



# TasWater Requirements for Sewer CCTV Conduit Inspections

**Version 3.0**

## Document Approval and Issue Notice

The TasWater Requirements for Sewer CCTV Conduit Inspections is a controlled document. Recipients should remove superseded versions from circulation. This document is authorised for issue once it has been approved.

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### Amendments in this release:

Section Title	Section Number	Amendment Summary
Purpose of Inspection	8.2	Clarification of structural conditional inspections definition.
Cleaning	8.6	Update to the cleaning requirements for all structure conditional inspections.
Additional required Information	10.4	Update to the required information for a CCTV inspection.
Reason for inspection	10.4.1	Included table 4.

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## 1. Purpose

The purpose of this document is to specify the requirements and considerations that must be met when undertaking a Closed-circuit television (CCTV) pipeline conduit inspection for TasWater (TW), including the return of the data. This document is intended to be used along with WSA 05-2020 Conduit Inspection Reporting Code of Australia (Version 4.1), so both the standards and the WSA 05-2020 code must be referenced for the completion of an inspection. Where there is contradiction or ambiguity with the WSAA code, the requirements listed within this document take precedence.

A copy of this document must be supplied to any contractor or internal operator who is engaged in CCTV work for supply to TW. Contractors and internal staff must ensure that they meet the requirements of this document before commencing work.

TW may review the returned inspection report(s) against these standards and may use them as the basis to request a re-survey or a re-supply of data.

## 2. Scope

This standard applies to any CCTV conduit inspections undertaken by or for supply to TW, including those undertaken with an IBAK Panoramo system, except for:

- Push camera inspections of small (i.e., 100mm) pipes.
- Specialised inspections of critical or non-typical infrastructure such as outfall pipes that are specified by a particular job.

## 3. Safety Considerations

Contractors must never enter any TW maintenance shaft, maintenance structure or node for data collection purposes. All node inspections must be completed without entry to a confined space by using measurement devices operated from the surface.

## 4. Definitions

Refer to **WSA 05-2020 Conduit Inspection Reporting Code of Australia (Version 4.1)** for complete definitions around sewer infrastructure and CCTV inspections.

**LISTMap:** Land Information Systems Tasmania Map <https://maps.thelist.tas.gov.au/listmap/app/list/map>

**Node:** An asset or other feature that marks the beginning or end of a pipeline; for gravity mains it is generally a maintenance structure, inspection opening or end cap.

### 4.1. Abbreviations

Acronym	Description
CCTV	Closed Circuit Television (video for pipeline inspection)
TW	Tasmanian Water and Sewerage Corporation known as TasWater
WSAA	Water Services Association of Australia

## 5. Person to Contact

The listed contacts in the table below are accountable for CCTV data and processes at TasWater in the listed areas.

Role	Person
Receipt and use of CCTV data for maintenance action	As per request for work or contract
Receipt and use of CCTV data for acceptance of new assets	<b>Field Services Officer</b> <a href="mailto:development@taswater.com.au">development@taswater.com.au</a>
Receipt and QA of CCTV data for condition/reline inspections.	<b>Asset Data Services Officer</b> <a href="mailto:assetinfo@taswater.com.au">assetinfo@taswater.com.au</a>
System administration and technical support Data requirements	<b>Data and Analytics</b> <a href="mailto:patrick.kent-fahey@taswater.com.au">patrick.kent-fahey@taswater.com.au</a>
Business Application Owner Business Process Owner Business Information Owner	<b>Manager Asset Information</b> <a href="mailto:assetinfo@taswater.com.au">assetinfo@taswater.com.au</a>
Technical Owner (Server, OS, network, security)	<b>Business Systems</b> <a href="mailto:ServiceCentre@taswater.com.au">ServiceCentre@taswater.com.au</a>

## 6. References

WSA 05-2020 Version 4.1 – Conduit Inspection Reporting Code of Australia

## 7. Compliance with this Standard

If there is doubt as to whether the requirements listed in this document or the WSA 05-2020 code can be met, TW must be approached prior to undertaking work to reach a practical agreement.

Where CCTV data provided to TW is not compliant with these requirements, TW reserves the right to not accept the work and can request the following:

- Re-supply of data with changes made,
- Re-coding based on the existing footage, and/or
- Complete re-inspection.

Subsequent submissions will be re-assessed until they demonstrate compliance.

## 8. General Requirements

### 8.1. WSAA standard

In addition to the specifications of this document, TW requires that all CCTV inspections be completed to the WSA 05-2020 version 4.1 code. Where the WSA code and this specification are in contradiction, this document takes precedence.

### 8.2. Purposes of CCTV inspections

CCTV inspections are undertaken for several reasons. The reason for each inspection must be recorded in the inspection header information as specified in the table below:

Table 1

Reason	Notes
New construction	Newly constructed asset inspection at time of practical completion.
End of warranty period	Inspection of newly constructed main at end of defects liability period.
Routine inspection of condition	Planned program of condition inspections.
Operational condition inspection	Reactive or unplanned maintenance inspection.
Structural condition inspection	Pre-relines, post-relines or renewal inspection.
Other	Build-over or working nearby inspection to understand potential impact(s) on assets; To record pre and post condition to determine any impacts of nearby construction; Or any other reason for the inspection.

This document will refer to the reasons listed in this table for certain considerations.

### 8.3. Camera and software

All inspections must be undertaken using a suitable pan and tilt capable camera system in accordance with the WSA 05-2020 code. Camera systems must be equipped with an inclinometer.

All inspections must be coded on-site using the software WinCan VX.

**Note:** Inclinometer readings may not be required if the size of the inspected main (i.e., <DN 100mm) precludes its use.

### 8.4. Quality assurance

Contractors engaged for CCTV inspections to be supplied to TW must be able to demonstrate to TW that their operators comply with the requirements of WSA 05-2020 code.

Contractors must also be able to demonstrate that they have a quality assurance mechanism in place such that all reports are reviewed for issues before submission to TW.

### 8.5. Inspection scope

A CCTV inspection is defined as a satisfactorily complete inspection of a single sewer main asset – as identified by TW.

A sewer main asset is the entire length of an individual line with a single asset ID as supplied by TW or indicated by TW data on LISTMap<sup>1</sup>. It is important to note that, generally, sewer main assets are split between two separate maintenance structures.

Therefore, for the completion of a CCTV inspection of a singular asset, the inspection should not be continued once the next maintenance structure has been reached, as noted by the requirements of WSA 05-2020 code.

For *new construction inspections* where the asset number is not yet available in TW system, it is defined as the complete length between two nodes (maintenance structures, a rod eye and a maintenance structure, or a maintenance structure and other end of line features).

For *operational condition inspections*, satisfactorily complete means inspected for any length that provides sufficient insight regarding the cause of a blockage or other event (an inspection usually proceeds until it must be abandoned at an obstruction).

For all other reasons, the full length of the main must be inspected unless there is a need for it to be abandoned. If the inspection must be abandoned, the requirements in section 9.5 must be followed.

## 8.6. Cleaning

Requirements for cleaning depend upon the reason for inspection as per the table below:

Table 2

Reason	Notes
New construction	Pipe must be cleaned before undertaking CCTV inspection, unless otherwise advised.
End of warranty period	Cleaning required unless otherwise advised.
Routine inspection of condition	Cleaning required unless otherwise advised.
Operational condition inspection	Cleaning required unless otherwise advised.
Structural condition inspection	No cleaning required if inspection carried out within 7 days of relining/renewal.
Other	Cleaning required unless otherwise advised.

## 9. Observations and Procedures

### 9.1. Pipe unit lengths

Pipe unit lengths must be recorded for any inspection as an aid to validation of pipe material types from their standard manufactured lengths. The pipe unit length recorded in the header information should generally be the measured distance between the second and third joint of the sewer main, as per figure 1 below, however the chosen points of measurement need to be representative of the majority of pipes between maintenance structures (for example when a shorter junction is laid between second and third joints).

<sup>1</sup> Land Information Systems Tasmania Map <https://maps.thelist.tas.gov.au/listmap/app/list/map>

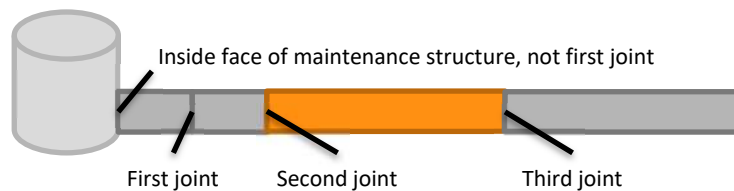


Figure 1<sup>2</sup>

## 9.2. Maintenance structure inspections

**SAFETY ALERT- CONFINED SPACES ARE HAZARDOUS AND POTENTIALLY DEADLY:** Note that contractors must *never* enter any TW maintenance shaft, maintenance structure or node for data collection purposes. All node inspections must be completed without entry to a confined space by using measurement devices operated from the surface.

Some jobs or contracts will require inspection of maintenance structures as part of the CCTV inspections.

If requested, TW requires an inspection to be completed for any maintenance structure node encountered during pipeline inspections where it is accessible and can have its lid opened. When a maintenance structure inspection is requested, surface photography can be employed as described in Section 1.6.2 (a) of the WSA 05-2020 code, unless otherwise specified. Cleaning of the MH is not required unless requested.

Any maintenance structure that has an inspection completed against it must be correctly referenced in the US MH and DS MH fields on all inspected main(s) that connect to it.

The inspection must be entered within WinCan as a node inspection associated with the correct node as referenced by the main(s) and must provide information as listed in the tables below.

Only the following header information is required by TW for a node inspection undertaken under these circumstances:

Table 3

Header Info	Description
Node name	The Asset ID of the maintenance structure as specified by TasWater
Node type	The type of maintenance structure
Node material	The construction material of the maintenance structure
Depth to Invert	Depth from the lid to the invert (lowest point of base or benching) in metres. Survey methodologies such that the precision of the measurement is at $\pm 30\text{mm}$ (at 95% confidence) are acceptable.  <b>Note:</b> for maintenance structure, the lowest point is the invert of the channel at the outlet.
Type of cover	The type of cover.
Type of lifting arrangements	The lifting mechanism required for the lid.

<sup>2</sup> Figure adapted from *Queensland Urban Utilities - CCTV Inspection Guide for Sewers* pg. 9



### 9.3. Missing maintenance structures

As shown in figure 2 below, there are instances where TW's data may incorrectly list 3 maintenance structures, with two separate sections. The middle maintenance structure may be found not to exist in the course of completing the inspection, meaning there should only be the one section.

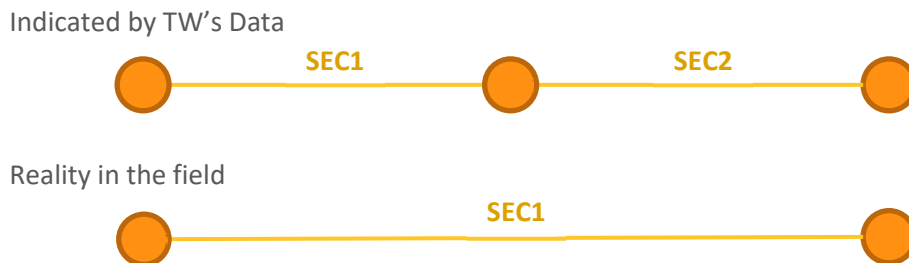


Figure 2

In this scenario, internal staff and contractors are advised to contact the TW representative responsible for the work or an appointed supervisor, if possible, for advice to proceed. If this is not possible, continue the inspection through to the next node and ensure that:

- A general comment (GC) observation is made in WinCan at the point where the maintenance structure was confirmed not to exist with the following text: [Missing Node](#).
- TW is informed that the other asset ID that would have had its own inspection has been *skipped* (See 9.6).
- The finish node is given the correct Asset ID, not the ID of the node that was skipped.

The inspection should be abandoned with a remark that states the reason for abandonment as being '*maintenance structure end does not exist*'.

### 9.4. Discovered maintenance structures

As shown in figure 3 below, there are instances where TW's data may incorrectly list 2 maintenance structures at either end of a single section. During the inspection, a new maintenance structure may be discovered somewhere along this section.

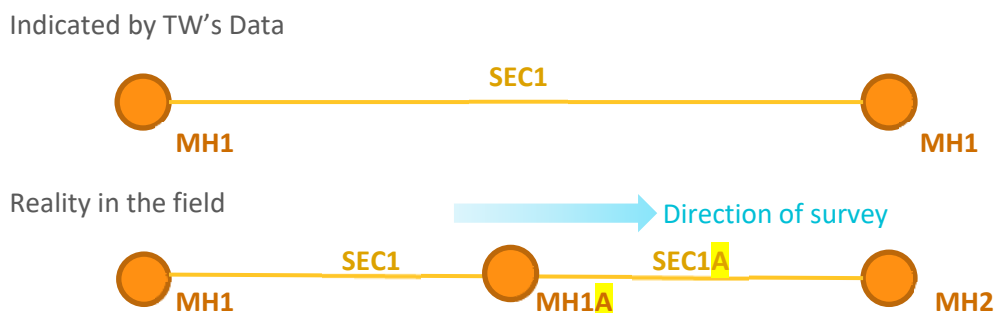


Figure 3

In this scenario, the inspection should be stopped at the newly discovered maintenance structure and a new inspection should be started for the remaining length. Adhere to the following, as shown in figure 3:

- The remaining length should be given a section ID of the original section asset number appended with the letter 'A.'
- The downstream node of the inspection for the first section and the upstream node for the remaining length should be set to the original upstream node appended with the letter 'A'.

**Note:** If additional missing maintenance structures are found, use the same process with the next letter (B and so on)

### 9.5. Abandonment

Where an inspection has been commenced but can only be partially completed, it is considered **abandoned**. This does not apply to reactive or unplanned maintenance inspections which are considered complete when they reach any length that provides sufficient insight regarding the cause of a blockage or other event.

Reasons for abandonment may include obstructions or high-water flow/level.

When an inspection is abandoned due to obstruction, a reverse inspection must be attempted from the other direction to create a single combined-reverse inspection for the main. A reverse inspection is *not* required where the remaining length is either:

- 5m or less.
- 5% of the total length of the main or less.
- There is not suitable access node from the other direction.

If an inspection must be abandoned due to high flow/water level, contact TW to confirm what flow control measures can be put in place to successfully conduct the inspection unless otherwise detailed within the contractual documents.

### 9.6. Skipped due to non-existing asset or inability to access.

An inspection is considered **skipped** where the asset:

- is proven not to exist in the field (no nearby nodes appear to exist that would match the requested asset).
- Cannot be accessed for camera inspection from either node.

The inability to complete the survey must be reported back to TW via best available contact for person responsible for the request the same day that it was skipped. TW may provide further action such as a rescheduled attempt if it is able to locate the asset or ensure access.

**Note:** Where TW has identified multiple, separate sewer sections that should logically be aggregated into a single sewer main, complete the full length and choose one of the two asset identifiers as the section ID. The asset ID that is not used should be raised as skipped to TasWater.

### 9.7. Inclinator readings

Inclinometer readings are required to be recorded in WinCan for the full length of the inspection.

## 10. Data Format & Submission

### 10.1. Delivery arrangements

CCTV Data must be submitted via TW's online file sharing platform, ShareFile. TW will supply an upload link to CCTV providers as part of a contract or job.

### 10.2. General requirements

TW requires CCTV data to be in WinCan VX format.

The full WinCan project and associated folder structure with all contents must be delivered to TasWater whenever CCTV data is supplied. This includes the WinCan database (.db3), all PDF files, all media files, and photos within their original folders.

All media and report files within the project must have filenames that exactly match their references within the WinCan database and comply with the filename requirements in the subsequent sections.

WinCan projects supplied to TW must only contain sections/mains which have been inspected within the project.

### 10.3. Job number format

The job number within WinCan must include a date-time stamp of the format **YYYYMMDD**. For example, a project that was started on the 17<sup>th</sup> of March 2017 could have a project name of:

*TASWATER - JM 402 - GEEVESTON 20170317*

This ensures that it will be unique when imported into TW's systems.

Where there is only one job for the project, the project name must be the same as the job number within WinCan (as per figure 4).

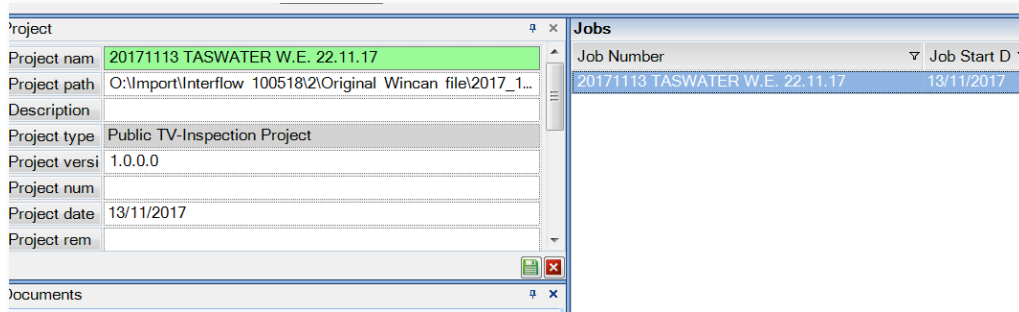


Figure 4

All sections and inspections within the project must be assigned to a valid job number.

### 10.4. Additional required information

The fields that that are highlighted yellow below in figure 5 and figure 6 are mandatory metadata fields that must be included within a CCTV inspection, including the reason for inspection and the company name.

#### 10.4.1 Reason for inspection

The purpose of inspection must be populated in the purpose of inspection field within the inspection information using the corresponding selection from the drop-down option. This process is highlighted within Figure 5 and Table 4 below.

Job ID	Taswater Thistle St 20230323
Client's Job Number	
Contractor's Job Number	
Date of inspection	28/03/2023
Time of inspection	07:35
Criticality	
Longitudinal reference point	Pipeline inside Start Node
Purpose of inspection	Other Authorities Works
Method of inspection	Television Camera
Precipitation	No precipitation

Figure 5

Table 4

CCTV Reason	WinCan Purpose of Inspection Selection
New construction	New construction.
End of warranty period	End of warranty period.
Routine inspection of condition	Routine inspection of condition.
Operational condition inspection	Operational condition inspection.
Structural condition inspection (Pre-relines, post-relines etc.)	Structural condition inspection.
Other	Other authorities works.

#### 10.4.2 Company Name

The name of the company undertaking the CCTV work must be provided in the Contractor tab of the metadata, as highlighted in figure 6.

Coding Standard	
Direction of camera	A510722 (U/S) A510723
Name of operator	(Contractors Name)
Camera	
Contractor	(Name of Company)
Customer	
Job ID	Taswater - CDO - 0040 - Devonport Sewer Program - 14072021

Figure 6

### 10.5 Timeframes

The time within which TW requires WinCan inspection data to be delivered depends upon the purpose of inspection. The table below lists maximum allowable timeframes for the return of final data.

Reason	Timeframe
New construction	Supplied along with delivery of as-constructed data to TW.
End of warranty period	Supplied along with application for final certificate.
Routine inspection of condition	As per contractual arrangement.
Operational condition inspection	Final data must be supplied within 1 business day of carrying out the inspection unless otherwise agreed to by TW.
Structural condition inspection	Final data must be supplied within 2 weeks of carrying out the inspection unless otherwise agreed to by TW.
Other	Final data must be supplied within 2 weeks of carrying out the inspection unless otherwise agreed to by TW.

**Note:** If timeframes cannot be met, contact the relevant TW representative for the reason for inspection so that an agreement can be reached.

## 10.6 Section and node identifiers for condition and reline CCTV

For all CCTV inspection that are conducted using sewer assets that currently exist within TW's systems, all sections and nodes inspected within the project must be uniquely identified using TW's asset number (e.g. A1235233), either as provided, or obtained from LISTMap.

Within a single project, each section should have exactly one inspection entered against it. This requires that:

- Reverse inspections should be combined within WinCan to make a single 'combined reverse' inspection.
- Inspections that are re-attempted should over-write the existing inspection for that section.
  - TW only requires the most recent inspection.

In the case that an asset number is not available for the pipe (i.e., not on ListMap), use the logic listed in section 9.3 to give the section a unique identifier.

Where the pipes do not match the way they are defined as assets by TW due to there being additional maintenance structures discovered or maintenance structures missing, refer to sections 9.4 and 9.5 for creating the identifiers.

## 10.7 Section and node identifiers for new construction CCTV

Pipes inspected for the handover of newly constructed assets may not have an asset number available. In these cases, a unique ID for each pipe must be created in the WinCan project. The following logic should be used to create the section identifier:

[Job Ref No.] \_[Unique ID of pipe]

The **Job Ref No.** may refer to a TasWater provided job (e.g. WO14234) or a development number such as PA2018/00129. The Unique ID of the pipe can be as simple as an incremented integer (1,2,3, etc).

Example section identifiers: for a job with a reference of PA2018/00129:

PA2018/00129-1

PA2018/00129-2

PA2018/00129-3

## 10.8 Report requirements

Reports must be included in the supply of CCTV data to TW. Each section in the supplied project must have a separate PDF report created for it using a standard WinCan template.

The report filenames must exactly comply with TasWater's naming convention as shown below:

[Asset ID of section] \_ [WinCan Section OBJ\_PK].pdf

*Example: A441375\_f7250d72-44b8-4815-82a2-da1027fa8709.pdf*

Reports must include the following components, as defined within WinCan:

- Cover page
- Project information
- Section Inspection
- Section Pictures
- Section inclination

- Node inspection (if applicable)

On request for CCTV work to be done, TW may provide a set of report templates for use with WinCan VX. If a report template is supplied, all reports must be generated using these report template files.

### 10.9 Media requirements

All video files associated with the inspections in a supplied project must be included in the delivery of the data within the original WinCan folder structure. Each video/image must be properly linked to the relevant section within the WinCan project.

Video and IPF image files must include the asset ID of the section and a unique string in the filename. For example:

*A12345\_68fec1cf-b43a-482c-ae57-d6761fbf243f.mpg*

All video files must be provided in .mpg format and adhere to all WSA 05-2020 code.

## 11 Contact Details

Where severe structural damage of pipes or other issues requiring urgent attention, contact TW on **13 6992** and advise of urgent works required.

For reasons mentioned within this document or any other issue that arises as part of an inspection, contact the relevant TW representative as nominated by contract or other agreement.

For questions related to data format and return, or to provide feedback on this specification, please email [assetinfo@taswater.com.au](mailto:assetinfo@taswater.com.au).