



Content of Detailed Design Report for Water and Sewerage Systems Detailed Design Report

The Detail design report would have three components as follows:

1. Detailed Design Report
2. Detailed Design Drawings as an annexure
3. Bill of Quantities
4. Electrical components

Detail Design Drawings

- a) All the drawings in the Detailed Design Drawings must be A3 size on a scale
- b) Legends of all the key entities must be in the drawings

Detailed Design Report

1. The report must be comprehensive
2. The report must have the following structure

a. Introduction

- i. Description of the project (in the view of designing)
- ii. Descriptions of catchment(s)

b. Methodology

A detailed description of the methods, formulae and models used for any calculation, if any, shall be incorporated in this chapter

c. Population and Household Projection

The current registered population and design population must be included and how the design population was established must be explained. The number of households and future projection also has to be included with proper explanation of such projection.

d. Flow Rates

The calculations of various flow rates could be based on the survey. The flow rates in the guideline given by the ministry or published in the website of URA shall be used just as a guide to arrive at a specific flow rate. In this chapter, calculations such as mean flow rate, peak factor, peak flow rate, and peak hour has to be incorporated. However, any major deviation from the values given in such a guideline or website has to be included with proper justifications.

e. Infiltration

Explanations, justifications and calculations of infiltration must be incorporated in this chapter

f. Pipe Network

A detailed description of pipe network including design flow rate, gradients, depths of flow, velocities, depth, sizes of the pipeline must be discussed



g. Design Material

The specification of all the material utilized for entire sewerage system has to be identified with justification if in case it differs from the design criteria given by the ministry or the criteria published in the URA website

h. Manholes/Access Chambers

Include the specifications of manholes/access chambers, including depths, diameters and the average distance between the manholes/access chambers.

i. Lifting Stations (associated with catchments)

Include the specifications of lifting stations, including calculations such as pump's capacity, head, specification of pumps and an estimation of their electricity consumption. Major deviations from the technical specifications provided with the agreement may not be acceptable unless proper justifications and explanations are not included.

j. Pumping Stations (associated with sea outfall(s))

Include the specifications of pumping stations, including calculations such as pump's capacity, head, specification of pumps and an estimation of their electricity consumption. Major deviations from the technical specifications provided may not be acceptable unless proper justifications and explanations are not included.

k. Treatment Plant

A description of treatment plant design should be included. Specification of each entity in the treatment plant has to be included. An estimate of electricity consumption also has to be included. Calculation such as hydraulic retention time, duration of dewatering of sludge, capacities, heads and horsepower requirement of different pumps, horsepower requirement of aerators, type of aeration, oxygenation capacity of the aerator, duration of aeration, the BOD in the effluent and influent, and the efficiency of the treatment must be included. The sludge treatment unit has to be described with detention time and disposal mechanism for sludge.

l. Sea Outfall

A description of the methods of hammering the sea outfall along with depth, diameter, length and material of outfall pipe should be included.

m. Emergency Bypass

If the facility is designed to have a treatment plant, an emergency bypass from the sewage collecting system to the sea outfall must be present. The size of the pipe used for the bypass and the bypassing mechanism must be included

n. Sludge Disposal Method or Sludge Management

For any sewerage system, a sludge disposal method or sludge management plan and calculations such as how much sludge is produced in a year must be included in the detailed design report



o. Administrative Building

The architectural and structural design of the administrative building must be included.

p. Annexes

- i. The detailed drawings must also be submitted as an annex of the Detailed Design Report
- ii. The detailed bill of quantities must also be submitted as an annex of the Detailed Design Report
- iii. If any permission(s) or approval is required from any government authority in the design stage, a certified copy of such permit(s) or approval(s) must be annexed
- iv. A certified copy of the land use plan (if it is available) must be annexed
- v. A certified copy of the letter from the relevant Council or government authority for land allocation for the sewerage facility must be annexed
- vi. Apart from inclusion in the main report, the calculated values such as gradient, depth, length and levels should be annexed as a table(s)
- vii. Any calculations that is not included within the report must be annexed
- viii. List of deviations from technical specification provided with the agreement

Bill of Quantities (BOQ)

- a) All items of works must be identified and included
- b) All such items must be described clearly following practices in Maldives
- c) Quantities of all such items must be calculated properly and must be specific.
- d) Mentioning any quantity as LS without a specific value may cause requisition for corrections and changes and delay the approval process
- e) All units must be clearly specified

Electrical Components

- a) Electrical components including electrical drawings, instruments and control equipments should be as per URA regulations.
- b) An approval letter and sealed approval of the electrical components should be submitted with the detailed design.

Important Notes

- a) EIA must be approved prior to the approval of the detailed design
- b) Please be informed that an application for Detail Design Approval without any of the above may subject to delay of the approval process.