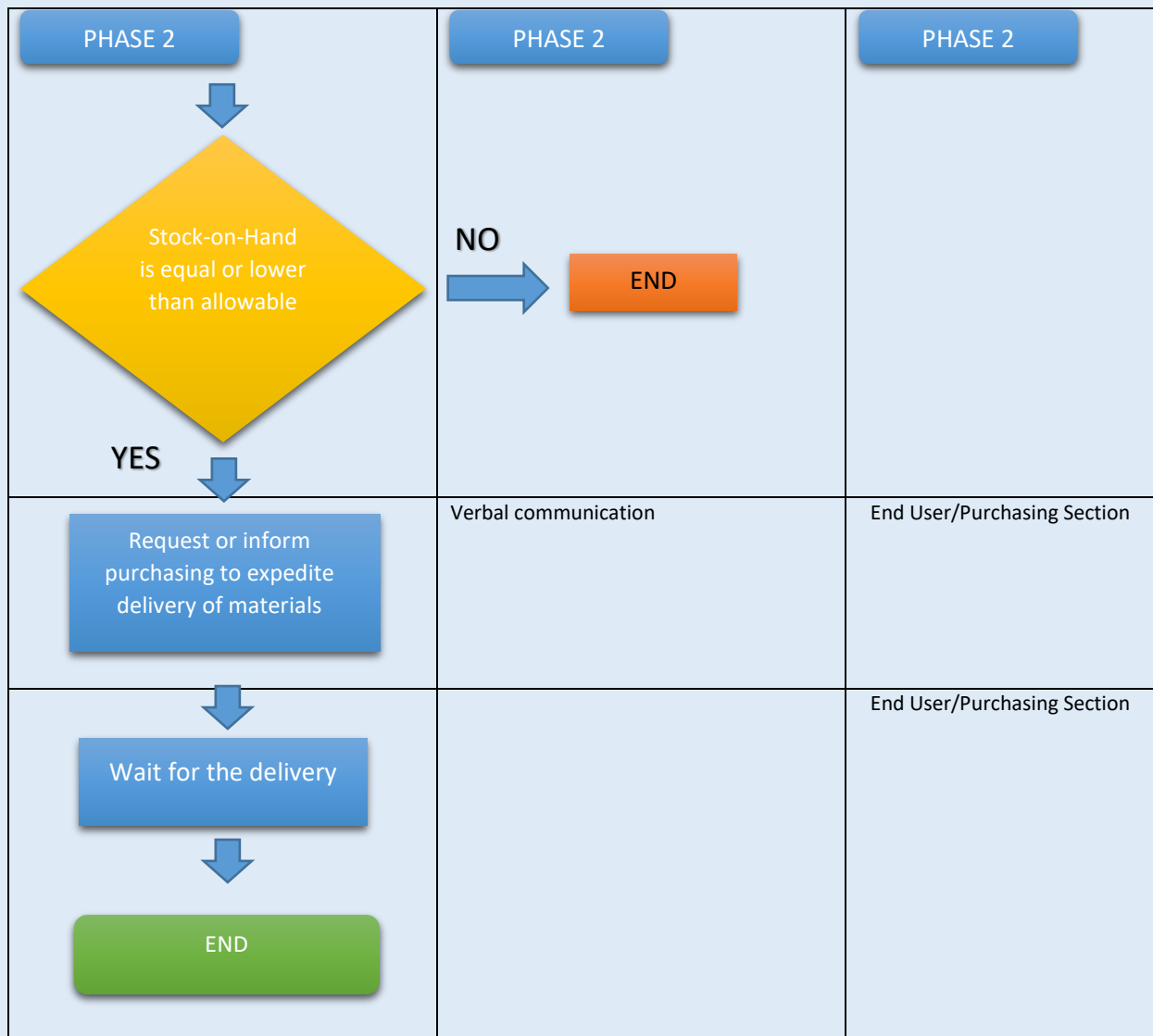
## Disposal Management

FLOWCHART	DETAILS	RESPONSIBILITY
INVENTORY TAKING (Year End)		
Submit Report	<ul style="list-style-type: none"> <li>Inventory &amp; inspection report of Unserviceable property.</li> </ul>	Storekeeper
Prepare Disposal Recommendation & Submit		Inspection team/ Disposal Team
<div>Is the delivery complete/ does it comply with the specification</div> <div>NO → END</div> <div>YES →</div>		
Comply COA Requirement on disposal		Storekeeper
Collect & gather waste materials in one place for easy inspection		
Conduct Scrap Bidding with at least 3 interested bidders	<ul style="list-style-type: none"> <li>Quotation.</li> </ul>	Bidders Storekeeper
Awarding of winning bidder & conduct disposal		Winning bidder COA Inspection team/ Disposal team
Prepare report submit	<ul style="list-style-type: none"> <li>Report on waste material.</li> </ul>	Storekeeper
END		

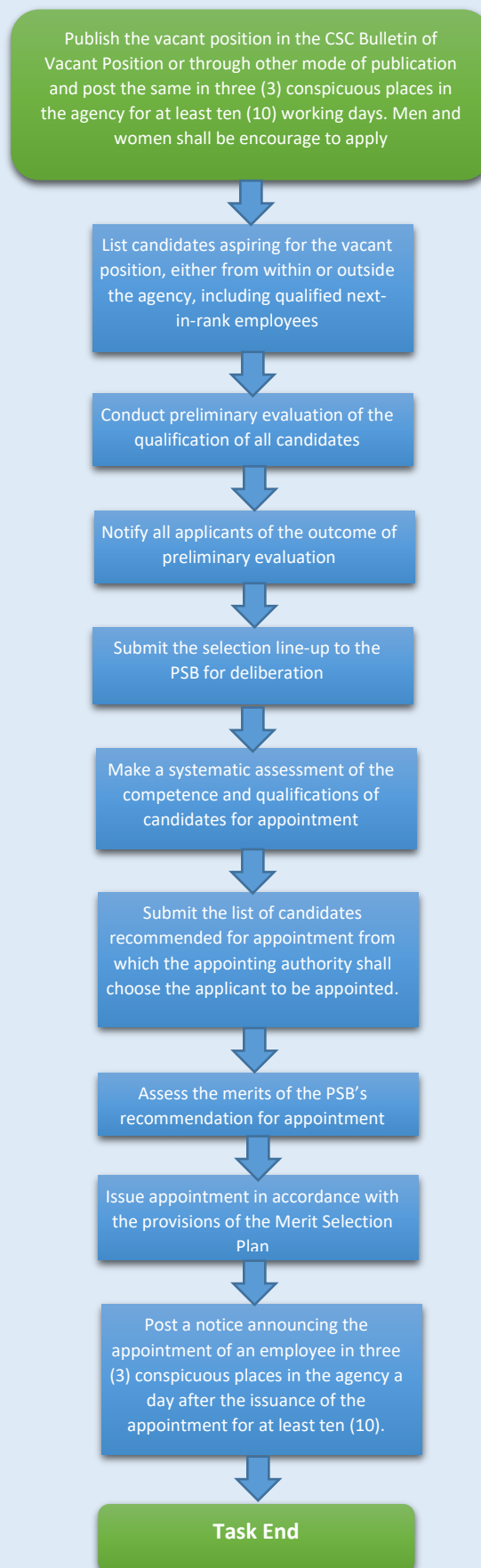
**MATERIAL HANDLING AND STOCK LEVEL MONITORING FOR WATER METER SERVICE CONNECTION & OTHER FITTINGS**

FLOWCHART	DETAILS	RESPONSIBILITY														
<div>START</div>																
<div>Check and receive delivered materials</div>	<ul style="list-style-type: none"><li>• Test result.</li><li>• Inspection report in case detected discrepancies.</li></ul>	Storekeeper/Inspection Team/End User														
<div>Accomplish IAR</div>	<ul style="list-style-type: none"><li>• Acceptance and inspection report form duly signed by end user and inspection team.</li></ul>	Inspection Team														
<div>Update posting of inventory</div>	<ul style="list-style-type: none"><li>• Encoding on supplies Inventory thru RMS-Return Material Slip.</li></ul>	Storekeeper														
<div>Issue requested materials</div>	<ul style="list-style-type: none"><li>• Request and issuance slip formed signed by requestor and approved by Division/Section heads.</li></ul>	Storekeeper/End User														
<div>Updating of Stocks on Hand</div>	<ul style="list-style-type: none"><li>• Conduct Inventory taking.</li></ul>	Storekeeper														
<div>Stock-on-Hand is equal or lower than allowable</div> <div>NO</div> <div>YES</div> <div>END</div>	<ul style="list-style-type: none"><li>• Safety stock level for UPVC Pipe &amp; P.E Tubing</li></ul> <table><tr><td>Size</td><td>Qty.</td></tr><tr><td>6"</td><td>5 pcs</td></tr><tr><td>4"</td><td>5 pcs</td></tr><tr><td>3"</td><td>5 pcs</td></tr><tr><td>2"</td><td>5 pcs</td></tr><tr><td>½"</td><td>2 pcs</td></tr><tr><td>1"</td><td>1 roll</td></tr></table> <p>All Service Connection fittings 50 sets; all ci fittings 5pcs each size all other fittings for maintenance 25pcs all size.</p>	Size	Qty.	6"	5 pcs	4"	5 pcs	3"	5 pcs	2"	5 pcs	½"	2 pcs	1"	1 roll	Storekeeper
Size	Qty.															
6"	5 pcs															
4"	5 pcs															
3"	5 pcs															
2"	5 pcs															
½"	2 pcs															
1"	1 roll															
<div>Inform end user of the stock availability status</div>	<ul style="list-style-type: none"><li>• Submit to end user-stock availability report.</li></ul>	Storekeeper														
<div>Request end user to prepare purchase request for the exhausted stocks</div>	<ul style="list-style-type: none"><li>• Purchase request form signed by requestor &amp; approved by GM.</li><li>• Record Purchase request.</li></ul>	End User/Storekeeper														
PHASE 2	PHASE 2	PHASE 2														

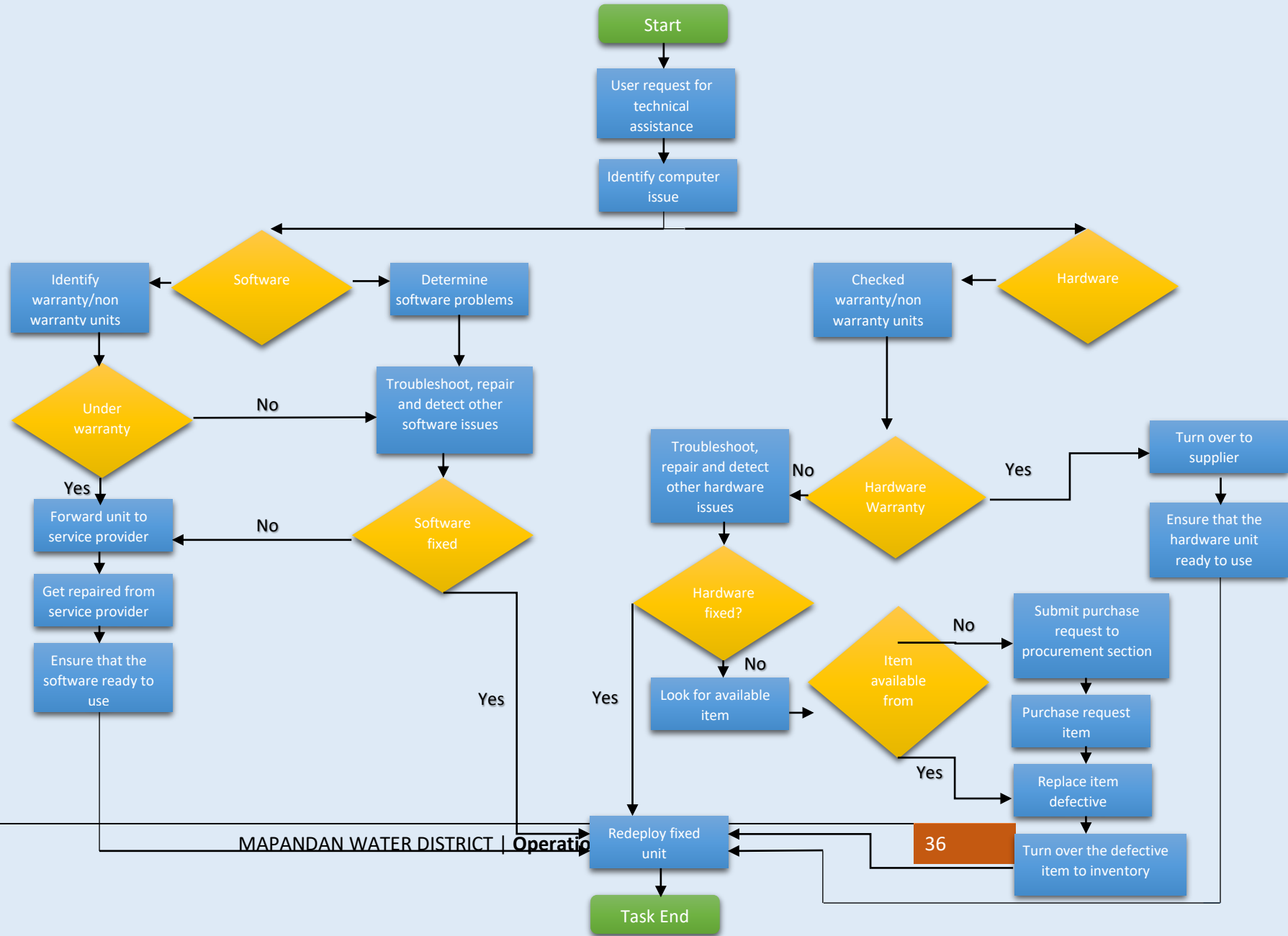
**MATERIAL HANDLING AND STOCK LEVEL MONITORING FOR WATER METER SERVICE CONNECTION & OTHER FITTINGS**



## Recruitment and Selection Process



Hardware/Software Maintenance



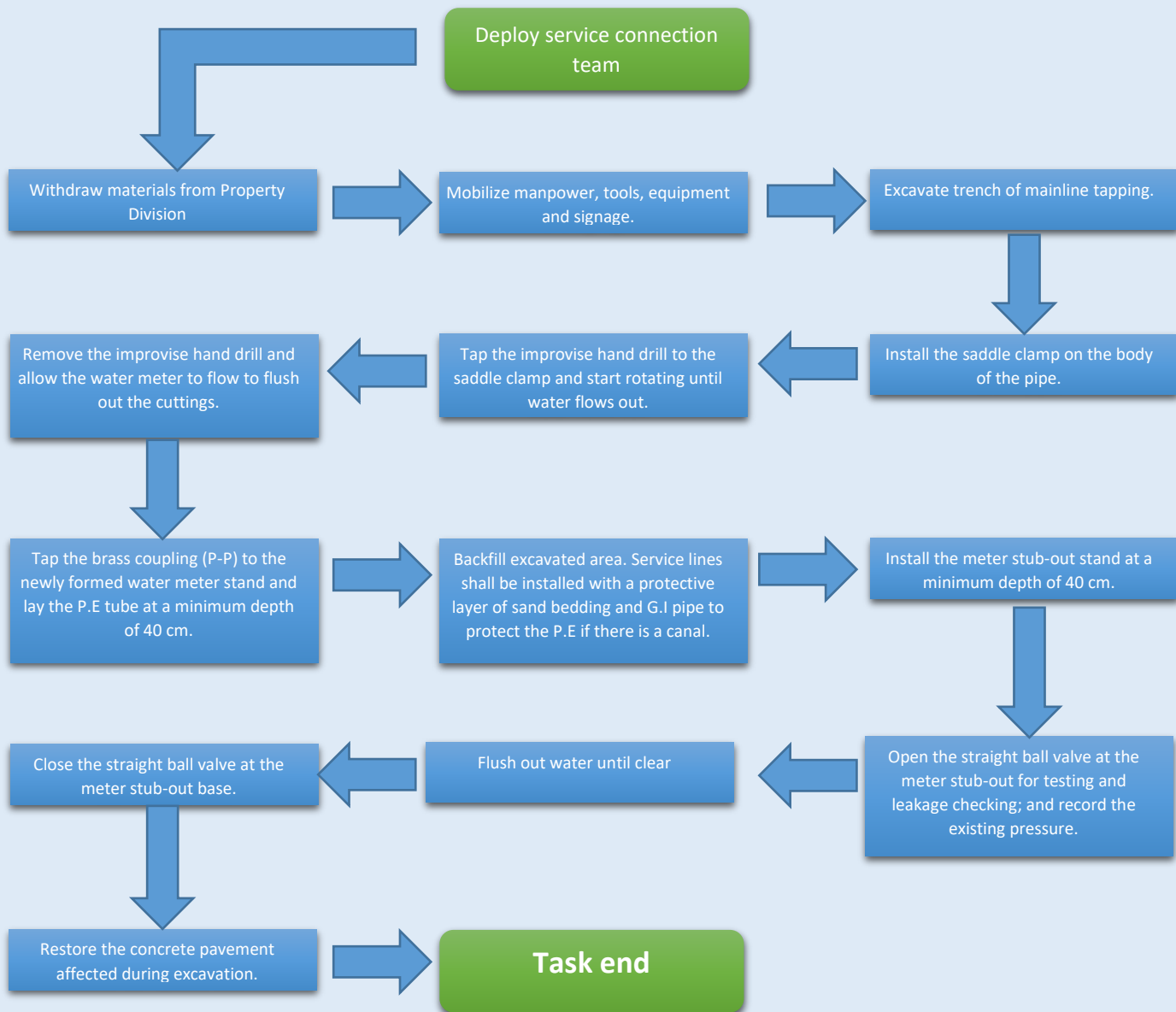
## CLEANING OF TANK

FLOWCHART	DETAILS	RESPONSIBILITY
START		
↓ Prepare the tank for cleaning	Let the water subside to see if it is full of residue,	Operator on duty
↓ Start cleaning	No. of hours materials and equipment needed scrub and brush and put some soap for disinfection.	Operator on duty
↓ Flush the residue and rinse	Open Gate Valve, drain and brush repeatedly and rinse until there is no more residue.	Operator on duty
↓ Checking of water tank	Close gate valve	Operator on duty
↓ Filling of water tank	After cleaning, fill the water tank	Operation
↓ Ready for usage		Operator on duty

## WEEKLY FLUSHING

FLOWCHART	DETAILS	RESPONSIBILITY
START		
Preparation	Check the schedule zone <ul style="list-style-type: none"> <li>- Prepare tools needed.</li> <li>- Group two-teams together with operator.</li> <li>- Record time &amp; flow meter reading.</li> <li>- Prepare cellphone/gadget for communication.</li> </ul>	Operation
Isolation of gate valve	Close the gate valve of the desired area does not affected by flushing.	Operators
Opening of blow-off for flushing	Conduct 20mins per blow-off flushing it depends upon the water quality, additional time for flushing if there's a yellowish color or bad odor.	Operators/Job orders
Collect samples for chlorine testing		
Recording	<ul style="list-style-type: none"> <li>- Record all blow-off opened.</li> <li>- Record the flow meter after flushing and record the no. of volume of water flushed.</li> <li>- Make proper turn-over to incoming operator.</li> </ul>	Operators
END		

## Service Connection & New Installation





## PIPELINE CONSTRUCTION AND INTERCONNECTION

### MATERIALS:

Pipes  
M. Gate valves  
M. Tee  
M. Elbow  
STC 6"  
STC 4"  
STC 3"  
STC 2"  
Bolts and Nuts  
Rubber Gasket  
Sand and Gravel  
Cement  
New Filling Materials  
Gasoline/Diesel  
Chlorine Powder

### TOOLS & EQUIPMENT NEEDED:

Wrenches  
Hacksaw  
Digger Bar  
Shovel  
Vise grip  
Jack hammer  
Pipe cutter  
Dewatering pump  
Concrete cutter  
Signage  
Service vehicle  
Measuring tape  
Concrete block  
Flexible hose  
Suction valve  
Battery  
Emergency Light

### A. PIPELINE CONSTRUCTION

#### **PROCEDURE:**

1. Coordinate with the local officials for the implementation of the project.
2. Prepare the site and all the necessary needed materials and equipment.
3. Mobilize all the materials, equipment, tools and manpower needed.
4. Pipe stored on site should be properly covered.
5. Ensure those safety signages are in place.
6. Opening in the pipeline shall be closed with water tight plug when pipe laying is done.
7. Joints of the pipe in the trench shall be completed before the work should stop.

8. If water accumulates in the trench, the plug shall remain in place until the trench is free of standing water and mud that may enter the pipe.
9. Sealing materials or gaskets shall be handled in a manner that avoids contamination.
10. The lubricant used in sealing the gasket shall be suitable for use in potable water and shall not contribute odor.

#### **B. PIPELINE INTERCONNECTION**

1. Notify the PR for water supply interruption press release.
2. Prepare site for interconnection works.
3. Mobilize all the materials, equipment, tools and manpower needed.
4. Ensure that the interconnection crew is using prescribed safety equipment.
5. Ensure that the safety signage are in place.
6. Close valve to isolate area prior to interconnection.
7. Drain the remaining water in the isolated pipe line works.
8. Clean all fittings for interconnection.
9. Perform interconnection works.
10. Open isolation valve slowly to restore normal supply of water.
11. Backfill with new filling materials.
12. Notify PR of work completion.

#### **C. HYDRO TESTING**

1. Conduct hydro testing with maximum pressure of 150 PSI for two (2) hours.
2. If allowable leakage failed. Fix it.
3. Repeat procedure number one (1.) until allowable leakage is attained.

#### **D. DISINFECTION, FLUSHING AND TURN-OVER**

1. Inject the desired concentration of chlorine to the pipeline network.
2. Check for residual chlorine at end point and retain for 24 hours.
3. After 24 hours, recheck if residual chlorine is within the minimum limit of 0.3 PPM.
4. If minimum limit is not attained, repeat disinfection process until desired level of residual chlorine is reached.
5. Conduct flushing and collect water sample to be subjected for water quality test.
6. Ready for turn-over if bacteriological test result is negative.

## STORAGE AND HANDLING MATERIALS AND SUPPLIES FOR WATER CONNECTIONS

### **PROCEDURE:**

1. Water connection materials should be placed in a clean and dry storage area.
2. All fitting materials should be grouped according to size, type, purpose, & should be packed properly.
3. Turned-over waste materials containing toxic substances should be stored away from water connection materials.
4. Maintain cleanliness inside and outside the warehouse.

## REPLACEMENT OF WATER METER

### **Materials and Tools Needed:**

New water meter with tailpiece

Water meter gasket

Teflon tape

Pipe wrenches

Adjustable wrenches

Open/back wrenches

Pliers

G.I. wire

### **Procedure:**

1. Inform the concessionaire prior to change of water meter.
2. Turn off the straight ball valve/control valve.
3. Record the cut off reading, brand and serial number of old water meter in the job order and meter receipt.
4. Remove the old water and install the new one.
5. Ensure that the new water meter is installed horizontally.
6. Record the initial reading, brand and serial number of the new water meter and issue meter receipt.

7. Open the control valve/ straight ball valve.
8. Check if there is no leak in the newly installed water meter.

## STARTING THE DEEP WELL PUMP

### PERFORM THE FOLLOWING BEFORE STARTING THE PUMP:

- 1 Make sure that you are properly oriented, meet the training program and know the locations of pumping stations and mechanical gate valves.
- 2 Open the control panel with the circuit breaker and check visually for its physical condition, signs of overheating, loosed or detached wires, burnt components particularly in the power circuit and ensure that they are in good condition. Report signs of deterioration to the maintenance personnel.
- 3 Always make it to the point to go over the operation log book before powering up the motor and find out the important events that has transpired before shifting of duty.
- 4 Know the operating current and voltage of the submersible motor. Refer to the data of the logbook.
- 5 Check if the supply line voltages are in accordance with the specified values or within safe operating range of the motor, such as the supply line voltages should not exceed  $\pm 10\%$  rated voltages.

### STARTING THE PUMP

1. Fully close the discharge valve, open the blow-off valve 1/3 opening and set the Automatic Off Manual (AOM), switch to manual position.
2. After satisfying the above requirements, start the submersible pump by setting the selector switch to manual mode, then press the start button. Should you want to operate in automatic mode, set the selector switch to automatic mode and no need to press the start button.
3. Once the motor control (MCC) have commenced starting sequence, observe its operation. The output of the variable frequency drive will increase gradually until the set frequency obtain. This time, fully open the blow-off valve. Monitor the condition of the water coming out of the blow-off header and also monitor the line current readings.

4. If it runs continuously check any warning lights on alarms. If you have encountered trouble, determine the cause. If it is minor, fix it. If it is a major one, and you cannot repair even if it is minor, shut-off the motor by pressing the stop button, switch off the main circuit breaker and report immediately to the preventive maintenance unit.
5. However, blow-off must be carried out not less than five minutes even if water is clear in the first time (or when turbidity is below 5 NTU), after this, open the distribution valve while gradually closing fully the blow-off valve.
6. Turn on the chlorine dosing pump and make sure that it is working properly.

## **DURING THE OPERATION**

### ***PROCEDURE:***

1. Always be vigilant and alert. Be sure to respond to an emergency in order to protect the equipment and facilities from serious and further damages.
2. Make frequent inspection of the volt meter, ammeter discharge pressure gauge and flow meter to determine that the pump unit is functioning normally.
3. Record properly and correctly the line voltages, line currents, kilowatt hour, discharge pressure, discharge flow and flow totalizer reading on the operation log sheet. Always analyze if these values are in accordance with the normal operation.
4. Record in the logbook all important information and events relevant to the smooth and efficient operation to be passed to the incoming personnel. Make it a habit to go over the logbook every time you assume your tour of duty. Maintain a separate record for all repair and preventive maintenance done on pumping unit and facilities.

## **STOPPING THE PUMP UNIT**

1. Stop the operation according to operation schedule.
2. Check the pump conditions by recommended preventive maintenance.
3. Set the variable frequency drive to off position. Wait for the time delay before the VFD will stop.
4. Turn off the main circuit breaker at the MCC Motor Control.

5. Record the time, hour meter reading, or flow meter pressure. Check the water level of mixture of chlorine and the well water drawdown level when the pump stopped.

### **DURING PUMP TRIP-OFF**

1. Open gravity tank distribution gate valve to back up water supply.

2. Proceed to another pump station to check pump trip-off.

3. Check VFD indicator which can be the cause of the following:

- Low Voltage Currency
- High Voltage Currency
- Low Pressure
- High Pressure
- Analog input voltage malfunction-check the transmitter

4. Single phase, check input voltage, line 1, line 2 and line 3

Some causes are:

a.) Transmission line busted cut out fuse-report to PANELCO III

If there is water supply shortage due to cut out busted fuse, check the radiator H<sub>2</sub>O, fuel and crude oil. If okay switch MTS set to generator then start it.

b.) Loose terminal connection-repair

c.) CB control trip

5. Close distribution gate valve and open 1/3 blow-off (by-pass gate valve) press the start push button switch, check amperage and voltages, and be sure to check water quality. If it is clear, enter to pipeline by opening distribution gate valve and close blow-off gate valve.

6. Wait for PANELCO III team to change cut out fuse, if done, press the stop button switch, then switch off gen set. Use MTS to set PANELCO power, then measure line voltages if okay. Press the start push button switch and observe within 10 minutes if okay then back to normal.

7. Leave the area and do roving to another pump station to check chlorine level, pressure (PSI) and voltages and record.

8. Some cause of pump trip-off malfunction is the liquid level control relay which must be checked and repair if needed.

## MAINLINE LEAKAGES

### **MATERIALS:**

Pipes  
STC  
Bolts and Nuts  
Rubber Gasket  
Sand and gravel  
New filling materials

### **TOOLS & EQUIPMENT:**

Open and Box Wrenches  
Hacksaw  
Digging Bar  
Shovel  
Dewatering pump  
Service Vehicle  
Signage  
Jack Hammer

### **PROCEDURE:**

1. Assess/ Investigate on site to determine the size of pipe in the preparation of materials needed in the repair.
2. Ensure that PR has issued a public announcement (includes affected area and duration of repair)
3. Inform the leader & manpower of the team to isolate the affected area.
4. Mobilize all materials, equipment tool, and other items needed in the repair.
5. Isolate the affected area.
6. Ensure that safety signage are in place.
7. Excavate the area with leakage.
8. Dewater the trench, clean the leaking pipe.
9. Fix leakage. Check all fittings and tighten all bolts.
10. Open the isolated valve to check leak test.
11. Open the blow-off and flush out.
12. If there is no leak, apply sand bedding under and over the pipe.
13. Apply needed restoration in the area.

## SERVICE CONNECTION LEAKS

### MATERIALS:

Pipes  
PE Tube  
PE Connector  
Brass Coupling  
Sleeve Type Coupling (STC)  
Rubber Gaskets  
Repair Clamps  
Universal Adaptors  
New Filling Materials

### TOOLS AND EQUIPMENT NEEDED:

Pipe Wrenches  
Open/Close wrenches  
Adjustable Wrench  
Hacksaw  
Digging Bar  
Shovel  
Chisel  
Mallet  
Vise Grip  
Pipe Cutter  
Dewatering Pump  
Signage  
Service Vehicle

### A. TAPPING POINT AT SERVICE CONNECTION LINE

#### PROCEDURE:

1. Assess/Investigate on site, to determine the size and kind of pipe in the preparation of materials needed in the repair.
2. Ensure that PR has issued a public service announcement (includes affected areas and duration of repair.)
3. Inform the transmission and distribution team to isolate the affected area.
4. Mobilize all materials, equipment, tools, signage, lighting and other items needed in the repair.
5. Isolate the affected area.
6. Put all safety signage in place on the affected area.
7. Excavate the area with leakage.
8. Dewater the trench, clean the leaking pipe.
9. Fix leakage. Check all fittings and ensure that all bolts are tighten properly.
10. Open the isolated valves for leak test.



11. If there's no leak, backfill the excavated area.
12. Conduct flushing at the fire hydrant/BOV's and collect water sample for quality test.
13. Inform the public relation officer, pump operators and department managers that the repair has already been completed.
14. Apply necessary restoration on the area.

## **B. SERVICE CONNECTION LINE**

### ***PROCEDURE:***

1. Asses/Investigate on site, to determine the size and kind of pipe in the preparation of materials needed in the repair.
2. Mobilize all materials, equipment, tools, signage, lighting and other items needed in the repair.
3. Put all safety signage in place.
4. Excavate the area with leakage.
5. Dewater the trench, clean the leaking pipe.
6. Fix leakages. Check all fittings.
7. Conduct flushing along service line.
8. Backfill the excavated area.
9. Inform the concessionaire/complainant that the repair has been completed.
10. Apply necessary restoration on the area

## **Chlorinator Preventive Maintenance**

1. Prepare 2L of muriatic acid in a small container. Dismantle the injection bulb and bulb assembly and place them in the container. Plug in the metering pump for five (5) minutes.
2. Switch off the metering pump. Prepare 2L of chlorine liquid in a small container then transfer the suction bulb and injection bulb to the container which has liquid chlorine. Plug in metering pump for five (5) minutes.
3. Switch off the metering pump and return injection bulb assembly to the pipeline and suction assembly to the chlorine mixing drum. Plug in chlorinator to check the

volume of chlorine which depends on the setting. If the pressure is good, inject the chlorinator to the pipeline. If not, repair or replace the bulb assembly.

## **SOLUTION PREPARATION**

1. The operator on duty will check the drum level of the left solution. If the remaining amount is already 10 liters, it will be set aside for disposal for the reason that there might be some solid particles that settled at the bottom, then the operator will begin to do another mixture.
  2. Pour 1 Kilo of chlorine dioxide powder per 40L of water.
  3. Stir/Agitate water for 2 minutes until CLO<sub>2</sub> Powder is totally dissolved.
  4. Wait for 5 minutes to activate the solution.
- Inject the solution into the stream line by using Dosing pump.

## **CHLORINE STORAGE AND HANDLING**

### ***PROCEDURE:***

1. Keep the floor dry.
2. Store under the steel, protected from heat and rain.
3. Use chlorine powder on a first in, first out basis.
4. Follow the recommended disposal procedures of chlorine suppliers for defective chlorine powder.