



Water Industry Technical Standards

Specification No: 95-095.1

**Survey and condition  
evaluation of conduits using  
CCTV**

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The Water Industry Technical Standards Unit provides co-ordinated Technical Standards for City West Water Limited ACN 066 902 467, South East Water Limited AOM 066 902 547 and Yarra Valley Water Limited. ACN 066 902 501

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# MELBOURNE WATER CORPORATION

## SURVEY AND CONDITION EVALUATION OF CONDUITS USING CLOSED CIRCUIT TELEVISION

SPECIFICATION 94.A.125

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## **PART A GENERAL**

### **A1 SCOPE OF WORK**

- A1.1 The Contractor shall survey and inspect the sewers as described in Schedule A so as to record all salient features and to discover evidence of their structural and service condition.
- (a) Sure is defined as the recording of defect codes against a definite chainage and is applicable to conduits reports shall consist of a video tape diskette and hardcopy printout of the diskette all in Sewrat format plus a CCTV Certification Statement.
- (b) Inspection is defined as a visual record of condition, without defect codes (i.e. not in Sewrat format), and shall be used for manholes, Inspection Shafts and Vent Stacks. Reports shall consist of a videotape of the structure inspected, a filled out standard pro-forma plus a CCTV Certification Statement.
- A1.2 Closed Circuit Television (CCTV) Surveys will be carried out in colour using a camera with the capacity to pan and tilt unless otherwise agreed to by the Superintendent. The surveys shall be conducted in accordance with relevant Codes and Standards and in particular with the Australian Conduit Condition Evaluation Manual and using Sewrat software or equivalent to obtain Structural and Service defect codes.
- A1.3 The Contractor shall supply sufficient labour, resources and equipment to safely and efficiently carry out all facets of work associated with this Contract including, but not limited to the placement of traffic safety equipment, traffic control, installation, monitoring and removal of flow control equipment. Locating, Inspecting, and accessing manholes, clearing debris from manholes and disposal of ensuing matter, undertaking the survey, preparing and supplying all required results, data and reports, liaison with other authorities and members of the public as required and complying with all regulations including the latest edition of Melbourne Waters Safety Manual E-053 at all times.

### **A2 SITE CONDITIONS**

- A2.1 The Contractor will be deemed to have ascertained the conditions of the site, including flow conditions prevailing in the sewers to be surveyed, by any means he deems fit (including site investigation) provided he does not enter the sewerage system. He will also be deemed to have chosen equipment and procedures suitable for carrying out the works of the Contract under those conditions without damage to the fabric of the sewer material and giving a clear picture of the conduit.

### **A3 WORK BY THE PRINCIPAL**

- A3.1 The Principal shall:
- (a) Supply all plans and other information required to locate manholes. Plans shall remain the property of Melbourne Water Corporation and shall not be copied or reproduced without the prior written approval of the Principal. All plans shall be returned to the Principal on completion of the Works.
- (b) Obtain Sewer Access Permits to authorise access to the sewer. Application for Access Permits will be based upon the Works Program submitted by the Contractor.
- (c) As soon as practicable after receipt of a request from the Contractor, carry out any necessary works to enable safe access for the Contractor. Such works will include repairs to manhole covers and access ladders, cleaning of manholes beyond that required under the provisions of E-053, removal of any blockages preventing survey and location and raising of buried manholes.
- A3.2 All other work necessary to complete the works, including normal washing down of manholes required by E-053, shall be the responsibility of the Contractor.

## **A4 WORKS PROGRAM**

- A4.1 At least five (5) days prior to the commencement of work, the Contractor must submit in writing, for approval, a works program which defines the sequence of work and working times intended by the Contractor.
- A4.2 For Contracts requiring more than two (2) days to complete, the Program shall be in the form of a bar chart and shall show daily activities.
- A4.3 Modifications or changes to the works program after the commencement of work must be approved by the Superintendent prior to the Contractor effecting the modifications or changes. Changes requiring new Access Permits shall require a minimum of five(5) days notice.
- A4.4 The Program shall be used by the Superintendent as a basis for application for Sewer Access Permits.
- A4.5 The Contractor must not enter any part of the sewerage system until the Superintendent has authorised commencement of work.

## **A5 EQUIPMENT**

- A5.1 The Contractor shall provide sufficient survey units, including standby units in the event of breakdown, so that the Survey can be completed within the contract period.
- A5.2 The survey vehicle for CCTV surveys shall comprise two totally separate areas, a viewing area and a working area. The viewing area shall be insulated against noise and extremes in temperature and be provided with means of controlling external and internal sources of light in a manner capable of ensuring that the monitor screen display is in accordance with this specification. Proper seating accommodation shall be provided by the Contractor to enable two people, in addition to the Operator, to view clearly the on-site monitor which displays the Survey as proceeds.
- A5.3 The working area shall be reserved for equipment both operation and stored, and no equipment utilised within the conduit shall be allowed to be stored in the viewing area.
- A5.4 The surveying equipment shall be capable of surveying complete conduits to the maximum length of conduit as specified in the Schedule of Information. The Contractor shall maintain this plant in full working order and shall satisfy the Superintendent at the commencement of each working shift that all items of plant have been provided and are in full working order.
- A5.5 Each survey unit shall contain means of transporting the CCTV camera in a stable condition through the conduit under inspection. Such equipment shall ensure the maintained location of the CCTV camera on or near the central axis of the conduit. Hand holding of cameras shall not be permitted except for survey of manholes, vent stacks and inspection shafts.
- A5.6 Where the CCTV camera is towed by winch and bond through the conduit, all winches shall be stable with either lockable or ratcheted drums. All bonds shall be steel or of an equally non-elastic material to ensure the smooth and steady progress of the CCTV camera. All winches shall be inherently stable under loaded conditions.
- A5.7 Each unit shall carry sufficient number-of guides and rollers such that, when surveying, all bonds are supported away from pipe and manhole node structures and all CCTV cables and or lines used to measure the camera's location within the conduit are maintained in a taut manner and set at right angles, where possible, to run through or over the measuring equipment.
- A5.8 Each survey unit shall carry the following equipment:

- (a) One hydrant standpipe. which shall be approved for connection to Melbourne Water mains
- (b) One hydrant bar.
- (c) 15m of hydrant hose (minimum).
- (d) 400 m of floating line (minimum), and
- (e) 60 m of rodding equipment.
- (f) Road safety equipment, signage. etc.

A5.9 Each unit shall carry a range of flow control equipment, as opposed to bypass pumping equipment, for use in controlling the flow during the Survey if specified. A minimum of one item of each size of equipment ranging from 100 mm to 300 mm diameter inclusive shall be carried. Loss of the flow control equipment shall be subject to the Principals approval and conditions of use.

## **A6 PERSONNEL**

- A6.1 All persons employed by the Contractor on the site shall be experienced in the work being performed, or if not experienced, under the direct supervision of an experienced person.
- A6.2 The Contractor shall ensure that all operators responsible for viewing of the CCTV monitor and subsequent encoding of data are suitably qualified. The minimum acceptable qualification shall be a "Certificate of Completion" obtained by successfully completing the Melbourne Water Training Course "Skills Train" Classification Course in Pipe and Brick Sewers".
- A6.3 The Contractor shall ensure that all persons employed by him are neatly attired at all times. Any person employed by the Contractor who, in the opinion of the Superintendent, is of unkempt appearance shall be required to leave the worksite.
- A6.4 Further to the requirements of Appendix A the identification, which shall be weatherproof, shall be worn such that it is clearly visible at all times.
- A6.5 Clothing shall include any safety equipment; clothing and footwear as required by the nature of the Services.

## **A7 MANHOLE LOCATION AND ACCESS**

- A7.1 The Contractor shall supply all labour and equipment associated with the locating and lifting of manhole covers- The Contractor shall familiarise himself with the location of the relevant manholes prior to the commencement of work.
- A7.2 Interior cleaning of manholes, required for ventilation under E-053. shall be carried out by the Contractor as part of the works at no cost to Melbourne Water.
- A7.3 Manholes that cannot be accessed because of damaged or missing components, blocked drop pipes, being unable to be found or other reason shall be immediately reported to the Superintendent who shall instigate repair or locate, at Melbourne Water's cost as soon as practicable. The Contractor shall reschedule his works to allow for the repairs to be undertaken and shall not be entitled to any additional payment due to such lost time.
- A7.4 Grating type covers shall be fitted with dead plates upon closing. Where a dead plate is damaged or missing the Superintendent will arrange for a new dead plate to be supplied at no cost to the Contractor.
- A7.5 Under no circumstances must manholes be left open or in an unsafe state whilst unattended.

**AS HOURS OF WORK**

- A8.1 The Contractor shall undertake the works within hours that will produce best results with minimal disruption.
- A8.2 Required working hours shall be clearly stated in the Works Program and shall be subject to the of the Superintendent, who shall not agree to work outside of normal working hours unless the Contractor can demonstrate that such working hours are necessary.
- A8.3 In determining the most suitable hours, the Contractor shall consider as a minimum:
- (a) Daily flow variations:
  - (b) Traffic conditions, including requirements of controlling bodies;
  - (c) Presence of houses, shops, etc;
  - (d) Public nuisance, noise and odour.
- A8.4 All work necessary outside normal working hours shall be deemed to be in the rates submitted by the Contractor and shall not incur additional cost to Melbourne Water.
- A8.5 Except in the case of an emergency, the Contractor shall not perform any work outside of the agreed hours.

## **A9 CUSTOMER SERVICE**

- A9.1 The Contractor shall at all times comply with the customer service requirements specified in Appendix
- A9.2 All operations shall be carried out, so far as compliance with the Contract permits, so as to not interfere unnecessarily or improperly with access to, or use of, private property.
- A9.3 The Contractor shall submit a sample of each letter to customers to the Superintendent for approval prior to distribution.
- A9.4 The Contractor shall make all reasonable efforts to reschedule works upon receipt of any requests or complaints received as a result of the communication.
- A9.5 The Contractor shall set up and maintain any signage supplied by the Principal at the Principal's cost, when required by the Superintendent. Such signage shall be sandwich boards or similar.

## **A10 MEASUREMENT**

All dimensions shall be METRIC. All levels shall be to Australian Height Datum. The Principal shall provide conversion factors for plans showing levels to a datum other than Australian Height Datum.

## **A11 SAFETY EQUIPMENT AND PROCEDURES**

- A11.1 The Contractor shall be fully responsible for all safety on the works and shall provide all necessary training and equipment to meet his obligations under the Occupational Health and Safety Act and the requirements of this Specification.
- A11.2 Any work practices used which are in breach of these requirements, or the use of inadequate or non-approved equipment, will result in the immediate suspension of work, at the Contractor's full cost, until the completion of an investigation into the use of unsafe work practices. Unsafe work practices may result in the termination of the Contract at no additional cost to Melbourne Water.
- A11.3 All work in confined spaces shall be carried out in accordance with AS 2865 - "Safe Working in a Confined Space" and also Melbourne Water Engineering Manual E-053 - "Safety: Work in Sewers and Underground

Drains"

AI 1.4 All persons entering a confined space shall be trained personnel conversant with all safety procedures and shall hold a "Confined Space Entry" ticket approved by Melbourne Water which shall be carried at all times and shall to be shown to any authorised Melbourne Water officer upon request. Failure to show a safety ticket will result in the relevant person being prohibited from entering a confined space.

AI 1.5 All equipment necessary to enter and work within a confined space, as outlined in the E-053, shall be supplied by the Contractor, shall be approved by the Superintendent and shall be on site at all times. The following minimum level of equipment shall be carried with each work crew:

- (a) Apparatus for detecting hydrogen sulphide, carbon monoxide, combustibles and oxygen deficiency all properly checked and in full working order, together with copies of current calibration certificates for the apparatus. Copies of the calibration certificates shall be available to be sighted by the Superintendent at all times during the performance of the works.
- (b) Fresh air breathing apparatus including facemask or approved air supply, all regularly serviced and operable.
- (c) Vertical lift safety harness.
- (d) Safety lines
- (e) Personal equipment per person: Safety Helmet. Gumboots (safety), Sewer Wading Boots, Disposable Protective Gloves:
- (f) Self contained breathing apparatus:
- (g) First aid kit
- (h) Washing facilities, including soft soap, disinfectant, clean hot water:
- (i) Two fire extinguishers:
- (j) 500 l/sec ventilation fan with associated equipment:
- (k) Communication devices from surface to conduit:
- (l) Continuous monitoring multi-purpose gas detector with built-in alarms.

A11.6 The Superintendent shall provide the Contractor with details of equipment acceptable to Melbourne Water at the request of the Contractor.

## **A11 ROAD SAFETY**

A12.1 The Contractor shall carry out the works in such a manner so as to minimise interference as possible to road or pedestrian traffic.

A12.2 Where any works are carried out in roadways the Contractor must comply with VicRoads "Roadwork Signing Code of Practice", the Police Traffic Branch and the requirements of the relevant Municipal Councils. It is the Contractor's responsibility to advise the above mentioned organisations of the proposed work prior to commencement of work.

## **A13.0 LOSS AND DAMAGE**

A 13.1 Loss of Equipment or Materials into the Sewer

- (a) If during the course of the works, any of the Contractors equipment or materials becomes lost within the conduit, the Contractor shall report the matter immediately to the Superintendent who shall direct the Contractor on the action to be taken.
- (b) The Contractor shall note that lost equipment or materials may cause extensive damage to downstream pumping equipment but prompt notification may enable the Superintendent to instigate protective measures to prevent such damage. Even minor items such as lengths of rope can cause damage so it is important that all losses be reported.
- (c) If damage to Melbourne Water equipment could have been mitigated by the Contractor promptly notifying the Superintendent, but the Contractor fails to do so, all costs associated with damage caused to Melbourne Water assets shall be born by the Contractor. Melbourne Water shall not be liable for any loss to the Contractors equipment.

#### A13.2 Jamming of Equipment

- (a) Should any pan of the Contractor's equipment become jammed in the conduit, the Contractor shall be responsible for all his costs relating to the recovery of. or damage to such equipment in any part of the sewer forming pan of the Works and shall be responsible for all costs and damage incurred by the Principal in the recovery of such equipment. Melbourne Water shall not be liable for any damage to the Contractors equipment.
- (b) Any work to recover the Contractor's equipment that will damage the sewer, road or other service shall be carried out only after the issue of a written instruction from the Superintendent.

#### A13.3 Damage caused to Melbourne Water Assets

Any damage caused to Melbourne Water assets as a result of the Contractor using inappropriate equipment, materials, work methods or untrained personnel, or losing equipment or materials into the sewer, shall be assessed by the Principal under the terms of the Contract and shall be at the full cost of the Contractor.

### **A14 ABANDONMENT OF SURVEY**

A14.1 Abandonment of the survey may be considered in the following circumstances:

- (a) inability to maintain picture quality because of structural defects of the conduit.
- (b) risk to the Contractor's equipment.
- (c) further progress being impossible due to blockage or obstruction..
- (d) inability to locate the manhole node.
- (e) inability to gain access to the manhole node once located.
- (f) risk to the Contractor's operations due to the unsafe condition of the manhole/node.
- (g) inability to survey the conduit due to high flow conditions, despite adequate flow by-pass arrangements, or
- (h) risk to the safety of Contractor's personnel once the surveying of a conduit length has commenced.

In case (a), (b) or (c) the Contractor shall photograph the problem area and supply the photographs with his report.

A 14.2 In all cases the Contractor shall, through the arrangements prescribed, inform the Superintendent of the situation as soon as reasonably possible. He shall also proceed to the next conduit length to be surveyed and continue, unless otherwise directed by the Superintendent.

## **A15 SUPPLY OF WATER**

A15.1 The Contractor shall provide pipes, materials and labour necessary for provision of water services for the Works. Where for any portion of the Works no water main is available, the Contractor shall make alternative arrangements for the supply of water to the Works at his own cost.

A15.2 No water shall be taken from a metered service or a private trunk service without the approval of the owner and the Superintendent.

A15.3 No charge will be made for water supplied directly from Melbourne Water mains in quantities which the Superintendent considers necessary for the proper execution of the Works.

A15.4 In the event of proclaimed water restrictions applying, the Contractor shall make arrangements for the supply and use of water at his own cost as directed or approved by the Superintendent.

A15.5 The Contractor shall be responsible for the cost of maintenance and repairs of all Melbourne Water's fireplugs, water supply mains and hydrants used by him. Where the Contractor's operations have caused damage to water mains the cost of repairs to the main plus any property damage shall be charged to the Contractor.

The Contractor shall take all precautions to prevent damage to pipelines caused by incorrect operation or valves connected to water supply pipelines, and shall bear the cost of repairs of damage caused by him, including burst mains.

## **A16.0 SURCHARGING OF FLOWS**

A16.1 The Contractor's equipment and work methods shall be designed to prevent excessive backing up of the sewer in any conduit. Under no circumstances shall the Contractor employ equipment or methods, which may cause the sewer to back up to the extent that an overflow is possible in the sewerage system.

A16.2 If any overflow is likely, or is reported, the Contractor shall immediately take all measures to return the flow to normal operating levels and shall then suspend all works until a full investigation is completed. The Contractor will be liable for all costs associated with the suspension and for damages incurred by Melbourne Water as a result of any overflow.

## **PART B INSPECTION PROCEDURE**

### **B1 WORK METHOD**

B1.1 At least five (5) days prior to the commencement of work, the Contractor shall submit, in writing, for approval a statement on the methods and procedures of work that are proposed by the Contractor.

B1.2 Notwithstanding that the Superintendent has given approval under paragraph B1.1, the Contractor shall be solely responsible for using a method that is appropriate to the size, material and condition of the sewer to be surveyed.

B1.3 Unless otherwise agreed by the Superintendent, the Contractor shall commence working at the most upstream manhole and proceed downstream in the order of manhole lengths.

### **B2 FLOW CONDITIONS**

B5.4 The Contractor shall demonstrate that once the camera is wholly within the line being televised the tolerance in Clause B5.2 is being complied with using one or both of the following methods in conjunction. with a linear measurement audit form which shall be completed each day during the Survey:

- (a) Use of a cable calibration device:
- (b) Tape measurement of the surface between manholes node.

B5.5 If the Contractor fails to meet the required standard of accuracy the Superintendent shall instruct the Contractor to provide a new device to measure the meterage. The Superintendent may at his discretion instruct, in writing, the Contractor to re-survey those lengths of conduit first inspected with the original measuring device using the new measuring device. Such re-survey shall be at the Contractor's cost.

## **B6 MANHOLE, INSPECTION SHAFT AND VENT STACK SURVEY**

B6.1 general

- (a) Inspection of manholes. Inspection Shafts and Vent Stacks shall be undertaken generally in accordance with this Specification with the exception that output in either diskette or hardcopy in SEWRAT format is not required. In lieu of SEWRAT format output the Contractor shall complete and submit, as part of the report, the pro-forma supplied by the Principal 10 provide a written record of the inspections.
- (b) Where approved by the Superintendent, the use of a hand held camera shall be permitted.
- (c) Manholes are defined as shafts installed on the sewer line for man access. The minimum cover opening is about 600 mm and a ladder or step-irons will be installed to enable access to the invert.

Inspection shafts are defined as shafts located along the sewer line either between manholes, or on smallest sewers, at the end of the line. On the larger sewers, inspection shafts may be a similar size to manholes big ladders and step irons will not be provided.

Vent Stacks are defined as above ground structures located off the sewer line to allow to sewer to ventilate They are connected to the sewer by an underground pipeline which is not required to be surveyed or inspected.

B6.2 Manholes

The Contractor shall inspect each manhole along the length of the works using the following procedure:

- (a) The camera shall be positioned about 5 meters upstream of the cover and slowly panned through 360 degrees, halting facing in the direction of the downstream manhole. If the downstream manhole is not clearly visible on the video, the position shall be clearly marked with a distinctive marker such as a ranging pole or similar. The panning shall include significant landmarks to assist in location of the manhole shaft in the future such as houses, fences, roads, etc.
- (b) The access cover shall then be panned, in sufficient detail to show the condition and need for repair, level correction, etc.
- (c) The cover shall be removed and the manhole filmed from surface level to show- major internal features.
- (d) The camera shall be slowly lowered to invert level while panning for the entire depth to locate and record all landings, drop pipes, stepirons, ladders, steel supports and any other fitting.

B6.3 Inspection Shafts

B2.1 Depth of flow, measured in the manholes, should not exceed that shown below, unless otherwise agreed to in writing by the Superintendent:

Conduit Size -----	Maximum Depth of Flow -----
150mm – 255mm diameter pipe	20% of pipe diameter
300mm – 600mm diameter pipe	25% of pipe diameter
> 600mm diameter pipe	30% of pipe height

B2.2 Where the Contract requires the Contractor to block off flows in a sewer to inspect the invert the Contractor shall supply all necessary materials to completely close off the flow, and shall co-ordinate the flow closure with the Superintendent.

B2.3 Where a temporary rise in the flow in the sewer due to wet weather makes work impossible, the Contractor shall either move to a different location where work is still possible or he shall delay the Works until the high flows have abated. The Contractor shall not be entitled to any additional costs on account of wet weather.

### **B3 CAMERA POSITION**

B3.1 The camera shall be so positioned as to reduce the risk of picture distortion. In the case of circular or regular shaped conduits, the camera lens shall be positioned centrally within the conduit. In the case of egg shaped conduits, the camera lens shall be positioned vertically above the invert at a height two-thirds of the vertical dimension of the conduit. In all instances the camera lens shall be positioned looking along the axis of the conduit.

A positioning tolerance of –10% of the vertical conduit dimension shall be allowed.

B3.2 All defects are to be examined utilising the pan and tilt facilities of the camera. If the camera is panned and, or tilted and moved forward at the same time, then it is to be withdrawn to where panning and or tilting started and repositioned to look along the axis of the conduit before continuing the survey. This is to ensure that a complete record of the conduit is obtained.

B3.3 Prior to positioning the camera within the conduit, a video record shall be made of the end of the conduit, as seen from within the manhole. Any significant features, i.e. the number of rings of bricks, shall be recorded.

### **B4 CAMERA SPEED**

B4.1 The speed of the camera in the conduit shall be limited to 0.1m/s for conduit of diameter less than 225 mm. 0.15m/s for diameters equal to or greater than 225 mm but not exceeding 300 mm and 0.20m/s for diameters greater than 300 mm. Speeds other than those nominated may be used if agreed to in writing by the Superintendent. The camera speed must enable all details to be extracted from the video tape recording.

### **B5 LINEAR MEASUREMENT**

B5.1 The CCTV monitor display shall incorporate an automatically updated record in metres and tenths of a metre of the meterage of the camera position from the set-up point at the start of the Survey along the line of the conduit.

B5.2 The Contractor shall use a suitable metering device which enables the cable length to be accurately measured: this shall be accurate to –1% or 0.3 m whichever is the greater.

B5.3 The initial point of observation shall be at the start of the conduit which shall be chainage 0.00 and in accordance with the requirements of the Australian Conduit Evaluation Manual. The Contractor shall ensure that the meterage counter reads correctly once the camera is fully within the pipe line being televised and after making due allowance for the length of the camera and focus distance.

The Contractor shall inspect each visible inspection shaft cover along the length of the works using the following procedure:

- (a) The camera shall be positioned about 5 meters upstream of the cover and slowly panned through 360 degrees, halting facing in the direction of the downstream manhole. If the downstream manhole is not clearly visible on the video, the position shall be clearly marked with a distinctive marker such as a ranging pole or similar. The panning shall include significant landmarks to assist in location of the inspection shaft in the future such as houses, fences, roads, etc
- (b) The access cover shall then be panned, in sufficient detail to show the condition and need for repair, level correction, etc.
- (c) There is no requirement to locate and inspect buried inspection shaft covers.

#### B6.4 Vent Stacks

The Contractor shall inspect each vent stack along the length of the works using the following procedure:

- (a) The camera shall be positioned clear of the vent stack, on the opposite side to the connecting manhole and slowly panned through 360 degrees, halting facing in the direction of the connecting manhole with both the connecting manhole and vent stack contained in the picture. If the downstream manhole is not clearly visible on the video, the position shall be clearly marked with a distinctive marker such as a ranging pole or similar. The panning shall include significant landmarks to assist in location of the manhole inspection shaft in the future such as houses, fences, roads, etc.
- (b) The vent stack base and tube shall then be panned, in sufficient detail to show the condition and need for repair, etc. Particular attention shall be paid to the connection between the tube and the base.

### **B7 DATA DISPLAY AND VIDEO RECORDING**

B7.1 A data generator shall electronically generate and clearly display on the viewing monitor and video recording a continuous record of data in alpha-numeric form containing the following minimum information:

- (a) A LI to malic update of the camera's meterage position in the conduit manhole, or inspection shaft relative to the start.
- (b) Conduit Dimensions.
- (c) Manhole node reference numbers in accordance with FIS numbering convention as used on the plans supplied by the Principal. The size and position of the data display shall be such as not to interfere with the main subject of the picture.

In addition to the automatically generated information, on screen information shall be added to show all:

- (d) Debris and/or obstructions in the invert or manhole
- (e) Infiltration
- (f) Structural defects.

B7.2 At the start of each manhole node length, the following additional information shall be clearly displayed:

- (a) Date of Survey.
- (b) Road name location.

(c) Direction of Survey.

- (d) Time of start of Survey.
- (e) Manhole/Conduit material and size, and
- (f) Upstream and downstream node (manhole) numbers.

B7.3 Correct adjustment of the recording apparatus and its associated electronic equipment shall be demonstrated by recording, at the commencement of each shift and each new tape (where possible), the ACCU Chan set (ACCU-4 Test Set) or equivalent, with colour test band for a minimum period of 30 seconds.

B7.4 All video cassette tapes shall be supplied by the Contractor and shall be best quality high grade (HG) new and unused prior to recording and shall be of a Video Home Systems (VHS) format. The label on each cassette shall include:

- (a) The sewer name
- (b) The manhole lengths as they appear on the video
- (c) Manhole references as per the plan numbering
- (d) Date of CCTV of each manhole length
- (e) If survey abandoned - a note of the fact plus where stopped.
- (f) Direction of survey (U = upstream. D = downstream)

Re-recording over previously recorded tapes shall not be permitted.

Only one sewer shall be recorded on each video tape, however the tape may contain as many manhole lengths for that sewer as practical.

B7.5 If two or more conduit lengths are televised with one pass of the camera, then the meterage of the start of each conduit length after the first shall be recorded on the reports for those lines.

B7.6 Where practicable, manhole surveys at the end of each conduit length shall be undertaken consecutively with the conduit length. Where this is not practical, space shall be left at the end of each tape which shall be used for the survey of every manhole along the conduit length as recorded on the tape.

## **PART C SURVEY DATA AND REPORT**

### **C1 SURVEY REPORTING**

C1.1 The report shall be presented in accordance with the format laid down in the Australian Conduit Condition Evaluation Manual. Each report shall consist off a hardcopy print of the SEWRAT output, a video and computer diskette of the subject of the printout and a Certification Statement.

- C1.2 For each completed manhole length, the Contractor shall provide the Principal with completed reports within seven (7) working days of the survey, taking place. Submission of such completed reports, videos and computer disks shall be a prerequisite for payment of progress claims.
- C1.3 The Superintendent may request that some of the items of the Survey Report be supplied to the Principal as the Survey proceeds. The Contractor shall comply with reasonable requests from the Superintendent to supply the information while the Survey is in progress.
- C1.4 The Principal shall have full physical and intellectual rights to all the items of the Survey Report.
- C1.5 Notwithstanding the requirements of clauses C 1.2 and C 1.3, all severe or potentially dangerous defects shall be reported immediately to the Superintendent at the end of the shift within which it was detected.
- C1.8 All reports shall make note of all discrepancies between data supplied by the Principal and that actually found on site. i.e. sewer material, manhole lengths, manhole locations, etc.

## **C2 DATA RECORDING**

- C2.1 Data recording shall be by direct entry onto hand held or personal computers as specified.
- C2.2 Each conduit length, i.e. the length of conduit between two manholes nodes, shall be entered as a separate job in the data capture software. Thus where a Contractor elects to continue through a manhole node the meterage shall be re-set to zero at the manhole node "continued through" and a new-job shall be entered in the data capture software. Where a length of conduit between consecutive manholes/nodes is surveyed from each end (due to an obstruction) two jobs should be entered in the data capture software or two coding sheets should be used. Where a length of conduit between two consecutive manholes nodes cannot be surveyed or attempted for practical reasons a completed header section shall be made out defining the reason for abandonment. At uncharted manholes nodes it is necessary to enter a new job in the data capture software and to re-set the meterage to zero unless otherwise agreed with the Superintendent. The Contractor shall obtain manhole node numbers for uncharted manholes from the Superintendent.
- C2.3 The contractor shall supply data on a 3.5 inch, diskette with all defects recorded by defect codes in accordance with the Australian Conduit Condition Evaluation Manual. This diskette shall be submitted with the video cassette, report and any associated documentation (including plans). Only one sewer shall be recorded on each data diskette.

Diskettes shall be labelled as for video cassettes and each diskette supplied shall correspond to a single video cassette.

## **C3 DRAWINGS**

- C3.1 One set of drawings showing manhole node numbers which coincide with the details in the Survey Report shall be returned to the Superintendent on completion of the Survey and shall be annotated to show any significant errors noted in the course of the Survey. Such errors shall be brought to the attention of the Superintendent during the Survey.

## **C4 PHOTOGRAPHS (OFF SCREEN VIDEO PROCESSED COPIES) r**

- C4.1 Photographs shall be taken of all major defects within the conduit, a photograph shall be taken of a representative length showing the general conduit condition and photographs shall be taken at such other places as the Superintendent shall direct. Where defects exist at adjacent points, photographs should not be taken at intervals of less than 2 m unless absolutely necessary to show the second defect.
- C4.2 Off screen photographs taken during CCTV surveys must clearly and accurately show what is displayed on the monitor which shall be in proper adjustment.

- C4.3 Photographs, which shall be durable, shall be approximately 100 mm X 75 mm unless otherwise specified otherwise.
- C4.4 Photographs and photographic negatives shall be clearly identified in relation to the location (minimum requirement manhole node start and finish numbers) survey direction, meterage and date when the photograph was taken. The annotation shall be clearly visible and in contrast to its background, shall have a figure size no greater than 5 mm, and be type printed.
- The annotation shall be so positioned as not to interfere with the subject of the photograph.
- C4.5 Unless otherwise specified, the photographic negatives of Off Screen photographs shall be supplied in suitable plastic negative holders and bound in a negative file. Each plastic negative holder sheet shall be clearly cross-referenced to the report.

## **PART D QUALITY**

### **D1 CONTRACTOR'S QUALITY ASSURANCE PROCEDURE**

- D1.1 The Contractor shall establish a Quality Assurance system in accordance with AS 3902, to be approved by the Superintendent, which will effectively ensure the accuracy and consistency of the Survey Report produced by the operator.

The system shall be such that the accuracy of reporting should be a function particularly of:

- (a) The accuracy of the header
- (b) the number of faults not recorded (omissions), and the correctness of the coding and classification of faults recorded.

The minimum levels of accuracy to be attained shall be 95% in each case.

The level of accuracy shall be determined in each case by deducting erroneous entries and missing entries from the correct number of entries and dividing the result by the correct number of entries. The answer shall be expressed as a percentage rounded down to the next lowest whole number.

- D1.2 The Superintendent shall be entitled to audit periodically the quality assurance system, the quality of the video recording, the recording and coding of faults and accuracy of the defect coding and be present when assessments are being computed.

### **D2 CONTROL PHOTOGRAPHS (OFF SCREEN OR VIDEO PROCESSED COPIES)**

- D2.1 The Contractor shall, prior to commencement of work, supply samples of photographic conduit survey work carried out by him within the previous 12 months. These samples shall consist of a minimum of three photographs of recently executed work. The samples shall reflect the type of Survey to be undertaken under this Contract
- D2.2 Samples shall be held by the Superintendent for the duration of the Contract and shall be used as a control against which the Contractor's performance shall be measured. If, in the opinion of the Superintendent, any photographs provided under the Contract fall significantly below the standard of the approved samples, the work in question shall be re-executed.
- D2.3 The Superintendent may at his discretion issue a written instruction to the Contractor to provide a sample of the photographs taken during the contract period. The Superintendent shall give a written instruction and the Contractor shall provide the photographs within 5 working days of receiving the written instruction.

**D3 PICTURE COLOUR**

D3.1 An approved test device shall be provided and shall be available on site throughout the Contract, enabling the specified tests to be checked. For colour tube type cameras, the test card shall be the ACCU-4 Test Chart or equivalent with a colour bar, clearly defined with no tinting to show the following colours:

White

Yellow

Cyan

Green

Magenta

Red

Blue

Black

The camera shall be positioned centrally and parallel to the test card at a distance where the full test card just fills the monitor screen. The card shall be illuminated evenly and uniformly without any reflection.

D3.2 The electronic systems, television camera and monitor shall be of such quality as to enable the following to be achieved:

(a) Shades of grey

The grey scale shall show equal changes in brightness ranging from black to white with a minimum of five stages.

(b) Linearity

The background grid shall show squares of equal size, without convergence divergence over the whole of the picture. The centre circle should appear round and have the correct height width relationship.

(c) Resolution

For colour tube type cameras, the live picture shall be capable of registering a minimum of 250 lines and be clearly visible with no interference. The resolution shall be checked with the monitor colour turned down.

(d) Colour

With the monitor control adjusted for correct saturation, the six colours plus black and white shall be clearly resolved with the primary and complimentary colours in order of decreasing luminance. The grey scale shall appear in contrasting shades of grey with no tint.

(e) Colour Constancy

To ensure the camera shall provide similar results when used with its own illumination source. the lighting shall be fixed in intensity prior to commencing the Survey and the white balance set to the colour temperature emitted. In order to ensure colour constancy, ideally no variation in illumination shall take place during the survey.

#### **D4 PICTURE QUALITY**

- D4.1 Pictures obscured by water vapour will not be accepted. Where necessary, the sewer is to be vented to obtain a clear picture.
- D4.2 If the camera lens becomes smeared, or for any other reason fails to produce a clear picture, the problem is to be rectified before proceeding with the conduit inspection.
- D4.3 Suitable test devices shall be provided on site to enable practical demonstration of compliance with the requirements of this section. Test devices shall utilise the ACCU-4 Test Chart or equivalent and the results of the test shall be recorded daily during the Survey on a picture quality audit form.

#### **D5 FOCUS/IRIS/ILLUMINATION**

- D5.1 The adjustment of focus and iris shall allow optimum picture quality to be achieved and be remotely operated. The adjustment of focus and iris shall provide a focal range of 150 mm to infinity. The distance along the conduit in focus from the initial point of observation shall be a minimum of twice the vertical height of the conduit. The angle of view shall not be less than 50 degrees. The illumination must be such as to allow an even distribution of the light around the conduit perimeter without the loss of contrast flare out of picture or, shadowing

#### **D6 DEFECT RECORDING**

The information contained on the diskette will be subject to data validation using the "EXAMINER" program. Diskettes which fail to meet the minimum level of accuracy specified in Clause D.I.I shall be returned for receding at the Contractors cost. Returned diskettes shall contain the error log generated by the validation program.

#### **D7 CERTIFICATION STATEMENT**

With each complied report the Contractor shall submit a statement, the "CCTV Contractor's Certification List" certifying that all, work has been completed in accordance with the requirements of the Specification.

### **PART E PAYMENT**

#### **E1 GENERAL**

- E1.1 Payment for each section of the work shall be made at the applicable rates or lump sums shown in Schedule B. the Schedule of Rates.
- E1.2 Acceptance by the Superintendent of the standard of the survey, submission of all documentation and compliance with all Occupational health and Safety and Customer Service requirements shall be a prerequisite for payment.

# APPENDIX 1

## REQUIREMENTS FOR CUSTOMER SERVICE

### 1 Customer Focus - Requirements

The Contractor shall have a clear customer focus when undertaking works within private property and public areas. The Contractor is the front line of the Principal's customer service on this project and the Contractor's performance impacts greatly on the public's perception of the Principal. Therefore, the Contractor shall carry out and complete the Works in a manner that results in minimal inconvenience or impact on the customers.

The performance of the Contractor on this Contract will be taken into account when awarding future contracts. The Contractor's performance will be based on, but not limited to, the following criteria:

- (a) The ability of the Contractor to complete the Works, causing minimal disruption to the customer's property and flora.
- (b) The degree of satisfaction expressed by residents/owners of properties included in the project area. The Principal will be canvassing all residents on or after the completion of the Works to ascertain their views on the Contractor's performance.
- (c) The number of complaints received. (A complaint is defined as any unsatisfactory action or unsatisfactory work performed by the Contractor, reported to the Principal by a customer.)
- (d) The standard of community liaison undertaken by the Contractor during the period of the Contract.
- (e) The willingness of the Contractor to resolve customer complaints in a quick and sensitive manner.
- (f) Customer satisfaction regarding the standard of restoration completed by the Contractor. In particular, the Principal's policy to "restore each property to as near as practicable to its former condition" shall be strictly adhered to.
- (g) The performance of the Contractor's employees or sub contractors during the execution of the Works. In particular, the amount of care taken with the customer's property including incidental damage caused by poor work methods or negligence by the Contractor.
- (h) The Contractor's preparedness to ensure that the Site is maintained at all times in a generally clean condition, in particular road surfaces, property restoration, property access, creeks, drains and the like.

- (i) The Contractor's incorporation of a Quality Assurance Plan into even' day activities for work beina undertaken on the site.

## **2 Allowance in Price for Customer Contact and Restoration**

The Contractor will be deemed to have included an allowance in the Contract Sum to cater for the customer contact and restoration required by the Principal.

## **3 Training of Employees and Subcontractors**

The Contractor shall ensure that all its employees and sub contractors are suitably trained and understand the requirements of this document.

## **4 Identification of Contractor's Staff**

The Contractor shall ensure that all persons on site wear personal identification at all times when working on the site. The tag shall clearly identify the company and the individual. The tag of:he Foreman shall include a photograph.

## **5 Affected Owners to be Advised**

The Contractor shall:

- (a) Advise (in writing) each property owner and resident who will be affected by the Works. The letter shall be on the Principal's pro-printed form and completed legibly by the Contractor.
- (b) Deliver the letter to each property at least two, but no more than five, working days prior to the Contractor requiring entry to the property.
- (c) Advise each owner/resident in person, where practicable, of the work that will be undertaken within or near the property. The description of work shall be in layman's terms and fully describe the time of work and form of nuisance caused.
- (d) Hold copies of the advice letters on the site for audit purposes and deliver them to the Superintendent at the time of Practical Completion.

## **6 Property Access to be Maintained**

The Contractor shall maintain access to the property for the owners/residents, and visitors at all times.

## **7 Roads and Access Ways to be Kept Clean**

The Contractor shall ensure that the surface of all roads, footpaths and any access through public and private lands are kept clear of a build up of debris, such as clay, sand and the like, resulting from the tyres or tracks of mechanical plant used on the Site. The Contractor shall ensure that this debris does not enter any drain or water course. Failure to comply with these requirements

may result in the Superintendent authorising others to carry out any cleaning operation to the owner's and resident's satisfaction, at the Contractor's cost.

## **8 Safe Environment Around Work Site**

The Contractor shall provide a safe environment around the work site for all customers and all workers in accordance with the requirements of the Occupational Health & Safety Act and any relevant codes of Practices

## **9 Working Areas and General Behaviour**

The Contractor shall be aware that the working areas may be located in or near private properties. The Principal therefore requires that the standards of behaviour of the Contractor be maintained at a level that will not offend the sensitivities of residents. As a minimum, it is expected that the Contractor and its employees and sub-contractors will:

- (a) Limit its activities to the working areas, and not encroach on private property any more than is absolutely necessary
- (b) Not leave personal rubbish, such as lunch wrappings or bottles and the like in private property:
- (c) Not allow dogs belonging to the Contractor or workers onto the Site:
- (d) Not use coarse or vulgar language within the hearing of residents or the public.
- (e) Ensure that the proper toilet facilities are used at all times by its work force.
- (f) Not enter into any arguments with residents or members of the public. Any matters, which cannot be settled quickly and amicably, are to be referred immediately to the Superintendent.

## **10 Fencing of Working Areas**

Where the Contractor is required to work on private property and required by the Superintendent, or requested by the owner/resident, the Contractor shall erect an appropriate temporary fence across the property to keep children and animals away from the working area or within the remaining confines of the property. As a minimum the fence should consist of steel droppers and ring lock wire netting, securely attached to the droppers and the ground. Child proof security fencing in accordance with local council requirements shall be maintained at all times around swimming pools where access from adjoining properties has been created into a property with a pool.

## **11 Planning Permits for Tree Removal**

Many local councils now require Town Planning Permits for the removal of trees and shrubs. The Contractor shall ensure that, if required, a Planning Permit has been obtained prior to the removal or pruning of any trees or shrubs required for the execution of the Works. Where a permit is not required, the written approval of the local council shall still be obtained.

## **12 Disposal of Native Trees and Shrubs**

Unless otherwise directed by the Superintendent, all native trees and shrubs removed by the Contractor shall be chipped and spread over the restored surface in the vicinity of where they were growing, or where required by the Superintendent or the property owner-resident

## **13 Access Through Properties and Use of Vacant Blocks**

Access required by the Contractor through any property shall be with the written permission of the property owner and the resident. Similarly the use of any vacant land for a compound, storage area or the like by the Contractor must be with the written permission of the owner and the resident. It is the Contractors responsibility to obtain permission from the owner and the resident.

A copy of the written permission from the owner and the resident on the Principal's pre-printed form is to be provided to the Superintendent prior to access being used. Any damage to the property along the permitted access route or vacant land used by the Contractor shall be rectified to the satisfaction of the owner and the resident. If the Contractor fails to comply with the above requirements, then the Superintendent may, without further notice 10 the Contractor, undertake to resolve the complaint at the Contractor's cost.

## **14 Property Use and Restoration**

(a) During the course of construction the Contractor shall:

- (i) Ensure that every attempt is made to limit the area occupied by the Works
- (ii) Plan the Works to minimise the time fences are removed
- (iii) When working in backyards- maintain the resident's access to clotheslines, sheds, garages and the like. The Contractor may be required to temporarily relocate clotheslines, or provide a temporary clothesline, for the duration of the work within the property

(b) At the completion of the Works within the property, the Contractor shall:

- (i) Remove any surplus material from the property within five days: and
- (ii) Complete all restoration including the erection offences, etc. within five working days of completion of-work

- (c) If the method of work makes the requirements in (b) impracticable to implement, then the Contractor shall advise the residents affected and also advise the Superintendent in writing of the expected compliance date. The Superintendent may however, direct the Contractor to complete part or all of the restoration within the time specified in (b) above.
- (d) Where the topsoil has been disturbed as a result of the Works, the Contractor shall ensure that the disturbed area is top dressed with a minimum of 100 mm of good quality topsoil free of debris and lumps, and equivalent in grading to that which existed prior to the Works. Where garden/vegetable beds have been previously prepared by the resident the Contractor shall ensure that an equivalent grade of soil is replaced.
- (e) Where grassed areas are disturbed by the Works, the Contractor shall rake the topsoil to a state that is suitable for sowing, apply a suitable starter (fertiliser) then apply grass seed over the disturbed area in accordance with the seed producer's directions. The Superintendent may direct the Contractor to re-seed those areas located in public areas or within private properties that do not strike after the initial sowing.
- (f) Replacement of Trees All trees shrubs and other plants that will be affected by the works shall be either:
  - (i) professionally pruned in a manner that will ensure the preservation of the plant, or
  - (ii) carefully dug out and stored in a manner that will enable their survival when replanted by the Contractor at the completion of the Works, or
  - (iii) removed and disposed of, but only when there is no other option available.

In each case the Contractor shall consult with the owner of the property and discuss the options available.

Trees, shrubs and other plants removed during the course of the Works and disposed of by the Contractor for any reason shall be replaced and planted by the Contractor to the satisfaction of the owner. Typically the owner may require replacement with well established trees or shrubs, however in any situation the minimum size plant for replacement shall be one that, if obtained from a nursery, would be in a 200 mm diameter pot.

- (g) The requirements for the restoration of public areas (Roads, reserves, etc) are the same as listed in (a) to (f) above

## **15 Rectification of Incidental Damage**

Further to clause 15 of the General Conditions of Contract, if any incidental damage is caused to any property during the execution of the work, the Contractor shall:

- (a) Report the damage immediately to the Superintendent.

- (b) Repair or replace the damaged property to the customer's satisfaction within 24 hours. If there is an agreement reached between the Contractor and the customer which defers the repair or replacement, the Superintendent shall be notified in writing immediately by the Contractor of the terms agreed to by the customer.

If the Contractor fails to comply with the above requirements, then the Superintendent may, without further notice to the Contractor, undertake to resolve the complaint at the Contractor's cost.

## **16 Rectification of Complaints**

When a complaint is received by the Contractor or by the Superintendent, the Contractor shall:

- (a) Unless notified otherwise by the Superintendent, contact the complainant within two days of receiving the complaint from either the customer or the Superintendent; and
- (b) Advise the Superintendent in writing if the complaint cannot be resolved within seven days from the time of receiving the complaint, giving the reasons and the expected date of resolution.

If, after seven days from receiving a complaint, a legitimate complaint has not been resolved by the Contractor or satisfactory reasons submitted to the Superintendent as to why not then the Superintendent may, without further notice to the Contractor, undertake to resolve the complaint at the Contractor's cost.

## **17 Release Notices**

- (a) A Release Notice shall be obtained by the Contractor from the owner and resident of every property entered.

Where the Works are within private properties, then a release notice should be obtained for those properties as soon as practicable after restoration is complete.

- (b) The Release Notice shows that the customer is satisfied at the time but does not prevent the customer requesting further restoration that may be required at a later date.
- (c) If a customer lodges a complaint a Release Notice is also required.
- (d) The Contractor is responsible for obtaining all Release Notices.
- (e) Release Notices on pre-printed forms, supplied by the Principal, shall be used.

- (f) In those cases where a Release Notice cannot be obtained the Contractor shall notify the Superintendent who will then inspect the Works in question, in conjunction with a representative from the Principal, to ascertain the status of the restoration undertaken by the Contractor. Following inspection of the Works, the Superintendent will either direct the Contractor to perform more restoration to achieve the desired standard or if the restoration is deemed to be satisfactory, despite not having a clearance, will certify payment for the work completed.
- (g) The Defects Liability Period may be extended for the whole of the Works until all Release Notices are received, except where the Superintendent has deemed the restoration to be satisfactory as in (e) above.

# CONTRACTOR'S RELEASE NOTICE

This Release Notice is required by Melbourne Water to show that you as the property owner or resident are currently satisfied with the standard of restoration completed by the Contractor.

It shows that at this time the Contractor has satisfied you that your property is restored to "as near as practicable to its former condition" and that any trees or shrubs removed by the Contractor have been replaced to your satisfaction.

The signing of this release DOES NOT STOP you from requesting further restoration that may be required at a later date.

PROJECT DESCRIPTION \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

PROPERTY ADDRESS \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*OWNER / RESIDENT \_\_\_\_\_

\*OWNER / RESIDENT \_\_\_\_\_

(\* Delete whichever is not applicable)

DATE

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**NOTIFICATION TO OWNER/RESIDENT OF  
PROPOSED SEWERAGE WORKS**

The owner/resident.

Address \_\_\_\_\_  
\_\_\_\_\_

I wish to advise you that the contractor listed below is about to commence the work on sewers in your area. The work is to be undertaken on behalf of Melbourne Water by the contractor who will answer any questions you may have about the construction of the sewers.

This project. \_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_ is expected to commence on \_\_\_/\_\_\_/199\_\_

It \* will/will not involve working within your property. The expected date of entry to your property is \_\_\_/\_\_\_/199\_\_

Construction work of this nature results in temporary inconvenience and disturbance to Melbourne Water's customers. For your case this is likely to be:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

In the event of any difficulties arising please contact one of the following people:

Melbourne Water's Contractor \_\_\_\_\_

Contractor's representative \_\_\_\_\_

Location of site office \_\_\_\_\_

Telephone No. \_\_\_\_\_

For further information regarding the proposed works, you may contact Melbourne Water directly at the Dandenong Office. 208 Princes Highway. Dandenong on telephone number (03) 767 3000 . Please ask for \_\_\_\_\_

# PERMISSION TO GAIN ACCESS THROUGH A PROPERTY OR TO USE VACANT LAND

When sewerage works are carried out by Melbourne Water's Contractors, it is sometimes necessary to:

Gain access through a property to allow the Contractor to do the work, or Use a vacant block to store materials or erect a site compound.

Melbourne Water requires the Contractor to obtain written permission from the owner / resident, before using the property. If you sign this form, you are showing Melbourne Water that you have given the Contractor your permission. This will help Melbourne Water to check that the correct procedures have been followed by the Contractor.

It is also a guarantee that the Contractor agrees to restore your property "as near as practicable" to its former condition.

When the Contractor has completed the work you will be requested to sign a separate "Contractor's Release Notice". This will tell Melbourne Water that you are satisfied that the Contractor has restored your property.

PROJECT \_\_\_\_\_

CONTRACTOR \_\_\_\_\_

PROPERTY ADDRESS \_\_\_\_\_

USE REQUIRED \_\_\_\_\_

DURATION OF USE \_\_\_\_\_

OWNER / RESIDENT  
(PRINT NAME) \_\_\_\_\_

OWNER / RESIDENT  
(SIGNATURE) \_\_\_\_\_

CONTRACTOR TO SIGN \_\_\_\_\_

DATE \_\_\_\_ / \_\_\_\_ / 199\_\_