

**TECHNICAL GUIDELINE**

## Checklist: Detailed Design of Wastewater Collection Infrastructure



Issued by: Principle Engineer Water & Wastewater Networks

Issue Date: 10 January 2007

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.

## **No Changes Required In the January 2007 Edition**

---

The following lists the major changes to the November 2004 edition of TG 17, which have been incorporated in this edition:

1. Nil

# Contents

---

**© SA Water 2007..... 2**  
**No Changes Required In the January 2007 Edition ..... 2**  
**Section 1: Purpose..... 4**  
**Section 2: Prerequisite Work – Technical Planning report..... 4**  
**Section 3: Checklist ..... 4**

## Section 1: Purpose

---

To be used as part of the Detailed Design Process to ensure all relative design activities for Major Wastewater Collection infrastructure are addressed and appropriately audited.

## Section 2: Prerequisite Work – Technical Planning report

---

The Technical Planning Report provides a workable preliminary concept for the infrastructure. It is prepared for strategic planning purposes, to enable budget estimates to be prepared and forms the basis of the Consultant Brief for the Detailed Design Phase. Due to recent changes in land development and use, the preliminary concept may need to be reviewed when preparing the Consultant's Brief.

No Concept Report is generally prepared for Major Wastewater Collection Infrastructure. Considerable further concept development (eg resizing and realignment of sewers) generally needs to be made during the Detailed Design.

As part of the Detailed Design Phase, the Consultant is generally expected to review and further develop the concept into a successful outcome.

## Section 3: Checklist

---

Item	Aspects to be Considered
Review Technical Planning Report	<ul style="list-style-type: none"><li>Identify and address changes that have occurred (eg further land development and changes to land use) since the Technical Planning Report was prepared.</li></ul>
Final Concept (Some of these items may be included in the Consultant's scope of work)	<ul style="list-style-type: none"><li>Inspect the site with the Client and review all sewer alignments.</li><li>Obtain preliminary survey data for proposed routes if required.</li><li>Review land and easement requirements.</li><li>Review sewer sizes and alignments, locations of vents, pipe materials pumping station locations and pump duties etc.</li><li>Determine duplication/temporary bypassing requirements.</li><li>Check that the technology is the most appropriate for the infrastructure.</li><li>Prepare final concept drawings and Briefs.</li></ul>

Item	Aspects to be Considered
Detailed Design (General)	<ul style="list-style-type: none"> <li>• Arrange and carry out field survey of the sewer routes and ground profile.</li> <li>• Select method of construction (eg open trench, trenchless)</li> <li>• Select Pipe Sizes (or the range of pipe sizes from node to node depending upon incoming branch sewers) <ul style="list-style-type: none"> <li>○ For initial duty</li> <li>○ For ultimate duty.</li> </ul> </li> <li>• Consider gradient, actual pipe ID (not nominal diameter), material type.</li> <li>• Examine geotechnical data.</li> <li>• Establish pipe loading and bedding conditions (dead loads and live loads, railway crossings).</li> <li>• Select pipe materials and class of pipe</li> <li>• Considerations should include: <ul style="list-style-type: none"> <li>○ Corrosive nature of the sewage.</li> <li>○ External pipe loads.</li> <li>○ Type of terrain (eg corrosive or saline ground water etc).</li> <li>○ initial capital cost versus desired asset life, etc.</li> </ul> </li> </ul>
Design Scheme Appurtenances	<ul style="list-style-type: none"> <li>• Determine the best solution and design details for: <ul style="list-style-type: none"> <li>○ Pumping stations</li> <li>○ Syphons</li> <li>○ Special manholes</li> <li>○ Venting <ul style="list-style-type: none"> <li>- Forced draft ventilation</li> <li>- Natural ventilation</li> </ul> </li> </ul> </li> </ul>
Determine if Works Need to be Duplicated.	<ul style="list-style-type: none"> <li>• Determine if the scheme shall be a: <ul style="list-style-type: none"> <li>○ replacement / enlargement on-line, or</li> <li>○ new pipeline parallel to existing sewer, with link-in at start and finish of the new works</li> </ul> </li> </ul>
Bypassing of Flows	<ul style="list-style-type: none"> <li>• Design should accommodate: <ul style="list-style-type: none"> <li>○ bifurcating MH's at either end of the works or</li> <li>○ temporary by-passing of flows</li> </ul> </li> </ul>
De-watering Requirements	<ul style="list-style-type: none"> <li>• Design must accommodate de-watering requirements (maximum lift 6.5 metres).</li> <li>• Determine how to remove extracted groundwater from the site.</li> </ul>
Survey Controls	<ul style="list-style-type: none"> <li>• Determine survey control points-required eg TBM's and those to locate sewer lines and manholes.</li> </ul>
Environmental Impact	<ul style="list-style-type: none"> <li>• Review the environmental issues with the Project Manager and the Manager Environmental Management.</li> <li>• Prepare Environmental Impact Check List.</li> <li>• 'Design out' where possible, environmental issues.</li> <li>• Prepare an environmental Management Plan for the Construction Phase.</li> </ul>
Site History Report.	<ul style="list-style-type: none"> <li>• List the changes that have occurred to the land and the environment (eg originally a waste disposal area).</li> </ul>

Item	Aspects to be Considered
Detailed Estimate for Cost Management Purposes.	<ul style="list-style-type: none"> <li>• Provide information for the Detailed Estimate and examine estimate to ensure all items have been included.</li> </ul>
Information for Public Works Standing Committee Presentation and Report	<ul style="list-style-type: none"> <li>• Assist Project Manager with the preparation of the Public works submission.</li> </ul>