

Memorandum for the Hong Kong Housing Authority

Updates on Issues Arising from the “Excess Lead in Drinking Water in Public Rental Housing Estates” Incident

PURPOSE

In Paper No. HA 15/2016 issued in May 2016, we reported on developments on various issues arising from the “excess lead in drinking water in public rental housing (PRH) estates” incident. This paper updates Members on the latest developments in respect of the following areas –

- (a) the progress of rectification works in the 11 affected PRH developments with excess lead in drinking water;
- (b) the Housing Authority (HA)’s implementation of the recommendations of the Commission of Inquiry into Excess Lead Found in Drinking Water (COI); and
- (c) water sampling tests for PRH estates.

RECTIFICATION WORKS IN AFFECTED PRH ESTATES

Rectification Works in the Common Areas of the 11 Affected PRH Estates

2. In order to rectify the problem of excess lead in water, HA has asked the four contractors to replace non-compliant pipes in the 11 affected PRH developments. Rectification works in the common areas started in March 2016 and progress so far is generally on schedule.

3. HA has asked the contractors to minimise the inconvenience for tenants as far as practicable, maintain close communication with tenants and address their issues or concerns. HA has also monitored the progress of works through regular meetings with the contractors. So far, we have not received major complaints or adverse feedback from tenants regarding rectification

works in the common areas except for some incidents of water leakage/pipe burst, which were partly caused by poor workmanship in using compression joints ^{Note 1} and miscommunication among workers. In response to these incidents, contractors have carried out emergency repairs swiftly and handled claims from affected tenants. To prevent the recurrence of similar incidents, HA has asked the contractors to improve their installation method for compression jointing, enhance training for workers and tighten up procedures to avoid miscommunication.

4. The incidents above show that there is a higher risk of leakage/burst if the water pipes are connected by compression jointing rather than soldering. The contractors have been exploring alternative soldering methods. Subject to the technical feasibility of these methods and implementation of precautionary safety measures, the contractors may consider adopting soldering during rectification works as appropriate, particularly for the pipework at external walls, special areas at which compression jointing is difficult and locations with a higher risk of leakage.

5. After replacement of water pipes in the common areas, water sampling tests will be conducted for the new pipes for various parameters including lead to ensure compliance with the Water Authority (WA)'s requirements.

Trial for Works Inside Flats

6. As reported earlier, the contractors will replace the non-compliant water pipes inside domestic units after the rectification works in the common areas are completed. According to the latest works programmes provided by the contractors, Yau Lee Construction Company Limited will be able to start works inside the flats of Kwai Yuet House at Lower Ngau Tau Kok Phase 1 in October 2016 as the rectification works in the common areas of Kwai Yuet House have been substantially completed.

7. As we mentioned in the past, given that the furnishings and pipe routings inside individual flats vary from one to another, there are a number of technical issues which must be resolved before works inside flats can start. In the past few months, HA has been discussing with the contractors and WA to resolve the issues and work out the arrangements for works inside flats as follows –

Note 1 To avert fire risk and nuisance to tenants arising from soldering pipe joints, and in line with HA's past practice in conducting replumbing works for existing estates, the four contractors have been using compression joints for connecting water pipes in the rectification works, except in locations where soldering cannot be avoided due to site constraints.

- (a) **Opt out:** an issue which has been raised by tenants is whether they can opt out of the works inside flats. In considering this issue, HA needs to take into account HA and tenants' legal obligations under the Waterworks Ordinance/Waterworks Regulation. Accordingly, we will require the contractors to replace the non-compliant pipes for every domestic unit of the 11 affected PRH developments. However, in practice, we do appreciate that some tenants may not be able to make arrangements to tie in with contractors' works programmes for various reasons. Such special cases will be dealt with after the contractors have completed other units of the same estate. For such tenants, HA and its contractors will continue to contact and persuade the tenants to allow contractors to carry out the works inside flats for health consideration.

- (b) **Pipe routing:** to avoid or minimise damage to tenants' furnishings, the contractors will adopt the piping's existing routing as far as practicable. If this is impracticable, a new routing would be adopted. The contractors will aim to complete works for each flat within one day as far as practicable, provided that tenants' existing furnishings are not extensive and the weather condition is favourable for works at external walls of the flat. The reinstatement of furnishings may be arranged on another day where necessary. For cases where the furnishings and/or pipe routings are more sophisticated, the works may take one more day. The water supply to the domestic unit where works are carried out will be temporarily suspended from 9 am to 6 pm. The contractors will communicate with tenants on the arrangements before works start. HA has asked the contractors to make good any damages to the furnishings as a consequence of the rectification works and to handle any claims for compensation by tenants.

8. Installation of water filters and provision of temporary water supply through standpipes and water points on each floor of the 11 affected PRH developments are measures which have been implemented to assist tenants in gaining access to safe drinking water. These measures will continue to be in force until the rectification works for both the common areas and inside flats are completed. After works inside flats are completed, water sampling tests (covering various parameters including lead) will be conducted in accordance with the Water Supplies Department (WSD)'s Circular Letter No. 5/2015 and 1/2015. Subject to satisfactory water test results and the progress of works, water filters will be removed and temporary water supply will be withdrawn in stages.

9. As reported earlier, the contractors have been replacing or cleansing the filter cartridges regularly in accordance with the manufacturer's instructions^{Note 2}. For households with whom we have had difficulty in getting in touch, the contractors have been trying to contact them outside working hours including on Sundays, and will continue to do so. HA and the contractors will also continue to encourage households which have not installed water filters (including those who have refused to install filters) to consider installing filters by posting notices at the lobbies and distributing newsletters to tenants' mailboxes.

10. Similar to what the contractors have done for the rectification works in common areas, we consider that there are merits in conducting a trial for works inside flats to test contractors' method and the arrangements on a small scale first. As works in the common areas of Kwai Yuet House at Lower Ngau Tau Kok Estate Phase 1 have been substantially completed, we announced on 11 October 2016 (**Annex A**) that the trial would be conducted there. Works inside flats for the rest of the affected PRH developments will be rolled out subsequently in light of the experiences of the trial works at Kwai Yuet House.

11. The trial for works inside flats will unavoidably cause inconvenience to tenants (e.g. temporary suspension of water supply, mounting of gondolas on external walls, use of passenger lifts to convey materials during non-peak hours and use of some public space in the estate for workshops, etc.). We have asked the contractor to minimise the nuisance and inconvenience as far as practicable and the following measures will be put in place for better communication with tenants –

- (a) newsletters providing details of the trial (e.g. the scope, dates, water suspension time etc.) will be distributed into the mailboxes of the tenants concerned and notices will be posted in the lobbies of the estate;
- (b) a briefing for the Estate Management Advisory Committee will be held;

Note 2 For the households with filters installed in Wing Cheong Estate and Tung Wui Estate, Paul Y. General Contractors Limited cleans the filter cartridges about once every three months, and replaces the filters once within 12 months' time. Paul Y. has cleaned the filter cartridges for these households three times already, and the most recent round of cleaning has been substantially completed. It has started replacing the filter cartridges for these households since September 2016. The remaining three contractors replace the filter cartridges for the households in their affected PRH developments about once every six months. Since filters were installed in the affected PRH developments at different times, the timing for replacement of the filter cartridges varies from one estate to another. The latest round of filter cartridge replacement has started since August 2016.

- (c) ambassadors will be deployed to answer tenants' enquiries; and
- (d) a hotline will be set up to answer tenants' enquiries (from 9 am to 6 pm, Monday to Saturday).

12. As for non-domestic units within the 11 affected PRH developments, rectification works will also be carried out to the extent that the pipes were installed by HA's contractors. Unlike domestic units where pipes inside units were installed by HA's contractors, for non-domestic units, HA's contractors installed various types of water supply connections (e.g. water points/plugged off water pipes/toilets, etc.), while tenants often installed/varied pipework inside the unit. Given that the pipework inside non-domestic units is more complex than that in domestic units, and having considered the liability and maintenance issues as well as the possibility that some tenants may not prefer to have rectification works inside their premises, we are inclined to request the HA's contractors to only replace those sections of the pipework which were installed by them. For those sections of pipework which were installed or varied by tenants themselves, we will liaise with the relevant bureaux/departments to see if they need to make separate arrangements for special cases.

13. HA will continue to monitor the progress of rectification works and liaise with WA and contractors to ensure that the works can be completed as soon as possible.

FOLLOW-UP ACTIONS ON THE RECOMMENDATIONS OF THE COMMISSION OF INQUIRY INTO EXCESS LEAD FOUND IN DRINKING WATER

14. Since the "excess-lead-in-water" incident, HA has been strengthening its quality assurance system for plumbing installation works. In its report published in May 2016, COI put forward a number of recommendations, which can be broadly categorised into three areas, namely –

- (a) enhancing HA's quality assurance mechanism;
- (b) enhancing staff's awareness and knowledge of risks; and
- (c) carrying out follow-up work in conjunction with WSD.

15. In response to COI's recommendations, HA has implemented a series of enhancement measures. Details and the latest progress of these follow-up actions are set out in **Annex B**.

16. HA has all along had a risk assessment system for building materials. The "excess-lead-in-water" incident has revealed that there is room for enhancement in how we identify risks and classify how such risks should be followed up. We have started an exercise to strengthen our risk assessment of building materials.

17. The exercise covers all building materials used in architectural (1,000+), building services (600+) and structural works (60+). Making reference to ISO 31000 ^{Note 3}, the risk assessment on materials is conducted based on the following framework –

- (a) for each of the materials, risk is rated in terms of a combination of the "Likelihood" of occurrence and the "Consequence" of an event;
- (b) the total risk score/level is derived by multiplying the "Likelihood" and "Consequence" aspects. Follow-up actions will be taken based on the degree of the total risk level of the material; and
- (c) a time factor is also included to identify the possible point at which the event may occur so as to target control measures at the particular time during the building construction period. These time factors are "Purchasing", "Delivery", "Storage Control" and "Use (Installation)".

18. We have engaged the Hong Kong Quality Assurance Agency as an independent party to assess whether the adopted risk assessment methodology aligns with the risk management requirements as set out in the ISO 31000 standard. We have also been engaging other stakeholders (e.g. contractors, relevant Government departments, trade associations/institutions, academia, etc.). The risk assessment exercise is targeted to be completed by end-2016. Staged implementation of materials control measures will begin thereafter.

19. The final results of the risk assessment will then be incorporated into the quality control system on materials compliance checking and monitoring which will include the updating of the contract requirements,

Note 3 ISO 31000: Risk Management – Principles and Guidelines is an international standard that provides principles and generic guidelines on risk management. It establishes a number of principles that need to be satisfied before risk management will be effective.

specifications, technical guides and site inspection procedures. The enhanced risk assessment regime will be subject to review on a regular basis and where necessary.

20. As for taking actions against contractors, following the publication of the COI report, HA's Tender Committee (TC) has discussed and considered whether any further follow-up action needed to be taken. TC noted that all the committed actions by the four contractors concerned had been carried through and all the regulatory actions previously imposed against the contractors and other related parties had been completed. Meanwhile, the performance of the contractors in carrying out the interim measures and permanent rectification works would continue to be closely monitored. Further regulatory actions would be imposed if the main contractors' performance is not satisfactory. The Housing Department will report to TC at an appropriate juncture on the contractors' performance. It will also keep in view the relevant criminal investigation. Further actions against implicated parties may be considered upon completion of the criminal investigations and legal proceedings, if any.

WATER SAMPLING TESTS FOR PRH ESTATES

21. One of the COI recommendations is that the Government should undertake to test the drinking water of all PRH estates again using an appropriate sampling protocol. In this regard, in June 2016, the Development Bureau (DEVB) set up an international expert panel on drinking water safety (IEP) to provide advice on, inter alia, a water sampling protocol for Hong Kong. Based on the views of IEP, DEVB and WSD will strive to put forward a proposal for a water sampling protocol for Hong Kong by March 2017. Should there be a new water sampling protocol, HA will follow up in conjunction with WSD as appropriate.

22. Since the "excess-lead-in-water" incident, we have been updating the public through various channels on the latest developments of water sampling for PRH estates and the various follow-up actions. When the water sampling exercise was conducted for PRH estates from July to November 2015, information on the water sampling results was made public once it became available in order to keep the public and affected tenants abreast of the extent of excess lead in drinking water in PRH estates.

23. As we reported in March 2016 (i.e Paper No. HA 7/2016), while the initial focus was on the quality of drinking water supplied to domestic tenants, that supplied to non-domestic tenants had not been neglected. Samples were subsequently taken from the non-domestic facilities located

within PRH estates in a more systematic manner. As the number of samples taken from non-domestic premises was only finalised in March 2016, we took the earliest opportunity to update Members on the confirmed number of samples (including these non-domestic samples) in Paper No. HA 7/2016. The same information was also provided to the House Committee of the Legislative Council (LegCo) in July 2016.

24. Recently, we note that there are a few discrepancies between the raw data and the information concerning water sampling of non-domestic units, that has been reported to Members in March 2016 and LegCo in July 2016. The discrepancies are set out below –

- (a) Kai Ching Estate: The total number of samples with excess lead should be 9 instead of 7;
- (b) Yan On Estate: The total number of samples taken should be 73 instead of 74;
- (c) Shek Kip Mei Estate Phase 2 (Mei Wui House, Mei Leong House): The total number of samples taken should be 54 instead of 59; and
- (d) Shek Kip Mei Estate Phase 2 Ancillary Facilities Block: The total number of samples taken should be 12 instead of 6.

25. Taking into account the two omitted water samples taken at the non-domestic units of Kai Ching Estate sharing the same water supply system with the domestic units already found with excess lead (i.e. item 24(a) above), the total number of water samples which were found to have excess lead should be 93 instead of 91. However, this does not affect the categorisation of Kai Ching Estate as an affected estate because the two non-domestic samples were taken after Kai Ching Estate was declared as an affected estate. Items 24(b) – (d) above are mainly concerned about inappropriate categorisation. The correct water sampling test tallies are provided at **Annex C** for Members' reference.

26. In spite of the above discrepancies, the following information which has been made public remains unchanged:

- (a) total number of samples taken for PRH estates: 7 456;
- (b) total number of samples taken for PRH estates completed before 2005: 2 635;

- (c) total number of samples taken for PRH estates completed in or after 2005: 4 821; and
- (d) classification of affected and unaffected PRH estates.

INFORMATION

27. This paper is issued for Members' information.

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c.c. Members of HA Committees/Sub-Committees

Public rental housing estates with excess lead in drinking water to start a trial for rectification works inside flats

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A trial for rectification works inside flats for public rental housing (PRH) estates with excess lead in water will start soon.

A Hong Kong Housing Authority (HA) spokesman said today (11 October) that a trial for rectification works inside some domestic flats at Kwai Yuet House in Lower Ngau Tau Kok Estate Phase 1 will start on 17 October.

In order to rectify the problem of excess lead in water, HA has requested the contractors concerned to replace the non-compliant water pipes in the 11 PRH developments with excess lead in water. The contractors have started replacing the water pipes in the common areas since mid-March 2016, and progress so far is generally satisfactory. On the whole, the contractors have completed about half of the works in the common areas. The works in individual blocks have been substantially completed and contractors may start rectification works inside flats.

As the furnishings and pipe routings inside domestic flats vary, works inside flats involve various complex technical issues. Therefore, it is necessary for contractors to assess the works through conducting trial works on a small scale first. In light of experience from the trial, the contractors will work out a more detailed work plan and timetable for works inside flats for the remaining affected PRH developments. As works in the common areas of Kwai Yuet House in Lower Ngau Tau Kok Estate Phase 1 have been substantially completed, the trial for works inside flats will be conducted inside some domestic flats at Kwai Yuet House.

During the trial for works inside flats, the contractor will adopt the piping's existing routing and aim to complete works for each flat within one day as far as practicable in order to avoid or minimize damage to tenants' furnishings. The contractor will start contacting tenants on 17 October for household visits to discuss and confirm the detailed arrangements with tenants before commencing actual works inside flats. The contractor will schedule a time which is convenient to the tenants as far as practicable to minimize the

inconvenience caused to them. For individual tenants who are not able to make arrangements to tie in with the works programme for special reasons, the contractor will arrange another suitable time to carry out the works inside flats for them.

The spokesman said, “The trial for rectification works inside flats will inevitably cause inconvenience to tenants. For example, tenants will need to make arrangements to allow the contractor to carry out works inside flats, the furnishings and decoration inside flats may need to be temporarily adjusted, temporary suspension of water supply, mounting of gondolas for works on external walls, use of passenger lifts by the contractor’s workers to convey materials during non-peak hours, use of some public space in the estate for workshops, etc. We would be grateful for tenants’ tolerance and understanding. HA will ask the contractor to minimise the nuisance caused to tenants during the works as far as practicable.”

As regards the detailed arrangements of the trial for rectification works inside flats at Kwai Yuet House, including the dates, scope, water suspension time, etc., HA will put up notices in the estate and distribute newsletters to affected tenants before the works start. The relevant Estate Management Advisory Committee will also be briefed on the detailed works arrangement. During the works, the contractor’s workers will wear uniforms and identification badges. The contractor will also set up a hotline and deploy ambassadors to answer tenants’ enquiries.

Since the “excess-lead-in-water” incident, HA has implemented a series of enhancement measures to strengthen its quality assurance system. Details of HA’s follow-up actions in response to the recommendations of the Commission of Inquiry into Excess Lead Found in Drinking Water can be found in Paper No. HA 24/2016 issued today (<https://www.housingauthority.gov.hk/en/about-us/housing-authority/ha-paper-library/index.html>).

Ends/Tuesday, 11 October 2016

Progress of HA's follow-up actions on COI's recommendations

HA's follow-up actions in relation to COI's report can be broadly categorised into three areas –

(a) Enhancing HA's quality assurance mechanism

COI supports the enhancement measures put forward by the Review Committee on Quality Assurance Issues Relating to Fresh Water Supply of Public Housing Estates, which was established by HA shortly after the discovery of excess lead in drinking water at certain PRH estates. Before the release of the COI Report, HA has already fully implemented measures to strengthen monitoring of contractors and subcontractors as well as the control and checking of materials (including soldering materials). HA has enhanced building contract specifications to require the main contractors to submit and implement a management plan covering stringent plumbing subcontractor and Licensed Plumber (LP) supervision and on-site monitoring. The main contractors are required to enhance supervision of their LPs, ensuring that the materials used and works carried out comply with the specifications. The measures already implemented cover approval, procurement, delivery, storage and use of materials.

HA has included soldering/brazing alloys, and copper pipes and fittings in the list of on-site delivery verification items. Soldering/brazing joints have also been included in the list of plumbing items that require routine checking by HD's site inspection staff at installation stage. For those recently completed construction projects, HA conducted the above checks and tests in the presence of the contractors. HA has also required the main contractors to use quick test methods to check the presence of lead in soldering joints. In case of any non-compliance, HA will require the main contractors to rectify it immediately and conduct testing of water samples towards completion of the plumbing works.

At completion stage of construction projects, the main contractors have to test water samples for lead and the other three heavy metals for newly installed inside service in accordance with the WA's latest requirements. HA has also requested the main contractors to take additional water sampling tests to ensure the safety of drinking water.

In terms of listing management for the subcontractors, HA has adopted the Development Bureau (DEVB)'s List of Approved Suppliers of Materials and Specialist Contractors for Public Works, PI Category (i.e. PI List), as contract requirement for the main contractor to appoint its plumbing domestic sub-contractor. We have also adopted a two-tier restriction on sub-contracting of plumbing installations and introduced workload capping limits for the plumbing domestic sub-contractor and LP. HA will review the monitoring system from time to time to ensure the quality and safety of construction as well as its effectiveness.

(b) Enhancing staff's awareness and knowledge of risks

Since the "excess-lead-in-water" incident, HA has been taking steps to enhance the relevant awareness and knowledge of staff concerned. HA has stepped up training for site inspection staff for plumbing works. Each site has been equipped with a training video for HA site staff's reference. Following the publication of COI report, the Secretary for Transport and Housing cum HA Chairman has issued a letter to the staff of HD to encourage them to learn from the incident and to develop a culture within the department that emphasises safety and quality control with constant alertness to risks.

(c) Follow up work in conjunction with WSD

Some of the recommendations in COI's report involve HA's work in conjunction with WSD. HA has been actively liaising with WSD on issues including those relating to project specifications, identification of hazards and contamination in drinking water, and establishment of a Water Safety Plan for PRH estates; and ensure full compliance with the WA's requirements. HA has also actively taken part in (i) WSD's Technical Committee on Plumbing and (ii) WSD's Advisory Committee on Water Supplies and its various working groups.

**Systematic water sampling test results for PRH developments
completed in and after 2005**

(a) Water samples with excess lead

	Name of PRH development	Year of completion	No. of units	Main contractor	No. of samples taken	No. of samples with excess lead
1	Kwai Luen Estate Phase 2 (Luen Yat House, Luen Yuet House)	2014	1 507	Shui On Building Contractors Limited	44	5
2	Kai Ching Estate	2013	5 204	China State Construction Engineering (Hong Kong) Limited	121	9
3	Wing Cheong Estate	2013	1 488	Paul Y. General Contractors Limited	46	1
4	Lower Ngau Tau Kok Estate Phase 1 (Kwai Leung House, Kwai Yuet House, Kwai Hin House, Kwai Sun House, Kwai Fai House)	2012	4 238	Yau Lee Construction Company Limited	131	6
5	Shek Kip Mei Estate Phase 2 (Mei Wui House, Mei Leong House)	2012	1 558	Yau Lee Construction Company Limited	54	5
6	Tung Wui Estate (Wui Sum House, Wui Yan House)	2012	1 333	Paul Y. General Contractors Limited	52	4
7	Hung Hom Estate Phase 2 (Hung Yat House, Hung Yan House, Hung Yiu House)	2011	1 938	China State Construction Engineering (Hong Kong) Limited	74	16

	Name of PRH development	Year of completion	No. of units	Main contractor	No. of samples taken	No. of samples with excess lead
8	Yan On Estate (Yan Hei House, Yan Yuet House, Yan Chung House)	2011	2 587	Yau Lee Construction Company Limited	73	5
9	Choi Fook Estate (Choi Lok House, Choi Sin House, Choi Hay House)	2010	2 524	Yau Lee Construction Company Limited	92	13
10	Un Chau Estate Phase 2 and 4 (Un Lok House, Un Nga House, Un Chi House, Un Hei House, Un Kin House)	2008	3 533	Yau Lee Construction Company Limited	135	19
11	Ching Ho Estate Phase 1 (Ching Chung House, Ching Yu House, Ching Hin House)	2008	3 167	Yau Lee Construction Company Limited	145	10

(b) Water samples that comply with WHO's PGV

	Name of PRH development	Year of completion	No. of units	Main contractor	No. of samples taken
1	Cheung Lung Wai Estate, Cheung Lung Lane and Cheung Lung Wai Estate Ancillary Facilities Block	2015	1 358	Yau Lee Construction Company Limited	49
2	Hung Fuk Estate Phase 1 and 2 (Hung Foon House, Hung Yan House, Hung Hei House, Hung Lok House, Hung Fuk Shopping Centre and Ancillary Facilities Block)	2015	2 097	Hsin Chong Construction Company Limited	163
3	Hung Fuk Estate Phase 3 (Hung Long House, Hung Yat House, Hung Yuet House, Hung Cheong House, Hung Shing House)	2015	2 808	Yau Lee Construction Company Limited	
4	Shui Chuen O Estate Phase 1 (Ching Chuen House, Long Chuen House, Yan Chuen House, Hei Chuen House) (Note)	2015	3 039	China State Construction Engineering (Hong Kong) Limited	59
5	Mei Tung Estate (Mei Tak House)	2014	990	Able Engineering Company Limited	26
6	Yee Ming Estate	2014	2 059	Hanison Construction Company Limited	108
7	Tak Long Estate, carpark block and kindergarten	2014	8 164	Yau Lee - Hsin Chong Joint Venture	208

	Name of PRH development	Year of completion	No. of units	Main contractor	No. of samples taken
8	Fung Wo Estate	2013	1 607	Hsin Chong Construction Company Limited	54
9	Cheung Sha Wan Estate and Cheung Sha Wan Estate Ancillary Facilities Block	2013	1 390	China State Construction Engineering (Hong Kong) Limited	51
10	Lung Yat Estate and Lung Yat Community Hall	2013	990	Shui On Building Contractors Limited	39
11	Mei Tin Estate (Mei Chuen House) and free standing block	2013	1 216	Hsin Chong Construction Company Limited	36
12	Shek Lei (II) Estate (Shek Foon House)	2013	839	Hip Hing Construction Company Limited	26
13	Ching Long Shopping Mall	2013	-	Zone A: China State Construction Engineering (Hong Kong) Limited Zone B: Yau Lee - Hsin Chong Joint Venture	20
14	Shek Kip Mei Estate Phase 5 (Mei Yick House, Mei Yin House, Mei Sang House, Mei Shing House)	2012	2 496	Shui On Building Contractors Limited	75
15	Un Chau Estate Phase 5 (Un Mun House, Un Wai House, Un Yat House) and Un Him House (i.e. Ancillary Facilities Block)	2012	1 486	China State Construction Engineering (Hong Kong) Limited	55

	Name of PRH development	Year of completion	No. of units	Main contractor	No. of samples taken
16	Domain and Yau Tong Community Hall	2012	-	China State Construction Engineering (Hong Kong) Limited	8
17	Choi Fook Estate (Choi Foon House)	2011	915	Hsin Chong Construction Company Limited	27
18	Choi Tak Estate (Choi Yan House, Choi Yee House)	2011	1 586	Hsin Chong Construction Company Limited	41
19	Kwai Luen Estate Phase 1 (Luen Yan House, Luen Hei House)	2011	1 470	Shui On Building Contractors Limited	43
20	Mei Tung Estate (Mei Yan House)	2010	799	China State Construction Engineering (Hong Kong) Limited	31
21	Choi Tak Estate (Choi Chun House, Choi King House, Choi Leung House, Choi Yin House) and Choi Tak Shopping Centre	2011	2 704	China State Construction Engineering (Hong Kong) Limited	83
22	Shatin Pass Estate (Wo Tin House, Shun Tin House)	2011	1 278	Chevalier (Construction) Company Limited	53
23	Yau Lai Estate Phase 5 (Cheuk Lai House, Yung Lai House) and carpark block	2011	2 002	Shui On Building Contractors Limited	39
24	Yau Lai Estate Phase 6 (i.e. Yau Lai Shopping Centre)	2011	-	Shui On Building Contractors Limited	4
25	Shin Ming Estate (Shin Chi House, Shin Lai House)	2011	1 974	Shui On Building Contractors Limited	50
26	Tin Ching Estate Tin Ching Amenity and Community Building	2011	-	Paul Y. General Contractors Limited	24
27	Chai Wan Estate (Wan Poon House, Wan Ying House)	2010	1 600	Nishimatsu Construction Co., Limited	46

	Name of PRH development	Year of completion	No. of units	Main contractor	No. of samples taken
28	Choi Tak Estate (Choi Shing House, Choi Shun House)	2010	1 462	Hanison Construction Company Limited	69
29	Upper Ngau Tau Kok Estate Phase 2 and 3 (Sheung Hing House, Sheung Shing House, Sheung Fu House, Sheung Wing House, Sheung Hong House, Sheung Tai House), Upper Ngau Tau Kok Shopping Centre and Integrated Service Centre	2009	4 584	Paul Y. General Contractors Limited	124
30	Tin Ching Estate Phase 3 (Ching Moon House, Ching Hei House, Ching Yuet House)	2009	2 365	Paul Y. General Contractors Limited	65
31	Shek Kip Mei Estate Phase 1 (Mei Yue House, Mei Ying House)	2006	2 033	Paul Y. General Contractors Limited	55
32	Sau Mau Ping (South) Estate (Sau Ho House, Sau Wong House)	2009	1 598	Chatwin Engineering Limited	130
33	Sau Mau Ping (South) Estate (Sau Mei House, Sau Tak House, Sau Sin House)	2009	2 397	Hanison Construction Company Limited	
34	Upper Wong Tai Sin Estate (Wing Sin House)	2009	714	Chun Wo Construction and Engineering Company Limited	22
35	Yau Lai Estate Phase 4 (Tsui Lai House, Hong Lai House, Yan Lai House)	2009	2 369	Shui On Building Contractors Limited	121
36	Yau Lai Estate Phase 3 (Ying Lai House, Fung Lai House)	2008	1 598	China State Construction Engineering (Hong Kong) Limited	
37	Shek Mun Estate Phase 1 (Kin Shek House, Mei Shek House) and supermarket	2009	1 958	Paul Y. General Contractors Limited	45

	Name of PRH development	Year of completion	No. of units	Main contractor	No. of samples taken
38	Lam Tin Estate (Lam Fai House, Lam Tai House, Lam Bik House, Lam Wai House)	2009	3 036	Shui On Building Contractors Limited	102
39	Mei Tin Estate Phase 3 (Mei Lok House, Mei Mun House, Mei Ting House) and Mei Tin Community Hall	2008	2 333	Hanison Construction Company Limited	71
40	Tin Ching Estate Phase 1 (Ching Pik House, Ching Hoi House) and Tin Ching Community Hall	2008	1 918	China State Construction Engineering (Hong Kong) Limited	98
41	Tin Ching Estate Phase 2 (Ching Choi House, Ching Wan House), Tin Ching Shopping Centre and Tin Ching Ancillary Facilities Block	2008	1 918	Nishimatsu Construction Co., Limited	
42	Choi Ying Estate Phase 1 (Ying Fu House, Ying On House)	2008	1 598	China State Construction Engineering (Hong Kong) Limited	137
43	Choi Ying Estate Phase 2 (Ying Hong House, Ying Lok House, Ying Shun House)	2008	2 397	China State Construction Engineering (Hong Kong) Limited	
44	Choi Ying Estate Phase 3 (i.e. Choi Ying Place)	2008	-	Shui On Building Contractors Limited	
45	Ching Ho Estate Phase 1 Ching Ho Shopping Centre	2008	-	Yau Lee Construction Company Limited	3

	Name of PRH development	Year of completion	No. of units	Main contractor	No. of samples taken
46	Ching Ho Estate Phase 2 (Ching Ping House, Ching Yun House)	2008	1 598	China State Construction Engineering (Hong Kong) Limited	54
47	Tung Wui Estate Tung Tau Community Centre	2012	-	Paul Y. General Contractors Limited	1
48	Shek Kip Mei Estate Phase 2 Ancillary Facilities Block	2012	-	Yau Lee Construction Company Limited	12
49	Lower Ngau Tau Kok Estate Phase 1 Lower Ngau Tau Kok Estate Plaza	2012	-	Yau Lee Construction Company Limited	3
50	Yan On Estate Yan On Shopping Centre	2011	-	Yau Lee Construction Company Limited	2
51	Oi Tung Estate (Oi Yat House)	2008	716	Nishimatsu Construction Co., Limited	23
52	Shek Pai Wan Estate Phase 2 (Pik Shan House, Pik Yuen House, Pik Wai House, Pik Luk House)	2007	2 398	Hanison Construction Company Limited	95
53	Lei Yue Mun Estate Phase 2 (Lei Lung House)	2007	799	Paul Y. General Contractors Limited	27
54	Shek Lei (II) Estate (Shek Wai House, Shek Yi House)	2007	1 598	Nishimatsu Construction Co., Limited	48
55	Ching Ho Estate Phase 3 (Ching Chak House, Ching Long House, Ching Chiu House)	2006	2 397	Shui On Building Contractors Limited	81
56	Kwai Chung Estate (Pak Kwai House, Hop Kwai House)	2008	1 983	Yau Lee Construction Company Limited	81

	Name of PRH development	Year of completion	No. of units	Main contractor	No. of samples taken
57	Mei Tin Estate Phase 1 and 2 (Mei Sau House, Mei Lai House, Mei King House, Mei Chi House) and Mei Tin Shopping Centre	2005	3 164	Nishimatsu Construction Co., Limited	95
58	Hoi Lai Estate Phase 3 (i.e. Hoi Lai Shopping Centre) and Phase 4 (Hoi Shui House)	2005	558	China State Construction Engineering (Hong Kong) Limited	29
59	Kwai Chung Estate Phase 3 (Chui Kwai House, Pik Kwai House, Luk Kwai House)	2005	2 742	Yau Lee Construction Company Limited	84
60	Hin Yiu Estate (Hin Yiu House)	2005	799	Shui On Building Contractors Limited	26
61	Shek Yam Estate Phase 5 (Lai Shek House)	2005	340	Hanison Construction Company Limited	9
62	Kwai Shing (East) Estate (Shing Wo House)	2003	362	Hsin Chong Construction Company Limited	59
63	Tsz Lok Estate (Lok Foon House)	2003	265	China State Construction Engineering (Hong Kong) Limited	23
64	Lok Fu Estate (Lok Tsui House)	1994	360	Hung Wan Construction Co Ltd	16
65	Yat Tung (II) Estate (Mei Yat House, Mun Yat House, Kui Yat House)	2005	2 782	Yau Lee Construction Company Limited	108
66	Lei Muk Shue Estate Phase 3 (Chui Shue House, Wing Shue House) and Lei Muk Shue Shopping Centre	2005	1 983	Hip Hing Construction Company Limited	66
67	Lei Muk Shue Estate Phase 4	2005	1 918	China State Construction	54

	Name of PRH development	Year of completion	No. of units	Main contractor	No. of samples taken
	(Hong Shue House, Lok Shue House, Kin Shue House)			Engineering (Hong Kong) Limited	
68	Yau Lai Estate Phase 1 (Bik Lai House, Sau Lai House, Yi Lai House, Nga Lai House, Chi Lai House, Yat Lai House)	2005	2 550	Leighton Contractors (Asia) Limited	78
69	Shek Pai Wan Estate Phase 1 (Pik Long House, Pik Yuet House, Pik Ngan House, Pik Fai House) and Shek Pai Wan Shopping Centre	2005	2 877	Shui On Building Contractors Limited	92
70	Kwai Chung Estate Phase 3 Kwai Chung Shopping Centre	2005	-	Yau Lee Construction Company Limited	6
71	Kwai Chung Estate Phase 4 (Chin Kwai House, Tsz Kwai House)	2005	1 983	China State Construction Engineering (Hong Kong) Limited	70
72	Kwai Chung Estate Phase 5 (Hiu Kwai House, Ying Kwai House, Yuk Kwai House, Nga Kwai House, Yat Kwai House)	2005	4 515	Hip Hing Construction Company Limited	152

(Note) One sample taken from a vacant unit at Hei Chuen House of Shui Chuen O Estate was found to have a lead level of 14 micrograms per litre, which slightly exceeded WHO's PGV. The water samples taken from the rest of the three domestic blocks did not exceed the value. WSD took more water samples from Hei Chuen House for testing to ascertain the situation. After analysis, it was concluded that the water sample which exceeded the value might have been affected by the environment.

Screening test results for PRH estates completed before 2005

(144 PRH estates involving 2 635 water samples)

Water samples that comply with WHO's PGV

Tsui Ping (South) Estate	Lee On Estate	Butterfly Estate	Choi Fai Estate	Sai Wan Estate	Choi Yuen Estate	Tin Yan Estate	Tsz Lok Estate	Oi Tung Estate
Kwai Shing (East) Estate	Kin Ming Estate	Tin Yuet Estate	Po Tat Estate	Lei Yue Mun Estate	Tin Heng Estate	Tin Chak Estate	Sau Mau Ping Estate	Fu Tai Estate
Wang Tau Hom Estate	Ap Lei Chau Estate	Lei Muk Shue (I) Estate	Chun Shek Estate	Pak Tin Estate	Ka Fuk Estate	On Yam Estate	Sheung Tak Estate	Cheung Hang Estate
Yiu Tung Estate	Tsz Man Estate	Wah Sum Estate	Shek Lei (I) Estate	Tin Wan Estate	Ko Yee Estate	Wan Hon Estate	Sheung Lok Estate	Tsz Ching Estate
Kwai Fong Estate	Chung On Estate	Ho Man Tin Estate	Ko Cheung Court (the PRH portion)	Upper Wong Tai Sin Estate	Tin Shui (II) Estate	Tai Wo Hau Estate	Cheung Hong Estate	Hau Tak Estate
Shun Tin Estate	Wan Tsui Estate	Sun Chui Estate	Mei Lam Estate	Kwong Fuk Estate	Shek Kip Mei Estate	Lung Hang Estate	Lei Muk Shue (II) Estate	Hing Wah (I) Estate
Shek Wai Kok Estate	Oi Man Estate	Yau Oi Estate	Lai Kok Estate	Sam Shing Estate	Kwai Shing West Estate	Lek Yuen Estate	Lai King Estate	Kai Yip Estate
Un Chau Estate	Siu Sai Wan Estate	Hing Man Estate	Chuk Yuen (South) Estate	Cheung Ching Estate	Sha Kok Estate	Tai Yuen Estate	Choi Wan (I) Estate	Cheung Wang Estate
Shui Pin Wai Estate	Ping Shek Estate	Ma Tau Wai Estate	Shek Lei (II) Estate	Tsz Hong Estate	Wah Lai Estate	Kwai Chung Estate	Ping Tin Estate	Lok Fu Estate
Shek Yam East Estate	Wah Fu (II) Estate	Fu Shan Estate	Lai Yiu Estate	Tin Tsz Estate	Hing Tung Estate	Tin Shui (I) Estate	Wu King Estate	Tin Yiu (I) Estate

Tin Yiu (II) Estate	Wah Fu (I) Estate	Mei Tung Estate	Yat Tung (I) Estate	On Ting Estate	Tai Hing Estate	Wo Che Estate	Shun On Estate	Choi Hung Estate
Lung Tin Estate	On Tin Estate	Yau Tong Estate	Cheung Shan Estate	Fuk Loi Estate	Hoi Lai Estate	Tai Hang Tung Estate	Lower Wong Tai Sin (II) Estate	Ma Hang Estate
Shek Yam Estate	Tin Wah Estate	Upper Ngau Tau Kok Estate	Lok Wah (North) Estate	Yat Tung (II) Estate	Fu Cheong Estate	Tin Yat Estate	High Prosperity Terrace	Easeful Court
Shek Lei Interim Housing	Hong Tung Estate	Fu Tung Estate	Ming Tak Estate	Shun Lee Estate	Grandeur Terrace	Po Tin Estate	Kam Peng Estate	Ngan Wan Estate
Lok Wah (South) Estate	Yue Wan Estate	Nga Ning Court	Tsui Lok Estate	Kai Tin Estate	Lai On Estate	Kwong Tin Estate	Cheung Kwai Estate	Chak On Estate
Sun Tin Wai Estate	Wo Lok Estate	Hung Hom Estate	Choi Wan (II) Estate	Fortune Estate	Nam Shan Estate	Model Housing Estate	Hing Wah (II) Estate	Long Bin Interim Housing