2015年11月4日

上午10時05分恢復聆訊

出席人士： 石永泰資深大律師、許偉強大律師及鄭欣琪大律師，為外聘律師，代表食水含鉛超標調查委員會

殷志明大律師，由羅夏信律師事務所延聘，代表香港房屋委員會

麥高義資深大律師及許佐賓大律師，由的近律師行延聘，代表保華建築營造有限公司

王鳴峰資深大律師、陳樂信大律師及羅頌明大律師，由律政司延聘，代表水務署署長

Mr Ian Pennicott資深大律師及林定韻大律師，由孖士打律師行延聘，代表中國建築工程（香港）有限公司

林國輝大律師，由孖士打律師行延聘，代表瑞安承建有限公司

李頌然大律師，由顧增海律師行延聘，代表有利建築有限公司、明合有限公司及伍克明

譚俊傑大律師及吳思諾大律師，由何謝韋、李偉業律師事務所延聘，代表啟晴邨及葵聯二邨公屋居民代表Lee Pui Yi、Chong So Nga及Lui Hui Ping

主席：我哋請番馮女士入嚟。

香港房屋委員會第二證人：馮宜萱女士（房屋署副署長（發展及建築））宣誓繼續作供

主席：繼續吖，殷大律師。

殷先生：主席，我繼續讀呢個馮女士嘅書面口供。

REQUEST 3 - "Explain and Identify the Specific Contractual terms and provisions pertaining to (a)the construction of the Affected Estates to ensure drinking water will be lead free and safe and (b)prohibiting the use of pipes, fittings and soldering and other plumbing materials from which lead may leach into drinking water."

51. HA's contracts with the contractors are drawn up to comply fully with the statutory and regulatory requirements under WWO. The contracts therefore include specifications to the effect that solder material should be of lead-free category, and that other parts of the fresh water supply system should comply with the standards promulgated by the WA. Under the WWO regime, there had been no stipulations on lead content in water, and HA's contracts similarly did not include such specifications.

52. Pursuant to the building contract requirements, the Main Contractor has the general obligations to execute the Works including providing all necessary labour, materials, construction plant, temporary works and superintendence and to complete the Works within the time for completion as stipulated in the contract. The Main Contractor shall comply with the instruction of the Contract Manager on any matter related to the contract and conform to all enactments and regulations including but without limitation to the Waterworks Ordinance (Cap. 102) and Waterworks Regulations (Cap. 102A) during the continuance of the Works. The Main Contractor is obligated under the contract to keep the HA indemnified against all penalties and liabilities for breach of any such enactments or regulations.

53. All materials and workmanship deployed by the Main Contractor for execution of the Works shall be of the respective character, quality or kind required by the

contract and shall be subjected to examinations and tests as specified in the contract or as ordered by the Contract Manager.

54. The HA produces standard specifications as templates for project teams to adopt. For all projects including the 11 affected estates, the following standard specifications for plumbing installation in the building contracts were adopted:-

(a) **PLU1** – Water Supply,

(b) **PLU2** – Sanitary Appliances; and

(c) **FWP1** to **FWP 6** and **FWP14** – cover system requirements of the water pump installations and associated pipework, fittings and components; as well as testing, commissioning and maintenance.

The key requirements of these specifications are elaborated as follows.

Compliance with Statutory Requirements

55. In PLU1, it was specified that the plumbing installation shall comply with all statutory requirements.

56. The following ordinance, regulations and standards are particularly relevant to drinking water:-

(a) The Waterworks Ordinance (Chapter 102) and Waterworks Regulations (Chapter 102A);

(b) Hong Kong Waterworks Standard Requirements for Plumbing Installation in Buildings and Circular Letters issued by the Water Authority; and

(c) Relevant sections of appropriate international standards on materials and workmanship

57. When the plumbing installation is executed and completed by the building contractor in full compliance with the contract conditions, it should satisfy all the requirements of Water Authority for water connection to the estates concerned. Also, if the WA accepts the installation for fresh water supply connection, the plumbing materials installed should be suitable for conveying water to tenants which must be safe for drinking.

Material Requirements

58. For copper and copper alloy fittings, compliance with BS EN 1254-1 is specified in PLU1.

59. For other materials and equipment involved in the fresh water supply system such as water pumps, valves, mixers, stop cock, etc., different extents of lead content are permissible according to the British Standards governing various components of equipment. The requirements of these standards have been specified in HA specifications. For those mixers, which are chromium plated brass, WSD's approval certificates are required as WSD is the authority in conducting testing and verification of the materials for appropriate application in fresh water supply system.

Workmanship Requirements

60. PLU 1 also covers the workmanship requirements during the execution of plumbing systems, including cleanliness, storage, and procedures for jointing of copper pipework by soldering. The requirement for the contractor to clean and sterilize the systems to the satisfaction of Water Authority before they are put into operation was also specified.

Inadequacies in the past systems

61. We now realise that the HA’s past system before the Incident did not focus on the presence of lead in the

fresh water supply system, or in the water, and did not target soldering materials as a high risk item. Under the contract, HA did not specifically require the main contractor to put in place a management plan to control, inspect or supervise the use of soldering materials, including quarantine upon delivery of materials. We have subsequently introduced appropriate measures to address the deficiencies.

REQUEST 4 - "Explain the Choice and Decision of joining the pipes (i) by soldering instead of (ii) using mechanical compression joints, and why the former method of joining the fresh water pipes was extensively used in the Affected Estates. If it is a matter of cost, please state the difference in costs."

62. All HA projects adopt standard Specifications for plumbing installations. Jointing of copper pipes must meet the functional requirements of water-tightness and pressure testing, be durable and must not leak in the longer term.

63. Currently, for copper pipe installation, soldering is specified in PLU1 for pipe connection while mechanical compression joint is allowed to be used on technical need basis, such as the pipe connection to valves or when soldering joint is not practicable due to site constraints.

64. Soldering when comparing with compression joint is considered more appropriate for connecting copper pipes in new construction projects where many connections must be made in a short period of time to ensure water-tightness and integrity of the plumbing installations. Moreover, a soldered joint is highly tolerant of flexing and bending while compression fittings are more sensitive to dynamic stresses. The latter is considered bulkier with which workers will require more effort to connect copper pipes at high level than soldering. The consideration of specifying soldering instead of mechanical compression joint for

copper pipe connection is mainly based on the technicality and practicality for application in the HA new construction projects instead of cost consideration.

65. All of the 11 affected estates used copper pipe connections with soldering, which is a standard practice generally adopted in other HA's projects constructed during the same period.

66. The HA is now considering the use of fittings with built in solder materials, as well as mechanical jointing of copper pipes, including compression joint, press fit, push fit types etc. all subject to further exploration with stakeholders in the industry. Moreover, the HA has been introducing stainless steel pipes with mechanical jointing for some pilot projects as another alternative.

REQUEST 5 - "*Who in HA was responsible for the procurement, inspection, construction and installation and approval of Plumbing Materials and the steps taken in (a) discharging such responsibilities and (b) ensuring the safety of drinking water.*"

67. In the implementation of public housing project, DCD adopts quality systems and measures as detailed in paragraphs 7 to 16, 20 and 21. For plumbing installations of each and every project, the Project Architect (PA) & the Project Building Services Engineer (PBSE), under the supervision of their respective Chief Architect and Chief Building Services Engineer, prepares the design and specifications in the Building Contract. HD's project officers submit, to WSD, Form no. WWO132 applying for new water supply for the project upon completion.

68. During the process of preparing the tender documents of the building contract, standard specifications are retrieved by PA and PBSE from the HA specification library, and modified through additional particular

specifications as necessary to suit specific circumstances of a project.

69. For capital works new works building contracts, HA enters into a contractual relationship with the Main Contractor, who shall then be responsible for carrying out of the works required, including the construction and installation of plumbing works.

70. The HD's Chief Architect (CA) is the Contract Manager (CM) of the building contract supported by professionals of various disciplines who are delegated with the authority under the Contract as Contract Manager's Representatives (CMR). The responsibilities of the CMR and site inspection team (SIT) in site inspection are outlined in a "Master Process Manual" (DCMP). CMR and SIT carry out the checks, inspections and tests according to the provisions under the contract and the DCMP. Inspection percentages are determined from time to time by the Project Architect and endorsed by the Senior Architect. Inspection percentages of nominated sub-contract are recommended by Senior Building Services Inspector and approved by the Senior Building Services Engineer.

71. The SIT checks the materials submitted by the Main Contractor against the specifications, and gives recommendations to CMR for approval. CMR also checks the submission to ensure compliance with specification requirements on materials, construction and performance characteristics based on information submitted by the Main Contractor prior to approval. SIT conducts periodic and sample checks on materials and workmanship for conformance to specifications.

72. The roles and responsibilities of the CMR and SIT and that of the Main Contractor including the submission of WWO forms have been detailed in paragraphs 41 to 49 and thus are not repeated.

73. The HA was not aware of the possibility of lead in water, and did not conduct any laboratory tests for lead in water before July 2015. The HA had all along considered that conducting laboratory testing for the eight mandatory parameters specified by the Water Authority would suffice. The HA has followed the established practice of focusing on the functional performance of the water supply installation in terms of pipe fixing and alignment as well as water tightness of the system through visual inspection and water test. Soldering materials have been regarded as an insignificant sundry item and there has been a general lack of awareness of the risk they pose. Had the HA been aware of such risk, it would have been effectively controlled through our Quality Assurance Regime both at contract level and at corporate level.

REQUEST 6 - "*Explain how plumbing materials containing lead came to be used in the affected estates and also why the use of the same had been allowed and overlooked.*"

74. With reference to the preliminary findings of the Task Force led by WSD issued in late September 2015 and as noted by the Housing Authority Review Committee in early October 2015, the major cause of excess lead found in drinking water is due to excessive lead content in the soldering material for the copper pipes. I, and my colleagues have been co-ordinating and presenting background information to facilitate the work of the Review Committee.

75. There are international standards outlining the extent of permissible lead content of various components of fittings and equipment, such as mixers, pumps and valves, in the water supply. Therefore, the HA had drawn up specifications with reference to WWO, WWR and such standards. In particular, soldering alloys with lead content and brazing alloys with cadmium are not permitted in installations for water for human consumption and according to British Standard EN ISO 9453, a maximum 0.07% of lead content

is defined for soldering alloys.

76. All along, it has been well recognized in the local construction industry that, in respect of the fresh water supply system, the focus of the quality control is on its operation performance, particularly for water tightness. Further, the eight parameters for testing of water samples prior to water connection and the seven testing parameters under the WSD's "Quality Water Supply Scheme for Buildings - Fresh Water" have not included the testing of heavy metals until WSD issued Circular No. 1/2015 in July 2015.

77. HA's quality control also focuses on the type and size of pipes, pipe brackets, pipe sleeve, soundness, plumb, level/fall, pressure test on operating performance and water sample test for the parameters prescribed by WSD. We trust the Main Contractor, domestic sub-contractor and nominated sub-contractor will procure and use "lead free" solder for the plumbing installation as the soldering material is widely accepted and broadly applied in the jointing of copper pipe works in Hong Kong. Before the Incident, we were even not aware of the risk of presence of lead in soldering materials.

78. Although there is no cost information in the Bills of Quantities, as part of our investigation we discovered that there is no significant cost savings in the use of soldering materials containing lead. And we also found using leaded soldering material will not result in any significant saving in time for the execution of soldering works as shown in site demonstrations.

79. Based on site records, the approved plumbing material samples of the affected estates complied with the specifications and statutory requirements. As reported by the Main Contractors, they relied on their domestic sub-contractor who further sublet the plumbing installation to a sub-sub-contractor who

would be responsible for procuring the soldering material.

80. As stated in the interim report of HA's "Review Committee on Quality Assurance Issues Relating to Fresh Water Supply of Public Housing Estates" (the Review Committee), which was submitted on 6 October 2015, HA's past quality control mechanism for fresh water supply before the Incident, including the parts that sought to meet the statutory and WSD's administrative requirements, as well as the parts that were in addition to the statutory and WSD's requirements, has been focused on **known issues about safety and quality of fresh water in the past.**

These are:-

(a) The physical performance of the water supply system, including the alignment of water pipes, position and quantity of brackets and whether they are firmly fixed, the adequacy and spacing of pipe sleeves, the connection of pipes, whether the materials used comply with contractual requirements, and whether there are water seepages or bursting of pipes in the system etc.;

(b) The eight water test parameters as stipulated under WSD Circular Letter No. 2/2012, including pH, colour, turbidity, conductivity, free residual chlorine, E.coli, total coliforms and heterotrophic plate count; and

(c) The risk of Legionnaires' disease, for which HA has been requiring the Main Contractors to carry out additional disinfection of the water supply system of newly completed estates before occupation.

81. I agree with the Review Committee's view that with hindsight the past mechanism for ensuring the quality of drinking water supplied to PRH estates had certain inadequacies. In general, there had been a lack of awareness in the construction industry, including on

the part of the Main Contractors, the plumbing sub-contractors, the LPs, as well as the HD, of the risk of presence of lead in solder and its implications for the drinking water quality and in turn, the associated health risks.

82. I also agree with the Review Committee's view that the past quality control mechanism for HA's projects that was in place before the Incident, was consistent with the industry's practice, the law (i.e. WWO and WWR) and other WSD's requirements, and hence had not focused on the presence of lead (or other heavy metals) in the fresh water supply system or in the water, and had not targeted soldering materials as a high risk item. This gave rise to inadequacies including :-

(a) In terms of the contract with the Main Contractor, HA's system was compliant with the law and the requirements of the WA, in that the contract specified that the Main Contractor must employ a LP, that only lead-free soldering materials could be used, etc. However, HA's system did not specifically require the Main Contractor to put in place a management plan to control, inspect or supervise the use of soldering materials, including quarantine upon delivery of materials;

(b) In terms of in-process supervision, testing and commissioning, HA's system did not check for presence of lead in soldering joints; and

(c) In terms of checks on completion of projects, HA's system followed the then WA's requirements on tests of water samples for eight parameters which did not include tests for lead.

REQUEST 7 - "*Explain what, after lead has been discovered in drinking water, Steps taken by the HA (a) to address health concerns of the residents of the Affected Estates and (b) to ensure the safety of drinking water in the affected estates.*"

83. With regard to tenants in the 11 affected estates, HA and WSD have, after excess lead was found in water, immediately arranged for the supply of bottled water and a temporary water supply (including the provision of water tanks or water wagons and standpipes). HA provided each household with excess lead found in water sample with health information and information about follow-up services. The estates' Property Service Management Office distributed a health fact sheet cum letter to each tenant's mailbox inviting residents to receive blood lead testing. Delivery service of bottled water to needy households was also provided. On the night of the announcement, representatives from HA, WSD and the Department of Health attended a residents' forum in the affected estate. Tenants were told of the latest updates and were able to air their concerns.

84. At the request of the HA, the four Main Contractors of the affected estates have provided various relief measures, including extending connection pipes from the roof-top water tanks to each floor of the building, and installing filters with U.S. National Sanitation Foundation 53 certification for lead reduction for the affected households free-of-charge, and to replace the filter cores for them free-of-charge for two years. As at 28 October 2015, filter installation for the households in all affected estates has been completed except those with whom we have difficulty in making contact. Connection pipes from the roof-top water tanks to each floor of the building have been completed and are in operation for 3 estates while others are at completion or final testing stage and are anticipated to be ready for operation progressively by end November 2015. All the above measures have helped immediately to reduce the health risks faced by affected residents in association with drinking water containing excess lead.

85. In addition, the HA has requested the four Main

Contractors to take necessary remedial actions, and to submit the options and timetable for the replacement of water pipes with solder joints which do not comply with the standards. The scope of and programme for such remedial work has to be discussed carefully. The HA project teams will monitor the progress of the contractors' remedial actions and ensure the safety of drinking water in the affected estates.

REQUEST 8 - "*Describe the Test results of plumbing materials taken by the HA for testing and identify the locations of the samples taken.*"

86. Prompted by enquiries and upon testing of more water samples, HD was seriously concerned about the first incident of drinking water containing excess lead in Kai Ching Estate and quickly investigated to learn more about the possible cause(s). On 9 July 2015, HA announced that lead was found in two soldering joints in Kai Ching Estate. Two pieces of copper pipe and two welding joints were collected from the kitchen of two vacant flats of Mun Ching House and Lok Ching House, Kai Ching Estate. The test results indicated that the lead content in the copper pipe was less than 0.05% whereas the lead content in the solder joint around 50%.

87. To have a better understanding of the availability of solder material in local street shops, HA had conducted lead test for two pieces of solder wires and one lot of solder powder flux bought from two local hardware shops in early July 2015. It had been clearly expressed to the shopkeeper that "the type suitable for drinking water copper pipe" was required. The test results indicated that the lead content of both solder wires were 60%. It should be noted that these materials were not used in Kai Ching Estate

88. HA also removed the kitchen sink mixer from a vacant flat of Mun Ching House, Kai Ching Estate and sent it to a WSD's approved laboratory for testing in July 2015,

with the results forwarded to WSD for consideration. WSD recently informed that the test results complied with the relevant general acceptance of the mixer.

89. Noting that the Government would set up the Task Force, we thus focused our efforts in relief measures, rectification, system review and offering assistance to the Task Force.

90. As part of the exercise to sample test water in PRH estates for lead, Government Laboratory carried out on-site rapid screening of lead on the solder joints by hand held XRF (X-ray Fluorescence) analyzer. This method is used generally after a water sample has been found to contain excess lead and in all such cases, the screening results indicate that lead was not detected in the exposed water pipe but detected in the soldering points at the joints of exposed water pipes. Further, Government Laboratory took solder joints samples from water pipes installed in estates in which water sample with excess lead has been found, for laboratory testing. 23 water pipe and solder joint samples have been taken from all such estates except for Kai Ching Estate. Locations included domestic flats, management offices, guard rooms, security rooms and disabled toilets. The lead content of the solder joint ranged from 18% to 61% by weight.

REQUEST 9 - "*Describe the Measures and Quality Control System put in place and/or any other recommendations by the HA in order to comply with the Requirements and Standards and to ensure the safety and quality of drinking water supply.*"

91. The past control mechanism for HA's projects was consistent with the industry practice, the law and other WSD requirements, but had not focused on the presence of lead in the fresh water supply system, and had not targeted soldering materials as a high risk items. Since then, the HA has reviewed and strengthened quality control to address the risk.

92. For projects under tender/construction and those to be tendered out, to ensure the use of only lead-free solders for copper pipes at fresh water inside services, and the supply of potable water meets the quality requirements of the WSD, the following interim enhancement measures are implemented with immediate effect from mid-August 2015 onwards:-

I. <u>During construction</u>

(a) Main Contractor is required to:-

(i) submit supporting document of lead free grade soft solder or filler metal as required under current submission procedure; and

(ii) submit a Sub-contractor's Management Plan covering stringent plumbing sub-contractor supervision and on-site monitoring to ensure that all workers will use only lead-free category of soldering / brazing materials for jointing of copper pipes including quarantine soldering / brazing materials and define the roles of Licensed Plumbers (LP) in supervising plumbing installation works.

(b) HA's project team is required to:-

(i) register delivery of soldering/brazing materials to site under On Site Delivery Verification Form 6210 now produced and shown to me marked "Exhibit [11]"; and

(ii) conduct random audit checking upon material delivery to site after Main Contractor's completion of checking for lead free content in solder joint.

II. <u>End of construction</u>

(a) Main Contractor is required to:-

(i) declare that only lead-free category soldering / brazing material are used;

(ii) carry out cleansing and disinfection of the plumbing installation;

(iii) collect water sample:-

- agree with WSD the locations for collecting water samples and arrange accredited laboratory for bacteriological and chemical analysis according to the water quality requirements specified in the WSD Circular Letter Nos. 2/2012 and 1/2015. In the submission of WWO46 part I, a supporting document of lead free grade soft solder or filler metal used in soldering, brazing and/or welding construction methods is required;
- agree with HA's Contract Manager and take additional test samples on top of WSD's requirement for concurrent water quality test by a Direct Testing Contractor employed by the HA. The sampling should cover a selected point of use of each distribution zone and a random point of the lowest zone of each vertical riser;

(b) In the event lead content in water greater than 5 µg/litre is identified:-

(i) HA's site inspection team to conduct further check on the soldering / brazing materials to ascertain if they contain lead; arrange with Direct Testing Contractor for X-ray scanning, or other means as appropriate;

(ii) Main Contractor to carry out investigation on the cause(s) and submit investigation results and details of all necessary rectification works for approval of the

Contract Manager;

(iii) after completion of the rectification works, Main Contractor to coordinate with the HA's site inspection team for conducting re-test(s) by a Direct Testing Contractor employed by the HA.

III. After completion and before occupation of new buildings

(a) Main Contractor to carry out cleansing and disinfection of all the completed fresh water tanks and fresh water supply pipework;

(b) HD's site inspection team to arrange a Direct Testing Contractor to collect water samples and test according to the water quality requirements specified in the WSD's "Quality Water Supply Scheme for Buildings - Fresh Water". Water samples shall be taken from each potable water supply tank in the building(s) and the water outlets at the farthest point of use in each branch of the distribution system.

REQUEST 10. LO & LO's letter Ref. CPY/GA:114501 dated 13 October 2015 - Given the incident of lead in drinking water, please comment on the necessity, appropriateness, feasibility and effectiveness of replacing the entire fresh water plumbing system (or part(s) thereof) in the Affected Estates to ensure the safety and quality of drinking water. On this subject, your comment is also sought on the time-table and costs involved.

93. The Water Authority (WA) has issued letters to HA's property management stating that the result of their analyses of the solder joints of the inside service "shows that the joint material does not comply with the Waterworks Regulations with regard to the lead content". We believe the rectification work is essential from health perspectives, and we consider it essential from contract administration

perspectives. The rectification in the form of re-plumbing is feasible from the construction perspective.

94. Under the contract, the Main Contractor has the obligation to rectify all non-conforming works and in this case, all four Main Contractors agreed to rectify all non-complying pipe joints and associated pipeworks all at their own cost. Due to the complexity and scale of the rectification, we have written to the WA to apply for an extension of time. The actual time needed to complete the work will depend on a number of factors, including the scale of rectification work to be identified and whether access to flats can be readily facilitated by tenants, etc.

95. HA attaches great importance to the Incident and the health of the tenants in the affected estates. HA has requested the four Main Contractors concerned to submit their proposals on how to rectify the state of non-compliance in the 11 affected estates. At the moment, the HA project officers and the Main Contractors have worked out some feasible solutions (including Vertical Plumbing Line Diagrams and disinfection proposals) for the initial stage of permanent replacement work and obtained approval by WSD. In order to iron out difficulties and uncertainty of the replacement work and minimize disturbance and nuisance to the residents, trial installation will be carried out on the public area of four selected estates to facilitate review and detailed planning of works. Preparation for trial installation including sourcing of materials, prefabrication, etc.is underway. In parallel the Main Contractors will carry out on-site investigation to identify the location of the affected solder joints.

96. The rectification works are no easy task. These works are classified as re-plumbing works requiring submission to and approval by the WA. They are labour

intensive, involve complex technical issues and procedures. Careful planning and preparatory work in advance, including liaison with tenants or their representatives, is necessary in order to ensure smooth execution and avoid causing undue inconvenience to tenants' daily lives.

<u>殷先生繼續主問</u>

問：馮女士，剛才同埋琴日你都聽到我朗讀咗一次你嗰篇書面嘅作供，咁你亦都知道我哋係喺嗰個 footnote 2 嗰度，作出咗一個細小嘅修改，關於嗰個"Permanent Secretary for Transport and Housing (Housing)"嗰部分，亦都係喺啲 exhibits 嗰度，附件嗰度，附件 6 至 8 嗰度，我哋係更改咗啲附件嘅，關於啲水務署嘅表格。除此之外，你有冇嘢要修改呀，對於呢個書面嘅口供？

答：我冇嘢需要修改。

問：你願意採納佢作為你喺呢個聆訊入面嘅口供嘛？

答：我願意。

問：你有冇其他嘢想補充呢？

答：我冇嘢補充。

問：咁請你等其他嘅大律師盤問你。

主席：係，石大律師。

<u>石先生盤問</u>

問：馮女士，我首先就想同你釐清一啲適用於水喉、水管或者係啲焊料嘅一啲標準，無論係法定嘅標準或者係合約嘅標準。咁就我哋大家成日聽日有個名詞，係叫「英國標準」，"British Standards"。咁就我想即係為即係委員會，或者為即係旁聽嘅公眾人士都好，就即係想

你解釋一下--或者我 show 畀你睇，睇下你同唔同意我對有關嗰啲即係適用嘅 British Standards 嘅理解。

答：唔。

問：首先，我就想你睇睇一啲嘅法例，就係 Waterworks Regulations，Bundle C2，C2，第 1156 頁，呢個 1156，就係《水務條例》(Waterworks Ordinance)底下嘅一個附屬法例，Waterworks Regulation。你睇睇 2 條，Regulation 2，釋義嗰個部分，Interpretation，裏面就有定義咩嘢叫做"BS"嘅。"BS"就係 British Standard，就係叫做"the latest revised edition of a specification issued by the British Standard Institution"，就係即係英國標準呢個學苑，呢一個機構，佢最新出嘅有關某一個要求嘅版本。因為我知道通常呢啲 standard 梗係不斷地與時並進嘅，咁所以就逢嚟法例裏面 refer to 話要適用 British Standard 呢，就用最近期嗰個為準。咁呢個就係嗰個釋義嘅部分。

答：唔。

問：咁就你哋同意呢個係即係一般你哋嘅睇法，係咪，British Standard？

答：係，我同意嘅。

問：係，好。跟住我哋睇睇就係第 19 條，1160 頁。嗱，1160 頁，佢就係有關喉管同埋一啲附件嘅，pipes and fittings，咁佢就話嘞，"Subject to subregulations (2), (3), (4), (5), (6)"，我哋唔使理呢一拃嘅 subreguations，咁跟住就係--即係除咗呢啲嘅 subregulation 另有規定除外，"this Part"，即係呢個 Waterworks Regulations 整個部分，同埋 Schedule 2，第 2 附件，"shall apply to any pipe or fitting ..."

主席：Shall...

問："... installed or intended to be installed ..."

主席：Shall not...

問："... in any fire service or inside service."

主席：Shall not apply。

石先生：Shall ...

主席："Shall apply"，因為你讀咗。

石先生：Shall -- Shall apply。

主席：Shall not apply。

講者（不能辨別）：Shall not。

石先生：Shall not -- well，"shall apply to any pipe or fitting"。

講者（不能辨別）：Sub(1) is "shall" and sub(2) is "shall not"。

石先生：Sub(1) is...

講者（不能辨別）：Sub(1)。

石先生：Sub(1) is "shall"。

主席：係，sub(1)。

石先生：Sub(1) is "shall"。

主席：係。

問：下面嗰啲 subregulation(2)嗰啲就可能會係締造咗一啲嘅例外，但係 subregu--即係 Regulation 19(1)就係話基本上，就係 Schedule 2 同埋個 regulation 嘅第一部分就係適用於任何喺 inside service 裏面用嘅一啲喉管或者附件嘅。Inside service 呢我哋而家即係都知道就係其實基本上就係即係供水系統一過咗嗰個所謂 lot boundary 一過咗地界，入咗去嗰個屬於業主嗰個地之後嗰 part 就叫 inside service㗎，對嘛？

答：正確嘅。

問：係。所以簡單咁講，通常法例就係用好長嘅方法講一啲好短嘅概念，即係基本上就係呢一拃嘅 Regulations 19 或者 20，加埋附件 2 就係適用於 inside service 裏面用嗰啲喉管嘅，我哋如果要睇下

有啲咩標準係適用呢，我哋就要此中尋嘞，就要去睇 Regulation 20 下面嗰條，同埋附件 2。Regulation 20 就係跟住嗰條嚟嘅，就叫做"Pipes and fittings to be of British Standard"，你見到喇。就係附--喉管同埋附件呢就係要符合英國標準，"shall be of the British Standard"。佢呢度就冇講過好仔細咁樣講係邊幾個 British Standard 嘅，但係我知道就其實有一個好巨大嘅表，一間會同你睇㗎嘞，同埋你嘅證人供詞都有講過。咁呢個第一呢就係基本上 British Standard 會適用，但係跟住仲有個 Schedule 2 個附件 2。附件 2，我哋睇睇就係喺 1171 頁，1171 頁。咁你見到就係 Schedule 2 就有 Pipes and Fittings。對唔住，我跳快咗。Schedule 2 見到嘛？Part 1 Pipes and Fittings。你如果睇 1172 頁第 17 段，佢就寫住"Capillary fittings or compression fittings shall comply with British Standard 864, Parts 2 for capillary and compression fittings of copper and copper alloy and compression fittings for pipes laid under the ground shall be Type B. "咁樣。即係呢種技術嘅嘢，佢就話咗係適用 BS 864 第 2 部分咁樣嘅。我嘅理解就係呢一個其實係一個比較已經係過期嘅一個 British Standard，對嘛，其實佢已經係即係比一個較新嘅 British Standard 取代咗㗎嘞，對嘛？

答：正確。

問：係。但係唔緊要，雖然呢一度佢 Schedule 2 講咗一個舊版，但係唔好理佢，因為其實 Regulation 20 佢已經話要適用 British Standard，而我哋知道 British Standard 嘅定義係指最新嗰個，雖然佢呢一度佢寫係寫咗舊嘅，不過唔緊要，Regulation 20 打底就已經係適用咗最新嗰個㗎嘞，可唔可以咁講？

答：可以咁樣理解。

問：好，好嘞。就我哋就睇睇其實水務署係自己有個表係 published 過出嚟，就係其實即係公告天下，其實在佢哋眼中邊一啲嘅 British Standard 係適用於邊一類型嘅嘢。我想你睇睇就係 C5。C5 嘅 3992，呢一個如果我冇搞錯，係一個水務署 keep 嘅一個表，呢一個水務署嘅表就係將適用於 inside service 同埋防火設施嘅一啲英國標準就例舉晒出嚟。當然你就唔係水務署，但係由於有關嘅部分，即係有關建築 inside service，建築水喉嘅喉管部分，好多時候都要同水務署配合。你見過呢個表㗎？

答：見過呢個表，呢個表呢睇番第 4001 頁就係 last updated，就係今年 10 月 2 號。

問：係。

答：即係變咗就係呢一份係最新嘅表。

問：係嘞。

答：所以--如果睇番係，譬如當年嗰啲工程進行嘅時候嗰個表係點嘅，應該睇番當年嗰個表...

問：得。

答：...就會係正確。

問：明白，明白。即係有啲可能係你睇番佢幾時 promulgate 呀...

答：係嘞。

問：...你見佢可能其實好多時候佢係有啲 2014 年先至 promulgate 嘅，咁就好明顯就唔會適用於...

答：係。

問：...一啲可能 2012 年落成嘅公屋喇？

答：正確。

問：因為呢個表講到明幾時即係 come into clause 嘅，可以一目了然嘅。佢裏面呢，我想麻煩你睇一睇就係第一-- 3995 頁，3995。裏面其中有一個 British Standard 就叫做 BS EN 1254-1，你見到嘛？

答：見到嘅。

問：見到，好嘞。對唔住，要跳嚟跳去，你嘅證人供詞有講到呢個，呢個就係你嘅證人供詞裏面，麻煩你睇睇 B15.1，B15.1 而家會攞畀你睇。37535 頁第 58 段，第 58 段。呢一度其實就係你係喺度講緊房署--對唔住，應該房委會，佢有啲標準嘅合約嘅條款，一啲 standard 嘅 clauses，佢裏面就會要求啲承建商去符合某一啲嘅規定，你就講就係嗰啲 PLU1，即係呢個部分嘅合約規定就會要求啲承建商喺做

呢個銅或者銅合金嘅配件嘅時候就要符合1254-1，對嘛？

答：對嘅。

問：呢個1254-1可唔可以咁講，好簡單講就係話係要lead-free，佢用係要lead-free嘅class，無鉛嘅級別？

答：喺佢裏面嗰個附表裏面...

問：係。

答：...有個footnote就係提到嗰啲soldering...

問：係。

答：...就係要lead-free category。如果係brazing嘅，就要係Cadmium-free。

問：好。所以如果係純粹係我哋針對我哋本案有關鉛呢，或者係即係--sorry，soldering，就即係我唔使攞個British Standard出嚟睇，因為如果成個standard就即係要買又好論盡嘅。總之我哋知道，簡單嚟講1254-1，簡單咁講就係要求soldering呢樣嘢係要lead-free級別㗎嘛？

答：要睇到落去好細節嗰度就會見到呢個要求。

問：係，好，得。跟住就呢一個係1998年係實施嘅一個規定，如果睇番3995頁嘅話，你睇番C5，3995就會見到係1998年呢個British Standard就實施㗎嘞，所以其實就本案有關嘅公屋其實都會係適用於呢一個British Standard嘅，對嘛有關soldering方面嘅要求？

答：呢個可以係正確嘅。

問：係，好嘞。跟住如果你睇番嗰個C5，3995嗰個水務署keep嗰個表，你一路撥撥到4000頁，4000。你就會見到喺近個底嗰度，就喺2014年嘅時候就頒布咗一個叫BS EN ISO 9453，見到嘛，見到嘛？

答：見到。

問：佢就嗰個title就係Soft solder alloy - Chemical composition and forms。睇番你嘅證人供詞B15.1，你睇去

37522頁，37522頁。37522頁裏面你嘅證人供詞第32段，就有提到就係話，32段最尾嗰句，"The Water Authority clarified in August 2015, that the permissible 0.07 per cent lead content is defined for soldering alloy in accordance with BS EN ISO 9453."其實好簡單咁講就係之前我哋睇過嗰個British Standard，嗰個1254-1佢裏面形容嗰個solder所適用於--即係個--sorry，soldering material佢嗰個級別叫lead-free，即係你話睇個footnote叫lead-free，但係lead-free其實係free成點呢，就係其實係呢一個9453呢一個British Standard就有解釋，就係lead-free唔係0，lead-free其實就係即係總之你小過0.07 per cent lead content都叫做符合呢個lead-free嘅級別，可唔可以咁講？

答：喺呢一個標準係可以咁講，呢個係BS EN ISO 9453，佢呢個係2014年先至，見到佢係首次出現...

問：唔。

答：...如果跟呢一個表嘅紀錄...

問：係。

答：...就我哋就係喺今年2015年就知悉到有呢一個要求。

問：係。但係總之呢個要求其實就係即係elaborate或者解釋所謂lead-free category呢一個級別，就其實就係你有0.07或以下嘅lead content都叫做係lead-free級別嘅，係咪咁樣？

答：呢個係可以咁樣理解。

問：得，好。其實就有個表嘅，既然我哋講開就不如睇埋，就B3.2，B3.2，2308頁。呢一個就其實係Housing Authority嘅一個review committee，一個檢討委員會，如果你睇番2304頁你見到，就其中一個會議裏面嘅一個紀錄，2304頁你見到喇。跟住你睇番2308頁，即係我啱啱要睇嗰度。

答：係。

問：呢度就係即係與會嘅人士就喺度討論緊即係水務署嘅一啲答覆畀一啲資料。你見到第4段嗰度，WSD replies，"Water Services Department replies to members, will summarize and

follow."佢就講緊。第1段就係講緊2015年1嗰個circular，就係一個即係叫做事情發生咗之後佢提出嘅一啲新嘅要求，我哋呢個遲啲會探討同水務署。但係B嗰度就係即係講番我哋頭先講嘅British Standard嘅嘢嘞，就BS EN 1254-1，就係話含鉛嘅焊料就係唔可以使用嘅，即係如果你係牽涉到即係飲用食水嘅一啲設施就唔可以用含鉛嘅焊料，呢個就係根據1254-1。I--EN ISO 9453，佢嘅意思就係話，唔含鉛嘅焊料嘅意思就係lead content鉛嘅成份係要少過0.07 per cent，所以水務署就有補充，就係話0.07 per cent鉛嘅成份係其實已經係好少㗎嘞，因為你要做到0就係唔可能嘅，所以即係其實佢只不過就係解釋就話唔好以為無鉛焊料即係0咁解，0.07 per cent都係可以接受嘅，即係可以咁樣理解，對嘛？

答：對。

問：即係呢個都係符合番你哋嘅理解...

答：係。

問：...即係你後來睇番？

答：係。

問：Okay，好嘞。總之即係我哋而家較為有啲背景嘅資料，我哋就知道其實我哋成日話法例，或者係合約規定焊料要無鉛其實嗰個來源就係咁樣嘅，法例或者附屬法例就係根據水務嗰個regulations，就係through嗰度就係話水務嗰邊就係用法例嘅方式，就係話焊料唔可以含鉛，或者要用無鉛級別。至於喺房委會方面嘅合約，佢哋就會以合約嘅形式就係要求承建商係用無鉛嘅焊料，因為要佢符合British Standard，所以就係透過法例，同埋透過合約嘅要求，就係達至希望焊料係符合英國標準，咁樣講準唔準確呢？

答：咁樣講大概係正確嘅，即係房委會都係一個即係要需要守法嘅...

問：係。

答：...一個發展嘅機構...

問：係。

答：...就透露合約就將啲要求寫落去合約嘅要求裏面...

問：唔。

答：...就要承建商就去遵守。

問：得，好嘞。合約寫就係咁寫，但係當然喺合約執行嘅時候，我哋就好多時候就靠合約嘅對方去符合合約嘅要求？

答：對方或者承建商亦都有需要就係符合香港法例...

問：係。

答：咁就除咗係個合約要求以外嘅，其實香--香港法例要求嘅一切嘅同建築有關嘅條例，佢都要遵守。

問：我明白。即係就算你合約唔寫，佢根據法例都有責任要去符合㗎嘞，但係如果合約寫埋呢，就你就直情係有權作為合約嘅一方，喺合約法上或者喺民事嘅關係上你直情係可以要求佢符合添，多咗一重嘅即係責任，即係對方唔係淨係要符合法例，直情係合約上你要求佢咁做？

答：即係兩個要求佢都要符合嘅。

問：係，係嘞

答：正確。

問：Okay。當然，合約對方有責任去符合，房委會作為合約嘅另外一方有冇需要成日 check 住，成日去管住，成日去睇住，呢一個就可能未必一定要 100 per cent 成日每一件事都要去睇住嘅。你會同意嘅係咪？

答：其實喺合約嗰個層面承建商就要負責...

問：係

答：...去施工...

問：係

答：...同埋負責係去監管佢嘅工程嘅。

問：係，係。

答：房委會所聘用嘅人士，就需要就係進行一個係 periodic inspection...

問：係嘞。

答：...咁就去令到我哋更加有一個多重嘅保障。

問：係嘞。啱啱想講就係話，樣樣 check 住固然即係未必實行得到，但係完全唔 check 住又唔得㗎，你都同意㗎？

答：一般嚟講，我哋都 check 主要都係以一個風險管理嘅基準...

問：唔。

答：...咁就變咗係會即係重點就去抽查...

問：唔。

答：...某一啲嘅物料，點樣施工嘅過程嘅...

問：唔。

答：...呢個就係一向以來都係根據以風險管理為一個基礎，就去釐訂一啲檢測嗰啲即係比例咁嘅。

問：好嘞。我就想同你了解下你所講嘅風險係點樣去釐訂嘞。你嘅證人供詞就都喺唔同嘅地方都有講過所謂一個 risk-based approach，或者需要評核一個風險嘅，舉個例你嘅第 8 段，你嘅第 8 段上面數起嘅第 8 行，即係當你喺度講緊房委會喺安全呢一方面嘅做法嘅時候，你就話你有陣時房委會就唔單止係要求嗰啲 testing，或者一啲測試方面係純粹淨係符合法定嘅要求，你哋係會用一個風險為本嘅態度，係可能會定一啲比起法例規定係更高嘅要求添，你呢度就係提到風險為本，呢個係第一個地方。跟住你睇番落四行嘅，你亦都有講到就係話房委會裏面嗰個 DCD，就特別留意一啲高風險嘅一啲嘅活動，high risk activities。你睇番第 9 段，第 9 段你亦都有講，就係關於呢個優質管理嘅一個制度 ISO 9001 呢一個嘅 system，呢個系統。你亦都係有講過就係每一個成員，呢個系統裏面嘅成員，佢全部係有既定嘅有文件規定嘅一啲責任，就與時並進嘅一啲嘅措施，"comprehensive set of measures enriched over time. These measures are subject to regular reviews, feedback and risk-based assessments"風險為本嘅審核。考慮咗乜嘢嘢呢，就法律、法規、國際標準，業界嘅一啲做法，或者係工業嘅技術，專家嘅意見，同埋以往嘅經驗，呢一啲都係即係考慮晒就要釐訂下一套嘅系係點樣去所謂去 manage，點樣去管理整個嘅建

築嘅過程，呢個就係你嘅講法。我想問你嘅，就係你所講風險管理裏面包含嘅一啲國際標準，或者係以往經驗，以往經驗係乜嘢嘅經驗？即係邊一類型嘅經驗？

答：舉例嚟講如果話以往經驗，例如就係有一啲即係事故或者我哋察覺到係有一啲風險，而我哋大家都要關注嘅，如果以水為例，例如就係退伍軍人症...

問：唔。

答：...咁發生之後就開始要睇下研究點樣可以做多少少工夫，就要確保水裏面就唔會有呢啲細菌嘅潛在危險。

問：唔。

答：一般嚟講，我哋都係即係已知道有一啲係經驗話畀我哋聽有一啲事故發生咗，或者呢就係大家都比較熟悉，就係譬如新嘅法例、法規有咩嘢新嘅要求等等，都會我哋關注嘅地方嚟嘅。

問：唔，好嘞。呢一啲嘅經驗，退伍軍人症就因為香港曾經發生過？

答：正確嘅，呢個就係...

問：係。

答：...係近幾年嘅事。

問：係。你哋關於去即係基本上就好簡單睇下以前即係犯過咩錯，或者發生過一啲漏咗眼嘅事情，咁就可能係未發生事情，唔係，以前發生過啲咩嘢事情，你就即係希望可以避免同樣嘅事情發生，呢個就係所謂 past experience。

答：唔。

問：你哋有冇一個特別嘅一個部門，或者特別嘅一啲同事係負責係，英文係叫做 keep an eye on 一啲嘅事故，英文我哋就係話。即係留意住，即係唔單止係香港，或者係唔同地方佢哋會發生過嘅一啲咩嘢事故呢？

答：我哋其實就嗰個同事都會時不時係留意住一啲主要嘅事故，但係一般嚟講，我哋就會都係睇因應番個業界或者係政府嗰啲規管機構係最新頒布嘅指令，同埋或者係頒布呢啲指令，或者係最新嘅發展嘅同時係

徵詢業界嗰啲意見，我哋都會係參與其中。另外就係我哋都同事--做項目嘅同事，另外有一組同事都會幫手係睇住一啲係標準同埋發展嗰方面嘅，佢都會係跟進好多現在睇到業界正在發展中各類嘅系統，或者係法例、法規等等，最新嘅動向嘅。

問：我想了解就係即係喺追隨住業界嘅發展，或者係一啲追隨住一啲以有嘅經驗，進行系統嘅改良，呢一類嘅工作係你哋有一、兩個特別嘅部門，有一班同事係日日坐喺度就係專門做呢樣嘢；定係話唔係嘅，其實即係唔會零零舍舍搵兩個 post 係專做呢樣嘢嘅，只不過就係每一個同事佢哋做開平時自己做緊嘅嘢，佢咁啱見到一啲佢覺得值得攞出嚟，講話「啊，我知道邊度發生咗件事故喎，不如我哋討論下使唔使 update 下我哋嘅系統呀咁。」即係係邊樣呢，特登有同事專門負責做呢樣嘢，定係靠你哋一般嘅同事見到有事就開聲咁樣呢？

答：我哋個部門主要就係有好多唔同嘅 participant 嘅同事...

問：唔。

答：...就係一個 matrix 嘅一個 staff...

問：係。

答：...佢就會去負責項目嘅方面，亦都有一啲負責就係幫手睇埋呢啲係標準方面嘅同事，但係我哋同事就係專業人士...

問：係。

答：...咁就各施其職...

問：係。

答：...不過佢哋未必係最專科，或者係最專家嗰一方面嘅人士嚟嘅，譬如講到你話水等等，我哋都要睇番專家方面，我哋都係始終向番係水務署去求教嘅。

問：唔，唔，唔。

答：好多時即使我哋會即係譬如自發性睇到有一啲，譬如係可以發展，或者係有啲問題嘅地方，要去再發展呢，我哋必須係要徵詢呢啲有關嘅部門，同埋一啲係業界嘅專家，先可以成事嘅...

問：唔。

答：...舉一個例子，就係若干年之前我哋就因應見到，譬如好多--我哋好多時我哋譬如洗水缸，就需要將啲水清晒，咁等啲居民可能要措起啲水，跟住放水之後，佢又會再將一啲水就係將佢放走等等，就唔係好方便。跟住我哋就睇--諗咗好多方法，就係發展一個係孖水缸嘅設計...

問：唔。

答：...但係做呢個設計，當然我哋部門裏面要有建築師，有工程師，屋宇裝備工程師，屋宇測量師等等，去做呢一個研發。但係好重要嘅，我一定係要諮詢番水務署...

問：唔。

答：...因為好多細節要同佢一齊商討...

問：唔。

答：...都要需要--都要可能去改埋少少某一方面，佢譬如Waterworks...

問：唔。

答：... 嗰啲係 instructions 裏面嘅細節都唔定...

問：唔。

答：...所以要有好多地方，我哋必須要搵番一啲專家...

問：唔。

答：...業界嘅一啲從業員...

問：唔。

答：...同埋有關嘅規管部門...

問：唔。

答：...一齊去推動先可以奏效。特別係如果講到係關於安全方面，當然我哋一定係會需要我哋嘅最專家專科嘅人員，即係水務署嘅專家就係幫我哋就去做一啲最基本嘅要求，例如就係喺嗰個測試方面...

問：唔。

答：...例如係檢測方面，有邊啲係各類嘅細節我哋需要去驗測嘅，一定係會係以水務署嘅要求係為依歸嘅。

問：唔。但係就冇嘢係真係咁死板㗎，當然水務署佢係直接處理水嘅品質，你可以咁講。

答：唔。

問：關於消毒，或者最新嘅消毒嘅技術嗰啲，可能水務署係專門啲。但係其實好多時候建築用嘅物料會唔會對水質有影響，呢個其實即係房委會係所謂去監察佢嗰啲建築過程，佢都會涉獵到嘅，係嘛？

答：呢個方面其實都問得好好，因為關於建築材料方面，我哋都係因應當時法例、法規可以容許我哋做，就去選料喇。

問：唔。

答：譬如講番就係好耐以前，就係用一啲係 galvanized iron pipe，就係一啲係鋼嘅喉。但係到到九零年代中期，水務署就要頒布一個公函就係話，譬如 95 年之後就唔可以再用，唔可以用嗰啲係 unlined 嘅 galvanized iron pipe。其實我哋就之前都要做好多即係一啲預備工夫，就要轉用第二啲物料嘅。

問：唔，唔。

答：所以我話全部啲選料，其實都係同好多法例、法規係可以話相輔相成，我都要--即係都會係以一個法規係為依歸。嗰陣時我都研發咗，嗰陣時就曾經做過一個研究，就係究竟要轉做咗咩嘢嘅水喉先至最恰當呢？

問：唔，唔。

答：當年都研究過，就係究竟用銅喉好吖，定話用一隻係叫做 lined 嘅 GI pipe 好呢？即係 UPVC lined 嘅 GI pipe。

問：唔。

答：最後當年嘅選擇就係決定咗--經過測試之後，就用咗一隻叫做 UPVC lined 嘅 GI pipe。

問：唔，唔。

答：我哋就因應法例嘅演變，我就會跟住嗰個法例嗰個規範就去進行工作。但係即係畢竟我哋用咗呢一隻料若干年之後，都見到有啲居民佢自己室外裝修再改用啲喉管嘅時候，佢就用銅喉。因為我哋選擇嗰隻UPVC lined GI pipe其實普遍喺個市面，喺坊間就唔係咁常用。

問：坊間多數用銅喉吖嘛？

答：係，坊間用銅喉。所以到到2000年，千禧年打後，我亦都係研發，就因應嗰個大勢所趨就轉用銅喉。所以呢一個嘅選料方面，其實我哋係跟住除咗市場發展之外，嗰個--就個regulator嗰啲要求，我哋都係會跟住佢去走嘅。

問：唔。

答：其實去到--最初我哋都引用銅喉嘅時候，就唔係一刀切嘅，我哋合約裏面都係容許個承建商可以選用銅喉，或者用番我哋UPVC lined嘅GI pipe。就過咗幾年之後，就發現佢哋全部其實都係選用就銅喉嘅。

問：唔。

答：呢個就係嗰個市場，同埋嗰個用料嘅發展。

問：唔，唔。

答：咁到到2005年左右，其實我哋亦都係有開始再研發，睇下會唔會用不銹鋼嘅水喉，但係畢竟隻物料比較新，同埋我哋亦都睇番佢有冇適當嘅BS，或者即係現在講叫BS EN，有晒全部嘅規範呢？佢發展係咪成熟呢？個市場物料供應，同埋工友方面、供應商等等係咪成熟呢？咁就要跟住個時間去發展。所以我哋都見到若干年我哋都有一啲試點項目，就係引用，或者係採用咗一啲不銹鋼嘅水喉。但係呢一隻喉，佢其實佢嗰啲joint，就未有BS或者BS EN嘅。

問：唔，唔。

答：所以就要每一個項目，其實都要水務署去批准。即係好多如果選用即係喉管方面嘅物料，就必定需要同我哋嗰個regulator就緊密合作，同埋都要同嗰個市場嘅發展，我哋話科技嘅發展就與時並進嘅。

問：唔。好嘞，講開喉管嘅用料，而家冇人用鉛喉㗎喇？

答：諗...

問：鉛喉，Lead pipe。

答：Okay，lead pipe，就唔係銅--有啲叫--通稱叫鉛水喉，鉛水喉就其實 GI pipe。

問：係。

答：鉛喉就係 lead pipe，lead pipe 就係冇。

問：Lead pipe 冇人用㗎？

答：我哋冇用。

問：係。

答：即係房委會係冇用。

問：係。其實個原因就應該好簡單，因為用鉛做嘅喉就會釋出，即係可能對身體唔好喇。

答：唔。

問：大家都會知道，你都知㗎，係咪呀？

答：一般嚟講，我哋冇採用鉛嘅喉嘅，呢個就...

問：唔係，我明白，我明白，我個問題就唔係話一般嚟講。因為我哋唔係純粹從技術，有冇嘢規定。即係你都明白，之所以而家大家就算有冇法例規定都好，唔會用鉛做嘅喉，因為鉛如果畀啲水通過，就好容易會導致釋出一啲鉛份，對身體唔好，呢個係即係都知道嘅，係咪，你？

答：呢一個正確嚟講，應該係可以知道嘅。

問：知道嘅。好嘞，頭先我哋都見到好多 British standard 裏面有講話，要 lead-free category 嘅 soldering。

答：係。

問：其實個內裏嗰個原因，其實都係因為就算你嗰條喉唔係用鉛做，但係如果你嗰啲接口嗰啲焊接位嗰啲焊料係有鉛份，或者超過過某一個含

量嘅鉛份，都會有對身體唔好，所以先至要用呢個 standard 嘅，對嘛？即係呢個係常理，可以咁講。

答：常理係咁樣理解。

問：係嘞。頭先我同你講過，就係關於你哋嘅同事有冇人會係即係特登去負責係去所謂收料，知道下有冇啲乜嘢特別嘅事故，或者以往嘅經驗就要嚟 improve，改善你哋嘅系統。咁我聽你嘅答案似乎就係，係冇一、兩個既定嘅人員係去即係專門負責收集呢啲資料嘅。其實係即係靠平時大家啲同事可能喺做嘢嘅時候，可能佢見到有啲咩問題出現，可能佢會提出，甚至會可能同水務署方面配合，攞下意見咁樣，係嘛？即係我嘅焦點係，有冇特定嘅同事負責去即係與時並進，update 呢個大家嘅即係對國際經驗嘅理解，定係冇呢，其實？

答：正確嚟講，唔會話一、兩個同事專責做呢樣工夫。

問：係嘞。

答：因為畢竟嚟講，我哋用嘅物料喺建築上面係超過一千種。

問：唔，唔。

答：所以就你好難話靠一、兩個同事睇晒--即係可以負責晒呢方面嗰個咁多種有各類要求嘅嘢。

問：唔。即係話其實可能係視乎個別同事佢哋可能喺日常嘅工作，或者可能喺自我進修，可能即係--我唔知公務員會唔會有 CPD point 呢個要求，走去即係 continuing education。但係即係總之可能係要靠即係個別嘅同事，可能佢哋日常從業，或者可能佢哋工餘睇下啲 research，或者上下啲堂，咁就會知道唔單只係香港發生嘅一啲事故，或者可能係外國發生咗一啲事故佢都會知道，可能會 expect 佢提出咁樣，係咪呀？

答：一般嚟講，如果係一啲好重大嘅事故，可能個業界或者業內都會有一啲消息，或者大家會喺嗰個平台交流都會見到，咁嗰啲就會有機會可以去分享嘅。

問：唔。如果有同事係咁啱見到，知道某一啲事情係值得留意，或者我哋平時做開嘅一啲嘢，我哋嘅 checklist「咦，冇做呢樣嘢個喎，但係我發覺，啊，唔係好妥當喎。」係有冇一個機制令呢啲同事可以提出嘅呢？

答：如果喺平時日常工作方面，啲同事見到會有啲問題，或者係潛在嘅問題，佢哋係有機會就可以係提出。因為我哋有一個 alert system，咁就係大家就可以喺嗰個平台上面就係通報消息，有個 alert system。但係就如果你話講到一啲係--譬如你話好世界性，或者同某一啲專科嘅安全關係，我哋都係會依賴番一啲專家。例如係譬如水資源，就係水專家。如果你話係同衞生有--嗰方面，健康有關嘅，我哋當然就會搵番嗰一啲有關嘅規管部門嘅專家，將會係即係最恰當嘅一啲機構。

問：唔，好嘞，...

答：因為我哋房委員都係一個發展機構嚟嘅。

問：係，我明白，我明白。即係其實你所講嘅，就係話房委會雖然係一個公營嘅機構，但係佢扮演嘅角色，其實即係等於一個發展商？

答：正確。

問：好。不過當然佢嘅地位就唔係單純一個發展商，因為即係香港有好大 percentage 嘅居民其實都係住喺房委會發展嘅屋裏面，佢係大業主，係即係租出去畀人嘅，所以佢嘅地位就唔係話單純呢個私人樓宇嘅發展商咁簡單，你同唔同意？

答：我哋係一個公營嘅發展機構，建屋安民就係我哋嘅己任，我哋一定會確保就係--根據現行嘅法例，係提供一啲係安全、衞生、健康、同埋係舒適嘅環境畀我哋嘅居民。

問：即係講得俗啲，即係大家都叫即係屋邨做「公屋」，「公屋」，阿公畀大家住嘅屋，即係大家會對即係公營房屋嗰個發展商都會有一定嘅期望係照顧佢哋嘅，你同唔同意？

答：我哋一定會基本--即係照顧一啲係基本嘅需求，同埋都亦都係會照顧各類唔同嘅人士嘅需要，長幼傷健共融。

問：好嘞，我同你睇一睇一啲外國嘅經驗。

主席：不如我哋睇之前 break 一 break 先，好唔好呀？

石先生：好。

主席：我哋早休二十分鐘先。

上午 11 時 27 分聆訊押後

上午 11 時 51 分恢復聆訊

出席人士如前。

香港房屋委員會第二證人：馮宜萱女士（房屋署副署長（發展及建築））

宣誓繼續作供

石先生繼續盤問

問：馮女士，就我哋自從呢個食水含鉛超標嘅呢個事故發生之後，就好多人都做過好多嘅調查、檢討，暫時我哋見到一個最多人話係即係呢個食水含鉛嘅成因，就係嗰啲焊料裏面係含鉛。即係用咗一啲含鉛嘅焊料。我哋獨立調查委員會就當然會自己去衡量究竟呢一個係唔係即係呢個真正嘅成因呢，但係起碼有好多--有兩個調查嘅報告，即係水務署嗰個，同埋房委會嗰個，都似乎就係即係將個茅頭就係指向係用咗含鉛嘅一啲焊料。我就想喺度問你一啲問題嘅，如果焊料含鉛，就好明顯係唔應該，對嘛？無論法例上或者合約上都係唔應該，對嘛？

答：正確嘅。

問：但係似乎就係法例規定、合約規定嘅嘢都發生咗。即係唔可以發生嘅事情，都發生咗。

答：唔。

問：我哋暫時就唔知道係特登，即係有欺詐嘅成分，定係只不過係有人唔小心或者唔覺意，但係事實上就係焊料裏面係出現咗唔應該出現嘅鉛份，對嘛？

答：呢一點係正確嘅。

問：係。好嘞，咁就我--你可能喺傳媒都見到，就係其實我哋發現到係有一啲喺外國發生過嘅事例，其實係同我哋香港啱啱發生嘅事情係都好相似嘅，我就想即係同你分享一下，就睇一睇，同埋問你一啲嘅問題。

答：唔。

問：首先我想你睇睇嘅，就係 A1 裏面嘅 134。A1，134，就係英國廣播公司 BBC 佢喺 2000 年嘅時候就一個節目，就係追查一個事故，就係喺蘇格蘭地區，就係發現咗食水含鉛。你見過呢一份嘢未？

答：我未見過。

問：未見過，okay。我可以好簡單咁樣同你講，就係呢一個係一個節目裏面嗰啲人嘅對答嘅一個謄本，一個 transcript。其實呢一個 transcript，我同張炳良先生都 go through 過，我嗰日就都即係講過出嚟，但係我可能會再讀多一次，即係其實即係大家都會有個背景知道呢個係咩嘢事情，但係我可以好簡單咁同你去--即係撮要式咁講畀你聽就係，九十年代末期嘅時候，就喺蘇格蘭就發生咗一啲事故，就係有個家庭裏面，有個兩歲大嘅小朋友，就係身體不適，誤打誤撞之下，走去四出求助，就後來啲人就發現咗，原來佢哋新買嘅一個發展項目裏面，買咗一間屋，間屋裏面嘅食水就含鉛超標，咁就引起咗當時嘅一件嘅爭議嘅。

裏面，我可以畀你睇一睇，即係中間，睇睇 134 頁，134 頁。中間你見到 "Reporter" 嗰度嘛？134 頁中間有度寫住 "Reporter"，見到嘛？

答：見到，見到，見到。

問：即係個記者講--即係佢呢度係輯錄緊個記者講嘅嘢。佢就話即係蘇格蘭即係有數以百計嘅新建嘅房屋，就可能會受一個危機嘅影響，就係鉛裏面--即係水裏面含鉛。佢話其實即係食水裏面含鉛，你應該似乎係一啲歷史嘅事情，即係以前啲人用鉛嘅喉就話有啫，但係即係後來政府當局就用咗幾百萬去換晒啲用鉛做嘅水喉管，就應該冇事㗎喇，而家仲即係唔准用。但係而家就喺格拉斯哥呢個地區--唔係，而家就係即係呢個 Uiddingston 呢個地方呢個項目，就發現咗係食水裏面係有即係好高，好高份量嘅鉛，lead。

跟住就麻煩你就睇一睇 136 頁，即係呢個節目就裏面有好多對答，即係比較戲劇性啲嘅嘢。136 頁中間嗰度，呢個 Mrs Fyfe，呢個係嗰個戶主，女戶主，佢四出求助之後，佢就話佢 "Ten days later I got a phone call." 你見到嘛？中間嗰度，"Ten days later I got a phone call." Mrs Fyfe，136 頁。

答：一百三十...

問：136。

答：136。

問：136。

答：唔。

問：佢嗰度有一度係"Mrs Fyfe: Ten days later I got a phone call." 見唔見到？

答：見到。

問：第一個 Mrs Fyfe。

答：係。

問：嗄。佢話「十日之後我收到個電話」，就話「你唔好飲你嗰啲水，啲水裏面有好高嘅含鉛量。」咁個記者就講，即係法定最高嘅含鉛量，只係能夠每公升 50 毫克--微克，但係就喺呢個 Fyfe 呢個家庭裏面嗰個廁所裏面嗰個洗手盆搵出嚟嘅 382 個微克，嗰個細路仔就晚晚喺嗰度刷牙嘅，後來就發現到即係更加高嘅含鉛量。

跟住就有好多即係唔同方面嘅訪問，訪問即係醫生呀咁樣，我哋就可以即係跳過嗰拃嘢佢。跟住就我哋睇到即係當地點解會含鉛即係超標呢咁樣，我哋就睇到 140 頁。140 頁，頂嗰度，你見到嗰個記者就係咁講，佢就話 "The law is clear."。即係當地嘅法例就好清楚嘅，水喉嗰啲焊料一定要用冇鉛份嘅焊料。但係就由於含鉛嘅焊料係仍然有得賣嘅，因為喺其他，即係譬如話做中央暖氣嗰啲嘅管係可以用含鉛嘅焊料嘅，所以含鉛焊料係即係市面上有售，同埋水喉工人隨時就係即係會帶住兩樣嘅。同埋係有財政上嘅誘惑，係令啲人係會非法地去用一啲含鉛嘅焊料，因為係平啲嘅，同埋可能係容易啲用，同埋快啲用添，即係快啲可以完工添。

跟住就有個叫做 Dr Oliphant 嘅專家就喺度發表佢嘅意見，就話其實即係如果用不含鉛嘅焊料，成本係會貴咗百份之二十嘍嘅。但係佢就話，不過咁即係話時話，「但係就即係焊料貴 20 per cent，其實整體上同間屋嘅價格相比就唔係貴好多啫，都。」咁，但係個記者就插口就話「成間屋嘅價錢就固然即係--焊料賸嗰 20 per cent，就可能唔係好緊要，但係對做水喉嗰啲工人嚟講，可能佢做幾十間屋，咁你每個--即係你焊料如果可以慳到嗰 20 per cent，就唔係微不足道嘅事情嚟嘅。」咁樣。

跟住就即係個節目就繼續咁樣係即係討論落去，就係總之--跟住佢後來佢哋就去訪問咗呢個發展商所提供嘅資料，就係搵番造呢個水喉嗰間公司。你睇番第143頁，最底嗰度，嗰個reporter。最底嗰個reporter，"The pluming firm involved in the Calder Gardens estate was referred to the Procurator Fiscal"，即係嗰個檢控當局。"who decided against prosecution."，冇檢控佢。個詳情我唔講，因為原來喺嗰面嘅法例係要六個月之內檢控，好似佢哋係--即係發現咗事情，已經係即係起屋之後六個月，所以就冇得告嘞。

但係你睇144頁個頂嗰度，佢哋就搵咗呢間公司嘅負責人，就走去訪問佢。嗰個負責人Ball先生，你見到嗰個Ball先生，就話「Basically there's two solders，基本上係有兩種焊料嘅，一種係有鉛，一種係無鉛，其實我哋有啲做嘢嗰啲工人就即係搞錯咗。即係整水喉嘅時候就用錯咗。」記者就問佢點解佢會咁做呢？嗰個Ball先生就話「搞錯囉」咁。個記者就話「啊，淨係搞錯？」跟住嗰個Ball先生，就話「哦，佢冇做得--即係佢冇即係做好份工囉，佢搞錯咗囉。」係因為即係貪--即係走捷徑，"Simple way out"定係即係根本冇去搵過啱用嘅product，咁總之就係搞錯喇。」個記者就話「咁即係佢即係用嗰啲有鉛嘅焊料，就用喺嗰個即係heating system，暖氣嗰度。咁跟住就總之就係即係太過懶嘞，就即係冇走去換番唔含鉛嘅焊料就要嚟整水喉呀？」咁，Ball先生就話「咁你唔可以話佢即係闊佬懶理嘅，咁但係我哋而家就喺度即係調查緊我哋啲人，睇下佢哋其實係用晒嗰啲無鉛嘅焊料，咁所以就，啊，即係就順手就攞啲有鉛嘅嚟做吖，定係點呢？」咁。

跟住就即係問咗好多嘢，「究竟係人為定係點呀？有冇炒魷魚呀？有冇訓斥佢哋呀？有冇即係自我檢討呀？」嗰啲，咁問咗一輪。詳情我就唔去呢個再同你深究，但係總之基本上呢一個節目就係話咗畀我哋聽，就係即係總之十五年前，喺蘇格蘭就發生過一個咁樣嘅事故。就亦都係食水含鉛，亦都係發現咗之後就四出求助，就發現咗原來係因為焊料含鉛。佢哋直情係搵埋嗰個即係做喉嗰間公司，咁認咗賬嘅，不過就即係後來係人手不足咁樣，咁就呢個係一件嘅事情。

麻煩你再睇睇就係198頁，呢個其實就係有餘波嘅呢個事情。因為你睇番就係198頁，咁有個叫做"Scottish New Homes Lead Survey"，即係蘇格蘭新建房屋對鉛嘅成份嘅一個統計，一個報告。你可以就咁flip through佢嘅啫，基本上我係--即係其實我畀你睇呢一個tab，即係198，同埋244頁都係，244頁。我唔會問你好仔細，逐個逐個字咁樣去嚟，你睇睇198頁，你撥下，係一個叫做

"Scottish Centre for Infection and Environmental Health" 去做嘅。呢個係應該係一個非官方嘅組織，但係就係政府係委托佢去做。

咁你見到就係--總之就係，由於發生食水含鉛事件之後，政府就委托咗呢一個嘅機構，就走去做咗好多化驗，就係睇下究竟呢個--即係蘇格蘭呢個地區，佢新起嘅房屋裏面，有邊啲房屋有百份之幾多會係含鉛呢，係會影響到幾多人呢咁樣。所以即係呢一個--即係我想帶出嘅一個信息，就係呢一個事故就唔係純粹係一啲嘩眾取寵嘅一個即係電視節目嘅炒作，而即係令到政府係採取咗一啲嘅措施去做咗一啲嘅係調查報告咁樣，呢個係2000年嘅時候蘇格蘭發生嘅事情嚟嘅。

我想問你嘅問題就係，即係當然你話 BBC，可能係一個英國嘅電視節目，即係香港嘅人未必會成日睇到 BBC。

答：唔。

問：但係作為一個專業嘅層面，即係譬如話房署裏面嘅專業嘅人士，佢哋有冇機會可能係，譬如話喺一啲嘅專業嘅交流、學術嘅研討上面會知道，「啊，建築材料」--因為呢個同建材有關，建築材料嘅管理，嘅 monitor 方面，有冇機會--有冇一個機制佢哋會知道「哦，原來外國有啲咁嘅事情發生過喎，嗄，我哋要檢討下，我哋會唔會同樣出事呢？」咁樣，有冇㗎？

答：我諗呢個問題現在我好難話知曉到當時有冇，因為呢個畢竟係上一個--即係2000年...

問：2000年，係。

答：...嗰段時間嘅事。其實嗰陣時我哋都未全面就係會轉為用一個銅喉嗰個方案嘅。

問：唔。

答：咁嗰個咁喺--即係你畀我睇呢一份嘅資料，我哋當時應該就未有資料嘅。

問：唔。

答：因為如果有嘅話，當然我哋嘅同事如果你話喺制訂一啲標準或者準則嘅時候，都可能會參考。

問：唔。

答：但係因為現在你畀我睇，我都係第一次睇啫。

問：唔。

答：所以當時我都可以理解，應該我哋部門嘅同事，就冇知曉呢件事。

問：好，我再畀多一、兩樣嘢你睇，呢個係蘇格蘭，蘇格蘭落啲，落幾多，就係威爾斯，就我哋睇睇190頁。

答：190。

問：190，係190。同樣一個bundle，190。呢個就係一個學術期刊裏面嘅一個article。呢個就係Journal of Environmental Health Research，環境衞生研究嘅一個期刊。係2011年嘅呢一個article。因為佢呢度你睇唔到係2011，但係即係我可以話畀你聽係2011。你見到左手面又有度係abstract，即係通常一啲學術嘅著作，佢會有一件即係撮要咁樣。佢就咁講，"The acute and chronic health effects"，即係嗰啲長久同埋係一啲好嚴重嘅對你健康嘅影響，鉛呀，即係對健康嘅長久同埋嚴重嘅影響，就係即係已經好多人講過，"numerous and well documented"，已經有立法管制對鉛嘅使用，所以就而家嚟講應該就好少見到係會有急性嘅中鉛毒，如果喺已發展國家。但係就其實即係證據上就冇話邊一個程度嘅鉛嘅exposure，即係面對暴露於鉛嘅環境之下，就冇話過邊條界先至叫做最安全。就即係歷史上就係話以前啲人用啲用鉛造嘅水管就會令人哋--即係食水裏面含鉛，但係就佢話more recently，你睇見第二段，最近，就點解會食水裏面有高度含鉛，就係因為啲新起嘅屋，就用咗一啲含鉛嘅solder，你見到，"because of the use of lead solder on drinking water pipework has been highlighted in Scotland."就喺蘇格蘭嗰度，就即係發生咗呢個事情。佢就話，"This paper details the multi-agency response to an incident where high lead levels were found in the drinking water of a number of new properties and developments in North Wales, UK."即係話，即係威爾斯都有類似嘅事情發生過，就呢個article就去研究，究竟有啲咩嘢事情係做咗用嚟補救。佢跟住所講就係，即係我可以跳過，基本上當地嘅法律規定，鉛嘅食水裏面嘅含量就唔能夠超過每公升25微克，但係佢嗰個新居驗出嚟就205微克。就唔係淨係單丁，就有廿--有五十二個居民中咗招，全部都係因為用咗含鉛嘅焊料，你見到即係第3段嗰度，就係"analysis showed lead solder used

on the drinking water pipework within the house was responsible."跟住呢佢就話，有個"multi-agency Incident Management Team (IMT)"，就即刻就即係有啲補救，即係跨部門嘅就成立咗，就即係去處理呢個問題。跟住麻煩你掀去195頁，195頁。Policy and regulation. Policy and regulation.即係政策同埋規管。"This incident highlights that some property developers of new houses continue to use lead solder in the plumbing of drinking water pipes, despite its use for this purpose being illegal."即係話雖然係法律係禁止用一啲含鉛嘅焊料，但係有啲發展商係繼續用含鉛嘅焊料，呢啲含鉛嘅焊料好容易喺嗰啲DIY店，或者係五金店，即係啲舖頭嗰度買到，同埋佢又唔係犯法，你又唔可以禁佢，因為佢要用嗰啲central heating嗰啲係可以用嘅焊料。同埋又平啲，每卷平十鎊，即係百幾蚊港幣。同埋因為一連串即係規管上嘅一啲漏洞，所以就即係令到大家要即係急切地去檢討呢啲含鉛嘅 solder，同埋即係呢個供水制度嘅管理，你見到，"This incident highlights the need for an urgent review of the availability of lead solder."跟住佢中間嗰段你見到，"Following the work done by the Scottish Centre for Infection and Environmental Health in 2003"，你見到就頭先我畀你睇嗰個 Homes Lead Survey，你記得嗰個，2003，跟住佢就話"issue of the use of lead solder in the plumbing of new homes was highlighted as an important public health issue."就話新居裏面嘅焊料含鉛，係突顯咗係一個好重要嘅公共健康嘅一個議題。跟住佢就有講到就係話，"the SCIEH highlighted that high lead water levels owing to this cause represents an avoidable and unacceptably high source of lead for vulnerable people such as young children and pregnant women."即係話嗰個蘇格蘭嗰個調查就突顯咗，就係話即係食水裏面有咁多鉛，由於即係用咗含鉛嘅焊料，搞到佢咁多鉛，其實係一個即係不能接受，但係又可以避免。跟住就即係講咗好多即係話需要即係地區嘅一啲議會就需要去即係考慮下佢哋嗰個檢測同埋inspection，檢測，即係檢視，monitoring，係監察，對鉛嘅即係檢視同埋監察，唔單止係新起嘅樓盤，甚至學校嗰啲嘢，所以佢哋就突顯咗就係話，係需要即係對鉛呢樣嘢，即係要加以警惕。跟住你睇番最底嗰度，「This incident did not come to light as a result of routine monitoring」，即係呢件事發生就唔係因為例行嘅一啲去 spot check，例行嘅檢測發現嘅，而係純粹有人走去投訴，投訴係投訴另外一啲嘢，投訴唔係投訴身體出現問題。佢

話咁啱得咁蹺，即係誤打誤撞即係找出呢個原因之後，呢個opportunistic testing，佢就話發現原來嗰個問題就係比原先估計嘅更加嚴重，佢就話呢個--由於發生咗呢件事，DCWW，呢個係有人話畀我聽其實係一個讀唔到嘅一個詞語嚟嘅，係一個威爾斯文嘅簡寫，我唔嘗試去讀，DCWW 呢個即係簡寫，呢個係一個政府嘅部門我諗係，「has now included in its routine inspections of newly built properties」，即係5 per cent of newly build 詼 residential properties and all commercial properties呢，a 'lead check' swab test」，即係話佢哋而家就有個--即係呢個就地嘅一個--即係刮一嚿嘢出嚟，就 check 下，睇下有冇 lead solder。所以人哋就可以咁做，即係新起嗰啲，佢就刮嚿嘢出嚟，就睇睇有冇，因為 swab test，咁你知喇，就總之刮一刮出嚟，就可以好快咁樣驗下有冇鉛。呢個就係威爾斯嘅經驗，係2011年嘅。就同樣嘅問題，就係即係以你嘅了解，即係譬如話房署或者房委會嘅同事，佢哋可能喺日常嘅進修，或者交流，會唔會有機會係接觸到呢一類嘅學術嘅資料嘅呢？

答：我就唔會揣測，但係因為如果係我哋啲同事有呢個知曉，可能我哋都可以有啲跟進工作。但係因為的確係呢一啲焊物，我哋都係第一次見，我就覺得如果係我哋嘅專家，即係譬如水務專家，佢哋有呢啲資料嘅話，如果又向我哋提供，咁可能我哋都會有少少警覺性，就去check。但係因為呢啲資料我哋今次都係第一次見，變咗就冇一個即係之前有呢個資料，可以去等我哋同事有一個所謂警覺性。

問：我都理解...

答：或者業界有個警覺性。

問：...譬如話即係你可能話呢個刊物係一個 environmental health，環境衞生嘅刊物，咁你可能話即係 housing 嘅同事未必會睇呢一類嘅嘢咁樣，但係即係冇人通風畀你哋聽亦都，冇一個機制有人要通風話畀你哋聽，係原來呢一樣嘢係牽涉到可能係 housing 嘅範疇，係要驗下啲建築物料嘅嘢個嗰，咁樣？

答：應該係冇，因為喺--呢一個刊物照計係衞生方面嘅。

問：係，係。

答：即係環境衞生，或者係一啲水務等等，我哋就自問就唔係嗰一科嘅專家。可能都要靠一啲有關嘅人士，係通風報信，我哋先有呢啲資料。

問：有冇呢個機制嘅呢？

答：我哋有好多機制，但係就未必會可以話關於咁即係細節，關於衞生同埋係關於食水方面，我哋有咁多資料。

問：但係唔好細，其實因為影響衞生嘅就唔會係細。

答：我哋可以理解，如果影響衞生又影響水質，如果水務署有一啲消息，或者有一啲係要求，等我哋知曉嘅話，我哋就會可以有咁嘅警覺性，有呢個知識，不過一向就我哋喺業界，喺各個規管部門，都冇收到呢一個信息。

問：好嘞，我就再同你睇睇美國嘅經驗，A1，399。399。呢個就係美國一份 1993 年嘅文件。就係美國環保局發出。個標題就係"Actions You Can Take To Reduce Lead In Drinking Water"，即係你能夠採取咩嘢措施減低食水裏面嘅含鉛量。跟住你睇番最底嗰度，"Why is lead a problem?"點解鉛係有問題呢？佢跟住就講，總之就係話，鉛係有毒，對--即係如果你吸入咗，或者食咗係會影響健康。就即係有啲乜嘢係重要嘅，即係鉛嘅來源，可以係空氣、泥土、塵或者食物，或者水。平均上佢就話即係人體吸入鉛嘅話，其實即係食水係佔最多嘅一個 percentage，即係百分之二十，對細路仔嚟講，跟住講咗好多嘢。跟住就你睇番，撥去後面，第 401 頁--400頁，400 頁。400 頁嘅頂嗰度。佢就話"Typically, lead gets into your water after the water leaves your local treatment plant or your well. That is, the source of lead in your home's water is most likely pipe or solder in your home's own plumbing."即係話你屋企啲水有鉛嘅話，最大機會就係來自你啲管同埋你嗰啲焊料，"The most common source is corrosion, a reaction between the water and the lead pipes or solder."即係話水同埋嗰啲含鉛嘅管或者焊料有化學作用，就會即係將啲鉛釋出咁樣。跟住就你睇番最底嗰度，"What is the government doing about the problem of lead in household water?"政府做咗啲咩嘢呢？"There are two major governmental actions to reduce your exposure to lead"，咁佢就話"Under the authority of the Safe Drinking Water Act"，按《食水安全法》呢，EPA 即係環保局，"set the action level for lead in drinking water at 15 ppb. This means utilities must ensure that water from the customer's tap does not exceed this level in at least 90 percent of the household homes sampled."即係話《食

水安全法》就訂立咗呢個叫做 15 ppb 嘅一個極限，跟住就去到隔籬嗰頁，401，就"In June 1986, President Reagan signed amendments to the Safe Drinking Water Act. These amendments require the use of "lead-free" pipe, solder, and flux in the installation or repair of any public water system, or any plumbing in a residential or facility connected to a public water system."所以美國政府就 86 年就立法，喺列根總統領導之下，就係要求就係即係總之係家居嘅食水系統就要用不含鉛嘅焊料。跟住講就係"These requirements went into effect in June 1986. The law gave state governments until June 1988 to implement and enforce these new limitations."即係有個緩衝期畀啲州嘅政府。"Although the states have banned all use of lead materials in drinking water systems, such bans do not eliminate lead contamination within existing plumbing."即係話你現有嘅系統裏面嗰啲鉛嘅就整唔走。跟住佢就話"Also, in enforcing the ban, some states have continued to find illegally used lead solder in new plumbing installations."即係話有啲州份仍然係發現有啲人，係起屋嘅時候係用啲含鉛嘅焊料。"While responsible plumbers always observe the ban, this suggests that some plumbing installations or repairs using lead solder may be escaping detection by the limited number of enforcement personnel."即係話就即係就有啲人如果係違法，照使用含鉛嘅焊料嘅話，就可能係檢測唔到，因為佢哋執法嘅人員係有限。跟住就"How can I reduce my exposure?"咁跟住政府就畀咗一啲意見嗰啲居民，點樣可以減低食水裏面嘅含鉛量呢？即係佢哋會叫你頭嗰浸水就沖咗先，諸如此類，呢樣我唔同你再詳述。呢個係美國嘅經驗，遠在 93 年，佢哋已經立咗法一段日子，86 年美國立法，93 檢討，佢哋都知道有一個問題，其實就即係我可以同你講，呢個其實未必係一個需要知道海外嘅問題，就係你有法例立咗，就點都會有個風險係有人鋌而走險，美國呢個就見到喇。我想問你嘅問題就係，第一，美國呢個經驗，同樣嘅問題，即係 housing 裏面嘅同事，會唔會有機會係接觸到，或者了解到呢？我知道呢段嘢 93 年。

答：多謝呢個問題，我諗個答案都係我哋真係冇呢個咁嘅知識關於呢一份嘅紀錄，可以咁講。

問：但係唔好理話需唔需要海外嘅知識，其實有法律，有規矩，譬如話合約規矩，但係點都會有一啲誘因係令人哋有意無意之間去犯，你同意

嗎？即係籠統嚟講，籠統嚟講。

答：籠統嚟講，如果有法例，有依據，如果有測試可以 check 到出嚟嘅呢，就係可以等多啲人有呢一個咁嘅警覺性。同埋就知道有一個可以量度嘅一個測試。就可以有多啲工具去確保佢可以唔會違規。

問：但係香港，即係我以我所睇就係，對 solder 含鉛呢一個風險，就冇一啲即係既定嘅一啲做法係去檢測，對嗎？

答：現在喺七月開始...

問：之前，之前，我哋講之前。

答：之前係應該係冇，因為嗰八種要測試嘅 perimeters 就冇包括係鉛同埋第二啲重金屬。

問：嗰八種你係指水務署喺臨接駁嗰個供水系統前，根據 2012 年嗰個通告話佢會 check 邊幾種，係咪？

答：係，正確。

問：得，我一陣間會慢慢同你檢討其實嗰個 test 係要嚟做乜嘢，我一陣間會同你慢慢去檢討。但係而家講番就係話，唔好理話即係人哋做咩嘢先，但係即係純粹以 common sense，人性嚟講即係上有政策，就下有對策，中國人有句咁嘅說話，即係你有法規寫得出嚟，但係有陣時啲嘢，走下法律罅，或者甚至乎係即係靜靜雞違下例，呢啲嘢其實都會發生，對嗎？

答：如果嗰啲係高風險，就一定要有一啲方法可以去盡量堵塞個漏洞。就當然亦都有啲人可能會鋌而走險，或者係出錯咗。但係如果係有一啲方法可以去測試到，或者量度到，或者令到呢個咁嘅所謂偷雞可能係會特別難度高，應該就可以比較可以有方法去杜絕，或者堵塞呢啲漏洞。

問：但係你知唔知道其實要測試某一樣物質裏面含唔含鉛份，我哋唔好理仔細要知道幾多，其實你只知道一個即係金屬物含唔含鉛，其實係有一個好 handy，好方便嘅一個儀器，走埋去啜一啜，就可以檢測到，你知唔知？

答：係出呢個事件之後，我哋就知曉，呢件事件之前，我哋都唔知曉。

問：Okay，一陣間我會同你詳細咁樣去睇睇，即係 Housing

Department，佢哋喺地盤嗰度驗嘢，佢哋即係嗰個工序係點樣，即係關於驗嘢，即係點樣驗，呢個我一陣間同你慢慢去講，總之就係話即係原來係發生呢個鉛水事件之前，係 Housing Department 係唔知道原來有一種咁嘅儀器係可以走埋去撳一撳掣咗，就起碼可以知道有冇鉛份，係唔知道？

答：係唔知道。

問：唔知道，好。好嘞，我哋最後睇一睇一份世衞嘅文件，就係 A1 嘅 407。A1 嘅 407，其實應該睇 403 先，403 呢份文件，就係一份世衞嘅背景文件，因為世衞就係草擬緊一連串關於食水品質嘅指引，呢個指引其實已經完成咗，出咗街，但係我就即係唔會勞煩你而家睇嗰份嘢。因為其中一個作者係會嚟到作供。呢一個 Background document for development of WHO Guidelines for Drinking-water Safety。你睇 411 頁。411 頁。喺 411 佢簡單咁講，第 2 段，2.2 嗰度，第 2 段，佢話"lead is present in tap water to some extent as a result of its dissolution from natural sources but primarily from household plumbing systems in which the pipes, solder, fittings or service connections to homes contain lead."即係話雖然大自然都可能好多時候會有鉛走咗入去啲水度，但係其實最主要嘅元兇就係家居嗰個水管系統裏面嘅管同埋含鉛嘅一啲焊料。跟住就有啲數據，或者係研究就講下唔同嘅地方，佢哋嗰個即係含鉛量係幾多，幾多咁樣，我唔講。世衞嘅呢一個文件，就已經係開宗明義講出就係話食水含鉛裏面嘅最大嘅元兇，其實就係家居裏面用咗一啲含鉛嘅焊料。呢一個世衞嘅文件，喺 Housing Department，或者 Housing--房委，房委或者房署嘅同事，會唔會有機會接觸呢一方面嘅資料？即係呢一份世衞文件呢一類嘅資料？

答：簡單講就我哋一向--如果你話同水質或者同水有關，我哋都會係按番水務嘅條例，或者嗰啲法規等等作為一個依歸。我哋就真係冇話要真係自己走去就搵 WHO 裏面，再睇佢嘅細節。

問：《水務條例》就話要符合 British standard，係咪？

答：正確。

問：Housing 嗰啲合約都係話要符合 British standard，就諗 British standard 就話要不含鉛。

答：係。

問：但係講番頭先嗰樣嘢就係你哋既定嘅一啲 check list，即係樓水嘅一啲步驟，係冇曾經包含過喺檢測建築呢一個步驟裏面，係要檢測鉛嘅存存。

答：呢一點我哋係呢件事之前，係冇呢一個咁嘅即係 awareness 或者係一個要求。

問：我就即係講嚟講去就係，你睇番你嘅證人供詞，第 21 段，呢個亦都係反映番你頭先所講，就係 37515。"A typical building HA project involves over one thousand materials and components."你頭先都講過，即係牽涉成超過一千種嘅物料。"To ensure effective use of manpower, we determine the quality control standards for material approval, complementing the performance-based specification, site inspection."諸如此類，"while taking into account of the laws and regulations."咁其實即係長話短說就係，一個建築過程可能要用成過千嘅物料，但係至於你哋檢測嗰個策略係基於風險嘅評估，你就訂下可能緩急先後 check 乜嘢，唔 check 乜嘢，係咪咁解呢？

答：係。

問：好嘞，你跟住你有個例子，就係 21 段嗰度。你嗰度就有個例子，for example，你舉例，"there are statutory requirements and trade practices to control the quality of reinforced concrete work from raw materials to the finished works."即係話係有法定嘅規例同埋有行規係去控制啲鋼筋，concrete，即係由原料直至到完工，啲 concrete work 嘅質量。就跟住你就話房署關於品質控制係--即係控制呢一方面，係亦都有同樣嚴謹嘅關於係抽樣調查、檢視、檢測嘅一個程序。但係你就以一個反嘅例子，另外，"Nevertheless, the tying wire in steel fixing"，呢個"steel fixing"即係啲鋼--鋼點嘅呢個定位裏面嗰啲 tying wire，嗰啲中文係咩嘢呢？Tying wire。接駁嗰啲...

講者（不能辨別）：紮鐵。

問：...紮鐵嗰啲...

答：紮鐵嗰條好細嗰條鋼絲。

問：係，嗰條鋼絲，"is not a subject of material approval and

testing in the industry as well as in the HA."即係關於呢一方面呢條紮鋼嗰條絲，就唔係即係行規也好，或者 housing 自己裏面嘅做法也好，就唔會話係要攞出嚟係要事先批核，或者係要去做測試。即係你就攞咗呢兩個作為一個例子，呢一啲就係我哋覺得需要，呢一種就係唔需要，你攞咗嚟做例子。我對你嘅問題就係，係基於乜嘢嘅尺度去決定前者係需要有嚴謹嘅測試，而後者就唔需要 approval，亦唔需要測試呢？

答：我諗最緊要講嘅就係話嗰啲--譬如講後者先，後者係行內一般相信嗰個 tying wire，佢一定係鋼，即係一定係會用番實係啱嘅嘢，佢係一啲好細嘅物料，但係就唔係一啲好大，或者係對嗰個建築嗰個份量，係嗰個數量係用得咁多，或者係咁嚴重嘅一啲主要建材，呢一啲係屬於--佢係小五金，一般嚟講，小五金就相信行內用慣咗嗰啲用料，都應該一般嚟講係冇問題，呢個例子就係用呢個作為一個係比較或者比喻。其實等於 tying wire，我哋就話我哋都唔會拎佢去測試佢係咪鋼，同等地，其實我哋都相信，因為用銅喉同埋用呢啲接駁方法，喺個行業裏面都係一啲慣用嘅方法嚟，同埋我哋亦都喺業內用銅喉都唔係一個話先驅者，都係一個後來者，相信業內已經用得好純熟，呢一類嘅接駁嘅焊料，一般嚟講，就冇人都諗到佢係會有啲問題出現，就只有相信就係話用開一般行業裏面，都相信呢一隻慣用嘅物料係會係 comply with 嘅。

問：好嘞，我想同你講一講，或者探討下就係房署喺物料方面，由開始合約嗰個階段，嗰個 approval，批核同埋監控嗰個過程，嗰個流程我想同你即係逐步逐步咁樣去睇。好簡單咁講，就係主承建商同房委會簽訂咗即係嗰個承建嘅合約，之後佢用嘅一啲物料，有啲係需要同房委會係攞事先嘅批准嘅，對嘛？

答：正確嘅。

問：唔係全部都要喇，有啲要嘅。

答：係。

問：你睇睇你嘅證人供詞，第 43 段，就寫住"Material approval"。

答：係，嗄。

問：你就話"As a general practice, the Main Contractor prepares a material submission and approval schedule to the contract team for reference and submits

materials, including soldering materials and equipment for the Contract Manager's approval." 即係一般嘅做法就係承建商會整一個即係清單，同埋係會呈交一啲嘅物料，應該就係包含埋實際嘅樣本嘅，係咪？就去畀嗰個合約經理去批准嘅。

答：係，一般嘅常規都係咁樣做。

問：係。即係話佢呈交去攞批准，可能係有份既定嘅一個 form，你要寫譬如話邊度出產，咩嘢牌子，咩嘢含量，可能就畀埋個樣本，咁嗰個合約經理就會去批核嘞，咁樣，一般嘅做法會唔會係咁樣？

答：佢有一個清單，即係講咗佢會 submit 啲咩嘢料喇，咁跟住就按住嗰個清單就會係適時就將嗰啲資料係提供畀個 contract manager 就係去批核。

問：咁就所以你嗰度寫住話"Pursuant to the WWR and HA contract specifications, the Main Contractor shall use only lead-free category soldering materials, as soldering alloys with lead exceeding the upper limits are not permitted." 咁你就話個承辦商只准用啲無鉛級別嘅 soldering materials。咁即係話呢個亦都係會喺嗰個呈交物料，即係批核嗰個過程中反映出嚟㗎嘞，呢樣嘢係。

答：係。

問：我畀你睇一睇就係中國建築佢呈交咗嘅一啲文件，咁就即係係實際話畀我哋聽係點樣運作嘅，呢樣嘢。你睇睇 B10-4，B10-4。

答：B10。

問：B10.4，sorry，係，Tab 234，234。呢個就係 China Construction (sic)，中國建築，即係涉事嘅十一條邨，其中-- 10.4 喎，見唔見到？

答：係。

問：Tab 234。呢個就係中國建築，佢係涉事嘅十一條邨其中嘅一個承辦商，佢就係受房委會嘅要求，就係做咗一個即係調查嘅報告，呢個就係關於紅磡邨嘅。你睇一一睇--嗱，我遲啲會同你仔細咁睇睇，其實佢哋查出嚟嘅結果，咁應該有啲都有 copy 咗畀你嘅。但係我想你睇

一睇裏面嘅26398頁，26398。

答：係。

問：咁你見到就係呢個係一個標準格式嚟嘅，應該係，見到嘛？

答：係。

問："HOUSING DEPARTMENT"，"SAMPLE SUBMISSION AND APPROVAL FORM"，呢個就係當時實際上佢哋用嗰份form，填咗出嚟嘅樣嚟嘅，咁嗰個合約就係construction of 紅磡邨二期同埋馬坑Headland Park。咁你見到"DETAILS OF SUBMISSION"，咁你見到下面就係"The enclosed sample and catalogue"，咁即係話應該係入呢一份 form 嘅時候就連埋有個樣辦。你見到嘛？即係"General Information"上面嗰度。

答：見到。

問："The enclosed sample and catalogue"，咁我唔知道佢--佢係"sample and catalogue"黐埋一齊寫，我唔知係咪連埋嚟嘢，即係連埋個實際嘅物件攞畀佢。

答：唔。

問：咁佢就話"as described below have been checked for compliance with the Specifications and Drawings, and are submitted for approval." 即係中國建築就將一啲嘅物料就呈交畀HD，就係要嚟係攞批核嘅，...

答：唔。

問:...咁就寫住嘞，"General Information"，就係"Powerflow Flux & Lead-Free Solder "FRY""，"FRY"就係呢個牌子。

答：唔。

問：係咪？

答：係。

問：Flux 就係其實--即係總之係即係接呢個焊料裏面其中要搽嘅一啲嘢嚟嘅係，即係 flux 呢樣嘢。

答：係松香，嗄。

問：咁"Location"就係"Jointing Copper Pipework for Copper Wire"咁喇，"(Brand: EAGLE)"咁樣。咁你跟住睇番下面嘞，就即係技術嘅資料，"Technical Information"，submitted sample，咁就係"Powerflow Flux and Lead-Free Solder "FRY""咁，lead-free solder 就係來自歐洲，咁有一拃嘅資料；supplier 就係一個叫做"Tung Shing Hardware"咁樣。好嘞，跟住你揧下，你睇下 26401。26401 就係即係有啲相喺度嘅，你見到下面就係"Lead-Free Solder "FRY""咁樣。

答：係。

問：其實你如果再睇番後面，即係你可以睇到一啲關於 Lead-Free 呢個 FRY 嘅一啲照片嘅，26407、26408。一啲照片，你見到嘛？係，即係應該 FRY 嗰啲 catalogue 裏面所講嘅嘢嚟嘅。

答：見到。

問：你見到，係。

答：唔。

問：咁即係佢大大隻字"LEAD FREE"嘅。即係 lead-free 係 big deal 嚟嘅，好大件事嘅，要話畀人聽嘅。即係業界對 lead 唔 lead-free 係好重視嘅，係咪，你都知道？

答：係。

問：好嘞，咁呢拃嘢就 submit 咗畀 HD。你就咁睇呢拃文件，你睇唔睇得出，其實佢係咪連埋成卷嗰啲 solder 畀埋 HD 去睇嘅？一般嘅做法會係點樣？

答:一般嚟講,佢都可能拎成卷去做一個 sample board 嘅,咁但係就--因為現在如果嗰啲 project 都已經係完咗工嘅，嗰啲 sample board 都會--全部都會係銷檔㗎嘞，...

問：好。

答：...咁所以就現在就睇唔番佢當時係唔係成卷。

問：我哋知道呢啲 solder 其實就係一條好幼嘅線嚟嘅，一卷好幼嘅線嚟

嘅係，咁呢卷好幼嘅線其實就係你圍住兩條銅管之間，就係即係包住佢，然之後燒熔咗佢，咁就係即係將兩條銅管之間嗰個位就焊接咗。

答：係。

問：咁係一卷卷咁買嘅，你知道，係咪？

答：係。

問：如果佢係有個樣本呈交咗畀房署去驗嘅話，咁當然佢就會寫住"FRY"呢個牌子，寫住"LEAD FREE"咁喇。

答：唔。

問：咁房署會用乜嘢去真係確保佢嗰張招紙上面寫嗰個"LEAD FREE"，佢實際上真係 lead-free 嘅呢？佢有冇嘢去驗到邊一啲佢有冇鉛咁嘅呢，其實？定係淨係信張招紙嘅呢？

答：一般嚟講，佢可能有一啲有埋個 test certificates 嘅。

問：哦，okay。即係如果佢附埋嗰個 test certificate，咁就係信嗰個 test certificate？

答：係。

問：即係房署未必一定係會自己用自己嘅儀器去檢測嗰樣物料嘅成分嘅？

答：因為一向我哋就話冇嗰個--即係冇察覺到可能會有啲含鉛嘅焊料會喺我哋地盤嗰度用得到，所以喺呢方面，我哋就的確係冇呢一個咁嘅措施。

問：我明白，我明白。因為--即係，嗱，其實，即係公道啲，我哋而家都唔知道究竟嗰啲含鉛嘅焊料，係呈交畀房署嘅時候就已經係含咗鉛吖，定係呈交畀房署嘅時候真係無鉛嘅，只不過去到地盤就偷龍轉鳳咗，呢個其實大家都未知住嘅。咁但係我只不過係問一個簡單嘅問題，就係房署裏面有冇一啲簡單嘅儀器，係可以人哋真係畀啲焊料嚟，你 check，就唔係淨係信張紙，有冇嘅呢？

答：以前係冇嘅。

問：以前係冇嘅？

答：以前係冇嘅，但係現在開始，即係 7 月之後，陸續我哋就會用一啲快速測試嘅方法就去 check 啲焊料，睇下有冇鉛。

問：噢，呢個可能假設性嘅問題，如果以前啲人攞啲焊料嚟，又冇 test certificate，淨係得張招紙，就話「噢，信我喇，無鉛嘅」咁，咁房署會點辦呢？即係打回頭，話「唔該你畀張 cert 我睇，有 cert，我就信你嘞」咁，係咪咁做呢，一般嘅做法？

答：一般都會係咁樣做。

問：Okay。咁從呢個例子我哋就知道，就係雖然你話成個 project 可能有過千種嘅用料，未必種種用料都要需過事先批核呢個程序，但係起碼我哋知道，喺呢個 project 嚟講，soldering material 係屬於要--一早攞定准許先至准用嘅一種物料，對嘛？

答：一般嚟講，呢個 material 都會係即係經過呢個 material submission approval 個過程嘅。

問：係，即係 soldering material，呢一種嘅物料都係 as a category，即係整體嚟講，所有嘅 project，佢哋裏面用嘅焊料，都係需要經過呢一個批核嘅過程？

答：我只可以講呢個係一般嘅情況。

問：一般情況。

答：但係呢一個就唔係。我哋另外有啲，喺合約裏面，或者規格裏面，即係唔一定係必須。佢呢個就唔係話屬於話必須嗰一隻物料。但係一般嚟講，的確呢樣物料都會經過呢個審批嘅程序嘅。

問：即係呢一種物料就唔屬於嗰啲直情...

答：Mandate...（聽不清）

問：...連審批都唔使嘅？因為有啲直情連審批都唔使㗎嘛，係咪？

答：譬如頭先我話譬如 tying wire，佢哋係可能都會有一個所謂--喺個批辦，佢都可能有提到嘅，咁但係就因為佢有--另外一類就寫到明 mandatory，就一定要有一啲 submission 同 approval。

問：係。

答：咁喺我哋嗰個 specification 裏面，一般嚟講，佢呢一類屬於喺我哋嗰個 spec 係叫做"PLU1"，嗰個就唔係寫住必須，PLU2 一定係必須。但係呢一類物料，一般嚟講，承建商都會呈交畀我哋去審批。

問：批示。即係話焊料係屬於 PLU1，...

答：係。

問：...就唔係必須嘅，但係一般嚟講承建商都會呈交嘅？

答：正確。

問：但係如果承建商唔呈交呢個焊料畀 HD 去事先審批，咁會有咩嘢後果呢？

答：即使佢唔呈交，唔審批，按照合約，佢一定都應該依照番合約嘅要求，提供一隻 lead-free 嘅焊料畀我哋嘅。

問：得，okay。即係打底就係用無鉛。佢如果事先話定畀你聽，「我係用呢隻牌子嘅，無鉛，嗱，你驗喇」，咁你就 approve 佢，咁就雙重保障啲嘞，會心安啲嘞，咁解嘅啫。其實法律上或者合約上，佢唔畀你事先審批，但係總之佢做出嚟係無鉛喇咁，咁就會過到㗎嘞。

答：正確，呢個係正確嘅。咁但係呢隻料，亦都可以話，喺 7 月之前，喺水務嘅要求，WWO 46 裏面，嗰個附表，亦都冇要求係去提交資料嘅。

主席：再講多次吖，唔該。

答：即係呢一隻物料，喺 7 月之前，喺 WWO 46 嗰張 form，嗰個 annex 裏面，個附表，嗰個清單，嗰啲物料清單嘅，都冇包含呢一隻物料嘅，即係 solder...

問：WWO 46，即係根據《水務條例》第 3／第 5 條，我一陣間會同你 go through㗎嘞。

答：唔。

問：即係開始施工前要入 46，Part I，跟住完工就要簽番即係 Part IV

嗰個 form，係咪，個意思係？

答：係，係。

問：我一陣間會逐個、逐個 form 同你去講佢哋嗰個用途嘅。但係總之即係你想同我哋講，就係焊料喺合約上其實唔係必須事先審批，但係好多時候承建商都選擇去畀 HD 去事先審批？

答：係。

問：就算冇事先審批，佢打底都一定要用屬於無鉛級別，無論甚麼牌子都好係？

答：係。

問：好嘞，咁呢個就係合約--即係施工前嘅一個階段，係咪？

答：唔。

問：你頭先睇到喇，就有呢一套嘅文件咁樣。我哋睇下實際上開始即係施工嘅時候嗰個程序係點樣。你睇番你嘅證人供詞，第 45 段。你證人供詞，45 段，佢就話"Surveillance and control during construction"，即係建築期間嘅監視同埋控制。好嘞，我讀出嚟，"HA's site staff"，呢啲係駐喺個地盤嗰度嘅 staff。

答：係。

問：真係有同事即係帶住鋼盔，咁就喺嗰度即係駐場，咁樣喺度監察嘅，...

答：係。

問：..."will check the materials upon their delivery to site, including visual inspection and verification of materials against the approved samples, respective catalogues and certificates in accordance with the contractual requirements." 呢一句，停咗先。即係房委會地盤嘅工人就會逢嚟有物料送到去個場嗰度嘅時候，佢就會用肉眼去檢測，同埋就會係將啲物料係與已經批核嘅樣本或者係 catalogue 或者係證書係要嚟相比較，睇下符唔符合合約嘅要求。呢一度就好籠統嘅，"the materials"，即係物料送到個場嘅時候，HA 嘅 site staff 會咁做。我而家就問你，純粹講第一句，"will check the materials"呢一句。唔好講第二句先，因為第二句，就係"also

selects"嗰句，我哋唔好講嗰句"also"嗰度住，因為"also"得就梗係--即係 addition 喇。我哋講第一句先，"will check the materials upon their delivery to site"，呢一 part，一般嘅做法包唔包焊料嘅呢？

答：可以簡單咁作答，就係 7 月之前的確就冇係檢測係即係焊料呢樣咁嘅物料。即係佢比較係屬於一啲--頭先我有提過，就係比較一啲係細嘅一啲物料，就例如鐵線、螺絲釘嗰一類，一般嚟講，就大家都覺得佢應該係 compliance 嘅，嗰一類要。咁但係如果係大件嗰啲物料或者主要嘅物料，一般嚟講，就 site staff 就係會 check，upon delivery check。

問：Okay，得。咁即係其實你都答埋我跟住嗰兩條問題㗎嘞。因為其實我跟住嗰兩條問題，我就係打算問你，第 42 (45?)段，第二句，"HA's project officers also select samples for checks on the appearance, construction, dimensions against relevant standards and whether there are visible defects." 即係話房委嘅即係項目嘅主任佢亦都更加係可能會選擇一啲嘢嚟到去睇下個樣或者睇下啲大細咁樣，或者睇下有冇啲表面嘅傷痕咁。呢一 part 亦都唔會包括 solder，對嘛？

答：正確。

問：跟住佢就話"HA also conducts laboratory tests on samples for major components such as sink mixers and shower mixers to ensure compliance"，就話可能會抽啲嘢出嚟去做實驗室嘅測試添。咁呢個亦都唔會包括 solders？

答：正確。呢個就係 major components 嘅。

問：Major components 就會做 lab test，呢個，係咪？但係總之我頭先同你讀咗嗰三句，三句都唔包即係焊料？

答：係。

問：好嘞，我就畀一張 form 你睇睇，就係你嘅證人供詞後面嘅，37640，呢個就係叫做"6210"。即係我哋將會見到好多 number 嘅。呢個係 6210 Form。

答：係。

問：On-Site Delivery Verification，即係送達地盤嘅一個核實...

答：係。

問：...嘅一個表格，咁佢就"Type of Material"，邊種；個合約有關嗰個條文係乜嘢，個合約係乜嘢，跟住又話"Document Check"、"Material Check"，跟住就睇下，即係有冇產物來源證，有冇貨單，表面嘅樣係點呀，大細係點樣呀咁。咁呢個就係第一頁。跟住你撥去後面，佢就有指引，...

答：係。

問：...37641。指引，即係其實呢個指引就係畀嗰啲房署喺個地盤度嗰啲職員，去教佢哋點樣去運用呢一套 form 嘅。好嘞，嗰個職員望住呢套 form，佢就會見到，嗱，check 文件，check 下，唔，佢係咪應該有送貨單；有冇話，呀，出產地，荷蘭或者英國或者係大陸或者邊度咁，佢要 check 呢啲文件。跟住 materials check，咁佢就教嗰個房署嘅職員，就係話，嗱，即係佢哋應該--即係承建商就應該當住 contract manager 嘅面就去 check 某啲嘢嘅。咁你 check 乜嘢呢？就應該睇番合約有關嘅條款，咁即係佢執藥咁樣執，係咪？「啊，呢個條款要求佢有乜嘢，咁我咪睇囉」咁。"3. Major materials to be checked are as follows"，咁就列舉咗一拃嘅物料出嚟，就話呢拃要 check 嘅。

答：唔。

問：咁所以駐場嘅即係--即係你假設我係一個駐場嘅人員，咁我就揦住呢沓嘢辦事，就係總之有一大拃嘅物料送到嚟，係屬於 a 至到 af 呢拃嘢嘅，呢個房署嘅職員就會 check，就係跟番有關嗰啲 clause 嘅要求去 check，係咪咁樣？

答：係，呢個一般嚟講都係咁樣做。

問：係嘞。咁所以我哋見到呢個 list 就唔包焊料嘅。

答：唔。

問：咁就所以呢個房署嘅職員，佢每日去到，見到一車車嘢送到嚟，唔見焊料，佢就話「啊，焊料，我唔係屬於要 check 嘅範圍」，咁佢就唔會 check㗎嘞，對嘛？

答：對。

問：咁一般嘅做法就唔會有一個酌情權去畀一個房署嘅職員，就話「啊，雖然呢度冇寫，但係我酌情我覺得--「呢包嘢點解即係唔係 FRY 嘅呢？有啲景轟喎，可唔可以 check 下嘅？」唔包括有個酌情喺度嘅，一般嘅做法，係咪？

答：一般嚟講，如果係常規冇要求啲同事去做嘅，但係如果佢係察覺到有啲問題，其實佢可以提出嘅。但係一般如果你話要跟番呢一個 On-Site Delivery Verification 去 check，就的確係跟而家我哋呢個列舉裏面嗰啲項目去 check。

問：明白。但係其實，好坦白講，有陣時你唔話明畀人哋聽，話有張 list，上面有個 box 要佢剔，純粹話「啊，你如果自己主動，見到有咩嘢嘢，可以主動提出」，十次有十次都唔會主動提出嘅，你同唔同意？

答：呢一個就又唔可以即係一概而論。

問：得，明白。好嘞，咁呢度由 a 至到 af，咁就即係五花八門，即係唔同嘅合約條款可能都有唔同嘅要求，所以嗰個可能負責嗰個人員佢就望下，啊，譬如話 cement，f，咁佢就睇番，哦，原來嗰個 clause 係幾多，咁佢就揀番個 clause 嚟睇下，個要求係乜，咁佢就會去即係負責做檢測咁樣。我就見到呢一度就真係乜都有嘅，呢個表；大、中、細都有。即係有啲就係好大件嘅嘢，譬如話，你話見到窗咁樣，個 window；有啲 shower door，嗰啲咁嘅嘢又有；你譬如話你見到下面呢個"ab"嗰度，"Sliding shower door"咁樣樣。咁你喺"f"見到"Cement"，嗰啲紅毛泥，定係呢度？定係...

答：唔。

問：Ready-mixed mortar 係要嚟抿埋啲磚之間嗰叭嘢，中文叫做咩嘢？

答：佢呢個砂漿嚟嘅。

問：砂漿，係。

答：砂漿。

問：Okay。

答：愛嚟做 plaster。

問：係。跟住你見到"i"嗰度嘞，"wall tile"，嗰啲瓷磚仔，係咪？

答：唔。

問：係咪？Wall tile 係咪瓷磚仔？

答：係。

問："j"就係即係唔會蹋腳嘅一啲地磚，floor tile。

答：唔。

問：咁係又牆又盛。跟住你就見到啲"mosaic"嘞，即係佢裏面有花嗰啲嘅一格格嗰啲瓷--啲磚喇。

答：紙皮石。

問：紙皮石，okay。"q"嘞，"Emulsion paint"，油漆；"Synthetic paint"，又係油漆；"acrylic paint"，又係油漆。"p"，"Tile adhesive and tile grout"，就係嗰啲格仔，嗰啲牆上面嗰啲一格格嗰啲瓷磚仔，中間要嚟抿實佢嗰啲，即係灰色，喺格仔嗰啲，係咪？啲 grout 係。

答：Tile adhesive 就愛嚟黐瓦仔上牆。

問：黐瓦仔上牆。啲 grout 就係一叭叭嘅...

答：Grout 就係嗰個 joint 嗰啲...（聽不清）

問：Joint，即係我哋灰色一叭咁嗰啲，我哋見到，係咪？即係兩嚿瓷磚中間個 joint，要嚟...

答：個 joint 嗰度。

問：...抿實佢嗰啲？

答：唔。

問：我就想你幫一幫我，就係呢個表其實係點樣去砌出嚟嘅呢？因為乜都有，又大，又細，又硬，又有啲漿咁樣，用咩嘢基準去整呢個表出嚟？

答：簡單嚟講，呢個表其實就會列明咗一啲係各方面唔同嘅建築物料，比

較主要同埋大手用嘅物料；或者有一啲物料，譬如你頭先提到有啲可能好細，tile adhesive，但係如果--佢有陣時如果唔係嗰個批次，或者等等，有問題嘅呢，可以導致到個後果就係甩瓦仔，就係debonding of tiles嘅。咁嗰啲佢就會係一啲--喺我嚟講，就會係一個比較高風險嘅一啲物料嚟嘅。咁如果你哋大家睇到同水嘅或者係同個plumbing有關嘅，其實睇到下面，就係由y嗰度開始，嗰度就係根據y去到ac嗰啲，就係同plumbing installation有關嗰啲物料嘞。即係頭先我提到就係 PLU2，即係佢後面嗰個verification嗰個clause number，就係屬於係PLU2嗰一類嘅物料嚟嘅，咁就喺呢一個表上面。

問：PLU2係即係一定要審批呢啲物料？

答：一定要審批，咁所以，就一定要審批嘅，我哋都喺呢個表裏面亦都有出現到。

問：呢個表裏面會唔會有啲PLU1嘅物料嘅？

答：喺呢一個表，當年係冇，不過最新嘅版本，7月--喺8月之後嗰個就有嘞。

問：就加咗solder嘞？

答：係。

問：咁其實即係係咪唔係PLU2嗰啲，當年吓，就唔會有機會喺呢個表度㗎嘞？即係入嚟呢個表，當年，就一定係要屬於PLU2嘅先至入到嘅，係咪？

答：亦都唔一定。我就話如果係我哋喺譬如係法例，譬如假設嚟講，如果法例規定要驗鉛。跟住，如果要驗鉛嘅話，我哋就會有個alert，就係話同嗰啲鉛有關嗰一類嘅部件或者係一啲物料，可能我哋都要加佢落去呢一個materials alert裏面嘞。一般嚟講，我哋嗰啲規管都係performance base或者output base，係risk base嘅一個決定嚟嘅。咁如果係--即係 output 都會決定，不個對我哋嗰個input嗰個要求，或者有幾多規管，就會係output driven嗰個base嘅。

問：好嘞，我哋講番啲grout，譬如話，你頭先講到嗰啲grout或者tile adhesive。我假設其實合約都會有條款去講係要乜嘢嘅標準嘅，係咪？

答：嗰一啲標準往往都係一個 performance base 嘅標準，特別係 tile adhesive，咁佢就好多時就會睇，就係佢可以係 withstand 係幾大嘅拉力呢，等等，嗰方面嘅一啲要求嘅。

問：Okay。咁而至於你話嗰個 risk，就係話如果佢唔符合呢個標準，嗰個 risk 就係咩嘢呢？你話會跌出嚟咁。咁啲瓦仔，我哋而家唔係講緊垵磚牆會冧；啲瓦仔，我諗可能係室內垵牆，譬如話你廁所嗰啲瓦仔咁樣，嗰類咁樣。

答：可以喺廁所--即係喺室內嘅地方，...

問：室內，嗄。

答：...公眾地方。咁就現在我哋喺外牆已經冇再用瓦㗎嘞。

問：但係總之--即係好多時候我哋見到--我問埋呢條問題。啲瓦喺室內跌出嚟，咁可能唔雅觀，可能唔方便，咁但係就真係唔會話危險㗎，即係係好 annoying 嘅啫，會係，係咪？即係如果啲瓦仔跌出嚟。

答：視乎喺咩嘢地方。即係如果喺一啲譬如係室內，但係佢係一個幾層高嘅一個 hall 或者 atrium 嘅地方，或者有陣時我哋有啲喺室--室外都有一啲瓦嘅，咁如果 debonding 係可以--而係導致到高控擲物嘅話，...

問：都有危險嘅，你會覺得？

答：...咁嗰個係會好危險嘅。

問：係。咁但係係唔應該跌出嚟㗎嘛，係咪？雖然理論上佢應該係黐得好，但係你就為咗要防預咁啱黐得唔好喎，佢嗰隻嘢有問題喎，呢個風險，咁所以你哋就喺呢度加插咗要驗呢啲 tile adhesive 嘞，係咪？

答：佢呢個其實都係一個 material check，都唔係去到驗嗰刻嘅。即係話佢會 check 番佢嗰啲--呢個 check 就未去到係 quality 嗰種 check 嘅。呢一個係...

問：佢係 check 咩嘢㗎，會係？

答：呢一個，佢如果係 check 咩嘢呢？就其實我哋呢一張 form 就要求個承建商去 check，就係佢...

問：當住個 manager 面前 check，okay。

答：係，當住我哋同事嗰度 check，就係唔係我哋同佢 check 嘅；就要求承建商佢一定要對住我哋同事 check，就係頭先都講過，關於嗰啲譬如 dimension、surface quality 同埋 other accessory 等等。咁同埋佢要就 confirm 佢嗰啲 certificates of origin、delivery notes 等等係正確無誤嘅。即係呢個係會擔心佢啲貨來料嘅時候係唔係正確嘅型號、批次等等。

問：就因為正正就係話你哋覺得呢件貨其實都係緊要嘅？

答：正確。即係呢啲貨係...

問：因為如果同合約要求唔同，咁就會有安全嘅問題？

答：係。

問：譬如話啲瓦仔跌落嚟，喺停車場嗰度揸嘅人咁。雖然係瓦仔，咁你高空跌咗落嚟，可能都揸爛人哋架車都唔好，係咪？

答：都會傷人，係。

石先生：Okay。我問到而家先，因為...

主席:好呀。我哋食晏，兩點半再繼續。唔該。

下午 1 時 07 分聆訊押後

下午 2 時 32 分恢復聆訊

出席人士如前。

香港房屋委員會第二證人：馮宜萱女士（房屋署副署長（發展及建築））
宣誓繼續作供
石先生繼續盤問

問：馮女士，我繼續我頭先食午飯之前問開嘅問題。就係關於嗰個表，即係關於 HD 嘅代表喺個地盤嗰度，佢要逐項逐項去睇嗰個表，今朝你

就同我哋講到，就係關於嗰啲 tiles，嗰啲瓷磚嗰啲--你搵唔搵得番嗰個表？37640 嗰個表。

答：搵到。

問：嗰個表上面嗰一連串嘅嘢，你今朝就講到，就係你考慮擺啲咩嘢落去，就其中一樣要考慮嘅，除咗係價錢或者數量之外，就係安全。

答：係。

問：你就講到係嗰啲瓷磚要黐嗰啲叫做膠。

答：嗰啲瓦。係黐...

問：瓦，瓦磚嗰啲膠，係咪嗰啲嚟？

答：係。

問：Adhesive。因為如果黐得唔好，就可能會有跌落嚟。

答：係。

問：如果用番同樣嘅邏輯，焊料，焊料可能係好似好少嘅事，亦都唔係好貴嘅嘢。，但係如果焊料唔跟呢個合約同埋法例嘅規定，亦都係會有危險個喎，其實個危險可能係仲大過你嗰啲瓦仔嗰啲瓷磚黐得唔好個喎，你同唔同意呢呢個邏輯？

答：應該講話，我哋都睇番呢件事，我哋都同意就係房委會我哋過往確保嗰個即係食水方面，對個品質嘅控制或者嗰個物料嗰個檢測，同當時業界做法其實係一致嘅，亦都符合相關法例提出嘅要求。不過我哋即係亦都冇對嗰食水，或者係食水供應系統裏面含鉛，或者其他重金屬嗰個風險係留意，呢個我哋都承認嘅。我哋呢一個係即係所謂 "Lack of awareness"，就冇察覺到呢個風險，其實我哋就話當年我哋係轉用銅喉嘅時候，其實成個香港嘅業界對於用銅喉，包括個供應商、分判商、持牌水喉匠、同埋嗰啲工友，其實係十分熟悉嘅。因為我哋已經係所謂一個後來者嚟喫嘞，成個行業好運作純熟。

而銅喉亦都唔係一啲新嘅物料同埋技術，係喺市面，或者喺成個世界都通行嘅。呢件事發生之前，亦都冇一啲跡象或者係警示係指示畀我哋睇，食水供應系統裏面嘅銅喉物料，或者係有一啲任何特別嘅健康風險。直到呢件事發生之前，其實我哋就相信水務監督係訂定嗰啲測試食水嘅標準，嗰八個 test parameters，我哋以為係已經係

足夠，所以亦都係冇--或者係睇唔到嗰個 solder，嗰啲焊接料裏面係會出現含鉛嘅問題。因為我哋相信個業界既然做得咁純熟，我哋既然用得嗰隻物料，大家都咁熟悉嘅，我哋就有理由相信用到嘅料，的確係業界一向慣用唔含鉛嘅焊料。

問：個問題唔係在於業界對嗰種料熟唔熟悉，你剛到講到就話其實用銅喉--房署起嘅公屋可能仲遲過出面嘅私樓，所以話業界就對銅喉，或者點樣將銅喉焊接呢個技術好熟悉。但係呢一個與我個問題就未必有關，我個問題係對採用咗一啲唔合規格嘅物料所產生嘅風險。呢樣嘢係冇關係嘅，點解呢？我向你提出一個例子就係，你嗰個表裏面有各種嘅油漆，emulsion paint、synthetic paint，tile adhesive and tile grout，嗰啲黐嗰啲瓦嗰啲接著劑，同埋有嗰啲 grout。我相信呢啲嘢全部大家行內都好熟行，油漆好多人都識油，黐嗰啲瓦仔嗰啲即係 adhesive，大家都識用。但係大家都識用，同我哋需唔需要去 guard against，係咪需要去小心、去謹慎咁樣去防禦出錯，係兩回事嚟，其實。

答：當然有一啲話要防禦出錯嘅情況，除咗佢係風險之外，或者係一啲係會引致一啲係嚴重嘅事故之外；另外一啲，可能就係根據我哋一向經驗，有啲物料曾經就出現過一啲事故。或者係行內，的確有啲人係會喺某一啲情況底下，用咗一啲我哋唔察覺到嘅違規嘅物料嗰啲經驗，就訂立 material 呢一個表嘅。呢一個就係有好多種唔同嘅因素，固然係安全嗰啲，亦都係一個首要嘅考慮點嚟。

問：你剛才講到其中一個考慮因素，就係行內會有人用咗啲唔合規格嘅因素，所以行內有人會違反一啲法律或者合約嘅規則，去用一啲唔合規格嘅嘢，呢個風險其實你哋係有考慮到嘅，對嘛，制訂呢個表嘅時候？

答：呢個我哋考慮到，都係基於一啲過往嘅經驗，或者係一啲係我哋業內亦都可能有一啲警示，或者係有一啲係跡象，係令我哋懷疑或者擔心佢會用錯料，或者係一啲提供嘅物料，如果同個辦係唔符合嘅時候，有引致一啲--嚴重啲嘅後果，咁嗰啲經驗係累積做呢個表。所以現在最新嘅版本--呢個就唔係最新版本，最新版本，如果現在以係十月計，個表已經有一個更新咗，就係加埋頭先我講嗰啲，係同嗰啲銅喉有關嘅物料㗎嘞。即係最新嘅版本，現在係 7 月之後嘅事。

問：我明。咁你話畀我哋聽出一次事，加一樣嘢咁樣會係，即係以前？

答：係...

問：即係呢啲--即係你係話畀我哋聽，裏面有好多嘢其實就係，每一樣嘢，

如果你搵番個源頭，「啊，有一次出過事」，咁所以加落去咁樣？

答：呢一個我就係--我哋喺行業裏面，或者我哋房委會嘅地盤裏面嘅經驗累積嘅，咁當然經一事長一智。就係如果我哋完全以前真係冇察覺到焊料會含鉛，而嗰一個風險嘅原因，所以冇幫佢擺落去，呢點我哋都一早都已經承認咗。但係因為正正係我哋過往真係唔察覺有呢個風險嘅存在，我一直相信隻物料係喺個業內已經好慣用，亦都係行之有效嘅一啲物料，所以亦都冇呢一個即係所謂警覺，事前都冇呢啲警示。

問：唔。我想問一問你就係，當然你唔係落手落腳做嗰位，同埋就係--但係我想知道，呢一份表格，就其實由 A 至到 AF 咁樣，你就話而家事發之後，就多咗一項，就係個 "Soldering"。37641。

答：多咗幾項。

問：吓？

答：多咗幾項。

問：多咗幾項，okay。

答：都係同--係嘞，都係同呢啲焊接料有關嘅。

問：得，得。即係呢一個表格，我哋睇佢一個現成嘅例子，就係出咗一次事之後，就加多幾項。其實呢一份嘢個編訂嘅過程係點嘅呢？應該唔係一次過由 A 至到 AF，應該係咪即係開頭可能係盤古初開，可能係有人整咗一份。跟住可能到到隔咗幾年，有需要再 revision 嘞，要改編嘞，可能就到時就即係加一項、加兩項咁，係咪？制訂呢份嘢嘅過程係點呢？

答：其實我哋好多標準嘅制訂，都一定係因應--我哋睇過，第一，就係以風險個評估為準；同埋亦都係睇番嗰個行業裏面嘅運作，我哋有前線嘅同事，亦都有承健商，佢哋都睇到呢啲係風險嘅物料，亦都可以參詳，畀意見。因為我哋一向做法都比較係透明度高，如果有一啲制訂一啲--或者係再去加多啲所謂規管嘅要求，都會同個業界就多加商量，又諗下點樣做係最有效，點樣去管理係最有--即係可以話到位嘅呢，就唔希望鑲成好多所謂文件嘅工作。呢個係同我哋實戰、實地喺現場嗰個運作好有關係，所以就亦都係要需要一啲前線同事嘅參與，同埋一啲係管理層係一齊去訂定嘅。

問：我明。但係你可唔可以講到，即係實際上譬如話喺個 office 裏面，

呢一份嘢佢由開頭編訂，到到後來做 revision，你可唔可以簡單咁講係有冇一、兩個特別嘅同事，或者一個特別嘅部門佢係負責係譬如話 keep 住呢啲 record form 嘅格式嘅？會有定期咁樣會話「啊，大家開下會，嗱，大家邊度有邊啲事發生過呀？」隔三年開一次會，或者有咩嘢例會，大家提出，「哦，原來最近發現咗三次撞咗板，唔同嘅，或者有三次有人即係通風報信，嗄，我哋就加加減減喇。」有冇咁嘅機制--有冇一個恒久咁嘅機制？或者有冇係提醒啲同事話「喂，就算冇人嚟同你講，你坐低諗一諗。」係嘛？有陣時唔使出咗事先至要去咩嘢嘅。

答：唔，係。

問：係嘛？你要諗下，用下啲邏輯，睇下有冇需要重新 overhaul 下咁樣，有冇咁嘅機制嘅呢？

答：係。喺我哋嗰個即係質素管理系統裏面，

係好多呢一啲守則等等，嗰啲有機制，就定時去將佢去再檢視。亦都係有關負責嘅同事，同埋一個小組，當然因為我哋都要喺唔同嘅項目小組裏面，就搵佢大家意見，咁就係會坐埋，就會一齊去檢討番呢一啲包括係各類嘅守則，或者係一啲係檢視嘅要點。

問：唔。負責呢個 record form，有冇特別嘅一個同事或者一個特別嘅小組去負責嘅？

答：我哋喺下面上面，係有呢啲小組，或者有一啲負責人就會對唔同嘅範疇，都會負責佢嗰部分嘅工作嘅。

問：即係唔係話有一個人係負責話 update 呢份 form，而係總之有唔同嘅範疇嘅人，佢哋會對自己個 subject matter，就會提供一啲嘅意見？

答：其實呢個係相輔相成嘅，可能有啲同事要係負責睇呢一啲 form，但係佢喺制訂或者喺佢編制，或者係佢要修改嘅時候，每一個範疇都有一啲專人負責番佢嗰部分嘅工作嘅。

問：Okay，得。

答：咁樣去即係形容，就比較係合理一啲。

問：好，得。不如你話畀我聽，有冇同事--即係呢度可以見到由 A 至 AF，好多唔同嘅範疇。首先，有冇一個 centralized，即係中央嘅一個同事，或者一、兩個同事係負責 keep 呢份表？係負責統籌，去接收唔同範疇嘅同事嘅資訊去 update 呢份表嘅呢？

答：喺總的來說，呢個係有嘅，有同事負責嘅。

問：係，可唔可以畀我哋究竟呢個同事佢嘅職級，或者係邊個呢？

答：睇呢個--要--即係呢一個表格，佢就係其中一個 manual--一個嗰啲 manual 裏面其中一個附表嚟。

問：係。

答：咁變咗就係嗰個有關嘅同事，有關嗰一組嘅同事，我返去都要考究一下。因為就唔同嘅年代，可能有唔同嘅人，隨住我哋嗰個機構嘅發展就去負責嘅。

問：唔，唔。即係基本上係有本好厚嘅一個 manual，咁可能我哋成日見到左下角會有個 revision of 幾多年咁樣。

答：係。

問：即係我都知嘅，職級嘅同事，they come and go，即係今日派駐呢度，可能佢又可能調走咗，但係總之係會有同事可能係負責去 update 呢一啲嘅 manual，或者呢個 manual 嘅呢部分，咁係咪？

答：可以咁講。但係喺呢個表裏面，佢有好多種唔同嘅物料，另外唔同嘅物料，亦都有唔--可能有唔同嘅同事去負責再去細分，去檢視。所以我就話除咗呢個表格，或者呢一個文件裏面嘅內容，可能仲有另外第二啲同事再參詳，先至構成改呢一張 form 嗰個細則嘅。

問：唔。咁對...

委員：我想問一點。

石先生：好。

委員：呢個 form 下面嗰度寫住，係咪 05 年你係最後一次嘅 update 呀？

答：大家睇呢一份就係 2005 嘅版本，但係我話如果現在，我要畀一份更加 update 嘅，應該係有一份係 2015 年，即係現在係 7 月之後出咗另外一份。

委員：但係事後先至有啲，嗰份？

答：事後，事後先出。

委員：但係呢一份之前呢--即係你事後嗰份，就之前淨係得呢份，即係十年前㗎嘞？

答：係。呢個係--呢啲 form 係 2005 年版本嚟嘅。

問：或者幫助我哋去收窄我哋嘅範圍，我哋未必一定要係即係搵番由盤古初開負責嘅同事佢嚟，但係我想知道即係架構上，系統上，負責 keep 呢一個 manual，係屬於邊一個 division，或者邊一個部門，或者係邊一個 section 嘅同事負責嘅？

答：呢一個係應該負責係 DASM。即係呢度分 number，就 DASM 嗰一組嘅同--即係嗰個同事，或者嗰一 team 嘅同事就會負責。而 DASM 一般嚟講，就係由一位總建築師幫手去處理，但係就總建築師就會隨住我哋嗰個架構不斷嘅 evolvement，就係會由唔同嘅同事去負責。

問：DASM 嘅全名係……

答：Divisional 嘅 Architectural Site Inspection Manual。

問：Divisional Architectural Site Inspection Manual。負責嗰個 section 係咩嘢話，講多次，嗰個 division？

答：負責會--應該係一個係總建築師去統籌，但係下面亦都有一啲係地盤管理嘅同事，咁就隨住我哋嗰個機構嘅演變，就會由唔同嘅總建築師去負責。

問：即係會有一個總建築師，即係我知道 Housing Department 就好多，應該係有即係八個定九個 Chief Architect 咁樣。

答：係。

問：可能佢裏面其中有一個就係即係 at any one point in time，即係喺任何一段時期，即係有一個係即係委派咗，「嗱，你就係負責 update 呢一本嘢。」

答：係，正確。

問：可能佢就會要依靠就係各種嘅專長嘅人就話畀佢聽，就係有啲乜嘢嘢發生咗嘅問題，或者有啲咩嘢心得佢想話畀佢聽要 update，係咪咁樣？

答：係，呢個係正確嘅。

問：但係有冇定期要檢討，定係即係煮到嚟先至去即係加咁嘅？

答：喺個系統上，就定時都有一個檢討，咁就唔一定係一個大修。

問：係。

答：即係可能喺呢個 DASM 裏面，有某一啲部分，係會劃作修改，但係就未必係每一張 form 都會，或者每一個細項都係年年去不斷係更新。

問：唔。即係你嘅機制裏面係會有定期嘅可能會面，會面結果可能就未必一定要為改而改，即係有需要就改，但係會有定期要坐埋一齊去研究下有冇需要改？

答：係，係。甚至有時講到就係話會唔會有啲嘢需要--可以 streamline，可以即係將佢減省啲，唔使咁繁複呢都有。即係 review 又嗰度同一種形式，有啲就係話可唔可以減省，有啲就可唔可以將佢加強，咁就幾樣都一齊，會同時係與時並進。

問：明白。即係而家問咗你就可能係即係 caught you by surprise 我叫做，你返去查一查，譬如話即係實際上呢一個 section，呢一個即係負責呢一方面嘅叫做部門又好，或者係一個 division 又好，佢哋有冇一個書面嘅一個流程係話畀佢聽，呢個 review 嘅做法嘅機制，係可能話「啊，隔幾耐要 review 一次？對上一次嘅 review 係幾時？」或者係你話有唔同嘅範疇嘅同事，其實基本上你哋內部大家其實分幾多個範疇呢，有冇即係可以畀到呢啲嘅資料我哋呢？

答：呢個我諗我要係...

問：明天講都唔怕嘅。

答：...返去寫字樓嗰度再搵多少少資料先。

問：即係舉個例，我想知嘅係咩嘢呢，就係話「啊，原來你哋內部另外有個即係 manual 就係話畀你哋聽，keep 呢本嘢，我哋要隔兩年就係大家要開一次會，睇下有冇--或者有咩嘢要傾嘅。另外，我哋就會有十個範疇，做窗，做呢，做嗰樣，呢十個範疇，每個範疇都要有個人去負責嚟到開會，提供意見嘅」咁樣，有冇類似咁樣嘅規矩喺個部門裏面，我想知道係呢樣嘢？

答：呢度可以補充資料。

問：係。

殷先生：係，主席我想你畀一個正式嘅指示畀證人，因為一般嘅情況下，證人喺在供嘅期間，就唔可以同其他講有關佢個作供嘅內容，但係...

石先生：我當然冇反對。

殷先生：嗄，佢可能要佢嘅手下幫幫手嘞。

主席：冇問題。繼續吖。

問：咁我仲想知道嘅，就係 Housing 裏面有好多專才，就負責唔同嘅 subject matter，即係嘅課題，有冇專門嘅一啲部門，或者一、兩個同事係專門係負責喉管方面嘅呢？

答：簡單嚟講，其實我哋係有一啲同事都會睇一啲係屋宇裝備，包括都有啲係水喉，或者係即係同嗰個 plumbing 同 drainage 有關嘅部門都有嘅。

問：有嘅？

答：即係呢部分--其實每一部分，你見到我哋嗰個建築嗰個規格，嗰個標準，每一個範疇，其實都有啲同事就會負責去--時不時就去睇下佢需唔需要 update。

問：Okay。即係其實水喉系統呢一個課題，呢個 subject，其實係有人係負責嘅，會係，係咪？

答：係。

問：有，okay。電當然會有喇？

答：有。

問：電、水喉...

答：風、火、水、電、...

問：風、火、水、電...

答：...水喉都有。

問：得。Okay，得。你聽日畀呢一方面嘅資料我，好唔好呀？即係譬如話分幾多個課題。即係你唔使畀人名嘅，未必畀人名，但係...

答：咁我要問問主席，我係咪可以返去同啲同事去呢個提供資料，係。

問：可以，可以，頭先殷大律師已經問主席攞咗准許，你係可以...

答：呢個係第二部分，抑或呢個係另一樣嘢嚟嘅？

問：明天可唔可以畀到我哋？

答：我要返去睇一睇我啲同事，佢哋可唔可以咁快搵到啲資料。

問：哦。唔係，其實如果而家 Housing Department 有同事喺度，佢即刻佢可以返去，因為唔使你個人走去勞力㗎嘛，呢樣嘢，係咪？

答：係。

問：或者 DOJ，或者個 Stephenson Harwood 可以即刻去叫--有冇同事可以即刻做到囉。如果唔得嘅話，就要等你離開證人台之後返去做。

答：係。

殷先生：我相信馮女士，因為我哋都冇佢咁熟悉佢嘅 department 嘅運作。

主席：咁冇乜可能嘅，政府一個部門裏面，冇可能得一個人知道點樣樣運作，一定有多過一個人知道點運作嘅。

石先生：我繼續問喇，我相信 Housing 會有同事喺度，佢哋返去，可能打電話畀...

主席：係，一定有人知嘅。

問：Okay，我繼續問落去。今日我哋繼續攞番一、兩個例子嚟睇，我哋見到"Emulsion paint"同埋"Synthetic paint"，亦都係有--你睇番 37641 嗰個表，見唔見到？

答：見到。

問：裏面有"Emulsion paint"同埋"Synthetic paint"，呢兩種係歸納於就係要 check 嘅範圍裏面，因乜事係需要將呢兩樣嘢列為即係要 check 嘅 item 呢？

答：我頭先都提過，可能係由--佢源於就係，如果曾經去懷疑或者發現過有一啲係唔合規格嘅物料，係曾經有咁嘅風險，我嘅同事喺當時就會將佢擺落去。呢個就係--呢一份表格都係 2005 年，所以就係好多時嗰啲即係油漆，其實都要小心。

主席：因為有鉛？

答：其中一樣係鉛。

問：因為係有規矩㗎嘛。即係譬如話因為你用好多呢啲唔同嘅用料，都有合約嘅規矩，佢裏面要有啲咩嘢質素嘅保證。

答：其實好多種，即係唔淨只係鉛，即係...

主席：好多種原因嘅，係咪？

答：有好多種嘅，同埋係嗰啲物料，佢來料嘅時候，有啲咩嘢大家都要注意嘅呢？特別係油漆方面，個數量呀等等，都要小心去盤點。其實如果講油漆嚟講，就唔淨只係來料，甚至用完之後嗰啲料--嗰啲罐點樣處理，我哋都會小心去妥善咁樣處理，個同事。因為就係怕有一啲係我哋違規嘅活動或者行為喺地盤出現。

問：即係用咗一啲唔應該用嘅油漆？

答：類似。

問：或者唔合規格嘅油漆？

答：唔合規格，或者係畀人哋譬如即係偷天換日等等嗰啲問題。

問：偷天換日嘅焊料，係咪都係一個危險呢，如果用番一樣嘅邏輯？

答：如果我哋知道呢一個係風險嘅一種物料，當然我哋就會係用同一個邏輯去處理。呢一個就話我哋如果一早查覺到嗰個焊料嗰個情況會係有含鉛，或者係含鉛之後，佢嗰個後果對於一個健康方面有影響，如果有任何一啲警示或者跡象話畀我哋聽，我一定就會將佢擺喺呢啲係物料監控嘅系統裏面。

問：不如可唔可以麻煩你，可唔可以啲埋就係呢個 emulsion--可唔可以 chase 到個歷史？Emulsion paint、synthetic paint、呢個 multi-layer acrylic paint 同埋呢個 tile adhesive and grout 呢幾樣嘢，淨係呢幾樣嘢啫。歷史上加落去，其實討論過個原因係咩嘢？你可唔可以起得番嘅呢？即係睇番公務員系統裏面嗰啲紀錄。

答：呢一個我諗就需要一啲時間去即係所謂查究。即係因為現在呢啲如果要啲番檔案，都未必可以係一朝一夕啲個時錄。如果要啲番十年前，可能要去倉等等，同埋就要唔可以話喺咁短時間裏面我就可以提供得到。

問：唔。

答：但係我如果講，你話嗰個籠統啲嚟講嗰個原則，我就可以講得到。

問：係。個原則就係頭先你所講，就係可能遇到過一啲嘅事情，就係雖然係明文寫定你要有某種嘅規格，但係有人偷天換日，有人違規，總之

種種嘅原因，令到你知道「啊，原來就算寫咗油漆要係用某種級別嘅，都會有人違規用咗嗰個，啊，我哋要 check 嘞。」係咪？

答：係。咁可能甚至唔一定需要等到定期開會去檢討先至擺落去，即係如果有啲即係特事特辦嘅時候，...

問：我明。

答：...就忽然間有啲事故，咁可能我哋已經好快可以有個決定就係擺咗落去。

問：明白，明白。但係麻煩你都可唔可以睇一睇？呢個聽日做唔到喇，但係你--即係呢個你返去如果做到嘅，就...

答：聽日做到機會就好微嘞。

問：係，我明。

答：嗄。

問：頭先即係話你畀個架構我哋，究竟邊一個級別嘅同事負責呢本 manual，有幾多個叫做 subtopic 嘅人去負責，隔幾耐會 review 一次，有冇啲即係流程，有冇啲 guideline 係呢個 revision of 呢一個 manual 咁樣運作，呢個你哋可以返去睇到，呢啲係一啲現有程序嘅嘢，係咪呀？

答：係，呢一個相對就比較容易啲去搜集資料。

問：好。

答：但係如果你話搵番即係歷史過往點解擺落去，點解擺落去，嗰啲咁細嘅資料，恐怕就會有一定困難嘞，因為畢竟呢個都係好多年前嘅事。

問：明白，好，好。咁分兩段進行，聽日畀到嗰啲聽日畀，呢個 2000 年呢份 form 裏面嗰幾個 item 點嚟嘅，可能你要用多少少嘅時間，呢個我明白。

答：好，我都可以提供埋現在最新嘅版本添。

問：好，好。呢個我哋就睇咗就係啱啱啲物料送到去個地盤嗰度嗰個階段，就係靠呢份 form，6210。好嘞，我哋睇番你嘅證人供詞第 47 段囉喎。47 段，中間嗰度，你見到 47 段，你話"As contract

administrators the Chief Arichitect(CAs) and Chief Building Services Engineers(CBSEs) of DCD are responsible for periodic supervision of the contractor's plumbing installation works on site." 即係 CA 同埋 CBSE 就會定期咁樣走去喺個地盤度去監視即係喉管、水喉嘅進度。咁就亦都係透過呢個 delegation，即係授權畀人，就實際去地盤嗰度監工嘅呢啲工作，就合約經理，contract manager 嘅代表。即係梗係唔係由個 CA 親自落去，可能係佢授權一啲嘅代表，總之 Housing 會有代表喺度，就定期去 check，對嗎？

答：係，正確。

問：呢啲係一種 spot check 嚟嘅，係咪可以叫做？

答：係。

問：係。你話"Site inspections are carried out as laid down in the DCMP. However, HA's staff did not inspect the joints between pipes or check for presence of lead as the construction industry and the HA had all along believed that the widely accepted and used soldering materials should have complied with relevant requirements."即係其實呢個 DCMP 裏面有講過，就話「嗱，你去 spot check 嘅時候，需要做嘅嘢就係如下咁樣。」係咪即係都有講過 spot check 點做㗎？

答：其實"Master Process Manual"係一個比較 high level 嘅一個 struct manual 嚟嘅。

問：係。

答：下面佢有 Contract Administration Manual，同埋仲有就係一啲係"Site Inspection Manual"。

問：係。

答：佢呢個就係最 overarching 嘅一個 Process manual 嚟嘅。

問：即係有一樣嘢叫做"Site Inspection Manual"？

答：係。

問：但係"Site Inspection Manual"有冇仔細到係話畀嗰個--去做 site visit 嗰個人士聽，有邊類嘢佢係需要走去做 spot check？

答：基本上係有，另外有一啲就係要定--譬如係去 check 幾多 per cent 個囉，咁都有一啲指引畀同事，當然係亦都可以有一個--嗰種 form 就係可以等個 Chief Architect 同埋個 Chief Building Services Engineer，就因應佢一個地盤嘅實況，就去調校嗰啲 percentage check。所以呢一個就係有一個基本嘅系統，但係每一個項目都會視乎佢嘅個別情況，就去再自己訂定一啲佢係 site specific 嘅 checks 嘅。

問：你睇睇 B1，唔該。B1。B1。B1 嘅 25 頁。

答：B1 嘅...

講者（不能辨別）：25 頁。

答：25 頁。

問：呢個就係"Master Process Manual"，係咪？

答：係。

問：見到嗎？

答：正確。

問：好。咁你一路 scroll 落去，"Site Supervisory Team"，見到嘛？

答：見到。

問：咁就"to carry out site inspections, to manage site records"，咁呢個就係指定咗呢個 site supervisory team 嘅功用，就係其中一個就叫做"to carry out site inspections"，對嘛？

答：正確。

問：呢個就係嗰啲 spot check 嘞？

答：係嘞。

問：咁係"DASM"同"DEI"就係即係負責嗰啲 post 嘅名稱，咁樣嘅？

答：唔係。其實嗰個係指個 manual 個名稱嚟嘅。

問：Manual，okay。

答："DASM"就係 architectural 嘅，"DEI"就係 engineering 嘅 inspection manual，"DBSI"就係 building services inspection manual。

問：Okay，得。咁麻煩你再睇 28 頁。

答：28 版？

問：係，28。

答：係。

問："Material Approval & Checking"，咁佢就話"This Annex is to be read in conjunction with relevant DCMBIs and Work Stage 7 with respect to material approval and checking." 咁跟住就有一連串嘅嘢。呢啲就係即係幾籠統嘅說法嚟嘅，係咪？即係唔會話 identify 你要 check 乜，你唔要 check 乜，咁樣嘅。

答：呢一個我係比較係--即係 DCMB，呢一個係一個比較 high level 嘅一個 manual 嘅 instruction 嚟，...

問：係，嗄，比較 high level 嘅。

答：...咁就講晒即係嗰個--一個大嘅框架，邊啲人做啲咩嘢工作，咁而係仲有一個 reference，就係頭先睇到，有邊一個 manual 係需要佢注意嘅。

問：咁你一路掃落去，25 --呢個係 28。噢，睇 29，跟住就"Roles of CT and C&MT"。跟住 roll 落去到--一路睇到三--噢，呢度停一停。

答：係。

問：CT同C&MT就有coordinated surveillance tests咁樣，係咪，有？1.12段。

答：1.15，係。

問：1.12段。

答：1.12，係。

問："C&MT is to conduct coordinated surveillance tests as a routine to concerned materials used"，咁呢個係咪--呢個surveillance test係咪就係嗰啲spot check呀，係咪叫做？叫surveillance test，係咪？

答：呢個有少少唔同。如果講C&M --即係C&MT，C&MT，咁佢叫components and materials team。

問：Okay。

答：咁嗰個亦都係中央嘅一個小組。咁呢一個surveillance就會係有別於平時project team做嗰一個surveillance嘅verification check。

問：Okay。即係唔係咁關事，okay。可以繼續，係。

答：呢個係中央嘅。

問：呢個係-- okay，okay。即係呢個就唔係話去地盤嗰度spot check嗰個？

答：佢可以喺地盤嗰度抽，但係呢一個係一個--係中央另外一個team就去抽一啲物料再去做一個surveillance test嘅。呢個就係on top of嗰啲project teams佢自己個project team嘅。

問：Okay，明白，明白。

答：即係呢個係中央仲有另外一層嘅一個監控嚟。

問：Okay，明白，明白，okay。咁我哋再睇落去，29頁睇落到去30頁，C&MT一路就係唔關呢個--即係斷project睇嗰樣嘢事㗎嘞，係，C&MT都係exactly...

答：佢係 across 全部嘅 projects。但係如果譬如有同類嘅物料，佢可能就係揀去某一個地盤，去抽邊一隻，或者喺廠嗰度抽嘢，抽驗。

問：Okay。但係就唔係斷 project 計㗎嘞，就唔係針對一個 project 咁樣嘅？

答：唔係，唔係嘅。

問：呢個係跨 project 咁樣嘅？

答：係嘞。

問：Okay，明白。咁我哋繼續睇到第 31 頁。

答：係。

問：Okay。咁即係呢一 part 就全部都係跨 project 嗰個 checking 嘞，就唔係 project by project 嗰個...

答：係嘞。

問：Okay。

答：但係呢一個 C&MT，如果做嘅水 test，如果或者睇到有問題嘅，就會全部嘅 project teams 都會 on the alert 嘅。

問：好，得。咁我哋就睇一睇，再睇 55 頁，呢個就係 DASM Architectural Site Inspection Guide。

答：Sorry，55？

問：55。

答：55。

問：55 頁，係嘞。呢個係咪似樣啲呢？呢個係咪就係講嗰個即係 site visit，spot check？

答：係，DASM 呢個係。

問：咁你跟住睇一睇七--第 80 頁，第 80 頁，呢一個我哋見到呢個 guide 就係 2015 年 6 月，咁都幾 update，不過就係唔係喺鉛水發生--即

係事件發生之後嘅，呢個係。你見唔見到"30 June 2015"？

答：係，喺之前嘅。

問：即係喺事件發生之前，啱啱之前嗰個禮拜先至 update 嘅。

答：唔係，佢之前--呢個 date 係 June 喇，但係其實佢 actual 嗰個工作其實已經係 well before June，所以 publish 先至喺 June 嘅。

問：Okay。

答：會有一個時--會有個時間去 up --去即係去改變。

問：好，得，得，okay。咁你見到第 80 頁就有個"LIST OF ITEMS REQUIRING VARIOUS CATEGORY CHECKS"。你見到嘛？

答：見到。

問：跟住就有啲 percentage，咁就"(A)"就"100%"，"(B)"就"10%"咁樣。

答：係。

問：你可唔可以解釋下，即係呢個系統係點樣運作㗎？即係"inspection percentages"係咩嘢意思？

答：即係呢個就係按嗰個-- the risk base 嘅一個決定。如果係嗰樣嘢係嗰個 chance of occurrence 或者係嗰個 significance 係嚴重嘅，咁我哋就會即係用 risk base 嘅 approach，就擺佢喺 100 per cent check 嘅。

問：100 per cent check？

答：嗄。

問：100 per cent，個 100 per cent 係代表乜嘢？

答：100 per cent 即係話全部嘅嘢都要 check 晒佢。咁呢度有好多例子，例如叫做 prototype、sample work、shop drawing，等等，咁嗰啲就係 100 per cent check 嘅。咁另外有一啲叫...

問：100 per cent，即係話你次次去巡嗰個場都要去 check 一 check

咁樣，定係點樣？

答：唔係，而係佢喺嗰個 contract 裏面，佢一定要嗰一件嘢，例如 shop drawing，佢一定要出晒成份 shop drawing 嘅。

問：Okay。

答：即係佢唔可以 sample 話，「諗，今次我唔 check，下一次我 check」，就唔可以咁。嗰個就係 100 per cent 嘅。

問：Okay。

答：另外有一啲就係 10 per cent check，有一隻係 random check at least 3 times 咁樣。就基本上分咗三類。咁但係我頭先提過，就係話視乎嗰個項目嘅特性，其實個 chief architect 或者佢嗰個 team，或者個 chief building services engineer，可以因應佢嗰個項目嗰個特性就去改變呢個 percentage check。即係話佢如果覺得嗰個係物料，或者嗰個 item 風險係比較高嘅，咁可能佢要將佢向上調校嘞。

問：咁就呢一個表就唔包括焊料，係咪？

答：如果我就咁睇佢跟嗰啲 process，如果 PLU1 嘅，就喺 86 頁嗰度出現嘅。咁嗰一度，如果睇 PLU1.01 同埋 PLU1.02，就有提到邊一啲係需 100 per cent 嘅 checks，就關於係話 plumbing，包括 underground 同埋 above ground 嘅 pipes。

問：但係包唔包 soldering㗎？

答：我呢度就睇唔到特別講 soldering。

問：係。

答：咁 100 per cent check 係咩嘢呢？就譬如 pipe testing，就 cleaning of water tank / pipeline...

問：唔係，你 100 per cent，你話每次都要。即係你嘅意思係每一次去--即係你頭先話每一次都要，嗰「次」係咩嘢？即係譬如話你建築期間，你會--即係呢一啲 Housing 嘅同事，咁佢--嗱，日日都會有人喺度㗎喇，當然係。咁但係你嘅意思係 100 per cent 係每日都要睇住，定係點樣？

答：唔係，唔係咁嘅意思。其實呢個，譬如 test，譬如睇番譬如 water pressure test 或者 pipe testing 嗰啲，係指佢成個 installation 裏面全部嘅 pipes 嘅 pipework。

問：係，okay。

答：咁譬如 pressure test，一定係全個系統去 test㗎喇，就唔會話係揀一截去 test，其餘嗰啲就唔 test 嘅，...

問：得，明白。

答：...咁當然係唔得。但係喺我哋嚟講，個要求就係呢一啲 testing 就要百分之百嘅 test 嘞，因為呢啲係同我哋嗰個 function 同埋個 performance 有關嘅就一定要 check。咁例如水管、水喉，最緊要係咩嘢呢？就係唔好漏水，佢要承受壓力，唔可以爆喉，等等，嗰啲就一定百分之百全部都要測試㗎嘞。

問：譬如話你睇下第 86 頁，上少少，"10.01"嗰欄，under "10% Check" 嗰度。

答：十...

問："10% Check"。

答："COM10.01"？

問：吓？"COM10.01"，係嘞。

答：COM...

問：咁嗰度有"Sealant"呢個 item。Sealant 即係係啲玻璃窗嗰啲，係咪？

答：係，正確。

問：咁嗰個就 10 per cent check。即係你哋會有一個 10 per cent check 嘅即係基準，即係要求 10 per cent check，就係 for 譬如話啲玻璃窗黐得穩唔穩，咁樣嗰啲...

答：即係譬如十隻，抽一隻去試，去睇咁樣。

問：Okay。十隻抽一隻。

答：一般就係咁樣去--可以咁樣去解讀，咁樣去理解。

問：係，okay，得。

答：即係十抽一。

問：十抽一？

答：係。

問：但係呢一個係 government 係到到完工嘅時候嗰個 checking，定係你即係工程做緊嘅時候嘅 checking㗎，呢個係？

答：如果 10 per cent check，呢啲一般嚟講都會係喺施工期間嘅 checking 嘅。

間：喺期間，okay。

答：咁到到最後，final inspection，好多嘢都會係 100 per cent check on 某一啲 items 嘅。嗰個就唔係喺呢一個表裏面去羅列㗎嘞。

問：Okay。

答：嗰次係 final inspection，有另外一個表格。

問：得，得。咁即係呢一個表其實就唔係包括 final inspection 嗰個階段，而係即係施工期間要做嘅嘢，係咪？

答：嗄。

問：Okay。咁右手面，"Random"，就係即係可你能你隨機咁樣去做，抽出嚟睇咁樣，叫啲人？

答：係，正確嘅，呢個係。

問：咁所以"Plumbing"嗰度，"Above Ground"，譬如話"PLU1.2"嗰度，"Random Check"就冇指示叫人做嘅，係咪？

答：係。

問：嗱，係睇"PLU1.02"，...

答：係，係。

問：...右手面，"Random Check"係冇嘢嘅。

答：唔。

問：咁即係根據呢個指示--當然喇，呢個係一個指引喇，只係。

答：係。

問：指引上，如果揀住個本子去辦事，就去做 inspection，落去即係做 spot check 嗰個人見到，就唔會話有人提佢，「喂，唔該你抽啲」--即係「唔該你去望一望嗰啲焊料」，就唔會有咁嘅事嘞？

答：我哋就冇講到焊料嘅，但係因為其實喺個--你見到"10% Check"嗰度，就有提到係"Materials, Type & Dimensions; Pipe Joint; Pipework installation; Valves & Strainers; Pipe Support; Protection to Pipe"，咁但係一般嚟講，呢個都會係目測，或者係即係就咁樣靠肉眼去睇，就唔會係抽啲焊料走去驗，即係就唔係嗰一個範疇嚟嘅。

問：係。所以即係就算係 spot check，都係一啲目測嘅嘢嚟嘅？

答：係嘞，因為十...

問：即係望下，即係個樣好唔好呀，或者即係實唔實呀，或者個 dimension 呀，嗰啲咁嘅嘢？

答：係。

問：係咪？

答：係。

問：Okay。好嘞，咁我哋又睇睇完工嗰度嘞。即係而家我哋--我哋頭先睇咗喇，開始啲物料送到，就見到嗰張 form 就冇列舉到 soldering，喺...（聽不清）施工期間，咁去巡，咁你睇番頭先嗰度，就無論係 100 per cent、10 per cent 或者係 random，都冇特別話要到去睇 soldering；就算有，學你話齋，都可能係用肉眼去睇。即係唔會話有一個環節係要求抽一樣嘢走去驗嘅，對嘛？

答：係。但係呢點我一早提過，就係因為根本我哋對嗰個焊料含鉛呢個風

險就的確係缺乏一個認知嘅，喺當時嚟講。因為成個業界都係一個照係沿用已久，冇特別嘅警示或者跡象顯示佢會係出問題，或者引致一啲係嚴重嘅健康嘅危害嘅，咁係睇唔到有任何嘅跡象或者警示。甚至我最後去到驗水辦，駁水，測水紙，都冇呢個要求，咁所以就係大家業界普遍都係睇到係有一個--都係一個缺嘅一個--即係缺乏呢個認知嘅情況出現嘅。

問：係咪因為太過微不足道呢？呢個即係 soldering 呢樣嘢，問題係太過...

答：我又唔可以話佢微不足道，但係一向就係起碼就係好多業界嘅人士，甚至係我哋喇，因為我哋已經見到業界用咗好耐吖嘛，就相信呢隻物料係大家都用慣咗，同埋係行之有效，又冇任何嘅跡象話畀我哋聽佢會出問題，或者佢出緊問題。

問：你睇...

答：咁我真係唔察覺到佢係會有機會咁樣出問題法。

問：你睇下你證人供詞第 73 段，37540 頁，37540，上面數落嚟第五行，"Soldering materials have been regarded" --你見唔見到？

答：見到。

問：37540 頁，73 段，上面數落嚟第五行，"Soldering materials have been regarded as an insignificant sundry item"。咁其實係咪真係我所講，大家都覺得 soldering material，呢啲焊料，真係太過細眉細眼，微不足道，"insignificant sundry"嘅，咁所以就大家真係睇漏眼，漏招呢？

答：呢個 statement，咁我要 clarify 喇，就係 soldering material 一向以來，喺我哋嗰個合約裏面，個 goods of quantities，佢就唔係一個 separate item being measured separately。佢就係 form part of copper pipes。即係銅喉裏面就已經係包今咗 soldering materials 或者 solder joints，就冇一個 separate item 去度數或者係去落價，咁而大家都覺得佢係水喉嘅一部分，咁即係呢個意思就係咁樣樣嘅。

問：唔，明白。

答：即係...

主席：即係你嘅意思即係裝水喉，即係如果要 install 啲 pipes 嘅時候，呢個焊料就係連工包料嘅一部分嚟㗎嘞？

答：的確佢係連工包--全部合約嘅嘢都係連工包料㗎喇。

主席：我知。

答：咁但係就喺嗰個...

主席：即係唔會有另外一個錢係畀嗰個分判商嘅？

答：係，正確。我哋喺一個合約裏面，個 goods of quantities，喺佢度數，同埋喺一個 standard measurements，就係即係世界通用㗎嘞，都係咁樣度法。咁 soldering material 就係 form part of 成個銅喉供水系統裏面，就已經銅喉嗰個 rate 就已經包埋呢個一個 soldering material。

問：咁即係嗰個人開個價畀你，話我喉，X 咁多錢，但係其實個成本度，將 soldering material 撳到好低，佢賺多啲嘅，係咪咁樣？

答：我哋唔可以咁樣睇得到喇。只不過就係話佢個 rate，即係佢嗰個價，就係連工包料，包埋銅喉同埋佢啲 joint 嘅 material。

問：明白。但係誘因嚟講，佢既然 bid 咗個價係銅喉，原來係裏面就包埋呢個 soldering materials 嘅，咁所以佢 soldering materials 嗰 part，如果佢...

主席：越平，係。

問：...可以做得平啲，咁佢就會賺多啲喇，係咪咁嘅意思？

答：我哋一向就冇去即係考究呢個 soldering material 嘅價錢嘅，不

過事後再睇番，其實佢嘅價錢佔佢嗰個 plumbing 嘅價錢其實係好細嘅，係...

問：對嗰個建築商嚟講就可能相對細？

答：對個 plumber，如果成個 plumbing system 嚟講，呢個數目都唔係大嘅。

問：睇下判幾多喇，當然係。

答：咁嗰個就係行業裏面佢嗰個分工同埋分判嘅一個情況。咁但係喺我哋，如果你話作為業主，或者作為係 contract administrator，去睇呢個數，就睇唔到嘅，呢個係。

問：但係 Housing 同業...

主席：我哋尋日知道，如果我有一個 project，有三蘴，咁就講緊一百萬個囉喎。

石先生：即係如果...

主席：因為我哋尋日，定係--對唔住，尋日，係咪？總之...

石先生：前日，前日。

主席：...石大律師就曾經放過呢個有利嘅其中之一個報告，佢事後交畀房委會嘅報告，咁就話詼 76 釵一個單位吖嘛，個分別，咁跟住就我哋有幾多--唔係，根據個 project，係呀，嗰度係。

石先生：如果一條邨，四千幾個單位，有三十幾萬。

主席：有三十幾萬，對唔住。

石先生：係。

主席：咁佢三十，一條邨四千個單位，一蘴有幾多個單位呀？你都唔係好知。

答：嗰個，其實一般嚟講，我哋可以有六百至八百個單位嘅嘅。咁如果四千幾個單位，嗰個係大約係五--應該係五座樓嘅嘅。

主席：五、六蘆樓。

答：咁就如果佢佔個 contract sum，整個項目嘅建築費，呢個銀碼就大約係佔 0.026 個 per cent 嘅。

主席：唔係，我明。對於個大判嚟講就梗係 insignificance，唔重要喇。對於個--甚至可能對於嗰個分判商都唔係一個 significant 嘅 sum。但係當你去到一個 sub-sub-contractors，或者再 sub-sub-contractors 之下嘅 plumbers，咁就係一個 significant sum 嚟個喎。

答：如果佢知道嗰個代價係好大嘅，我諗冇乜人會去 take 呢個 risk 嘅。

主席：係，唔可以...

答：因為--係。

主席：...咁講嘅。即係搶嘢要坐監，好多人都知，不過都有人搶嘢㗎嘛。

答：嗰個--呢個就視乎佢分判嘅情況，同埋邊個去訂料，同埋點樣訂料。咁佢訂料同來料，跟住係點樣啲工友拎啲料去用嘅呢，其實一環扣一環，都係有好多即係步驟係需要跟進嘅。

主席：我明，我明白。繼續。

石先生：明白，明白。

主席：繼續。

問：即係如果係好上面嗰一層負責買埋料嘅，咁即係有頭有面，可又未必會即係做一啲所謂違規，或者係即係掉包嘅事情，咁但係當你判咗幾層落去，有可能唔同嘅睇法，可能唔同嘅情況會出現，其實會呢？

答：但係我--呢一點我諗就要即係睇下，如果睇下佢嗰個業界嘅運作係點。佢如果業界知道全部供應食水嘅焊料都唔應該含鉛，包括係買

方、賣方，甚至係用料嘅工友。咁如果係大家有呢個認知嘅，就係唔應該出現呢啲事故或者事件。即係如果你話即係抽離啲去睇呢件事。甚至如果你話食水裏面含鉛係對健康有害，咁可能啲工友，如果佢知道佢呢個--有呢個咁嘅對健康有風險，甚至如果佢吸鉛都會影響健康嘅，可能佢都唔會用啲含鉛焊料喇。咁變咗就係如果係業界普遍有呢個認知嘅話，可能呢啲事件、呢啲事故係或許係唔會出現。即係呢個我只可以話抽離啲去睇，成件事係點嘅呢咁。如果一早有人講，譬如你話人人都知，譬如吸煙危害健康，咁如果你話吸鉛都危害健康嘅，可能工友都唔會用呢啲含鉛焊料呢。

問：但係你頭先你都講過，你嘅供詞，就話你去做實驗，你走去同啲五金舖講話「我係要嚟做喉嘅」，佢都可以畀到啲含鉛超過50個per cent嘅。咁即係而家睇番業界，其實就唔係好知道原來嗰啲做喉嘅焊料係唔應該有鉛嘅。

答：係。現在睇番就係嘞。或者當時，我哋第一次，就係有呢個警示之後，我哋自己就好似--嗰啲同事好似去查案咁，就四圍去查，就發現到有呢個現象嘅。

問：好嘞，我而家就同你睇番即係一個項目個進展，就係開工前，開緊工，咁而家我睇番完工嘅時候係點樣。完工，你就睇番你嘅證人供詞，48段，係嘞。我又係讀番你嗰個證人供詞出嚟，你講就係"Upon completion of fresh water plumbing systems"，即係整完呢個食水嗰個喉管系統之後，"the Main Contractor, the sub-contractors and the Licensed Plumber conduct inspections and tests"，乜乜乜咁喇，呢拃就唔關你事嘅，因為呢拃係嗰個大判、二判同嗰個水喉匠做㗎，頭呢四行。

答：係。

問：係咪？對嘛？

答：係，正確。

問：Housing幾時入嚟，就係第五行嘞，"HA conducts the final inspection and testing of the water supply system with the Main Contractor who arranges for cleansing and disinfection of all fresh water tanks and fresh water supply pipeworks"，諸如此類咁樣。佢裏面講到"Housing Authority conducts final inspection and testing of the water supply system"，呢一句嘢，Housing Authority，呢

個就係叫做即係 final completion 嗰個 check 嚟，對嘛？

答：係，正確。

問：咁就會有另外一本嘅 manual，或者另外一套嘅規矩，就係去管究竟去到做呢個 final check 嗰啲人係會點 check，check 乜嘢呢，佢哋。

答：係，正確嘅，呢個。

問：即係我哋頭先睇嗰本 manual，site inspection 嗰個就唔適用㗎嘞，因為呢個係 final inspection 吖嘛。

答：唔。

問：呢個係完工之後要 check 嘅，咁就係另外一本書仔要教㗎喇。

答：係，係，係。不過我哋 final inspection 其實都係--一般沿用開都係 performance base 嘅 check 嚟嘅，即係除咗有啲特別嘅警示或者 alert system。如果唔係，喺特別係 plumbing system 裏面，最主要就係都係講係水喉嘅 function 喇，就係譬如 pressure test 同埋就係唔會有 leakage。

問：咁所以--即係長話短說，就係你哋做 final test、final inspection 嗰個守則，嗱，我而家手頭冇喇，但係手頭有都好，你都搵唔到有一句話要去 check 嗰啲 soldering 嘅 joint 裏面嘅化學成分嘅，對嘛？

答：呢點係肯定正確嘅。因為如果要 check，我一早喺來料嗰陣時 check 咗喇。

問：就 check 咗嘞，係，okay。

答：如果來料嗰陣時都冇呢個 awareness 去 check，當然就冇理由到到去 completion 嗰陣時先至 check 嘅。

問：嘅時候 check，係，okay。

答：因為一定係希望嗰個行業係 do it right at the first time。

問：Okay，好嘞。你跟住嗰句就係--即係咁，嗱，呢度就已經係即係解決咗個問題，就係冇 final check 到個 solder 喇。跟住嗰句，"HA's

project officers and LP”，即係水喉匠，“apply to the WA for inspection and approval of the plumbing installation stating that the pipes and fittings have been completed according to the approved drawings”，跟住你就 refer 咗就去 part 4，第 4 部分，呢個 form，WWO 46，嗱，呢一拃嘅 form 就其實就好似個迷宮咁，咁就我就試圖去睇番呢啲唔同嘅 form，因為呢啲 form，即係你起碼可以數到有 46、132 同埋有 1005 嘅，咁每一張 form 都有唔同嘅功用，亦都係唔同嘅條例底下要求嘅，咁所以，嗱，我而家就逐張 form 去同你睇究竟每一張 form 裏面簽名嘅人佢哋所扮演嘅角色同埋佢哋所證實緊嘅係乜嘢，okay。嗱，第一件事，我哋睇就係睇 form 46，嗱，尋日你嘅大律師就更替咗一套嘅證物，因為你原本你嘅證人供詞裏面就擺咗一啲而家用緊嗰套嘅 form 落去嘅，咁但係尋日你嘅--今朝你嘅--尋日你嘅大律師就係即係更替番，就係將一啲當時用緊嘅 form 就擺番落去。

答：正確，係，係。

問：所以，嗱，我唔知道嗰套啱嗰套 form 有冇畀到頁數落去，好似冇嘅，係咪呀？

主席：冇呀。

問：冇，嗱，咁我哋就要攞住嗰沓 form 就即係逐張逐張咁去搵...

石先生：有 paginate 咗？咦？same number？哦，okay，好。

問：我係收到通知，係原本係同樣嘅頁數，已經完全更替晒。咁所以，嗱，我哋--首先我哋睇睇就係 37621，37621，嗱，呢一張就係 form 46，你見到底，左下角見到“WWO 46”，見唔見到呀？見到嘛？

答：見到。

問：46，咁嗱，呢個 form 46，就其實裏面就包含好多部分嘅，part I、part II、part III 咁樣嘅，每部分都扮演一個唔同嘅角色，嗱，form 46 佢就係基於水務條例嘅第--一啲 regulations 嘅第 5 條係制定出嚟嘅，嗱，form 46 主要嘅功用就係佢嘅收件人就係水務監督，你見到喇，“To Water Authority”，你見到喇？

答：見到。

問："To Water Authority"。

答：係。

問：佢主要功用就係佢開工前要話畀水務監督聽「我將會開工整水喉」，咁就同埋係攞 permission？

答：正確。

問：係，咁所以你就會見到有"To Water Authority"，咁就見到喇，畀水務監督，"Plumbing Installation for the Premises at"，咁就係話，嗱，即係需要做水喉管嘅地址就係呢度，咁跟住就望落去就係話就"which has been approved by the Water Authority"，即係其實原來佢之前就已經事先就係攞定咗一個許可㗎喇，即係呢一份嘢，佢話"We are engaged by the Registered Consumer"乜乜乜乜乜，"for new water supply to construct/install an inside service which has been approved by the Water Authority"，即係其實入呢份嘢之前，水務監督已經事先已經係准許咗，即係概念上，呢個喺嗰個大廈嗰度係建設一個水喉系統。

答：係。

問：呢個就係實際開工，話「我開工喇」咁係？

答：係，即係基本上水務監督已經批核咗一套係 plumbing proposals，即係嗰啲 plumbing line diagram 等等，就先 submit 咗㗎喇，咁有個 approval reference 嘅。

問：咁呢一個就係話「我真係開工喇」，譬如話「嗱，我真係落手落腳，啲人會去開工喇，麻煩我而家話畀你聽」咁。

答：唔。

問：咁所以你跟住睇見下面"purpose of submission"嗰度，你見到"2"嗰度就係"your permission is sought for us to construct an inside service of the above premises"咁樣，咁所以，嗱，基本上 part I 就係臨開工前畀通知水務監督嘅，對嘛？

答：正確。

問：噢，有關適用嘅條例，就係水務條例 Rule number 5 -- Regulation 5，C2，我哋睇番 C2，1157，噢，嗰度有個 Regulation 5 嘅，佢就話"Where permission is required under the Ordinance to construct, install, alter or remove an inside service, application for such permission shall be made to the Water Authority in such form as may be specified and the application shall be accompanied by such plans, specifications and other information as the Water Authority may require."，咁呢一個 form 就係呢個嗰個 application for permission，呢個，對嘛？

答：對嘅，正確嘅，呢個係。

問：應該係 Regulation 5 吖嘛，係咪，即係？

答：係。

問：即係其實你睇番最 up to date 嗰個 form 46，佢抬頭直情話埋畀你聽係 under Regulation 5 嘅，不過呢個舊 form 佢冇寫，不過係 under Regulation 5，呢個就係申請話「我準備」--基本上就係開工申請，呢個就係，對嘛？

答：對，係。

問：好喇，咁開完工之後--噢，你睇番呢個開工嘅申請，咁你睇 part IV，你撳後幾頁，就會見到 part IV，37624，係喇，咁呢個就係完工之後，你見到嘛？

答：見到。

問："To Water Authority"。

答：唔。

問：Right，"whole of plumbing"或者"part of plumbing covered by this form was completed on"幾時、幾時，"Your inspection and approval is requested. I undertake the correctness of the meter position"，呢一個就係完工之後要交畀水務監督嘅，對嘛？

答：正確。

問：咁就要求水務監督就去視察，去 inspect，對嘛？

答：正確嘅。

問：咁點解要水務監督去視察，就係如果你睇番水務嘅 regulation，即係頭先我哋講嘅 C2 嘅 1157 頁，你就會見到 Regulation 6，即係 5 之後就到 6，5 就係四十-- 5 就係嗰張 application form 46 嘅 part I，嗱，呢個 Regulation 6 就話"A person who constructs or installs a inside service shall apply to the Water Authority in such form for- inspection and approval of the inside service"，嗱，個字眼就係 check 番一模一樣，我哋睇番見到 part IV 嗰個喇。

答：唔。

問：做完之後，你就向水務監督申請就「唔該你嚟睇我哋完工之後嘅結果，就唔該就順便就係」-- （b）就係話"and a connection to the main"諸如此類，即係話「唔該幫我開始駁埋喉」添咁，係咪呀？個流程就係咁喇？

答：係。

問：46 就係開工前申請，開工後告知就係你嚟到睇下，然之後就 okay，就幫我駁？

答：呢個流程係正確嘅。

問：係，好喇，呢個就係 under 水務條例 Regulation 5、6 咁喇。

答：唔。

問：咁當然佢睇完之後，佢如果滿意，咁佢就會 physically 去駁條喉畀你喇？

答：係。

問：咁就唔牽涉佢出啲咩嘢文件畀你嘅，你要求叫佢走嚟 inspect，佢 inspect 完，你叫佢 connect，佢 okay，佢就 connect㗎喇？

答：唔。

問：咁呢個就係 form 46 嘅功用，對嘛？

答：係，對。

問：咁另外又有套 form 嘅，就叫做 132。

答：唔。

問：132，你就睇一睇，就係向後再搋37630，37630，嗱，呢一個就唔係 under 水務條例出嘅一份文件嚟嘅，呢一個就係 under 呢個《建築物條例》出嘅一套文件嚟，你見到嘛？

答：唔。

問："Application for certificate regarding water supply availability/connection"，見到嘛？

答：（沒有可聽到的回答）

問：就係 under "Building"，跟住"standards of sanitary, fitments, plumbing, drainage works" etc. 嘅 Regulations，咁你見到"availability of water supply"，咁佢就寫住究竟係飲用水定係廁所水，portable water 定係 flushing water。

答：唔。

問：咁跟住又係一拃喇，地址喺邊度咁諸如此類，跟住"II Connection of Water Supply"，咁跟住就"I serve this notice on the period of availability of site under safe condition for connection works"，"I confirm that the plumbing, fittings and pipes used in the captioned project are in full compliance with Waterworks standards and requirements."，即係話「我確認呢啲水喉嗰啲 fitting 同埋啲喉管係完全符合水務嘅標準同埋要求嘅」，你見到有呢句咁樣嘅嘢，簽署就係 authorized person，授權人士，咁喺公屋嚟講，呢個授權人士就係個 Chief Architect，對嘛？

答：呢一個就因為我哋係喺 Building Ordinance 就係 exempted 嘅，咁個 authorized person 嘅角色就係 coordinator，咁喺我哋 public housing 方面就係個 Chief Architect pick up 呢個 role as coordinator。

問：係，明白，明白，係，得。咁所以即係實際上，呢份嘢簽去畀水務監督就係房委會裏面嘅 Chief Architect，佢就扮演住 equivalent to 一個 authorized person 嘅角色。

答：呢一個係正確。

問：類近喇，或者？

答：係，即係係，不過一般嚟講，佢就可以 under delegation，就係由第二啲同事，即係佢下面可以係佢負責嘅同事就係去簽，就 for the Chief Architect。

問：唔，明白。入咗呢份嘢去申請，其實個目的係乜嘢，就原來係要攞一份證書嘅，因為你睇下個抬頭都知喇，"the Application for Certificate Regarding Water Supply Availability/Connection"，入咗呢張紙換嚟嘅嘢就係 1005，對嘛？即係如果你...

答：係。

問：即係你都好熟個流程，你換嚟嘅就係 1005，1005，就係睇--揈後 37638，37638，見到嘛？

答：見到。

問：呢個就係一張 Certificate Regarding Water Supply Connection，就係 under 嗰個 Building Regulation，咁所以頭先我哋睇嗰張 132 係 under Building Regulation 嘅一個 standard 標準格式，就填咗畀水務監督，水務監督就根據呢個水務 Regulation 嘅 5A，就會發一張 Certificate Regarding Water Supply Connection 畀呢個 Housing 嘅，咁嗰個內容就唔緊要喇，即係總之就係即係我哋香港有關建築物所需要嘅眾多格式裏面嘅其中一款。嗱，我想問嘅問題就係你睇完呢拃嘢之後，你會見到就係 132 嗰張 form 裏面，其中係有一欄係由 authorized person，即係由 Housing Authority 裏面嘅 Chief Architect 或者佢即係授權嘅一啲下屬去簽嘅一個聲明，就係水管，啲水喉管係完全係符合水務嘅要求同埋標準，你見到喇？

答：係。

問：係之前兩頁我哋睇過，嗰度有個 declaration。水務嘅要求同埋標

準就包括要符合英國標準，對嘛？我哋今朝第一件事就係睇到喇，英國標準包括就係焊料要係無鉛級別，對嘛，記得嘛？

答：嗰個邏輯係咁樣 flow 嘅。

問：係，係，好喇，咁我嘅問題就係你入呢張紙畀水務監督嘅時候，嗰個簽名嗰個人其實係基於乜嘢事實基礎去話畀佢聽其實嗰個喉管係已經依照英國標準係裝嵌咗嗰啲焊料嘅呢？因為你話包含晒 Waterworks Standard，梗係包含晒裏面所有嘅嘢，包含埋用嘅焊料喇，咁簽名嗰個人係基於乜嘢嘅事實基礎，可以同水務監督講話「我嗰套喉管係符合英國標準」？

答：答呢個問題可以分幾個唔同嘅部分去答，咁第一部分就係喺嗰個合約嗰個規格，定嗰個 specification 個要求嘅時候，我哋嗰個合約規格已經定咗係要用一啲 lead-free 嘅 category 嘅 solder，咁第一點，就係個 pre-contract stage 個 specification 我已經定咗，咁跟住到到開工、施工嗰陣時，喺佢嗰個 material submission approval 嗰個階段，咁佢嗰個--大家都睇到頭先都--今朝睇過有一啲文憲，就係的確係有一啲咁嘅 submission and approval，都睇到承建商提交，佢話佢用嘅物料就係 comply with specification，即係話係唔--係 lead-free category 嘅 solder，咁...

問：但係嗰個係 PLU1㗎喎，佢唔係一定要畀你去...

答：唔係，但係我就話一般嚟講，嗱，我就話因為 WWO 46 亦都冇要求將呢個物料係羅列於佢個 annex 裏面嘅，咁但係一般嚟講，就可以話一個 general practice，就的確係承建商都會提供呢個物料畀我哋嘅同事就去批核，咁批核嘅時候，嗰啲物料就係 comply with specifications，到到施工嘅階段，我亦都提過，我哋一路都冇察覺到或者係缺乏一個認知，就係會有一啲含鉛嘅焊料喺地盤嗰度用咗落去，咁所以喺個--成個嗰個 inspection 嘅流程都冇將呢一樣列為一個係高風險嘅一個物料去 check，咁所以同事到到呢個階段，佢係唔會察覺到係有啲係會係--嗰啲物--啲焊料可以係含鉛用咗落去個地盤嗰度，即係我點樣--咁樣去勾畫。咁呢一樣嘢就係其實我哋喺呢件事發生之後，咁 7 月初，咁就有一啲地盤就要去--即係去抽查，咁跟住就再將嗰個驗水嘅範圍再擴大到去 2013 年落成咗四-- 2014 年落成嗰啲工程方面，咁我哋都就邀請承建商嚟同佢講我哋嗰個驗水計劃，咁其實佢哋個個都係--當時畀我哋嗰個感覺都係都唔知自己會唔會係中招呢咁，因為大家的確係行業裏面都係一向就係以為或者相

信呢啲物料就會落去，自然就係應該係 lead-free category，大家都唔係好清楚或者唔係好知曉根本個地盤會唔會有問題呢，即係大家當時都有呢一個咁嘅所謂即係唔認知嘅情況出現嘅，咁呢個亦都係喺個業界都幾普遍，咁當然就係因為業界一向都冇一個特別嘅 check，亦都冇呢個 alert 要 check 水含鉛量或者係焊料會唔會含鉛，咁所以大家都係有一個係缺乏認知，或者係大家都唔察覺到會有啲係唔合規格嘅焊料喺地盤會出現嘅。咁嘅情況底下，即係如果譬如我哋合約裏面冇寫嗰個規定話要用一啲係 lead-free category 嘅 solder，或者我哋亦都唔批辦，即係批辦嗰方面亦都冇呢一個咁嘅要求，亦都唔需要睇，而用咗一隻係有鉛嘅焊料，咁可以話就會即係--變咗你話點樣 comply 呢，咁嗰度會有比較個大嘅問題，但係當時我哋作--同事作為一個係 specifier，同埋一個係 Design Team 同埋一個 Contract Permission Team，佢將呢個要求擺落合約嗰度，而批辦嗰時亦都批咗一隻係 lead-free category 嘅，都有理由相信個業界既然咁普遍用呢隻料，應該都用得啱嘅料，咁所以佢簽咗名落去其實係表示佢對嗰個行業裏面一向嗰個運作都有一定嘅信任。

問：咁亦即係話簽呢樣嘢就唔係基於佢最後係驗咗知道，而係基於頭先我所講嘅--你剛才講嘅，第一，就係「合約咁寫，所以我第一，我就係有理由相信合約咁寫，你會照做」，第二，就係雖然唔係是必要提供樣辦，事先去 approve，因為呢個係 PLU1 嘅物料，但係有時，或者 general practice 喇你講，就啲人會係真係提供啲樣辦嘅，咁所以就加深咗呢個 CA 或者佢嘅下屬嘅信心，就係第一，「我信你會咁做」，第二，就係「如果你選擇畀個辦我，個辦又係合規嘅，咁就加深咗我嘅信心」喇？

答：係，咁仲有另外一樣，就係喺跟住落嚟嗰啲測試等等，係各類要求嗰啲 testing 嘅 parameters 都冇包呢樣物料，咁因為如果個 consequence 係--如果係嗰啲 test 係唔 pass 嘅話，就肯定會有一個 alert 嘅，因為仲有一個我哋喺--其實我哋部門都好相信就係 what's get measured gets done，如果你量度或者你去測試嘅嘢，佢一定啲人就會係去即係追求達標，就唔會係令到自己唔達標嘅，咁所以就喺全部呢一啲顯示或者警示系統裏面都唔會令我哋嘅同事可以察覺得到有呢樣嘅問題出現嘅，咁佢簽個名落去，其實當時都係等於一般平常業界都係咁做，即係我哋同事唔會係特別係有異於現在香港嘅業界普遍嘅運作情況。

問：即係私樓嘅發展商佢哋個 AP，你所了解，好多時候都係未必係真係會走去 check 完工之後嗰個焊接位嘅含鉛量，佢就係講個信字嘅啫？

答：嗱，因為其實講係嗰個焊料係咪含鉛，就係7月初嘅時候，咁我哋都拎啲即係物料畀一啲laboratories去測試，咁其實嗰個即係check lead in solder呢一個--呢個test或者呢個laboratory test都未係一個accredited test嘅，即係都未係一個認證嘅test嚟嘅，咁所以話我就話整個業界其實對呢一個焊料含鉛嗰一個認知或者嗰個運作，其實成個業界都係冇呢一個 awareness，或者一個standing practice都係未ready。

問：你頭先講就係話好多其他嘅測試嗰啲 parameters 都包--頭先你有提過。

答：嗰八個parameters。

問：好喇，我哋講一講嗰八個 parameters，嗰八個 parameters 就係水務署佢哋有一個 circular，嗰八個參數，就係水務署有一個circular佢出過嚟嘅，喺2012年嘅時候，就係講佢哋會其實test邊八樣嘢嘅，嗱，嗰張 circular，我哋睇一睇，就係 37560 嘅，37560，嗱，其實第1頁就係37558嘅，嗱，37558就係水務署嘅一個 circular，distribution 就係"To all Licensed Plumbers"，即係畀所有持牌水喉匠同埋畀所有嘅授權人士，2012年8月10號，咁就"I attach a copy of the guidelines on cleansing and disinfection"，清潔和消毒，即係食水，inside service，即係內部系統嘅清潔同埋消毒嘅一啲指引，咁睇番就係佢後面第2頁，就係一連串收到呢份嘢嘅人士，咁就包括就係房署、屋宇署一拃人士，好喇，咁跟住你睇番37560，就係"Guidelines on Cleansing and Disinfection of Fresh Water Inside Service"，嗱，因為我想大家了解，就係其實呢個清潔同埋佢後來清潔完之後要test嗰八個參數，其實個法律基礎係乜嘢呢咁。嗱，我哋睇番 37560，37560，佢一開始擘頭就話"Under the provision of Waterworks Regulation 7"，根據水務條例嘅第7條，一個消費者、一個用家或者佢嘅代理人，即係基本上就係開個水喉account嗰個人，即係嗰啲用家，"shall be responsible for keeping an inside service clean"，即係邊個申請要用水個用戶就要負責係keep嗰個內部嘅系統，令佢乾淨嘅，因為我哋就尋日睇過一本書仔，我而家唔攞出嚟喇，就你記得就係話即係水務署供水，就由水塘，跟住經過嗰啲咁嘅處理站諸如此類，就一路通過條喉，就去到一個叫 lot boundary 嘅地方嘅，你知喇，地界，去到一個地界嘅地方，去到地界，過咗地界之後嗰樣就叫做 inside service，我哋知道，嗰個內部系統，我哋叫做。

答：正確。

問：咁所以即係基本上，呢度嘅講法就係話，嗱，水務署就係話喇，嗱，根據水務嘅條例第7條，你想申請用水咩，唔該你自己嗰面，用水嗰方，lot boundary，喺用戶嗰方嗰個系統就係由個用戶就負責令佢乾淨，呢個係一個清潔嘅 consideration，我哋無需要睇第7條本身，因為佢咁寫呢度，即係我當佢係喇，"To this end, the consumer or agent concerned shall clean and disinfect a newly installed fresh water inside service before it is given a supply from the Water Supplies Department"，佢話有見於此，所以任何即係呢個要用水嘅用戶，喺佢獲得接駁用水之前，就唔該你好好地將你新起嗰套供水系統就清潔同埋消毒，咁佢就話，"Besides, after repair or maintenance of fresh water inside service, if there is a possibility that extraneous materials can get into the inside service, the inside service shall be cleaned and disinfected before water supply is resumed"，即係總之就係話你修理完你嗰個或者維修完你嗰個 inside service 之後，如果有機會有啲外來物料可能係整污糟咗你個 inside service 嘅話，就你都要好好地清潔同埋消毒，before water supply is resumed，即係喺呢個--即係開始繼續重新供水之前就要重新消毒，咁所以，嗱，你睇番呢個 circular，呢個 circular 其實就係解釋--咁跟住佢解釋就係"Newly Installed Fresh Water Inside Service"，咁跟住佢就講一連串嘅步驟，見到嘛？就係叫啲人點樣去消毒，用幾多嘅--你見到下面講喇，即係 sub-paragraph （2）就係用幾多份量嘅氯氣，要消毒幾耐，你睇番後面37561，就好多嗰啲--即係一啲好技術性嘅嘢，就係教啲人用乜嘢嘅程序去消毒，咁你一路撳撳撳撳撳，就撳到第37565頁，37565頁，你就見到嗰八個參數，對嘛？

答：對。

問："Test parameters shall include but not limited to the following"，turbidity，turbidity 就係即係污水混--啲水混唔混濁，係咪應該就係混唔混濁？

答：係。

問：顏色，酸鹼度，free residual chlorine，即係氯氣，剩餘氯氣，conductivity，我唔知呢個係傳熱定傳電，總之即係

conductivity，total coliforms，E. coli，heterotrophic plate count，異菌數值呢樣叫做，噢，咁總之呢度有八個嘅參數就要 test 嘅，要測試嘅，清潔，咁噢，即係我嘅理解就話已經係呢八個參數，水務署即係要接駁之前就做呢八個參數，佢都冇要驗鉛喇，咁但係，噢，即係我想同你指出嘅，我睇下你有咩嘢意見，就係水務署測試呢八個參數係為佢保護自己個系統嘅清潔而做，你見到嗰張 circular？

答：唔。

問：佢為咗自己，保護自己乾淨，佢嘅目的唔係為咗要嚟測試究竟個系統裏面係咪符合英國標準㗎嘛，你同意嘛？

答：（沒有可聽到的回答）

問：即係佢又測下寄生蟲，又 check 下有冇異菌什麼、什麼，又 check 下 conductivity、氯氣剩番幾多、混濁度，又顏色呢啲，即係呢啲係一啲好常理，即係一般用戶可能會覺得，嘩，係咪污糟呢啲水，同你究竟譬如話嗰個系統整出嚟符唔符合一啲技術、化學嘅要求係兩回事嚟㗎嘛，你同唔同意呀？

答：我諗我哋睇呢一張嘅指引，或者睇佢嗰個測試參數，就覺得佢應該係一個 health protection 嗰個 angle 去睇嘅，即係姑勿論佢係喺邊一個 regulation 去--即係去訂定呢一個 guide，咁但係一般嚟講，如果就咁樣，就 at the first glance，就覺得佢係因為嗰個 health 嗰方面，health protection，都係--即係為個健康或者為衛生方面，就去要求做呢啲測試嘅，姑勿論佢動機係為個 inside service 定話係為咗唔好污染嗰個即係水嘅來源。

問：咁但係個問題就係而家我哋要睇嘅，就係因為我哋點解要講呢八個參數呢，就係因為我哋好多時候見到房協方面--房委方面佢有陣時提出嘅一啲論據，佢就係借助呢個用咗八個參數嘅一個測試，就係要嚟支持，就係話「噢，水務署嗰八個參數都冇驗到，咁所以就我哋冇用到測試鉛嚟到睇下究竟有冇違規都唔係太過啫」咁樣，即係個論據似乎就係咁樣，即係我向你指出，就係話即係水務署，你當佢係為健康、為乾淨，為乜都好，佢嘅出發點就係 Regulation 7，話「你唔好整污糟我啲嘢」，但係而家我哋嘅著眼點就係合約同埋法例嘅規格有冇含鉛呢樣嘢係即係有人違規吖嘛，係兩回事嚟㗎嘛，人哋嘅出發點係乜嘢係同 Housing 佢應該做乜嘢嘢係兩回事㗎嘛其實？

答：一般嚟講，如果我哋睇番，即係宏觀啲去睇，就係話如果佢呢一個測

試係為健康或者衛生等等嘅要求，咁我哋就有理由去相信就係佢呢一啲測--呢類測試就可以足夠令我哋確保水裏面嗰啲最基本嘅要求都可以係合乎一啲即係國際嘅要求嘅，咁呢一個我諗就係唔係--唔只我哋有呢個咁嘅係即係概念，我諗喺業內--喺業界有好多啲practitioners都有類似嘅一個咁嘅感覺或者咁嘅impression，因為呢一個似乎係同health有關㗎嘛，大家睇嗰啲參數，即係不論好多測試等等，其實最主要都係希望食水嘅質素係可以達到一個衛生嘅標準，咁我哋都有理由相信就係做咗呢八樣主要嘅測試，就應該全部對--如果係一般嚟講，對於係健康方面或者 health risk 嗰啲major factors，都會可以係address到嘅，即係呢個就係我哋一般即係practitioners或者係業主，甚至係一啲從業嘅專業人士，都會有呢一個咁嘅impression...

問：但係...

答：...或者係expectation。

問：但係以你所知，一般嚟講，嗱，頭先我哋見到嗰啲唔同嘅 form，即係46或者132，其實都係同水務監督講話「我整好喇」，46就話「唔該你同我接駁」，132就係其實申請攞番張1005嗰張water certificate，喺整個過程當中，都係有人向水務監督申請某啲嘢，話畀佢聽「我起好喇」，以你所知，水務監督有冇人真係去個場嗰度check下嗰套嘢實際上做得好唔好嘅，或者合唔合標，實際運作上？

答：實際運作上，咁水務監督係--因為我哋相信佢都會有啲inspectors都會去睇一睇，甚至呢一部分嘅工作可能就係同個 licensed plumber就會聯絡，就去進行呢個工作嘅，因為畢竟駁水嗰一刻一定要有水務署嘅同事去即係到場，咁變咗就一般嚟講，我哋嘅理解，都係會有水務署嘅人員都會去做一個checking嘅，或者係...

問：唔係，駁水嗰一刻會有水務署嘅同事喺度，但係我嘅意思係水務署有冇人係去扮演一個角色係去真係 check 下嗰套水務系統係唔係真係好似你哋所講係符合咗個規則嘅，有冇人去做嘅呢？

答：呢一點我諗就要去做番好多checking，咁但係我哋就有理由相信呢啲工作係會進行嘅。

問：即係水務署應該係有啲人咁樣走去即係望下啲位或者即係有冇漏水呀又盛咁樣，或者用啲咩嘢料咁樣？

主席：好似有人去睇水錶嘅，我記得就。

答：係，係。

主席：係咪呀？

答：譬如睇水錶嗰啲位啱唔啱，可唔可以抄到錶呀咁。

問：係，水錶位。

主席：就一定有人睇嘅？

答：即係有一--但係你話係咪個個項目，各有幾多人去睇、睇幾多嘢，咁嗰個我現在冇一個咁嘅資料在手嘅，即係但係我哋有理由相信就係水務署應該係有派員係去進行一啲視察。

問：好喇，嗱，...

主席：但係我想問下你，因為頭先即係你要水務署畀水你嘅時候，你就要話畀水務署聽你所有嗰啲 fittings and pipes 就全部已經符合晒呢一個水務嘅條例嘅要求，咁就基於你頭先所講嘅信念，即係其實完全即係冇實際上去做任何嘅測試，咁呢啲後來呢所謂呢八個 parameters 亦都唔會令到你係會覺得係有符合咗呢一個--其實即係譬如好似 British standards 嗰啲嘢，其實換句話嚟講，即係嗰張 form 填咗去畀人之後，就係你個相信，咁跟住後來佢先至供水畀你，又係另外一回事嚟㗎喎，兩樣完全嘅嘢嚟㗎喎，你明我意思嘛？可能...

問：即係你填嗰張form，你填--唔係你呀，即係當然，即係Housing嘅同事填132，簽嗰個名，你睇番37630，佢話"I confirm that the pipes and fittings installed in the captioned project are in full compliance"，你見到嗰句嘢喇，37630，你見到喇？"I confirm that the pipes and fittings"--...

答：係。

問：..."the plumbing, fittings and pipes used in the captioned project are in full compliance"，你見到呢句嘢喇，嗱，即係房委會嘅同事簽呢句嘢，遞紙入去水務署嘅時候，其實水務署係未做嗰八個參數嗰個testing㗎嘛，因為嗰個testing就真係你要去清潔、消毒嗰陣時做㗎嘛，你入呢張紙嘅時候，人哋水務署係未做嗰啲testing㗎嘛，所以個問題就係你入呢張紙嘅時候，簽呢張紙嗰個人嘅腦袋中係唔會話諗住「呀，水務署都已經pass咗嗰八個參數喇，我覺得係支持我嘅信念嘅」，佢唔會咁諗㗎嘛，對唔對呀？

答：呢一個37560嗰度都提到，佢提到嗰一句，就係"To this end"--第二行嗰度，"To this end, the consumer or agent concerned shall clean and disinfect a newly installed fresh water inside service before it is given a supply from the Water Supplies Department"，咁呢個我哋就應該相信就做咗呢啲測試先，37560。

問：即係你覺得實際上運作起嚟，係做咗呢拃測試，然之後先至簽嗰張37630？

答：睇呢個文字，就應該係，咁而仲有，就係頭先提番嗰張form WWO 132，即係37630嗰張form，咁其實喺個project裏面，嗰個同事嘅團隊，項目嘅團隊，佢哋批嘅物料，其實如果跟嗰個form WWO 46個附表，有好多種唔同嘅物料嘅，咁基本上佢應該就係certify嗰啲物料全部都係啱水務條例，而咁頭先我提--我哋提到即係嗰一樣，譬如你話係焊料方面，其實就唔係form part of嗰個annex to WWO 46嘅，咁但係一般嚟講，就係即係話喺我哋嚟講，啲同事都會批埋咁解嘅啫，咁其實佢呢句嘅意思，如果我就咁字面理解，就係話佢批咗嗰啲用料，其實全部嘢都係合乎水務條例，咁install嘅都係，咁當然如果喺我哋嚟講，就亦都包埋就係嗰啲焊料唔含鉛，但係就唔會淨係single out嗰一樣物料喇，因為佢呢度其實包含嘅物料係好多種嘅，大約三十種嘍喇，應該可以有。

問：你係睇緊37630？

答：係。

問：37630嗰個就係申請嗰個Water Certificate？

答：係喇，佢-- "I confirm that the plumbing, fittings and pipes used in the this project are in full compliance with the Waterworks Standards and Requirement"，咁即係話其實佢呢度所謂佢包含，我想--個意思就係話佢包含嗰啲plumbing、fittings and pipes其實係好多嘅。

問：但係嗰啲 fittings、pipe 嗰啲全部都係符合呢個 Waterworks Regulation㗎嘛？

答：係，係。

問：唔係話 form 46 裏面 annex 提嗰啲吖嘛，佢唔係咁講喎，呢句，即係 form 46 係完全另外一樣嘢嚟㗎嘛？

答：係，但係一般嚟講，就大家都會有好多即係機會，因為都係簽一啲form，同埋嗰個時候簽嘅，都會有理由相信幾樣嘢都係有啲關係嘅。

問：係，我明，即係好多時候個心裏面炒埋一碟，因為尤其是呢啲全部都係都係啲 standard form，好多 number，咁都係水務...

答：同埋都係喺嗰個就接近完工嘅階段，咁嗰個階段最緊要就係點呢，就係要確保佢嗰個水喉嘅安裝係妥善，同埋係驗收，咁跟住就申請--即係申請駁水，當然之間都要做測試，咁所以係同步，有幾樣嘢都可以話係可能係 in parallel 咁樣做。

問：但係 46 就係根據水務條例申請，就係直接要駁喉，132 就係根據《建築物條例》就係攞嗰張 certificate，嗱，即係如果而家咁樣睇嘅話，兩樣嘢係講緊啲唔同嘅嘢嚟嘅，根據唔同嘅法例，攞番嚟嘅嘢亦都唔同。

答：不過一般嚟講，我就話喺個運作上面，大家都會喺嗰個階段，喺個即係 near completion stage，就係覺得嗰一個一連串嘅動作或者個運作上面都係有一啲關係咁解。

問：同埋你頭先講到就係 form 46 嗰個 annex，嗱，我哋睇番 form 46，你記得我哋頭先睇過就係通知水務署話「我開始整喉喇」或者通知佢「呀，我整完喇」咁嗰套呢。

答：唔。

問：37621，佢後面就有個 annex 嘅，37627。

答：係，37627。

問：37627，我哋講緊新嘅 record，唔該。係喇，37627，噢，你見到呢個就係 form 46 嗰個附件，後面，第 7 點嗰度，你見到喇， "All pipes used -- intended to be used are required to be reported in the Annex"，你見到喇，即係話你--任何你用嗰啲喉管都要喺個 annex 入面呢度寫出嚟嘅。

答：係。

問：佢話"For fittings"，即係話附--配件，你就淨係需要寫嗰啲 draw-off-taps、stop valves、gate valves、ball valves、combination fittings 諸如此類嘅嘢，咁跟住就下面就列舉咗一拃嘅配件，佢適用嘅英國標準，咁你嘅說法就係由於水務署佢哋嗰個 form 46 要求 Housing 入紙嘅時候，要佢填寫嗰啲管同埋部件，都冇要求佢 declare 或者宣布佢哋用嘅焊料嘅仔細、詳細嘅資料，咁所以就點呢？即係我嘅問題就下一步就係所以就點呢？即係覺得水務署唔重視呢樣嘢，係咪呀？定係點呢？即係水務署要你報乜嘢同埋 Housing 嘅責任係兩回事嚟嘅？

答：如果要申報或者要呈報，應該就係一啲比較重要嘅一啲物料，同埋佢對嗰個係--一般嚟講，如果我哋都會 expect 係對嗰個 quality 或者係嗰個日後令到佢嗰個水嗰個 quality 係會有一個影響，即係呢個就係我哋咁樣理解，如果對--如果係 output base 嘅諗法，即係主要就係睇嗰個最後嗰個 end product 嗰個 output 究竟佢係會達到乜嘢嘅標準呢咁，咁我就會有呢一個理解。咁而最緊要就係嗰個--即係譬如同事批辦嘅時候要睇啲咩嘢呢，就睇佢嗰度 7 下面有一個細 item 2，就"categories of compliance of fittings are as follows"，咁佢有分 category A、B、C and D，咁所以佢同事一路批辦嘅時候，佢一定要確保嗰啲物料係可以達到呢幾個 category 裏面任何一個嘅 category 嘅，咁先至會去批嗰隻物料，咁亦都令佢哋就會相信用嘅料喺地盤就係合嗰個資格或者要求。

問：唔係，但係我嘅問題就係呢一張係水務署佢喺呢一個行政嘅表格上面就係話「你向我申請，要我駁喉」嘅時候，你就有一啲嘅仔細啲嘅資料要寫出，例如你要通知我你用咗啲乜嘢嘅牌子、咩嘢型號、咩嘢嘅喉管、咩嘢嘅 fitting，咁我見到呢啲資料，我就會確認，噢，咁但係呢一個水務署嘅要求係唔會影響房委會佢即係法律上嘅責任㗎嘛，佢嘅責任你要--後來你喺--呢個係 46 呢個表格呢度入面嚟㗎嘛，但係 132 嗰張表格，你係主動地話畀水務署聽話你已經係符合咗

需要嘅要求。

答：不過我如果睇番，就132似乎就唔係水務條例裏面嘅一個條文嚟嘅。

問：係喇，就雖然--我講番轉頭，就係我頭先同你講嘅嘢，就係你係唔可以借用水務條例下面嗰張46 -- form 46所要求呈交咩嘢，係去嚟到幫助你解釋點解Housing喺Form 132裏面簽咗嘅嘢㗎嘛？

答：咁我諗呢個又唔可以一個係即係咁直接將佢係即係割蓆嘅一個諗法嚟嘅，我就因為喺呢個--喺嗰個完工階段，completion 嘅 stage，其實好多樣嘢都似乎係一環扣一環嘅，即係WWO 46嗰度就證明嗰啲就係fittings等等嘅嘢，plumb and fittings都係合乎規格，咁跟住就係驗水辦嗰度，就要驗咗嗰八個criteria，就會佢有一個water connection，咁而有water connection，然之後先至可以出入伙紙，而係最後要攞到張水紙，駁咗水，然後先有入伙紙，係呢一個動作，其實幾樣嘢就似乎係一環扣一環嘅。

問：我想...

答：不論佢喺邊個法例或者邊條 regulation 底下，但係似乎比一個--淨係as一個client嗰方面去睇，呢個係一連串嘅動作，都係要確保係嗰啲水質係達標嘅。

問：得，明白。噢，我想同你講一講一個即係用字嘅問題，一般你哋所講嘅水紙係咪就係1005嗰張form？嗰張certificate。

答：係。

問：1005嗰張certificate就係叫做--37638，呢張係咪就係你哋所指嗰張水紙，Certificate Regarding Water Supply Connection？

答：係，係。

問：係咪呀？

答：係。

問：因為我哋好多場合都聽過唔同嘅人講水紙，可以指唔同嘅嘢，但係喺呢一度，即係最終、最後嗰個水紙就係呢個？

答：係。

問：嗱，咁我哋頭先就沉醉咗喺唔同嘅 number 嗰度，有 1005、132 咁，好多，但係其實即係你想講嘅，其實就係話房委會佢哋喺確保佢哋嘅樓宇裏面嘅供水系統所用嘅焊料是否合乎規格呢，雖然佢冇真係自己走去喺完工嘅時候走去 measure 下，佢亦都冇真係走去喺施工嘅時候做一啲 spot check，甚至佢冇用 PLU2 嘅形式係強制要求啲承建商將佢哋將會用嘅焊料係畀房署去 approve，但係由於第一，有啲承建商選擇將佢嘅焊料畀房署去 pre-approve，同埋合約上啲承建商有呢個責任，加上水務署佢哋嗰八個 parameters 驗嘅嘢都包括，咁所以你就相信--雖然你係冇喺最終嗰度去驗過啲焊料有冇鉛，你都相信頭先所講嘅種種嘢都確保起出嚟嗰棟樓嗰個供水系統係安全嘅，可唔可以咁講？即係你係倚賴種種其他嘅嘢，雖然你冇直接自己去驗過。

答：其實我哋冇驗嘅嘢係好多嘅，譬如咁講，即係如果你話世衛標準有好多唔同嘅 parameters，咁我哋真係唔知道邊啲要驗，咁只可以就係話我哋會有理由相信就係跟水務署篩選咗嗰八隻或者七隻或者係十二隻等等，係需要特別測試嘅，就係最重要，或者係喺香港嚟講，係最需要關注嘅一啲 parameters。

問：咁如果水務署返轉頭，佢同你講，佢話「喂，我唔知原來你係咁樣去演繹我嗰八個 parameters 㗎喎，我以為你真係--你 check 咗㗎喎」，咁你會點講？

答：第一，我都要--即係我都唔係一個水務或者係即係食水衛生嘅專家，咁我只可以就話我都相信一啲專家要求我做嘅測試就可以確保我哋有一定嘅 quality assurance for drinking water。

問：即係你--可唔可以咁講呢，就係你一定程度上就係相信水務署定嗰八個 parameters 就係佢哋著緊嘅嘢喇？

答：我哋係相信嘅。

問：嗱，我問多一次呢個課題，我就...

答：仲有就係另外一個就係 quality water examination 嗰個，即係優質水嗰個檢驗計劃裏面就有七種嘅 parameters，就去--係愛嚟測試嘅。

問：嗱，我哋又講番優質水嗰個喇，不如，嗱，優質水嗰個有七個 parameter 嘅，我嘅理解。

答：係。

問：就呢個頭先我哋見到水務署嗰個八個 parameters，不過爭咗一個，咁但係其實嗰七個 parameters 裏面就有一個係呢八個裏面冇嘅。

答：係。

問：嗰七個 parameters 裏面有，而呢八個 parameters 裏面冇嗰項係咩嘢？應該係鐵嘅，如果我冇記錯嘅話。

答：應該 iron，係。

問：Iron，鐵嘅。咁所以其實即係喺唔同嘅場合，for 唔同嘅 purposes，其實即係水務署選擇出嚟嘅一啲 parameters 都會係唔同嘅，係因應其實嗰個 content 係乜嘢，你同唔同意？

答：呢個我都同意，不過我都相信水務署篩選出嚟呢啲 parameters 就係對嗰個健康或者係食水嗰個衛生係最重要嘅 parameters。

問：Okay，即係種...

主席：再講多一次，唔該。

答：即係我相信水務署，無論佢因為咩嘢原因，所篩選出嗰八樣或者七樣嘅 parameters 就會對嗰個食水嘅衛生同埋係確保嗰啲食水係即係健康、乾淨嘅，係有關係嘅，或者係最重要嘅 parameters。

主席：實際上又--我又唔係好同意嘅，因為點解呢，譬如好簡單，鐵呢，你係可以飲好多都冇乜事，鉛呢，你飲少少都好大件事，你明我意思嘛？

答：我都係相信我哋嘅專家對我哋嘅要求或者個規管係有佢一定嘅原因，咁一般嚟講，即係我哋就唔熟話世衛標準，WHO guideline 係乜嘢 values，咁多種料，我哋真係唔識，我哋都係只係即係相信就係啲專家，不論係衛生嘅專家或者係水嘅專家，就要求我哋作為即係業主或者係一啲係專業人士、業內嘅人去做嘅測試，係應該可以確保或者保障最基本嘅要求，就係食水嘅衛生同埋係健康嘅。

問：好喇，嗱，我仲有一、兩個課題要同你去探討嘅，咁但係就仲有5分鐘剩，我就開一個新嘅課題，就係我想同你睇一睇一啲承建商佢哋喺事後就房委會要求，就做咗一啲內部嘅報告，咁各自都有自己嘅解釋嘅，咁即係各自都有提出可能出事嘅地方係乜嘢，咁我就想同你即係睇一睇佢哋提出嚟嘅可能性，有啲係可能性啫，大家都知道即係因為焊料含鉛，但係點解啲焊料會含咗鉛呢，大家有唔同嘅講法，咁我想同你探討下，同埋睇下究竟其實佢哋呢啲出事嘅方法，就係如何其實可以--如果提早知道，有啲咩嘢辦法其實係可以預防到嘅。嗱，我哋首先睇一睇中國建築，中國建築，我哋先睇一睇就係B5.7，B5.7，第11926頁-- sorry，唔係，係--唔係11926，係11818 -- sorry。係，11821，嗱，呢個係啟晴邨嘅一個調查報告，見到嘛？

答：見到。

問：咁佢就講話即係2015年嘅7月，咁中國建築就被呢個房委會通知就話係有鉛咁喇，咁一路佢講一啲所謂背景嘅資料，咁跟住你睇番11826，嗱，11825就其實係一封信，佢係寫畀你嘅，你見到嘛？

答：係。

問：就係提供一啲即係補充嘅資料。

答：係。

問：你見過呢個文件嘅，係咪呀？

答：係。

問：見過。咁佢跟住有啲補充嘅資料，咁佢就開頭11827、11828，佢就喺度講緊佢有啲乜嘢嘅即係內部嘅系統去監測咁樣，嗱，你睇番11829，11829，佢就係講到佢哋嗰個合約嗰個架構，你見唔見到？即係the first tiers of contractor，見唔見到？

答：係。

問：咁佢就講，就係話關於水喉呢一方面嘅工作，佢就外判咗畀何標記呢一個二判，咁佢就講到同何標記呢一個合約，佢話"The Subcontractor"何標記"was required under the Subcontract to supply, deliver, install and complete the whole of the plumbing works, including providing the soldering material"，就何標記嗰個二判個合約就包埋要

提供整套嘅水喉，包括埋嗰啲焊料，咁你睇番11830，11830中間嗰度，你就見到就係--唔係，最上嗰度，"As a statutory requirement"，何標記"was required to engage a licensed plumber to fully monitor and be responsible and liable for the plumbing work"，你見到喇？

答：係。

問：嗱，喺呢度我哋打岔少少，講一講licensed plumber呢個概念，呢個叫持牌水喉匠吖嘛？

答：係。

問：知道？

答：知道。

問：咁就有關嘅法例，我哋可以喺C2 1149頁嗰度見到嘅，C2 1149頁，呢個就係水務條例第15條，Section 15，嗱，佢就話"Subject to subsection (2), no fire service or inside service shall be constructed, installed, maintained, altered, repaired or removed by a person other than a licensed plumber or a public officer authorized by the Water Authority"，就除第（2）段認可之外，只有一個持牌水喉匠或者一個公職嘅人員係即係受水務監督為授權嘅公職人員，先至可以去建築、裝嵌一個inside service，咁呢個就係持牌水喉匠呢個概念嘅來源。嗱，我話我都係打岔問一問你，我遲啲會問水務署嘅，不過即係見你喺度，同埋即係你好多時候都即係好倚賴嗰個持牌水喉匠，喺呢個法例，佢本身嘅字眼，就係真係要持牌水喉匠自己去做㗎喎，你同唔同意呀？嗰個裝嵌嗰個喉管，佢唔可以話搵班伙記嚟做。

答：呢個照字面的確係咁樣睇，但係我哋同水務署都理解過，其實可以係有個licensed plumber supervise一啲人去做，佢都可以接受嘅。

問：佢接唔接受係一回事，但係字面上，學你話齋，就係即係construct、install、maintain、alter by a person other than a licensed plumber，即係話冇人可以做，除咗佢自己喎，唔係話包括一啲佢supervise嘅人喎。

答：呢個就字面上的確係咁樣寫，咁我諗嗰個詳細演繹都係要交由水務署

去作為一個水務監督，去作答係最作實嘅。

問：得，唔係，我而家又係事先張揚，總之就係透過佢哋嘅問題。好喇，嗱，我哋繼續睇落去，咁呢個何標記，睇番 11830，B5.7，11830，咁何標記，根據中國建築所講，11830 嘅中間嗰度--搵番先，係，落少少，個 screen 嗰度，係喇。佢話何標記嘅董事呢個何先生係話係何標記係知道有關嘅要求，即係佢係知道係應該係用無鉛嘅焊料嘅，嗱，咁佢跟住就講，就係話何標記其實就係冇將呢個裝設喉管嘅工作係再判上判，冇嘅，okay，何標記係自己做嘅，但係佢就請咗呢個陳先生就去監督，跟住就即係搵咗一拃人，黃先生、范先生咁去做，咁呢個就係佢嗰個合約嗰個 set up，你見到喇，就係中國建築就搵咗何標記去做，咁跟住你再睇番 11832，就係即係邊啲人係負責，咁佢就寫咗好多人名出嚟，嗱，咁跟住你睇番 11832 中間嗰度，"soldering materials, copper pipes & fittings, valves" 咁樣，咁你睇番中間，就係"Mr Ho stated that"，你見到喇，何先生，即係呢個何標記個老細，11832 頁，就話何標記啲同事落咗 order 去買呢啲焊料之後，何標記嗰個採購部就應該跟住呢啲 order 走去買㗎喇，咁但係由於呢一啲嘅焊料係一啲雜項，而用咗就冇嘅一啲即係物料，所以何標記就冇一啲正式嘅購買合約。咁跟住你睇番 11833，11833 就話，喺個頂嗰度，何先生就話佢哋係冇 keep 到呢啲焊料嘅紀錄嘅，冇 keep 到呢啲焊料紀錄，雖然房委會嗰個 Project Team 就係曾經 approve 過係用 Fry 呢個牌子嘅，即係何標記自己就話「我冇 keep」，但係中國建築就知道就係話房委會 approve 咗用 Fry。咁你跟住睇番落去，11833 個底嗰度，就係 material delivery note，即係嗰啲物料嗰啲即係送貨單，就即係通常就係由嗰啲外判商就會即係攞番去 claim 數，但係由於今次呢啲焊料係唔包喺可以 claim 錢嘅一啲物料嚟嘅，咁所以何標記就冇提供過任何嘅送貨單，okay，咁但係就中國建築就 keep 咗少數嘅送貨單嘅，咁佢就即係攞咗出嚟，做咗一個附件。咁跟住 11834，你望見 11834，record of checking materials，佢就講咗一樣，頭先我哋都探討過嘅嘢，就係由於嗰個 form 6210 係冇包括要 check 焊料嘅，所以就冇一啲焊料送達呢個嗰個地盤嘅一啲紀錄，係冇嘅，即係冇一啲 check 焊料嘅紀錄，嗱，咁跟住其實我仲有一連串嘅嘢係要即係同你去睇關於呢度，即係佢根本好--佢會好仔細咁樣去講出，我諗你都知道佢哋睇過，即係中國建築佢調查過之後，佢覺得出事嘅原因係咩嘢，咁但係即係而家四點半，我諗我聽日同你繼續，勞煩你聽日要再返過嚟。

主席：咁石大律師較早之前就有兩樣嘢要求你做嘅，咁其中一樣嘢係可以做到嘅，咁做得幾多，就聽日返嚟話畀我哋聽--話畀我哋知。

答：好，我叫同事返去盡量去搵資料，咁就我唔係好熟悉個程序，個 submission 係咪要又做番一個 supplementary statement 咁樣嘅呢？

主席：唔使㗎喇，你攞咗資料之後，你自己記低佢，聽日石大律師問你，咁你口講就得㗎喇，唔使一定要 statement 嘅。咁我哋聽朝早 10 點鐘再繼續。

2015年11月4日
下午4時36分聆訊押後

Wednesday, 4 November 2015

(10.05 am)

CHAIRMAN: Let's invite Mrs Fung in, please.

MS ADA FUNG YIN SUEN (on former oath)

Examination-in-chief by MR YIN (continued)

MR YIN: Mr Chairman, I will continue to read out the written statement of Mrs Fung:

(Paragraphs 51 to 96 were read in English)

Ms Fung, just now and from yesterday's session, I have read out your written witness statement, and as you know, under footnote 2, we made a minor amendment, with regards to the part on the Permanent Secretary for Transport and Housing, and in the exhibits, annexes 6 to 8, we amended some forms from the Water Supplies Department.

Apart from that, do you wish to move any amendments?

A. No.

Q. Are you willing to take this witness statement for the purposes of this hearing?

A. Yes, I do.

Q. Is there anything you wish to add?

A. No.

CHAIRMAN: Mr Paul Shieh.

Cross-examination by MR SHIEH

MR SHIEH: Ms Fung, first of all, I would like to clarify

a few matters with you with regards to the plumbing and pipes, and the soldering standards, including statutory and contractual standards.

We hear about the so-called British Standards very often. I would like to help the public and Commission understand such standards. I would like to clarify our understanding of the British Standards with you.

First of all, let's look at certain regulations, including the Waterworks Regulations. We can look at bundle C2, page 1156.

Page 1156 refers to the Waterworks Regulations under the Waterworks Ordinance. Let's look at Regulation 2, "Interpretation". The definition of BS is listed -- "BS" refers to British Standards:

"BS means the latest revised edition of a specification issued by the British Standards Institution ..."

In other words, the latest specifications issued by the British Standards Institution. As I know, these strands regularly updated, so whenever the British Standards are referred to, then we would adopt the latest interpretation.

Do you agree that this is the general view taken by you?

A. (Witness nodded).

Q. Let's look at section 19 on page 1160. Page 1160 is about pipes and fittings.

Let's not deal with these subregulations first. Apart from these subregulations, the words "this Part" -- which refers to the entire Waterworks Regulations and schedule 2 -- "shall apply to any pipe or fitting installed or intended to be installed in any fire service or inside service."

CHAIRMAN: "Shall apply", it should be or "shall not apply"?

MR SHIEH: It should be "shall apply to any pipe or fitting". (Chinese spoken) is "shall".

For other sub-regulations, there are certain exceptions, but regulation 19(1) is about schedule 2 and the first part of the regulations. It applies to all pipes and fittings of inside service. By "inside service", we refer to pipes and fittings inside the boundary, in the area that belongs to the landlords.

A. That's correct.

Q. So, in gist, it's a simple concept described by rather complicated wording. In other words, schedule 2 shall apply to any pipe or fitting installed in any inside service. And for details we have to look at regulation 20 and schedule 2. Regulation 20 is on pipes and fittings to be of British Standard. So, in other words, the pipes and fittings must adhere to the

British Standard. The specific British Standards are not listed, but I understand that there is a long table, and you already elaborated on that in the witness statement already.

And we also have annex 2 in schedule 2, page 1171. Under schedule 2, we have "Pipes and Fittings". Are we at schedule 2, part 1, "Pipes and Fittings"?

When you look at page 1172, paragraph 17, it says:

"Capillary fittings or compression fittings shall comply with [British Standards] 864, Parts 2 for capillary and compression fittings of copper and copper alloy and compression fittings for pipes laid under the ground shall be type B."

These are rather technical, so, in other words, BS 864, Parts 2 shall apply. As I understand, the set of standards is rather outdated and it has been replaced by another up-to-date set?

A. (Nodded head).

Q. Although an old version was mentioned in Parts 2, we understand that the British Standards must be adopted, and by British Standard we are referring to the latest standard, even though this version is outdated, but it does not matter, under regulation 20, the latest standards have been adopted, is that the correct understanding?

A. Yes.

Q. The Water Supplies Department has published a table to stipulate the British Standards applicable under different circumstances. Let's look at C5, for 3992 under C5. This is a table published by the Water Supplies Department. This table lists out the British Standards applicable to inside service and fire service.

I understand you do not represent the Water Supplies Department, but on the pipes applicable to inside service, you would often have to work with the Water Supplies Department. Have you seen this table before?

A. Yes. On page 401, this table was last updated on 2 October this year. So we have to look at the table which was applicable at that time.

Q. As you can see, some parts were only promulgated in 2014, and so apparently they wouldn't apply to PRH developments in 2012.

Let's look at 3995, 1399. One of the British Standards is BS EN 1254-1. Can you see that?

A. Yes.

Q. Under your witness statement, can you look at B15.1. We will show you that part in a moment. Page 3753. Paragraph 58. This paragraph lists out some standard contractual clauses. Contractors are required to abide by certain requirements, including PLU1. Under the

contracts, contractors are required to comply with BS EN 1254-1. For the BS EN 1254-1, in simple words, the parts used must be lead-free?

A. In a footnote under this schedule, the solder used must be of the lead-free category. For brazings, they must be cadmium-free.

Q. So, for the sake of this hearing, we don't have to refer to the British Standards, because that's rather complicated, so, simply speaking, under BS EN 1254-1 the fittings used should be lead-free?

A. (Nodded head).

Q. The requirements were in force since 1998, when we looked at C1, page 3995. The British Standards were adopted in 1998. So all PRH estates involved in this hearing would adhere to such British Standards with regards to soldering?

A. Correct.

Q. So when you look at page 3995 under C5, for the table published by the Water Supplies Department, when you turn to page 4000, near the bottom of the page you can see that in 2014, BS EN ISO 9453 was promulgated; do you see that?

A. Yes.

Q. "Soft solder alloys -- Chemical compensations and forms."

Let's come back to your witness statement, B15.1, page 37522, under paragraph 32 of your witness statement. Let's look at the last line of paragraph 32:

"The Water Authority clarified in August 2015 that the permissible maximum 0.07 per cent lead content is defined for soldering alloys in accordance with BS EN ISO 9453."

Simply put, we looked at the British Standard 1254-1. There, there's a description of the solder, or rather, sorry, the soldering materials, the class is lead-free. You said in the footnote it's lead-free. Lead-free to what extent? Actually, the 9453 British Standard says lead-free doesn't mean zero lead, but rather, if it's less than 0.07 per cent lead, then it still complies with the requirement of lead-free; can we put it that way?

A. Yes, in that standard, you could put it that way, because we are talking about ISO 9453, it's only in 2014 that it first came about, you know, if you go by the record on this table. Then this year, in 2015, we learned about this requirement.

Q. Anyway, this is just to elaborate what lead-free category means. That means if there's lead of 0.07 per cent or less of lead, it's still classified as lead-free; is that correct?

A. Yes, that's my understanding.

Q. There is actually a table. Since we are on it, let's refer to that table. B3.2, page 2308.

This is the review committee of the Housing Authority. At page 2304 you can see that. It's one of the meetings of the Review Committee. This is the notes of meeting. Page 2304, you see it's the notes of meeting of the Review Committee.

Then if you go to page 2308, the page I referred to earlier, here, those at the meetings were considering the reply and information supplied by the WSD. It says here, in paragraph 4:

"WSD's replies to Members were summarised in the following --

(a) WSD's Circular Letter No. 1/2015 ..."

That is after the incident happened. These are the new requirements put in place. We will confirm that with the WSD later on, but in paragraph (b) it refers to the British Standard we were just talking about:

"BS EN 1254-1 stated that solder with lead was not permitted ..."

When water for human consumption is involved. So that's in accordance with BS EN 1254-1.

As for BS EN ISO 9453, it states that for a lead-free solder, that means it has a lead content of

less than 0.07 per cent, and the WSD then supplemented that for 0.07 lead content of solder is actually a very low level, because 0 per cent impurity is simply impossible. So the explanation is simply that lead-free solder doesn't mean zero lead. So our understanding is this, and that's in line with your understanding; is that right?

A. Yes.

Q. Okay. By way of background information, we know what the legislation is about and what the contractual requirements are about, when it comes to lead-free materials, that the legislation or subsidiary legislation is based on the Waterworks Regulations. Now, in terms of waterworks, the regulations state that solder must not contain lead, so it's lead-free category.

As for Housing Authority contracts, in the contracts contractors are required to use lead-free soldering materials, because they need to comply with the British Standards. So it's through both the legislative requirement and the contractual requirement that the soldering materials must meet the British Standards. Is that a correct interpretation?

A. Yes, that's more or less a correct statement, because the Housing Authority must comply with the law. Through

the contract, we include the requirements, and we require the contractor to follow these requirements.

Q. Okay. That's what's stated in the contract.

When it comes to the execution of the contract, very often we depend on the other party of the contract to comply with the contractual requirements.

A. The other party or the contractor must also comply with the laws of Hong Kong, so outside of the contractual requirements, whatever is required in the laws of Hong Kong must also be complied with by the contractor.

Q. I understand. Even if it is not in the contract, then in accordance with the law the contractor still has the obligation to comply with the law, but if it is stated in the contract, then as one party to the contract, in terms of contractual law or civil action cases, then you could impose requirements on them; right? So it's more than just a legal requirement because in the contract they require to do such things?

A. Yes, they must comply with both sets of requirements.

Q. Fine.

Contract -- the other party has the duty to comply with the contract. The Housing Authority, as the other party to the contract, do you need to check regularly, supervise regularly and watch over the contractor regularly? Maybe you don't need to watch everything

100 per cent; would you agree?

A. On the contractual level, the contractor is responsible for carrying out the works and supervising the works. The Housing Authority appoints individuals to carry out audit inspection, so there is an added protection.

Q. So, as I was just about to say, it's not possible for you to check each and every thing, but it is not possible to not do any check either; right?

A. Well, the checks we conduct are based on risk management as the criterion. So we will just do sampling tests of materials used in the construction. So that's always been the basis, risk management, for us to inspect and test materials to a certain percentage or ratio.

Q. How do you then determine the risks? In your witness statement, in various parts you refer to the risk-based approach, that is, there's a need to assess risk.

For example, paragraph 8 of your statement, counting from the top, line 8 -- well, you were talking about the practice of the HA in relation to safety, and you said sometimes the HA may not just require testing to comply with legal requirements, you also adopt a risk-based approach in setting even higher standards than those in the law.

So you mention risk-based here. That's the first time you mentioned it. Then if you go down four lines

further, you also mentioned that the "DCD places special attention to high-risk activities".

Then, in paragraph 9, it's about the quality management system, ISO 9001. You mentioned that, for every member in the system, they all have roles and responsibilities defined, as documented, and there is a "comprehensive set of measures" to be "enriched over time":

"These measures are subject to regular reviews, feedback and risk-based assessments ..."

And what you take into account: laws, regulations, international standards, industrial practices and technologies, expert knowledge, past experience. So these are all the factors you consider in setting a system to the whole construction process. Those are your words.

So what I want to ask you is this. You mentioned risk management, and there are international standards included and past experience. Past experience, what is that? Which kind of past experience?

A. Say, for example, past experience, there were incidents or we came to notice certain risks that we should pay attention to. Take the example of water, like Legionnaries' disease, say; after there was an incident, then we have to see what more we could do to ensure that

there is no such disease in our water.

So experience, we are talking about no experience because something has happened, or perhaps something we are familiar with, that is, say, there are new regulations, new requirements, what they are. So these are the areas that we pay attention to.

Q. Legionnaries' disease, because there were such cases in Hong Kong before; correct?

A. Yes, correct.

Q. When?

A. A few years ago.

Q. So basically, you should look at what mistakes were made or what you overlooked in the past, so you looked at what happened in the past and you want to prevent the same from happening again; right? That's what you call past experience.

Is there a special department or unit responsible for, so to speak, keeping an eye on possible incidents? In Chinese, that means maybe you look not just in Hong Kong but in other places, whether certain incidents have happened?

A. Our colleagues will keep an eye from time to time on major incidents. Primarily, we look at the latest instructions and orders enacted -- given by the government or the sector, and if there are incidents

then we will consult the industry, we will be involved in the consultation, and we also have a team of colleagues responsible for looking at standards and how they evolve.

So, in different trades or sectors, maybe there are various legal systems or rules or regulations being developed, and this team will keep a close watch on that.

Q. So you follow the developments in the industry, and you follow experience and improve your system. Do you have a special team which does that every day, so you have a team of colleagues sitting there, just to do that every day, or is it the case that it's just one or two posts doing that, or maybe colleagues do what they have to do from day to day, and then, if it so happens they come across something they think should be raised, they say, "I have come to know there has been a certain incident somewhere, so let's consider whether we should update our system"? Which way is it? Do you have a dedicated team on this, or do you just rely on your usual colleagues, if they spot anything then they tell you?

A. There are many participants in the team, in the set-up. Some are responsible for projects, some are responsible for looking at standards. Our colleagues are

professionals, they all have their own roles and responsibilities, but they may not be the expert in a particular field. For instance, water and so on, we will have to look at the experts' views, so we have to seek advice from the Water Supplies Department. While sometimes, maybe on our own initiative, we see the possibility of certain developments or we see some problems, and there is need to do something, then we will have to consult the relevant department or the experts in the field before it can be done.

I can give you an example. About several years ago -- you know, when it comes to cleaning water tank, very often we have to clear out the water tank, and then afterwards we put the water back and then residents will have to run the tap for some time before they can use it; it is not convenient. So eventually we tried to look for another approach and we developed this design of double water tanks, but we need of course the Building Services engineers and all other professionals to be involved in the development of this model. More importantly, we have to consult the WSD, because we need to discuss the details with them. Maybe there is a need to make some minor amendments to the waterworks instructions.

So, on various fronts we need to consult the experts

and the practitioners in the field, as well as the regulating authority. We need to work together with them before we could get something done.

Now, when it comes to safety, of course we will need the very experts, that is the WSD experts, to help us to decide on the basic requirements. For example, in terms of testing, what sort of details we need to test. Definitely, we will have to base it on the requirements of the WSD.

Q. But there is some flexibility; right? I understand that the WSD is responsible for water control. For instance, the latest disinfection technology, and so on, the WSD might have more expertise on that. But in terms of construction materials and whether they have any impact on water quality, the HA should be involved during the process of construction; right?

A. This is a good question. For construction materials, we would use materials allowed under the laws and regulations. A long time ago, we used galvanised iron pipes, in other words steel pipes. But since the mid-1990s, the WSD issued a circular that such galvanised iron pipes could not be used anymore. So we did some preparation work in order to switch to other materials. In fact, our choice of materials is in line with the various regulations. We would abide by such

regulations.

We did a study on the most appropriate type of pipes to be used, and at that time we considered copper pipes or lined GI pipes, and at that time, after conducting tests, we decided to use uPVC lined pipes.

So we would follow the law, and years after adopting this material, we found that some residents switched to copper pipes. Copper pipes are often used by residents, and after the year 2000 we looked at the trend and switched to copper pipes.

So the choice of material would keep up with market trends as well as requirements set by the regulator. When we first used copper pipes, we adopted a gradual approach. We allowed contractors to use either PVC pipes or PVC-lined pipes or copper pipes, and eventually they switched to copper pipes.

So that's a brief history.

By around 2005, we considered stainless steel pipes, which was a relatively new material at that time. We also looked at the latest BS EN and we looked at the supply of materials and we considered whether the market was mature for development, and we launched some pilot schemes at that time to adopt stainless steel water pipes. But the joints did not have BS EN standards and each item had to be approved by the WSD. So, in terms

of the materials used, we must abide by the regulator and we must keep up with the trends.

Q. So let's come back to the material used for the pipes. Now no one uses copper pipes anymore; is that correct? Lead pipes.

A. Well, we are talking about lead pipes, not GI pipes.

Q. No, the Housing Authority no longer uses lead pipes. I think the reason is simple, because lead pipes might release lead, which is harmful to health; right?

A. Generally speaking, we don't use lead pipes.

Q. I understand. I'm not asking this question on a general level. Regardless of the regulations, no lead pipes would be used because the lead released could be harmful to health?

A. Yes, basically.

Q. We looked at a number of British Standards and lead-free soldering was mentioned. The reason is that even if the pipe is not made of lead, if the soldering material contains lead or if the lead content is excessive, then it could be harmful to health, and as such we needed to adopt such standard?

A. That's rather common sense, yes.

Q. I asked if any of your colleagues would be dedicated to obtaining the latest information or keeping tabs on the latest incidents so that the system could be improved.

From your answer, apparently, you don't have dedicated officers to collect such information; you would rely on observations made by your staff, and you might also collect information from the WSD.

So my point is: are there any dedicated staff to keep tabs on the latest developments on the international scene?

A. We would not dedicate one or two officers for this task. We are looking at more than 1,000 materials, so we cannot possibly assign one or two staff to this task.

Q. So, in other words, you would rely on the daily experience of your staff and you might ask them to study further? I'm not sure if there are any requirements on the civil servants in this regard, but, as I understand, you would rely on research or studies done at a personal level in order to keep tabs on incidents in Hong Kong and abroad?

A. Right. For major incidents, information would be disseminated within the trade and there would be some information exchanges, and there could be some sharing of information.

Q. If your staff are aware of certain issues or if it's found that certain parts are missing in your daily checklist, would any of your staff be able to help?

A. If our staff detects any potential issues in their daily

work, they can raise them. We have an alert system in place, and through this platform information dissemination or exchange can be done.

For issues of an international scale or of specific expertise, we would count on the experts: for water resource issues we have water resource experts; we also have experts on hygiene, health, et cetera. We would seek expert advice from the relevant departments.

Q. The Housing Authority is a Development Bureau body.

A. Yes, I understand that.

Q. You said the Housing Authority is a public body, but it takes up the role of a developer?

A. Yes, correct.

Q. Of course, its role is beyond a developer. A lot of residents in Hong Kong live in housing estates under the Housing Authority. So the HA's role is beyond that of a private developer.

A. We are a public development, and housing development is our core duty, so we would provide a comfortable and safe environment for our residents.

Q. So, in other words, you are a housing provider, and the public would naturally have certain expectations on the public housing provider?

A. We will take care of the basic needs for different people, for example, the elderly, the children and the

disabled, and so on.

Q. So let's look at some international experience.

CHAIRMAN: Let's take a 20-minute break.

(11.27 am)

(A short adjournment)Testing

(11.51 am)

MR SHIEH: Madam Fung, since the lead water incident took place, many people conducted many investigations or reviews. So far, what we see is most people said that the cause of the lead in water incident was the use of soldering materials with lead. Of course, the Commission will have to determine if that is the real cause, but in these two investigation reports, the WSD one and the Housing Authority's one, people seem to be pointing to the use of leaded soldering materials. So I have some questions for you.

Of course, obviously, it is not right to have lead in soldering materials in terms of the statutory requirements and contractual requirements, but it seems what was required in the law or in the contract was not followed, it still happened. We don't know whether there's fault involved or whether it's just negligence. But anyway, the fact is lead was found in soldering materials when it shouldn't have been; is that correct?

A. Yes, correct.

Q. Well, maybe you read from media reports, we found some incidents in other places, overseas. Those incidents are very similar to the ones we had in Hong Kong, so I would like to share that information and I also have some other questions.

A1/134, can I refer you to that, please. The BBC, in 2000, in a programme, tried to investigate into a case in Scotland. In Scotland, lead was found in water. Have you seen this report before?

A. No.

Q. Let me briefly take you through it then. This is a programme, and this is the full transcript of the questions and answers in that programme. I actually went through this transcript with Prof Anthony Cheung, I read out this transcript, and, of course, most may know the background to this, so perhaps I will briefly summarise the transcript.

That is, in late 1990s in Scotland, there was an incident. In a family, there was a two-year-old child who became sick. The parents went to seek help all over. Eventually, it was found that -- they had bought a house in a new development property and excessive lead was found in the drinking water.

At that time, the incident sparked a controversy. Perhaps I could refer you to page 134 still. In the

middle, "Reporter", do you see that word in the middle of 134? This is what the reporter said, that in Scotland, there are hundreds of new homes which could be affected with lead in water. Lead in drinking water should be something of the past, only in those days, where people use lead pipes, that this should happen. Afterwards, the government spent several millions of pounds to replace all the pipes, so there should not be a problem. In fact, lead pipes are now prohibited. Then, in Uddingston, in this development project, a high level of lead was found in the water.

May I refer you to page 136. In this programme, there were a lot of questions and answers. There was a dialogue. Mrs Fyfe, the occupant of the property, said ten days later she got a phone call. This is here:

"Mrs Fyfe: Ten days later I got a phone call ..."

Page 136. Mrs Fyfe said here:

"Ten days later I got a phone call ..."

Do you see that? The first "Mrs Fyfe":

"Ten days later I got a phone call ..."

To say not to drink the water because it contained a high level of lead. So the reporter said:

"The maximum legal limit is 50 micrograms of lead per litre of water."

But in the Fyfes' household in the bathroom, in the

washbasin tap, they found that the level was 382 micrograms. The child brushed his teeth there every night. Then the subsequent testing revealed high levels.

Then, doctors and others were interviewed. We can skip that.

Why was there excess lead in water, that place?

So let's go to page 140. At the top, you see the reporter said this:

"The law is clear."

So the law is clear, the local law is clear. For soldering materials, they must not contain lead; they must be lead-free. But because leaded soldering materials are still available in the market, say for central heating systems, leaded solder can be used, so in the market leaded solder could still be bought and plumbers are usually carry both.

There are also financial temptations for people to use leaded solder illegally, because it's cheaper, and also probably because it's easier and quicker to use, so it's quicker to finish the job.

Then there's an expert, Dr Oliphant, who gave his views. That is, if we use lead-free solders or non-leaded solders, the cost would be about 20 per cent more. But he said that the increase as compared to the

total cost is not significant.

And in reply the reporter said that the cost difference of 20 per cent in solder might not be significant, but for the plumber, since the plumber might be responsible for multiple houses, if the plumber can save 20 per cent in the soldering cost, then the total cost might be significant.

The discussions continued in the programme. Subsequently, they interviewed the developer, and they interviewed the plumber in charge of the development. We can refer to page 143, at the bottom. At the bottom, the reporter referred to:

"The plumbing firm involved in the Calder Gardens estate was referred to the Procurator Fiscal who decided against prosecution."

I won't go into the details, because prosecution must be made within six months in line with the local law. So, since the deadline had passed, no prosecution was made.

Let's look at page 144 at the top. The person in charge of the company was interviewed. That person was called Mr Ball. He said:

"Basically there's two solders ..."

One is the lead-free type and the other the leaded type, and the plumbers used the wrong solder. When

asked why they did it, Mr Ball replied that it was an error. The reporter asked was it a "straight error", and Mr Ball said:

"They didn't do their job properly ... He was in error. Whether it was a simple way out, or whether it was they just couldn't be bothered to go and check the right product, but it was basically human error."

The reporter said the leaded solder was used for the central heating system and they couldn't be bothered to change to the non-leaded solder for the rest of it.

Mr Ball said it was probably wrong to say that they hadn't bothered to do it, and whether they were running or ran out of the unleaded solder, it's worth investigating.

I won't go into the details, but basically we learned from the programme that 15 years ago there was such an incident in Scotland. Lead was detected in water, and after the incident, support was sought and it was found that lead was present in the solder, and the results were unconclusive upon investigation.

Now let's turn to page 198. The incident did not end here. Let's look at page 198. The title is "Scottish New Homes Lead Survey". It was a report.

Now we can just flip through the report, from page 198 to page 244. I won't ask you questions in

detail but please flip to page 198. The title is, "Scottish Centre for Infection and Environmental Health". It was done by an NGO and the study was commissioned by the government.

After the lead in water incident, the government commissioned this organisation to conduct tests, to see how many per cent of the new homes in Scotland have water that contains lead.

So the message I want to bring out is that this incident wasn't merely a sensational story recorded by the TV programme, it was based on a report done -- it was an incident in Scotland in the year 2000.

My question is: as you know, the BBC is a British programme, and it may not be familiar to the people of Hong Kong, but on a professional level, would the HA's experts be aware of this issue concerning the management of construction materials on various occasions? Is there any mechanism in place to alert them to such incidents overseas and whether you would consider whether Hong Kong would be exposed to similar risk?

A. It would be very hard to say whether they were aware at that time, because the incident happened back in 2000, and at that time we had not made the switch in terms of soldering material. And at that time I believe we had no such information. When establishing the standards,

our colleagues might have taken it as reference. Well, this is the first time I see these materials, so I understand that my colleagues might not be aware at that time.

Q. Let me show you another paper. This was an incident in Scotland. Now, let's look at page 190 for an incident in Wales. Page 190 in the bundle. This was an article from an academic journal, research from the Journal of Environmental Health Research. It was published in 2001. The year of publication did not show up but it was published in 2001.

On the left, you can see "Abstract", which is normal for academic articles. It says:

"The acute and chronic health effects of lead exposure are numerous and well documented."

There is legislation in place to control the use of lead, so acute lead poisoning is no longer common in developed countries. And evidence suggests that there is no safe threshold of lead exposure. No line was drawn with regard to the safe threshold.

Historically, lead in drinking water has been associated with lead piping, but more recently, the issues of high lead levels in drinking water in new houses because of the use of lead solder on drinking water pipework has been highlighted in Scotland. So

there was an incident in Scotland, and it says:

"This paper details the multi-agency response to an incident where high lead levels were found in the drinking water of a number of new properties and developments in North Wales, UK."

So similar incidents occurred in Wales as well, so this article looked into the remedial measures taken.

Let's move on to the local legislation. With regards to the lead standards, the cap was 5 micrograms per litre. 52 residents were affected. And all the incidents were due to solder containing lead. It says the lead solder used on the incidents were responsible.

A multi-agency incident management team, or IMT, was convened. It was a multi-departmental agency.

Now let's turn to page 195. Let's look at "Policy and regulation". It says:

"This incident highlights that some property developers of new houses continue to use lead solder in the plumbing of drinking water pipes, despite its use for this purpose being illegal."

Although lead solder is illegal, some developers were continuing to use them, and these soldering materials can be conveniently purchased at various stores, at DIY stores. They are cheap, they are

10 pounds cheaper per roll, which comes to HK$100-odd. So an imminent review was necessary on the use of lead solder in construction material. This incident highlights the need for an urgent review of the material.

"Following the work done by the Scottish Centre for Infection and Environmental Health in 2003 ..."

Which was the homes survey I showed you just now, it was done in 2003, and it says:

"... The issue of the use of lead solder in the plumbing of new homes was highlighted as an important public health issue ..."

And it says the SCIE highlights that:

"... high lead water levels owing to this cause represents an avoidable and unacceptably high source of lead for vulnerable people such as young children and pregnant women."

And such high levels were unacceptable but at the same time they are avoidable, and:

"There needs to be consideration by local authorities as to their inspection and monitoring strategies for lead, not only in new housing developments but [also] in schools ..."

So there must be a high alert for lead. And:

"The incident did not come to light as a result of

routine monitoring but as a result of the investigation of an unrelated complaint by a resident."

And the complaint was on something else.

"Following this complaint and opportunistic testing, the extent of the problem was greater than first anticipated. As a direct result of this incident, DCWW" -- an abbreviation of an organisation in Welsh which could not be pronounced -- "has now included in its routine inspections of newly built properties (5% of new build residential properties and all commercial properties) a 'lead check' swab test ..."

Was carried out to detect lead solder on the drinking water plumbing and services. So a swab test was done on these new properties.

So this was the experience in Wales in 2011. As you understand, would the staff of HA or HD be aware of such academic information through their daily exchanges?

A. I would not speculate on that, but if our colleagues were aware of that, we can do follow-up work. But it's the first time we hear about these soldering materials. If our waterworks expert had such information and if they provided us with such information, then we would have been alert and conducted checks accordingly. But we did not have such information. I did not see such information before. It's the first time I have

encountered these materials.

Q. So, on such publications of public and environmental health, you said your officers might not have read such materials and nobody alerted you to that, and there was no mechanism to alert you on these housing issues and that you had to test these soldering materials?

A. No, we are not aware of that. Because it's about environmental health and waterworks, we are not experts in those fields, so we rely on relevant personnel to alert us before we have the information.

Q. Was there a mechanism?

A. We have many mechanisms, but maybe it won't be down to such details on health or water issues.

Q. It is not about details, because here we talk about affecting health; anything affecting health can't be minor?

A. Well, if it's about health or water quality, let's say the WSD has been alerted to certain information or it imposes certain requirements, then we will have the alertness, we will have the knowledge, we will learn about it. But for the various regulatory departments or the industry, they did not receive this information.

Q. Now may I refer you to the experience in the United States, at A1/399. This is a paper in the United States, 1993. The Environmental Protection

Agency of the US published this document. The title is "Actions You Can Take To Reduce Lead In Drinking Water", so it's about actions you can take to reduce lead in drinking water.

Go to the bottom, "Why is lead a problem?" It says here that lead is poisonous; if there is intake of lead or ingestion of lead, it will affect health. So what are the important sources of lead? Air, soil, dust, food or water. On average, it says here, it is estimated that lead in drinking water contributes to the highest percentage of the total lead exposure, 20 per cent.

Then if you read on to the next page, page 400, at the top, it says here:

"Typically, lead gets into your water after the water leaves your local treatment plant or your well. That is, the source of lead in your home's water is most likely pipe or solder in your home's own plumbing."

So if there's lead in the water, the biggest possibility is that it comes from your pipes or the solders.

"The most common cause is corrosion, a reaction between the water and the lead pipes or solder."

That means there could be chemical reaction between the lead in water and the pipes, and so lead may be

leached.

Next, go to the bottom:

"What is the government doing about the problem of lead in household water?"

A: There are two major governmental actions to reduce your exposure to lead.

1. Under the authority of the Safe Drinking Water Act, EPA set the action level for lead in drinking water at 15 ppb. This means utilities must ensure that water from the customer's tap does not exceed this level in at least 90 per cent of the homes sampled."

In other words, the Safe Drinking Water Act sets a limit of 15 ppb.

Then the next page, 401:

"In June 1986, President Reagan signed amendments to the Safe Drinking Water Act. These amendments require the use of 'lead-free' pipe, solder and flux in the installation or repair of any public water system, or any plumbing in a residential or non-residential facility connected to a public water system."

So the US government enacted legislation in 1986 under the leadership of President Reagan; that is, for household water plumbing systems there should be lead-free solders used.

Then in June 1986 this requirement came into effect:

"The law gave state governments until June 1988 to implement and enforce these new limitations."

So there is a grace period for state governments.

"Although the states banned all use of lead materials in drinking water systems, such bans do not eliminate lead contamination within existing plumbing."

That means, in an existing drinking water system, there is no way to eliminate the lead already there.

"Also, in enforcing the ban, some states have continued to find illegally used lead solder in new plumbing installations."

So that means in some states it is found that people still use lead solder in new builds.

"While responsible plumbers always observe the ban, this suggests that some plumbing installations or repairs using lead solder may be escaping detection by the limited number of enforcement personnel ..."

That means if some people illegally use lead solder, they may not be detected, because there is limited number of enforcement personnel.

The next part, "How can I reduce my exposure?" The government gives some advice to residents on how they can reduce lead in drinking water. That is, run the tap for a while, et cetera. I won't go into details.

So that's the experience in the United States as

early as back in 1993, and actually they had the legislation way before that but in 1993 they reviewed it. So it's not about whether you know about the experience overseas, but what this case shows is that even if the law is there, some may still try to break the law. That's the US experience.

So my question for you is this. From the US experience, is there any opportunity for Housing colleagues to come to know about this? I know this was in 1993.

A. Thank you for the question. I think the answer is still, honestly, we do not have the knowledge about this document.

Q. Let's not consider whether there is need for overseas knowledge. But if there's a law and if there's a contract, there may still be incentives for people to breach the law or contract, purposefully or unintentionally; do you agree?

A. Well, if there's the law and there's a basis for doing tests, then more people would become alert to it and then we would know there's a way to measure it and test it, so there would be more tools to ensure compliance or to stem non-compliance, rather.

Q. But for lead in solder, I understand there is not any specific mechanism to test for it; right?

A. From July?

Q. No, I'm talking about before.

A. Before this, probably -- there is nothing, because the eight parameters to be tested do not include testing for lead or heavy metals in water.

Q. But the eight parameters were based on the 2012 notice to say what should be tested; correct?

A. Yes.

Q. Actually, I will go through the tests with you later on to see what the purpose of it is.

But coming back here, let's not consider what others do. Just go by common sense, human nature. Well, you know, Chinese people, we say, "You have a policy or a law but I have a way to counter that"; you know, exploiting the loopholes of the law or breaching the rules. This could happen; right?

A. Well, if it's high-risk, then we must find ways to plug the loopholes. Of course, there are always people who may be tempted to break the law or to breach the contract, but if something goes wrong and if there's a way to test for it, then it will make it difficult for people not to comply. So we would be able to plug the loophole.

Q. But if you want to test for certain material and whether it contains lead -- well, let's not go into the details.

Let's say you want to know whether a matter contains lead, there is quick and easy equipment; you just need to use it and it goes beep, and then you know whether there's lead?

A. Well, after this incident, yes, we had the information but before then we did not, no.

Q. Later on I will go through the Housing Department's inspection process with you, later on, on site. That is how they test, do inspection on site. I will go through that with you later. But before the lead in water incident, the Housing Department did not know there was such a device, that you could just point it and then a beep sound would go off and then they would know whether there's lead. So they didn't know about that before; right?

A. Correct, they didn't know.

Q. Now let's refer to a WHO document: A1/407. Let's first go to page 403.

This document is a background paper of the WHO, because the WHO is -- was, rather -- formulating a set of Guidelines for Drinking Water Quality. The guidelines have now been published -- I won't go to that -- because one of the authors actually came to give evidence. This is "Background document for development of WHO Guidelines for Drinking-water Quality.

Page 411, here, if I may summarise paragraph 2.2, the second paragraph under paragraph 2.2:

"Lead is present in tap water to some extent as a result of its dissolution from natural sources, but primarily from household plumbing systems in which the pipes, solder, fittings or service connections to homes contain lead."

What it says here is that in nature, lead will find its way into water, but the primary source would be pipes and solder in household plumbing systems.

Next, some data is given, and there are studies in various places about the lead level, and so on.

Now, for this WHO document, it states from the outset that the primary source of lead in drinking water is the use of leaded solder, used in the household plumbing systems. This is a WHO document.

In the Housing Department or Housing Authority, would colleagues have the chance to come across such information, you know, like that is the WHO document?

A. Simply speaking, with regards to issues of water quality, we would follow the Waterworks Ordinance and relevant regulations. We would not look into the details in the WHO Guidelines.

Q. According to the Waterworks Regulations, the British Standard must be adhered to?

A. Yes, correct.

Q. In the housing contracts, the British Standards must also be adhered to?

A. Correct.

Q. And according to the British Standards, unleaded solder must be used?

A. Correct.

Q. Now, for your checklist, the testing of lead in construction materials was never included; right?

A. Before the incident, we had no such awareness or requirement.

Q. So, at the end of the day -- well, please look at paragraph 21 of your witness statement. Let's look at page 37515:

"A typical building HA project involves over one thousand materials and components ..."

There are over a thousand types of construction materials, to ensure the proper use of materials, complementing the performance-based specification, site inspection, and so on, adhering to the laws and regulations.

So, in simple terms, the whole construction process might involve more than 1,000 types of materials. So, in terms of the testing standards, you would adopt a risk-based standard and you would set priorities

accordingly; is that correct?

A. Yes.

Q. You then gave an example in paragraph 21. You said:

"For example, there are statutory requirements ... and trade practices to control the quality of reinforced concrete work from raw materials ... to the finished works."

So, in other words, there are statutory requirements and trade practices to control the quality of the concrete work from raw materials to the finished works.

You then said:

"The HA has a similar stringent control process for material approval, trial samples, testing, and inspection. Nevertheless ..."

You gave a counterexample and you said:

"Nevertheless, the tying wire in steel fixing ...

And the steel fixing refers to the tying wire -- I'm not sure what you call it in Chinese.

A. Yes, we are referring to the tying wire.

Q. And it says:

"... the tying wire in steel fixing is not a subject of material approval and testing in the industry as well as in the HA."

So, in other words, the tying wire in steel fixing, the wire is not a subject of material approval,

according to trade practice or the HA's practice.

And you gave these two examples. You gave one example and one counterexample. So my question is: what were the standards you adopted to decide when testing is required and when it isn't?

A. Let me talk about the second example first. According to trade practice, the tying wire used is made by steel. We are talking about very fine materials, and the quantities used are not large. Normally, the materials used by the trade are satisfactory, so we would not test the tying wire to see whether it's made of steel.

Copper pipes are typically used in the trade, and we were not the first ones to use copper wires in the trade. The use of such pipes are already mature and we did not expect any problems. It's commonly used in the trade and it's believed to be compliant.

Q. I would like to talk about the approval and inspection process since day one, with regards to the Housing Department.

The main contractor signs a contract with the Housing Authority, and some materials require pre-approval from the Housing Authority; right?

A. Correct.

Q. I am not talking about all the materials, only some materials.

Now can you turn to paragraph 43 in your witness statement. It says, "Material approval". You said:

"As a general practice, the main contractor prepares a material submission and approval schedule to the contract team for reference and submits materials, including soldering materials and equipment ... for contract manager's approval."

So the normal practice is that the main contractor would come up with a list, with a schedule of material submission, and it would be submitted to the contractor manager for approval?

A. Yes, that's the normal practice.

Q. So there is a template or form that stipulates the country of origin, the brand, the quantities and so on, and the contract manager would grant approval; that's the normal practice, right?

A. There's a list of materials to be submitted, and the relevant information would be submitted to the contract manager for approval.

Q. So you said:

"Pursuant to the WWR and HA contract specifications, the main contractor shall use only lead-free category soldering materials, as soldering alloys with lead exceeding the upper limits stipulated ... are not permitted ..."

So, in other words, the contractor can only use lead-free soldering materials, and these are reflected in the list of soldering materials used.

I would like to show you some paper submitted by China Construction. Let's look at B10.4, tab 234. It was a China Construction document on the affected estates. Let's look at tab 234. It was about the main contractor of the 11 affected housing estates, and it was commissioned by the HA for a study on the Hung Hom Estate. So you might have copies of some parts of this document, and I would like to point you to page 26398.

This is a standard form or template. You can see a title, "Sample submission and approval form", "Housing Department". It was an internationally accepted form they used at that time. The title, "Construction of Hung Hom Estate Phase 2 and Ma Hang Headland Park". Under "Details of submission", you can see the words, "The enclosed sample and catalogue". So, when the form was submitted, a sample was also attached.

Can you find the words "General Information"?

A. Yes.

Q. And you can see the words, "The enclosed sample and catalogue ..."

I'm not sure if the actual materials were submitted. It says:

"... as described below have been checked for compliance with the Specifications and Drawings, and are submitted for approval."

So China State Construction submitted the materials to the Housing Department for approval, and under "General Information" it says:

"Powerflow Flux & Lead-Free Solder 'FRY'."

"Fry" is the brand name. "Flux" refers to soldering material.

And the location is "Jointing Copper Pipework for Copper Pipe (Brand: Eagle)".

And there are other technical information. It says, "Submitted Sample: Powerflow Flux & Lead-Free Solder 'FRY'", the lead-free solder came from Europe, and the supplier is called Tung Shing Hardware.

Now turn to page 26401. There are some photographs. You can see the words "Lead-Free Solder 'FRY'".

Now let's continue on. You can see some photographs of the lead-free solder "Fry", 26407 and 26408. Can you see the photographs? Those are some catalogues published by Fry.

A. (Nodded head).

Q. So you can see the words "lead-free", so it's a big deal because the trade really cares about the words "lead-free". These materials were submitted to the

Housing Department.

So, from these documents, do you know whether the rolls of solder were attached with the submission?

A. Normally speaking, the rolls would be submitted to the sample board, but if the projects were completed, the sample would be destroyed. So now we cannot see whether the rolls of solder were submitted.

Q. We understand that the solder were thin wires; the solder was a roll of thin wire, and in between the two copper coils they would be welded, and the joints would be soldered, and the solder is available in rolls.

If a sample was submitted to the Housing Department for testing, the brand Fry would be stipulated, the words "lead-free" would be included. How would the Housing Department confirm whether the solder submitted is actually lead-free? How would you test whether the solder is lead-free, or you would simply believe in the label?

A. Usually, there should be a test certificate attached.

Q. Oh, I see. So, if a test certificate is attached, then you just trust the test certificate? In other words, the Housing Department may not use its own equipment to test the content of that material?

A. Because usually, as we said, we were not aware that there was the use of leaded solder used on our site,

that's why we did not have that measure.

Q. Yes, I follow that. To be fair, actually we do not know, when the leaded materials were submitted to the Housing Department, whether lead was actually there, or when the materials were submitted to the Housing Department, no lead was in there, just that eventually they switched it. But anyway we don't know yet.

But my short question is: does the Housing Department have any simple devices you can just test it, so when you check you don't just believe in the label?

A. In the past, there was not such a device, but after July we have quick-test devices, to check whether there's lead in the soldering materials.

Q. Well, perhaps this is a hypothetical question. Let's say in the past, when the soldering materials were submitted, there was no test certificate, there was just a label and they say, "Trust me, there's no lead in there", then what would the Housing Department do? Would you send it back and ask them for a certificate, so, "If you believe produce a cert, then I will believe in you"? Is that how you do it?

A. Yes, usually that's how we would do it.

Q. So, from this example, you know, for the whole project, there may be over a thousand types of materials, and it's not the case that for every material it needs to be

approved in advance. But at least for this project, we know soldering materials belong to the type that requires prior approval before it can be used; right?

A. Usually, for this material, it will have to go through the material submission approval process.

Q. You mean for soldering materials, it's one of the categories; right? That means for all projects, soldering materials used must first be approved in advance?

A. Well, I'm just saying that's the general situation. It may not be an essential requirement or that it must be this material that has to be used, but usually this kind of material would have to go through approval.

Q. So this is not a kind of material that doesn't need any approval at all, because there are such materials as well?

A. Well, I mentioned tying wire, perhaps on the sample board it does mention, but then there's another type that is a mandatory requirement to make submission. In our specification, generally speaking, in our spec, if it belongs to PLU1, then it is not mandatory. PLU2 is mandatory. But usually, for this type of material, the contractor would submit it to us for approval.

Q. So you mean soldering materials belonging to the PLU1 category, the submission is not mandatory, but in

general contractors would submit the materials to you, and if the contractor does not submit this soldering material to the HD for prior approval, what would be the consequence?

A. Even if the contractor did not submit the materials for approval, then the contractor must still go by the contractual requirement to provide lead-free solders.

Q. So if they tell you beforehand, "We are using this brand of lead-free so that you can test it and then you approve it", so that's double protection, right, just to give you more assurance; correct? But in terms of the law or the contract, they don't need to give it to you for approval in advance, but as long as what they do is lead-free or what they use is lead-free, then it's fine?

A. Yes, correct. Before July, in the WWO schedule, there is no requirement for submission of the materials.

CHAIRMAN: Sorry, can you repeat?

A. For this material, before July, in WWO 46, the form WWO 46, annexed to the form, in that list of materials, it is not in that list.

MR SHIEH: WWO 46, there's a section 3 and 5 of the WWO -- that means, before the works, it has to comply with part 1, and then after the works are completed, part 4. Well, I will go through the Waterworks Ordinance with you later on, in detail.

But what you are trying to tell us is that soldering materials, in terms of the contract, need not be submitted for approval in advance, but contractors would usually choose to submit the materials to the HD for prior approval, and even if there is no prior approval, still they must use lead-free solder materials, regardless of the brand; correct?

A. Okay.

Q. So that's before the works commence. We have seen this document.

Now, after works have started, during the works, let's see what happens. Paragraph 45 of the witness statement.

Paragraph 45 of your witness statement -- it says here, "Surveillance and control during construction". That is during construction, it's about surveillance and control. I will read it out:

"HA's site staff ..."

Here, we are talking about staff on-site. That means these are staff wearing their safety helmets and working on site to monitor the works.

"[They will] check the materials upon their delivery to site, including visual inspection and verification of materials against the approval samples, respective catalogues and certificates in accordance with the

contractual requirements."

Let's stop here for now. So, for the HA's site staff, whenever materials are delivered to the site, they would conduct visual inspection. They will also check the materials against the approved samples or catalogues or certificates, to see whether that is in compliance with the contractual requirements.

Here, it's actually rather general. It says "the materials upon their delivery to site", the HA site staff will do this.

So my question for you is this. "Will check the materials" -- let's just look at this phrase, "will check the materials". Let's not look at the other phrase, about "also selects" -- "also" means "in addition to". Let's look at the first sentence, "will check the materials upon their delivery to site". For this part, does the general practice include soldering materials?

A. Well, to give you a short answer, before July, it's true, soldering materials were not included because, as I said, they are some minor material items like wires and screws; most people would think that they should be in compliance. But for the larger items or materials, usually the site staff will check them.

Q. Fine. So you have actually answered my next two

questions, because my next two questions -- I was going to ask you about the second sentence of paragraph 45. That is, "The HA's project officers ..." also checked against the samples, blah, blah, blah.

In other words, for the HA supervisors, they will actually select certain materials, look at their appearance or size, or whether there are any superficial defects. And again, here, it would not cover soldering materials; correct?

A. Yes, correct.

Q. Then it goes on to say:

"HA also conducts laboratory tests on samples for major components such as sink mixers and shower mixers to ensure compliance ..."

So, in other words, they may collect certain samples for laboratory tests, and again this would not include soldering materials?

A. Correct.

Q. Here, we are talking about major components only. For major components, you might do laboratory tests.

Anyway, I read out three sentences, and all three do not cover soldering materials?

A. Correct.

Q. I will show you a form. It's actually attached to your witness statement. Page 37640. This is number 6210.

We will be seeing a lot of numbers. This is form number 6210, "On-site delivery verification". In other words, it's a form to verify on-site delivery.

Type of material, the relevant contract clause number, the project contract number, then document check, material check, and see whether there is any certificate of origin, delivery note, the service quality, the dimension, and so on. This is on page 1.

If you turn to the next page, there's the guideline, page 37641. This guideline is for the HA site staff, so they know how they could use this form. So, when the staff member looks at the form, he will see he needs to check the documents, whether there is a delivery note, certificate of origin, the Netherlands, the UK, China, whatever.

Then materials check: the HA staff are instructed here that the contractor should check these items in the presence of the contract manager. That is, what to check is to check the relevant specification clauses. Let's see what this clause requires and then you check.

"3. Major materials to be checked are as follows ..."

And here a list of materials are given. Then test must be done; there must be a check for these materials. Let's say I were a HA site staff, and then I go by this

form, so there is a whole bunch of materials delivered to site, and if it falls under "a" to "af", then the HA staff will check accordingly; right?

A. Yes, in general, that's the practice.

Q. Here, we see in this list soldering materials are not included, so every day, when HA site staff go to work on site, and truckloads of materials are delivered, but because soldering materials are not in the list, so they won't check.

And in this practice, usually there's no discretion given to the HA staff. Well, maybe it is not on the list, but perhaps the HA staff might wonder, "How come this packet has not got the Fry label? Maybe something is wrong." So then, does he have the discretion to check?

A. Usually, if by rules, staff are not required to check this, but if the staff spot any problems, they could raise it. But if you go by this on-site delivery verification check, it's true, then we go by the list in the form, to do the check.

Q. Well, to be honest, to be frank, sometimes if you don't give a box for people to tick and then you tell them, "You can raise anything on your own initiative", I'm sure, 10 times out of 10, people won't raise such items.

A. Well, no, I don't think you can generalise.

Q. Okay. Understood. From "a" to "af" here, there are various different materials. Maybe for different statutory clauses there may be different requirements. So the person in charge may consider, okay, cement is "f", and then you see which clause is relevant, and then check the clause to see what is required, and then he will carry out the inspection.

Here, we see all sorts of items in this list: big, small or medium-size items. Some are huge items, like windows, for instance. Then shower doors also there, further down the list, "ab", sliding shower doors; "f", cement, let's say; ready-mixed mortar, it's used to connect the bricks. This is a kind of plaster.

And under item "i", you can see wall tile, small wall tiles. Those are the small tiles. And at "j" we have the non-slip homogeneous floor tile. Then we have mosaics; in other words, some patterned tiles.

Then at "q" we have emulsion paint; synthetic paint; we have acrylic paint; and at "p" we have tile adhesive and tile grout.

So this is the material used to stick the chequered tiles together.

A. The adhesive is used to paste the tiles to the wall.

Q. So the other material is used to connect the joints between two tiles.

So how did you come up with this table? There are a number of materials. There are hard materials, sort materials, there are adhesives. So by which sentence did you create this table?

A. This table lists out various construction materials; some fine materials, for example, adhesives. If certain batches were problematic, some tiles might fall off. So some materials are rather high-risk.

For plumbing-related materials, you can look at "y" and beyond. From "y" to "ac", these materials are related to plumbing installation. I talked about PLU2. The clause number refers to PLU2, and these materials are listed here as well.

Q. So, for PLU2, they must be inspected, right? They must be approved; right?

A. Yes, and those materials are listed here.

Q. What about PLU1 materials; are they included here?

A. No. But in the latest version, after August, PLU1 materials were included.

Q. So, in other words, non-PLU2 materials were not included in this table?

A. Not necessarily. If the law requires lead testing, lead-related parts or materials had to be included in this list of alerts, and this is a risk based or performance or output-based decision. We have to --

well, we would look at -- well, we would take an output-driven approach.

Q. You talk about the grouts or adhesives. I assume that there are contractual clauses stipulating the standards required?

A. The standards are often performance-based, and they would address the maximum stress permitted.

Q. As for the risk, if you stipulated the risk, if the standards were not followed, the risk was that the tiles would come off. And we are not talking about the whole brick wall. The tiles refer to the tiles used in washrooms. The tiles could be used outdoors, in public places. We no longer use lead tiles outdoors.

If indoor tiles fall off, then it might affect the appearance, but it should not pose any dangers; right? Well, it's only annoying but not dangerous; right?

A. It depends on the place. If it's an atrium, a multi-floor atrium, we have some outdoor tiles as well. In case of debonding, they might fall off and lead to falling objects from height, which is dangerous.

Q. They should not come off; right? Theoretically, they should hold together well. But you have to guard against the risk of the inadequate adhesive, and that's why you include adhesive on this list.

A. This is not a quarantine, so what are you actually

testing for? This form requires contractors to conduct checks in the presence of our representatives. They have to check for dimensions, service quality, other accessories, and so on. They have to confirm the certificates of origin, delivery notes, et cetera, to make sure that they are all correct. This is to ensure the correct certificates of origin of the batches.

Q. So, in other words, you value the -- you feel that the validity of batches is important or else there would be safety issues? For instance, if the tiles come off, even though those are small tiles, they still pose danger if they fall off.

A. (Chinese spoken).

CHAIRMAN: All right. Let's take a lunch break and we will resume at 2.30.

(1.08 pm)

(The luncheon adjournment)

(2.32 pm)

MR SHIEH: Mrs Fung, I will continue with the line of questions before lunch.

The HD representative on site, he has to check every item on the list. This morning, you told us about the tiles -- I can't recall exactly your words. Let's go back to the form. Page 37640. On the form, there is a list of items. You told us this morning what you

would consider to put on a list. The factors you would consider would include the price, quantity and safety aspects. You said for tiles, adhesive; you use tile adhesive. If tiles are not properly adhered, they may fall off.

If we go by the same logic, soldering materials, they may seem minor and not noticeable, but if there is no compliance with the law in terms of soldering materials, there could be a danger too. The danger may be even greater than poorly affixed tiles; would you agree?

A. Well, when we look at this incident, in the past, when it comes to water quality control or the testing of materials, our practice was consistent with that in the trade. On the water supply system, the content of lead, of heavy metal and the risks it posed, at the time we did not pay attention to that. We agree and we admitted that there was no enough awareness.

In those days, when we switched to copper pipes, at the time, for the industry, the contractors, subcontractors, licensed plumbers and workers were all very familiar with copper pipes. Actually, we started rather late, so the trade was already familiar with the use of copper pipes, and copper pipes was not any new technology; it's common around the world.

Before this case there were no signs or any warnings that copper pipe materials may pose any health risks because of any materials in the water.

Now, the Water Authority set the eight parameters for water testing. We thought it was enough. So we did not see that there would be a problem of lead in soldering materials, because the trade was so familiar with this practice, and this is a material familiar to all. And so we had reasons to believe that this was the materials free of lead, frequently used by the trade.

Q. I think it's not a question of whether the trade is familiar with the materials. You say the Housing Department might have started using the material later than say for private properties, so you say the trade must be very familiar with the use of such soldering materials. But that's not really the question.

What about the use of substandard materials and the risks involved?

Let me give you an example. In the list, there are various types of paint: emulsion paint, synthetic paint, tile adhesive and tile grout; you know, the materials for affixing tiles, the adhesive and the grout.

I'm sure everyone in the industry is familiar with these items; many in the industry can paint and everybody knows how to use the adhesive and grout. But

is it because everybody is using it, that's why we need to guard against errors? Actually, the two are separate issues, would you say?

A. Well, to prevent mistakes or errors, and if it involves risks or it might lead to a serious incident, that's one type. The other type is, maybe from our own past experience, we knew of any incidents, and maybe under some circumstances people may have used non-complying materials without us knowing. Then it may not appear on this list. There are many different factors. Safety, of course, is the prime consideration.

Q. You said one of the considerations is that maybe people would use substandard materials. So some in the trade may breach legal or contractual requirements to use substandard materials. There is this risk. You considered it when you compiled the list; right?

A. Well, we based on considerations on past experience, or perhaps also, in the industry, maybe there have been some sort of warnings or signs that led us to suspect or worry that the wrong materials are used. If the materials provided do not match those on the sample board, and that may lead to serious consequences, well, we will pay attention to that. That's from past experience.

Now, the latest version, starting from October this

year, the list has been updated, and materials related to copper pipes have been included. So the current version, after July.

Q. Yes, I know that. So you are saying that every time there's an incident, you add something else to the list? So maybe for each of these items, it's there because of something that happened before; is that correct?

A. Well, it's a matter of accruing of experience on HA's side. Of course we become wiser from incidents. Now, before we did not realise the risk involved if materials contain lead. That's why we did not include the item on the list; we already admitted to that.

Maybe in the past we knew of certain risks, then we might put on the list, but also here we are talking about materials widely used in the trade, and there have been no warnings or any signs before about the problems here.

Q. Of course, you are not the one doing the actual work. This list, can I find out about this? From "a" to "af", you said, after the incident, now there is another item, soldering materials -- or several more items have been added to the list, all related to soldering materials.

A. Okay, fine.

Q. So, one present example is that something happens so you add more items to the list, but how was this list

compiled? I'm sure it didn't start off with "a" to "af"; right? Maybe someone initially prepared a list, maybe a few years later there was a need for revision, maybe then you add one or two more items. So how was this list compiled?

A. In formulating standards, first it will be based on risk assessment, and we will also look at the practice in the trade. We have frontline staff, we have contractors, subcontractors; they also note that certain materials could carry risks and they could share their views with us. Because we have a transparent approach, actually, and if we add any new requirements or regulations, we will always first discuss with the trade. We will see which is the most effective way to go about it and how we could manage things and make sure the management or regulation is effective. We don't want to add to the paperwork burden, because that has very much to do with operations on site. So that's why we need involvement of frontline staff as well as the management, and they work together to formulate the list.

Q. Yes, I get that. Say in the office, when this list first came about, and then maybe there were revisions later, can you tell us if there are one or two specific staff members or a unit responsible for keeping the record forms? And maybe regularly they will have

meetings and see if something happened somewhere. Maybe every year or so there's a regular meeting. Maybe it's found in the past three times that something went wrong, "We were tipped off and so we might add to or subtract from the list."

So is there such a standing mechanism, or do you just remind colleagues, "You have to sit down and think about it, maybe sometimes you don't have to wait until something happens, you have to consider the logic, and maybe your staff needs to overhaul this list"? Is there such mechanism?

A. In our quality assurance system, there are many codes and practices. These are regularly reviewed. There are dedicated staff, there's also a unit, because for different projects or items we have to seek the views of different parties and then together we will review the various codes or apply for inspection.

Q. What about this record form: is there a particular staff member responsible for this record form? Or is there a team?

A. Well, yes, we have teams, and the heads of teams may take care of tasks under the team's portfolio.

Q. So there is not a specific person responsible for updating the form, but rather there are teams from different fields and then they may give their views in

relation to their own subject matters?

A. Actually, it's a complementary effort. Some colleagues may just take care of forms, but when they need to revise the forms, then the establishment is such that for each trade or field there is someone taking special responsibility. Perhaps that's a sensible way to put it.

Q. Also, from "a" to "af" here, is there someone in the centralised staff, one or two colleagues who are responsible for co-ordinating information from different parties and updating the list?

A. Yes, we have colleagues responsible for that.

Q. Can you give us the title of that colleague?

A. Well, this form is one of the annexures to a manual. So the responsible team -- I think I have to go back and find out, because in different times, maybe there were different people. You know, with the development of the organisation, there may be different people put in charge of this. So we are talking about a thick manual here.

Q. At the bottom left-hand corner, we see a revision date for that. I understand maybe staff in the same grade may be transferred from post to post, but the thing is, there is someone responsible for updating the manual or this part of the manual; correct?

A. Yes, you can say that, and in the list there are different materials. Well, different staff would be responsible for inspecting different materials, apart from this list or this document; other officers might also be involved in the revision of this form.

COMMISSIONER LAI: I have a question. Under the form, according to the latest update, it was revised in 2005?

A. Yes, this version is from 2005. But we do have a more up-to-date version, revised this year.

COMMISSIONER LAI: Can you share that with us later? Before it was revised, the previous version was ten years old; right?

A. Yes, it was from 2005.

MR SHIEH: To help us narrow the scope of questioning, we do not need to summon the officers who were responsible for the original version, but we would like to know the division that was responsible for revising this form. Which department or division or section was responsible?

A. DASM was responsible. The officer of the DASM or a team from DASM was responsible. DASM is spearheaded by a chief architect, and with the involvement of our organisation, the chief architect would delegate the work to other officers.

Q. What does DASM stand for?

A. Division of Architectural Services Management.

Q. Division of Architectural Site Inspection Manual, rather. Which section was responsible for it?

A. A chief engineer, a chief architect co-ordinated the work, and the chief architect would meet other officers, and as our organisation evolves we have different chief architects.

Q. In the Housing Department, I understand that there are eight or nine chief architects. At any point in time, one of them would be responsible for updating the form. And that chief architect would rely on the support from other staff, to tell him or her what is going on and what needs to be updated?

A. Correct.

Q. Are there any regular reviews, or you would only react?

A. Under the system, we have regular reviews. There might not necessarily be major revisions, but part of the form may be revised. But not each form or section would be updated every year.

Q. So, under your mechanism, there would be regular meetings, and you would only make revisions if necessary, but you would meet regularly; right?

A. Sometimes we talk about streamlining the text, and in some cases we would introduce new items. So the idea is to keep the form up to date.

Q. I might have caught you by surprise. But for the

section or department or division responsible for the work, did they have a written flowchart to explain the mechanism and the frequency of review and so on and when the last review was conducted? You said staff from different aspects or expertise would be involved. How many areas of expertise were involved? Can you provide such information?

A. We have to dig out further information.

Q. You have an internal manual to stipulate the frequency of meetings and stipulate what needs to be discussed. For instance, you might have ten aspects, for example, windows or other things, and in each aspect one representative must be sent to a meeting. So are there any such things like that?

A. We can provide also additional information later.

MR YIN: Chairman, can you give the witness a clear instruction? Generally, witnesses cannot discuss the contents with anyone else. So the witness might ask her subordinates to help.

MR SHIEH: Yes, I understand that. I understand that the Housing Department has different experts to take care of different issues.

Is there a dedicated department or dedicated officer to take care of plumbing?

A. Some of our officers would take care of housing

services, including water pipes, and we have departments responsible for plumbing. According to the building standards, different aspects are taken up by different staff.

Q. So, with regards to the plumbing system, someone is responsible; right? And what about electricity or electrical connections?

A. Yes, we have staff responsible for different aspects.

Q. Can you provide the additional information tomorrow? You don't have to give any names.

A. So, Chairman, can I be given some time to dig up the information?

Q. That's for the second part; right?

A. I have to see if my subordinates can dig up the information in such a short time.

Q. We have staff from the Housing Authority now. They can go back to the office now and dig up the information. So can something be done right now?

MR YIN: We are not as familiar as Ms Fung with regards to the department operations. That's not really possible.

CHAIRMAN: Within the hierarchy, we should have multiple staff who understand the operation of the department. I'm sure someone else would be familiar as well.

MR SHIEH: So let me continue with the questioning. Let's look at one or two more examples. For emulsion paint

and synthetic paint, so let's look at page 37641 again, the list of materials. We have emulsion paint and synthetic paint. And these two materials must be inspected. Why were these two materials included on the list of materials to be checked?

A. As I said, a possible reason was that we suspected there were risks associated with certain materials, and as such they were included on the list. This form was compiled in 2005, and we had to be careful when we dealt with the paint.

CHAIRMAN: Why was that? Is it because they contain lead?

A. Lead was only part of the reason.

MR SHIEH: There were contractual requirements on different materials and the qualities required were stipulated.

CHAIRMAN: (Chinese spoken).

A. We had to pay attention to different aspects of the materials, including the quantity of paint and so on.

For paint, we not only have to look at the origin, we have to consider how to deal with the paint. We were wary of illegal activities.

Q. In other words, incompatible or non-compliant paint might be used?

A. Yes, we had to guard against non-compliant paint.

Q. So was the use of non-compliant paint a risk?

A. Well, by the same logic, we would deal with

non-compliant paint just like other materials. If we knew that the solder contained lead, or if we knew the consequences of using leaded solder, if there were signs that there might be negative impacts, we would have included it on the list.

Q. Can you trace the history or origins of the tile adhesive and tile grout, emulsion paint, synthetic paint and multi-layer acrylic paint; what were the historical reasons for including them on the list?

A. We need time to trace the history. It takes time to look at the archives. We cannot come up with information in a short time. But generally speaking, I can try to explain our principles.

Q. The principle is that you encounter certain incidents and you had to guard against the use of non-compliant paint due to different reasons, and there were cases in which non-compliant materials are used, even though the rules are already clearly listed?

A. We did not have to wait for the regular meetings before taking rectifying action, and we would try to come up with a quick decision in case of incidents and include the materials on the list. It would be difficult for us to come up with the information by tomorrow.

Q. In terms of the organisation, which officers would be responsible for the manual and how many people would be

in charge and how frequent would your reviews be? Are there any guidelines on the revision of this manual? I believe you can dig out this information, right, with the existing procedures?

A. Yes, this is more or less straightforward. But if we are to trace the reasons for including them on the list, it might be difficult, because we are talking about a long time ago.

Q. So, please try to provide the information, some of the information, by tomorrow, and for the rest, you might require more time.

A. I can provide the latest version to you.

Q. Now, we looked at form 6210 for the materials. Now, let's go back to paragraph 47 of your witness statement.

Let's look in the middle of the paragraph:

"As contract administrators the [Chief Architects] and [Chief Building Service Engineers] of DCD are responsible for periodic supervision of the contractor's plumbing installation works on site."

So, in other words, the CAs and CBSEs would conduct monitoring on site regularly with regards to the plumbing installation works. And:

"Through delegation of authority, contract administration and site inspection are discharged by the Contract Manager's representatives ..."

So the CAs wouldn't be there personally; they would delegate representatives to conduct regular checks. Is that correct?

A. Yes.

Q. So these are spot checks?

A. Yes.

Q. It says:

"Site inspections are carried out as laid down in the ... (DCMP). However, HA's staff did not inspect the joints between pipes or check for presence of lead in soldering materials as the construction industry and the HA had all along believed that the widely accepted and used soldering materials should have complied with relevant requirements."

In other words, in this DCMP, it says, "When you do spot check, what you need to do is as follows." So it does explain how spot checks should be done?

A. Well, the master process is actually quite a high-level manual. Under that, there are other manuals and the site inspection manuals. And this is an overarching manual, rather.

Q. So there is such a thing as site inspection manual?

A. Yes.

Q. For the site inspection manual, does it go to such specifics? So, for the site inspection staff, they know

what they need to check?

A. Yes, basically. They have to check for so many per cent of something, and we give guidelines to staff, and the chief architect and the chief building services engineer could have regard to the actual situation of a site, and then adjust the percentage check in the form. So there is a basic system in place, but then for each project, we have to consider its own unique conditions and there could be specific site checks.

Q. Can I refer you to B1, please. B1, page 25. This is the master process manual; correct?

A. Yes.

Q. Let's go down. "Site Supervisory Team"; do you see that?

A. Yes.

Q. "a. to carry out site inspections.

b. to manage site records."

So the site supervisory team is required to do these? One of the tasks is to carry out site inspections; correct?

A. Yes.

Q. So these are the spot checks?

A. Correct.

Q. DASM, DEI and DBSI, what is that?

A. Well, DASM is contractual, DEI is manual, and then DBSI

is Building Services inspection manual, engineering inspection manual and architectural services inspection manual. So different manuals.

Q. Let's go to page 28, "Material Approval & Checking". It says:

"This Annex to be read in conjunction with relevant DCMBIs and Work Stage 7 of ... with respect to material approval and checking."

Then there is a whole series of items. So this is a rather general statement, and it doesn't identify what to check; correct?

A. Well, DCMP is a rather high-level manual structure. It provides for a broad framework as to who is in charge of what. Then there are references to which manual should be paid attention to.

Q. This is page 28. Let's go to page 29. Go down all the way. Let's pause here. "Roles of CT and C&MT". Co-ordinate surveillance tests, that's 1.12:

"C&MT is to conduct co-ordinated surveillance tests as a routine to concerned materials used ..."

So is this surveillance test a spot test?

A. Well, if we talk about C&MT, then it's component and materials team. That's a central team. The surveillance would be different than the surveillance tests which are usually conducted which by the other

teams.

Q. So it is not relevant?

A. This is central, at a central level.

Q. So it is not the on-site spot checks?

A. Well, yes, they could draw samples on site, but then this is another team, a central team, to collect sample samples for material tests. So it's on top of the project teams. This is the central team. This is the central surveillance.

Q. Okay, then, let's go down, page 30. C&MT. So is it project based?

A. It's across all projects, but if it's the same type of materials, maybe they will pick a particular site and pick a particular material.

Q. So it's not project by project; right? This is across projects; correct?

A. Correct.

Q. Okay, got it.

Let's move on to page 31. So here, these are all cross-project checking, it's not project by project checking?

A. The C&MT, if they find any problems, then all project teams will be put on alert.

Q. Okay. Let's go to page 55. This is "DASM Architectural Site Inspection Guide".

A. Sorry, 50 ...?

Q. Page 55.

A. Is this the one? It's about sites with spot-check?

Q. DASM, yes.

Page 80. This guide is dated June 2015, rather up to date, but it's not after the lead in water incident. It's 30 June 2015.

A. Yes, it's before.

Q. So it's before the incident?

A. Well, the date may be June, but the actual work would have been well before June. That's why it's only published in June, because it takes time to publish it.

Q. Okay. Page 80. That's a "List of Items Requiring Various Category Checks". Do you see that?

A. Yes.

Q. There are some percentages:

"(A) 100 per cent ... (B) 10 per cent ..."

Can you explain how does this system work? Inspection percentages, what does that mean?

A. It's a risk-based decision. If the chance of occurrence or significance is serious, then we will use the risk-based approach and we'll do 100 per cent check.

Q. What do you mean by 100 per cent?

A. 100 per cent means everything has to be checked. There are many examples here. Say, "Prototype/Sample Work",

"Shop Drawing", these items are 100 per cent checked.

Q. 100 per cent means every time you inspect the site you will check for it?

A. No. In the contract for that particular item, like "Shop Drawing", the whole shop drawing must be provided. They can't just send us a sample; no, they must give us all the shop drawings for checking.

Then there are other items for 10 per cent check or random check, at least three times. So there are three categories, broadly. But, as I say, it depends on the uniqueness of a project; the chief building services engineer or the chief architect may have regard to the unique conditions of a project and change his percentage check. For example, if he believes that for a particular material the risks are relatively high, then maybe they will adjust the percentage upwards.

Q. So, for this table, it doesn't include soldering materials?

A. Well, as I look at it, if we go by a process PLU1, that's at page 86, it appears on page 86, PLU1.01 and 1.02, here you see what items require 100 per cent check. It's about plumbing, both underground and aboveground pipes.

Q. Does it include soldering?

A. I don't see any specific mention of soldering here.

100 per cent check, what is that? That is pipe testing, cleaning of water tank --

Q. 100 per cent check, every time. You said "every time", the time, what do you mean by time? Is it during the construction, the Housing colleagues -- or of course they have someone on site too -- so what do you mean? 100 per cent, that means every day it has to be checked?

A. No, no, no. That's not what I mean. Let's say water pressure test or pipe testing, we refer to the whole installation, all the pipes in the whole installation. For example, pressure test, of course we have to check the whole system. We won't just test a segment or section of the system. It's not that it cannot be done, but, for us, our requirement is that, for such testing is that it has to be 100 per cent, because it's about the function and performance, then that must be checked. But for pipes or plumbing, what is most important is that there is no leakage and it's able to withstand pressure, the pipe won't burst. So there would be 100 per cent test for this aspect.

Q. Page 86, further up, 10.01, under "10 per cent check"?

A. COM10.01?

Q. Yes, COM10.01. Sealant is one of the items.

A. You mean for windows, glass windows?

Q. Yes, correct. So that's 10 per cent check. So you have

a 10 per cent check standard -- or you require 10 per cent check to see if windows are sealed properly?

A. Well, yes, I would say for every ten windows, we will take one to check. That's in general how you could interpret it. So one in ten, we'd take one sample in ten.

Q. Is it testing towards the end of the project or during the project?

A. Well, for 10 per cent check, usually it's a check during construction. For final inspection, most items there would be 100 per cent check. And it's not in this table, because that's final inspection; there's a different form or table.

Q. So, for this table, it does not include the final inspection stage; it's checks to be done during construction, correct? "Random", the far-right column, means you pick any items to check?

A. Yes, correct.

Q. "Plumbing - Above Ground Water", PLU1.02, random check, there's no instructions to do random check here. PLU1.02, the right-hand column, there's nothing under "Random Check". Of course, this is just a guideline, but the instructions would be that, if people would just follow the guideline to the letter, so the person who does the spot check, then he will not draw random

samples or he won't go and look at the soldering materials. Is that the case?

A. 10 per cent check, you see there is a mention of materials, type and dimensions, pipework installation, valves and strainers, pipe support, protection to pipes. But generally speaking, that would just be visual inspection.

We won't be collecting samples for laboratory test. No, it doesn't fall into that category.

Q. So even for spot checks, you just talk about visual inspection; you just take a look at whether it seems solid or you look at the dimensions and so on; is that correct?

A. Yes, correct.

Q. Now let's look at the completion of the works. You can see that solder is not included on the list of materials. During the construction or during the work stage, whether for all columns, 100 per cent, 10 per cent or random check, solder was never included. None of that requires testing of the solder; right?

A. Yes, as I mentioned, we were not aware of the risk associated with lead in solder. It has been used commonly by the trade, by the time there are issues or problems; until then, we did not see any signs or warnings that there would be harmful effects.

So, in general, there is a lack of awareness within the trade.

Q. Is it because soldering was not held in high regard?

A. I wouldn't say that. We saw that the trade had used the material for a long time, and we believed that the material or the solder is effective and there were no signs to show that there might be issues. So we were not aware that there would be problems.

Q. Can you look at paragraph 73 of your witness statement, page 37640, line 5. It says five lines from the top:

"Soldering items have been regarded as an insignificant sundry item ..."

So is it that everyone did not find the soldering material significant and then as such there was an oversight?

A. All along, under the contractual requirements or the bills of quantities, soldering material is never a separate item; it's part of the copper pipes. So, in other words, copper pipes contain soldering material; there is no separate item. And it's generally believed that the soldering material is part of the pipes.

CHAIRMAN: In other words, when pipes are installed, solder is already included; right?

A. All contracts would include the materials.

CHAIRMAN: No separate budget would be set aside for the

subcontractor; right?

A. Correct. In the bills of quantities, when calculating the quantities, soldering material would form part of the entire copper water pipe system. The system already includes the soldering material.

MR SHIEH: So, in other words, the quotation given would be for the whole system and the soldering material might only constitute a small part?

A. Let's look at it this way: the copper pipe system would include the soldering material already.

Q. The copper pipes would include the soldering material already. So if they can save some money with the soldering material, they can earn more; is that correct?

A. We never looked into the costs of the soldering material, but in retrospect the cost of the soldering material is only a very small part of the whole plumbing costs. For the plumber, this is only small money.

Q. What's the percentage, approximately?

A. This is to deal with the breakdown between the contractor and subcontractor, but as the administrator, there's no way we have access to that breakdown. Let's say if the budget is 1 million for three buildings.

CHAIRMAN: Well, a few days ago, Mr Shieh talked about a report submitted to the HA by Yau Lee, and the average cost is $76 per unit.

If there are 7,000-odd units in an estate, it comes to more than $300,000. If there are 12 estates and more than 4,000 units, how many units would there be in each estate?

A. Usually, we have about 800 units in each estate. It constitutes about 0.06 per cent of the entire contract sum.

CHAIRMAN: For the subcontractor, it might be insignificant. Well, even for the subcontractor, it might not be significant, but for sub-subcontractors or sub-sub-subcontractors or the plumbers working for them, it might be a significant sum?

A. If they understand the cost implications then no one would be willing to take this risk.

CHAIRMAN: You cannot say that. You know, robbery is illegal but still we have robbers.

A. It depends on who the subcontractor is and where the materials come from, and the usage of and how of workers use the materials. There are a number of factors and they are all correlated. There are a number of procedures involved.

MR SHIEH: I understand that. For those at the upper tier who procured the materials, they might not do anything illegal, but at the lower tiers we might have problems?

A. I think it depends on how the trade works. If the trade

was aware that no drinking water should contain lead, if there was awareness, then we shouldn't see such incidents. If the workers knew that lead in drinking water is harmful, or if the workers were aware that lead is harmful to health, then they might not use leaded solder, and these incidents might not have happened altogether. So we should look at the incident from a more objective standpoint.

Let's take smoking as an example. If everyone knows that smoking is harmful to health, well, it's the same. The workers might not have used this leaded material.

Q. If you visit a store and asked for unleaded solder, they might still give you leaded solder, but then there is a lack of general awareness in the trade?

A. Retrospectively, yes. When we were first alerted of the incident, we conducted investigations immediately, and this is what we found.

Q. Now, let's look at the progress of the work. We looked at the pre-work and work phases. Now let's look at the post-work part.

Now I will read out the relevant part in your witness statement. At paragraph 48, you said:

"Upon the completion of fresh water plumbing systems, the Main Contractor, the subcontractors and the [licensed plumber] conduct inspections and tests ..."

And so on. So this has nothing to do with you, because this has to do with the contractors, subcontractors and licensed plumber; correct?

A. Yes.

Q. The HA comes into play, starting from line 5. It says:

"HA conducts the final inspection and testing of the water supply system with the Main Contractor who arranges for cleansing and disinfection of all fresh water tanks and fresh water supply pipeworks ..."

And so on and so forth.

It says HA conducts the final inspection and checking of the water supply system. We are looking at the final completion stage there; right?

A. Yes.

Q. There's a separate manual or another set of rules to govern what needs to be done during the final stage; correct? The manual of site inspection we just looked at no longer applies, right, because we are talking about the final inspection?

A. For the final inspection, we usually adopt performance-based checks. Well, apart from the alert system, we usually look at the function of the water pipes. For example, water tests, leakage tests, and so on.

Q. So, strictly speaking, the guidelines for the final

inspection -- well, I don't have a set of the guidelines right now, but there is nothing inside that stipulates the checking of lead in soldering material?

A. Yes, absolutely. If there was no awareness to check for lead when the materials arrived, then it wouldn't be checked later. We believed the trade would get it right the first time.

Q. So the conclusion is that there's no final check for solder, and for the next line:

"HA's project officers and LP [in other words the licensed plumber] apply to the WA for inspection and approval of the plumbing installation stating that the pipes and fittings have been completed according to the approved drawings ..."

You then refer to part IV of form WWO 46. These forms are like a maze. I tried to look at the forms. We have 46, 132, and so on, and they serve different functions, and they are required under different regulations. So now I will look at these forms one by one, and I would like to know the roles of the signatories of these forms and what their functions are.

First of all, let's look at form 46. Yesterday, the counsel filed a set of exhibits. In your witness statement, in the original witness statement, the form currently used has been included, but the counsel

replaced that form with the form used back then. So I'm not sure if the correct form was given to the plaintiff. What about for the paginated version? I was informed that the page numbers have changed and the pages were replaced.

Now, first let's look at 37621. This is form 46. you can see "WWO 46" on the bottom-left corner. Form 46 has different parts, parts I, II and III, and each part serves a different purpose. Form 46 is based on section 5 of the Waterworks Regulations.

The main purpose of form 46, the recipient is the Water Authority -- you can see the words, "To the Water Authority". The main purpose is to inform the Water Authority before the works begin that they are about to begin the plumbing works, and permission is sought. So you can see the words, "To the Water Authority".

Plumbing installation for the purposes of -- so the address is written here, and further down you can see the words "which has been approved by the Water Authority". That means beforehand the permission has to be sought. It says here:

"... were engaged by the registered consumer ... to construct/install inside service which has been approved by the Water Authority".

In other words, before this form was submitted, the

Water Authority has already given approval, conceptually, that is, for inside service to be built inside the building.

A. Well, the Water Authority has already approved a set of public proposals. Those would have been submitted first, and there should be an approval reference, actually.

Q. Okay. So here, it's just to inform the Water Authority, "We are actually going to start the works now, workers are going to do the work now", right?

A. Right.

Q. Then if you go further down, "2. Purpose of submission": your permission is sought for us to construct the inside service at the above premises.

So, for part I, that is just before works commence, you informed the Water Authority; correct?

A. Yes.

Q. For the applicable legislation, that's the Waterworks Regulations, Regulation 5: C2/1157. There's a Regulation 5:

"Where permission is required under the Ordinance to construct, install, alter or remove an inside service, application for such permission shall be made to the Water Authority in such form as may be specified and the application shall be accompanied by such plans,

specifications and other information as the Water Authority may require."

So this form is the application for permission; correct? That's Regulation 5; correct?

A. Yes.

Q. Because if you look at the most updated form, 46, it does say in the title it is under Regulation 5. The old form doesn't say so, but it is under Regulation 5. So it's basically a commencement application; right?

A. Yes.

Q. After the works are commenced, if you approach this commencement application, part IV, that is you turn a few pages to part IV, page 37624, that's after the works are completed -- do you see that? To the Water Authority: whole of plumbing or part of plumbing covered by this form have been completed when your inspection approval is requested.

So this is to be submitted to the Water Authority after the works are done; right?

A. Yes.

Q. So this is to require the Water Authority to inspect the works?

A. Yes, correct.

Q. Why do you have to ask the Water Authority to do the inspection? Because if you look at the Waterworks

Regulations -- C2/1157 -- you will see Regulation 6 -- after Regulation 5 is Regulation 6 -- 5 is part I of the application form 46. Regulation 6:

"A person who constructs or installs a fire service or inside service shall apply to the Water Authority in such form as may be specified ..."

So the wordings are exactly the same as in part IV. That is, after the works are done, you have to apply to the Water Authority, inviting them to come and inspect the works done, and also (b) says in connection to the main, that is to connect the inside service to the main. So that's the flow.

Form 46 is pre-commencement application, and then after work is done, inform them the work has been done and then ask them to inspect, and then they should connect the main. That's the flow?

A. Yes, correct.

Q. So that's the Waterworks Regulations 5 and 6. And of course, if the Water Authority is satisfied after inspection, then there will be connection to the main. So you ask them to come to inspect, they inspect, and you ask them to connect, then they connect, if they are satisfied. So that's the purpose of form 46; correct?

A. Yes.

Q. There's another form, 132. Go to 37630, so you go

forward. This is not a form under the Waterworks Ordinance. This form is under the Buildings Ordinance. "Application For Certificate Regarding Water Supply Availability/Connection". It's under "Building", and then standard for drainage work, blah, blah, blah.

What you see, "Availability of Water Supply", it states here whether it is potable water or flushing water, and then again the address and so on.

Then II, "Connection of Water Supply", and then it says:

"I serve this notice on the period of availability of site under safe condition for connection works ...

I confirm that the pipes and fittings and pipes installed or used in the captioned project are in full compliance with the relevant provisions in the Waterworks Regulations."

In other words, I confirm the fittings and the pipes are in full compliance with the standards and requirements for waterworks. The person to sign is the authorised person. For a public housing estate, the authorised person is the chief architect; correct?

A. Well, we are exempted from the Buildings Ordinance. The authorised person is the co-ordinator. In public housing it's the chief architect, the chief architect is in the role of co-ordinator.

Q. So the person who signs this form for the Water Authority would be the chief architect. He is playing the role equivalent to an authorised person?

A. Well, generally, he can do so under delegation. That is, he can delegate colleagues under him to sign the form, on behalf of the chief architect.

Q. Okay, understood.

Now, the purpose of submitting application is to secure a certificate. This is already the title, "Application for certificate regarding water supply availability".

So after you submit the application, you get in return 1005; correct? So what you get in return is 1005. Page 37638. Do you see it? That is "Certificate regarding water supply connection". This is under the building regulations. So we were looking at form 132, that is the standard form under building regulation is completed and submitted to the Water Authority, and then the Water Authority, in accordance with regulation 25 of the building regulations, then issued this certificate to the Housing Authority.

Well, the content does not matter. It's about the various types of forms involving buildings in Hong Kong. There are so many forms; this is one of them.

My question is, having looked at all this, for

form 132 there is a column, there's an authorised person, that is the chief architect of the Housing Authority or someone he delegates will sign this form. That is for water pipes that are in full compliance with the waterworks requirements. We already looked at the declaration earlier. The waterworks requirements and standards would include complying with British Standards. British EN standards require that soldering materials must be lead-free; do you remember?

So my question is: you submit this application to the Water Authority, the person who signs it, on what facts or basis does he know that the water pipes are in compliance with British Standards to cover the soldering materials? Because it says here it is in full compliance with the waterworks standards, so that must include the standards for soldering materials. So on what basis does the person who signs this form confirm that the pipes are in compliance with these standards?

A. Well, perhaps -- there are several parts to this question. First, in the contract specification, we would have stated that lead-free category solder must be used, so that's already in the specification clause. Then, when it comes to the commencement of works or the carrying out of works, at that approval stage, this morning we saw some documents, there was submission for

approval, the contractor submitted a form to say that the materials they used are of a lead-free category.

Q. But as the PLU1, they don't have to seek your approval.

A. Yes, because form WWO 46 does not require for the materials to be annexed to the form. But we could say as a general practice the contractors would actually submit the materials for approval by our colleagues, and upon approval the materials comply with the specifications.

During construction, as we mentioned before, we did not know or we lacked the awareness that leaded solders were used on site.

So, in the whole inspection process, this item was not listed as a high-risk material item for checking. So that's why, at this stage, colleagues would not know that some soldering materials could have contained lead.

So, after the incident, in early July, on some sites they would need to take samples for inspection, and then we expanded the scope of water testing to public housing estates completed in 2013 to 2014, and then we talked to the main contractors about the water testing scheme, plan.

At that time, they gave us the impression as if they were not sure if they were also caught in this, because all along everybody believed that if these materials

were used on site, naturally they would be lead-free. No one knew for sure whether there would be a problem with a particular site in the charge of a contractor. So there was this question of a lack of awareness at the time.

And it is rather common in the industry, because all along, in the industry, there is not a specific check for lead content in water or to check for lead in soldering materials. So, for all of us, we lacked the awareness; we did not realise that there were substandard soldering materials used on site.

If in the contract we did not state that there should be the use of lead-free category solder or in approving samples we did not make this requirement, we didn't have to check if soldering materials contained lead, then -- well, how do we comply? Then that would be a big question mark.

But if our colleagues want to specify the specifications, they are part of the design team, and they include this requirement in the contract, and the sample they approve is lead-free, so they have reasons to believe that since this list of materials used by the industry should be the right materials to be used, and so when he puts his signature there, that just shows that he has a certain degree of trust in the operations

of the trade all along.

Q. So, in other words, the form was signed not because an inspection was made; it was based on the fact that there are contractual requirements and they trusted that the material was compliant. And we are talking of PLU1 materials, but as a general practice, samples would be given.

As such, the CAs and their subordinates trusted that the materials are compliant. If a sample was given and it was up to standard, then the CAs would trust that the materials are all right.

A. For the subsequent tests and test parameters, this material was not included as well. If they did not pass those tests, an alert would be sent. And our department believes that what gets measured gets done. If a test is in place, then contractors would seek to comply with the standards. So, under the alert systems, our colleagues were never alerted, and as such, just like as with normal trade practice, we would go with the common practice adopted by the trade in Hong Kong.

Q. So, for the AP of private developments, they would not check the lead content in solder joints; right?

A. In early July, we commissioned some laboratories to check the soldering material for lead, and those tests were not accredited. So, in general, the trade had no

awareness on lead in soldering material; they were completely not ready.

Q. You mentioned a lot of test parameters, and that lead is included. Well, there are eight parameters. Let's talk about those eight parameters.

Those parameters were stated in a WSD circular. The circular was published in 2012, on what they would test. Let's look at that circular, on page 37560. Page 1 is on 37558. Page 37558 was a circular letter issued by WSD. The distribution was to all licensed plumbers and all authorised persons. It was issued on 10 August 2012. It says:

"I attach a copy of the guidelines on cleansing and disinfection of fresh water inside service ..."

And this is the set of guidelines.

The second page lists out all the recipients of this letter, including the Housing Department, Buildings Department and a lot of other bodies.

Now let's look at page 37560, "Guidelines on Cleansing and disinfection of Fresh Water Inside Service". I want to let you know the legal basis of the cleansing operation and the eight parameters to be tested.

Now let's look at page 37560. At the beginning, it says:

"Under the provision of Waterworks Regulation 7, a consumer or the agent" -- well, the agent refers to the user of the water pipes -- it says they "shall be responsible for keeping an inside service clean."

So, in other words, the applicant for water service, or the user, is obliged to keep the inside service clean.

We read a booklet yesterday and it says the water supply system begins from the reservoir and it passes through plants and so on, and it would reach an area called lot boundary, and beyond the lot boundary, that would be the inside service area.

So what this is saying is that according to Waterworks Regulation 7, if you want to apply for water service, the user site system or the lot boundary system should be maintained and cleaned by the user. So we don't have to look at Regulation 7 itself.

Then the document says:

"To this end, the consumer or agent concerned shall clean and disinfect a newly installed fresh water inside service before it is given a supply from the Water Supplies Department."

So, in other words, any user, before they are allowed to install an inside service, they must clean and disinfect the newly installed fresh water inside

service. Then it says:

"Besides, after repair or maintenance of fresh water inside service, if there is a possibility that extraneous materials can get into the inside service, the inside service shall be cleaned and disinfected before water supply is resumed."

So, after the inside service is repaired or maintained, if there's a possibility that extraneous materials can get into the inside service, it must be cleaned and disinfected thoroughly before water supply is resumed. So, before water supply is resumed, the service must be disinfected again.

Then there's a section on newly installed fresh water inside service. A series of procedures is listed on how disinfection can be done, and in subparagraph (2), the quantities of chloride to be used is specified, the disinfection period is also specified, and it continues on to page 37561. These are very technical issues on how disinfection can be carried out.

Let's move on, up until page 37565. You can see the eight test parameters. It says:

"The test parameters shall include but not limited to the following": "Turbidity" -- in other words, whether the water is clear -- and colour, pH, free residual chlorine, conductivity -- I'm not sure whether

this refers to heat or electricity -- and total coliforms, E.coli, heterotrophic plate count. This is called heterotrophic plate count.

So we have eight test parameters that must be tested. After testing for all eight parameters before the water connection is made, if the Water Supplies Department is satisfied -- well, I have a question here. Was the purpose of testing for these eight parameters to safeguard the hygiene of their own system, or was the objective to test whether the system complies with the British Standards? So they would test for parasites, they would test for other bacteria or conductivity, the free residual chlorine, turbidity, colour, and so on.

So these are common parameters to decide whether the water is clean. It has nothing to do with whether the system complies to technical or chemical standards.

A. The test parameters should refer -- these parameters were tested due to health grounds. But at first glance, I believe these parameters were tested to safeguard health and hygiene. Whether the intent is to protect the inside service or to protect the water against contamination is another issue.

Q. The reason for mentioning these eight parameters is that some arguments raised by the HA were based on these eight test parameters, and the HA used these parameters

as an argument, and it says lead is not included in these test parameters, and as such the HA would not test for lead content.

So that's more or less what the HA said. Whether the WSD did the tests to safeguard hygiene or health, the idea is not to pollute the inside service, but our focus is something else. Our focus is whether there are any legal or contractual stipulations on lead content and whether there's excessive lead. We are talking about two entirely different things. The objectives are different. The objective of the WSD and what the HA has to do are two different things.

A. Generally speaking, when we look at the big picture, if the test is done for hygiene and health, we have reason to believe that these tests can help satisfy basic requirements and water quality, to bring us up to scratch with international standards. So this is a different concept. I believe that a lot of trade practitioners would have the same impression. This is apparently related to health, when you look at these parameters, so the goal is to ensure drinking water, to ensure the hygiene standard, and, after conducting the tests on these eight parameters, the major health risk should have been addressed.

This is the impression of trade practitioners,

landlords and experts, or shall we say this is a common expectation.

Q. Now, generally speaking -- just now, we saw some forms, 46, 132 -- that's to tell the Water Authority, "I've done the works, so please connect me to your mains system." 132 is also to apply for the certificate.

So, in the whole process, there's someone who applies to the Water Authority for something. From what you know, does the Water Authority actually send someone to site to check anything? What is the actual practice?

A. Well, the actual practice, we believe the Water Authority must have inspectors to go and check. Maybe they will liaise with a licensed plumber to carry out this task. After all, when it comes to water connection, there must be Water Authority colleagues who come on site. Our understanding is, usually, the WSD staff will do a checking.

Q. Well, yes, at the point of water connection, there would be WSD colleagues there, but my question is: is there anyone in the WSD who plays the role of actually checking the inside service to see whether it really does comply with the requirements that you state?

A. Well, there's a lot of checking to be done but we have reason to believe that someone would do it.

Q. So there should be someone in the WSD who looks at the

different locations, sees whether there is a leakage or whatever?

CHAIRMAN: I understand someone would go and check the water meters?

A. Yes, they will see whether the locations of the water meters are suitable, meters readings could be taken and so on. As to how many will inspect what, I don't have the information at hand, but we have reason to believe that the WSD should send staff to carry out certain inspection.

MR SHIEH: (Chinese spoken).

CHAIRMAN: Can I ask you this: when you ask the Water Supplies Department to connect water for you, you have to tell the WSD that all the fittings and pipes are in compliance with the Waterworks Ordinance and its requirements; so you've said it's based on trust? Right? So there is no actual testing.

And for these so-called eight parameters, they won't let you believe you have complied with the British Standards alone. In other words, after the form is submitted, it's based on trust that they will supply you with water. So those are two totally different issues, actually.

Do you get my point?

MR SHIEH: So, when you fill in a form, not you of course,

but Housing colleagues who fill in the form and sign the name, that is 37635 -- that is "I confirm that the pipes installed are in full compliance", 37630. Do you see that?

"I confirm that the pipes and fittings ... used in the captioned project are in full compliance ..."

Do you see this?

So, when the Housing Authority colleagues signs this form and then submits it to the Water Authority, the test for the eight parameters has not yet been done; right? So, when you submit this form to the WSD, the testing has not been done yet.

So the question is, when you submit the form -- the person who signs the form, in his mind he wouldn't have thought, "The WSD has already passed our test for the eight parameters, so that supports my belief", no, he won't think that.

A. 37560. Line 2:

"To this end, the consumer or agent concerned shall clean and disinfect a newly installed fresh water inside service before it is given a supply from the Water Supplies Department."

So we believe the test would have been done first. 37560.

Q. So you believe that in actual operation the test would

have been performed first, before 37630 is signed?

A. Yes, if you read these guidelines, that should be the case. Then you refer to the other form. In 37630, there is form 132, in the project, the colleagues, the team, if they approve the materials, in line with form 46, that is WWO 46, there is a list of different materials. So he should have certified that all the materials are in compliance with the Waterworks Ordinance.

You mentioned soldering materials. They do not form part of the annex to WWO 46. But in general -- it's just that my colleagues would also have approved it, and so on. So, if I read this line, my interpretation is that for all the materials already approved, they are in compliance with the Waterworks Ordinance. Of course, the installation is also the same case, and of course it also covers soldering materials not containing lead, but it will just single out material, because the materials covered here are of many different kinds, over 30 kinds.

Q. Are you referring to 37630?

A. Yes, 37630. That's to apply:

"I confirm the pipes and fittings and pipes installed or used in [this] project are in full compliance with the ... Waterworks Regulations."

So, in other words, what I am saying is it includes

plumbing and fittings of many different kinds. But the fittings and pipes are all in full compliance with the Waterworks Regulations.

Q. It's not like what's mentioned in form 46. That's not how it's put here.

A. Form 46 is something totally different. But in general, because they sign forms all at the same time, so there's reason to believe the several things are all related.

Q. Well, yes, I can see it, in the mind this is all lumped together, because many forms don't have numbers.

A. Because this is near the stage of completion and at that stage it is important to make sure that the pipes are laid properly and then they will inspect for acceptance and then they apply for a water connection. Of course they have to do tests too. So probably all these tasks are carried out in parallel at that stage.

Q. 46 is about applying for water connection under the Waterworks Ordinance. 132 is under the Buildings Ordinance. It's to apply for the certificate.

A. So if you just look at it, these are two separate issues, because they different pieces of legislation and what the applicant gets in return is also different. This is the stage where the works are near completion, so this whole series of operations are related. That's what I meant.

Q. You refer to the annex to form 46. Let's go back to that. Form 46 is to inform the Water Authority: we are going to commence the plumbing works or we have completed the plumbing works. 37621. There is an annex, 37627.

A. Yes.

Q. 37627. Yes, 37627, you see here, this is the annex to form 46. Point 7:

"All pipes intended to be used ... are required to be reported in the Annex."

In other words, for all the pipes used, they must be listed in the annex.

For fittings, you only need to put down the drop test, stop valves, gate valves, ball valves and combination fittings et cetera. Then, further down, there's a list of fittings that comply with British Standards or the relevant British Standards.

Now, for form 46, when the Housing is to submit this form, it is required to jot down the fittings, and so on. There's no requirement to declare details about the soldering materials used. So what is the point? That leads to my question. So that means that the Housing Department does not attach importance to this; is that correct? Or, rather, the WSD doesn't attach importance to it. What does the WSD require to you report and what

is the duty of Housing?

A. Well, if it's declaration, then it must be about the more important materials. Usually, it's about quality or, in future, the impact on future quality. That's my understanding. That is, basically, it's to look at the end product. If it's an output-based approach, that is: what standards must the output achieve? So that's my understanding, as I read this.

Then, when colleagues approve samples, what do they look at? Under 7, there's a small item 2: categories of compliance, fittings are as follows. So there's categories A, B, C and D. So, when colleagues approve samples, they must make sure that the materials are in one of these categories, and only then would they approve the materials.

So they would believe that for materials used on site, they meet the requirements.

Q. My question is that there is this form from WSD, and when you apply for water connection, you have to provide certain details, for example, the brands, models of the parts used. And after receiving the information, we would check this information and then provide the water connection.

But that said, the WSD requirements would not affect the HA's legal responsibilities. This is form 46. But

for form 132, you notify WSD proactively that you comply with all necessary rules?

A. Well, form 132 is apparently not one of the clauses under the Waterworks Ordinance.

Q. What I was saying is that you cannot use form 46 of the WWO to explain why the Housing Authority signed this document in 132.

A. I think you cannot separate both completely. At the completion stage of the works, a lot of different parts are correlated, and in form 46 the fittings are proved to be compliant and the eight parameters would be tested in the water samples before a water connection is given. And with the water connection, the occupation permit is granted. A Fire Services permit is also needed before an occupation permit is given. So these are all correlated.

From the client's perspective, this is a series of procedures to ensure that water quality is up to scratch.

Q. I have a question on wording. On page 37638, is that the certificate you are referring to?

A. Yes.

Q. The certificate regarding Water Supplies Department, people talk about the so-called "water certificate", is that what they are referring to?

A. Yes.

Q. We talked about some forms before. What you were saying is that, in determining whether the soldering material used for water connections in the developments, although the Housing Authority did not take measurements or do tests, and they did not perform any spot checks during the works stage, and they did not mandate contractors to submit the soldering material to be used for checking under PLU2, some contractors chose to submit the soldering material to the HA for checking, and the contractors under contract would be obliged to do so, and the eight parameters stipulated by WSD do not include lead. Thus, you believed that the measures taken already ensured that the water connection system in the new buildings are safe. So you rely on a series of factors; is that correct?

A. Actually, we did not test for a lot of substances or things. There are a number of parameters but we had no idea what needed to be tested, so we had reason to believe that the seven, eight or 12 substance to be tested are the most important substances and they are the most crucial parameters in Hong Kong.

Q. If the WSD told you that they had no idea that you would interpret those eight parameters this way, what would you do?

A. First of all, I am not an expert on waterworks or water hygiene, so I believe that if the experts told us to do certain tests, then we would have a certain level of quality assurance with regards to drinking water.

Q. Can I put it this way: to some extent, you trust the eight parameters stipulated by the WSD?

A. Yes, we do.

Q. For the quality of water examination, for the quality of drinking water scheme, seven parameters are listed for tests. Now let's go back through the scheme. Seven parameters are listed, as I understand. We looked at the eight parameters set by the WSD, and out of those seven parameters, one of the parameters is unique and are not included in the eight parameters. If I remember correctly, it should be iron.

A. Yes, it's iron.

Q. So, on different occasions, for different purposes, the WSD's parameters would be different. They would be different to cater for different situations?

A. Yes, but I understand that the goal is to ensure hygiene in the drinking water.

CHAIRMAN: Can you repeat that, please.

A. Regardless of their considerations, the seven or eight parameters drawn up by the WSD serve to ensure drinking water, hygiene, and it's to safeguard public health. So

these would be the most important parameters.

CHAIRMAN: I don't quite agree with you. The reason is simple. You can take in a lot of iron and it won't be a problem, but even if you take in a small amount of lead, it might be harmful. Do you understand what I mean?

A. I trust our experts and I believe what they do has a reason. I don't know the WHO standards, but I trust that the experts, whether waterworks experts or hygiene or health experts -- and since the tests are done by trade professionals, the basic requirements can be met on drinking water quality, and health can also be safeguarded.

MR SHIEH: I want to look into one or two more issues with you, but since we still have five minutes, I would like to go into a different issue.

On request by the HA, the contractors came up with different reports, and different explanations were given, and they cited the different reasons for the issues. So I would like to study the possibilities. There are different explanations given on why lead is present in drinking water. I would like to look into the testing methods and how they could have been prevented.

First of all, China State Construction. Let's look

at B5.7 first. Page 11821. This is an investigation report for Kai Ching Estate. Can you see that?

In July 2015, China State Construction was notified by the HA that there is lead in the water.

Some background information was given.

Let's look at page 11825. It's a letter addressed to you on the provision of further information. Have you seen this letter?

A. Yes.

Q. And there's additional information, page 11827 and 11828, on the internal systems in place for monitoring.

Now let's look at 11829. 11829 is on the contractual structure. You can see the words "1st Tier subcontracting", and they said:

"The Plumbing works were sublet to the Subcontractor Ho Biu Kee ..."

They said:

"The Subcontractor was required under the Subcontract to supply, deliver, install and complete the whole of the Plumbing works, including providing the soldering materials for the 'copper and copper alloy capillary fittings' ..."

So the subcontract for Ho Biu Kee includes the entire plumbing works, including soldering material.

Let's look at 11830, in the middle of the page.

Well, let's look at the top. It says:

"As a statutory requirement, [Ho Biu Kee] was required to engage a licensed plumber to fully monitor and be responsible and liable for the Plumbing works including ..."

And so on and so forth.

Now let's look at something else. Let's talk about the concept of licensed plumber. The relevant law can be found in 1149; C2/1149. This is the Waterworks Ordinance, section 15. It says:

"(1) Subject to subsection (2), no fire service or inside service shall be constructed, installed, maintained, altered, repaired or removed by a person other than a licensed plumber or a public officer authorised by the Water Authority."

Apart from those authorised under subsection (2), only a licensed plumber or a public officer authorised by the Water Authority is allowed to construct, install or maintain inside service. So this is what a licensed plumber means.

Now, let me just sidetrack a little bit. I will ask about licensed plumbers later on, but I want to put this question to you first. So, in other words, the work must be done by a licensed plumber; it cannot be delegated?

A. I have looked into the issue with the WSD. The licensed plumber can supervise other workers and it's still acceptable.

Q. Whether it's acceptable depends on the wording: "constructed, installed, maintained, altered", and so on. So no one else can do the work apart from the licensed plumber himself; it's not acceptable that the plumber authorises someone to do it?

A. That's what the wording says, but as the WSD, as -- the Water Authority would better answer this question.

Q. I'm just trying to give you a preview of what I am going to ask.

Now let's come back to 11830, B5.7. According to the China State Construction, in the middle of the page on 11830, a little bit further down it says:

"... Mr Ho [a director of Ho Biu Kee] emphasised that HBK was fully aware of the requirements ..."

That lead-free solder must be used.

Then says:

"... [Ho Biu Kee] did not sublet any of the Plumbing works to another subcontractor but instead employed Mr Chan Siu Hau ... to supervise the Plumbing works ..."

And they commissioned two other supervisors, namely Mr Wong and Mr Fan. So China State Construction sublet the construction to Ho Biu Kee.

When you look at 11832, the persons responsible were listed. In the middle of page 11832, you see the words, "Soldering materials, copper pipes & fittings, valves". In the middle it says:

"Mr Ho said that ..."

In other words, the owner of Ho Biu Kee. He said:

"... after HBK's staff made orders for soldering materials, HBK's purchasing department should purchase them according to these orders. However, since the soldering materials were a miscellaneous consumable material and therefore BK did not make any formal purchase contract."

Go to 11833. At the top:

"Mr Ho stated that they did not keep any records ..."

For the soldering materials.

They did not keep any such records, although he was approached by HA's project team. And Ho Biu Kee did not keep the records, but China State Construction knew that it was approved by the HA's project team.

On the bottom, under "Material delivery notes":

"The ... delivery note is usually provided by the subcontractor(s) ... for ... payment purpose ... [but] Since soldering materials were not eligible for ... payment ... HBK did not provide any delivery record ..."

But CSCE kept some delivery notes.

At 11834, under the "Record of checking material", for form 6210, there is no need to check soldering materials. Therefore, there's no record of delivery of soldering materials to the site. Rather, there's no record on checking the soldering materials.

Now, later on, there's a whole series of other issues I want to talk to you about. You see, China State conducted an investigation. They thought that's the reason of the cause of the incident. But it's already 4.30, so maybe you can come back tomorrow.

CHAIRMAN: Mr Shieh made two requests earlier. For one, you could comply with that. Let's see how much you can manage and let us know tomorrow.

A. Yes, I will ask my colleagues to go and dig for information. But I don't understand the procedure fully. Do I have to make a statement again for submission?

CHAIRMAN: No, no, no. There's no need. You just get the information and you jot it down and tomorrow when Mr Shieh asks you, you just need the information verbally. There's no need to make a statement.

So tomorrow we will re-convene at 10.00.

(4.37 pm)

(The hearing adjourned until 10.00 am the following day)

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