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Orissa Water Utility Service Costing Manual, India

Final Report

Indo-USAID Financial Institutions Reform and Expansion Project—Debt & Infrastructure Component (FIRE-D Project)

USAID-TCGI Contract No. 386-C-00-04-00119-00

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Indo-USAID Financial Institutions Reform and Expansion Project—Debt & Infrastructure Component (FIRE-D Project)

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ORISSA WATER UTILITY COSTING MANUAL

PUBLIC HEALTH ENGINEERING ORGANISATION

HOUSING AND URBAN DEVELOPMENT DEPARTMENT

GOVERNMENT OF ORISSA

Contents

Abbreviations

CLR	Casual Labour Rate
GoI	Government of India
GoO	Government of Orissa
KL	Kilo Litres
MLD	Million Litres per Day
NMR	Nominal Muster Roll
OWCM	Orissa Water Utility Costing Manual
PHEO	Public Health Engineering Organisation
WS and SS	Water Supply and Sanitation Services

List of Forms

Chapter 1

Introduction

1.1 Management is not about guessing, it is about knowing. Those in positions of responsibility must have the information they need to make effective decisions. Cost information is one such essential component of any well managed organization. Cost accounting system[1] intends to bring costing to the operational decision-making table. It does not state that cost should always be the primary factor in decision-making, but any well-managed utility should know the cost of service and how it affects the various decisions taken by the utility.

Cost Accounting

1.2 Cost accounting (also referred to as management accounting) is the process of accumulating, measuring, analyzing, interpreting and reporting cost information that is useful to both internal and external groups concerned, with the way in which the organization uses, accounts for, safeguards and controls its resources to meet its objectives.

1.3 Effective cost accounting system shall assist the ring fenced entity as it strives to achieve cost effective mission performance and provide full accountability towards citizens. In addition, effective cost accounting practices demonstrate accountability in financial accounting, budgeting including allocating resources and managing programmes.

Objectives of the Cost Accounting System

1.4 The most important factor in the design of a costing system is the objective, how the cost will be analyzed and utilized for decision-making. We understand that the following are the overall objectives of the proposed costing system:

- **To control costs**: Cost information is useful for planning, operational control and strategic decision-making. An understanding of the various elements of costs could

[1] The term costing system and cost accounting system is used interchangeably in this manual.

be used for their control.

- **To assess cost effectiveness and monitor efficiency level**: Cost is one of the most important indicators of efficiency. Trends in movement of costs could be one of the indicators of the performance of the system. Opportunities can be identified for improving output/service performance and efficiency.
- **To estimate losses**: This is a part of efficiency analysis and cost control. Costing would help put a value to the losses and hence prioritize action.
- **To fix tariffs:** The price charged for a service (water supply and sanitation) should be based on several factors like cost of service, return on fixed assets, etc. One of the foremost factors is benefit to users (as evidenced by willingness to pay) and cost of the service. Cost is a key input in the pricing decision.
- **To fix subsidies**: This is similar to tariff setting. A costing system would assist in estimating the total worth of services rendered and the quantum of which should be charged to the consumers. The State may have to step in to finance the gap between the two through a subsidy.
- **Planning and forecasting**: Costing system provides important inputs for making estimates, planning resource requirements and forecasting inputs and outputs. A costing system also provides inputs when making non-routine management decisions.

Inter-linkage with Financial Accounting and Budgeting System

1.5 Cost information is essential to effective financial management and plays an important role in financial reporting. The three components of the financial management system – Costing, Accounting and Budgeting system work in unison to provide information to decision makers. The exhibit below captures the inter linkage between the three systems.

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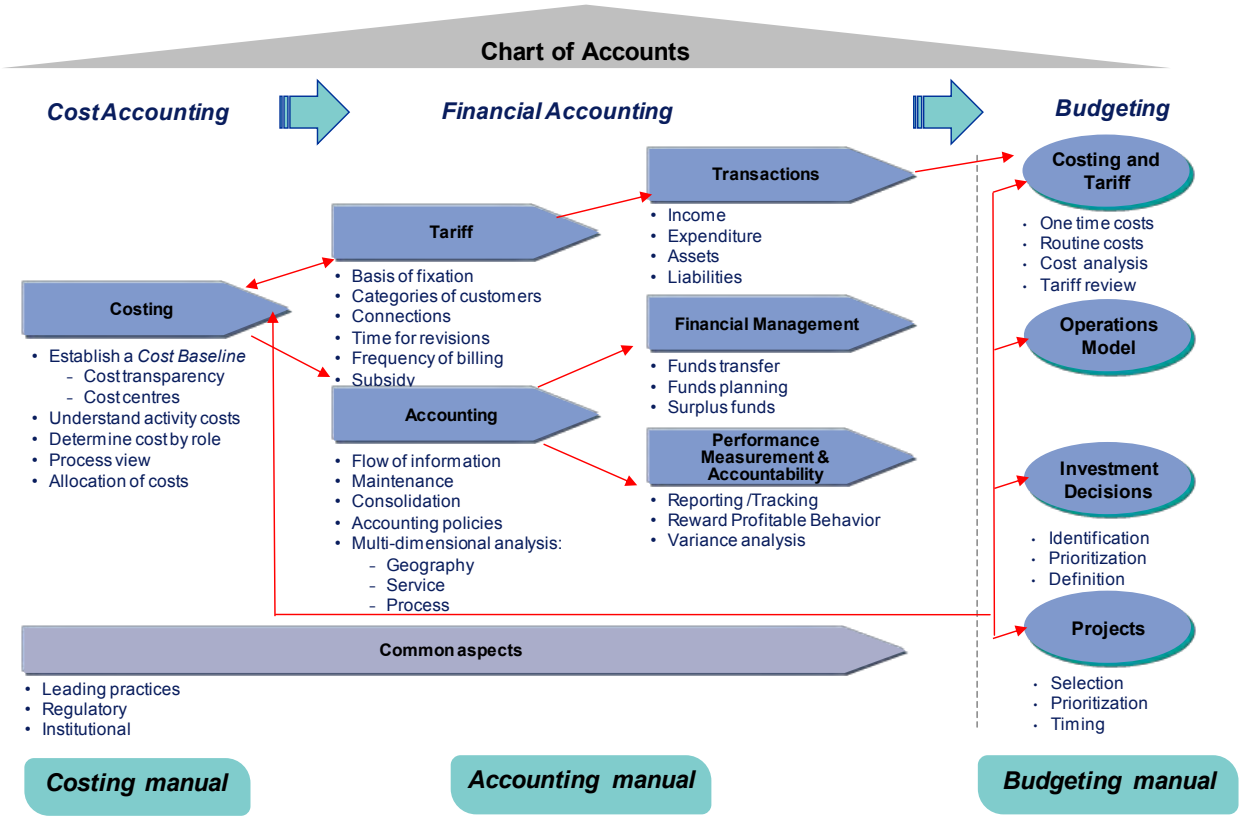


Linkage of Costing to Financial Accounting System

1.6 The cost accounting system is closely related and integrated with financial accounting system. Fundamentally, cost accounting should assist financial accounting in determining the results of operations during a fiscal period by providing relevant data that are accumulated to produce operating expenses. These data include the allocation of capitalized costs to periods of time or units of usage.

Both the systems use the same data source including the chart of accounts.

Linkage of Costing to Budgeting System

1.7 Cost accounting provides cost information to budgetary accounting in preparing yearly and long-term budgets for required materials, supplies, equipment, human resources and other resources needed to produce different levels of outputs. Cost accounting also helps in making many budgetary decisions such as those concerning future capital expenditures.

Pre-requisites for Implementing Cost Accounting System

1.8 The cost accounting processes consist of collecting data from the common data source, processing that data, and reporting cost and output information in various reports. Appropriate procedures and practices should be established to enable the collection, measurement, accumulation, analysis, interpretation and communication of cost information. This can be accomplished through the use of a cost accounting system or the use of cost finding techniques and other cost studies and analyses. ***A cost accounting "system" is an organized grouping of methods and activities designed to consistently produce reliable cost information.***

1.9 The following are some of the pre-requisites or activities to be carried out prior to implementing a cost accounting system

- Identify cost centres or responsibility segment
- Select appropriate costing methodology for identification of the "Full Cost" of the services provided
- Integrate costing and financial accounting system. Capture data only once and use common data source.

1.10 The Orissa Water Utility Costing Manual (OWCM) assists in implementing and operating the cost accounting system for the ring fenced entity.

Orissa Water Utility Costing Manual

1.11 The Orissa Water Utility Costing Manual prescribes appropriate methodology to arrive at the full cost of service for the ring fenced entity. The manual is intended to provide the following

- Formats and methodology for identification of ring fenced expenditure and costs for providing WS and SS services
- Formats and methodology for identification of direct and indirect costs related to WS and SS services
- Formats and methodology for identification of disaggregated information by cost center for determining the 'full cost' of WS and SS services.

1.12 OWCM is based on and is integrated with the Orissa Water Utility Accounting Manual (OWAM). Further, the following documents were also studied and the relevant aspects have been incorporated in OWCM

- Coding of Cost Sheets – Report of the Task Force constituted by Comptroller & Auditor General of India to suggest the Accounting and Budgeting Formats for ULB
- Cost Accounting Standards issued by the Cost Accounting Standards Board of The Institute of Cost and Works Accountants of India

- Cost Accounting Record Rules of similar industries issued by the Ministry of Corporate Affairs. Government of India
- Manual on Water Supply and Treatment issued by Central Public Health and Environmental Engineering Organisation (CPHEEO), Ministry of Urban Development, Government of India
- Manual on Operations and Maintenance of Water Supply Systems, CPHEEO
- Manual on Sewerage and Sewage Treatment, CPHEOO

1.13 Since OWCM applies to the ring fenced entity that is yet to be created, the term –entity" has been used throughout the manual to refer to the ring fenced entity. Further, OWCM may require revision on incorporation and finalization of the operating model of the entity.

Structure of OWCM

1.14 This Manual has been structured as follows:

- Chapter 1 – Introduction (this Chapter)
- Chapter 2 – Cost Accounting Definitions and Concepts
- Chapter 3 – Orissa Water Utility Costing System
- Chapter 4 – Cost of Production
- Chapter 5 – Cost of Distribution
- Chapter 6 – Cost of Waste Water System
- Chapter 7 – Costing Reports

Chapter 2

Cost Accounting – Definitions and Concepts

2.1 This chapter gives an introduction to the cost accounting terms, concepts and classification of costs.

Cost Concept

2.2 The dictionary meaning of cost is ~~a~~ loss or sacrifice", or, ~~a~~n amount paid or required in payment for a purchase or for the production or upkeep of something, often measured in terms of effort or time expended". CIMA terminology defines cost as resources sacrificed or forgone to achieve a specific objective'. Cost is generally measured in monetary terms.

2.3 Cost is the amount of expenditure (actual or notional) incurred on or attributable to, a specified thing or activity. Thus, material cost of a product will mean the expenses incurred in procuring, storing and using materials in the product. Similarly, labour cost will represent that part of payment made to the employees for time spent on the production.

2.4 Further, the term cost' can hardly be meaningful without using a suffix or a prefix. The cost is always ascertained with reference to some object, such as, material, labour, direct, indirect, fixed, variable, job, process, etc. Thus, each suffix or prefix implies certain attribute which will explain its nature and limitations.

Cost Management

2.5 The techniques and process of ascertaining cost involve three steps, viz.,

- Collection of expenditure or cost data (cost elements)
- Classification of expenditure as per cost elements, function, etc. (cost centre)
- Allocation and apportionment of expenditure to the cost centres and cost units.

2.6 Each of the above components of cost management is discussed below

Cost Elements

2.7 For the purpose of identification, accounting and control, breakup of cost into its elements is essential. Elements are related to the process of manufacture i.e. the conversion of raw materials into finished products. Costs are normally broken down into three basic elements, namely, material, labour and expense. Material cost includes all materials consumed in the process of manufacture up to the primary packing. Labour cost includes all remuneration paid to the staff and workmen for conversion of raw materials into finished products. Expenses consist of the cost of utilities and services used for the conversion process including notional cost for the use of owned assets.

2.8 Each of the cost elements can be further divided into direct and indirect cost. Direct costs are those which can be identified with or related to the product or services, so much so that an increase or decrease of a unit of product or service will affect the cost proportionately. Indirect cost, on the other hand, cannot be identified or traced to a given cost object in economical way and are related to the expenses incurred for maintaining facilities for such production or services. Thus, the elements of cost may be summarised as follows

- Direct materials and indirect materials
- Direct wages and indirect wages
- Direct expense and indirect expense.

Cost Centre

2.9 Cost centre is defined as a location, person or item of equipment (or group of them) in respect of which costs may be ascertained and related to cost units for the purposes of cost control. It is the smallest segment of activity or area of responsibility for which costs are accumulated. Thus cost centres can be of two kinds, viz.,

- Impersonal cost centre consisting of a location or item of equipment (or group of these) such as treatment plant, and
- Personal cost centre consisting of a person or a group of persons such as Superintending Engineer, Executive Engineer, etc.

2.10 The main purpose of cost centre is two fold

- Recovery of cost: Costs are collected, classified and accumulated in respect of a location, person or an item of equipment and then the costs are distributed over the products for recovery of incurred cost, and
- Cost control: Cost centres assist in making a person responsible for the control of expenditure incurred by the cost centre. Manager of each cost centre shall control costs incurred in their area of responsibility.

Cost Units

2.11 While cost centres assist in ascertaining costs by location, person, equipment, operation or process, cost unit is a unit of product, service or a combination of them in relation to which costs are ascertained or expressed.

2.12 The selection of suitable cost unit depends upon several factors, such as, nature of business, process of information, requirements of costing system, etc. but usually relates to the natural unit of the product or service. Examples of cost units are kilo litre for water, kilo watt hour for power, kilogramme for chemicals.

Allocated and Apportioned Cost

2.13 Cost allocation is the allotment of the whole items of costs to cost centres or cost units. Cost apportionment refers to the allotment of proportions of item of cost to cost centres or cost units. A cost which is allocated to a cost centre is a direct cost of that cost centre, whereas the cost which is apportioned to different cost centres on suitable basis is an indirect cost of that cost centre. Thus, direct costs are allocated, since they can be directly identified with a cost centre or cost unit, and indirect costs are apportioned expenditure. The concept of direct and indirect cost is very important for costing purposes.

Classification of Costs

2.14 Cost classification refers to the process of grouping costs according to their common characteristics, such as nature of expense, function, variability, controllability and normality. Cost classification can be done on the basis of time, their relation with the product and accounting period. Cost classification is also made for planning and control and decision making. Thus, classification is essential for identifying costs with cost centres or cost units for the purpose of determination and control of cost :

- Nature of expense like material, labour, etc.
- Functions/activities like production cost, administration cost, etc.
- Behaviour like fixed, variable or semi-variable
- Controllability, whether they are controllable costs or non-controllable
- Production process, i.e., direct or indirect costs
- Time period, i.e., historical cost or future cost.

2.15 Cost accounting related terms used in OWCM is given in the Glossary (Refer Appendix 1 to this chapter).

Methods of Costing

2.16 Various methods of ascertaining costs are available to suit the business need, but the basic principles are the same in every method. The choice of a particular method of costing depends on the nature of business of the entity. There are two basic methods of costing, viz.,

- Specific order or job costing
- Continuous operation or process costing.

All other methods are either variation of job or process costing or are just techniques used for particular purpose under specific conditions. The two methods of costing are briefly described below.

Job Costing

2.17 Job costing is the basic costing method applicable to those industries where the work consist of separate contracts, jobs, or batches, each of which is authorised by a specific order or contract. The most important feature is that each job or order can be identified at each stage of production and therefore, costs which can be directly identified with a job or order is charged to that job or order. A share of indirect expenses is also charged to the same. Variations of job costing are contracts costing and batch costing.

Operation Costing – Process and Services

2.18 Process costing method is applicable where goods or services result from a sequence of continuous or repetitive operations or processes and products are identical and cannot be segregated. Costs are charged to processes and averaged over the units produced during the period. Examples are food processing, chemical, dairies, paints, etc. Variations of process costing are found in single or output costing, operation costing, and departmental costing.

2.19 This chapter discussed the basic concepts of costing system. The next chapter discusses the activities involved in setting up of cost accounting system for the ring fenced entity, i.e., identification of cost centres and selection of appropriate methodology for costing system.

Appendix 1 – Glossary of Terms

(Source: Perspectives on Cost Accounting for Government – International Federation of Accountants (IFAC))

Administrative Costs: Indirect costs that are incurred in support of programs, outputs or other operating activities. They include costs of functions such as senior management, information systems, finance and accounting, which usually cannot be assigned on a cause and effect basis. Other support costs that may be assigned on that basis such as purchasing (procurement), personnel (human resources), insurance and property logistics, are sometimes also included in this term.

Assigning Costs: A process that identifies specific costs with programs, outputs, activities or other cost objects. There are three appropriate methods of cost assignment, listed here in order of preference:

- Directly tracing costs wherever economically feasible
- Allocating costs on a reasonable and consistent basis.

Classifying Costs: A process of identifying costs by type, behaviour, account, source, accounting period, etc., so that those costs may be suitably assigned to cost objects.

Common Cost: The cost of resources employed jointly in the production of two or more outputs that cannot be directly traced to any one of those outputs.

Contract Costs: The costs of the goods and services used in complying with the provisions of an agreement between a buyer and a seller.

Controllable Cost: A cost that can be influenced by the action of the responsible manager. The term always refers to a specific manager since all costs are controllable by someone.

Cost: The monetary value of resources used or sacrificed, or liabilities incurred to achieve an objective, such as acquiring or producing of goods or performing an activity or service.

Cost Analysis: The development of cost information from cost records and other historical data sources, other than a cost accounting system.

Cost/Benefit Analysis*:* An analytical tool to systematically compare and evaluate the total costs and benefits (quantified to the extent possible) of alternatives.

Direct Cost: A cost that is specifically identified with a single cost object, or the cost of resources directly consumed by an activity. Direct costs are assigned to activities by direct tracing of units of resources consumed by individual activities.

Expense: Outflow or other using up of resources or incurring liabilities (or a combination of both), the benefits of which apply to an entity's operations for the current accounting period but do not extend to future periods.

Fixed Cost: A cost that does not vary in the short term with the volume of activity. This is also called as Non-variable Cost.

Flexible Budget: Budget based on different levels of activity. It distinguishes between fixed and variable costs, thus allowing budgeting to be adjusted to the particular level of activities actually attained.

Full Cost: The sum of all costs required by a cost object, including the costs of activities performed by other entities, regardless of funding sources.

Incremental Cost: The increase or decrease in total costs that would result from a decision to increase or decrease output level, to add a service or task, or to change any portion of operations.

Indirect Cost: A cost that cannot be identified specifically with or traced to a given cost object in an economically feasible way.

Opportunity Cost: The value of the alternatives foregone by adopting a particular strategy or employing resources in a specific manner.

Output: Any specific product or service generated from the consumption of resources.

Performance Measurement: A means of evaluating efficiency, effectiveness and results. A balanced performance measurement scorecard includes financial and non-financial measures focusing on quality, cycle time and cost.

Process: The organized method of converting inputs (people, equipment, methods, materials and environment) to outputs (products or services).

Process Costing: A method of cost accounting that first collects costs by processes and then allocates the total costs of each process equally to each unit of output flowing through it during an accounting period.

Product: Any discrete, traceable or measurable goods or services provided to a customer.

Production Cost: All the costs reasonably related to bringing goods, services or benefits to consumers.

Programme: An organized set of activities directed toward a common purpose or goal that a governmental entity undertakes or proposes, to carry out its responsibilities.

Project: A specific, non-recurring cost object whose total cost is to be determined, such as a particular physical item of property, plant or equipment.

Relevant Costs: Those expected future costs that will differ among the alternatives considered in decision-making.

Responsibility Centre: An organizational unit headed by a manager or a group of managers who are responsible for its activities.

Responsibility Segment: A significant organizational, operational, functional or process component that has the following characteristics:

- Its manager reports to the entity's top management;
- It is responsible for carrying out a mission, performing a line of activities or services, or producing one or a group of products; and
- For financial reporting and cost management purposes, its resources and results of operations can be clearly distinguished, physically and operationally, from those of other segments of the entity.

Unit Cost: The cost of a selected unit of goods or services. Examples include the monetary cost per kilo litre, machine hour, *labour* hour or department hour.

Chapter 3

Orissa Water Utility Costing System - Framework

3.1. The pre-requisites for setting up of cost accounting system are identification of cost centres and selection of appropriate costing methodology. This chapter discusses the cost centres and its coding structure, the costing methodology and the various elements of costs. Together, these form the framework of Orissa Water Utility Costing System.

Water and Waste Water System

3.2. The design of cost centre and selection of appropriate costing methodology depends on the nature of business. This section briefly discusses the nature of business of the entity.

3.3. The ring fenced entity is currently part of Public Health Engineering Organisation (PHEO), Government of Orissa. The primary functions of PHEO are

- Planning of water and sewerage services
- Construction of minor capital works for water and sewerage services
- Operation, maintenance, and management of services
- Monitoring and quality control.

3.4. The water and waste water system can be categorized into two components

- Process Component that includes sourcing, treatment, transmission and distribution
- Product Component of each process that includes raw water, treated water and the potable water (which can be analysed for each category of consumers)

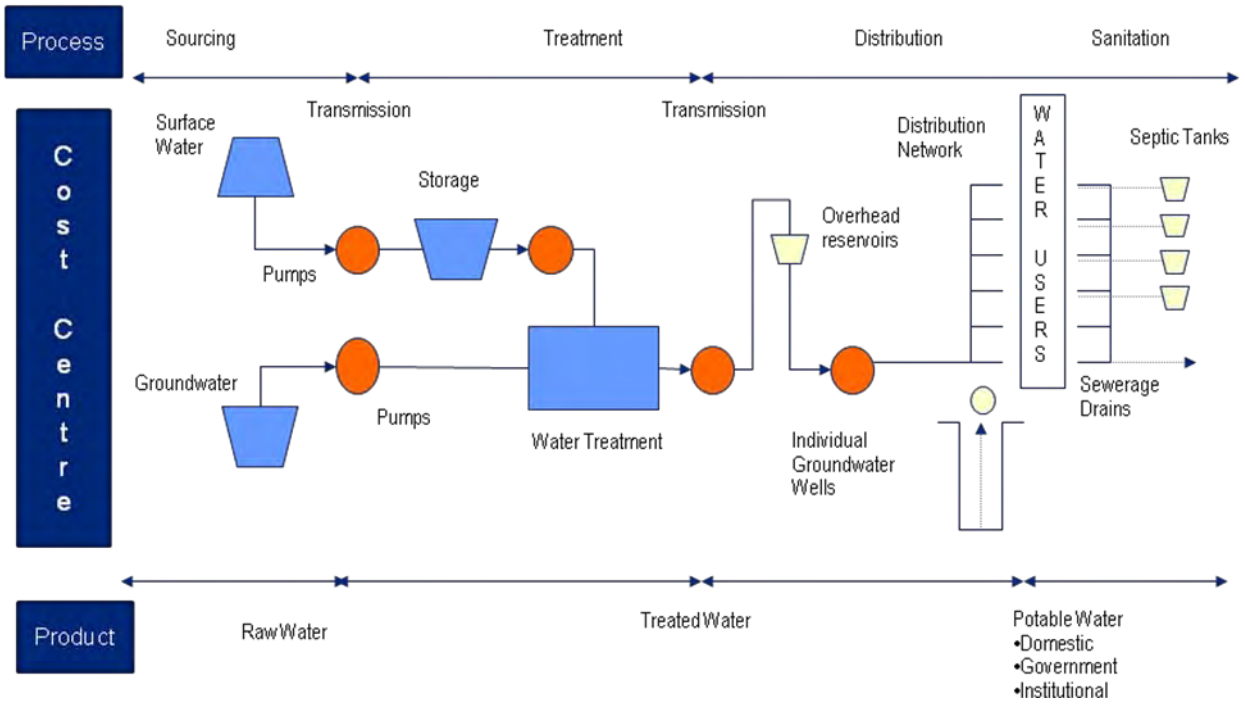
3.5. Identification of the products that will be ~~-c~~osted" is the key aspect in setting up of the costing system. The definition of the cost centres shall also depend on the products identified.

3.6. An overview of the water and waste water system is given in exhibit 3.1 below.

3.7.

Exhibit 3.1

Water and Waste Water System



3.8. As can be seen from the above exhibit, the key processes in the water and waste water system are

- Sourcing of water – from surface or ground
- Treatment of water
- Transmission of water – raw water and clean water (treated water)
- Distribution
- Collection and disposal of waste water.

3.9. The data captured in the above processes with the assistance of the chart of accounts defined by the financial accounting system and the cost centres shall enable –product costing". The products that will be costed are

- Raw water
- Treated Water
- Potable water (that shall be analysed for each category of –Consumers").

3.10. The water and the waste water system depicted above shall form the basis of defining the cost centres, the cost elements and the costing methodology that are discussed in the subsequent sections.

Costing Methodology

3.11. The costing methodology depends on the nature of industry and the requirements of the business. The prime objective of the costing system is to design and develop a "product costing" system to determine the cost of services and facilitate in decision making.

3.12. The product costing shall be done based on process costing. The cost of each production process shall be identified separately. The output of the preceding process shall become the input for the next process. Each process shall add value to the input received from the previous process and shall pass on the value-added product to the next process.

3.13. The value added at each process shall be determined based on the various resources consumed by the product in the production process at rate per unit of resources consumed.

Data Capturing System

3.14. Costing system requires an effective system of capturing the cost data. The cost data shall be captured from the financial accounting system and from the sub-systems (for e.g., personnel, production, etc.). The main cost information base will be the cost centres.

Cost Centres

3.15. Cost centre is defined as a location, person or item of equipment (or group of them) in respect of which costs may be ascertained and related to cost units for the purposes of cost control.

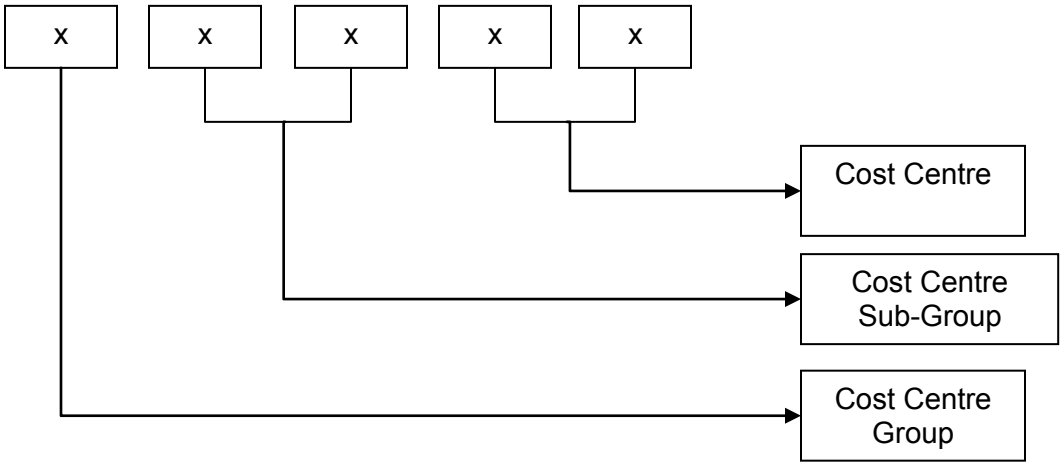
Coding Structure

3.16. For better management, identification, control and reporting, the cost centres have to be coded. A well designed coding structure enables capture of information at various levels, consolidate them as well as collapse to generate various information reports. For example, the coding structure should enable the user to arrive at the cost of raw water at each source of supply and the overall cost of raw water, map the raw water to the respective treatment plant and to the distribution units, and identify the cost at each treatment plant and so on. The coding structure has been designed considering the unique requirements of the water and waste water system and the needs of the users.

3.17. The coding structure shall be a five digit numeric code. The first digit will identify the main group. The next two digits will be the cost centre group and the last two digits will indicate the cost centre. The coding structure is given in exhibit 3.2.

Exhibit 3.2

Coding Structure



Cost Centre Group

3.18. Each unique identifiable process in the water and waste water system is categorized as cost centre group. Nine cost centre groups mapping all the transactions of the entity have been identified. The cost centre group will be a numeric field from starting from ~~"1~~".

Cost Centre Sub-Group

3.19. Under each cost centre group, sub-groups have been identified. These sub-groups represent the next level of information capture. This will be of two digits starting at ~~"0~~1". For e.g., cost centre group, source of supply will have Mahanadi, Daya and various intake wells as the sub-group.

Cost Centre

3.20. The leaf level information capturing cost centre is the next level in the coding structure. Continuing with the above example of source of supply, for Mahanadi, the cost centres will be the pumps and pumping stations, the electrical sub-stations and other machinery associated with sourcing the raw water from Mahanadi. Cost centre code will be of two digits starting from ~~"00~~".

3.21. The table below summarises the cost centre groups and their brief description.

Cost Centre Group	Description
Sourcing of Raw Water	The pumping stations involved in drawing water from river or intake wells.
Water Treatment	The water treatment plants involved in treatment of the raw water. This shall also include the storage units inside the water treatment plant.
Transmission	The activities that are involved in transmitting the raw water from the source to the treatment plant and clean water from treatment plant to distribution network.
Distribution	The departments involved in distribution of water to various categories of consumers, collection of dues, etc.
Sewer Pumping Stations	The pumping stations involved in collection and pumping of sewer.
Sewer Treatment	The sewer treatment plants that treat the sewer collected before it is let out or reused.
Administration	Departments that provide administrative support to various functions, for e.g., finance and accounts, personnel, etc.
Project Cost Centres	The department involved in creation of capital assets. They shall not be included in the product costing.
Non-cost Centres	Non-cost centre shall include all those expenses, which appear in financial books but are not considered in costing records. Non-cost centres cost shall facilitate reconciliation of costing records with the financial records.

3.22. The detailed list of cost centres is given in Appendix 1 to this Chapter.

Applicability of Coding Structure to the Transactions

3.23. The coding structure is integrated with the chart of accounts defined in the Orissa Water Utility Accounting Manual. The code shall be captured along with the account code for the transaction. It must however be noted that the account codes and cost centre codes shall

remain unique and distinct. Cost centre codes shall be captured only for the expenditure (capital or revenue). In case of capital expenditure, the project cost centre code shall be captured. Further, whenever, incorrect cost centre codes are captured for a transaction, journal entry for the same shall be passed rectifying the cost centre code. Please refer to Orissa Municipal Accounting Manual for guidelines to pass journal entries.

3.24. Identification of the cost centre code involves the following steps:

a. Process involved (from the nine processes given in table above). This will be the cost centre group

b. Identification of sub-cost centre group, i.e., the function/activity, location/unit, etc.

c. Identification of the cost centre under the respective sub-cost centre group.

3.25. For better understanding of the usage of cost centre codes, a few illustrations have been provided below.

Illustration - Wages paid to workers operating "pump 1" at Mahanadi Head Works

Using the steps mentioned above, the cost centre will be identified in the following manner

a. Process involved – Source of supply – Code –1"

b. Sub-cost centre group – What is the source of supply – Mahanadi – Code –01"

c. Cost centre – Associated unit – Pump 1 – Code –02" (assuming 02 is given for pump1)

The cost centre code for this transaction that will be captured in the payment/journal voucher is 1-01-02.

Assuming, wages are paid to workers operating more than one pump, the cost centre code shall be –01". Similarly for pumping stations, the code will be –11". Further, all common costs related to a source of supply, for e.g., the salary of the section head will be booked under the cost centre code –99".

Illustration – Alum used in the Alum mixer at water treatment plant at Palasuni (3MGD)

Using the steps mentioned above, the cost centre will be identified in the following manner

a. Process involved – Treatment of Water – Code –2"

b. Sub-cost centre group – Which Treatment Plant – Palasuni (3MGD) – Code –04"

c. Cost centre – Associated unit – Alum Mixer – Code –08"

The cost centre code for this transaction that will be captured in the payment/journal voucher is 2-04-08.

Illustration – Salaries to Accounts Section at Division I

Using the steps mentioned above, the cost centre will be identified in the following manner

a. Process involved – Administration – Code ~~-8~~"
b. Sub-cost centre group – Division – PH Division 1 – Code ~~-0~~3"
c. Cost centre – Associated unit – Accounts Section – Code ~~-0~~4"

The cost centre code for this transaction that will be captured in the payment/journal voucher is 8-03-04.

Illustration – Salaries paid to Revenue Collection Staff

Using the steps mentioned above, the cost centre will be identified in the following manner

a. Process involved – Water Distribution – Code ~~-4~~"
b. Sub-cost centre group – Associated unit – Rent Sub-division – Code ~~-0~~8"
c. Cost centre – Associated unit – Consolidated Water Distribution - Rent Sub-division – Code ~~-0~~0"

The cost centre code for this transaction that will be captured in the payment/journal voucher is 4-08-00. As can be observed, the cost centre captured is at a consolidated level. This is because detailed cost centres are not desired for this unit and hence not defined.

3.26. The users should not add, delete or modify any codes. Any request for new codes should be sent to the Costing Department who shall decide on the requirement of the new code and add the same if and only if it is necessary.

Cost Elements

3.27. The various costs in respect of each of the cost centres shall be captured through the financial accounting system using the Chart of Accounts structure designed in the financial accounting system.

3.28. The various groups of cost elements for the purpose of costing are

a. **Direct Cost of Operations** : This includes the cost of wages, chemicals, power, etc. that are directly identifiable to the process.
b. **Direct Cost of Maintenance** : This includes the maintenance costs directly identifiable to the maintenance of the treatment plant, reservoir, transmission mains, etc.
c. **Depreciation** : The depreciation related to the assets used in the respective process.
d. **Interest and Finance Charges** : The interest and finance charges directly attributable to the process. All general interest and finance charges shall be treated

as part of administrative overheads.

e. **Process Overheads :** The indirect costs associated with the production (of water) process that are not directly identifiable to a specific cost centre. For example, the cost of the engineer heading the sub-division. These overheads shall be allocated to the concerned cost centres.

f. **Administration Overheads** : It shall include costs relating to administration departments/sections such as office of executive engineer, accounts, etc.

Cost Accounting Records

3.29. In a water utility, the major costs are incurred on salaries and wages, power, maintenance of the machineries and the chemicals used in the production process. Hence, proper records need to be maintained for exercising adequate control and monitoring. Costing system shall, to the maximum extent possible, use the records and registers of financial accounting system and other feeder systems. In addition, the following records shall be maintained at a minimum for cost accounting purposes.

Production Register

3.30. The production of water involves drawing of water from various sources – surface or ground, treatment, its transmission to distribution units. During the process, water losses are expected at various points due to many reasons including leakage, evaporation, process loss while treatment, etc. Measurement and recording of water produced, transmitted and consumed therefore assumes primary importance for the effective functioning of the costing system.

3.31. The ring fenced entity shall maintain daily production register at all the locations/units. This shall be in addition to the production log currently maintained. The information shall be sent to the cost accounting department for compilation. The register shall capture the quantity of raw water sourced, treated, losses in treatment process, quantity of clean water produced, transmitted and distributed. Currently, as system for determining the exact unaccounted for water (UFW) is not established, the ring fenced entity shall estimate the losses at each stage based on their knowledge.

3.32. The indicative format of production register for source of supply, treatment and distribution is given in Appendix 2.

Consumables Register

3.33. The consumables used in the production and distribution of water, e.g., chemicals shall be captured through the stores register. The stores register (used in the financial accounting

system) shall capture the receipts, issue and consumption of the materials used in the production or distribution of water.

Power Log

3.34. Cost of Power constitutes a major expenditure in the production process. Power log for each of the machineries (with appropriate cost centre code) shall be maintained to capture the power consumption. The details of power cost shall be compiled for each cost centre and sent to the cost accounting department. The cost accounting department shall reconcile the consolidated power cost reported under each cost centre to the total cost of power on a monthly basis.

Salaries and Wages

3.35. The cost accounting system shall take inputs from the Salary Register/Muster Roll. However, all employees shall be assigned to a cost centre code. Any movement of employees across cost centres shall be recorded in the payroll system.

3.36. This chapter dealt with the elements of the costing system, viz., the methodology and the information capture system. The next section discusses the methodology for ascertaining the cost of service.

Appendix 1 – Cost Centre Codes

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
1	**Source of Supply**	**01**	**Mahanadi**	**00**	Consolidated Source of Supply - Mahanadi
				01	Pumps
				11	Pumping Stations
				21	Electrical Sub-stations
				99	Others
		02	**Kuakhai**	**00**	Consolidated Source of Supply – Kuakhai
				01	Pumps
				11	Pumping Stations
				21	Electrical Sub-stations
				99	Others
		03	**Daya**	**00**	Consolidated Source of Supply – Daya
				01	Pumps
				11	Pumping Stations
				21	Electrical Sub-stations
				99	Others
		04	**Spring Tank**	**00**	Consolidated Source of Supply - Spring Tank
				01	Pumps
				11	Pumping Stations
				21	Electrical Sub-stations
				99	Others
		11	**Intake Wells**	**00**	Consolidated Source of Supply - *Name of the Intake Well 1*
				01	Pumps
				11	Pumping Stations
				21	Electrical Sub-stations
				99	Others

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
		31	**Production Wells**	**00**	Consolidated Source of Supply - *Name of the Well 1*
				01	Pumps
				11	Pumping Stations
				21	Electrical Sub-stations
				99	Others
		51	**Open Wells**	**00**	Consolidated Source of Supply - *Name of the Well 1*
				01	Pumps
				11	Pumping Stations
				21	Electrical Sub-stations
				99	Others
		71	**Tube Wells**	**00**	Consolidated Source of Supply - *Name of the Well 1*
				01	Pumps
				11	Pumping Stations
				21	Electrical Sub-stations
				99	Others
2	**Water Treatment**	**01**	**High Level Tank - 1.5 MGD**	**00**	Consolidated Water Treatment - High Level Tank
				01	Raw Water Head Works
				02	Pumping Stations
				03	Pumps
				04	Transmission Mains
				05	Aerator
				06	Raw Water Channel
				07	Rapid Mixer
				08	Alum Mixer
				09	Lime Mixer
				10	Flash Mixer
				11	Clarifloculator/Flocculator - cum - Settling Tank

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				12	Filter Beds
				13	Filter Bed Cleaner
				14	Filter House Line
				15	Clear Water Channel
				16	Clear Water Reservoir
				17	Clear Water Pumps
				18	Clear Water Pump House
				19	Chemical Store
				20	Chlorine Plant
				21	Electrical Sub-stations
				99	Others
		02	**Spring Tank - 0.5 MGD**	**00**	Consolidated Water Treatment - Spring Tank
				01	Raw Water Head Works
				02	Pumping Stations
				03	Pumps
				04	Transmission Mains
				05	Aerator
				06	Raw Water Channel
				07	Rapid Mixer
				08	Alum Mixer
				09	Lime Mixer
				10	Flash Mixer
				11	Clarifloculator / Flocculator - cum - Settling Tank
				12	Filter Beds
				13	Filter Bed Cleaner
				14	Filter House Line
				15	Clear Water Channel
				16	Clear Water Reservoir
				17	Clear Water Pumps
				18	Clear Water Pump House

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				19	Chemical Store
				20	Chlorine Plant
				21	Electrical Sub-stations
				99	Others
		03	**Old Town - 3 MGD**	**00**	Consolidated Water Treatment - Old Town (Samantarapur)
				01	Raw Water Head Works
				02	Pumping Stations
				03	Pumps
				04	Transmission Mains
				05	Aerator
				06	Raw Water Channel
				07	Rapid Mixer
				08	Alum Mixer
				09	Lime Mixer
				10	Flash Mixer
				11	Clarifloculator / Flocculator - cum - Settling Tank
				12	Filter Beds
				13	Filter Bed Cleaner
				14	Filter House Line
				15	Clear Water Channel
				16	Clear Water Reservoir
				17	Clear Water Pumps
				18	Clear Water Pump House
				19	Chemical Store
				20	Chlorine Plant
				21	Electrical Sub-stations
				99	Others
		04	**Palasuni - 3 MGD**	**00**	Consolidated Water Treatment - Palasuni 3 mgd
				01	Raw Water Head Works

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				02	Pumping Stations
				03	Pumps
				04	Transmission Mains
				05	Aerator
				06	Raw Water Channel
				07	Rapid Mixer
				08	Alum Mixer
				09	Lime Mixer
				10	Flash Mixer
				11	Clarifloculator / Flocculator - cum - Settling Tank
				12	Filter Beds
				13	Filter Bed Cleaner
				14	Filter House Line
				15	Clear Water Channel
				16	Clear Water Reservoir
				17	Clear Water Pumps
				18	Clear Water Pump House
				19	Chemical Store
				20	Chlorine Plant
				21	Electrical Sub-stations
				99	Others
		05	**Palasuni - 6 MGD**	**00**	Consolidated Water Treatment - Palasuni 6 mgd
				01	Raw Water Head Works
				02	Pumping Stations
				03	Pumps
				04	Transmission Mains
				05	Aerator
				06	Raw Water Channel
				07	Rapid Mixer
				08	Alum Mixer

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				09	Lime Mixer
				10	Flash Mixer
				11	Clarifloculator / Flocculator - cum - Settling Tank
				12	Filter Beds
				13	Filter Bed Cleaner
				14	Filter House Line
				15	Clear Water Channel
				16	Clear Water Reservoir
				17	Clear Water Pumps
				18	Clear Water Pump House
				19	Chemical Store
				20	Chlorine Plant
				21	Electrical Sub-stations
				99	Others
		06	**Palasuni - 9 MGD**	**00**	Consolidated Water Treatment - Palasuni 9 mgd
				01	Raw Water Head Works
				02	Pumping Stations
				03	Pumps
				04	Transmission Mains
				05	Aerator
				06	Raw Water Channel
				07	Rapid Mixer
				08	Alum Mixer
				09	Lime Mixer
				10	Flash Mixer
				11	Clarifloculator / Flocculator - cum - Settling Tank
				12	Filter Beds
				13	Filter Bed Cleaner
				14	Filter House Line

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				15	Clear Water Channel
				16	Clear Water Reservoir
				17	Clear Water Pumps
				18	Clear Water Pump House
				19	Chemical Store
				20	Chlorine Plant
				21	Electrical Sub-stations
				99	Others
		07	**Chandrasekharpur - 1.5 MGD**	**00**	Consolidated Water Treatment – Chandrasekharpur
				01	Raw Water Head Works
				02	Pumping Stations
				03	Pumps
				04	Transmission Mains
				05	Aerator
				06	Raw Water Channel
				07	Rapid Mixer
				08	Alum Mixer
				09	Lime Mixer
				10	Flash Mixer
				11	Clarifloculator / Flocculator - cum - Settling Tank
				12	Filter Beds
				13	Filter Bed Cleaner
				14	Filter House Line
				15	Clear Water Channel
				16	Clear Water Reservoir
				17	Clear Water Pumps
				18	Clear Water Pump House
				19	Chemical Store
				20	Chlorine Plant
				21	Electrical Sub-stations

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				99	Others
		08	**Mundali - 25 MGD**	**00**	Consolidated Water Treatment – Mundali
				01	Raw Water Head Works
				02	Pumping Stations
				03	Pumps
				04	Transmission Mains
				05	Aerator
				06	Raw Water Channel
				07	Rapid Mixer
				08	Alum Mixer
				09	Lime Mixer
				10	Flash Mixer
				11	Clarifloculator / Floculator - cum - Settling Tank
				12	Filter Beds
				13	Filter Bed Cleaner
				14	Filter House Line
				15	Clear Water Channel
				16	Clear Water Reservoir
				17	Clear Water Pumps
				18	Clear Water Pump House
				19	Chemical Store
				20	Chlorine Plant
				21	Electrical Sub-stations
				99	Others
3	**Water Transmission**	**01**	**High Level Tank**	**00**	Consolidated Water Transmission - High Level Tank
				01	Pumps
				02	Pump Houses
				03	Raw Water Transmission Pipes

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				04	Clear Water Transmission Pipes
				05	Electrical Sub-stations
				99	Others
		02	**Spring Tank**	**00**	Consolidated Water Transmission - Spring Tank
				01	Pumps
				02	Pump Houses
				03	Raw Water Transmission Pipes
				04	Clear Water Transmission Pipes
				05	Electrical Sub-stations
				99	Others
		03	**Old Town**	**00**	Consolidated Water Transmission - Old Town
				01	Pumps
				02	Pump Houses
				03	Raw Water Transmission Pipes
				04	Clear Water Transmission Pipes
				05	Electrical Sub-stations
				99	Others
		04	**Palasuni - 3 mgd**	**00**	Consolidated Water Transmission - Palasuni 3 mgd
				01	Pumps
				02	Pump Houses
				03	Raw Water Transmission Pipes
				04	Clear Water Transmission Pipes
				05	Electrical Sub-stations
				99	Others
		05	**Palasuni - 6 mgd**	**00**	Consolidated Water Transmission - Palasuni 6 mgd
				01	Pumps
				02	Pump Houses
				03	Raw Water Transmission Pipes

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				04	Clear Water Transmission Pipes
				05	Electrical Sub-stations
				99	Others
		06	**Palasuni - 9 mgd**	**00**	Consolidated Water Transmission - Palasuni 9 mgd
				01	Pumps
				02	Pump Houses
				03	Raw Water Transmission Pipes
				04	Clear Water Transmission Pipes
				05	Electrical Sub-stations
				99	Others
		07	**Chandrasekharpur**	**00**	Consolidated Water Transmission - Chandrasekharpur
				01	Pumps
				02	Pump Houses
				03	Raw Water Transmission Pipes
				04	Clear Water Transmission Pipes
				05	Electrical Sub-stations
				99	Others
		08	**Mundali**	**00**	Consolidated Water Transmission - Mundali
				01	Pumps
				02	Pump Houses
				03	Raw Water Transmission Pipes
				04	Clear Water Transmission Pipes
				05	Electrical Sub-stations
				99	Others
4	**Water Distribution**	**01**	**High Level Tank**	**00**	Consolidated Water Distribution - High Level Tank
				01	Water Distribution Pipes & Valves
				02	Overhead Reservoirs (OHR)
				03	Over Ground Reservoirs (OGR)

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				04	Under Ground Reservoirs (UGR)
				05	Electrical Sub-stations
				06	Chlorine Plants
				07	Pumps
				08	Pump Houses
				09	Meters
				10	Public Stand Posts
				11	Meter Testing Equipments
				12	Water Testing Equipments
				99	Others
		02	**Unit - III**	**00**	Consolidated Water Distribution - Unit III
				01	Water Distribution Pipes & Valves
				02	Overhead Reservoirs (OHR)
				03	Over Ground Reservoirs (OGR)
				04	Under Ground Reservoirs (UGR)
				05	Electrical Sub-stations
				06	Chlorine Plants
				07	Pumps
				08	Pump Houses
				09	Meters
				10	Public Stand Posts
				11	Meter Testing Equipments
				12	Water Testing Equipments
				99	Others
		03	**Unit - IV**	**00**	Consolidated Water Distribution - Unit IV
				01	Water Distribution Pipes & Valves
				02	Overhead Reservoirs (OHR)
				03	Over Ground Reservoirs (OGR)
				04	Under Ground Reservoirs (UGR)
				05	Electrical Sub-stations

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				06	Chlorine Plants
				07	Pumps
				08	Pump Houses
				09	Meters
				10	Public Stand Posts
				11	Meter Testing Equipments
				12	Water Testing Equipments
				99	Others
		04	**Old Town**	**00**	Consolidated Water Distribution - Old Town
				01	Water Distribution Pipes & Valves
				02	Overhead Reservoirs (OHR)
				03	Over Ground Reservoirs (OGR)
				04	Under Ground Reservoirs (UGR)
				05	Electrical Sub-stations
				06	Chlorine Plants
				07	Pumps
				08	Pump Houses
				09	Meters
				10	Public Stand Posts
				11	Meter Testing Equipments
				12	Water Testing Equipments
				99	Others
		05	**Unit - IX**	**00**	Consolidated Water Distribution - Unit - IX
				01	Water Distribution Pipes & Valves
				02	Overhead Reservoirs (OHR)
				03	Over Ground Reservoirs (OGR)
				04	Under Ground Reservoirs (UGR)
				05	Electrical Sub-stations
				06	Chlorine Plants
				07	Pumps

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				08	Pump Houses
				09	Meters
				10	Public Stand Posts
				11	Meter Testing Equipments
				12	Water Testing Equipments
				99	Others
		06	**Sahid Nagar**	**00**	Consolidated Water Distribution - Sahid Nagar
				01	Water Distribution Pipes & Valves
				02	Overhead Reservoirs (OHR)
				03	Over Ground Reservoirs (OGR)
				04	Under Ground Reservoirs (UGR)
				05	Electrical Sub-stations
				06	Chlorine Plants
				07	Pumps
				08	Pump Houses
				09	Meters
				10	Public Stand Posts
				11	Meter Testing Equipments
				12	Water Testing Equipments
				99	Others
		07	**Palasuni**	**00**	Consolidated Water Distribution – Palasuni
				01	Water Distribution Pipes & Valves
				02	Overhead Reservoirs (OHR)
				03	Over Ground Reservoirs (OGR)
				04	Under Ground Reservoirs (UGR)
				05	Electrical Sub-stations
				06	Chlorine Plants
				07	Pumps
				08	Pump Houses
				09	Meters

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				10	Public Stand Posts
				11	Meter Testing Equipments
				12	Water Testing Equipments
				99	Others
		08	**Rent Sub-division**	**00**	Consolidated Water Distribution - Rent Sub-division
		09	**Chandrasekharpur**	**00**	Consolidated Water Distribution - Chandrasekharpur
				01	Water Distribution Pipes & Valves
				02	Overhead Reservoirs (OHR)
				03	Over Ground Reservoirs (OGR)
				04	Under Ground Reservoirs (UGR)
				05	Electrical Sub-stations
				06	Chlorine Plants
				07	Pumps
				08	Pump Houses
				09	Meters
				10	Public Stand Posts
				11	Meter Testing Equipments
				12	Water Testing Equipments
				99	Others
		10	**Mundali**	**00**	Consolidated Water Distribution – Mundali
				01	Water Distribution Pipes & Valves
				02	Overhead Reservoirs (OHR)
				03	Over Ground Reservoirs (OGR)
				04	Under Ground Reservoirs (UGR)
				05	Electrical Sub-stations
				06	Chlorine Plants
				07	Pumps
				08	Pump Houses
				09	Meters

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				10	Public Stand Posts
				11	Meter Testing Equipments
				12	Water Testing Equipments
				99	Others
		11	**Ghatikia**	**00**	Consolidated Water Distribution – Ghatikia
				01	Water Distribution Pipes & Valves
				02	Overhead Reservoirs (OHR)
				03	Over Ground Reservoirs (OGR)
				04	Under Ground Reservoirs (UGR)
				05	Electrical Sub-stations
				06	Chlorine Plants
				07	Pumps
				08	Pump Houses
				09	Meters
				10	Public Stand Posts
				11	Meter Testing Equipments
				12	Water Testing Equipments
				99	Others
		12	**Khurda**	**00**	Consolidated Water Distribution - Khurda
				01	Water Distribution Pipes & Valves
				02	Overhead Reservoirs (OHR)
				03	Over Ground Reservoirs (OGR)
				04	Under Ground Reservoirs (UGR)
				05	Electrical Sub-stations
				06	Chlorine Plants
				07	Pumps
				08	Pump Houses
				09	Meters
				10	Public Stand Posts

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				11	Meter Testing Equipments
				12	Water Testing Equipments
				99	Others
5	**Sewer Collection System**	**01**	**Sewer Collection**	**00**	Consolidated Sewer Collection System
				01	Collecting Sewers
				02	Main Sewers
				03	Manholes
6	**Sewer Pumping Stations**	**01**	**Laxmi Sagar**	**00**	Consolidated Sewer Pumping Station - Laxmi Sagar
				01	Sewer Pumps
				02	Sewer Pump Houses
				99	Others
		02	**Toshali Plaza Complex - I**	**00**	Consolidated Sewer Pumping Station - Toshali Plaza Complex - I
				01	Sewer Pumps
				02	Sewer Pump Houses
				99	Others
		03	**Toshali Plaza Complex - II**	**00**	Consolidated Sewer Pumping Station - Toshali Plaza Complex - II
				01	Sewer Pumps
				02	Sewer Pump Houses
				99	Others
		04	**RHS Colony, Baramunda**	**00**	Consolidated Sewer Pumping Station - RHS Colony, Baramunda
				01	Sewer Pumps
				02	Sewer Pump Houses
				99	Others

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
		05	**DAV School, Unit - VIII**	**00**	Consolidated Sewer Pumping Station - DAV School, Unit- VIII
				01	Sewer Pumps
				02	Sewer Pump Houses
				99	Others
		06	**VIP Lease Plot, Nayapalli**	**00**	Consolidated Sewer Pumping Station - VIP Lease Plot, Nayapalli
				01	Sewer Pumps
				02	Sewer Pump Houses
				99	Others
7	**Sewerage Treatment System**	**01**	**Sewer Treatment**	**00**	Consolidated Sewer Treatment
				01	Septic Tanks
				02	Aerated Lagoons
				03	Waste Water Treatment Plant (HRTS System) near Sainik School
				99	Others
8	**Administration Cost Centres**	**01**	**Chief Engineer Office**	**00**	Consolidated Administration Cost Centre - Chief Engineer Office
				01	Office of Chief Engineer
				02	Estimation Section
				03	Establishment Section
				04	Accounts Section
				05	Cash Section
				99	Others
		02	**Superintending Engineer Office**	**00**	Consolidated Administration Cost Centre - Superintending Engineer Office
				01	Office of Superintending Engineer
				02	Estimation Section
				03	Establishment Section

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
				04	Accounts Section
				05	Cash Section
				99	Others
		03	**PH Division I**	**00**	Consolidated Administration Cost Centre - PH Division I
				01	Office of Executive Engineer
				02	Estimation Section
				03	Establishment Section
				04	Accounts Section
				05	Cash Section
				99	Others
		04	**PH Division II**	**00**	Consolidated Administration Cost Centre - PH Division II
				01	Office of Executive Engineer
				02	Estimation Section
				03	Establishment Section
				04	Accounts Section
				05	Cash Section
				99	Others
		05	**PH Division III**	**00**	Consolidated Administration Cost Centre - PH Division III
				01	Office of Executive Engineer
				02	Estimation Section
				03	Establishment Section
				04	Accounts Section
				05	Cash Section
				99	Others
9	**Project Cost Centres**	**01**	**PH Division I**	**00**	Consolidated project cost centre
		02	**PH Division II**	**00**	Consolidated project cost centre
		03	**PH Division III**	**00**	Consolidated project cost centre
10	**Non - Cost**	**01**	**PH Division I**	**00**	Non-cost centre

Cost Centre Group Code	Cost Centre Group Description	Cost Centre Sub-Group Code	Cost Centre Sub-Group Code Description	Cost Centre Code	Cost Centre Code Description
	Centres				
		02	**PH Division II**	**00**	Non-cost centre
		03	**PH Division III**	**00**	Non-cost centre

Appendix 2 – Production Register

Name of the Entity

Production Register - Source of Supply

Name of the Source of Supply

Location
Cost Centre Code

Capacity
Cost Centre

S.No	Date	Shift	Quantity Pumped (in KL)	Machine Hours	Comments
(1)	(2)	(3)	(4)	(5)	(6)

Note : 1. Separate folio shall be opened for each cost centre. For e.g., separate folio shall be maintained for each pump involved in sourcing of water
2. Please enter the details for each shift

Name of the Entity

Production Register - Water Treatment Plant

Location

Capacity

Cost Centre

Cost Centre Code

S.No	Date	Inputs		Shift	Machine Hours	Quantity Produced (in KL)
		From (CC Code)	Quantity (in KL)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)

Note :

1. Separate folio shall be opened for each cost centre
2. Please enter shift details, machine hours wherever applicable
3. Machine hours refer to the actual time the machine has run in that specific shift
4. Inputs refer to the raw water or water that is in the process of being treated

Name of the Entity

Production Register - Distribution

Location
Cost Centre

Capacity
Cost Centre Code

S.No	Date	Clean Water Received		Distribution		Shift	Machine Hours
		From (CC Code)	Quantity (in KL)	CC Code	Quantity (in KL)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

Note :
1. Separate folio shall be opened for each cost centre
2. Please enter shift details, machine hours wherever applicable
3. Machine hours refer to the actual time the machine has run in that specific shift
4. Inputs refer to the clean water received from various treatment plants/sources

Chapter 4

Water Production

4.1. The production process involves sourcing, treatment and its transmission to the distribution units. Ascertaining the cost of production is one of the key objectives of the costing system. This chapter discusses the methodology to ascertain the cost of treated water and raw water sourced from various sources. The process involved in production of water is also explained briefly.

Sourcing of Water

4.2. Rain, snow, hail and sleet are precipitated upon the surface of the earth as meteorological water and may be considered as the original source of all the water supplied. Water, as source of drinking water, occurs as surface water and ground water.

Surface Water

4.3. Surface water accumulates mainly as a result of direct runoff from precipitation (rain or snow). Precipitation that does not enter the ground through infiltration or is not returned to the atmosphere by evaporation, flows over the ground surface and is classified as direct runoff. Direct runoff is water that drains from saturated or impermeable surfaces, into stream channels, and then into natural or artificial storage sites (or into the ocean in coastal areas).

4.4. The amount of available surface water depends largely upon rainfall. When rainfall is limited, the supply of surface water will vary considerably between wet and dry years. Surface water supplies may be further divided into river, lake, and reservoir supplies. Dams are constructed to create artificial storage. Canals or open channels can be constructed to convey surface water to the project sites. The water is also conveyed through pipes by gravity or pumping.

4.5. In general, the surface sources are characterized by soft water, turbidity, suspended solids, some colour and microbial contamination.

Ground Water

4.6. Part of the precipitation that falls infiltrates the soil. This water replenishes the soil moisture, or is used by growing plants and returned to the atmosphere by transpiration. Water that drains downward (percolates) below the root zone finally reaches a level at which all the

openings or voids in the earth's materials are filled with water. This zone is called the zone of saturation. The water in the zone of saturation is called the ground water.

4.7. Ground waters are, generally, characterized by higher concentrations of dissolved solids, lower levels of colour, higher hardness (as compared with surface water), dissolved gasses and freedom from microbial contamination.

4.8. A well that penetrates the water table can be used to extract water from the ground basin. The extraction of ground water is mainly by

- Dug well with or without walls
- Dug cum bore wells
- Cavity Bore
- Radial collector wells
- Infiltration galleries
- Tube wells and bore wells.

4.9. Ground water that flows naturally from the ground is called a —spring".

Sources of Water in Bhubaneswar

4.10. Mahanadi, Daya, and Kuakhai Rivers supply over three-quarters (75 percent) of the total daily per capita requirement of potable water, while the balance is obtained from groundwater sources (104 production wells).

4.11. All the sources of supply have intake arrangements to source raw water. An Intake is a device or structure placed in a surface water source to permit withdrawal of water from this source and its discharge into an intake conduit through which it will flow into the water works system. Types of intake structures consist of intake towers, submerged intakes, intake pipes or conduits, movable intakes, and shore intakes. Intake structures over the inlet ends of intake conduits are necessary to protect against wave action, floods, stoppage, navigation, ice, pollution, and other interference with the proper functioning of the intake.

4.12. Intake towers are used for large waterworks drawing water from lakes, reservoirs and rivers in which there is either or both a wide fluctuation in water level or the desire to draw water at a depth that will give water of the best quality to avoid clogging or for other reasons.

4.13. Water is pumped from the source of supply using centrifugal pumps and is transmitted to the water treatment plant for further processing.

Computation of Cost of Raw Water

4.14. Raw water is sourced from various sources as discussed above. Costing system has been designed to provide the cost of raw water for each source and the total cost of raw water.

The costs incurred at each source of supply vary depending on its nature. In general, the cost of raw water at any source will have all or any of the following costs

a. Direct cost of raw water – This includes the rent paid for sourcing the water, usage fee paid for using the surface water, purchase cost of water where water is procured from outside source.

b. Direct cost of maintenance of source – This includes the costs incurred in maintenance of the source including removal of weeds, de-clogging of head, etc.

c. Direct cost of operations and maintenance of machineries used in sourcing of water including the cost of lubricants, power, preventive maintenance, etc.

d. Salaries and wages paid to the staff and workers involved in operations and maintenance of the respective source of supply.

e. Rent, if any, for the premises that houses the pumps and the administration office of the source of supply

f. Depreciation of the machineries and other fixed assets involved in the sourcing of raw of raw water.

g. Interest and finance charges, to the extent directly identifiable to the raw water source.

4.15. The cost centres have been defined in such a way that the cost data shall be captured for each of the pump involved in sourcing of water (since in many cases more than one pump is used to pump raw water from one source of supply).Hence, the costing shall be first carried out at the machinery level and later on aggregated to each source of supply to obtain the cost of raw water. However, if the machine level information is not desired, the cost sheets can be generated at the cost centre sub-group level. For example, in the case of raw water sourced from Mahanadi, the system enables capture of cost data for each of the machinery involved in pumping of water from the source and its transmission. However, in cases where information is not desired/required by decision makers or due to practical limitations, information is not available, cost shall be computed at cost centre sub-group level. The steps involved in computation of the cost of raw water are explained below. The format of cost sheet is given in Appendix 1.

Step 1 – Statement of cost centre wise statement of expenditure

Prepare cost centre level statement of expenditure from the accounting system as per the template given below.

Cost Centre Wise Statement of Expenditure for the period ended _____

Cost Centre Code:_____ Cost Centre : _____

S.No.	Account Code	Description	Amount (in Rs.)

Step 2 – Fill in the information in the cost sheet for each cost centre

Based on the above statement of expenditure, prepare cost sheet for each cost centre. For e.g., assuming that pump ~~x~~" , ~~y~~" and ~~z~~" are involved in the process of drawing water from Kuakhai, separate cost sheet shall be prepared for each of the pumps. All process overheads that are common to the pumps and other cost centres shall be accounted under the code ~~o~~thers" with separate cost sheet prepared for it.

Step 3 – Allocate common costs

Allocation of common costs will be at two stages – in the first stage, costs that are common to the ~~n~~ature" of cost centre, for e.g. the common costs incurred for the pumps in Kuakhai (accounted under the cost centre code ~~0~~1" will be allocated to each of the pump). The allocation will be based on the actual machine hours.

In the next stage, all common process overheads will be allocated to each of the cost centre. The common process overheads will be allocated on the basis of the cost of each cost centre to the total cost (of the respective source).

The output of this step will be ~~c~~ost centre" level cost sheet for the respective source of supply

Step 4 – Computation of Raw Water Cost from Source "x"

The raw water cost from the source ~~x~~" shall be the sum total of the costs incurred by each centre that forms part of the specific source of supply. Further, the cost relating to the administration overheads (Head Office Costs) shall be allocated on the total cost centre sub-group cost to the total cost. This shall be done separately when the consolidated cost statement is prepared.

Step 5 – Capture the quantitative details of the water pumped from the production register

The production register includes the quantity of water pumped from the source. The quantity of water will assist in ascertaining the cost per unit of raw water from a specific source.

Illustration – Computation of Cost of Raw Water sourced from Kuakhai.

Please note that the numbers given here are illustrative and only for explaining the costing methodology. They are not representative of the actual cost incurred or quantity of water sourced from the river.

The cost centre code of Kuakhai is 1-02-00. The source of supply has 2 pumps, an electrical substation. The source of supply is headed by a section officer. Cost Sheet is being prepared for the month of December 2009.

Step 1 – Prepare cost centre level statement of expenditure. The cost centre level statement of expenditure is given below

Cost Centre Sub-Group - Kuakhai

Statement of Expenditure for the period December 1, 2009 to December 31, 2009

Cost Centre Code				**1-02-01**	**1-02-02**	**1-02-03**	**1-02-21**	**1-02-99**
Cost Centre Name				**Pumps**	**Pump x**	**Pump y**	**Elec subst**	**Others**
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Amount**	**Amount**	**Amount**	**Amount**	**Amount**
210	10	00	Salaries of Employees - Source of Supply	12000				10000
210	20	00	Wages of NMR (Nominal Muster Roll) Employees - Source of Supply	2000	20000	18000	12000	5000
210	30	00	Welfare Expenses of Employees - Source of Supply					1000
210	40	00	Welfare Expenses of NMR Employees - Source of Supply		1000	1300		
210	50	00	Casual Labourers' (CLR) Wages - Source of Supply	2000	7000	5000		2000
230	10	01	Power - Source of Supply	5000	6000	5500	1000	1000
230	35	00	Consumption of Tools & Spares - Source of Supply		1000			
230	50	03	Repairs & maintenance of Plant & Machinery (Water Supply)		1000	1000		
			Total	**21000**	**36000**	**30800**	**13000**	**19000**

Step 2 – Fill in the above data in the cost sheet template (for each cost centre). The template for cost sheet is as given in the appendix.

Step 3 – Allocation of common costs and process overheads

Stage 1 – Allocation of "sub-process" overheads.

The costs common to the operation of pumps have to be allocated to the respective pumps. This shall be done on the basis of machine hour rate. The process of allocation is given below.

Let us assume the machine hours of Pump x is 176 hours and that of Pump y is 160 hours. The machine hour rate for Pump x will be Rs.204.55 per Hour and for Pump y, it is Rs.192.50 per hour. This is computed by dividing the total cost by the machine hours. The template for computation of machine hour rate is provided in Appendix.

Based on the machine hour rate, the total cost of cost centre 1-02-01 is allocated to 1-02-02 and 1-02-03 on the basis of machine hour rate using the formula

*Allocated cost = (Total Process Overheads/ sum of machine hour rates) * Machine Hour Rate of Pump x*

Using this formula, the allocated process overheads (for stage 1) are

Pump x = (21000/397.05) * 204.55 = 10,819

Pump y = (21000/397.05) * 192.50 = 10,181

Stage 2 – Allocation of process overheads for the sub-cost centre group

This stage will involve allocation of the costs of cost centre code "1-02-99" to the pump x, pump y and Electrical substation. The cost will be allocated on the basis of the cost centre cost to the total cost.

Hence, the allocation to each of the cost centres will be

Pump x = (10000/100800) * 46819 = Rs.8,825

Pump y = (10000/100800) * 40981 = Rs.7,725

Electrical Sub-station = (10000/100800) * 13000 = Rs.2,450

The above allocation shall be made in the cost sheet and cost sheet shall be prepared for each cost centre. An illustrative cost sheet for Pump "x" is given below.

Cost Sheet - Computation of Cost of Raw Water - Kuakhai - Pump x				
Cost Centre Code				**1-02-02**
Cost Centre Name				**Pump x**
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Amount (Rs.)**
			Direct Cost of Operations	
210	20	00	Wages of NMR (Nominal Muster Roll) Employees - Source of Supply	20000
210	40	00	Welfare Expenses of NMR Employees - Source of Supply	1000
230	10	01	Power - Source of Supply	6000
230	35	00	Consumption of Tools & Spares - Source of Supply	1000

			Total - A	**28000**
			Direct Cost of Maintenance	
210	50	00	Casual Labourers' (CLR) Wages - Source of Supply	7000
230	50	03	Repairs & maintenance of Plant & Machinery (Water Supply)	1000
			Allocated Costs	*19643*
			Total - B	**27643**
			Grand Total - C = A + B	**55643**
			Quantity of water pumped (in KL) - D	**36000**
			Cost per unit - C / D	**1.55**

Step 4 – Preparation of Raw Water Cost sourced at Kuakhai

The cost of sourcing raw water from Kuakhai comprises the cost of operations and maintenance of the pumps, electrical substations and other process overheads. The cost sheet that captures the cost of raw water sourced at Kuakhai is given below

Cost of Raw Water for the Period December 1, 2009 to December 31, 2009									
Cost Centre Code				**1-02-01**	**1-02-02**	**1-02-03**	**1-02-21**	**1-02-99**	
Cost Centre Name				**Pumps**	**Pump x**	**Pump y**	**Electrical substation**	**Others**	**Total**
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**						
			Direct Cost of Operations						
210	10	00	Salaries of Employees - Source of Supply	12000				10000	22,000
210	20	00	Wages of NMR (Nominal Muster Roll) Employees - Source of Supply	2000	20000	18000	12000	5000	57,000
210	30	00	Welfare Expenses of Employees - Source of Supply					1000	1,000
210	40	00	Welfare Expenses of NMR Employees - Source of Supply		1000	1300			2,300
230	10	01	Power - Source of Supply	5000	6000	5500	1000	1000	18,500
230	20	01	Purchase of water - Source of Supply						-
230	20	02	Electricity expenses - Source of Supply						-
230	30	00	Consumption of Stores - Source of Supply						-
230	35	00	Consumption of Tools & Spares - Source of Supply		1000				1,000
230	40	00	Consumption of consumables - Source of Supply						-
			Total	**19000**	**28000**	**24800**	**13000**	**17000**	**101,800**
			Direct Cost of Maintenance						

Cost of Raw Water for the Period December 1, 2009 to December 31, 2009									
Cost Centre Code				**1-02-01**	**1-02-02**	**1-02-03**	**1-02-21**	**1-02-99**	
Cost Centre Name				**Pumps**	**Pump x**	**Pump y**	**Electrical substation**	**Others**	**Total**
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**						
210	50	00	Casual Labourers' (CLR) Wages - Source of Supply	2000	7000	5000		2000	16,000
210	60	00	Payments to Trainees / Deputationists - Source of Supply						-
210	80	00	Pension - Source of Supply						-
210	90	00	Other Terminal & Retirement Benefits - Source of Supply						-
230	50	03	Repairs & maintenance of Plant & Machinery (Water Supply)		1000	1000			2,000
			Others						
			Total	**2000**	**8000**	**6000**	**0**	**2000**	**18,000**
			Total - Direct Costs	**21,000**	**36,000**	**30,800**	**13,000**	**19,000**	**119,800**
			Indirect Cost of Operations						
220	10	00	Rent, Rates and Taxes					1000	1,000
220	11	00	Office Maintenance					2000	2,000
220	12	00	Communication Expenses					2500	2,500
220	20	00	Books & Periodicals					3000	3,000
220	21	00	Printing and Stationery					1200	1,200
220	30	00	Inland Travelling & Conveyance						-

Cost of Raw Water for the Period December 1, 2009 to December 31, 2009								
Cost Centre Code				**1-02-01**	**1-02-02**	**1-02-03**	**1-02-21**	**1-02-99**	
Cost Centre Name				**Pumps**	**Pump x**	**Pump y**	**Electrical substation**	**Others**	**Total**
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**						
220	31	00	Foreign Travel Expenses						-
220	40	00	Insurance						-
220	50	00	Audit Fees						-
220	51	00	Legal Expenses						-
220	52	00	Professional and Other Fees						-
220	53	00	Training & Other expenses						-
220	60	00	Advertisement and Publicity						-
220	61	00	Membership & subscriptions						-
220	80	00	Other Administrative Expenses						-
230	47	01	Petrol / Diesel Expenses -Source of Supply					5000	5,000
			Total	-	-	-	-	**14,700**	**14,700**
			Indirect Cost of Maintenance						-
230	47	02	Repairs & Maintenance of Vehicles -Source of Supply						-
230	48	00	Hire Charges						-
			Total						-
			Interest & Finance Charges (Indirect component)						-
			Depreciation (Indirect component)						-
272	32	01	Water Intake						-
272	32	02	Production Wells						-
272	32	03	Open Wells						-
272	32	04	Hand Pump Tube Wells						-
272	40	06	Drilling Equipments						-
272	43	01	Raw Water Pumps						-

Cost of Raw Water for the Period December 1, 2009 to December 31, 2009								
Cost Centre Code				**1-02-01**	**1-02-02**	**1-02-03**	**1-02-21**	**1-02-99**	
Cost Centre Name				**Pumps**	**Pump x**	**Pump y**	**Electrical substation**	**Others**	**Total**
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**						
272	48	01	Electrical Sub-stations - Intake						-
272	50	01	Vehicles - Source of Supply						-
272	60	01	Office & Other Equipments - Source of Supply						-
272	70	01	Furniture & Fixtures - Source of Supply						-
272	80	01	Other Fixed Assets - Source of Supply						-
			Total						-
			Total Indirect Costs						14,700
			Total Costs - Source of Supply and Pumping	**21,000**	**36,000**	**30,800**	**13,000**	**19,000**	**134,500**
			Quantity of Water Pumped (in KL)						**150,000**
			Cost per KL						**0.90**

Treatment of Water

4.16. Water to be supplied for public use must be potable, i.e., satisfactory for drinking purposes from the standpoint of its chemical, physical and biological characteristics. Drinking water should, preferably, be obtained from a source free from pollution. The raw water normally available from surface water sources is, however, not directly suitable for drinking purposes. The objective of water treatment is to produce safe and potable drinking water.

4.17. The process of water treatment depends on the source of water. Generally, the following stages are involved in the treatment of water. However, depending on the quality and nature of the source of water, some of the activities will be carried out.

a. Screening – The water from source is initially screened for large particles or debris.
b. Pre-chlorination – Chlorine is added to kill micro organisms. This stage is called pre-chlorination.
c. Flocculation – Alum is added to the water that causes the small particles to clump together to form clusters (coagulation). Gentle mixing of the water causes the clumps to come together to form larger group of particles called ‗floc'. This process is called flocculation during this process, heavy flocs drop out of the water in a settling tank and collect at the bottom (sedimentation). These are removed from the water and the cleaner water left at the surface is drawn through the spillways which leads to filtering basins.
d. Filtration – Filters are made up of graded gravel and fine sand. In filtration process, the layer of sand removes fine bit of floc, algae and other sediments. In this process, other chemical and physical impurities are removed.
e. Chlorination – The filtered water is treated with chlorine to disinfect them. Chlorinated water is then stored before they are transmitted for distribution.

4.18. In addition to the above, quality control section tests the water to ensure the quality is maintained as per the standards. Other activities involved during treatment include checking the turbidity of the water and the pH levels at various points.

Computation of Cost of Treated Water

4.19. Raw water sourced from various sources is treated before the same is distributed for consumption. Costing system has been designed to provide the cost of treated water for each treatment plant. The nature of cost incurred at the treatment plant generally includes the following

a. Direct cost of operations and maintenance of machineries used in treatment of water including the cost of lubricants, power, preventive maintenance, etc.

b. Salaries and wages paid to the staff and workers involved in operations and maintenance of the treatment plant.

c. Rent, if any, for the premises that houses the treatment plant and the administration office of the treatment plant

d. Depreciation of the machineries and other fixed assets.

e. Interest and finance charges, to the extent directly identifiable to the treatment plant.

4.20. The cost centres have been defined in such a way that the cost data shall be captured for each of the machinery/component involved in treatment of water. Hence, the costing shall be first carried out at the machinery level and later on aggregated to arrive at the cost of treated water. However, in cases where information is not desired/required by decision makers or due to practical limitations, information is not available, cost shall be computed at cost centre sub-group level. The steps involved in computation of the cost of treated water are explained below. The format of cost sheet for arriving at the cost of treated water is given in Appendix 2 of this chapter.

Step 1 – Statement of cost centre wise statement of expenditure

Prepare cost centre level statement of expenditure from the accounting system as per the template given below.

Cost Centre Wise Statement of Expenditure for the period ended _____

Cost Centre Code:_____ Cost Centre : _____

S.No.	Account Code	Description	Amount (in Rs.)

Step 2 – Fill in the information in the cost sheet for each cost centre

Based on the above statement of expenditure, prepare cost sheet for each cost centre. For e.g., separate cost sheet shall be filled for alum mixer, floculator, aerator, etc. All process overheads that are common to these machineries and other cost centres shall be accounted under the code ~~-o~~thers" with separate cost sheet prepared for it.

The template of cost centre level cost sheet for treatment process is given in Appendix 1.

Step 3 – Allocate common costs

Allocation of common costs will be at two stages – in the first stage, costs that are common to the ~~n~~nature" of cost centre, for e.g. the common costs incurred for the pumps (accounted under the cost centre code ~~0~~03" will be allocated to each of the pump). The allocation will be based on the actual machine hours.

In the next stage, all common process overheads will be allocated to each of the cost centre. The common process overheads will be allocated on the basis of the cost of each cost centre to the total cost (of the respective source).

The output of this step will be ~~c~~ost centre" level cost sheet for the respective source of supply. The cost sheet so prepared assists in monitoring the performance of each component involved in treatment of water.

Step 4 – Computation of treated water at treatment plant "x"

The cost of treated water at plant ~~x~~" shall be the sum total of the costs incurred by each centre that forms part of the treatment plant. Further, the cost relating to the administration overheads (Head Office Costs) shall be allocated on the total cost centre sub-group cost to the total cost. This shall be done separately when the consolidated cost statement is prepared.

Step 5 – Capture the quantitative details of the water pumped from the production register

The production register includes the quantity of water received, treated, process loss and other losses. The quantity of water will assist in ascertaining the cost per unit of treated water.

The reader is advised to refer to the illustration for computation of cost of raw water as the steps involved in computation of cost of treated water is similar to that of raw water.

Transmission

4.21. The overall objective of a transmission system is to deliver raw water from the source to the treatment plants and transmit treated water from treatment plants to the storage reservoirs for onward supply into distribution networks. Transmission of raw water can be either by canals or by pipes whereas transmission of treated water is by pipes only. Transmission through pipes can be either by gravity flow or by pumping.

4.22. The cost of production of water shall include the cost of transmission of water till it reaches the distribution network. Transmission of water accounts for an appreciable part of capital outlay and hence needs control and monitoring of the costs incurred.

4.23. Transmission system primarily consists of transmission mains (raw water and clean water). The costs involved are the direct cost of maintenance including the wages paid, the consumables, etc.

4.24. Thought no new product emerges out of this process, the transmission costs will be computed in the same manner as that of raw water and treated water. The cost sheets for computation of costs of transmission are given in Appendix 3 of this chapter.

Process Losses

4.25. During the process of production of water, losses occur due to various reasons. The process losses can be either normal or abnormal. Normal losses are those that are inherent in the production process, for example, the water let out during treatment, etc. These are known costs and are expected. Abnormal costs occur due to leakage, poor maintenance, etc. These costs cannot be anticipated. Abnormal loss will be removed from the process cost and charged to costing profit and loss account. The abnormal losses shall be monitored separately.

Illustration of normal and abnormal losses

a. Total water sourced – 1000 KL
b. Normal (expected) process loss – 30% or 300 KL
c. Water that should have been received (a – b) – 700 KL
d. Water actually received at distribution unit – 600 KL
e. Abnormal loss (c-d) – 100KL
f. Cost of treated water – Rs.15 per KL
g. Abnormal loss (e * f) – Rs1500/-

Cost of Production of Water

4.26. The cost of production includes all the costs till the point of distribution – from sourcing, treatment and transmission. The cost centres have been designed in a manner to enable the computation of cost of production of water from each source and the total cost of water produced. The cost of production of water will include the following

a. Cost of raw water
b. Cost of treated water
c. Transmission costs

4.27. The cost of production shall be based on the cost sheets of individual processes and further adjusted with the process losses. The costing department shall prepare the cost of production of water on a monthly basis. The template for preparation of cost of production is given in Appendix 4.

Appendix 1 – Source of Supply/Cost of Raw Water

Name of the Entity				
Cost Sheet - Source of Supply and Pumping at *Plant x* for the period ending				
Cost Centre Code				
Cost Centre Name				
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Amount**
			Direct Cost of Operations	
210	10	00	Salaries of Employees - Source of Supply	
210	20	00	Wages of NMR (Nominal Muster Roll) Employees - Source of Supply	
210	30	00	Welfare Expenses of Employees - Source of Supply	
210	40	00	Welfare Expenses of NMR Employees - Source of Supply	
230	10	01	Power - Source of Supply	
230	20	01	Purchase of water - Source of Supply	
230	20	02	Electricity expenses - Source of Supply	
230	30	00	Consumption of Stores - Source of Supply	
230	35	00	Consumption of Tools & Spares - Source of Supply	
230	40	00	Consumption of consumables - Source of Supply	
			Total – A	
			Direct Cost of Maintenance	
210	50	00	Casual Labourers' (CLR) Wages - Source of Supply	
210	60	00	Payments to Trainees / Deputationists - Source of Supply	

Name of the Entity				
Cost Sheet - Source of Supply and Pumping at *Plant x* for the period ending				
Cost Centre Code				
Cost Centre Name				
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Amount**
210	80	00	Pension - Source of Supply	
210	90	00	Other Terminal & Retirement Benefits - Source of Supply	
230	50	03	Repairs & maintenance of Plant & Machinery (Water Supply)	
			Total – B	
			Grand Total - C = A + B	
			Quantity of water pumped (in KL) – D	
			Cost per unit - C / D	

Name of the Entity								
Cost Sheet of Raw Water Sourced from *location* for the period ending								
Sub Cost Centre Code								
Sub Cost Centre Name								
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**	**Cost Centre 2**	**Cost Centre n**	**Allocations**	**Total**
			Direct Cost of Operations					
210	10	00	Salaries of Employees - Source of Supply					
210	20	00	Wages of NMR (Nominal Muster Roll) Employees - Source of Supply					
210	30	00	Welfare Expenses of Employees - Source of Supply					
210	40	00	Welfare Expenses of NMR Employees - Source of Supply					
230	10	01	Power - Source of Supply					
230	20	01	Purchase of water - Source of Supply					
230	20	02	Electricity expenses - Source of Supply					
230	30	00	Consumption of Stores - Source of Supply					
230	35	00	Consumption of Tools & Spares - Source of Supply					
230	40	00	Consumption of consumables - Source of Supply					
			Total					
			Direct Cost of Maintenance					
210	50	00	Casual Labourers' (CLR) Wages - Source of Supply					
210	60	00	Payments to Trainees / Deputationists - Source of Supply					

Name of the Entity								
Cost Sheet of Raw Water Sourced from *location* for the period ending								
Sub Cost Centre Code								
Sub Cost Centre Name								
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**	**Cost Centre 2**	**Cost Centre n**	**Allocations**	**Total**
210	80	00	Pension - Source of Supply					
210	90	00	Other Terminal & Retirement Benefits - Source of Supply					
230	50	03	Repairs & maintenance of Plant & Machinery (Water Supply)					
			Total					
			Total - Direct Costs					
			Machine Hour Rate					
			Indirect Cost of Operations					
220	10	00	Rent, Rates and Taxes					
220	11	00	Office Maintenance					
220	12	00	Communication Expenses					
220	20	00	Books & Periodicals					
220	21	00	Printing and Stationery					
220	30	00	Inland Travelling & Conveyance					
220	31	00	Foreign Travel Expenses					
220	40	00	Insurance					
220	50	00	Audit Fees					
220	51	00	Legal Expenses					
220	52	00	Professional and Other Fees					
220	53	00	Training & Other expenses					
220	60	00	Advertisement and Publicity					

Name of the Entity								
Cost Sheet of Raw Water Sourced from *location* for the period ending								
Sub Cost Centre Code								
Sub Cost Centre Name								
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**	**Cost Centre 2**	**Cost Centre n**	**Allocations**	**Total**
220	61	00	Membership & subscriptions					
220	80	00	Other Administrative Expenses					
230	47	01	Petrol / Diesel Expenses -Source of Supply					
			Total					
			Indirect Cost of Maintenance					
230	47	02	Repairs & Maintenance of Vehicles -Source of Supply					
230	48	00	Hire Charges					
			Total					
			Interest & Finance Charges (Indirect component)					
			Depreciation (Indirect component)					
272	32	01	Water Intake					
272	32	02	Production Wells					
272	32	03	Open Wells					
272	32	04	Hand Pump Tube Wells					
272	40	06	Drilling Equipments					
272	40	07	Construction Equipments					
272	43	01	Raw Water Pumps					
272	48	01	Electrical Sub-stations - Intake					
272	50	01	Vehicles - Source of Supply					
272	60	01	Office & Other Equipments - Source of Supply					

Name of the Entity								
Cost Sheet of Raw Water Sourced from *location* for the period ending								
Sub Cost Centre Code								
Sub Cost Centre Name								
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**	**Cost Centre 2**	**Cost Centre n**	**Allocations**	**Total**
272	70	01	Furniture & Fixtures - Source of Supply					
272	80	01	Other Fixed Assets - Source of Supply					
			Total					
			Total Indirect Costs					
			Total Costs - Source of Supply and Pumping					
			Quantity of Water Pumped (in KL)					
			Cost per KL					

Name of the Entity							
Cost Sheet of Raw Water from all sources for the period ending							
Cost Centre Group							
Cost Centre Group Name							
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**	**Sub Cost Centre 2**	**Sub Cost Centre n**	**Total**
			Direct Cost of Operations				
210	10	00	Salaries of Employees - Source of Supply				
210	20	00	Wages of NMR (Nominal Muster Roll) Employees - Source of Supply				
210	30	00	Welfare Expenses of Employees - Source of Supply				
210	40	00	Welfare Expenses of NMR Employees - Source of Supply				
230	10	01	Power - Source of Supply				
230	20	01	Purchase of water - Source of Supply				
230	20	02	Electricity expenses - Source of Supply				
230	30	00	Consumption of Stores - Source of Supply				
230	35	00	Consumption of Tools & Spares - Source of Supply				
230	40	00	Consumption of consumables - Source of Supply				
			Total				
			Direct Cost of Maintenance				
210	50	00	Casual Labourers' (CLR) Wages - Source of Supply				
210	60	00	Payments to Trainees / Deputationists - Source of Supply				

Name of the Entity							
Cost Sheet of Raw Water from all sources for the period ending							
Cost Centre Group							
Cost Centre Group Name							
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**	**Sub Cost Centre 2**	**Sub Cost Centre n**	**Total**
210	80	00	Pension - Source of Supply				
210	90	00	Other Terminal & Retirement Benefits - Source of Supply				
230	50	03	Repairs & maintenance of Plant & Machinery (Water Supply)				
			Total				
			Interest & Finance Charges				
			Total - Direct Costs				
			Indirect Cost of Operations (post allocation)				
220	10	00	Rent, Rates and Taxes				
220	11	00	Office Maintenance				
220	12	00	Communication Expenses				
220	20	00	Books & Periodicals				
220	21	00	Printing and Stationery				
220	30	00	Inland Travelling & Conveyance				
220	31	00	Foreign Travel Expenses				
220	40	00	Insurance				
220	50	00	Audit Fees				
220	51	00	Legal Expenses				
220	52	00	Professional and Other Fees				
220	53	00	Training & Other expenses				
220	60	00	Advertisement and Publicity				

Name of the Entity							
Cost Sheet of Raw Water from all sources for the period ending							
Cost Centre Group							
Cost Centre Group Name							
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**	**Sub Cost Centre 2**	**Sub Cost Centre n**	**Total**
220	61	00	Membership & subscriptions				
220	80	00	Other Administrative Expenses				
230	47	01	Petrol / Diesel Expenses -Source of Supply				
			Total				
			Indirect Cost of Maintenance (post allocation)				
230	47	02	Repairs & Maintenance of Vehicles -Source of Supply				
230	48	00	Hire Charges				
			Total				
			Interest & Finance Charges (Indirect component)				
			Depreciation (post allocation)				
272	32	01	Water Intake				
272	32	02	Production Wells				
272	32	03	Open Wells				
272	32	04	Hand Pump Tube Wells				
272	40	06	Drilling Equipments				
272	40	07	Construction Equipments				
272	43	01	Raw Water Pumps				
272	48	01	Electrical Sub-stations - Intake				
272	50	01	Vehicles - Source of Supply				
272	60	01	Office & Other Equipments - Source of Supply				

Name of the Entity							
Cost Sheet of Raw Water from all sources for the period ending							
Cost Centre Group							
Cost Centre Group Name							
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**	**Sub Cost Centre 2**	**Sub Cost Centre n**	**Total**
272	70	01	Furniture & Fixtures - Source of Supply				
272	80	01	Other Fixed Assets - Source of Supply				
			Total				
			Total Indirect Costs				
			Total Costs - Source of Supply and Pumping				
			Quantity of Water Pumped (in KL)				
			Cost per KL				

Note : The data for this cost sheet shall be obtained from the sub-cost centre wise data prepared.

Appendix 2 – Treatment of Water/Cost of Treated Water

Name of the Entity						
Cost Sheet - Treatment of Water of Machinery *x* for the period ending						
Cost Centre Code						
Cost Centre Name						
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Quantity (in KL)**	**Cost per unit**	**Amount**
			Cost of Water Received from Earlier Process (See Note 1)			
			Direct Cost of Operations			
210	11	00	Salaries of Employees - Water Treatment Plants			
210	21	00	Wages of NMR (Nominal Muster Roll) Employees - Water Treatment Plants			
210	31	00	Welfare Expenses of Employees - Water Treatment Plants			
210	41	00	Welfare Expenses of NMR Employees - Water Treatment Plants			
230	10	02	Power - Water Treatment Plants			
230	20	03	Purchase of water - Water Treatment Plants			
230	20	04	Electricity expenses - Water Treatment Plants			
230	31	00	Consumption of Stores - Water Treatment Plants			
230	36	00	Consumption of Tools & Spares - Water Treatment Plants			
230	41	00	Consumption of consumables - Water Treatment Plants			
			Total – A			
			Direct Cost of Maintenance			
210	51	00	Casual Labourers' (CLR) Wages - Water Treatment Plants			

Name of the Entity						
Cost Sheet - Treatment of Water of Machinery *x* for the period ending						
Cost Centre Code						
Cost Centre Name						
210	61	00	Payments to Trainees / Deputationists - Water Treatment Plants			
210	81	00	Pension - Water Treatment Plants			
210	91	00	Other Terminal & Retirement Benefits - Water Treatment Plants			
230	50	01	Repairs & maintenance to Civil Works			
230	50	02	Repairs & maintenance of Water Treatment Plants			
230	59	00	Repairs & maintenance -Others			
			Total - B			
			Interest & Finance Charges - C			
			Process Loss (in KL)			
			Grand Total - D = A + B + C			

Name of the Entity										
Cost Sheet of Treated Water for the *location* for the period ending										
Sub Cost Centre Code										
Sub Cost Centre Name										
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
			Cost of Water Received from earlier process								
			Direct Cost of Operations								
210	11	00	Salaries of Employees - Water Treatment Plants								
210	21	00	Wages of NMR (Nominal Muster Roll) Employees - Water Treatment Plants								
210	31	00	Welfare Expenses of Employees - Water Treatment Plants								
210	41	00	Welfare Expenses of NMR Employees - Water Treatment Plants								
230	10	02	Power - Water Treatment Plants								
230	20	03	Purchase of water - Water Treatment Plants								
230	20	04	Electricity expenses - Water Treatment Plants								
230	31	00	Consumption of Stores - Water Treatment Plants								
230	36	00	Consumption of Tools & Spares - Water Treatment Plants								

Name of the Entity											
Cost Sheet of Treated Water for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
230	41	00	Consumption of consumables - Water Treatment Plants								
			Total								
			Direct Cost of Maintenance								
210	51	00	Casual Labourers' (CLR) Wages - Water Treatment Plants								
210	61	00	Payments to Trainees / Deputationists - Water Treatment Plants								
210	81	00	Pension - Water Treatment Plants								
210	91	00	Other Terminal & Retirement Benefits - Water Treatment Plants								
230	50	01	Repairs & maintenance to Civil Works								
230	50	02	Repairs & maintenance of Water Treatment Plants								
230	59	00	Repairs & maintenance -Others								
			Total								
			Interest & Finance Charges								
			Total - Direct Costs								
			Machine Hour Rate								
			Indirect Cost of Operations								

Name of the Entity											
Cost Sheet of Treated Water for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
220	10	00	Rent, Rates and Taxes								
220	11	00	Office Maintenance								
220	12	00	Communication Expenses								
220	20	00	Books & Periodicals								
220	21	00	Printing and Stationery								
220	30	00	Inland Travelling & Conveyance								
220	31	00	Foreign Travel Expenses								
220	40	00	Insurance								
220	50	00	Audit Fees								
220	51	00	Legal Expenses								
220	52	00	Professional and Other Fees								
220	53	00	Training & Other expenses								
220	60	00	Advertisement and Publicity								
220	61	00	Membership & subscriptions								
220	80	00	Other Administrative Expenses								
230	47	03	Petrol / Diesel Expenses -WTP								
			Total								
			Indirect Cost of Maintenance								
230	47	04	Repairs & Maintenance of Vehicles -WTP								
230	48	00	Hire Charges								

Name of the Entity											
Cost Sheet of Treated Water for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
			Total								
			Interest & Finance Charges (Indirect component)								
			Depreciation (Indirect component)								
272	20	02	Water Treatment Plant Buildings								
272	30	00	Roads, Bridges & Culverts								
272	40	01	Plant & Machinery - Water Treatment Plants								
272	48	02	Electrical Sub-Stations – Treatment								
272	49	00	Chlorine Plants								
272	50	02	Vehicles - Water Treatment Plants								
272	60	02	Office & Other Equipments - Water Treatment Plants								
272	70	02	Furniture & Fixtures - Water Treatment Plants								
272	80	02	Other Fixed Assets - Water Treatment Plants								
			Total								
			Total Indirect Costs								
			Total Costs								

Name of the Entity											
Cost Sheet of Treated Water for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	Minor Head Code	Detailed Head Code	Description of Cost	Cost Centre 1		Cost Centre 2		Cost Centre n		Allocations	Total
				Quantity	Cost	Quantity	Cost	Quantity	Cost		
			Process Loss (in KL)								
			Quantity of Water Pumped to Transmission (in KL)								
			Cost per KL								

Name of the Entity										
Cost Sheet of Treated Water of all treatment plants for the period ending										
Cost Centre Group										
Cost Centre Group Name										
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**		**Sub Cost Centre 2**		**Sub Cost Centre n**		**Total**	
				Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
			Cost of Raw Water								
			Direct Cost of Operations								
210	11	00	Salaries of Employees - Water Treatment Plants								
210	21	00	Wages of NMR (Nominal Muster Roll) Employees - Water Treatment Plants								
210	31	00	Welfare Expenses of Employees - Water Treatment Plants								
210	41	00	Welfare Expenses of NMR Employees - Water Treatment Plants								
230	10	02	Power - Water Treatment Plants								
230	20	03	Purchase of water - Water Treatment Plants								
230	20	04	Electricity expenses - Water Treatment Plants								
230	31	00	Consumption of Stores - Water Treatment Plants								
230	36	00	Consumption of Tools & Spares - Water Treatment Plants								

Name of the Entity										
Cost Sheet of Treated Water of all treatment plants for the period ending										
Cost Centre Group										
Cost Centre Group Name										
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**		**Sub Cost Centre 2**		**Sub Cost Centre n**		**Total**	
				Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
230	41	00	Consumption of consumables - Water Treatment Plants								
			Total								
			Direct Cost of Maintenance								
210	51	00	Casual Labourers' (CLR) Wages - Water Treatment Plants								
210	61	00	Payments to Trainees / Deputationists - Water Treatment Plants								
210	81	00	Pension - Water Treatment Plants								
210	91	00	Other Terminal & Retirement Benefits - Water Treatment Plants								
230	50	01	Repairs & maintenance to Civil Works								
230	50	02	Repairs & maintenance of Water Treatment Plants								
230	59	00	Repairs & maintenance -Others								
			Total								
			Interest & Finance Charges								
			Total - Direct Costs								
			Indirect Cost of Operations (post allocation)								
220	10	00	Rent, Rates and Taxes								

Name of the Entity										
Cost Sheet of Treated Water of all treatment plants for the period ending										
Cost Centre Group										
Cost Centre Group Name										
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**		**Sub Cost Centre 2**		**Sub Cost Centre n**		**Total**	
				Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
220	11	00	Office Maintenance								
220	12	00	Communication Expenses								
220	20	00	Books & Periodicals								
220	21	00	Printing and Stationery								
220	30	00	Inland Travelling & Conveyance								
220	31	00	Foreign Travel Expenses								
220	40	00	Insurance								
220	50	00	Audit Fees								
220	51	00	Legal Expenses								
220	52	00	Professional and Other Fees								
220	53	00	Training & Other expenses								
220	60	00	Advertisement and Publicity								
220	61	00	Membership & subscriptions								
220	80	00	Other Administrative Expenses								
230	47	03	Petrol / Diesel Expenses -WTP								
			Total								
			Indirect Cost of Maintenance (post allocation)								
230	47	04	Repairs & Maintenance of Vehicles -WTP								
230	48	00	Hire Charges								
			Total								

Name of the Entity										
Cost Sheet of Treated Water of all treatment plants for the period ending										
Cost Centre Group										
Cost Centre Group Name										
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**		**Sub Cost Centre 2**		**Sub Cost Centre n**		**Total**	
				Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
			Interest & Finance Charges (Indirect component)								
			Depreciation (post allocation)								
272	20	02	Water Treatment Plant Buildings								
272	30	00	Roads, Bridges & Culverts								
272	40	01	Plant & Machinery - Water Treatment Plants								
272	48	02	Electrical Sub-Stations - Treatment								
272	49	00	Chlorine Plants								
272	50	02	Vehicles - Water Treatment Plants								
272	60	02	Office & Other Equipments - Water Treatment Plants								
272	70	02	Furniture & Fixtures - Water Treatment Plants								
272	80	02	Other Fixed Assets - Water Treatment Plants								
			Total								
			Total Indirect Costs								
			Process Loss of Water (in KL)								
			Total Costs - Water Treatment								
			Cost per KL								

Name of the Entity										
Cost Sheet of Treated Water of all treatment plants for the period ending										
Cost Centre Group										
Cost Centre Group Name										
Major Head Code	Minor Head Code	Detailed Head Code	Description of Cost	Sub-Cost Centre 1		Sub Cost Centre 2		Sub Cost Centre n		Total	
				Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount

Appendix 3 – Transmission of Water

Name of the Entity						
Cost Sheet - Transmission of Water for *Transmission Cost Centre* for the period ending						
Cost Centre Code						
Cost Centre Name						
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Quantity (in KL)**	**Cost per Unit**	**Amount**
			Cost of Water Received			
			Direct Cost of Operations			
210	12	00	Salaries of Employees - Transmission			
210	22	00	Wages of NMR (Nominal Muster Roll) Employees - Transmission			
210	32	00	Welfare Expenses of Employees - Transmission			
210	42	00	Welfare Expenses of NMR Employees - Transmission			
230	10	03	Power - Transmission			
230	20	05	Purchase of water - Transmission			
230	20	06	Electricity expenses - Transmission			
230	32	00	Consumption of Stores - Transmission			
230	37	00	Consumption of Tools & Spares - Transmission			
230	42	00	Consumption of consumables - Transmission			
			Total - A			

Name of the Entity						
Cost Sheet - Transmission of Water for *Transmission Cost Centre* for the period ending						
Cost Centre Code						
Cost Centre Name						
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Quantity (in KL)**	**Cost per Unit**	**Amount**
			Direct Cost of Maintenance			
210	52	00	Casual Labourers' (CLR) Wages - Transmission			
210	62	00	Payments to Trainees / Deputationists - Transmission			
210	82	00	Pension - Transmission			
210	92	00	Other Terminal & Retirement Benefits - Transmission			
230	50	04	Repairs & maintenance of Water Mains and Network			
			Total - B			
			Interest & Finance Charges - C			
			Process Loss (in KL)			
			Grand Total - D = A + B + C			

Note : 1. Depreciation is charged for the water transmission as a whole and hence does not form part of individual cost centres

2. Cost of water from earlier processes is not included in each sub-process of water transmission

3. The cost of process loss is absorbed by the output.

Name of the Entity											
Cost Sheet of Transmission for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
			Cost of Water Received from earlier process								
			Direct Cost of Operations								
210	12	00	Salaries of Employees - Transmission								
210	22	00	Wages of NMR (Nominal Muster Roll) Employees - Transmission								
210	32	00	Welfare Expenses of Employees - Transmission								
210	42	00	Welfare Expenses of NMR Employees - Transmission								
230	10	03	Power - Transmission								
230	20	05	Purchase of water - Transmission								
230	20	06	Electricity expenses - Transmission								
230	32	00	Consumption of Stores - Transmission								
230	37	00	Consumption of Tools & Spares - Transmission								
230	42	00	Consumption of consumables - Transmission								
			Total								
			Direct Cost of Maintenance								
210	52	00	Casual Labourers' (CLR) Wages -								

Name of the Entity											
Cost Sheet of Transmission for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
			Transmission								
210	62	00	Payments to Trainees / Deputationists - Transmission								
210	82	00	Pension - Transmission								
210	92	00	Other Terminal & Retirement Benefits - Transmission								
230	50	04	Repairs & maintenance of Water Mains and Network								
			Total								
			Interest & Finance Charges								
			Total - Direct Costs								
			Allocation Base								
			Indirect Cost of Operations								
220	10	00	Rent, Rates and Taxes								
220	11	00	Office Maintenance								
220	12	00	Communication Expenses								
220	20	00	Books & Periodicals								
220	21	00	Printing and Stationery								
220	30	00	Inland Travelling & Conveyance								
220	31	00	Foreign Travel Expenses								
220	40	00	Insurance								
220	50	00	Audit Fees								
220	51	00	Legal Expenses								

Name of the Entity											
Cost Sheet of Transmission for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
220	52	00	Professional and Other Fees								
220	53	00	Training & Other expenses								
220	60	00	Advertisement and Publicity								
220	61	00	Membership & subscriptions								
220	80	00	Other Administrative Expenses								
230	47	05	Petrol / Diesel Expenses - Transmission								
			Total								
			Indirect Cost of Maintenance								
230	47	06	Repairs & Maintenance of Vehicles -Transmission								
230	48	00	Hire Charges								
			Total								
			Interest & Finance Charges (Indirect component)								
			Depreciation (Indirect component)								
272	20	03	Water pumping station buildings								
272	21	01	Head works — Water								
272	21	02	Water storage and purification								
272	40	02	Electrical equipments — Water supply								
272	41	01	Transmission - Raw water mains								

Name of the Entity											
Cost Sheet of Transmission for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
272	41	02	Transmission - Clear water mains								
272	41	03	Transmission - Water service connections								
272	43	02	Clear Water Pumps								
272	48	03	Electrical Sub-Stations - Transmission								
272	50	03	Vehicles - Transmission								
272	60	03	Office & Other Equipments - Transmission								
272	70	03	Furniture & Fixtures - Transmission								
272	80	03	Other Fixed Assets - Transmission								
			Total								
			Total Indirect Costs								
			Total Costs								
			Process Loss (in KL)								
			Cost per KL of water transmitted								

Name of the Entity											
Cost Sheet of Transmission for the period ending											
Cost Centre Group											
Cost Centre Group Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**		**Sub Cost Centre 2**		**Sub Cost Centre n**		**Total**	
				Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
			Cost of Treated Water								
			Direct Cost of Operations								
210	12	00	Salaries of Employees - Transmission								
210	22	00	Wages of NMR (Nominal Muster Roll) Employees - Transmission								
210	32	00	Welfare Expenses of Employees - Transmission								
210	42	00	Welfare Expenses of NMR Employees - Transmission								
230	10	03	Power - Transmission								
230	20	05	Purchase of water - Transmission								
230	20	06	Electricity expenses - Transmission								
230	32	00	Consumption of Stores - Transmission								
230	37	00	Consumption of Tools & Spares - Transmission								
230	42	00	Consumption of consumables - Transmission								
			Total								
			Direct Cost of Maintenance								

Name of the Entity										
Cost Sheet of Transmission for the period ending										
Cost Centre Group										
Cost Centre Group Name										
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**		**Sub Cost Centre 2**		**Sub Cost Centre n**		**Total**	
				Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
210	52	00	Casual Labourers' (CLR) Wages - Transmission								
210	62	00	Payments to Trainees / Deputationists - Transmission								
210	82	00	Pension - Transmission								
210	92	00	Other Terminal & Retirement Benefits - Transmission								
230	50	04	Repairs & maintenance of Water Mains and Network								
			Total								
			Interest & Finance Charges								
			Total - Direct Costs								
			Indirect Cost of Operations (post allocation)								
220	10	00	Rent, Rates and Taxes								
220	11	00	Office Maintenance								
220	12	00	Communication Expenses								
220	20	00	Books & Periodicals								
220	21	00	Printing and Stationery								
220	30	00	Inland Travelling & Conveyance								
220	31	00	Foreign Travel Expenses								

Name of the Entity											
Cost Sheet of Transmission for the period ending											
Cost Centre Group											
Cost Centre Group Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**		**Sub Cost Centre 2**		**Sub Cost Centre n**		**Total**	
				Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
220	40	00	Insurance								
220	50	00	Audit Fees								
220	51	00	Legal Expenses								
220	52	00	Professional and Other Fees								
220	53	00	Training & Other expenses								
220	60	00	Advertisement and Publicity								
220	61	00	Membership & subscriptions								
220	80	00	Other Administrative Expenses								
230	47	05	Petrol / Diesel Expenses - Transmission								
			Total								
			Indirect Cost of Maintenance (post allocation)								
230	47	06	Repairs & Maintenance of Vehicles -Transmission								
230	48	00	Hire Charges								
			Total								
			Interest & Finance Charges (Indirect component)								
			Depreciation (post allocation)								

Name of the Entity											
Cost Sheet of Transmission for the period ending											
Cost Centre Group											
Cost Centre Group Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**		**Sub Cost Centre 2**		**Sub Cost Centre n**		**Total**	
				Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
272	20	03	Water pumping station buildings								
272	21	01	Head works — Water								
272	21	02	Water storage and purification								
272	40	02	Electrical equipments — Water supply								
272	41	01	Transmission - Raw water mains								
272	41	02	Transmission - Clear water mains								
272	41	02	Transmission - Water service connections								
272	43	02	Clear Water Pumps								
272	48	03	Electrical Sub-Stations - Transmission								
272	50	03	Vehicles - Transmission								
272	60	03	Office & Other Equipments - Transmission								
272	70	03	Furniture & Fixtures - Transmission								
272	80	03	Other Fixed Assets - Transmission								
			Total								
			Total Indirect Costs								
			Process Loss of Water (in								

Name of the Entity											
Cost Sheet of Transmission for the period ending											
Cost Centre Group											
Cost Centre Group Name											
Major Head Code	Minor Head Code	Detailed Head Code	Description of Cost	Sub-Cost Centre 1		Sub Cost Centre 2		Sub Cost Centre n		Total	
				Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
			KL)								
			Total Costs - Water Transmitted								
			Cost per KL								

Appendix 10

Name of the Entity			
Cost Sheet - Cost of Production of Water for the period			
S.No.	**Description**	**Quantity**	**Amount**
1	Source of Supply and Pumping Costs		
	(As per Sheet enclosed)		
2	Water Treatment Cost		
	(As per Sheet enclosed)		
3	Cost of Transmission		
	(As per Sheet enclosed)		
	Total Cost of Production of Water		
	Cost per KL		

Note : The cost sheet of the respective process shall be enclosed with this report

Chapter 5
Cost of Water Consumed

5.1. This chapter discusses the methodology of arriving at the cost of water consumed. This includes the cost of distribution of water and apportionment of common costs.

Distribution Process

5.2. The overall objective of a distribution system is to deliver wholesome water to the consumer at adequate residual pressure in sufficient quantity at convenient points and achieve continuity and maximum coverage at affordable cost. To attain this objective the entity has to evolve operating procedures to ensure that the system can be operated satisfactorily, function efficiently and continuously, and as far as possible at lowest cost.

5.3. The storage tanks/reservoirs, distribution mains, pumping stations, service mains, etc. together form part of the distribution system. The process overview of the distribution system and the costs involved are discussed in this chapter.

Key components and process overview

5.4. The key components of the distribution system includes

a. Storage tanks/reservoirs – The storage tanks / reservoirs are used to provide storage capacity to *inter alia* meet fluctuations in demand, other emergency situations and also to equalize pressure in the distribution system. The storage tanks are either elevated or at ground level.
b. Distribution Mains – The distribution mains carry water from the storage tanks to the consumers. The service mains connect consumers to the distribution main. The distribution mains are smaller in diameter compared to the transmission mains.
c. Pumping stations– The pumping stations maintain the pressure of water in the distribution mains.
d. Valves – The valves are primarily used to regulate the flow of water. Maintenance of valves is one of the major activities carried out by the water utility.

Process Overview

5.5. The water produced and transmitted to the elevated tanks is then pumped to the sub stations and stored. The water is then disinfected using chlorine before they are transmitted to the consumers.

Computation of Cost of Distribution

5.6. The clean (treated) water transmitted from the treatment plants are distributed to the end consumers through the distribution networks. The cost of distribution shall be arrived at for each of the components involved in distribution and for the process as a whole. The nature of cost incurred in the distribution process generally includes the following

a. Direct cost of operations and maintenance of machineries used in pumping the water, chlorination, etc., including the cost of lubricants, power, preventive maintenance, etc.

b. Salaries and wages paid to the staff and workers involved in operations and maintenance of the distribution network

c. Rent, if any, for the premises that houses the pumping stations, administration office, etc.

d. Depreciation of the machineries and other fixed assets.

e. Interest and finance charges, to the extent directly identifiable to these units.

5.7. The cost centres have been defined in such a way that the cost data shall be captured for each distribution unit and the machineries employed. For e.g., the cost of distribution from ―High Level Tank" shall be computed which will be further drilled down to the cost of various units like overhead reservoir, chlorine plants, etc.. Hence, the costing shall be first carried out at the machinery level and later on aggregated to arrive at the cost of distribution from the unit. . However, in cases where information is not desired/required by decision makers or due to practical limitations, information is not available, cost shall be computed at cost centre sub-group level, for e.g. in this case at the ―High Level Tank" only.

5.8. The steps involved in computation of the cost of distribution are explained below. The methodology given below is for

Step 1 – Statement of cost centre wise statement of expenditure

Prepare cost centre level statement of expenditure from the accounting system as per the template given below.

Cost Centre Wise Statement of Expenditure for the period ended _____

Cost Centre Code:_____ Cost Centre : _____

S.No.	Account Code	Description	Amount (in Rs.)

Step 2 – Fill in the information in the cost sheet for each cost centre

Based on the above statement of expenditure, prepare cost sheet for each cost centre. For e.g., separate cost sheet shall be filled for Electrical sub-stations, Chlorine plants, Pumps, etc. All process overheads that are common to these machineries and other cost centres shall be accounted under the code ~~-o~~thers" with separate cost sheet prepared for it.

The template of cost centre level cost sheet for treatment process is given in Appendix .

Step 3 – Allocate common costs

Allocation of common costs will be at two stages – in the first stage, costs that are common to the ~~-n~~ature" of cost centre, for e.g. the common costs incurred for the pumps (accounted under the cost centre code ~~-0~~7" will be allocated to each of the pump). The allocation will be based on the actual machine hours.

In the next stage, all common process overheads will be allocated to each of the cost centre. The common process overheads will be allocated on the basis of the cost of each cost centre to the total cost (of the respective distribution unit).

The output of this step will be ~~-c~~ost centre" level cost sheet for the respective source of supply. The cost sheet so prepared assists in monitoring the performance of each component involved in treatment of water.

Step 4 – Computation of cost of distribution at location "x"

The cost of treated water at location ~~-x~~" shall be the sum total of the costs incurred by each centre that forms part of the distribution unit. Further, the cost relating to the administration overheads (Head Office Costs) shall be allocated on the total cost centre sub-group cost to the total cost. This shall be done separately when the consolidated cost statement is prepared.

Step 5 – Capture the quantitative details of the water pumped from the production register

The production register includes the quantity of water received, distributed to various location, process loss and other losses. The quantity of water will assist in ascertaining the cost per unit of water consumed. However, this shall require metering at all consumers which is currently not

the case. Hence, it is suggested that judgement be exercised for arriving at the normal and abnormal loss of water.

The distribution cost shall be arrived at in the same manner as illustrated for source of water. The cost of distribution shall form the basis of arriving at the cost of water consumed by various categories of consumers.

5.9. The key issue in the computation of cost of distribution is the input cost or the cost of water received. A distribution unit may receive clean (treated) water from one more than one source/treatment plant. Hence, the quantity and the cost of water received have to be mapped properly and entered in the production register. This shall be the basis of computation of cost of water received at each distribution unit.

Administration Overheads

5.10. The cost of water consumed shall include the cost of administration overheads. Administration overheads include the following departmental costs

a. Corporate office
b. Finance and Accounts Department
c. Human Resources
d. Procurement
e. Information Technology
f. Other support services

5.11. In the present context, the administration cost centre shall include the costs incurred at Office of Chief Engineer, the Superintending Engineer and the Executive Engineer.

5.12. For the purpose of computation of cost of water, the costing department shall prepare a statement of administration overheads for each sub-cost centre group that falls under ―Administration". Administration overheads shall be apportioned to all the distribution units. Although a part of the ―Administration overheads" relates to production of water, considering the materiality of the efforts involved(time spent), the same is not apportioned to production.

5.13. The administration overheads shall be apportioned to all the distribution sub cost centres. This will be done at two stages

a. Administration overheads of Executive Engineer‘s/Divisional office in the existing setup shall be apportioned only to the distribution units under that based on the cost of the respective administration cost centre sub-group to the total cost (of all distribution offices under the Division).

b. Administration overheads of corporate and other common services like rent sub-division shall be apportioned to all the distribution units based on the cost of that cost centre sub group to the total cost.

Statement of Administrative Overheads							
Cost Centre Group							
Cost Centre Group Name							
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub Cost Centre 1**	**Sub Cost Centre 2**	**Sub Cost Centre n**	**Total**
				Amount	**Amount**	**Amount**	**Amount**
			Total Administrative Overheads				

Illustration for Apportionment of Administrative Overheads

Assuming the following costs have been incurred at the Executive Engineer‘s Office.

Salaries & Wages – Rs.100000/-

Rent – Rs.20,000/-

Telephone Expenses – Rs.15,000/-

Travel & Conveyance – Rs.15,000/-

Total – Rs.1,50,000/-

The above expense shall be apportioned to the distribution units under its control using the formula

*Apportioned Cost = (Total Administrative Overhead / Total Distribution cost before apportionment) * Cost of the concerned distribution cost centre*

Assuming the following costs at the distribution cost centres

Distribution unit x – Rs.10000/-

Distribution unit ―y‖ – Rs,15000/-

Distribution unit z – Rs.20000/-

The apportionment for each of the units will be computed as given below:

Distribution unit x = (150000/45000) * 10000 = Rs.33,333/-

Distribution unit y = (150000/45000) * 15000 = Rs.50,000/-

Distribution unit z = (150000/45000) * 20000 = Rs.66.667/-

The corporate administrative overheads shall then be distributed to all the distribution units on the same basis as explained above.

Appendix 1 – Distribution/Cost of Water

Appendix 1

Name of the Entity						
Cost Sheet - Distribution of Water for *Distribution Cost Centre* for the period ending						
Cost Centre Code						
Cost Centre Name						
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Quantity (in KL)**	**Cost per Unit**	**Amount**
			Cost of Water Received from Transmission			
			Direct Cost of Operations			
210	13	00	Salaries of Employees - Distribution			
210	23	00	Wages of NMR (Nominal Muster Roll) Employees - Distribution			
210	33	00	Welfare Expenses of Employees - Distribution			
210	43	00	Welfare Expenses of NMR Employees - Distribution			
230	10	04	Power - Distribution			
230	20	07	Purchase of water - Distribution			
230	20	08	Electricity expenses -Distribution			
230	33	00	Consumption of Stores - Distribution			
230	38	00	Consumption of Tools & Spares - Distribution			
230	43	00	Consumption of consumables - Distribution			
230	45	01	Discount allowed on water charges			
230	46	01	Miscellaneous Operating Expenses - Water Connections			
230	46	03	Miscellaneous Operating Expenses - Investigation and planning expenses			

Name of the Entity						
Cost Sheet - Distribution of Water for *Distribution Cost Centre* for the period ending						
Cost Centre Code						
Cost Centre Name						
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Quantity (in KL)**	**Cost per Unit**	**Amount**
230	46	04	Miscellaneous Operating Expenses - Plant hire charges			
230	46	05	Miscellaneous Operating Expenses - Handling charges			
230	46	06	Miscellaneous Operating Expenses - Water Tanker hire charges			
230	46	07	Miscellaneous Operating Expenses - Freight charges			
230	46	08	Miscellaneous Operating Expenses - Conversion charges - Fabrication			
230	46	09	Miscellaneous Operating Expenses - Other Operating expenses			
			Total - A			
			Direct Cost of Maintenance			
210	53	00	Casual Labourers' (CLR) Wages -Distribution			
210	63	00	Payments to Trainees / Deputationists - Distribution			
210	83	00	Pension -Distribution			
210	93	00	Other Terminal & Retirement Benefits - Distribution			
230	50	05	Meter Survey Station Service charges			
230	50	06	Repairs & maintenance of Water Drains			

Name of the Entity						
Cost Sheet - Distribution of Water for *Distribution Cost Centre* for the period ending						
Cost Centre Code						
Cost Centre Name						
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Quantity (in KL)**	**Cost per Unit**	**Amount**
230	50	07	Repairs & maintenance of Other Water Supply Assets			
			Total - B			
			Distribution Loss (in KL)			
			Grand Total - D = A + B			

Name of the Entity											
Cost Sheet of Potable Water for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
			Cost of Water Received from Transmission								
			Direct Cost of Operations								
210	13	00	Salaries of Employees - Distribution								
210	23	00	Wages of NMR (Nominal Muster Roll) Employees - Distribution								
210	33	00	Welfare Expenses of Employees - Distribution								
210	43	00	Welfare Expenses of NMR Employees - Distribution								
230	10	04	Power - Distribution								
230	20	07	Purchase of water - Distribution								
230	20	08	Electricity expenses -Distribution								
230	33	00	Consumption of Stores - Distribution								
230	38	00	Consumption of Tools & Spares - Distribution								
230	43	00	Consumption of consumables - Distribution								
230	45	01	Discount allowed on water charges								
230	46	01	Miscellaneous Operating Expenses								

Name of the Entity											
Cost Sheet of Potable Water for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
230	46	03	Miscellaneous Operating Expenses - Investigation and planning expenses								
230	46	04	Miscellaneous Operating Expenses - Plant hire charges								
230	46	05	Miscellaneous Operating Expenses - Handling charges								
230	46	06	Miscellaneous Operating Expenses - Water Tanker hire charges								
230	46	07	Miscellaneous Operating Expenses - Freight charges								
230	46	08	Miscellaneous Operating Expenses - Conversion charges - Fabrication								
230	46	09	Miscellaneous Operating Expenses - Other Operating expenses								
			Total								
			Direct Cost of Maintenance								
210	53	00	Casual Labourers' (CLR) Wages - Distribution								
210	63	00	Payments to Trainees / Deputationists - Distribution								
210	83	00	Pension -Distribution								

Name of the Entity											
Cost Sheet of Potable Water for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
210	93	00	Other Terminal & Retirement Benefits - Distribution								
230	50	05	Meter Survey Station Service charges								
230	50	06	Repairs & maintenance of Water Drains								
230	50	07	Repairs & maintenance of Other Water Supply Assets								
			Total								
			Total - Direct Costs								
			Allocation Base								
			Indirect Cost of Operations								
220	10	00	Rent, Rates and Taxes								
220	11	00	Office Maintenance								
220	12	00	Communication Expenses								
220	20	00	Books & Periodicals								
220	21	00	Printing and Stationery								
220	30	00	Inland Travelling & Conveyance								
220	31	00	Foreign Travel Expenses								
220	40	00	Insurance								
220	50	00	Audit Fees								
220	51	00	Legal Expenses								

Name of the Entity											
Cost Sheet of Potable Water for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
220	52	00	Professional and Other Fees								
220	53	00	Training & Other expenses								
220	60	00	Advertisement and Publicity								
220	61	00	Membership & subscriptions								
220	80	00	Other Administrative Expenses								
230	47	07	Petrol / Diesel Expenses - Distribution								
230	80	00	Other operating & maintenance expenses								
			Total								
			Indirect Cost of Maintenance								
230	47	08	Repairs & Maintenance of Vehicles -Distribution								
230	48	00	Hire Charges								
			Total								
			Depreciation (Indirect component)								
272	20	01	Office Buildings								
272	20	07	Administrative office buildings								
272	20	08	Residential colony buildings								
272	20	09	Guest house buildings								

Name of the Entity											
Cost Sheet of Potable Water for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
272	20	10	Other buildings								
272	21	03	Water reservoirs — Overhead								
272	21	04	Water reservoirs - Over Ground								
272	21	05	Water reservoirs - Under Ground								
272	21	06	Water Pump Houses								
272	42	01	Water Pipes & Valves								
272	44	01	Bulk Meters								
272	44	02	Household Meters								
272	46	00	Meter Testing Equipments								
272	47	00	Water Testing Equipments								
272	48	04	Electrical Sub-Stations - Distribution								
272	50	04	Vehicles - Distribution								
272	60	04	Office & Other Equipments - Distribution								
272	70	04	Furniture & Fixtures - Distribution								
272	80	04	Other Fixed Assets - Distribution								
			Total								
			Total Indirect Costs								
			Total Costs								
			Distribution Loss (in KL)								

Name of the Entity											
Cost Sheet of Potable Water for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	Minor Head Code	Detailed Head Code	Description of Cost	Cost Centre 1		Cost Centre 2		Cost Centre n		Allocations	Total
				Quantity	Cost	Quantity	Cost	Quantity	Cost		
			Cost per Kl of water distributed								

Name of the Entity											
Cost Sheet for Cost of Potable Water for the period ending											
Cost Centre Group											
Cost Centre Group Name											
Major Head Code	Minor Head Code	Detailed Head Code	Description of Cost	Sub-Cost Centre 1		Sub Cost Centre 2		Sub Cost Centre n		Total	
				Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
			Cost of Transmitted Water								
			Direct Cost of Operations								
210	13	00	Salaries of Employees - Distribution								
210	23	00	Wages of NMR (Nominal Muster Roll) Employees - Distribution								
210	33	00	Welfare Expenses of Employees - Distribution								
210	43	00	Welfare Expenses of NMR Employees - Distribution								
230	10	04	Power - Distribution								
230	20	07	Purchase of water - Distribution								

Name of the Entity											
Cost Sheet for Cost of Potable Water for the period ending											
Cost Centre Group											
Cost Centre Group Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**		**Sub Cost Centre 2**		**Sub Cost Centre n**		**Total**	
				Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
230	20	08	Electricity expenses -Distribution								
230	33	00	Consumption of Stores - Distribution								
230	38	00	Consumption of Tools & Spares - Distribution								
230	43	00	Consumption of consumables - Distribution								
230	45	01	Discount allowed on water charges								
230	46	01	Miscellaneous Operating Expenses								
230	46	03	Miscellaneous Operating Expenses - Investigation and planning expenses								
230	46	04	Miscellaneous Operating Expenses - Plant hire charges								
230	46	05	Miscellaneous Operating Expenses - Handling charges								
230	46	06	Miscellaneous Operating Expenses - Water Tanker hire charges								
230	46	07	Miscellaneous Operating Expenses - Freight charges								
230	46	08	Miscellaneous Operating Expenses - Conversion charges - Fabrication								
230	46	09	Miscellaneous Operating Expenses - Other Operating expenses								

Name of the Entity											
Cost Sheet for Cost of Potable Water for the period ending											
Cost Centre Group											
Cost Centre Group Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**		**Sub Cost Centre 2**		**Sub Cost Centre n**		**Total**	
				Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
			Total								
			Direct Cost of Maintenance								
210	53	00	Casual Labourers' (CLR) Wages - Distribution								
210	63	00	Payments to Trainees / Deputationists - Distribution								
210	83	00	Pension -Distribution								
210	93	00	Other Terminal & Retirement Benefits - Distribution								
230	50	05	Meter Survey Station Service charges								
230	50	06	Repairs & maintenance of Water Drains								
230	50	07	Repairs & maintenance of Other Water Supply Assets								
			Total								
			Total - Direct Costs								
			Indirect Cost of Operations (post allocation)								
220	10	00	Rent, Rates and Taxes								
220	11	00	Office Maintenance								
220	12	00	Communication Expenses								
220	20	00	Books & Periodicals								

Name of the Entity										
Cost Sheet for Cost of Potable Water for the period ending										
Cost Centre Group										
Cost Centre Group Name										
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**		**Sub Cost Centre 2**		**Sub Cost Centre n**		**Total**	
				Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
220	21	00	Printing and Stationery								
220	30	00	Inland Travelling & Conveyance								
220	31	00	Foreign Travel Expenses								
220	40	00	Insurance								
220	50	00	Audit Fees								
220	51	00	Legal Expenses								
220	52	00	Professional and Other Fees								
220	53	00	Training & Other expenses								
220	60	00	Advertisement and Publicity								
220	61	00	Membership & subscriptions								
220	80	00	Other Administrative Expenses								
230	47	07	Petrol / Diesel Expenses - Transmission								
230	80	00	Other operating & maintenance expenses								
			Total								
			Indirect Cost of Maintenance (post allocation)								
230	47	08	Repairs & Maintenance of Vehicles - Transmission								
230	48	00	Hire Charges								
			Others								

Name of the Entity											
Cost Sheet for Cost of Potable Water for the period ending											
Cost Centre Group											
Cost Centre Group Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Sub-Cost Centre 1**		**Sub Cost Centre 2**		**Sub Cost Centre n**		**Total**	
				Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
			Total								
			Depreciation (post allocation)								
272	20	01	Office Buildings								
272	20	07	Administrative office buildings								
272	20	08	Residential colony buildings								
272	20	09	Guest house buildings								
272	20	10	Other buildings								
272	21	03	Water reservoirs — Overhead								
272	21	04	Water reservoirs - Over Ground								
272	21	05	Water reservoirs - Under Ground								
272	21	06	Water Pump Houses								
272	42	01	Water Pipes & Valves								
272	44	01	Bulk Meters								
272	44	02	Household Meters								
272	46	00	Meter Testing Equipments								
272	47	00	Water Testing Equipments								
272	48	04	Electrical Sub-Stations - Distribution								
272	50	04	Vehicles - Distribution								
272	60	04	Office & Other Equipments - Distribution								

Name of the Entity										
Cost Sheet for Cost of Potable Water for the period ending										
Cost Centre Group										
Cost Centre Group Name										
Major Head Code	Minor Head Code	Detailed Head Code	Description of Cost	Sub-Cost Centre 1		Sub Cost Centre 2		Sub Cost Centre n		Total	
				Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
272	70	04	Furniture & Fixtures - Distribution								
272	80	04	Other Fixed Assets - Distribution								
			Total								
			Total Indirect Costs								
			Distribution Loss of Water (in KL)								
			Total Costs - Water Distributed								
			Cost per KL								

Chapter 6

Cost of Waste Water

6.1. This chapter discusses the methodology of arriving at the cost of waste water collected and disposed.

Process Overview

6.2. The source of waste water is from the consumers. Logically, it is the reverse of the water system process. The waste water from the consumers is collected through the waste water mains. The waste water is pumped to the treatment plant for disinfection/treatment. The treated waste water is then let out.

6.3. The waste water system consists mainly of the following components

a. Waste water collection mains
b. Waste water pumping stations
c. Waste water treatment plant
d. Waste water transmission mains

6.4. In Bhubaneswar, currently, waste water is partially treated in oxidation ponds and aerated lagoons located at various places. Both the untreated sewage and the partially treated effluent flow into the Gangua Nallah on the eastern side of the City, which finally discharges into the Daya River.

Computation of "Cost of Waste Water"

6.5. Waste Water sourced from consumers is pumped, treated/disinfected before they are let out. Costing system has been designed to provide the cost of waste water at each of these stages and for the process as a whole. The nature of cost incurred for the collection, treatment and transmission of waste water is the same as that of clean water and primarily includes the following

a. Direct cost of operations and maintenance of sewer mains and other systems involved in the waste water system including the cost of lubricants, power, preventive maintenance, etc.

b. Salaries and wages paid to the staff and workers involved in operations and maintenance of the treatment plant.

c. Rent, if any, for the premises that houses the treatment plant and the administration office of the treatment plant

d. Depreciation of the machineries and other fixed assets.

e. Interest and finance charges, to the extent directly identifiable to any of the fixed assets.

4.28. The cost centres have been defined in such a way that the cost data shall be captured for each of the machinery/component involved in collection, treatment or disposal of waste water. Hence, the costing shall be first carried out at the machinery level and later on aggregated to arrive at the cost of waste water. However, in cases where information is not desired/required by decision makers or due to practical limitations, information is not available; cost shall be computed at cost centre sub-group level. The steps involved in computation of the cost of waste water are explained below. The methodology given below is for

Step 1 – Statement of cost centre wise statement of expenditure

Prepare cost centre level statement of expenditure from the accounting system as per the template given below.

Cost Centre Wise Statement of Expenditure for the period ended _____

Cost Centre Code:_____ Cost Centre : _____

S.No.	Account Code	Description	Amount (in Rs.)

Step 2 – Fill in the information in the cost sheet for each cost centre

Based on the above statement of expenditure, prepare cost sheet for each cost centre. For e.g., separate cost sheet shall be prepared for sewer pumps, pump houses which shall later be consolidated for the sub-cost centre group, etc. All process overheads that are common to these machineries and other cost centres shall be accounted under the code ~~"o~~thers" with separate cost sheet prepared for it.

The template of cost centre level cost sheet for treatment process is given in Appendix.

Step 3 – Allocate common costs

Allocation of common costs will be at two stages – in the first stage, costs that are common to the ~~n~~nature" of cost centre, for e.g. the common costs incurred for the pumps (accounted under the cost centre code ~~0~~03" will be allocated to each of the pump). The allocation will be based on the actual machine hours.

In the next stage, all common process overheads will be allocated to each of the cost centre. The common process overheads will be allocated on the basis of the cost of each cost centre to the total cost (of the respective source).

The output of this step will be ~~c~~ost centre" level cost sheet for the respective collection system, pumping stations, etc. The cost sheet so prepared assists in monitoring the performance of each component involved in collection and treatment of waste water.

Step 4 – Computation of cost of waste water

The cost of waste water shall be the sum total of the costs incurred by each cost centre group. Further, the cost relating to the administration overheads (Head Office Costs) shall be allocated on the total cost centre sub-group cost to the total cost. This shall be done separately when the consolidated cost statement is prepared.

Name of the Entity						
Cost Sheet - Sewer Treatment & Disposal of Water for Sewerage *Cost Centre* for the period ending						
Cost Centre Code						
Cost Centre Name						
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Quantity (in KL)**	**Cost per Unit**	**Amount**
			Direct Cost of Operations			
210	14	00	Salaries of Employees - Sewerage			
210	24	00	Wages of NMR (Nominal Muster Roll) Employees - Sewerage			
210	34	00	Welfare Expenses of Employees - Sewerage			
210	44	00	Welfare Expenses of NMR Employees - Sewerage			
230	10	05	Power - Sewerage			
230	20	09	Electricity expenses - Sewerage			
230	34	00	Consumption of Stores - Sewerage			
230	39	00	Consumption of Tools & Spares - Sewerage			
230	44	00	Consumption of consumables - Sewerage			
230	45	02	Discount allowed on sewerage charges			
230	46	02	Miscellaneous Operating Expenses - Sewer Connections			
			Total - A			
			Direct Cost of Maintenance			

Name of the Entity						
Cost Sheet - Sewer Treatment & Disposal of Water for Sewerage *Cost Centre* for the period ending						
Cost Centre Code						
Cost Centre Name						
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Quantity (in KL)**	**Cost per Unit**	**Amount**
210	54	00	Casual Labourers' (CLR) Wages - Sewerage			
210	64	00	Payments to Trainees / Deputationists - Sewerage			
210	84	00	Pension - Sewerage			
210	94	00	Other Terminal & Retirement Benefits - Sewerage			
230	51	01	Repairs & maintenance of Civil Works-Sewerage			
230	51	02	Repairs & maintenance of Sewerage Treatment Plants			
230	51	03	Repairs & maintenance of Plant & Machinery (Sewerage)			
230	51	04	Repairs & maintenance of Sewer Mains and Network			
230	51	05	Repairs & maintenance of Sewer Drains			
230	51	06	Repairs & maintenance of Other Sewerage Assets			
			Total - B			
			Grand Total - C = A + B			

Appendix 2

Name of the Entity											
Cost Sheet of Sewerage Treatment & Disposal for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
			Direct Cost of Operations								
210	14	00	Salaries of Employees - Sewerage								
210	24	00	Wages of NMR (Nominal Muster Roll) Employees - Sewerage								
210	34	00	Welfare Expenses of Employees - Sewerage								
210	44	00	Welfare Expenses of NMR Employees - Sewerage								
230	10	05	Power - Sewerage								
230	20	09	Electricity expenses - Sewerage								
230	34	00	Consumption of Stores - Sewerage								
230	39	00	Consumption of Tools & Spares - Sewerage								
230	44	00	Consumption of consumables - Sewerage								
230	45	02	Discount allowed on sewerage charges								
230	46	02	Miscellaneous Operating Expenses - Sewer Connections								
			Total								
			Direct Cost of Maintenance								

Name of the Entity											
Cost Sheet of Sewerage Treatment & Disposal for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
210	54	00	Casual Labourers' (CLR) Wages - Sewerage								
210	64	00	Payments to Trainees / Deputationists - Sewerage								
210	84	00	Pension - Sewerage								
210	94	00	Other Terminal & Retirement Benefits - Sewerage								
230	51	01	Repairs & maintenance of Civil Works-Sewerage								
230	51	02	Repairs & maintenance of Sewerage Treatment Plants								
230	51	03	Repairs & maintenance of Plant & Machinery (Sewerage)								
230	51	04	Repairs & maintenance of Sewer Mains and Network								
230	51	05	Repairs & maintenance of Sewer Drains								
230	51	06	Repairs & maintenance of Other Sewerage Assets								
			Total								
			Total - Direct Costs								
			Allocation Base = Machine Hour Rate								
			Indirect Cost of Operations								
220	10	00	Rent, Rates and Taxes								

Name of the Entity											
Cost Sheet of Sewerage Treatment & Disposal for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
220	11	00	Office Maintenance								
220	12	00	Communication Expenses								
220	20	00	Books & Periodicals								
220	21	00	Printing and Stationery								
220	30	00	Inland Travelling & Conveyance								
220	31	00	Foreign Travel Expenses								
220	40	00	Insurance								
220	50	00	Audit Fees								
220	51	00	Legal Expenses								
220	52	00	Professional and Other Fees								
220	53	00	Training & Other expenses								
220	60	00	Advertisement and Publicity								
220	61	00	Membership & subscriptions								
220	80	00	Other Administrative Expenses								
230	47	09	Petrol / Diesel Expenses -Sewerage								
			Total								
			Indirect Cost of Maintenance								
230	47	10	Repairs & Maintenance of Vehicles - Sewerage								
230	48	00	Hire Charges								
			Total								

Name of the Entity											
Cost Sheet of Sewerage Treatment & Disposal for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
			Depreciation (Indirect component)								
272	20	04	Sewage treatment plant buildings								
272	20	05	Sewage pumping station buildings								
272	20	06	Sewage compost plant buildings								
272	21	07	Sewage pumping stations								
272	21	08	Sewage treatment plants								
272	21	09	Sewage compost plants								
272	31	01	Underground Drains								
272	31	02	Open Drains								
272	31	03	Collecting Sewers								
272	31	04	Main Sewers								
272	31	05	Manholes								
272	40	03	Sewage treatment plant								
272	40	04	Electrical equipments - Sewage schemes								
272	40	05	Compost works								
272	41	04	Sewage transmission mains								
272	41	05	Sewage road mains								
272	41	06	Sewage service connections								
272	42	02	Sewerage Pipes & Valves								
272	43	03	Sewage Pumps								

Name of the Entity											
Cost Sheet of Sewerage Treatment & Disposal for the *location* for the period ending											
Sub Cost Centre Code											
Sub Cost Centre Name											
Major Head Code	**Minor Head Code**	**Detailed Head Code**	**Description of Cost**	**Cost Centre 1**		**Cost Centre 2**		**Cost Centre n**		**Allocations**	**Total**
				Quantity	**Cost**	**Quantity**	**Cost**	**Quantity**	**Cost**		
272	48	05	Electrical Sub-Stations - Sewerage								
272	50	05	Vehicles - Sewerage								
272	60	05	Office & Other Equipments - Sewerage								
272	70	05	Furniture & Fixtures - Sewerage								
272	80	05	Other Fixed Assets - Sewerage								
			Total								
			Total Indirect Costs								
			Total Costs								
			Cost per KL of treated waste water								

Name of the Entity										
Cost Sheet of Sewerage Treatment & Disposal (Waste Water System) for the period ending										
Cost Centre Group										
Cost Centre Group Name										
Major Head Code	Minor Head Code	Detailed Head Code	Description of Cost	Sub-Cost Centre 1		Sub Cost Centre 2		Sub Cost Centre n		Total	
				Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
			Direct Cost of Operations								
210	14	00	Salaries of Employees - Sewerage								
210	24	00	Wages of NMR (Nominal Muster Roll) Employees - Sewerage								
210	34	00	Welfare Expenses of Employees - Sewerage								
210	44	00	Welfare Expenses of NMR Employees - Sewerage								
230	10	05	Power - Sewerage								
230	20	09	Electricity expenses - Sewerage								
230	34	00	Consumption of Stores - Sewerage								
230	39	00	Consumption of Tools & Spares - Sewerage								
230	44	00	Consumption of consumables - Sewerage								
230	45	02	Discount allowed on sewerage charges								
230	46	02	Miscellaneous Operating Expenses - Sewer								

Name of the Entity											
Cost Sheet of Sewerage Treatment & Disposal (Waste Water System) for the period ending											
Cost Centre Group											
Cost Centre Group Name											
Major Head Code	Minor Head Code	Detailed Head Code	Description of Cost	Sub-Cost Centre 1		Sub Cost Centre 2		Sub Cost Centre n		Total	
				Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
			Connections								
			Total								
			Direct Cost of Maintenance								
210	54	00	Casual Labourers' (CLR) Wages - Sewerage								
210	64	00	Payments to Trainees / Deputationists - Sewerage								
210	84	00	Pension - Sewerage								
210	94	00	Other Terminal & Retirement Benefits - Sewerage								
230	51	01	Repairs & maintenance of Civil Works-Sewerage								
230	51	02	Repairs & maintenance of Sewerage Treatment Plants								
230	51	03	Repairs & maintenance of Plant & Machinery (Sewerage)								
230	51	04	Repairs & maintenance of Sewer Mains and Network								
230	51	05	Repairs & maintenance of Sewer Drains								
230	51	06	Repairs & maintenance of Other Sewerage Assets								
			Total								

Name of the Entity											
Cost Sheet of Sewerage Treatment & Disposal (Waste Water System) for the period ending											
Cost Centre Group											
Cost Centre Group Name											
Major Head Code	Minor Head Code	Detailed Head Code	Description of Cost	Sub-Cost Centre 1		Sub Cost Centre 2		Sub Cost Centre n		Total	
				Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
			Total - Direct Costs								
			Indirect Cost of Operations (post allocation)								
220	10	00	Rent, Rates and Taxes								
220	11	00	Office Maintenance								
220	12	00	Communication Expenses								
220	20	00	Books & Periodicals								
220	21	00	Printing and Stationery								
220	30	00	Inland Travelling & Conveyance								
220	31	00	Foreign Travel Expenses								
220	40	00	Insurance								
220	50	00	Audit Fees								
220	51	00	Legal Expenses								
220	52	00	Professional and Other Fees								
220	53	00	Training & Other expenses								
220	60	00	Advertisement and Publicity								
220	61	00	Membership & subscriptions								
220	80	00	Other Administrative Expenses								
230	47	09	Petrol / Diesel Expenses - Sewerage								
			Total								

Name of the Entity											
Cost Sheet of Sewerage Treatment & Disposal (Waste Water System) for the period ending											
Cost Centre Group											
Cost Centre Group Name											
Major Head Code	Minor Head Code	Detailed Head Code	Description of Cost	Sub-Cost Centre 1		Sub Cost Centre 2		Sub Cost Centre n		Total	
				Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
			Indirect Cost of Maintenance (post allocation)								
230	47	10	Repairs & Maintenance of Vehicles -Sewerage								
230	48	00	Hire Charges								
			Total								
			Depreciation (post allocation)								
272	20	04	Sewage treatment plant buildings								
272	20	05	Sewage pumping station buildings								
272	20	06	Sewage compost plant buildings								
272	21	07	Sewage pumping stations								
272	21	08	Sewage treatment plants								
272	21	09	Sewage compost plants								
272	31	01	Underground Drains								
272	31	02	Open Drains								
272	31	03	Collecting Sewers								
272	31	04	Main Sewers								
272	31	05	Manholes								
272	40	03	Sewage treatment plant								

Name of the Entity											
Cost Sheet of Sewerage Treatment & Disposal (Waste Water System) for the period ending											
Cost Centre Group											
Cost Centre Group Name											
Major Head Code	Minor Head Code	Detailed Head Code	Description of Cost	Sub-Cost Centre 1		Sub Cost Centre 2		Sub Cost Centre n		Total	
				Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
272	40	04	Electrical equipments - Sewage schemes								
272	40	05	Compost works								
272	41	04	Sewage transmission mains								
272	41	05	Sewage road mains								
272	41	06	Sewage service connections								
272	42	02	Sewerage Pipes & Valves								
272	43	03	Sewage Pumps								
272	48	05	Electrical Sub-Stations - Sewerage								
272	50	05	Vehicles - Sewerage								
272	60	05	Office & Other Equipments - Sewerage								
272	70	05	Furniture & Fixtures - Sewerage								
272	80	05	Other Fixed Assets - Sewerage								
			Total								
			Total Indirect Costs								
			Total Costs - Waste Water (Sewer) Treatment								

Chapter 7

Costing Reports

7.1. The costing reports primarily consist of the ―cost sheets" that were discussed in the earlier chapters. In addition to these cost sheets, the following are some of the summary level reports that aids in better control and decision making

a. Statement of category-wise cost of water supplied
b. Costing Income and Expenditure Statement
c. Reconciliation with financial income and expenditure statement

Statement of Category-wise Cost of Water Supplied

7.2. One of the objectives of the costing system is ascertaining the cost of water supplied to each category of consumers. One of the key inputs to this process is the quantum of water consumed by each category and the number of users. However, currently, metering is not done for all the users which makes ascertaining the quantum of water consumed by each category difficult. In such a situation, initially, it is left to the subjective judgement of the concerned Department Heads to ascertain the quantum of water consumed.

7.3. The format for determining the category-wise cost of water supplied is given in Appendix 1.

Costing Income and Expenditure Statement

7.4. The costing system is integrated with the financial accounting system. It uses the same head of accounts and also the information captured therein in various records and registers. To that extent, an integrated system has been designed to ensure lack of duplication of efforts involved. However, it is recommended that a costing income and expenditure statement be prepared for the entity as a whole.

7.5. The forma for preparation of costing income and expenditure statement is given in Appendix 2.

Reconciliation with Financial Income and Expenditure Statement

7.6. Where accounts are maintained on the integral accounts system, there are no separate cost accounts and financial accounts. Hence, the question of reconciliation of cost and financial accounts does not arise.

Appendix 1

Name of the Entity							
Statement of Cost of Water Supplied							
S.No.	**Description**	**Source of Supply**	**Treatment**	**Transmission**	**Distribution**	**Others**	**Total**
1	**Cost of Operations**						
	Direct Cost of Operations:						
	Salaries of Employees						
	Wages of NMR Employees						
	Welfare Expenses of Employees						
	Welfare Expenses of NMR Employees						
	Power						
	Purchase of water						
	Electricity expenses						
	Consumption of Stores						
	Consumption of Tools & Spares						
	Consumption of consumables						
	Others						
	Indirect Cost of Operations:						
	Petrol / Diesel Expenses						
	Others						
2	**Cost of Maintenance**						
	Direct Cost of Maintenance:						
	Casual Labourers' (CLR) Wages						
	Payments to Trainees / Deputationists						
	Pension						
	Other Terminal & Retirement Benefits						
	Repairs & maintenance of Plant & Machinery						
	Others						
	Indirect Cost of Maintenance:						
	Repairs & Maintenance of Vehicles						

Name of the Entity							
Statement of Cost of Water Supplied							
S.No.	**Description**	**Source of Supply**	**Treatment**	**Transmission**	**Distribution**	**Others**	**Total**
	Hire Charges						
	Others						
3	**Administrative Overheads**						
4	**Interest and Finance Charges**						
5	**Allocation of Administrative Overheads**						
	Total						

Note : Administrative overheads to be allocated by way of deduction from column —others" and addition to other cost centres

Name of the Entity

Statement of Category-Wise Cost of Water Consumed

	Total Cost of Water Supplied	Domestic	Government	Institutional	Industrial
		Amount	Amount	Amount	Amount
Quantity of Water Consumed (in KL)					
Cost of Operations					
Cost of Maintenance					
Administrative Overheads					
Interest and Finance Charges					
Total					

Appendix 2

Name of the Entity

Costing Income and Expenditure Statement for the period

	Domestic	Government	Institutional	Industrial	Total
Income from Supply of Water					
Connection charges					
Others					
Total - A					
Cost of Operations					
Cost of Maintenance					
Administrative Overheads					
Interest and Finance Charges					
Total - B					
Excess/(Deficit) of Income over Expenditure (A-B)					
Adjustments (Non cost centres)					
Income Tax					
Profit/ loss on sale of assets					
Others					
Total					
Excess/(Deficit) of Income over Expenditure as per Financial Records					
Quantity of Water Produced (in KL)					
Quantity of Water Consumed (in KL)					
Cost per KL Produced					
Cost per KL Consumed					