

**Content for Operation and Maintenance Manuals**  
**Table of content for Operations & Manuals**  
**Process, Operation, Maintenance, Installation and Trouble-Shooting**

This sample outline is intended as a guide to be used when developing an O&M manual. Use of this sample outline will facilitate the development, review and approval of the O&M manual. However, all aspects of the sample outline may not be relevant for all facilities.

<b>Volume I : Operation</b>	
<b>Item</b>	<b>Description</b>
<b>1</b>	<b>Introduction</b>
1.1	Description and Type of Development
1.2	Description and Status of Existing Treatment Facilities (Upgraded Plants)
1.2	Selection of Site
1.3	Choice of Treatment System
1.4	Effluent Quality
<b>2</b>	<b>Process Description</b>
2.1	General Process Flow
2.2	System Description
2.2.1	Physical Treatment Process
2.2.2	Chemical Treatment Process
2.2.3	Biological Treatment Process
<b>3</b>	<b>Design Calculation</b>
3.1	Basis of Design Information
3.2	Details of Design Calculations
<b>4</b>	<b>Treatment Plant Operation</b>
4.1	Initial Start-up Procedure
4.2	Testing & Commissioning
4.3	Procedure for Operating Plant Constructed in Stages or Phases
4.4	Plant Shut-down Procedure
<b>5</b>	<b>Schedule of Equipment</b>
5.1	Main Mechanical & Electrical Equipment
5.2	Pipes, Valves & Fittings, Instrumentation
<b>6</b>	<b>Unit Process Trouble-shooting &amp; Investigation</b>
6.1	Anticipated Problems & Investigation Works
6.2	Causes of Process Disruption & Non-Compliance of Effluent Quality
6.3	Recommended Corrective Actions
6.4	Description of the appropriate response or adjustment to minimize impact of emergency situations with the potential to affect the discharge or compliance with the permit
6.5	Periodic Maintenance Procedures for each unit process
6.6	Details on how inspections will be conducted and a schedule for the inspection of collection systems and pump stations, where applicable
6.7	Inspection checklist
6.8	Record Keeping:
6.8.1	Date of entry, inspection observations, maintenance performed
6.8.2	Process efficiency monitoring results
6.8.3	Operating cost records and recommendations
<b>7</b>	<b>Monitoring Process Efficiency</b>
7.1	Monitoring programme
7.2	Sample equipment used to perform tests, sample locations, collection and handling
7.3	Effluent sampling-lab protocol for in-house testing or reference to off-site laboratory. Sampling and analysis manual
<b>8</b>	<b>Safety &amp; Health</b>
8.1	Security Measures
8.2	Noise Control
8.3	Odor Control

**Volume I I: Maintenance**

Item	Description
	Catalogues, Technical specification, Performance data, Equipment installation, Equipment trouble-shooting, Periodic maintenance procedures, Start-up/shutdown for mechanical & electrical equipment, Spare parts inventory, Certificates of warranty, JPP equipment approval letter, etc.
1	Pump
2	Motor
3	Gearbox
4	Penstock
5	Static Screen
6	Mechanical Screen
7	Screw Conveyor/Compactor
8	Screenings Bin
9	Grit Removal System
10	Grease Removal System
11	Scraper Mechanism Primary Sedimentation
12	Aerators
13	Diffusers
14	Mixers
15	Blowers
16	Main Control Panel
17	Scraper Mechanism Secondary Clarifier
18	Thickeners
19	Dewatering Equipment
20	Disinfection Equipment/Apparatus
21	Measuring Instruments/Devices/Sensors
22	Pipes/Valves/Fittings
23	Lifting Devices
23	Electrical Equipment
25	Diesel Generator
26	Fire-Fighting Equipment
27	Sound-Proof Installations
28	Dryer
29	Odour Control Equipment
30	Programme Logic Controller
31	Manhole Cover/Grating

**Volume III : As-Built Drawings**

Item	Description
	Process, Hydraulic, PID, Layout, Structure, Mechanical, Electrical, Architecture, Schedule, Standard Drawings, etc.
1	Hydraulic profile & Schematic Flow Diagram
2	Schematic Flow Diagram
3	Process & Instrument Diagram (PID)
4	Site Layout
5	Plant Layout
6	Inlet Works (Primary Screen, Wet Well & Dry Well)
7	Secondary Screen & Grit/Grease Chamber
8	Equalisation Tank & Distribution Chamber
9	Aeration Tank
10	Blower House & Control Room
11	Secondary Clarifier
12	Sludge Holding Tank
13	Sludge Digester
14	Sludge Thickener
15	Sludge Dewatering
16	Sludge Drying Bed & Cake Storage Shed
17	Chlorination Plant & Disinfection Tank
18	Effluent Discharge Chamber
19	Perimeter Fencing & Lighting
20	Schematic Line Diagram for Power Supply
21	Instrument Layout of Control Panel
22	Electrical Line Diagram of all Equipment
23	Schedule of Pumps

24	Schedule of Other Mechanical Equipment
25	Schedule of Pipes, Valves & Fittings
26	Architectural Drawing of Buildings

Item	Description
27	Ladder Diagram for Programmable Logic Controller (PLC)
28	Architectural Drawings
29	Locations of Fire-Fighting Equipment
30	Mass Balance Diagram

**Notes**

- i. A draft to be submitted for approval 60 days before date of operation of the facility and if manuals found to be inadequate, the owner is required to make appropriate modifications.
- ii. A review of the approved manuals one year after initiation of plant operation and subsequent to the review, the manuals shall be revised to reflect actual treatment plant experience.

