



SCOTTISH WATER

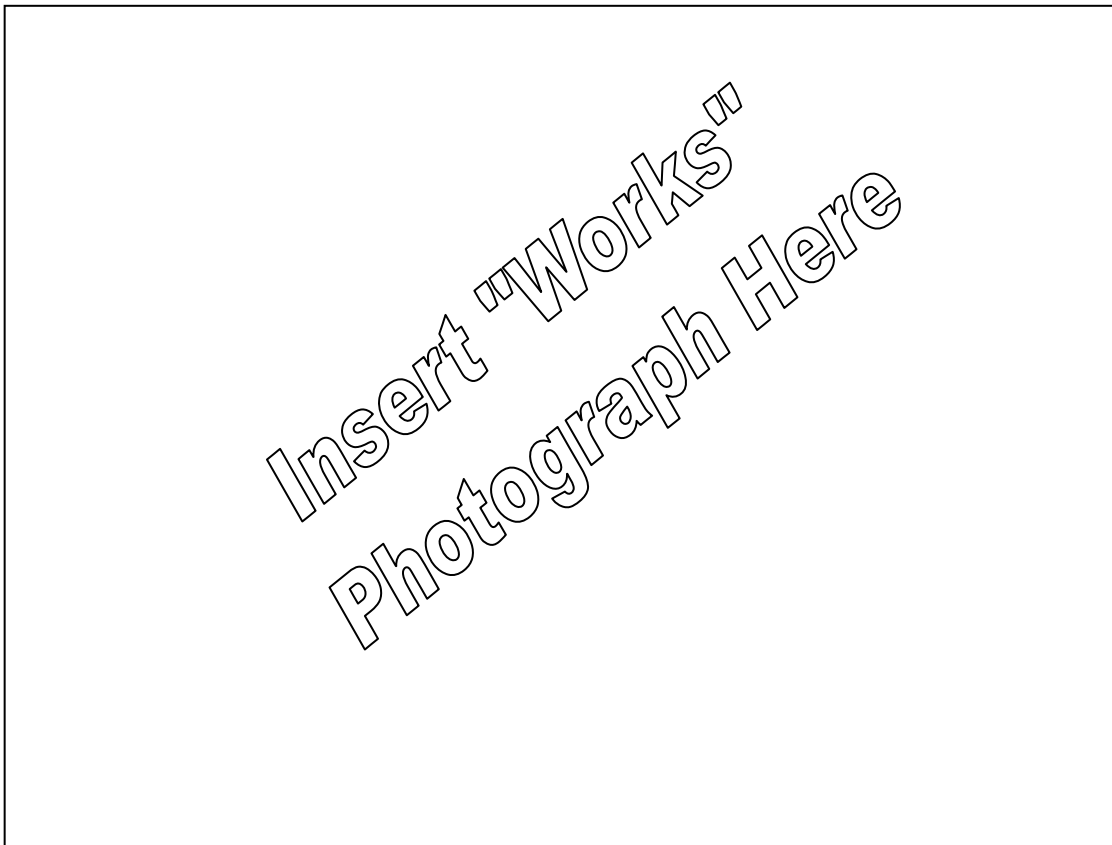
Waste Water Treatment Works

Typical WWTW

Ellipse Equipment No: 50000XXXX

Ellipse Plant No: STW00XXXX

**Works Manual Volume 1/3 Operating Manual (OMA)
Non-Routine Operations**



Manual Ref No: 50000XXXX-WW-OMA-03000000

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1 Introduction (WW-OMA-03010000)

1.1 About this Manual (WW-OMA-03000000)

1.1.1 Introduction (WW-OMA-03000001)

This document is the Non-Routine Operations manual; part of the Operating Manual (OMA) Volume 1/3 of the Works Manuals for Typical Waste Water Treatment Works (WWTW).

For simplicity this document is known as Works Manual Volume 1/3.

The complete Works Manuals were produced by Balfour Beatty on behalf of Scottish Water. The Works Manuals incorporate information provided in the original site manual, plus changes brought about by the capital maintenance project carried out by Balfour Beatty. Details of these changes are provided in Section 3.1 of Volume 1/1.

1.1.1.1 Copyright and Trademark Information

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1.1.1.2 Purpose of the Operating Manual

The OMA provides management, operational and maintenance personnel with a detailed description of the works and processes; and contains detailed operating procedures. These procedures detail how the works will be operated efficiently to continuously meet the needs of Scottish Water's customers.

1.1.1.3 Requirements for the Operating Manual Holder

Each OMA holder shall make reasonable arrangements to ensure that the information in the OMA is kept available for inspection by any person who may need information for the purpose of complying with the requirements and prohibitions imposed by the relevant statutory provisions.

1.1.1.4 Updating and Transfer of the Operating Manual

The OMA should be kept up to date and it is a transferable document. When a project/structure owner disposes of the whole, or part of the property, either, the whole OMA, or all of the relevant parts of the OMA should be passed on to the new owner/end user.

1.1.2 Notice of Liability – Sewer Networks Employees

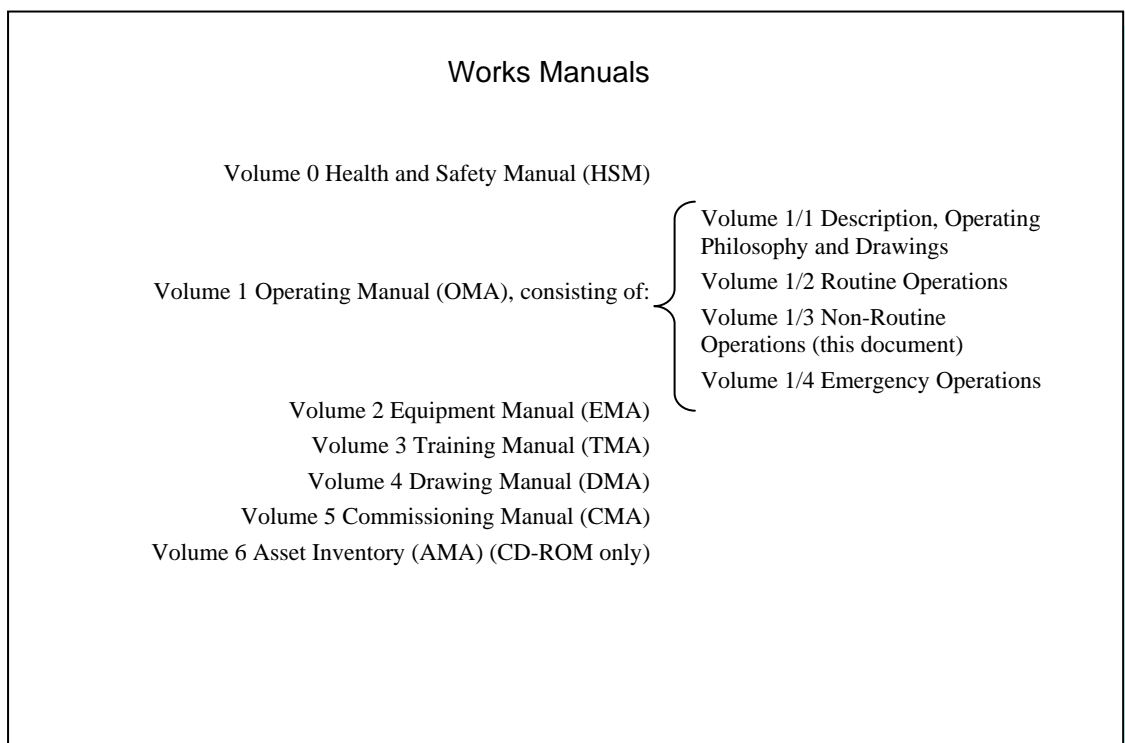
- 1.1.2.1 Each person employed at a Waste Water treatment works is personally liable, under the terms of section 30F of the Control of Pollution Act 1974, for causing or knowingly permitting the pollution of controlled waters.
- 1.1.2.2 A person who contravenes this section of the Act shall be guilty of an offence and liable on summary conviction to imprisonment for a term not exceeding three months or to a fine not exceeding £20,000 or both. On conviction on indictment the person could be liable to imprisonment for a term not exceeding two years or to a fine or both.
- 1.1.2.3 To ensure that every effort is made to protect the quality of discharges from works, the following actions are required:
- 1.1.2.3.1 Prompt action must be taken in the event of any incident or emergency. (This includes plant failures and operational conditions which could jeopardise effluent quality.) All incidents must be reported to Team Leader/Treatment Manager.
- 1.1.2.3.2 Contractors or third parties who request access to the treatment works to undertake work must not be granted access without possession of a current valid “External Personnel/Contractors Permit to Work”, issued by the Works Supervisor. (Works Supervisor refers to SW’s designated competent person in terms of the permit to Work System.) Contractors or third parties shall be made fully aware of the conditions pertaining to the works. This includes awareness of the environmental policy, the works specific aspects and compliance to the relevant legislation. The treatment works Team Leader, or standby personnel if outside normal working hours; and works personnel should have prior notification of their impending arrival and work content.
- 1.1.2.3.3 Contractors’ or third parties’ plant and equipment must not be sited within the grounds of the treatment works without the prior permission of the Works Supervisor and this plant and equipment must be in compliance with the “External Personnel/Contractors Permit to Work”.
- 1.1.2.3.4 Contractors’ or third parties’ plant and equipment must only be sited at designated locations within the works and suitable arrangements must be made (e.g. by the provision of temporary bunding if appropriate) to ensure that there will be no risk to the effluent quality. These locations should be clearly defined in the “External Personnel/Contractors Permit to Work” or risk assessment.
- 1.1.2.3.5 All incidents, emergencies, plant failures, visitor names, details of external plant and equipment and anything else which may have an impact on effluent quality must be recorded in the daily log book.
- 1.1.2.3.6 It is assumed that all work will be carried out by trained and competent staff; and that adequate line management supervision will be provided to ensure safe working procedures are adhered to.

1.1.3 Reference Documentation (WW-OMA-03010000)

This manual describes the equipment and processes involved in the treatment process within the operational works named in the title. It provides a schedule of procedures which require to be carried out to ensure the quality of the processes. It DOES NOT, however, describe any of the associated safety procedures or risk control measures required to carry out any of these procedures in a safe manner. Method Statements and Risk Assessments have been undertaken by operational staff for each procedure and are held on site.

1.1.3.1 Structure of the Works Manuals

For a guide to the document structure of the Works Manuals, see the illustration following:



1.2 Document Control (WW-OMA-03010200)

1.2.1 Changes and Amendments

Amendments to the text or drawings pertaining to this document must be recorded on the Amendment Record Sheet located in Section 1.2.1.2.

Document control relating to this manual is described in the procedure, 'Documentation Utilisation and Control' (Doc. Ref. TOM-WR-PRC-00000002) held within the Works Manuals document system. Works Manuals documentation is held in the Works Manuals site on 'Wavelength'. All documents requiring a change or amendment must be administered through the 'Document Change Request Procedure' as described following.

All documents are controlled with a Title, Reference Number, Version Number and Date of Issue. Superseded documents are held in the Works Manuals document archive.

1.2.1.1 Raising an Amendment

As described in the Works Manuals system, any user of the manual may make an observation that could lead to an amendment being raised. In the event of a change to the manual becoming necessary, as a result of plant or equipment modification or changes to operating procedures, the user will raise a "Document Change Request Form" (Doc. Ref. TOM-WR-FOR-00000001) held on 'Wavelength'. The requester will detail the change, required to the manual, on the form and forward to the document owner to process as per the procedure.

The Document Controller will ensure that all requests for amendments are logged with an appropriate reference number and that the authorised amendments are made.

Re-issued documents must be placed in the manuals and previous versions withdrawn from circulation. This process is auditable.

The amendment procedure for documentation is described in 'Document Utilisation and Control' (Doc. Ref. TOM-WR-PRC-00000002).

1.2.1.2 Record of Changes and Amendments

This document is a CONTROLLED DOCUMENT when viewed on Wavelength.
The document becomes UNCONTROLLED if printed or downloaded from Wavelength.

Refer to the Wavelength site for the latest Version of this document.

A record of changes and amendments to this document is held at the rear of this Section.

All Works Manuals requests should be routed to:

worksmanualsinfo@scottishwater.co.uk

Amendment No.	Document Section/ Reference Number	Document / Section Title	Version Number	Amendment Date	Archived Document / Section	Text Affected	Archived Document / Section Replaced By

1.2.2 Raising a Waiver for a Temporary Procedure

A temporary works procedure must be prepared and issued on any occasion when there is a requirement to temporarily replace a procedure contained within the Works Operating Manuals, or when there is a requirement for temporary instructions to maintain normal practice.

For example: when operating a temporary pump or during maintenance of plant and equipment, or for any on Works trials of plant, chemicals or equipment.

This is detailed in the Temporary Procedure document Reference (TOM-WR-PRC-00000003).

A Waiver Request Form (TOM-WR-FOR-00000002) must be completed to record a temporary change.

1.2.3 Raising a Document Query

A Query Request Form (TOM-WR-FOR-00000003) must be completed to record any Document Query Requests.

2 Reserved Section (WW-OMA-03020000)

This Section intentionally blank because it is reserved for future use.

3 Non-Routine Procedures – General (WW-OMA-03030000)

3.1 Processes (WW-OMA-03030100)

No.	Title
WW-PRC-03030101	Accepting Deliveries
WW-PRC-03030104	Internal Inspection of Pressure Vessel [Mandatory]

3.1.1 Accepting Deliveries (WW-PRC-03030101)

Task No.	Location/ Equipment	Task	Effect/Remarks
1	Typical WWTW	Prior to any deliveries on works, the driver must report to the Team Leader or Designated Person.	
2		Check delivered goods against Advice Note or Delivery Note.	Any discrepancies/damages should be reported to the appropriate Team Leader as soon as possible.
3		In the event of a driver refusing to wait for the goods to be checked, Operator must clearly write on Advice/Delivery Note “GOODS RECEIVED – NOT CHECKED. DRIVER UNABLE TO WAIT “ before signing.	
4		If deliveries are of heavy equipment then prior arrangements for lifting must be made.	
5		Chemical deliveries must only be stored in designated area.	
6		If deliveries of maintenance equipment are made, then maintenance personnel must be informed immediately.	
7		Prior arrangements must be made where storage of delivered equipment is required.	
End of Procedure			

3.1.2 Internal Inspection of Pressure Vessel (WW-PRC-03030104)

NOTE: Team leader to arrange for M&E section or Contractor to carry out Inspection.

Task No.	Location/ Equipment	Task	Effect/Remarks
1	Selected Pressure Vessel	Close the Inlet and Outlet Valves of the Selected Pressure Vessel.	Isolate power supply.
2		Drain off Air pressure using the selected drain valve.	
3	M&E Section or Contractor	Operational staff to sign over the Asset Transfer Certificate to <i>M&E section or Contractor in order they can carry out inspection</i>	
4		On completion of Inspection and repair M&E section or Contractor to sign off and return Asset Transfer Certificate to Operational staff.	File the asset Transfer Certificate in appropriate place.
5	Selected Pressure Vessel	Operational staff to return Selected Pressure Vessel to service as required.	De-isolate power supply Open Inlet and Outlet valves.
End of Procedure			

4 Non-Routine Procedures – Processes (WW-OMA-03040000)

4.1 Preliminary Treatment Screening (WW-OMA-03040400) Huber Rotamat

NOTES: *On attending site (monthly)*

Hose down the screen to remove any accumulated sewage and screenings, paying particular attention to the level probes.

Check the washwater Y-strainer. Clean the strainer element as necessary.

Washwater supply should be shut off before checking the Y-strainer.

Check the operation of the automatic air receiver drain valve by operating the receiver manual drain valve.

No.	Title
WW-PRC-03040406	To Shut Down Inlet Screen
WW-PRC-03040408	Remove/Return Inlet Screen from/to Service
WW-PRC-03040410	To Test Run the Inlet Screen

4.1.1 To Shut Down Inlet Screen (WW-PRC-03040406)

If the screen is to be shut down for longer than one month, the following procedure should be completed:

- Hose down the screen to remove any accumulated sewage and screenings.
- Run the screen in *hand* mode for approximately half an hour to clear the majority of screenings from the screw conveyor.
- Turn the screen selector switch to *off*.
- Leave the mains fuseswitch switched on. This allows the control panel anti-condensation heater and screen frost protection to continue operating.
- Secure the access to the control panel.

NOTE: *The screen should be run for five minutes every month to provide adequate self-lubrication of the gearbox oil seals.*

4.1.2 Remove/Return Inlet Screen from/to Service (WW-PRC-03040408)

4.1.2.1 Test Operation of the Screen

- Switch the mains isolator on.
- Turn the screen selector switch to *hand*.
- Press the screen start pushbutton. The screen should operate correctly.
- Check the pulsed operation of the *Integrated Screenings Washing* system (N/A).
- Press the stop pushbutton. The screw conveyor should stop immediately. The dewatering chamber wash should then operate for ten seconds.
- Press the inch reverse pushbutton. The screw conveyor should reverse for as long as the button continues to be pressed.

4.1.2.2 Auto Function Checks

In *auto* mode, the screen is controlled by a conductivity probe responding to upstream level or an ultrasonic level measurement system measuring upstream or differential level. Differential level measurement gives a better measurement of screenings loading by indicating the headloss across the screen.

To ascertain the correct level settings, use the following procedure:

- Run the screen in hand at peak daily flow during dry weather conditions.
- Ascertain the upstream level/differential level whilst the screen is running. This will determine the natural hydraulic level for when the screen mesh is clean.
- Set the level control system to allow for 100mm increase in upstream/differential level before the screen starts. With an ultrasonic level measurement system, the stop level should then be set at 10mm below the start level. The screen will automatically run on for 30 seconds after the level drops below the start level.
- The high level setting for alarm indication should be set in accordance with the installation drawing in Works Manual Volume 4 and with reference to overflow weirs upstream of the screen.

4.1.3 To Test Run the Inlet Screen (WW-PRC-03040410)

- Turn the screen selector switch to *auto*. The screen should operate as described in the control philosophy.
- The screen will operate for 30 seconds and will then stop if no liquid is detected in the channel. The screen should then complete the dewatering chamber wash cycle as described in control philosophy
- When the screen has stopped, earth the start level probe. The screen should operate continuously while the start level probe is earthed.
- With the start probe still earthed, earth the high level probe (N/A). After a five second time delay the *high level alarm relay* in the control panel should energise to provide a high sewage level warning signal.
- Following completion of auto function checks, remove all level probe earth connections.

4.2 Secondary Treatment Package Plant (WW-OMA-03040800) Washwater Transfer Station

NOTE: *For information see the equipment manufacturer's manual in Works Manual Volume 2.*