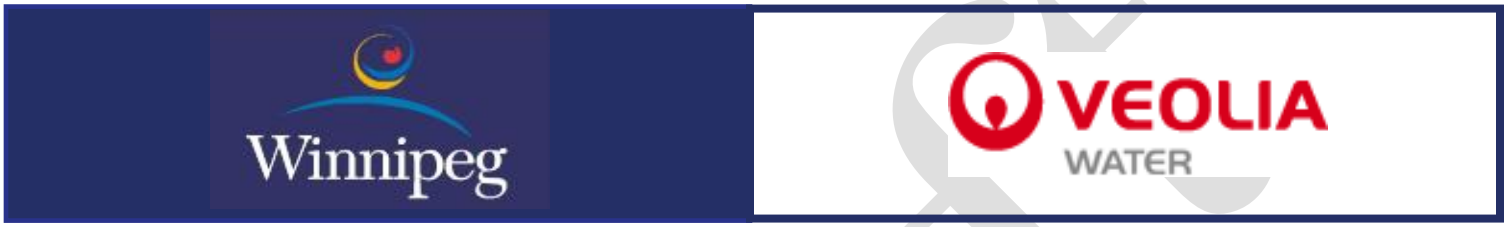
Winnipeg Sewage Treatment Program
Integrated Management System



Operations Manual Specification
Contents Pages

Volume 0 to 6

Draft

Winnipeg Sewage Treatment Program
Integrated Management System

Operations Manual Specification

Volume 0
General Requirements
(Contents)

DOCUMENT NUMBER: XX-XX-XX-XX

Rev	Description	Prepared by	Reviewed by	Approved by	Approved Date
2014-10-31	Draft	NWA			
2014-11-18	Draft	NWA			
2015-03-05	Final	NWA			
2015-03-20	Final	NWA			

DRAFT

Contents

1 PURPOSE 3

2 GENERAL REQUIREMENTS 3

2.1 STANDARDS 3
2.2 READERSHIP AND STYLE 3
2.3 NUMBER OF COPIES AND DELIVERY 3

3 PRESENTATION OF MANUALS 3

3.1 OPERATIONS AND MAINTENANCE MANUAL (O&M) STRUCTURE 3
3.2 ELECTRONIC FORMAT REQUIREMENTS 4
3.3 GENERAL FORMAT REQUIREMENTS 4
3.4 HARD COPY FORMAT REQUIREMENTS 4
3.5 EXAMPLE MANUALS 4

DRAFT

1 Purpose

This section will explain the purpose of the specification

For example:
The purpose of this document is to provide guidance for the production of Operations Manuals for the City of Winnipeg Wastewater Treatment Facilities. The specification ensures information relating to the operation of the facilities is presented in a consistent way and allows for the content of the manuals to be updated as the facilities develop over time.

The formats of all Operations Manuals delivered to the City of Winnipeg Wastewater Services Division must follow this specification and be based on the templates and examples in this document.

2 General requirements

This document describes a standard approach, across Wastewater Services (WWS), for the format, presentation and numbering procedure for documentation within the scope of the manual. Document format requirements are described in Document Numbering and Presentation (Doc. Ref. xxxxx).

2.1 Standards

This section will refer to any relevant standards for the provision of technical information (e.g. ISO 14001).

2.2 Readership and Style

This section will define the audience for the manuals and provide guidance on technical language and level of detail required.

2.3 Number of copies and delivery

This section will define the file and folder structure, number of hard copies and transmission method of electronic copies.

3 Presentation of Manuals

3.1 Operations Manual Structure

This section will describe the structure of the set of Operations Manuals.
For example:
The manuals will consist of a set of volumes in the following order:
Volume 1 – Area Process Operations Manual
Volume 2 – Asset Data Manual

DRAFT

Volume 3 – Equipment and Maintenance Task Manual
Volume 4 – Training Manual
Volume 5 – Commissioning Manual
Volume 6 – Drawing Manual

3.2 Electronic Format Requirements

This section will define the format requirements for the electronic files
For example:
The Manual is be supplied in the following formats:
Native file formats: ".doc": ".docx"
Searchable ".pdf"
Audio Visual material: [define format]

3.3 General Format Requirements

This section will describe general requirements for format of the manuals and include:
Title pages, index requirements (e.g. Volume #, Section # and description); section labeling; text size and font; use of figures and tables; use of diagrams; use of colour; use of photographs; language and style; warnings and caution notices; referencing; layout and format (as process driven manuals).

3.4 Hard Copy Format Requirements

This section will describe specific requirements for hard copy provision and include: Identification and binders; Separators and sections; Table of contents per volume and section; Paper quality;

3.5 Example Manuals

An example manual will be provided in each the specification for each manual.

DRAFT

Winnipeg Sewage Treatment Program
Integrated Management System

Operations Manual Specification

Volume 1
Area Process Operating Manual
(Contents)
[Plant Name]

DOCUMENT NUMBER: XX-XX-XX-XX

Rev	Description	Prepared by	Reviewed by	Approved by	Approved Date
2014-12-02	Draft	NWA	RXS		
2015-12-02	Final	NWA			
2015-03-20	Final	NWA			

DRAFT

Contents

1 GENERAL REQUIREMENTS 4

1.1 OPERATIONS MANUAL STRUCTURE 4
1.2 DOCUMENT SCOPE 4
1.3 DOCUMENT CONTROL 4

2 AREA PROCESS OPERATING MANUAL CONTENTS 5

2.1 PURPOSE OF THE AREA PROCESS OPERATING MANUAL 5
2.2 INTRODUCTION 5
2.3 SAFETY (COMMON) 5
2.3.1 SAFETY AND HEALTH HAZARDS 5
2.3.2 HAZARD CONTROLS 6
2.3.3 CONFINED SPACE 6
2.3.4 SIGNAGE 6
2.3.5 FIRE PROTECTION 6
2.3.5.1 Portable fire extinguishers 6
2.3.5.2 Fixed fire protection systems 6
2.3.6 HAZARDOUS LOCATION PLANS 6
2.4 SITE SERVICES 7
2.5 FACILITY CONTROL SYSTEM 7
2.5.1 CONTROL SYSTEM EQUIPMENT 7
2.5.2 CONTROL SYSTEM DRAWINGS 7
2.6 PROCESS BY AREA 8
2.6.1 GENERAL DESCRIPTION OF PROCESS AREA (E.G. HEAD WORKS) 8
2.6.2 UNIT PROCESSES 1 – BAR SCREENS AND SCREENINGS CONVEYOR 8
2.6.2.1 Unit Process Description 8
2.6.2.2 Safety and SWPs 8
2.6.2.3 Design Criteria 8
2.6.2.4 Operation and Process control 8
2.6.2.5 Standard Operating Procedures (SOPs) 9
2.6.3 UNIT PROCESSES 2 – CHANNEL AERATION 9
2.6.3.1 Unit Process Description 9
2.6.3.2 Safety and SWPs 9
2.6.3.3 Design Criteria 9
2.6.3.4 Operation and Process control 9
2.6.3.5 Standard Operating Procedures (SOPs) 9
2.6.4 UNIT PROCESSES 3 – GRIT REMOVAL SYSTEM 9
2.6.4.1 Unit Process Description 9
2.6.4.2 Safety and SWPs 9
2.6.4.3 Design Criteria 9
2.6.4.4 Operation and Process control 9
2.6.4.5 Standard Operating Procedures (SOPs) 9
2.6.5 UNIT PROCESSES 4 – GRIT PUMPING AND DE-WATERING 9

DRAFT

2.6.5.1 Unit Process Description 9
2.6.5.2 Safety and SWPs 9
2.6.5.3 Design Criteria 9
2.6.5.4 Operation and Process control 9
2.6.5.5 Standard Operating Procedures (SOPs) 9

3 APPENDIX 10

3.1 DIRECTORY 10
3.2 INDEX OF SOPS 10
3.3 INDEX OF SWPS 10
3.4 INDEX OF SAFETY AND HEALTH RECORDS 10
3.5 SAFETY AND HEALTH RECORDS 10
3.6 MATERIAL SAFETY DATA SHEETS 10
3.7 HAZOP RECORDS 10

4 EXAMPLE MANUAL 11

DRAFT

1 General requirements

This document describes a standard approach, across Wastewater Services (WWS), for the format, presentation and numbering procedure for documentation within the scope of manual. Document format requirements are described in Document Numbering and Presentation (Doc. Ref. xxxxx).

1.1 Operations Manual Structure

This section will describe the structure of the Operations Manuals and put the Area Process Operating Manual in context of the full set of manuals.

1.2 Document Scope

This section will describe the scope of the document.

1.3 Document Control

This section will describe the document control arrangements for this document, it may refer to the IMS document control procedures.

For example:
This document is a CONTROLLED DOCUMENT when viewed on line through the WSTP Document Management System. The document becomes UNCONTROLLED if printed or downloaded. Document control procedures are described in xxxxx

DRAFT

2 Area Process Operating Manual Contents

This section will define the structure of the Area Process Operating Manual which is to be provided prior to substantial completion. The manuals will be structured by process area following the flow of the treatment process from inlet pumping to final effluent discharge and from raw (and WAS) sludge capture to final biosolids removal from site. Sub-sections will describe unit processes within each process area.

2.1 Purpose of the Area Process Operating Manual

This section will describe the purpose of the Area Process Operating Manual.

2.2 Introduction

This section will provide: location and address of the facility; general description of the facility including a process flow diagram, plant layout diagram; key data such as dry weather and maximum treatment capacity, license limits etc..

2.3 Safety (common)

This section will provide information on safety that is common to all process areas.

2.3.1 Safety and Health Hazards

This section is to provide information on safety and health hazards that are common across all process areas in the facility. Reference will be made to the appropriate section in the O&M Manual where necessary to avoid duplication of material.

Example hazards (area specific hazards will be moved to that specific section(s) of the manual):

- Chemicals Hazards
    - Chemical exposure; list of chemicals used in facility
    - Compressed gasses
    - Asbestos
- Physical Hazards (for example)
    - Temperature
    - Local exhaust ventilation (LEV)
    - Arc flash
    - Confined spaces
    - Electrical safety
    - Explosive atmospheres
    - Pressurized systems
    - Noise
    - Manual handling
    - Traffic
    - Hazardous materials
    - Buried services
    - Overhead cables

DRAFT

    - Vibration
    - Lighting levels
- Biological Hazards
    - Insect bites
    - Mold

Include identification of all site services and restrictions – For example: Deliveries, Chemicals, gas, electricity, telecom, water, spills, discharges, drainage.

2.3.2 Hazard Controls

This section will describe the design features of the facility that have been used to mitigate each of the identified facility wide hazards.

This section should explain the hierarchy of controls applied to mitigate the hazard. For example: identify Engineering Controls; Administrative Controls and PPE controls. Reference should be made to the appropriate section in the O&M manual where required.

A table of SWPs common to all areas will be provided.

2.3.3 Confined Space

This section will provide warning of the hazards of confined spaces in the facilities and reference the applicable legislation and safe work procedures.

2.3.4 Signage

This section will include a list of all statutory and general safety and health signage included in the design, specification of the signage and location installed.

2.3.5 Fire Protection

2.3.5.1 Portable fire extinguishers

This section will include a list of portable fire extinguishers provided, type and location installed, will reference a drawing.

2.3.5.2 Fixed fire protection systems

This section will describe the fixed fire protection systems in the facilities including: Fire alarms (location); fire detectors (type and location); fire hydrant locations and fixed hose reels; fixed fire suppression systems (if any)

2.3.6 Hazardous Location Plans

This section will include a reference to a drawing (or set of drawings) identifying hazardous areas with respect to explosive atmospheres and their classification (including source e.g. methane; H2S; fuel oil etc…). A reference will be made to the appropriate volume of the O&M Manual for special equipment installed and operational mitigation procedures.

DRAFT

2.4 Site services

This section will provide an overview of all site services including and any restrictions that apply. Site services scope will include: electricity supply, domestic services, water supply, telecommunications, sewerage, drainage, chemicals, containment of chemical /Fuel /Gas Discharges, delivery of process chemicals. Etc;

Requirements for site access will be provided including key directory, intruder alarm system, door entry/exit system, CCTV and fire protection.

2.5 Facility Control System

2.5.1 Control System Equipment

This section will describe the facility control systems architecture and provide details of the control system related assets. The content will be limited to a high level description of the control system, for details on how the control system works reference will be made to the WWT Control System Manual.

2.5.2 Control System Drawings

Reference will be made to the drawings manual.

DRAFT

2.6 Process By Area

The manual will organize the plant into physical treatment areas and then into unit processes within each process area.

The process areas will be plant specific, however the suggested process areas are:

- Inlet Pumping
- Head works
- Primary Treatment
- Sludge Thickening
- Secondary Treatment
- UV
- Digestion
- Dewatering
- HVAC
- Plant Electrical System
- Plant Utilities (including: sump pumps; effluent wash water; compressed air; potable water)

An example of the structure of each area is as follows.

2.6.1 General description of process area (E.g. Head works)

A general description of the process area will be provided and refer to the PFD.

2.6.2 Unit processes 1 – Bar Screens and Screenings Conveyor

2.6.2.1 Unit Process Description

This section will explain the function of each unit process within a process area. Reference will be made to process flow diagrams, P&IDs, SOPs, SWPs and control narratives where applicable. An explanation of following will be included: Process objective; process description.

2.6.2.2 Safety and SWPs

This section will contain area specific safety information including safety hazards and safety controls. A table of SWPs applicable to this area of the plant will be provided.

2.6.2.3 Design Criteria

Key design data will be provided.

2.6.2.4 Operation and Process control

This section will provide the Process narratives; process control parameters (identifying key parameters separately) with control warning and alarm limits; trouble shooting guide;

DRAFT

protection systems installed; emergency shut down and power failure; sampling and analysis requirements; related documents including (process flow diagrams, P&IDs, SOPs, SWPs) .

2.6.2.5 Standard Operating Procedures (SOPs)

This section will make reference to a template for creation of Standard Operating Procedures (SOPs) and provide a reference table of all SOPs relevant for this unit process. A list of SOPs will be included in the appendix.

2.6.3 Unit processes 2 – Channel Aeration

2.6.3.1 Unit Process Description

2.6.3.2 Safety and SWPs

2.6.3.3 Design Criteria

2.6.3.4 Operation and Process control

2.6.3.5 Standard Operating Procedures (SOPs)

2.6.4 Unit processes 3 – Grit Removal System

2.6.4.1 Unit Process Description

2.6.4.2 Safety and SWPs

2.6.4.3 Design Criteria

2.6.4.4 Operation and Process control

2.6.4.5 Standard Operating Procedures (SOPs)

2.6.5 Unit processes 4 – Grit Pumping and De-watering

2.6.5.1 Unit Process Description

2.6.5.2 Safety and SWPs

2.6.5.3 Design Criteria

2.6.5.4 Operation and Process control

2.6.5.5 Standard Operating Procedures (SOPs)

DRAFT

3 Appendix

3.1 Directory

This appendix will provide identify the following who have been involved in the project (with contact name, organization, address, e-mail and telephone number(s)): Designer; Consultant; Prime Contractor; a comprehensive directory of contractors, subcontractors and specialist contractors. An index of equipment suppliers will be provided in volume 5, Plant Equipment and Maintenance Task Manual.

3.2 Index of SOPs

3.3 Index of SWPs

3.4 Index of Safety and Health Records

3.5 Safety and Health Records

This appendix will contain copies of Safety and Health related records. A separate list of records which are to be provided as originals will be provided with a statement of how these are to be transmitted.

The type of records envisaged to be provided in this manual include:

- Pressure vessel test certificates
- Fixed lifting equipment test certificates
- Portable lifting equipment test certificates
- Electrical safety test certificates
- Fire alarm test certificates
- Legionella

Provide a list of records for which originals are required to be provided in hard copy (if any).

3.6 Material Safety Data Sheets

Operations maintain a copy of all materials data sheets on an online application. This appendix will provide an index of materials data sheets applicable to the facility with a reference to where They are used on the facility. A copy of all material safety data sheets will be provided.

3.7 HAZOP Records

This appendix will include a copy of the HAZOP records produced by the project, all control measures (engineering and operational) identified in the HAZOP should be included in the hazard control section of this manual.

DRAFT

4 Example Manual

This section will provide an example manual.

DRAFT

Winnipeg Sewage Treatment Program
Integrated Management System

Operations Manual Specification

Volume 2
Asset Data Manual
(Contents)
[Plant Name]

DOCUMENT NUMBER: XX-XX-XX-XX

Rev	Description	Prepared by	Reviewed by	Approved by	Approved Date
2014-11-18	Draft	NWA	RXS		
2015-03-05	Final	NWA			
2015-03-20	Final	NWA			

DRAFT

Contents

1 GENERAL REQUIREMENTS 3

1.1 OPERATIONS MANUAL STRUCTURE 3
1.2 DOCUMENT SCOPE 3
1.3 DOCUMENT CONTROL 3

2 ASSET DATA MANUAL CONTENTS 4

2.1 PURPOSE OF THE ASSET DATA MANUAL 4
2.2 ASSET DATA TIMELINE 4
2.3 ASSET DATA SPECIFICATION 4

3 EXAMPLE MANUAL 4

DRAFT

1 General requirements

This document describes a standard approach, across Wastewater Services (WWS), for the format, presentation and numbering procedure for documentation within the scope of manual. Document format requirements are described in Document Numbering and Presentation (Doc. Ref. xxxxx).

1.1 Operations Manual Structure

This section will describe the structure of the operations manuals and put the Asset Data Manual in context of the full set of manuals.

1.2 Document Scope

This section will describe the scope of the document.

1.3 Document Control

This section will describe the document control arrangements for this document, it may refer to the IMS document control procedures.

For example:
This document is a CONTROLLED DOCUMENT when viewed on line through the WSTP Document Management System. The document becomes UNCONTROLLED if printed or downloaded. Document control procedures are described in xxxxx

DRAFT

2 Asset Data Manual Contents

This section will define the structure of the Asset Data Manual.

2.1 Purpose of the Asset Data Manual

This section will describe the purpose of the Asset Data Manual.

2.2 Asset Data Timeline

This section will define the process for submitting asset data to the City of Winnipeg resulting from a change in assets through a capital project.

Outline of timeline as follows:
City to provide current asset data in a specified format
Consultant to identify and flag assets that are to be modified or retired – provide to City in a specified format and at a particular milestone
Consultant to identify new assets to be created - provide to City in a specified format (basic asset data) and at a particular milestone (approx. 30% design – how to define?)
Consultant to provide all required data prior to substantial completion

2.3 Asset Data Specification

This section will define the quality of data to be provided to the City – reference to the City asset data collection sheet and provide definition of fields here.

Notes for specification development: P&ID TAG number needs to be a mandatory field.

3 Example Manual

This section will provide an example manual

DRAFT

Winnipeg Sewage Treatment Program
Integrated Management System

Operations Manual Specification

Volume 3
Equipment and Maintenance Task Manual (Contents)
[Plant Name]

DOCUMENT NUMBER: XX-XX-XX-XX

DRAFT

Rev	Description	Prepared by	Reviewed by	Approved by	Approved Date
2014-11-18	Draft	NWA	RXS		
2015-03-05	Final	NWA			
2015-03-20	Final	NWA			

Contents

1 GENERAL REQUIREMENTS 3

1.1 OPERATIONS MANUAL STRUCTURE 3
1.2 DOCUMENT SCOPE 3
1.3 DOCUMENT CONTROL 3

2 MAINTENANCE MANUAL CONTENTS 4

2.1 PURPOSE OF THE EQUIPMENT AND MAINTENANCE TASK MANUAL 4
2.2 TECHNICAL DATA 4
2.3 MAINTENANCE INSTRUCTION SPECIFICATION 4
2.4 LUBRICANTS SCHEDULE 4
2.5 CRITICAL PARTS LISTS 4
2.6 MANUFACTURERS LITERATURE 5
2.7 MAINTENANCE TASK SCHEDULE 5
2.8 EQUIPMENT SUPPLIERS 5

3 EXAMPLE MANUAL 5

DRAFT

1 General requirements

This document describes a standard approach, across Wastewater Services (WWS), for the format, presentation and numbering procedure for documentation within the scope of manual. Document format requirements are described in Document Numbering and Presentation (Doc. Ref. xxxxx).

1.1 Operations Manual Structure

This section will describe the structure of the Operations Manuals and put the Equipment and Maintenance Task in context of the full set of manuals.

1.2 Document Scope

This section will describe the scope of the document.

1.3 Document Control

This section will describe the document control arrangements for this document, it may refer to the IMS document control procedures.

For example:
This document is a CONTROLLED DOCUMENT when viewed on line through the WSTP Document Management System. The document becomes UNCONTROLLED if printed or downloaded. Document control procedures are described in xxxxx

DRAFT

2 Maintenance Manual Contents

This section will define the structure of the Equipment and Maintenance Task Manual which is to be provided prior to substantial completion.

2.1 Purpose of the Equipment and Maintenance Task Manual

This section will describe the purpose of the Maintenance Manual.

2.2 Technical Data

This section will provide a technical description of equipment installed by asset arranged by process area.

Technical description to cover both functional elements e.g. aeration equipment and sub functional elements such as blowers, valves, diffusers, D.O instrument, flow meter, Telemetry, SCADA, PLC, Works control etc…

2.3 Maintenance Instruction Specification

This section will provide detailed instructions on the maintenance of each item of equipment. It will provide information to allow the plant & equipment to be maintained safely.

Where a partial treatment works, or item of Plant or Equipment is replaced, an update to the plant Equipment Manual will be provided.

To be based on the Wastewater Treatment maintenance strategy (to be defined from maintenance charter).

Provide maintenance instructions to format defined in maintenance charter – to create information for population in OWAM. This may require reproduction of information from manufacturers' documentation. Purpose is to provide guidance on issues related to maintenance of assets as installed at the specific plant. May refer to Volume 4 - Asset Data Manual.

Equipment handling requirements will be provided with details of specific lifting points.

2.4 Lubricants Schedule

This section is to provide a complete schedule of all lubricants used, in the form of a matrix of lubricant against asset (excel spreadsheet).

2.5 Critical Parts lists

This section to provide a list of critical spare parts for assets. To be defined through maintenance charter project.

DRAFT

Asset number; asset description; asset location; critical spare – manufacturers item number; part description; reference in manufacturers manual; supplier name.

2.6 Manufacturers Literature

This section will contain all applicable original literature from manufacturers SPECIFIC to the equipment installed, where manufacturers' literature contains information on multiple equipment types or variants the SPECIFIC equipment installed will be clearly identified.

2.7 Maintenance Task Schedule

This section will define the maintenance tasks to be carried out on the specific assets in the form of a schedule that can be imported to OWAM. The schedule will comply with the maintenance strategy to be defined through the maintenance charter.

The information to be supplied will be defined and a template data collection sheet will be provided.

The Maintenance Task Schedule is used by the City to plan the maintenance schedule based on the maintenance strategy (to be defined from maintenance charter project).

The data for the maintenance schedule will come from the equipment supplier literature combined with the standard maintenance task codes (to be defined). The consultant should define the maintenance frequency based on the specific usage conditions of the plant.

The completed Maintenance Task Schedule (Excel workbook) must be provided to within prior to completion to allow loading of the data on the maintenance system.

2.8 Equipment Suppliers

This section will provide a schedule of equipment suppliers, relevant Material Management award reference number, contact details, e-mail addresses, telephone numbers etc..

3 Example Manual

This section will provide an example manual

DRAFT

Winnipeg Sewage Treatment Program
Integrated Management System

Operations Manual Specification

Volume 4
Training Manual
(Contents)
[Plant Name]

DOCUMENT NUMBER: XX-XX-XX-XX

Rev	Description	Prepared by	Reviewed by	Approved by	Approved Date
2014-11-18	Draft	NWA	RXS		
2015-03-05	Final	NWA			
2015-03-20	Final	NWA			

DRAFT

Contents

1 GENERAL REQUIREMENTS 3

1.1 DOCUMENT SCOPE 3
1.2 DOCUMENT CONTROL 3

2 TRAINING REQUIREMENTS SPECIFICATION 4

2.1 TRAINING PLANNING AND ADMINISTRATION 4
2.2 TRAINING PROGRAM 4
2.3 TRAINING DOCUMENTATION REQUIREMENTS 4

3 TRAINING MANUAL CONTENTS 6

3.1 OPERATIONS MANUAL STRUCTURE 6
3.2 PURPOSE 6
3.3 TRAINING PROGRAM 6
3.4 INDEX 6
3.5 TRAINING RECORDS 6
3.6 TRAINING MATERIAL BY PROCESS AREA 6

4 EXAMPLE MANUAL 6

DRAFT

1 General requirements

This document describes a standard approach, across Wastewater Services (WWS), for the format, presentation and numbering procedure for documentation within the scope of manual. Document format requirements are described in Document Numbering and Presentation (Doc. Ref. xxxxx).

1.1 Document Scope

This section will describe the scope of the document.

This Training Manual shall provide the information required to train Operations and Maintenance staff (including control systems) in the safe and efficient operation and maintenance of plant and Equipment, to include but not be limited to:

- Works operation in fully automatic and manual mode
- Plant and equipment routine and non-routine procedures (operation and maintenance)
- Use of facility Operating & Maintenance Manual
- Facility external / layout
- Facility internal layout
- Facility drainage
- Facility P&IDs
- Facility process flow
- All installed plant and equipment
- As installed plant and electrical drawings
- Individual unit processes.
- Individual chemical process.
- Safety and Health risk assessments.
- Hazardous area classification.
- Electrical classification.
- Works specific emergency procedures
- Training in all specific electronic equipment (SCADA, PLC's, HMI's Data Networks and Interfaces, Telemetry, security systems).
- Facility specific commissioning

1.2 Document Control

This section will describe the document control arrangements for this document, it may refer to the IMS document control procedures.

For example:
This document is a CONTROLLED DOCUMENT when viewed on line through the WSTP Document Management System. The document becomes UNCONTROLLED if printed or downloaded. Document control procedures are described in xxxxx.

DRAFT

2 Training Requirements Specification

2.1 Training Planning and Administration

The specification will include examples of forms required for the planning and administration of plant specific training and explain how they are used.

For example:

The following forms will be used:

- Training needs assessment form [reference to form]
- Attendance registers [reference to form]
- Individual post training course evaluation forms [reference to form]

2.2 Training Program

This section will describe the mandatory steps to identify training requirements and document minimum requirements of a training program.

To cover the process of identifying staff affected by change due to the project, assessing training needs, arrangements to ensure maximum staff attendance, notice periods and mop up.

The program will describe how O&M staff involved in start-up will be trained prior to their involvement and how knowledge gained during start-up will be communicated to O&M staff.

The requirements for training throughout the construction and commissioning period will be included]

Recording of Training
The City may identify particular courses from the training program to be recorded for future use.

2.3 Training Documentation Requirements

This section will describe the minimum requirements for the contents of a training session.

For example:

Training documentation for each course must include:
- Training objectives. (May be contained in the course notes)
- Training course program (may be contained in the course notes)
- Technical and non-technical training course notes / hand-outs [.pdf and native format]
- References to O&M Manual where relevant

Audio Visual (AV) Records
Where AV material is used in the training a copy will be provided in [define format].

DRAFT

The contents of any specific training course will be specific to that course and subject. The training manual will contain copies of any other documentation used during the training sessions.

Where quiz or knowledge assessments are used in the training, copies of the forms and anticipated answers will be provided.

DRAFT

3 Training Manual Contents

This section will define the structure of the Training Manual to be provide at the end of the training program. The manual is to be provided within ## weeks of the completion of the training program.

3.1 Operations Manual Structure

This section will describe the structure of the Operations Manuals and put the Training Manual in context of the full set of manuals.

3.2 Purpose

This section will describe the purpose of the Training Manual.

For example:

The purpose of the Training Manual is to contain a record of training delivered during the commissioning and handover of new assets to operations and to provide a copy of all training materials used to enable such training to be repeated as required during the operations and maintenance of the facilities.

3.3 Training Program

This section to provide a copy of the final training program as carried out.

3.4 Index

This section to provide an index to all training courses to allow staff to quickly find relevant training material in the manual].

3.5 Training Records

This section will contain copies of the completed training attendance sheets and post course evaluations for each course in the program.

3.6 Training Material By Process Area

This section to provide a copy of all materials used in each training course within the training program, to be organized by process area. Electronic files and hard copy.

4 Example Manual

This section will provide an example manual.

DRAFT

Winnipeg Sewage Treatment Program
Integrated Management System

Operations Manual Specification

Volume 5
Commissioning Manual
(Contents)
[Plant Name]

DOCUMENT NUMBER: XX-XX-XX-XX

Rev	Description	Prepared by	Reviewed by	Approved by	Approved Date
2014-11-18	Draft	NWA	CReimer		
2015-03-05	Final	NWA			
2015-03-05	Final	NWA			

Contents

DRAFT

1 GENERAL REQUIREMENTS 3

1.1 OPERATIONS MANUAL STRUCTURE 3
1.2 DOCUMENT SCOPE 3
1.3 DOCUMENT CONTROL 3

2 COMMISSIONING MANUAL CONTENTS 4

2.1 PURPOSE 4
2.2 PROJECT COMMISSIONING PLAN 4
2.2.1 GENERAL 4
2.2.2 ROLES AND RESPONSIBILITIES 4
2.2.3 SCOPE 4
2.2.4 SEQUENCE / SCHEDULE 4
2.3 COMMISSIONING SPECIFICATION AND OBJECTIVES 4
2.4 COMMISSIONING PROCEDURES 4
2.5 COMMISSIONING RECORDS 4
2.5.1 FACILITY 5
2.5.2 AREA A 5
2.5.2.1 System 1 5
2.5.2.2 System 2 5
2.5.3 AREA B 5

3 EXAMPLE MANUAL 6

1 General requirements

This document describes a standard approach, across Wastewater Services (WWS), for the format, presentation and numbering procedure for documentation within the scope of manual. Document format requirements are described in Document Numbering and Presentation (Doc. Ref. xxxxx).

1.1 Operations Manual Structure

This section will describe the structure of the Operations Manuals and put the Commissioning Manual in context of the full set of manuals.

1.2 Document Scope

Within the IMS there are a number of Basis Of Design documents and standards developed which detail certain commissioning requirements depending upon the trade and the type of installation. This manual will document the outcome of those requirements.

Scope will include commissioning, re-commissioning and eventual de-commissioning considerations.

This Commissioning Manual will consist of two key parts:

Part 1 – Commissioning Plan
The commissioning plan is a set of documents which provide the information required comprehensively document the procedures required to commission the facility. This includes acceptance criteria for the commissioning tests.
Part II – Commissioning Records

The commissioning records are a set of documents which record and demonstrate the results of the commissioning process and that the acceptance criteria have been met. The records will include test result documentation, checklists, letters of conformity and certificates.

1.3 Document Control

This section will describe the document control arrangements for this document, it may refer to the IMS document control procedures.

For example:
This document is a CONTROLLED DOCUMENT when viewed on line through the WSTP Document Management System. The document becomes UNCONTROLLED if printed or downloaded. Document control procedures are described in xxxxx.

2 Commissioning Manual Contents

This section will define the structure of the Commissioning Manual to be provided at the end of the commissioning process. The manual is to be provided within ## weeks of the completion of the facility commissioning.

2.1 Purpose

This section will describe the purpose of the Commissioning Manual.

For example:
The purpose of the Commissioning Manual is to contain a record of the commissioning process and handover of new assets to operations. The commissioning manual will enable operations and City personnel to re-commission systems as required.

2.2 Project Commissioning Plan

The Project Commissioning Plan defines the overall requirements for testing and commissioning the facility. It may be comprised of multiple documents that are related to incremental upgrade projects. The section will include:

2.2.1 General

2.2.2 Roles and Responsibilities

2.2.3 Scope

2.2.4 Sequence / Schedule

2.3 Commissioning Specification and Objectives

This section will describe the commissioning tests required to demonstrate the design intent of the project, along with the approved acceptance criteria.

2.4 Commissioning Procedures

The commissioning procedures provide the detailed information to describe the specific field activities necessary to complete the commissioning process and ensure the commissioning specification and objectives are met. Multiple documents will be included for various facility processes.

2.5 Commissioning Records

The commissioning records to be included within the Commissioning Manual are a subset of the complete set of Commissioning Records. The records included will be limited to process and system performance verification, and not verification of individual components:

Examples of records to be included are as follows:

- Process
- Performance tests certificates.
- Structural
- Lifting Test Certificates
- Mechanical
- Equipment Commissioning Certificates
- Pressure Test Certificates.
- Electrical
- Power distribution system acceptance documentation
- Fire alarm acceptance documentation
- Security system acceptance documentation
- CCTV system acceptance documentation
- Automation
- Process Control System SAT (Site Acceptance Test) acceptance documentation, but not necessarily documentation of all detailed tests.
- Network acceptance documentation

The commissioning records section will be organized as follows:

2.5.1 Facility

This section will contain copies of the completed records, tests and certificates that are applicable to the entire facility. For example – Facility effluent quality commissioning record.

2.5.2 Area A

This section to provide a copy of all major completed commissioning records that are applicable to process area A.

2.5.2.1 System 1

This section to provide a copy of all major completed commissioning records that are applicable to the specific system. The records would detail overall system performance, but would not necessarily include detailed test results of components, such as cable testing forms. See Section XX.

2.5.2.2 System 2

Similar to System 1 … and continued for all systems.

2.5.3 Area B

Similar to Area A and continued for all systems.

3 Example Manual

This section will provide an example manual

Winnipeg Sewage Treatment Program
Integrated Management System

Operations Manual Specification

Volume 6
Drawing Manual
(Contents)
[Plant Name]

DOCUMENT NUMBER: XX-XX-XX-XX

Rev	Description	Prepared by	Reviewed by	Approved by	Approved Date
2014-11-18	Draft	NWA	RXS		
2015-03-05	Final	NWA			
2015-03-20	Final	NWA			

DRAFT

Contents

1 GENERAL REQUIREMENTS 3

1.1 OPERATIONS MANUAL STRUCTURE 3
1.2 DOCUMENT SCOPE 3
1.3 DOCUMENT CONTROL 3

2 DRAWING MANUAL CONTENTS 4

2.1 PURPOSE OF THE DRAWING MANUAL 4
2.2 INDEX OF DRAWINGS 4
2.3 DRAWINGS 4

3 EXAMPLE MANUAL 5

DRAFT

1 General requirements

This document describes a standard approach, across Wastewater Services (WWS), for the format, presentation and numbering procedure for documentation within the scope of manual. Document format requirements are described in Document Numbering and Presentation (Doc. Ref. xxxxx).

1.1 Operations Manual Structure

This section will describe the structure of the Operations Manuals and put the Drawing Manual in context of the full set of manuals.

1.2 Document Scope

This section will describe the scope of the document.

1.3 Document Control

This section will describe the document control arrangements for this document, it may refer to the IMS document control procedures.

For example:
This document is a CONTROLLED DOCUMENT when viewed on line through the WSTP Document Management System. The document becomes UNCONTROLLED if printed or downloaded. Document control procedures are described in xxxxx

DRAFT

2 Drawing Manual Contents

This section will define the structure of the Drawing Manual which is to be provided within xxx weeks after substantial completion.

2.1 Purpose of the Drawing Manual

This section will describe the purpose of the Drawing Manual.

2.2 Index of Drawings

This section will contain an index of all drawings provided as part of the design. The index will include: Drawing Number, title Box Description, version number and date of issue.

Drawings in index should include, (as constructed drawings) this list is not exhaustive:
Civil Drawings
Cranage points and load bearing capacity drawings for siting of mobile cranes during maintenance lifting operations
Mechanical Drawings
Pneumatic control systems
Hydro electrical supply and gas supply drawings
Telephone and other communication line drawings
Telemetry drawings
Electrical drawings
Process flow diagrams
P&IDs
Works layout
Works Drainage (Drainage, Chemical and Foul)
Internal layout plans,
Hazardous location plans
Shop drawing
Any Drawings referred to within any documentation.

Where 3D drawings have been provided, a reference will be included on how to navigate and find drawings. Need to include a description of 3D drawings provided e.g. expectations on what users can find in the 3D view and what requires reference to a traditional 2D drawing.

2.3 Drawings

This section will define a minimum list of specific drawings to be provided in hard copy.
Note for specification: *Consider idea to include asset number on P&IDs – how would this work in terms of timing as asset numbers are not available until late in project delivery lifecycle; drawing specification would need to be updated.*

DRAFT

3 Example Manual

This section will provide an example manual

DRAFT