



WATER SERVICES  
ASSOCIATION OF AUSTRALIA

# CONDUIT INSPECTION REPORTING CODE OF AUSTRALIA

Version 4.1

WSA 05-2020

## FRONTMATTER

### GENERAL

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## FOREWORD

The fourth edition of the Conduit Inspection Reporting Code of Australia has been prepared to take account of the experiences of asset owners that have adopted the Code as part of their condition assessment practices for [conduit](#) and maintenance structures. Advice has also been provided by a small number of practitioners, who deliver training courses for operators as well as contract and asset managers.

The fourth edition of the Code has been further revised to improve the functionality of the Code as an aid to effective asset management of sewerage and stormwater drainage systems.

Conceptually the Australian codes used to describe [conduit](#) condition bear some relationship to the codes used in EN 13508-2:2003 Conditions of drain and sewer systems outside buildings Part 2: Visual inspection coding system. However, the Australian codes have endeavoured to make as much use as possible of the codes previously established in the Australian Conduit Condition Evaluation Manual (ACCEM) - 1991. Consequently, the Australian codes generally define the same features and defects as their European equivalents, but the codes themselves are quite different.

Additional information is sometimes appropriate to enable monitoring of the deterioration of [conduit](#) and maintenance structures in the Australian environment and, as a result, the characterisation and quantification information in some Australian codes is more comprehensive.

The first edition of the Conduit Inspection Reporting Code of Australia was published in 2002 as the Sewer Inspection Reporting Code of Australia. Since the first edition was published there had been major technological advances in [conduit](#) inspection technology and equipment as well as decision-making software.

Defect scoring and condition grading guidance have been upgraded in this edition to provide a more realistic guide to the service and structural condition of [conduit](#) for a range of conduit types and defects. However, the reports generated using this Code and condition grades are only a guide for asset owners in determining priorities for repair, rehabilitation and/or continued monitoring of assets.

Acceptance Inspection Specification for newly constructed gravity sewers and stormwater [conduit](#) has been reintroduced as Appendix J in this edition.

Some codes have been reintroduced from the WSA 05-2008 edition with minor modifications. Some codes in the WSA 05-2013 edition have been removed while others have been modified to reduce ambiguity and simplify the process of inspecting and reporting.

It is expected that further enhancements of this Code may be needed from time to time to take account of on-going technological developments in inspection equipment and the introduction of and experience with new products for [conduit](#) systems.

Adam Lovell  
Executive Director, Water Services Association of Australia

Handwritten signature or initials in black ink, appearing to be 'Ae LU'.

## PREFACE

### CODE PURPOSE

This Code establishes a uniform standard coding system for recording and comparing defects and features observed as a result of inspection of conduits and maintenance structures predominantly associated with but not limited to gravity sewers and stormwater drains. By defining codes to be used to describe the various observations, the Code establishes a system to ensure that every operator uses the same terms to objectively record defects and features and take measurements or make estimates where required. Asset managers reviewing a report will be able to assume the same meaning to each reported code, description and measurement.

The Code provides a framework for consistent communication between computer systems used to generate reports, analyse results and inform asset management and geographical information systems (GIS) databases.

This Code may be applied to all conduits, culverts, open drains, channels and canals and associated structures such as access [chamber](#), maintenance holes, inlet and outlet structures, pits and traps where access is feasible. Any such application is at the user's own risk.

The Code prescribes minimum requirements for reporting and leaves it to the marketplace to develop technology to take advantage of data collecting, analysis, reporting and management procedures.

Although it is not appropriate for this Code to prescribe a software package, the experience of those undertaking inspections and producing reports has highlighted the need to have software that is efficient to use and will provide consistent and standardised results with the capacity for data to be easily communicated with asset management systems. To facilitate this, a specification for software is provided in [APPENDIX A — SPECIFICATION FOR SOFTWARE](#).

### SCOPE OF CODE

This Code details the condition assessment of new and existing conduit systems, principally, but not limited to, sewers, drains and culverts and their related maintenance structures, by internal inspection, status codification and consideration of external factors and other information.

It is applicable to conduit systems that operate under gravity. For example, in the case of sewerage systems, it applies to sewers and sanitary drains from the point of collection to the point of discharge to a treatment works or receiving water.

The Code specifies a coding system for the description of the internal features of conduits and maintenance structures identified through visual inspection. The asset owner may also allow it to be used for rising mains, pressure and vacuum conduit systems. The Code may also be used as a guide for inspection and reporting on electrical or telecommunications ducts and other conduits. However, in these circumstances the defect/feature codes may not be relevant and the scoring and grading will not be applicable.

The Code also references laser and sonar profiling, which may be specified to provide additional information on the condition of the conduit.

This Code does not specify contractual requirements for carrying out inspections. Different parts of the Code should be used with consideration given to the intent of the proposed inspection. Not all elements outlined in this Code need be applied unless otherwise specified by the asset owner.

## MANDATORY AND INFORMATIVE

The Code provides a mixture of mandatory and informative statements.

The information and guidance (informative text) contained in the Code has been deliberately interspersed throughout the mandatory requirements to provide some context and enable better understanding of the mandatory requirements. Informative text has been italicised to enable clearer differentiation.

However, it is emphasised that the exact approach taken to all aspects of a particular condition assessment project is the decision of the asset owner and its asset managers. This Code provides technical information to aid in that process.

## APPENDICES

Appendices to this Code can be accessed through the links provided throughout the text and as given below:

- A [SPECIFICATION FOR SOFTWARE](#)
- B [MATERIALS AND ACRONYMS](#)
- C [SCORING OF DEFECTS AND THE PRELIMINARY GRADING OF THE APPARENT CONDITION OF OPERATIONAL SEWERS](#)
- D [SCORING OF DEFECTS AND THE PRELIMINARY GRADING OF APPARENT CONDITION OF OPERATIONAL STORMWATER DRAINS](#)
- E [SCORING OF DEFECTS AND THE PRELIMINARY GRADING OF APPARENT CONDITION OF MAINTENANCE STRUCTURES](#)
- F [CRACKING, BREAKING, DEFORMATION, CORROSION AND COLLAPSE OF RIGID, FLEXIBLE AND MASONRY CONDUITS](#)
- G [SUMMARY OF MAIN CODES FOR DESCRIBING CONDUIT CONDITION](#)
- H [SUMMARY OF MAIN CODES FOR DESCRIBING MAINTENANCE STRUCTURES](#)
- I [COMPENDIUM OF DEFECTS AND FEATURES](#)
- J [GUIDE FOR INTERNAL INSPECTION OF NEWLY CONSTRUCTED SEWERS OR STORMWATER CONDUITS AND CRITERIA FOR ACCEPTANCE](#)
- K [MANUAL CODING SHEETS](#)

## INDUSTRY TRAINING

To enable successful adoption of this Code it is essential that persons responsible for identifying and recording information from inspections, for preparing reports and operating equipment are suitably trained and hold appropriate qualifications required by the National Water Training Package 2015 or Water Industry Training Package NWP07 and other qualifications specified by the asset owner.

WSAA invites Registered Training Organisations, or qualified trainers in association with Registered Training Organisations, which can demonstrate appropriate expertise and experience, to enter into licence agreements to enable use of the Code and its contents for training purposes and cost-effective provision of the Code to course participants.

WSAA will make available the names and contact details of training organisations/ individuals that have entered into licensing agreements.

## PROPOSED AMENDMENTS

WSAA Codes and their supporting documentation are living documents that reflect progress in science, technology and systems. To maintain their currency, all Codes are periodically reviewed, and new editions are published. Between editions, amendments may be issued.

It is important that Users assure themselves that they are using a current Code, which should include any amendments that may have been published since the Code was published.

Detailed information about Codes and their supporting documentation including amendments can be found by visiting the [WSAA Codeshop](#).

WSAA welcomes suggestions for improvements and encourages Users to notify us immediately of any apparent inaccuracies or ambiguities. Users may use the feedback link on the side menu of this Code to submit comments or suggested improvements. Alternatively, you can also contact us via email at [codes@wsaa.asn.au](mailto:codes@wsaa.asn.au) or write to the National Codes Manager, Suite 8.02, Level 8, 401 Docklands Drive, Docklands, 3008.

To increase the likelihood of suggested amendments being adopted, it is recommended that Users seek preliminary review by and support of a WSAA Member or other relevant organisation, for example, CSIRO, Civil Contractors Federation or PIPA for inclusion with the submission.

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