VOLUME 2: TECHNICAL SPECIFICATIONS

PAROO SHIRE COUNCIL

CONTRACT No. PSC2017-18-001

QUALITY ASSURED, LUMP SUM BILL OF QUANTITIES CONTRACT
for the
CUNNAMULLA SEWERAGE PIPE REPLACEMENT PROJECT (PART 1: CLEANING AND CCTV)

Volume 2 of 4

- TECHNICAL SPECIFICATIONS

PREPARED BY: Paroo Shire Council Infrastructure Department
DATE: 15th October 2017

TECHNICAL SPECIFICATIONS
1 GENERAL

1.1 The Services under the contract are to carry out a Closed Circuit Television (CCTV) survey of the sewer pipelines and associated manholes in order to determine their structural condition and serviceability. The objective is to enable Council to use the information about pipe and manhole conditions so that the appropriate method of rehabilitation and repair priorities can be selected.

1.2 The location of the sections of mains to be inspected are shown in the plans in VOLUME 3.

1.3 The Contractor shall apply adequate resources, including equipment and labour to undertake all aspects of the Services, including:

- The location and access of manholes;
- Removal and disposal of debris from manholes;
- Control of traffic and pedestrians;
- Liaising with other authorities and the public as required; and
- Compliance with all regulations.

1.4 The Services include:

- Locating, accessing and inspecting manholes;
- Locating, cleaning, accessing and inspecting the sewer mains;
- Removal of tree roots from pipelines as required;
- Marking locations of serious defects;
- Reporting on manhole condition;
- Reporting on pipeline condition, serviceability and pipe material;
- Providing DVDs showing video footage of the CCTV survey, photographs of significant features and defects;
- Providing an electronic record in an acceptable data format of all mains inspected; and
- Providing a written condition assessment report.

2 WORK BY OTHERS

No works by others.

3 PROPERTY DAMAGE

3.1 The Contractor shall make good any damage to property caused by them at their own cost. The Contractor shall notify the Principle’s representative immediately of such damage and the steps that are proposed to be taken to restore the damage.

3.2 Where access to manholes from which the survey is to be undertaken is through a public park or reserve then the Contractor shall take special care not to drive on soft and/or wet areas causing
rutting. Paroo Shire Council reserves the right to reinstate areas damaged in this way and charge the cost back against the Contract.

4 TRAFFIC CONTROL

Where provision of the Services would require control of traffic or pedestrians, traffic control devices shall be provided and maintained in compliance with AS 1742.3 and the applicable Road Authority traffic management specification. The Contractor shall prepare necessary traffic control plans and get necessary approval from the relevant road authority prior to the commencement of works.

5 SURVEY REQUIREMENTS

5.1 – Asset Numbering

Council has supplied a plan of the sewerage infrastructure to be inspected with the tender, as well as detailed schedules showing the unique identification of each manhole, to be used for recording assets in reports. As a general rule, the Asset ID of each sewer pipeline is the 5-digit downstream manhole number, followed by an underscore character, followed by the 5-digit upstream manhole number. For example, if downstream manhole is numbered 2312A and the upstream manhole is number 02902 or 2902, then the Asset ID is 2312A_02902.

5.2 – Inspection of Manholes

5.2.1 All manholes that are opened in the course of CCTV survey work are to be thoroughly inspected for damage and deterioration.

5.2.2 Record details of manhole construction, connections, work required, service assessment and so forth as detailed on the Manhole Inspection Form. The Manhole Inspection Form is to be created by the Contractor in consultation with Council to suit Council’s data systems.

5.2.3 Information shall be recorded on a pre-formatted Excel worksheet provided by Council.

5.2.4 Clean out debris and obstructions in the manhole that would impede the CCTV survey.

5.2.5 Notify Council’s representative of any manholes which are buried, holding water due to a blockage, or considered to be unsafe.

5.2.6 Personnel entering manholes are to adhere to Council procedures regarding confined space entry.
CCTV survey shall be in accordance with ‘WSA 05-2013 Conduit Inspection Reporting Code of Australia V3.1’, herein abbreviated to WSA 05-2013 produced by Water Services Association of Australia, except where specific clauses are modified in this specification.

6.1 – Pipeline Cleaning

6.1.1
Prior to commencement of the CCTV survey carry out cleaning of the pipeline using water jetting to facilitate clear viewing of the whole of the inside of the pipe, and to enable the camera to traverse within the pipe in order to complete the inspection.

6.1.2
At a minimum, undertake three passes of water jet cleaning with a minimum flow rate of 240 litres per minute and pressure of 1400kPa. Such cleaning is deemed to be included in the unit rate for the pipeline cleaning and CCTV survey. Previous experience is that silt and other solids may be present in the sewer mains. This material will require collection, dewatering into a manhole designated by Council’s representative, followed by transport to the Cunnamulla Waste Transfer Facility.

6.1.3
If the mains cannot be cleaned by the three passes specified in Clause 6.1.2 above and is found to contain debris that prevents a full 360 degree view of the pipe then contact Council’s representative to arrange for additional cleaning. Any additional work shall be a variation to the contract at a cost to be negotiated between Council and the Contractor prior to starting cleaning.

6.1.4
If after jet cleaning the pipe is found to be obstructed with roots such as to obstruct passage of the camera then follow the procedure in Section 9 for an abandoned survey and notify Council’s representative immediately.

6.1.5
Start a second survey from the manhole at the other end of the asset length. If on viewing the video footage of the abandoned survey Council’s representative concurs that root cutting of the line is required such work will be paid at the nominated rate for the length approved at the time by Council’s representative.

6.1.6
In the event that Council’s representative is delayed in attending site for any reason so that an agreement on additional cleaning and/or root cutting cannot be reached within a reasonable time, continue with pipeline CCTV survey of other assets until Council’s representative arrives.

6.1.7
If root cutting is approved then cut the roots and undertake at least two passes of water jet cleaning to remove roots and dislodged debris at the flow rate and pressure in Clause 6.1.2.

6.1.8
Following this, re-commence CCTV inspection from the start manhole. The unit rate for root cleaning is to include the cost of this secondary water jet cleaning of the pipeline. Discuss any work that cannot be continued with Council’s representative who will decide what action should be taken, or whether the job is to be regarded as complete.
6.1.9
Where the Contractor is delayed due to reasons beyond their control they are to notify Council immediately and the stand-down rate nominated on the quotation form shall apply for the duration approved by Council.

6.2 – Flow Bypassing
6.2.1
Do not use bypass pumping or hold back the flow along the pipeline to complete the CCTV inspection unless specifically requested or agreed by the Council’s representative. If high flow conditions are experienced that may obstruct CCTV inspection, details of the proposed method of flow control are to be submitted to Council’s representative for approval. E.g. bypass pumping, flow diversion or storing the flow upstream.

6.3 – Zero Point for Survey
6.3.1
The reference point (also known as zero point) for start of the survey shall be soffit of the end of the pipeline inside the starting node. This is option (b) of Clause 3.5.4.5 of WSA 05-2013. Begin each survey at the reference point and set the distance counter to zero at this point.

6.3.2
If CCTV surveying commences from a pothole into a sewer rather than a manhole, list the node numbers directly upstream and downstream of the pothole location as start and finish points. Show on the report that the survey was started from a pothole and indicate how far the pothole was from the theoretical start node. This can be noted in the comments if necessary. If the theoretical start node cannot be located, then sketch on the plan the location of the pothole relative to buildings, fences or other appropriate reference points. Depths of the pipe invert level at the pothole shall be recorded.

7  ON-SCREEN VIDEO INFORMATION

7.1
At the commencement of survey display the information required in Clause 2.8 of WSA 05-2013 and additionally display:

- The Asset ID per Clause 5.1, and
- For a sewer main the distance from the top of the manhole surround to the pipe invert, i.e. the manhole depth at the start node, to the nearest 50mm.

Display this information for a minimum of 20 seconds.
7.2
Use the following standard two abbreviations for street names:

<table>
<thead>
<tr>
<th>Street Type</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avenue</td>
<td>Av</td>
</tr>
<tr>
<td>Court</td>
<td>Ct</td>
</tr>
<tr>
<td>Crescent</td>
<td>Cr</td>
</tr>
<tr>
<td>Drive</td>
<td>Dr</td>
</tr>
<tr>
<td>Grove</td>
<td>Gr</td>
</tr>
<tr>
<td>Highway</td>
<td>Hw</td>
</tr>
<tr>
<td>Lane</td>
<td>Ln</td>
</tr>
<tr>
<td>Parade</td>
<td>Pd</td>
</tr>
<tr>
<td>Place</td>
<td>Pl</td>
</tr>
<tr>
<td>Road</td>
<td>Rd</td>
</tr>
<tr>
<td>Street</td>
<td>St</td>
</tr>
<tr>
<td>Way</td>
<td>Wy</td>
</tr>
</tbody>
</table>

7.3
Superimpose on the video the camera’s longitudinal position, nominal pipe size and material and start and finish node reference numbers as required by Clause 2.8 of WSA 05-2013.

8  DEFECTS AND FEATURE LOGGING

8.1
Ensure that distances of all attributes, service connections and locations of pipes are located and recorded to an accuracy of +/- 150mm. Accuracy of camera equipment is to be checked with regular audits by measuring on the surface between manholes and comparing with the distance recorded on the camera. Documentary evidence of the results of such audits are to be provided to Council on request.

8.2
Lighting is to be sufficient to illuminate the pipe so that features are easily recognisable, yet not create lens flare or glare on the recording.

8.3
The video recording must be without breaks or jumps in the picture.

8.4
Payment will not be made for surveys that do not provide sufficient clarity to enable the identification of defects. Any compression should not make the image fuzzy or pixilated when viewed at full screen size. Council’s preference is for all video and images to be recorded directly to a hard drive recorder with a MPEG-2 codec using either Standard Play (SP) or Long Play (LP) modes if either of these are available. Use of MPEG-1 or MPEG-4 codec is not acceptable unless authorised beforehand in writing by Council and subject to demonstration of video quality. Provision of survey video on VHS or any other tape system is not acceptable.
8.5
Camera speed for video viewing shall not exceed that required under WSA 05-2013 Clause 2.6.2. That is, the speed shall not exceed the following:

(a) 0.1 metres per second for pipes of less than 200mm internal diameter,

(b) 0.15 metres per second for pipelines of internal diameter greater than 200mm but not greater than 300mm, and,

(c) 0.2 metres per second for internal diameters exceeding 300mm.

8.6
Survey camera speeds will be assessed prior to payment and surveys that exceed the maximum speeds nominated in WSA 05-2013 Clause 2.6.2 may, at the total discretion of Council, be rejected and the Contractor shall redo the survey at no additional cost.

8.7
Record each defect without moving the camera for a minimum of 3 seconds.

8.8
Record each lateral connection by looking along the centreline of the connection without moving the camera for a minimum of 3 seconds and view from different angles to enable a full assessment of the connection. Pan the camera as required to get a clear and complete view of the defect, for example displaced joints, multiple cracks and encrustations.

8.9
If in the course of the survey a previously unknown manhole is discovered notify Council’s representative immediately. Provide details to Council’s representative of the start manhole of the survey, whether survey is proceeding upstream or downstream and the distance from the start manhole to the newly discovered manhole. Include GIS data location.

8.10
Log all defects and feature in accordance with WSA 05-2013 into a ‘Wincan’ version 8 computer database.

8.11
Tenderers proposing the use of other software systems will be required to demonstrate that it will produce a professional result that meets all of Council’s requirements. Information provided by the system should be in agreement with the reporting requirements of the Inspection Code and compatible with ‘Wincan’ version 8 databases. Tenderers should obtain written approval of alternative systems from Council prior to submitting their tender.

8.12
The use of WSA 05-2006 or the Australian Conduit Condition Evaluation Manual (Sydney Water) for defect logging is not acceptable.

8.13
Complete the sewer survey along the entire asset length, manhole to manhole, from one manhole setup wherever possible. If after reasonable effort the camera cannot go any further, follow the procedures in Section 9 for abandoned survey, then start a second survey from the manhole at the other end of the asset length. Cross-reference distances, survey directions and start and finish manholes.
9  ABANDONED SURVEY

9.1 Record any abandoned surveys and provide all information recorded. Take a still photograph of the obstruction or feature that presents the survey from proceeding with title and filename in accordance with the naming convention in Section 16 below. The words “SURVEY ABANDONED” together with words detailing the reason for the decision to abandon shall be shown superimposed on the video image for a minimum of 5 seconds over the feature or defect that has prompted the survey to be abandoned.

9.2 Notify Council’s representative immediately of a decision to abandon a survey.

9.3 Do not abandon CCTV due to steam or fog. Ventilate the line by lifting manholes, allowing it to clear and then continue with the survey. If normal venting is unsuccessful, contact Council’s representative for further instructions and advise on other possible means of venting, for example fans.

10  LOCATION OF DEFECTS

All defects or features that prevent the survey from being completed are to be located by a Sonde, electronic detection unit. Use spray paint to mark locations of the pipeline alignment and defect or feature on the ground surface, position details shown on a sketch (or marked on the plan) and information passed to Council’s representative for urgent attention. Do not use excessive paint when marking sealed surfaces, especially those in private property. Examples of observations requiring Sonde are missing inverts, buried manholes and collapsed pipes that block passage of the camera. GIS data location of all defects are to be recorded and provided to Council.

11  CAMERA EQUIPMENT

It is not essential that the Contractor provide all of the following camera preferences. However, the capabilities of the equipment that is readily available to the Contractor will form part of the selection criteria when awarding the contract.

- Sufficient light intensity to survey pipes, yet not provide glare in smaller diameter pipes.
- Be able to survey pipes as shown in the drawings.
- Different size wheels available to enable surveys of larger diameter pipes.
- Lifting camera head to enable surveys where large flows exist and to be able to look down connection lines in pipes of different diameters.
- Non-fog camera lens.
- Be able to continue survey after camera has been totally immersed in water without significant adverse effect on picture quality.
12 REPORTING REQUIREMENTS

12.1
Provide inspection reports for all assets in accordance with Section 2.12 of WSA 05-2013. Provide an inspection report for each asset length with illustration of defects and features and their position relative to the start and end nodes. Provide this report in both hard copy and electronic .pdf format. Include in the report the structural and service grading for each asset length including mean and peak ratings in accordance with the weighting scheme given in Appendices C, D and E of WSA 05-2013.

12.2
If the manhole inspection reporting is initially undertaken by manually completing a hard copy of the Manhole Inspection Report form then provide copies of the forms in .pdf format. Forms are to be in order of adjoining manholes as present in the field, starting at the downstream end of the inspected line. For example, if in the field the first manhole is 1234A, followed by 05681 and then by 9903B, then compile the forms in this order in the report. The manhole reports should then be transferred to a worksheet. The completed worksheet should be forwarded to Council’s Representative as an editable Microsoft Excel worksheet. The worksheet is not to be locked or otherwise protected.

12.3
CCTV reports, video footage, photos and database files of each surveyed asset are to be supplied to Council together on DVD. Provide database files for all assets surveyed including abandoned surveys for incorporation into Council’s asset management systems. Database files are to be compatible with ‘Wincan’ version 8, fully editable, are not to be locked or otherwise protected. Defect logging and reporting using SEWRAT software is not acceptable.

12.4
The Contractor is to provide full ownership of the physical and intellectual property of the CCTV survey records, database files, images and all reports to Council.

12.5
All survey reports must record a complete start and finish node number for the asset length. Surveys reports recording starting or finishing nodes as MH?? or other meaningless identifications will not be accepted. Council will provide the existing Asset Register documentation including GIS information for use as a baseline by the Contractor.

13 MEDIA TYPE

13.1
All information shall be provided on the following media:

- DVDs are to be single layer DVD+R or DVD-R.
- DVD-RAM, DVD-RW and DVD+RW are not acceptable nor are dual layer DVDs
- DVDs are to be genuine Taiyo Yuden brand archive-quality disks. Other brands of DVD will be rejected unless first approved in writing by Council.
13.2
With Council’s written permission the electronic files may be provided on a portable hard drive device subject to provision of further details. In this instance all CCTV reports, video footage, photos and database files of each surveyed asset are to be stored together in a separate folder on the hard drive, each folder labelled with the Asset ID as detailed in Section 5.1. The hard drive would become the property of Paroo Shire Council.

14  MEDIA LABELLING

14.1
DVDs are to be labelled directly onto the printable surface of the DVD or with securely attached, custom made, adhesive labels.

14.2
Label each DVD with Council’s name, the contract number, the company name, the company’s internal job number (if available), month and year of survey, and a unique sequential disk number. For example, the label may be:

Paroo Shire Council  
Contract #. XXX-XX  
ABC CCTV SURVEYS PTY LTD  
Job No: 123456  
July 2016  
Disk No: 002

15  VIDEO FILE NAMING CONVENTION

15.1
File names for each video file is to be in accordance with the following convention:

- PSC_StartNode_FinishNode_YYYYMMDD, where:
  - StartNode is a 5-digit number supplied by Council, usually the manhole number
  - FinishNode is a 5-digit number supplied by Council, usually the manhole number
  - YYYYMMDD is the year as four digits, the month as a two-digit number and the date as a two-digit number.

15.2
For example, if the video was taken on 5 April 2008 and the start node is manhole “1234A” and the end node is manhole “05681” then the file name would be:

PSC_1234A_05681_20080405

15.3
If the manhole number provided by Council is less than 5-digits, include leading zeros at the start to make it 5 digits long, e.g. “9723” would become“09723”. This is to permit connection with Council’s asset register.
16  FILE NAMING CONVENTION FOR STILL IMAGES

16.1  Still images are to be in .jpg format. For later integration to Council’s asset registers, a strict protocol is to be observed for naming still image files. File names and titles are to follow this naming convention:

PCS_StartNode_EndNode_distance from start node in millimetres_defect/feature.

16.2  For example, if the start node is manhole “1234A” and the end node is manhole “05681” and a displaced joint found a distance 15.2m from the start manhole, the filename for the photo would be: PSC_1234A_05681_15200_DisplacedJoint.jpg.

17  WATER SUPPLY

17.1  The Contractor may use water direct from the water mains and is required to utilise a metered hydrant standpipe issued by Council for this purpose. The use of an unmetered standpipe by the Contractor is prohibited.

17.2  A bond is to be lodged with Council prior to the standpipe being issued. The bond is refundable upon return of the standpipe in good working order as determined by the Superintendent. Any repairs required as a result of damage or misuse by the Contractor will be deducted from the bond.

17.3  The Contractor shall pay per kilolitre of water used (rate to be advised upon payment of bond).

17.4  The standpipe should be collected and returned to Council’s Broad Street Depot at the commencement and end of the project and the meter readings recorded and given to Council’s representative.

18  PUBLIC RELATIONS

18.1  During the execution of the CCTV inspection survey the Contractor must carry out public liaison requirements. Council will write to residents likely to be affected by the works at least seven days prior to commencement of the CCTV survey. Day-to-day public liaison is the Contractor’s responsibility. The Council’s plumbing department will be available to provide support if necessary to the Contractor.

18.2  Provide at least 24 hours clear notice to the public before entering private property.

18.3  A standard letter will be provided by Council’s representative for this purpose. The letter should be left in the letter box of the property if the resident is not at home.
19 PAYMENT TERMS

19.1 Payments are to be made via monthly progress claims. Council reserve the right to withhold payments if Quality, WH&S or Environmental conditions of the tender are not met. In the event of an incident, Council may withhold payment until an incident report has been received.

19.2 The item for establishment shall be a one only charge including all costs involved in setting up the operation in Cunnamulla.

19.3 The item for jet cleaning and pipe inspection shall include all costs associated with the pipeline jet cleaning and actual CCTV inspection in the field as a rate per lineal metre. Different payment rates apply to different diameter pipes.

19.4 As noted in Clause 6.1.3 should extra cleaning beyond the designated three passes be required then an additional rate for this work will be agreed between Council and the Contractor.

19.5 The item for root cutting shall include all costs associated with the cutting of roots when required. This item is to be paid at a per lineal metre rate for pipelines for lengths approved by Council’s representative on viewing of video of surveys abandoned due to tree roots.

19.6 This item for reporting shall include all costs involved in providing both the hard copy and the electronic copy of the reports as required under the Specifications.

19.7 The hourly stand down rate shall include all costs incurred due to circumstances beyond the Contractor’s control. This item is to be paid as an hourly rate for time that has been approved in writing.