

TECHNICAL GUIDELINE

Selection of Flow Meters



Issued by: Manager Engineering

Issue Date: 21 January 2005

This is an intellectual property of the South Australian Water Corporation. This document is copyright and all rights are reserved by SA Water. No part may be reproduced, copied or transmitted in any form or by any means without the express written permission of SA Water.

The information contained in these Standards is strictly for the private use of the intended recipient in relation to works or projects of SA Water.

These Standards have been prepared for SA Water's own internal use and SA Water makes no representation as to the quality, accuracy or suitability of the information for any other purpose.

It is the responsibility of the users of these Standards to ensure that the application of information is appropriate and that any designs based on these Standards are fit for SA Water's purposes and comply with all relevant Australian Standards, Acts and regulations. Users of these Standards accept sole responsibility for interpretation and use of the information contained in these Standards.

SA Water and its officers accept no liability for any loss or damage caused by reliance on these Standards whether caused by error, omission, misdirection, misstatement, misinterpretation or negligence of SA Water.

Users should independently verify the accuracy, fitness for purpose and application of information contained in these Standards.

The currency of these Standards should be checked prior to use.

Major Changes Incorporated In the January 2005 Edition

The following lists the major changes to the January 2005 edition of TG 31, which have been incorporated in this edition:

1. Nil

Contents

© SA WATER 2007 2
MAJOR CHANGES INCORPORATED IN THE JANUARY 2005 EDITION 2
SECTION 1: SCOPE 4
SECTION 2: FLOW METERS 4
APPENDIX A: CHECKLIST: SPECIFYING, TESTING AND INSTALLING FLOW METERS ... 5

Section 1: Scope

Sets out the criteria for the selection of flow meters and the preferences SA Water has for the selection of flow meters for various applications. The content is limited to flow meters for full pipe flow only.

Section 2: Flow Meters

This material is under review and development and care must be taken in its application. When using this information please consult with the Manager Engineering Services to verify the appropriateness of its application.

The background to meters is well documented in the Water Pumping & Distribution Manual.

It should be noted that for sewage pumping main applications, the full pipe diameter must be maintained with no intrusion components.

A check list for specifying, testing and installing flow meters has been included as Appendix A.

Appendix A: Checklist: Specifying, Testing and Installing Flow Meters

The activities listed apply to meters located anywhere in the water system (not only those at the pumping station) and in sewage pumping mains.

Flowmeter Selection

The current preference for flow meters in SA Water is generally:

- Accuracy (+/-1.0% or better) for water applications Magnetic flow meter
- Low to normal accuracy for water applications Ultrasonic flow meter
- All sewage applications Magnetic flow meter
- Test Bays Magnetic flow meter
- Chemical Dosing Magnetic flow meter

Other meters such as orifice plates, dall tubes and venturi meters may be selected for special conditions.

Check List

Item	Aspects to be Considered
System Requirements	<ul style="list-style-type: none"> • Determine: <ul style="list-style-type: none"> ○ Location of meter in the system and location of disturbances eg isolating valves and bends. ○ Pipeline configuration and available space ○ Flow range ○ Medium handled (eg: water, sewage, brine, chemical) ○ Head conditions ○ Required flow accuracy (acceptable tolerance) ○ Limitations if an existing pipe (eg: straight pipe lengths).
Select/Specify Meter	<ul style="list-style-type: none"> • Specify size of meter: <ul style="list-style-type: none"> ○ Size selected on the minimum flow for which good accuracy is required. ○ Optimum size of meter primary and any adjacent straight-line requirements may be smaller than the main size and require tapers. (eg magnetic or differential meters) • Primary Meter - type/details <ul style="list-style-type: none"> ○ Tolerance of adjacent pipe ○ Flange details ○ Flowmeter name plates ○ For Ultrasonic flow meters, consider the need to remove transducers without dewatering the main. • Meter secondaries - Signal transmitter and instrumentation: <ul style="list-style-type: none"> ○ Transmitter signal details. ○ Instrumentation parameters and details • Location and size of electrical service. • Overall accuracy tolerance for the flowmeter. • Cleaning of electrodes. • Spare parts and special tools. • Drawing/s required from the Manufacturer. • Determine if work tests are required or if only test certificates are required.

ASSOCIATED ENGINEERING WORK

Advise other designers of any associated meter installation requirements e.g.

- Upstream and downstream straight pipe requirements
- Tapping points for ultrasonic and orifice flow meters and any associated pipework.
- Type of installation eg buried or chamber.
 - Ultrasonic and magnetic flow meters can be buried. (must specify this case).
- Chamber drainage.
- Ducting to secondaries eg pumping station.