

Executive Summary

The general health of the population improves when people have access to basic clean water supply and sanitation. The safe disposal of human excreta and greywater is vitally important in the control of infectious and other communicable diseases and the design and construction of appropriate sanitation systems is of paramount importance in contributing to the safe disposal of human excreta. However, on its own, the proper planning and construction of sanitation systems does not provide a guarantee that the general health of the population will improve. A holistic approach to health care is required, with the provision of suitable sanitation being just one of the necessary components thereof.

A three-pronged approach was followed to source the information required to produce this guide. At the outset, the authors collaborated with a number of local authorities in South Africa and gathered information regarding the design and operation of their sewer systems. The main concerns raised by the managers of the various sewer networks in South Africa were also noted and were addressed in compiling this report. Secondly, the standards and guidelines used in practice in the design and operation of waterborne sanitation systems were reviewed. Thirdly, many sources of information were consulted and a synthesis of the material was tailored to South African conditions to produce a comprehensive guide on waterborne sanitation systems. In particular, the following documents were heavily relied on: Guidelines for the Provision of Engineering Services and Amenities in Residential Township Development (CSIR, 2003); Alternative Sewer Systems (WEF Manual of Practice, 2008); the USEPA (1991) manual entitled Gravity Sanitary Sewer Design and Construction; and the Sewer Design Manual (ASCE, 1982).

This report summarizes the available knowledge, information and advancements of all waterborne sanitation systems used in South Africa. The objective of the report is to provide a concise guide for the analysis and design of waterborne sanitation systems.

In order to streamline the planning and design process in South Africa a three-tier philosophy is proposed for sewage collection system planning and design. As described by Jacobs and Van Dijk (2009) the philosophy used originates from the field of transport engineering where three different 'solution levels for design procedures' are documented in the South African Code of Practice for the Design of Highway Bridges and Culverts (Department of Transport, TMH 7). Adopting this concept for the planning and design of sewage collection systems leads to three technical tiers. This three-tiered philosophy could be used as a basis to derive a best management practice for sewer system planning and design.

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General information

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Detailed design

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Specialized/Advanced design