

Panel on Development

Reply on Hon CHAN Han-pan's Letter dated 30 March 2017

On 30 March 2017, Hon Chan Han-pan sent a letter to the Chairman of Panel on Development to request the Administration to provide the following information:

a) Follow-up work on the incident of “excess lead in water” incident in the past two years; and

b) Replacement of aged water mains (in particular, on the replacement programme for Kwai Tsing District)

a) Follow-up work on the incident of “excess lead in water” incident in the past two years

1. Our response to the request after consulting the Education Bureau (EDB), Food and Health Bureau (FHB), Housing Department (HD) and Social Welfare Department (SWD) is as follows. The follow-up work stated in this response mainly covers actions taken after Legislative Council House Committee meeting on 11 July 2016.

Residential Buildings : Public Rental Housing (PRH) Estates

2. Since the “excess lead in water” incident, the Administration and the Housing Authority (HA) have been updating the public and the Legislative Council (LegCo) on the latest developments of the various follow-up actions. Regarding the follow-up actions for PRH estates, Members may refer to the papers issued to LegCo, including those issued to Panel on Housing for the meetings on 22 July 2015, 2 November 2015, 1 February 2016, 5 December 2016 and 6 March 2017; and papers for House Committee for the meetings on 1 September 2015, 8 October 2015 and 11 July 2016. The latest developments on the rectification works in affected PRH estates and enhancing HA's quality assurance mechanism are set out in paragraphs 3 to 14 below.

Rectification Works in Affected PRH Estates

3. In order to rectify the problem of excess lead in water, HA has asked the four contractors to replace the non-compliant pipes in the 11 affected PRH developments. Rectification works in the common areas of the 11 affected PRH developments started in March 2016. To date, works in the common areas of nine of the affected PRH developments have been completed. It is estimated that all the works in the common areas of the remaining affected PRH developments will be completed by Q2, 2017.

4. After rectification works in the common areas are completed, the contractors will begin works inside flats. Given that the furnishings and pipe routings inside individual flats vary from one to another, a trial for works inside flats was conducted at Kwai Yuet House of Lower Ngau Tau Kok Estate Phase 1 starting from 17 October 2016 to test the contractors' method and the arrangements on a small scale first.

5. Considering that the works in the common areas of the 11 PRH developments will be completed soon, and having consolidated experiences from the trial works at Kwai Yuet House of Lower Ngau Tau Kok Estate Phase 1, HA announced on 9 March 2017 by way of a press release and an HA paper that the works inside flats for the remaining affected PRH developments will be rolled out in Q2, 2017. With the consolidated experiences of the trial works, the contractors will apply the following arrangements for works inside flats for the rest of the affected PRH developments –

(a) Preparatory work

- (i) Household visits: The contractors will conduct household visits to discuss and work out the detailed arrangements of the works with the tenants. After on-site examination and sorting out the technical issues, the contractors will confirm the date and time of works with the tenants. In case the tenants are not available at the scheduled time, they can inform the contractors' ambassadors beforehand to

reschedule the appointment. During the trial, tenants were mainly concerned about the date and time of the works, preparation before the commencement of works, and the effects on existing furnishings, etc.;

(ii) **Communication with tenants:** In order to keep tenants informed of the detailed arrangements for works inside flats, newsletters providing details of works (including the flow, scope and date of works, water suspension time, samples of workers' identification badges and uniforms, etc.) have been distributed into tenants' mailboxes and notices have been posted in the lobbies of the estates. We appreciate that the works will inevitably cause inconvenience to tenants (e.g. tenants will need to make arrangements to enable the contractors to carry out works inside flats, mounting of gondolas for works on external walls, use of passenger lifts by the contractors' workers to convey materials during non-peak hours, use of some public space in the estate for workshops, etc.) and we would be grateful for tenants' tolerance and understanding. Before and during the works, the contractors will deploy ambassadors and set up a hotline (9am to 6pm, Monday to Saturday) to answer tenants' enquiries regarding the works inside flats.

(iii) **Briefings for the Estate Management Advisory Committees (EMAC):** Before the commencement of works, HA and the contractors will brief EMAC on the details of the method and arrangements for works inside flats to enable tenants to have a better understanding of the work details and answer their enquiries. During the works, HA will also update EMAC on the progress of works at suitable junctures.

(b) Arrangements during works

(i) **Works procedures:** The new pipes to be installed will be disinfected at the contractor's workshop and water samples will be taken in accordance with the requirements of the Water Supplies Department (WSD). The pipes will only be

delivered to site for installation upon obtaining compliant water test results. For the works inside each flat, two groups of workers will be arranged to replace the pipes inside the flat and on the external walls simultaneously. Gondolas will need to be mounted for the works on external walls. During the works, HD's site inspection staff will regularly monitor the quality and progress of works.

- (ii) **Duration of works:** The contractors' working time is from 9am to 6pm, Monday to Saturday. The contractors will schedule a time which is convenient to the tenants as far as practicable to minimize the inconvenience caused to them. The actual time required for the works in each flat will depend on factors such as the furnishings, pipe routings and weather condition on the day of works, etc. During the trial, for flats where existing furnishings were not extensive (e.g. the pipe routings had not been altered or the pipes were not covered by storage cabinets), the works inside flats could generally be completed within one day. For cases where the furnishings were more extensive (e.g. the pipes were covered by storage cabinets that required alteration of the back panels, etc.), the works may take around two days. Moreover, as the works will involve some of the pipes on external walls, the operation of the gondola would be affected at times of rainy or windy weather, and thus the works on external walls would need to be suspended, causing delay to the works schedule. In cases where the works cannot be completed within one day, the contractors will resume the water supply first and reschedule the appointment with the tenants at a time convenient to them to complete the works on another day.

- (iii) **Water suspension time:** The water supply to the flats where works are being carried out will be temporarily suspended. Other flats where works are not being carried out will not be affected. The water suspension will take about nine hours (from 9 am to 6 pm). Tenants can obtain drinking water from the temporary water points on each floor and the

standpipes during water suspension. Water supply to the flats concerned will be resumed after the works.

- (c) Reinstatement of furnishings
- (i) Pipe routing: To avoid or minimise damage to tenants' furnishings, the contractors will adopt the piping's existing routing as far as practicable provided that it is compliant with the relevant legal requirements. If part of the pipe routing is covered, subject to the tenants' agreement, the contractors may adopt a new routing based on the conditions of the flat.
 - (ii) Complexity of the furnishings: For flats with simple furnishings, the works are relatively easy and can usually be completed within one day. For cases with more complex furnishings (e.g. storage cabinets or false ceilings are installed in the kitchens or toilets), the works may take a longer time. During the household visits, the contractors will examine the areas concerned and discuss the work details with tenants. If the back panels have to be altered or the storage cabinets/ false ceilings have to be temporarily removed, subject to the tenants' agreement, the contractors will conduct the necessary alterations or temporary removal to facilitate the replacement of pipes. After completion of works, the contractors will reinstate the back panels or reinstall the storage cabinets/ false ceilings that have been removed. The approach to handling the furnishings for different types of flats is generally the same. The contractors will make good any damage to the furnishings and handle any claims for compensation by tenants.

6. During the trial works, the contractor has encountered cases where the works inside flats could not be carried out. These included cases where the tenants could not be contacted, flats with complex furnishings, and tenants who expressed unwillingness in carrying out the works, etc. For tenants who could not be contacted, the contractor will continue to try to contact them to arrange for the works to be carried out.

For flats with complex furnishings (e.g the pipes are covered by storage cabinets or false ceilings, etc.), the contractor is now exploring ways to minimise damage to the furnishings during works as far as practicable. As for tenants who expressed unwillingness in carrying out the works, we would continue to persuade them to allow the contractor to carry out the works at their convenience. This process would take time and HA would monitor the progress. The Water Authority would follow up with these tenants at an appropriate juncture and consider whether, and if so, what actions to be taken on a case-by-case basis.

7. To assist tenants of the 11 affected PRH developments in gaining access to safe drinking water, HA has provided temporary water points on each floor and standpipes, and the contractors have also installed water filters. As reported earlier, the contractors have been replacing or cleaning the filter cartridges regularly in accordance with the manufacturer's instructions¹. 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.

8. The measures above will continue to be in force until the rectification works for both the common areas and inside flats are completed. When the works inside flats are completed, water sampling tests (covering various parameters including lead) will be conducted in accordance with WSD's requirements. 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. HA will continue to monitor the quality and progress of the

¹ 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 substantially completed the replacement of filter cartridges for these households once, and the latest round of cleaning started in March 2017. 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 is in progress.

rectification works, and liaise with Water Authority and the contractors in order to minimize the inconvenience caused to tenants during the works and ensure that the works can be completed as soon as possible.

Enhancing HA's Quality Assurance Mechanism

10. In response to the recommendations in the Report of the Commission of Inquiry into Excess Lead Found in Drinking Water (COI), HA has implemented a series of enhancement measures to strengthen its quality assurance system for plumbing installation works, ranging from contract specifications, delivery and verification of materials, monitoring during construction to testing upon completion. These measures will strengthen the monitoring of contractors and sub-contractors as well as the control and checking of materials, including soldering materials. COI supports these enhancement measures.

11. In addition, the “excess lead in water” incident has revealed that there is a need for us to enhance HA’s risk identification and follow-up mechanism. Therefore, HA completed a risk assessment of about 2 300 building materials in December 2016. In accordance with the international standard ISO 31000 principles, HA identified the risk level of building materials and grouped them into categories according to the degree of risk -

- (a) for each of the materials, risk was rated in terms of a combination of the “Likelihood” of occurrence and the “Consequence” of an event;
- (b) the total risk score/level was 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 was 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)”.

12. After completing the risk assessment of building materials, HA has evaluated the risk assessment results and developed corresponding risk treatment measures based on the present known risk levels. These risk treatment measures will be implemented in phases with priority based on the degree of impact on construction quality. The first batch of risk treatment or enhancement measures was rolled out in January 2017. Major risk treatment measures for all materials will be rolled in the Q3, 2017 for every works project.

13. The proposed risk treatment measures will be applied to the five building construction work stages, namely, “Sample Submission”, “Purchasing”, “Delivery”, “Storage Control” and “Use (Installation)”, so as to ensure that effective control measures are in place for every stage. Such measures include increasing the number of materials for verification checks at delivery stage, the frequency of sampling test, the number of times of inspection during installation and adding the requirements on random checking of materials at storage areas.

14. HA updated LegCo Panel on Housing on the latest developments above in December 2016 and March 2017. HA will keep on cooperating with relevant stakeholders and experts, and improve the quality control systems regularly to check and monitor whether the materials comply with the specifications, with a view to maintaining and improving the effectiveness of the system.

Blood Lead Level Testing

15. The Administration took immediate follow-up actions upon occurrence of the lead in drinking water incident in public rental housing (PRH) estates. Amongst others, starting from 11 July 2015, arrangements for blood lead level testing were made for households with excess water lead level found by the WSD and residents of the three more easily affected groups, i.e. children aged under six years old (extended to eight years old on 3 August 2015), lactating women and pregnant women of the affected PRH estates. Persons with raised blood lead level have been monitored according to the established measures under a care protocol jointly developed by the Department of Health (DH) and the Hospital Authority until their blood lead levels return to normal. Health

advice and information were also disseminated to residents of the affected PRH estates through different channels.

16. As demand for blood lead level test service for the more easily affected persons for the lead in drinking water incident had been met, the DH and the Hospital Authority ceased to provide the dedicated blood lead level test service starting from 30 September 2016. As at 30 September 2016, the Hospital Authority conducted a total of 5 655 first-time blood lead level tests. Amongst them, only 165 persons (including 129 children, 28 lactating women, five pregnant women and three other adults) were found to have borderline raised blood lead level, which indicated potential health risks far below the risk of poisoning. To monitor the blood lead level of the above group of persons with borderline raised blood lead level according to the established care protocol, the Hospital Authority arranged blood lead level reviews for them. As at 31 March 2017, 144 persons' blood lead levels have returned to normal while seven persons were still at borderline raised level and would continue be monitored by the Hospital Authority. For the remaining 14 persons defaulted their blood lead level follow-up reviews, the Hospital Authority has, according to established procedures, tried to contact them through available channels and sent out letters some time earlier to remind them to contact DH/Hospital Authority as soon as possible if they would like to receive blood lead level reviews. Up to 30 September 2016, none of the 14 cases called back for review test rearrangement.

17. Based on the blood lead level test results, the DH arranged children with borderline raised blood lead level to undergo preliminary developmental assessment at the Child Assessment Service or Student Health Service, as well as drew up follow-up plans according to individual's situation. DH has been conducting developmental surveillance for 126 children with borderline raised blood lead level. As at 31 March 2017, 34 were found to have mild developmental problem which require surveillance and follow up; while another 10 children were found to have signs of developmental delay. Children identified with mild developmental problems or developmental delay have been referred to appropriate rehabilitation services, such as training, special education support, and clinical service, etc. Children showing no signs of

development problem have already been referred to the Maternal and Child Health Centres or the Student Health Service for enhanced developmental surveillance to facilitate appropriate follow-up. Child development is a continuous process which may change as the child grows. The DH will continue to monitor the development of these children.

18. As a matter of fact, during the hearings of COI, the expert witness for COI testified that the reference values on blood lead level adopted by the Government for prioritising individuals for screening and follow-up were appropriate and consistent with those identified by the international bodies. The expert witness remarked that the Government had taken appropriate steps to support the affected people, including arranging developmental assessments for children with borderline raised blood lead level, and ensuring that the residents would not be further exposed to lead in drinking water. He commended the Government for going beyond the guidelines of the Centre for Disease Control and Prevention of the United States in following up on the developmental issues of the affected children and was very impressed with the level of detail and the thought that had been invested in different contingencies.

Schools

19. Before the start of the 2016/17 school year, EDB has issued letters to all schools and kindergartens again in late August 2016 to remind them to take appropriate measures in accordance with the advice from the DH and WSD related to drinking water safety. Amongst others, schools and kindergartens were reminded to flush at taps before drinking or cooking as appropriate after a prolonged period of stagnation and to drain away water in wall-mounted dispensers before use every morning. They were also advised to refer to the information related to drinking water safety previously circulated as well as newly updated on EDB's webpage².

20. EDB has been maintaining close liaison with WSD in respect of drinking water safety in schools and continued to assist in disseminating

² Relevant information and publications distributed to schools and kindergartens can be viewed at <http://www.edb.gov.hk/en/sch-admin/admin/about-sch/reducing-lead-exposure/index.html>

relevant information and advices from WSD to schools and kindergartens to enhance their understanding on safety of drinking water, e.g. the pamphlet on “Water Use Tips” distributed in January 2017 which highlighted the flushing advice. In addition, in collaboration with WSD, a total of four seminars were organised in Q1, 2017 for kindergartens to provide them with tips and guidance on ways to ensure drinking water safety in their premises.

21. As for the secondary school with excess lead found in the drinking water samples collected during the water testing exercise in 2015³, remedial works for pipings serving for potable consumption at the school, including all drinking fountains and taps at the Home Economics Room for food preparation purpose, were completed in March 2016. EDB will continue to take forward the pipeworks for the remaining portions in liaison with WSD and the school concerned.

Welfare Facilities

22. The SWD arranged water sampling tests with the support of WSD, for 205 welfare units serving children aged below six who had to stay in the units for long hours and consume drinking water in the units. The concerned welfare units include day child care services, residential child care centres, children’s homes, small group homes, pregnant girls’ hostel and day and residential special child care centres. A total of 400 drinking water samples were collected and all were found to comply with World Health Organisation’s Provisional Guideline Value.

23. In September 2015, SWD provided water filters for lead reduction for 13 welfare units located in Government premises completed in 2005 or after and serving children aged below six who have to stay in the units for long hours and consume drinking water in the units. With the coordination of the Government Logistics Department, SWD also assisted about 200 other subvented welfare units (including child care centres, residential care units and day care units) in purchasing water

³ Seven drinking water samples (including five samples taken from the inside service and two samples from water dispensers) collected from the secondary school concerned were found to have lead content exceeding the World Health Organisation’s provisional guideline value. EDB has immediately installed filters certified for lead reduction for the school after the water testing results. The school has also stopped using the water dispensers in question.

filters for lead reduction through bulk purchase directly from suppliers.

24. To enhance the welfare sector's understanding on the ways to reduce lead exposure and maintain water safety, SWD disseminated relevant information to different welfare units serving service users who had to stay in the units for long hours and consume drinking water in the units, including residential care homes for the children, the elderly and the disabled. The information included health advice on reducing lead exposure from the Centre for Health Protection of the Department of Health, the advice on installation and use of wall-mounted dispensers provided by WSD, as well as "Tips for Using Wall-mounted Dispensers" published by WSD was disseminated on 28 August, 30 September and 8 December 2015 respectively. To further enhance the welfare units' understanding on ways to ensure water quality and water safety in drinking water as well as proper use of wall-mounted dispensers, two seminars were organised by WSD for residential institutions, day centres and child care centres on 18 and 20 January 2017 respectively.

25. These advices and tips were uploaded to SWD's website. SWD has also provided enquiry hotline for the welfare units concerned to seek advice and information.

Investigation and Review by Development Bureau and WSD

26. The Development Bureau (DEVB) established an International Expert Panel on Drinking Water Safety (IEP) on 1 June 2016, comprising members from Australia, Canada, United Kingdom and local experts.

27. DEVB has established an inter-bureau and inter-departmental working group in March 2016 and engaged a consultant to study the water safety regimes of leading jurisdictions. Having reviewed the findings of the consultancy studies, DEVB will continue, in consultation with the working group, to explore the water safety regulatory regime and deliberate the necessity of legislation on drinking water safety and developing a water quality regulatory framework which involves establishment of a Water Quality Regulator to oversee the performance of water suppliers.

28. In regard to formulation of the drinking water standards, sampling protocols and enhanced drinking water quality monitoring programme, WSD had engaged an expert consultant from the United Kingdom to review, amongst others, the sampling protocols of various organizations (e.g. the European Union) and developed countries. DEVB, WSD, the IEP and the United Kingdom expert consultant have completed the study on the relevant issues, including the purposes and limitations of the various sampling protocols, and their applicability in Hong Kong's situation, and are deliberating on the implementation details and necessary follow-up actions on the proposed action plan with relevant bureaux/departments and the trades, with a view to finalizing the plan as soon as possible.

29. In regard to the development of Water Safety Plans (WSP), WSD, with assistance of an Australian expert consultant, has completed the review of the existing WSPs for its facilities for enhancement and planned to promulgate in stages the guidelines and templates for developing WSP for general buildings as well as specific buildings, and will provide assistance to property owners and management agents in facilitating the development of the respective WSP for buildings.

30. WSD has also set forth on a holistic review of the Waterworks Ordinance and its Regulations on, inter alia, the roles and responsibilities of persons engaged in the design and construction of the inside service and the systems for their registration. WSD has identified some priority amendments setting out clearly the duties of licensed plumbers and plumbing workers, and the applicable standards for plumbing materials and submitted the proposal to the Legislative Council for deliberation in the Q2, 2017.

31. Starting from September 2016, training courses have already been provided for licensed plumbers and plumbing workers about the potential causes and hazards of drinking water contaminations, and precautionary measures, so as to enhance their awareness on drinking water safety. WSD launched the Voluntary Continuing Professional Development Scheme for Licensed Plumbers in October 2016 in conjunction with the plumbing industry stakeholders and issued a practice guide namely "Good Practice Guide on Plumbing Works" in March 2017

jointly with the Construction Industry Council, recommending good practices to relevant stakeholders for adoption during the course of design and construction of plumbing works.

32. WSD has stepped up the regulatory control of the pipe materials and fittings of the plumbing system by carrying out pilot scheme of risk-based random inspection of plumbing works during construction stage of new plumbing installations with effect from 1 April 2017. WSD will further enhance the control of the plumbing products that have its General Acceptance (GA) for use in plumbing systems by introducing a surveillance programme for sampling and conducting verification test for the plumbing products with GA and setting up a material laboratory to conduct the verification test. WSD also launched the stage one voluntary labelling scheme which covers water taps and mixers with GA on 1 April 2017 to help the public identify plumbing products with GA to safeguard their drinking water quality.

b) The progress of Administration's work on replacement and rehabilitation of water mains is as follows:

1. The WSD launched the Replacement and Rehabilitation (R&R) Programme for Water Mains in 2000 to replace and rehabilitate around 3 000 kilometres (km) of water mains. The R&R Programme was substantially completed in 2015 and the healthiness of water supply network has been improved significantly. The number of main burst in Hong Kong decreased significantly by about 95% from around 2 500 cases in 2 000 to around 120 cases in 2016. For Kwai Tsing District, the number of main burst also decreased significantly from around 190 cases in 2 000 to 17, 14 and 10 cases in 2014, 2015 and 2016 respectively. The remaining works under the R&R programme mainly involve connection of the replaced and rehabilitated water mains to the consumers and the subsequent road reinstatement works. However, due to the traffic conditions and other factors, works at a few individual road sections still require further coordination with relevant departments before completion.

2. WSD has paid close attention to the aging of water mains in Kwai Tsing District, and has been proactively replacing and rehabilitating the aged water mains. Around 153 km of aged water mains are included in the R&R Programme. At present, replacement and rehabilitation of around 142 km water mains have been completed. The works could not be proceeded with as scheduled previously owing to the contractor's internal problem but this problem has been resolved. The works for the remaining 11 km of water mains are anticipated to be completed in stages from 2017 to 2018. As for the works within the North-eastern part of Kwai Chung, the major work-fronts are located in the vicinity of Wo Yi Hop Road (near Lei Muk Shue and Cheung Wing Road) and Shek Pai Street. Although a great deal of difficulties were encountered in carrying out the works at these locations, such as heavy traffic, congested underground utilities and high rock profile, with the coordination among WSD, related authorities and local stakeholders, these difficulties have been overcome and the contractor is now pressing ahead with the works in these areas. For example, concurrent work-fronts have been set up along Wo Yi Hop Road to expedite the works progress. Under a smooth scenario, the works at Wo Yi Hop Road is likely to be completed in 2017.

3. In order to improve the water supply system in the North-eastern part of Kwai Chung and to minimize the inconvenience to the public arising from the main burst incidents, WSD will closely monitor the progress to ensure completion of the works as soon as possible.

**Development Bureau
Water Supplies Department
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