



# **Sample Contract Clauses and Specification for Procurement of Leak Investigation Services**

**in respect of Underground Water Mains in the Communal Areas within a Development**

*April 2019*

# **Sample Contract Clauses and Specification for Procurement of Leak Investigation Services**

**in respect of Underground Water Mains in the Communal Areas within a Development**

*April 2019*

## **Content**

- User Guide for Sample Contract Clauses and Specification
- Sample Contract Clauses
- Sample Specification

This page is intentionally left blank.

**USER GUIDE  
FOR SAMPLE CONTRACT CLAUSES  
AND SPECIFICATION**

This page is intentionally left blank.

# USER GUIDE FOR SAMPLE CONTRACT CLAUSES AND SPECIFICATION

## **1 Disclaimer**

The sample contract clauses (hereinafter referred to as the “Sample Clauses”) and sample specification (hereinafter referred to as the “Sample Specification”) for engaging leak investigation services for water mains are provided as an example only and will always need to be adapted to suit a particular situation, while the information in this user guide (hereinafter referred to as the “User Guide”) is provided for general information only. If you are in any doubt about the terms of the Sample Clauses or the Sample Specification, or whether and how to incorporate them in your contract, you should consult your legal adviser or other professional adviser. The Government of the Hong Kong Special Administrative Region of the People’s Republic of China takes no responsibility for the contents of the Sample Clauses, the Sample Specification and this User Guide, makes no representation, warranty or guarantee of any kind, express or implied, as to their accuracy, completeness or suitability for use in any particular circumstances, and expressly disclaims any liability whatsoever for any loss howsoever arising from or in reliance upon the whole or any part of the contents of the Sample Clauses, the Sample Specification or this User Guide.

## **2 General Notes**

The Sample Clauses set out the mechanism illustrated in the flowchart attached at Appendix 1 to this User Guide where it is assumed that: -

- (i) a person (i.e. Party X) will engage a contractor (i.e. Party Y) to provide leak investigation services for the underground water mains in the communal areas within a development and that the sections of water mains for which the leak investigation services are required to be performed by Party Y will be indicated on a plan or drawing;
- (ii) if Party X, within a specific period of time upon receipt of the leak investigation report submitted by Party Y, enters into a contract to engage<sup>1</sup> any person to carry out repair works for the water mains concerned based on the recommendation(s) in the said leak

---

<sup>1</sup> When engaging a person to carry out repair works for the water mains, please ensure that the Waterworks Ordinance (Cap. 102), including but not limiting to section 15 (who may carry out specified plumbing works) thereof, has been complied with.

investigation report, Party X may, upon the completion of the repair works, require Party Y to review the leakage conditions and submit a leak repair review report at no extra cost. If within a specific period of time after the receipt of the leak repair review report, Party X enters into a contract to engage any person to carry out further repair works for the water mains based on the recommendation(s) in the leak repair review report, Party X may, upon the completion of the repair works, require Party Y to review the leakage conditions again and submit another leak repair review report at no extra cost. The aforesaid process may be repeated until (a) Party X does not enter into a contact to engage any person to carry out further repair works within the specific period of time upon receipt of the leak repair review report, (b) Party X does not require Party Y to review the leakage conditions upon completion of the further repair works, or (c) “Completion of Water Loss Reduction” (which would be defined by the parties in Clause D of the Sample Clauses) has been achieved; and

- (iii) the fee for the leak investigation services will be paid in two instalments. The first instalment will be paid after Party Y’s submission of the leak investigation report and the timing for payment of the second instalment will depend on whether or not Party X has engaged any person to perform the relevant repair works for the water mains and require Party Y to review the leakage conditions upon completion of the repair works, and whether “Completion of Water Loss Reduction” (which would be defined by the parties in Clause D of the Sample Clauses) has been achieved.

You should consider carefully whether the aforesaid suit your needs and situation before making reference to the Sample Clauses and the Sample Specification.

Please also note that the Sample Clauses only set out the basic framework for the above-mentioned mechanism but do not cover other details, contingencies or aspects of the provision of leak investigation services by Party Y to Party X. It is for the parties to set out other essential terms of their contract as appropriate (e.g. any requirement that Party Y shall take out appropriate insurance) to reflect their intention and agreement.

Further, it is assumed that the Sample Clauses will be used together with the Sample Specification. If you seek to incorporate the Sample Clauses and the Sample Specification or any part thereof into your contract, the numbering of,

and cross-references to, the clauses in the Sample Clauses and the sections in the Sample Specification should be amended accordingly.

Please note that the Sample Specification covers only the technical requirements for leak investigation works. Any repair works to the water mains shall be carried out in accordance with the latest version of “Technical Requirements for Plumbing Works in Buildings” published by the Water Supplies Department.

### **3 Tender Procedure**

When procuring leak investigation services for water mains you should consider adopting the control measures for the receipt and opening of tenders as suggested in ICAC’s Building Maintenance Toolkit as shown in the link below:

[https://bm.icac.hk/bm\\_wcms/UserFiles/File/en/CMS/education\\_publicity/bmain\\_kit\\_1901.pdf](https://bm.icac.hk/bm_wcms/UserFiles/File/en/CMS/education_publicity/bmain_kit_1901.pdf)

In particular, you should consider incorporating the sample anti-bribery and anti-collusion clauses as provided in Annex 5 of ICAC’s Building Maintenance Toolkit in your tender documents where applicable.

For transparency and fairness in competitive bidding, you should specify clearly the tender assessment criteria in the tender documents.

### **4 Supplementary Information concerning the Sample Clauses**

#### **4.1 Payment for Leak Investigation Services [A% and B%]**

Please note that A% and B% in Clause A.2 in the Sample Clauses must add up to 100%.

A higher percentage for “B%” may incentivize the contractor to carry out leak detection and recommend repair works for earliest completion and payment. However, an excessively high percentage for “B%” may deter potential tenderers from submitting tenders or result in less competitive tender price.



## **4.2 Engagement Period [Day C]**

The time for Party X to engage a contractor to carry out the repair works for the water mains upon the receipt of the leak investigation report prepared by Party Y (i.e. the Engagement Period) should be set out in Clause B of the Sample Clauses.

## **4.3 Time of Engagement for Further Repair Works [Day D]**

The time for Party X to engage a contractor to carry out further repair works for the water mains upon the receipt of the leak repair review report prepared by Party Y should be set out in Clauses C.3, C.4(c) and C.5(c) of the Sample Clauses.

## **4.4 Completion of Water Loss Reduction**

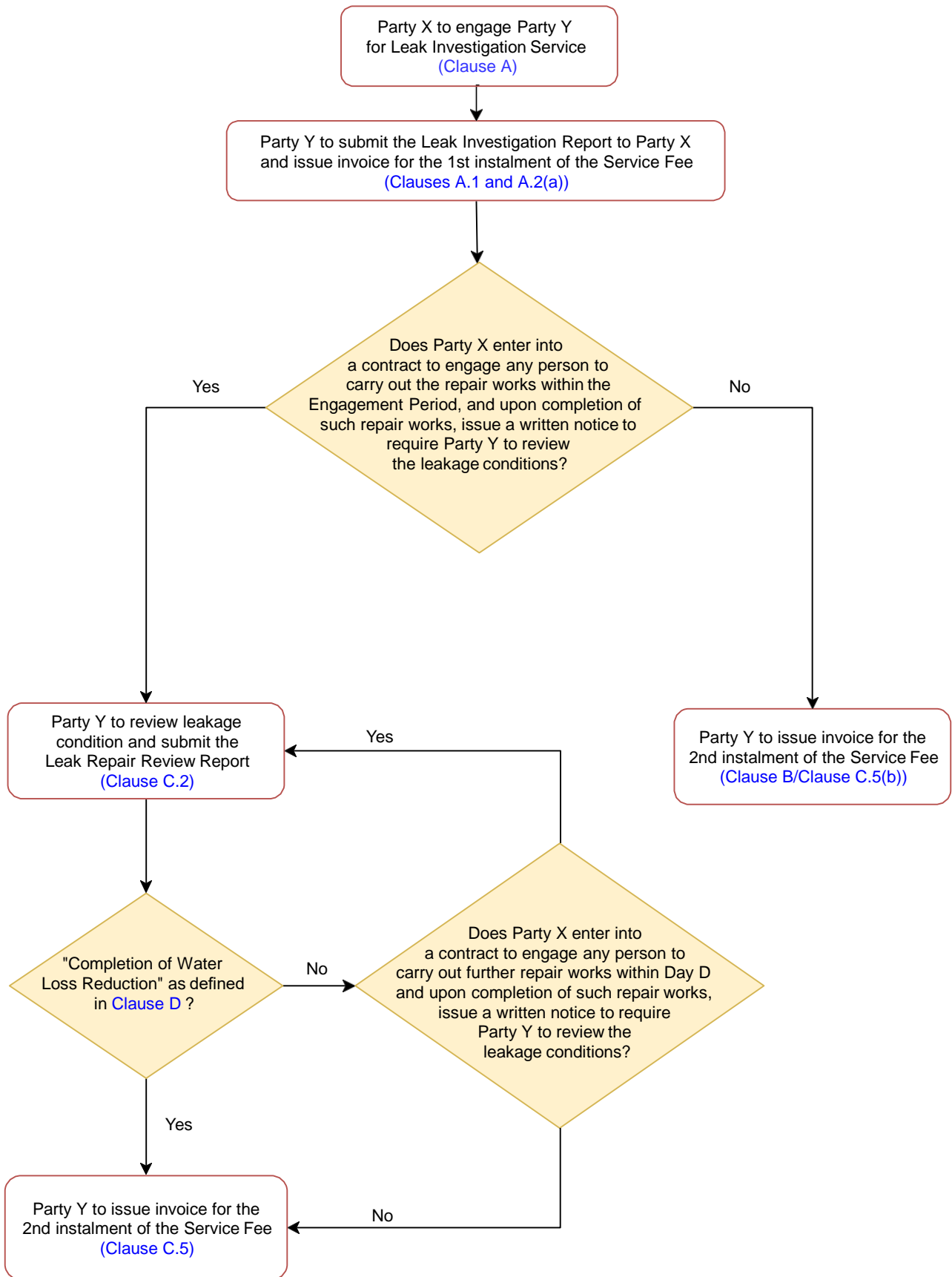
The parties should work out how they would set the benchmark for “Completion of Water Loss Reduction”. The definition of “Completion of Water Loss Reduction” in Clause D of the Sample Clauses should be clear and workable to avoid potential dispute.

If a notice requiring repairs or other works to be carried out in respect of underground “communal service” as defined in section 2 of the Waterworks Ordinance (Cap. 102) (the “Ordinance”)<sup>2</sup> has been served by the Water Authority under section 16 of the said Ordinance, the parties may consider defining “Completion of Water Loss Reduction” as the completion of the relevant works specified in such notice to the satisfaction of the Water Authority.

---

<sup>2</sup> Under section 2 of the Ordinance, “communal service” means “that part of a fire service or inside service which is used in common by more than one consumer in the same premises”. Section 2 of the Ordinance also defines, inter alia, “fire service” as “the pipes and fittings in premises, and any pipes and fittings between the premises and a connexion to the main, which are used or are intended to be used for a supply solely for the purposes of fire fighting” and “inside service” as “the pipes and fittings in premises, and any pipes and fittings between the premises and a connexion to the main, (other than the pipes and fittings forming part of a fire service) which are used or are intended to be used for the purposes of a supply”.

**Appendix 1 - Flowchart for the Sample Clauses**



This page is intentionally left blank.

# **SAMPLE CONTRACT CLAUSES**

This page is intentionally left blank.

---

**SAMPLE CONTRACT CLAUSES**  
**(to be read with the User Guide)**

**Disclaimer**

These sample clauses are provided as an example only and will always need to be adapted to suit a particular situation. If you are in any doubt about the terms of these sample clauses or whether and how to incorporate them in your contract, you should consult your legal adviser or other professional adviser. The Government of the Hong Kong Special Administrative Region of the People's Republic of China takes no responsibility for the contents of these sample clauses, makes no representation, warranty or guarantee of any kind, express or implied, as to their accuracy, completeness or suitability for use in any particular circumstances, and expressly disclaims any liability whatsoever for any loss howsoever arising from or in reliance upon the whole or any part of the contents of these sample clauses.

**Clause A**

- A.1 Party Y shall provide to Party X leak investigation services (the “**Leak Investigation Services**”) in respect of the water mains as indicated in the attached [plan/drawing no. XX] (the “**Water Mains**”) including: -
- (a) to prepare and submit to Party X a leak investigation proposal as required under Section [3.1] of the attached specification (the “**Specification**”) (the “**Leak Investigation Proposal**”) within [14 (*or insert other number of days as appropriate*)] days from \*[XX (*insert the exact date*) / the date specified in XX (*insert cross reference to other parts of the contract/tender documents*)];
  - (b) to carry out leak investigation works in accordance with [Sections 1 and 2] of the Specification and perform all such acts which are required or necessary in connection with such leak investigation works; and
  - (c) to prepare and submit to Party X a leak investigation report as required under Section [3.2] of the Specification (the “**Leak Investigation Report**”) within [28 (*or insert other number of days as appropriate*)] days from the submission of the Leak Investigation Proposal to Party X.

A.2 In consideration of the provision of the Leak Investigation Services by Party Y, Party X shall pay Party Y \*[a sum of HK\$ XX (*insert the agreed amount*)/the amount set out in XX (*insert reference to the relevant part of the tender documents*)] (the “**Service Fee**”) in two instalments as follows: -

- (a) Party X shall pay [XX (*insert A%, see User Guide*)] of the Service Fee within [XX] days after receipt of Party Y’s first invoice, which shall be issued by Party Y after the completion of the Leak Investigation Services (including the submission of the Leak Investigation Report); and
- (b) Party X shall pay [XX (*insert B%, see User Guide*)] of the Service Fee within [XX] days after receipt of Party Y’s second invoice (the “**Second Invoice**”), which shall be issued by Party Y in accordance with Clause [B] or Clause [C.5] below, as the case may be.

## **Clause B**

If Party X does not enter into a contract to engage any person to carry out repair works for the Water Mains based on the recommendation(s) in the Leak Investigation Report within [XX days (*insert Day C, see User Guide*)] commencing from the date of receipt of the Leak Investigation Report from Party Y (the “**Engagement Period**”), Party Y shall issue the Second Invoice after the expiry of the Engagement Period.

## **Clause C**

C.1 If Party X enters into a contract to engage any person to carry out repair works for Water Mains based on the recommendation(s) in the Leak Investigation Report within the Engagement Period, Party X shall, upon completion of such repair works, either: -

- (a) issue a written notice to Party Y to require Party Y to review the leakage conditions of the Water Mains; or
- (b) inform Party Y that Party Y may issue the Second Invoice,

and Party Y shall issue the Second Invoice in accordance with Clause [C.5] below.

- C.2 Upon receipt of the written notice issued by Party X under Clause [C.1(a)] above or Clause [C.3(a)] below, Party Y shall at its own costs and expenses:
- (a) review the leakage conditions of the Water Mains and where necessary, carry out further inspection/test/survey in accordance with [Section 2] of the Specification; and
  - (b) prepare and submit to Party X within [28 (*or insert other number of days as appropriate*)] days after the date of receipt of the written notice a leak repair review report as specified in Section [3.3] of the Specification (the “**Leak Repair Review Report**”).
- C.3 In the event that within [XX days (*insert Day D, see User Guide*)] commencing from the date of receipt of a Leak Repair Review Report submitted by Party Y under Clause [C.2] above, Party X enters into a contract to engage any person to carry out repair works for Water Mains based on the recommendation(s) in the said Leak Repair Review Report, Party X shall, upon completion of such repair works, either: -
- (a) issue a written notice to Party Y to require Party Y to review the leakage conditions of the Water Mains; or
  - (b) inform Party Y that Party Y may issue the Second Invoice.
- C.4 The process set out in Clause [C.2] and Clause [C.3] above may be repeated until any of the following events occurs: -
- (a) “Completion of Water Loss Reduction” as defined in Clause [D] below;
  - (b) Party X informs Party Y under Clause [C.3(b)] above that Party Y may issue the Second Invoice; or
  - (c) within [XX days (*insert Day D, see User Guide*)] days commencing from the date of receipt of the last Leak Repair Review Report submitted by Party Y under Clause C.2 above, Party X does not enter into a contract to engage any person to carry out repair works for the Water Mains based on the recommendation(s) in the said Leak Repair Review Report.



C.5 Party Y shall issue the Second Invoice after:

- (a) “Completion of Water Loss Reduction” as defined in Clause [D] below;
- (b) Party X informs Party Y under Clause C.1(b) or C.3(b) above that Party Y may issue the Second Invoice; or
- (c) expiry of [XX days (*insert Day D, see User Guide*)] commencing from the date of Party X’s receipt of the last Leak Repair Review Report submitted by Party Y under Clause C.2 above, provided that within the said period, Party X does not enter into a contract to engage any person to carry out repair works for the Water Mains based on the recommendation(s) in the said Leak Repair Review Report,

whichever occurs earlier.

#### **Clause D**

“Completion of Water Loss Reduction” shall mean [..... (*insert requirements, see User Guide*)].

\* Please delete whichever is not applicable.

# **SAMPLE SPECIFICATION**

This page is intentionally left blank.

## **SAMPLE SPECIFICATION** **(to be read with the User Guide)**

### **Disclaimer**

This sample specification is provided as an example only and will always need to be adapted to suit a particular situation. If you are in any doubt about the terms of this sample specification or whether and how to incorporate them in your contract, you should consult your legal adviser or other professional adviser. The Government of the Hong Kong Special Administrative Region of the People's Republic of China takes no responsibility for the contents of this sample specification, makes no representation, warranty or guarantee of any kind, express or implied, as to their accuracy, completeness or suitability for use in any particular circumstances, and expressly disclaims any liability whatsoever for any loss howsoever arising from or in reliance upon the whole or any part of the contents of this sample specification.

### **Index**

#### **1 DESCRIPTION OF SERVICES**

- 1.1 Objective of the Leak Investigation Services
- 1.2 Definitions
- 1.3 Field Works
- 1.4 Leak Investigation Works for Water Mains

#### **2 PROCEDURES FOR LEAK INVESTIGATION**

- 2.1 Sounding and Visual Inspection
- 2.2 Step Test
- 2.3 Leak Noise Correlator Survey and Further Leak Detection Surveys

#### **3 SUBMISSIONS AND REPORTING**

- 3.1 Leak Investigation Proposal
  - 3.2 Leak Investigation Report
  - 3.3 Leak Repair Review Report
-

This page is intentionally left blank.

---

## SAMPLE SPECIFICATION

### 1 DESCRIPTION OF SERVICES

#### 1.1 Objective of the Leak Investigation Services

The objective of the leak investigation services is to conduct the leak investigation works for the water mains as indicated in the attached [plan/drawing no. XX] (the “**Water Mains**”).

#### 1.2 Definitions

In this specification for leak investigation (the “**Specification**”), the following words and expressions shall have the meaning hereby assigned to them except when the context otherwise requires:

- (1) Leak Noise Correlator (LNC) is a leak location instrument. It shall consist of at least two accelerometer sensors, two hydrophones, and a correlator. The accelerometer sensors are attached to the contact points or valve spindles while the hydrophones are attached to the hydrants along the water main to be surveyed. The correlator analyses the leak noises collected by the two accelerometer sensors or the two hydrophones for locating the leak position.
- (2) Mechanical Leak Detector (MLD) is a passive device similar to doctor’s stethoscope which transfers the leak noise to the operator’s ear directly through ground microphones.
- (3) Electronic Leak Detector (ELD) shall consist of a ground microphone, a noise amplifier, headphones and frequency filters. The leak noise is amplified and transmitted to either headphones, loudspeaker or indicating meter electronically. Unwanted noises can be removed by electronic frequency filters.
- (4) "Contact Points" can be any points along the Water Mains such as fire hydrants, valves, fittings, meters, exposed pipes or points along the Water Mains that Party Y is responsible for making as required for the leakage detection works.
- (5) "Suspected Leaks" shall mean the potential leaks indicated by any distinguished spikes, peaks, signals, or noises detected by the

LNC or potential leaks detected by other approved methods.

- (6) "Pinpointed Leaks" shall mean the leaks located by using LNC and MLD and/or ELD or other approved devices.
- (7) "Apparent Leaks" shall mean any leaks or sign/indication of leaks observed on the ground surface, or at the associated valves, fire hydrants, fittings, meters, etc., during the preliminary inspection of the Water Mains.

### **1.3 Field Works**

- (1) Party Y shall carry out the field works in such a manner as to cause as little interference as possible with the normal activities in the buildings or other premises and not to cause nuisance to the public, owner and occupants of the buildings or other premises. Party Y shall also maintain the sites in a clean and tidy condition.
- (2) For surveying works which will affect existing vehicular or pedestrian access, Party Y shall prepare and implement temporary traffic arrangement schemes, make all arrangements with and obtain the necessary approvals from the Commissioner for Transport, the Commissioner of Police, the Director of Highways and any other relevant authorities for temporary traffic arrangements and control.

### **1.4 Leak Investigation Works for Water Mains**

Party Y shall carry out the following tasks of leak investigation works for the Water Mains within the respective periods specified.

- (1) Prior to the commencement of the field works of the leak investigation works, Party Y may obtain latest copy of relevant mains record plans from Party X or other relevant authorities to facilitate his planning for the leak investigation works.
- (2) Party Y shall carry out the proposed leak investigation works upon the submission of the leak investigation proposal required in Section [3.1] of this Specification (the "**Leak Investigation Proposal**") to Party X.
- (3) Party Y shall notify related parties, prepare and implement temporary traffic arrangement schemes and obtain all required approvals/permits before the commencement of the field works

of the leak investigation works.

- (4) Party Y shall complete all field works of the leak investigation works and submit the leak investigation report required in Section [3.2] of this Specification (the “**Leak Investigation Report**”).
- (5) During the field works, Party Y shall be responsible to locate the alignments of the Water Mains and locations of the valves for carrying out the leak investigation works and shall verify the site conditions against the available records and information. Party Y shall report to Party X if there are any major deviations.
- (6) Party Y shall carry out sounding and visual inspection for the Water Mains specified in Section [2.1] of this Specification, and if necessary, Party Y shall also carry out step tests for the Water Mains in accordance with Section [2.2] below and/or leak noise correlator survey and further leak detection surveys specified in Section [2.3] of this Specification, to locate the points of water leak in the Water Mains.

## **2 PROCEDURES FOR LEAK INVESTIGATION**

### **2.1 Sounding and Visual Inspection**

- (1) Party Y shall carry out the following activities for the sounding and visual inspection:
  - (a) Checking valve position;
  - (b) Locating of the buried Water Mains by pipe locators;
  - (c) Visual inspection along the Water Mains;
  - (d) Visual inspection of all relevant valves and valve pits/chambers along the Water Mains;
  - (e) Sounding on all relevant valves;
  - (f) Visual inspection of utility manholes/pits along the Water Mains and on the slopes in the vicinity of the Water Mains.



(2) Checking Valve Position

Party Y shall obtain the latest copy of the relevant main record plans from Party X or other relevant parties and check the position of each valve relevant to the leak investigation works. Party Y shall make necessary arrangement and coordination (such as removal of rubbish) to ensure there is free access to the valve. In case of illegal structures or permanently parked vehicles on the valve cover, Party Y shall report and seek further instruction from Party X.

(3) Inspecting Valve Pit

Party Y shall open the valve pit covers of the relevant valves and inspect the relevant valves during the leak investigation works. Party Y shall record any defects identified.

(4) Checking the Valve Packing Gland

Party Y shall record any leak observed at a valve packing gland.

(5) For sounding on a valve, Party Y shall use the stethoscopes or ground microphones to listen the noise transmitted by the underground water mains directly and perform the visual inspection.

(6) After carrying out the sounding and visual inspection described in this Section [2.1], Party Y shall include the result of the sounding and visual inspection and valve leak inspection in the Leak Investigation Report and where applicable, in the leak repair review report required in Section [3.3] of this Specification (the “**Leak Repair Review Report**”).

## 2.2 Step Test

If necessary, Party Y shall carry out step test for the Water Mains as follows:

- (1) Step test involves bracketing the test area with excessive leakage into a tightly branched network with a flow meter installed on its input main.
- (2) Working from the valve furthest away from the flow meter, the size of the area is systematically reduced by closing valves to cut off different pipe sections in succession (so that less and less of

the area is supplied through the meter), at the same time recording changes in flow rate at the meter.

- (3) The sequence of closing valves is followed by working backward towards the flow meter until the meter is reached (when the flow becomes zero). A disproportionate change in flow discrepancy between two successive steps indicates a leak in the section of pipe that was last shut off. The sequence is repeated by opening valves in reverse order. The method can effectively narrow down leaks to specific pipe segments of the distribution system.
- (4) Step tests should normally be carried out at night before the morning high demand to minimize supply interruption and inconvenience to customers.

### **2.3 Leak Noise Correlator Survey and Further Leak Detection Surveys**

If necessary, Party Y shall carry out the following activities for the Leak Noise Correlator Survey (the “**LNC Survey**”) to pinpoint the leaks:

- (1) Set up the LNC.
- (2) Place the sensors on the pipe fittings such as valves or air valves. Mark the locations of the sensors on the mains record plan.
- (3) Measure the length of the pipe between the sensors to be surveyed.
- (4) Start the LNC to collect data.
- (5) Analyze the data.
- (6) If Suspected Leaks are indicated by the LNC, the locations of the Suspected Leaks shall be marked on site. The Suspected Leaks shall be accurately determined such that the actual leaks fall within the square boxes of area 1m x 1m which are marked on the ground with red spray paint by Party Y.
- (7) Print out the LNC result.
- (8) The LNC Survey record together with the print-out of the LNC result shall be included in the Leak Investigation Report and where applicable, in the Leak Repair Review Report.

- (9) If the LNC Surveys do not produce good results, Party Y shall then carry out further leak detection surveys by LNC, MLD and ELD or by carrying out the leak detection surveys during night time or low flow period until reasonable results are obtained.

### **3 SUBMISSIONS AND REPORTING**

#### **3.1 Leak Investigation Proposal**

- (1) The Leak Investigation Proposal shall include, but not be limited to, the following:
- (a) Composition of the leak investigation team and qualifications and experience of the team members;
  - (b) Proposed methods and procedures of the leak investigation and detection work;
  - (c) Types, model numbers and details (including calibration certificates) of the LNC, MLD, ELD and other equipment to be used;
  - (d) Types, model numbers and details of listening equipment to be used;
  - (e) The programmes of the leak investigation works;
  - (f) The data processing and reporting procedures;
  - (g) Other related work such as temporary traffic diversion schemes; and
  - (h) The quality assurance/quality control plans for the required works.

#### **3.2 Leak Investigation Report**

- (1) The Leak Investigation Report shall include, but not be limited to, the following:
- (a) Particulars of the Water Mains (e.g. identification number, location, length measured from the mains record plan, etc.);

- (b) Names of the leak investigation team members;
- (c) Total length of the Water Mains surveyed;
- (d) All relevant photos, sketches, drawings, record forms, data/test records for the sounding and visual inspection specified in Section [2.1] of this Specification and, if applicable, for the step test specified in Section [2.2] of this Specification;
- (e) All relevant photos, sketches, drawings, record forms, data/test records for the leak detection surveys specified in Section [2.3] of this Specification (if applicable), which shall include, but not be limited to, the following:
  - (i) Sketches showing the locations of the Water Mains surveyed and the locations of the leaks (Apparent Leaks, Suspected Leaks, Pinpointed Leaks, if any). The locations of the leaks shall be defined by setting out distances with reference points or benchmarks;
  - (ii) Colour photographs indicating the locations of leak detection work, the locations of the Water Mains surveyed, the locations of the leaks, and the site marked up of the Pinpointed Leaks;
  - (iii) The LNC graphical plot for the sections of Water Mains surveyed (if applicable) together with the survey information and brief explanations;
- (f) Interpretation and analysis of results with detailed explanation and supporting records to substantiate the findings and interpretation/analysis;
- (g) Any problems encountered;
- (h) Any instructions given by Party X; and
- (i) Conclusion/recommendation for repair works for the Water Mains.

### **3.3 Leak Repair Review Report**

- (1) The Leak Repair Review Report shall include, but not be limited to, the following:

- (a) Particulars of the Water Mains (e.g. identification number, location, length measured from the mains record plan, etc.);
  - (b) Names of the leak investigation team members;
  - (c) Leak condition of the Water Mains after repair; and
  - (d) Conclusion/recommendation as to whether or not further repair works for the Water Mains are required and if so, recommendations for further repair works for the Water Mains.
- (2) Where Party Y has carried out any further inspection/test/survey specified in Section [2] above in reviewing the leakage conditions of the Water Mains, the Leak Repair Review Report shall also include, but not be limited to, the following (where applicable):
- (a) Total length of the Water Mains surveyed;
  - (b) All relevant photos, sketches, drawings, record forms, data/test records for the sounding and visual inspection and step test specified in Sections [2.1 and 2.2] of this Specification;
  - (c) All relevant photos, sketches, drawings, record forms, data/test records for the leak detection survey specified in Section [2.3] of this Specification, which shall include, but not be limited to, the following:
    - (i) Sketches showing the locations of the Water Mains surveyed and the locations of the leaks (Apparent Leaks, Suspected Leaks, Pinpointed Leaks, if any). The locations of the leaks shall be defined by setting out distances with reference points or benchmarks;
    - (ii) Colour photographs indicating the locations of leak detection work, the locations of the Water Mains surveyed, the locations of the leaks, and the site marked up of the Pinpointed Leaks;
    - (iii) The LNC graphical plot for the sections of Water Mains surveyed together with the survey information and brief explanations;

- (d) Interpretation and analysis of results with detailed explanation and supporting records to substantiate the findings and interpretation/analysis.

This page is intentionally left blank.



水務署

Water Supplies Department

Tel No. : 2824 5000

Fax No. : 2824 0578

Website : [www.wsd.gov.hk](http://www.wsd.gov.hk)