

LCQ11: Engagement of land surveying personnel

Following is a question by the Hon Tony Tse and a written reply by the Secretary for Development, Mr Michael Wong, in the Legislative Council today (June 5):

Question:

Some works departments have issued guidelines specifying that contractors must engage, according to a project's scale and needs, a certain number of land surveyors and land surveying technicians with relevant professional qualifications and experience. However, such requirements do not apply to engineering consultants who are responsible for supervising, on behalf of the Government, contractors' carrying out the works. Some members of the surveying sector have pointed out that an engineering consultant's failure to engage a sufficient number of surveying personnel will render a project more prone to flaws (e.g. errors in setting out exact positions), thus necessitating last-minute changes to the design and even resulting in problems such as settlement, delay of works and cost overruns. Moreover, currently quite a number of engineering consultants have not yet employed the most advanced surveying equipment, technology and software for conducting surveying work, and they often carry out inspections only occasionally during the construction process, making it difficult for the Government to identify construction issues early and demand rectifications by the contractors. In this connection, will the Government inform this Council:

(1) regarding the relevant advance engineering infrastructure works at the Kwu Tung North and Fanling North New Development Areas, of the details of the Government's requirements in respect of the engagement of land surveying personnel by engineering consultants (set out, by works contract, the number of such personnel, the qualification and experience required of them, as well as whether such personnel are required to be resident on site);

(2) whether it will formulate guidelines specifying the requirements concerning the engagement of land surveying personnel by engineering consultants, e.g. that engineering consultants must (i) engage, for every public works contract, at least one land surveyor who possesses qualifications of being a member of the Hong Kong Institute of Surveyors in the Land Surveying Division or equivalent, and (ii) engage, according to the project's scale, a corresponding number of land surveying technicians with relevant qualifications and experience; and

(3) whether it will require engineering consultants to (i) employ the most advanced equipment, technology and software for conducting surveying work, and (ii) monitor, continuously during each stage of construction until completion, if deviations from the design and settlements have occurred in the works carried out?

Reply:

President,

The Government has been implementing public works in a moderate and orderly manner to enhance people's quality of living, to promote Hong Kong's economic development and to sustain Hong Kong's long term competitiveness. We accord high priority to the site supervision and construction quality of public works. The Development Bureau and works departments will ensure proper supervision of public works by specifying in the relevant contracts appropriate supervision requirements for different types of works procedures, and providing necessary resident site staff (RSS) establishment. From time to time, we also introduce innovative technologies to reinforce project management and improve construction efficiency, including Building Information Modelling and new technologies for individual types of works. We are also promoting the digitisation of the works supervision system.

My consolidated reply to the Hon Tony Tse's question is as follows:

(1) The construction of infrastructure works for the first phase development of Kwu Tung North and Fanling North New Development Areas, including advance and first stage site formation and engineering infrastructure works, will be implemented under seven construction contracts. The consultant responsible for managing the project will need to employ RSS to supervise the works under the contracts, which include one senior land surveyor, three land surveyors, 10 senior survey officers (engineering) and 13 survey officers (engineering). The senior land surveyor/land surveyors will supervise the relevant land surveying work, while the senior survey officers (engineering)/survey officers (engineering) will assist the land surveyors for carrying out the related day-to-day duties. The qualification and experience requirements for the respective positions of land surveying RSS are tabulated below:

Position	Qualification and experience requirements
Senior Land Surveyor	Member of the Hong Kong Institute of Surveyors in Land Surveying Division or equivalent with at least five years relevant post qualification experience.
Land Surveyor	Member of the Hong Kong Institute of Surveyors in Land Surveying Division or equivalent with relevant experience.

Senior Survey Officer (Engineering)	Diploma or Higher Certificate from the Construction Industry Council in Hong Kong/ Hong Kong Institute of Construction/ Hong Kong Institute of Vocational Education/ technical institute/ technical college/ a Hong Kong polytechnic university/ polytechnic or equivalent in an appropriate discipline; and at least seven years' relevant post qualification experience; or at least seven years' relevant experience as Resident Survey Officer (Engineering) or equivalent in public works projects.
Survey Officer (Engineering)	Diploma or Higher Certificate from the Construction Industry Council in Hong Kong/ Hong Kong Institute of Construction/ Hong Kong Institute of Vocational Education/ technical institute/ technical college/ a Hong Kong polytechnic university/ polytechnic or equivalent in an appropriate discipline.

(2) The Development Bureau has clear guidelines requiring consultants to propose appropriate RSS establishment for each works contract with regard to its nature, scope, complexity, etc. before the commencement of the works. In addition to land surveying, the proposed RSS establishment will also include staff of other professional fields such as civil engineering, geotechnical engineering, electrical and mechanical engineering, architecture, landscape architecture and quantity surveying. The proposed RSS establishment will be subject to the approval of the relevant works department. Take the construction of infrastructure works for the first phase development of Kwu Tung North and Fanling North New Development Areas as an example. Its RSS establishment was proposed and approved with regard to the actual need of the project as a whole. In view of varying characteristics of different projects, we consider that the afore-mentioned mechanism will provide the project team with flexibility in formulating a RSS establishment to suit specific project needs.

(3) The Development Bureau encourages works departments to adopt suitable new technologies in public works projects. The survey divisions of works departments would keep abreast of the development of land surveying technologies in the market, and will conduct reviews and update the relevant technical requirements if considered necessary. In general, works departments will consult their respective survey division in determining the technical and monitoring requirements for land surveying work in order to ensure that appropriate equipment, techniques and software are used to meet specific project needs. The consultant is also required to formulate an appropriate monitoring regime for continuous checking of any deviation from design and occurrence of settlement, displacement, etc. at every stage of construction, and taking appropriate follow-up actions when specified limits are exceeded.

Managing Director of Urban Renewal Authority reappointed

The Government announced today (June 5) that the Chief Executive has reappointed Mr Wai Chi-sing as Managing Director of the Urban Renewal Authority (URA) for another term of three years with effect from June 15, 2019.

The Secretary for Development, Mr Michael Wong, welcomed Mr Wai's reappointment, and expressed his sincere gratitude to Mr Wai for his dedicated service in leading the URA in taking forward various urban renewal efforts over the past three years.

"With exceptional leadership and a great wealth of professional expertise and experience, Mr Wai has been leading the URA management in implementing large scale urban redevelopment plans and undertaking various strategic studies to explore new directions and models to facilitate sustainable urban renewal. We look forward to continuing our close working relationship with him to advance the cause of urban renewal," he said.

An engineer by profession, Mr Wai was appointed Managing Director of the URA by the Chief Executive in 2016. The Managing Director is the administrative head of the URA and Deputy Chairman of the URA Board. Mr Wai had served in the civil service for 35 years and held the position of Permanent Secretary for Development (Works) before his retirement in April 2015.

LCQ15: Privacy issues involved in use of CCTV systems with automated facial recognition function

Following is a question by the Hon Charles Mok and a written reply by the Secretary for Constitutional and Mainland Affairs, Mr Patrick Nip, in the Legislative Council today (June 5):

Question:

At present, quite a number of government departments have installed closed-circuit television (CCTV) cameras at areas under their purview or

public places for security and monitoring purposes. With the advancement in technology, the governments and commercial organisations in some other regions make use of high resolution CCTV systems with recording and automated facial recognition (AFR) functions (AFR-CCTV systems) to get to know the identity of persons in a footage by making comparisons between the footage and databases. Such a practice has given rise to controversies. In view of this, the governments of some overseas cities have recently banned the use of facial recognition technology by government departments (including law enforcement agencies), with a view to preventing the abusive use of such technology and excessive monitoring by government departments, thereby protecting the personal privacy of the public. In this connection, will the Government inform this Council:

(1) of the respective numbers of (a) CCTV cameras installed in government venues and public places by the various government departments (including the Hong Kong Police Force (HKPF) and other law enforcement agencies), and (b) body worn video cameras provided by such departments to their public officers, in each of the past three years, as well as (i) the uses of such devices and (ii) for how long they have been installed/provided (set out in a table);

(2) whether the various government departments (including HKPF and other law enforcement agencies) procured or developed AFR-CCTV systems or conducted trials of applying AFR technology in CCTV systems, in each of the past three years; if so, of the details and justifications for that;

(3) whether it will, in order to protect the public's privacy, ban government departments (including HKPF and other law enforcement agencies) from using systems and devices with AFR function in public places for collection of personal identifiable information and automatic comparison with databases; if so, of the details; if not, the reasons for that; and

(4) whether it will enact legislation to regulate the use of AFR-CCTV systems by commercial organisations, so as to prevent excessive collection of sensitive personal data; if so, of the details; if not, the reasons for that?

Reply:

President:

After consulting the relevant bureaux and the Office of the Privacy Commissioner for Personal Data, our consolidated reply is as follows:

(1) and (2) At present, a number of government departments have installed closed-circuit television (CCTV) cameras in areas under their purview or in public places, such as transport infrastructure and public rental housing estates, for various purposes such as daily security, anti-theft, protection of public safety and crowd management, etc. These departments mainly include:

The Hong Kong Police Force (HKPF) has installed around 250 CCTV systems along the land boundary and Hong Kong waters for purposes such as boundary

security, anti-illegal immigration and anti-smuggling. The HKPF has also set up temporary CCTV cameras at strategic locations (including places where large crowds may appear) to assess pedestrian flow and movement during festivals and large-scale public events, so as to implement corresponding crowd management measures. Such temporary systems are not equipped with recording function and will be removed after the events. The Immigration Department and the Customs and Excise Department have installed 2,331 and 3,070 CCTV systems at control points respectively, to monitor crowd and vehicle movements at immigration control points and the operation of e-Channels as well as for general security purpose. The Housing Department has installed around 24,000 CCTV cameras at venues such as public rental housing estates and shopping arcades for security and anti-theft purposes. To monitor real-time traffic conditions, the Transport Department has set up around 770 CCTV systems on roads with busy traffic and within control areas. Operators at Area Traffic Control Centres may, through the CCTV data and having regard to real time traffic conditions, implement traffic management schemes. The Leisure and Cultural Services Department has set up 8,650 CCTV systems at its venues for maintaining public safety, assisting in crowd control and monitoring operation of the venues.

The above government departments deploying CCTV systems all have internal guidelines which state that only authorised officers are allowed to use the systems. The guidelines also ensure that the use of CCTV systems, the collection of recorded images and the handling of data comply with the Personal Data (Privacy) Ordinance (Cap 486) (PDP0).

With respect to body worn video cameras provided by government departments to public officers, the HKPF has issued over 2,200 body worn video cameras to their officers since 2013, and the Correctional Services Department has issued around 700 body worn video cameras to their officers since 2016, mainly for use in investigation, evidence-gathering, prosecution or complaint-handling. According to information provided by government departments, no government department has procured or developed AFR-CCTV systems or applied AFR technology in CCTV systems.

(3) and (4) Biometric data (such as facial features) is data directly related to an individual. When the biometric data is linked with personal data in another database, or after data consolidation and analysis, a particular individual can be directly or indirectly identified. Therefore, biometric data (such as data of facial features captured by facial recognition technology) is also regarded as personal data under the PDP0 and regulated by the provisions of the Ordinance.

The PDP0 is applicable to both the public and private sectors. All public and private organisations, including government departments, are required to comply with the PDP0 and its Data Protection Principles (DPPs) when collecting and using personal data. Before collecting biometric data, the public or private organisation must ensure there is a specific purpose and an actual need for it. Some exemptions for personal data held for the purposes of the prevention or detection of crime are provided for under section 58 of the PDP0. In general, DPP4(1) stipulates that a data user must take all practicable steps to ensure that any personal data held by him/her

is protected against unauthorised or accidental access, processing, erasure, loss or use, having regard to the kind of data and the harm that could result from improper handling (as well as other factors).

To assist data users in complying with the requirements of the PDP0 with respect to the collection of biometric data, the Privacy Commissioner for Personal Data published the Guidance on Collection and Use of Biometric Data. It provides a number of measures and recommendations to minimise the risk with regard to biometric data collection, which include:

- Data users who intend to collect biometric data must first consider whether the collection is necessary;
- Data subjects should be provided with a free and informed choice to allow the collection of their biometric data, together with a detailed explanation about the impact of the collection of such data on personal data privacy;
- Strict controls on the access to, use and transfer of biometric data should be imposed. An individual's biometric data should not be used for any purposes other than the ones for which it was originally collected (including disclosure to a third party) unless explicit and voluntary consent has been obtained in advance;
- For biometric data which is no longer required for the purpose for which it is collected, regular and frequent purge should be carried out;
- Measures should be taken to guard against any risk of compromising and thieving of the biometric database and ensure that effective security measures are implemented as are reasonably practicable in the particular circumstances. For example, the biometric data should be encrypted while it is being stored or transmitted;
- Regular privacy compliance assessments and reviews should be conducted to ensure that the acts done and practices engaged are in compliance with the Ordinance. Proper training, guidance and supervision have to be given to the staff responsible for the collection and management of the biometric data; and
- If contractors are engaged in the handling of personal data, contractual or other means must be adopted to prevent personal data transferred to the contractor from being kept longer than necessary and from unauthorised or accidental access, processing, erasure, loss or use.

LCQ13: Shatin to Central Link and Kwun Tong Line

Following is a question by the Hon Wu Chi-wai and a written reply by the Secretary for Transport and Housing, Mr Frank Chan Fan, in the Legislative Council today (June 5):

Question:

The commissioning date of the Shatin to Central Link (SCL), now under construction, has been postponed due to, among others, works quality problem of the project. It has been reported that the MTR Corporation Limited (MTRCL) has planned for a partial commissioning of SCL by first opening up train services from Tai Wai Station to Diamond Hill Station, and providing limited train services plying between Diamond Hill Station and To Kwa Wan Station by non-stop trains. On the other hand, the Chief Executive has announced in the 2018 Policy Address that a "Government, Institution or Community" site with an area of about 11 000 square metres in Kwun Tong has been identified for redevelopment to construct a civil service college and other community facilities, and the Government is exploring with MTRCL the feasibility of widening the station platform and/or concourse of Kwun Tong Station, so as to divert the passenger flow from Kwun Tong Station. In this connection, will the Government inform this Council:

- (1) whether it knows the details of MTRCL's plan for partial commissioning of SCL;
- (2) whether it has assessed the impact of partial or full commissioning of SCL on the passenger throughput of the Kwun Tong Line and that of the various railway stations along the Line; if it has assessed, of the outcome;
- (3) as it has been reported that in order to divert excessive passenger flow from some railway stations along the Kwun Tong Line, MTRCL has been running, during the morning peak hours in recent years, empty trains from Tiu Keng Leng Station or Whampoa Station heading directly to Wong Tai Sin Station or Kowloon Tong Station to pick up passengers, whether it knows the details of such arrangement and the other measures currently in place to divert excessive passenger flow from some railway stations along the Kwun Tong Line; whether it knows the measures to be put in place by MTRCL to cope with an additional passenger throughput of the Kwun Tong Line to be generated by SCL upon its partial commissioning;
- (4) of the commissioning dates, based on the latest projection, of the Tai Wai to Hung Hom Section and the Hung Hom to Admiralty Section of SCL, as well as the various railway stations of these two Sections; and
- (5) of the new proposals of the Government and MTRCL to divert the passenger flow from Kwun Tong Station; as the Government indicated in reply to my question on 29 November 2017 that the Urban Renewal Authority had put forward a proposal to MTRCL the construction of a "podium" connecting the Kwun Tong Town Centre redevelopment project with Kwun Tong Station, with a view to providing additional circulation area for the Station, whether it knows the latest progress of the proposal?

Reply:

President,

My reply to the five parts of the Hon Wu Chi-wai's question is as

follow:

(1), (2) and (4) The Shatin to Central Link (SCL) is a strategic railway project connecting a number of existing railway lines. The "Tai Wai to Hung Hom Section" will connect the existing West Rail Line and Ma On Shan Line to form the "Tuen Ma Line"; and the "Hung Hom to Admiralty Section" will extend the existing East Rail Line from Hung Hom through the fourth cross harbour railway tunnel to Hong Kong Island (see Annex I). Tuen Ma Line will connect the East Rail Line at Tai Wai Station and Hung Hom Station, and connect Kwun Tong Line at Diamond Hill Station and Ho Man Tin Station. Furthermore, apart from connecting the East Rail Line with Kwun Tong Line at Kowloon Tong Station, its "Hung Hom to Admiralty Section" will connect the Island Line, Tsuen Wan Line and South Island Line at Admiralty Station (see Annex II). Tuen Ma Line and the East Rail Line that extends to Hong Kong Island will not only provide more alternative routes to passengers, but also divert the patronage from existing railway lines such as Kwun Tong Line and East Rail Line, which will help enhance the overall carrying capacity of the railway network.

Due to the concerns about the quality of works of Hung Hom Station Extension and the associated investigations since the end of May 2018, the target commissioning date of "Tai Wai to Hung Hom Section" and "Hung Hom to Admiralty Section" will need to be further reviewed in light of the final results of the proposed holistic assessment strategy for the Hung Hom Station Extension.

The MTR Corporation Limited (MTRCL) is studying the feasibility and different options for partial commissioning of the East West Corridor of the SCL at the request of the Government. These options should take into account the technical feasibility of opening part of the railway section, the capacity of the railway system, the modification to the signalling system, the compatibility of the road transport, etc. We have no decision made at this moment. In light of the practical feasibility and railway operation safety as first priority, the Government will continue to explore it with MTRCL proactively; and will make decision and public announcement in due course.

(3) The Government and the MTRCL have been closely monitoring the carrying capacity and patronage of various stations and train services along the Kwun Tong Line. The Government has requested the MTRCL to adopt various measures to ease the passenger flow during peak hours. The MTRCL has been implementing various measures, including arranging short-haul trips to run between busy stations as far as possible during peak hours (for instance during the morning peak hours, some of the trains running along the Kwun Tong Line will not carry passengers after dropping-off at terminal station and go direct to Kowloon Tong Station, Wong Tai Sin Station, Prince Edward Station or Ngau Tau Kok Station to take passengers. Such arrangement has been incorporated into the daily schedule of train services.), improving station facilities and platform management, etc. to ensure the operation of every station of Kwun Tong Line is maintained in a smooth manner.

For Kwun Tong Station, the MTRCL plans to enhance its station facilities

by phases. In addition to the installation of additional ticket gates and relocation of some ticket gates at designated exits which was completed in end 2018, the MTRCL is planning for the preliminary works of a large-scale station improvement project in Kwun Tong Station, including the construction of new escalators, re-provisioning of lifts connecting station concourse and platform, etc. Tendering for the preliminary works has commenced and the overall project is expected to be completed by the fourth quarter of 2022.

As regards the impact of partial commissioning of SCL on Kwun Tong Line, the MTRCL has been closely monitoring the operation of various stations along Kwun Tong Line and will study the effect of potential partial commissioning options on the station capacity, passenger flow direction, future improvement to passenger flow etc.

(5) As regards the proposed elevated pedestrian deck connecting the Kwun Tong Station with the Kwun Tong Town Centre Redevelopment Project (Development Area 4), the Urban Renewal Authority (URA) has commenced its liaison with the MTRCL with respect to the approved redevelopment master layout plan in the fourth quarter of 2018. The URA has later in the first quarter of 2019 provided the Deck Connection Study Report to the MTRCL for consideration. The URA is closely liaising with the MTRCL and hopes to gazette the relevant roadworks regarding the Pedestrian Deck and the Redevelopment Project in the fourth quarter this year, upon securing the support from the MTRCL and the Kwun Tong District Council. It is believed that the completion of the Pedestrian Deck will provide additional space to the Kwun Tong Station, thereby help diverting passengers to other entrances and exits.

In the long run, to strengthen the pedestrian connectivity within the Kwun Tong district and to ease the pedestrian flow with important facilities nearby, the Government and the URA will carry out preliminary feasibility study of the linkage among the Kwun Tong Station, the redevelopment project of Kwun Tong Town Centre, and the proposed integrated development project nearby. These include the possibility of extending the station concourse or platform of the Kwun Tong Station, in order to further enhance the connectivity of Kwun Tong Town Centre.

LCQ18: Preparation for and follow-up work after the onslaught of typhoons

Following is a question by the Hon Paul Tse, and a written reply by the Secretary for Development, Mr Michael Wong, in the Legislative Council today (June 5):

Question:

In the past two years, super typhoons Hato and Mangkhut successively hit Hong Kong and caused huge damage. For instance, at the low-lying areas by the seaside in Lei Yue Mun and its vicinity, storm surges and huge waves tossed up tonnes of seawater together with silts onto the shore, threatening the lives of shop operators and residents along the shore and causing substantial damage to properties. I and the District Council members of the district concerned have repeatedly called on the authorities to construct flood protection barriers along the shoreline of Lei Yue Mun to guard against typhoons. It is understood that the Tourism Commission is implementing the Lei Yue Mun Waterfront Enhancement Project in the district concerned, and the Civil Engineering and Development Department is also conducting a study on the impact of storm surges on the low-lying or exposed coastal areas in Lei Yue Mun and its vicinity as well as in other districts during extreme weather. As both initiatives will take more than a year to complete, they cannot provide a solution to the imminent problems. Moreover, some shop operators and residents who have been victimised twice are worried that in the absence of short-term protective measures, disasters will happen again in this year's typhoon season to the area around the Lei Yue Mun Lighthouse where it is most seriously affected by silts tossed up onto the shore during the onslaught of typhoons in Hong Kong every year. The Observatory has forecast that four to seven typhoons will hit Hong Kong this year. In this connection, will the Government inform this Council:

(1) of the latest progress of the post-Hato and post-Mangkhut clearance work; the manpower and resources involved in such work, including the expenditure on hiring service contractors to carry out the relevant work, with a breakdown by policy bureau/government department;

(2) whether it has assessed, during the onslaught of Mangkhut and Hato in Hong Kong, the volume of silts that was tossed up, in particular through the gap near the Lei Yue Mun Lighthouse, onto the shore by storm surges and then poured into nearby shops and residential premises at Lei Yue Mun waterfront, as well as the amount of economic loss so caused;

(3) whether it has assessed, in the absence of short-term protective measures, the casualties and economic loss that will be caused to the area along the shore at Lei Yue Mun by rainstorms and typhoons this year, and whether last year's disasters will recur; and

(4) as the aforesaid two initiatives will take more than a year to complete, whether the authorities have put in place targeted short-term measures (e.g. some members of the public have proposed the placing of a number of breakwater columns horizontally) to enhance the capability of Lei Yue Mun waterfront (in particular the area around the aforesaid Lei Yue Mun Lighthouse) to withstand rough sea conditions, so as to avoid the recurrence of the disaster of tonnes of silts and rocks pouring into residential premises and shops; if so, of the details; if not, whether they will conduct a study immediately?

Reply:

President,

The geographical position of Hong Kong makes it susceptible to weather-related threats such as tropical cyclone, rainstorm and storm surge. As climate change goes drastic, threats induced by extreme weathers are expected to be more frequent and severe. Therefore, the Government has been strengthening resilience of Hong Kong in various aspects to cope with extreme weather. Earlier on, the Government completed the review on the handling of super typhoons and briefed the Legislative Council Panel on Security at its meeting of May 7, 2019 on the outcome of the review, as well as the Government's preparedness, emergency response and recovery work for future super typhoons. Moreover, on May 30 this year, the Security Bureau held an inter-departmental table-top exercise in the Emergency Monitoring and Support Centre at the Central Government Offices. This exercise tested the preparedness, contingency measures and capabilities of relevant bureaux and departments, as well as their decision-making process and interoperability before the onset of typhoon season this year with a view to enhancing relevant bureaux and departments' general awareness and co-ordination in various aspects of contingency handling. All relevant departments also continue to review design and construction standards of infrastructures as well as carry out technical studies to strengthen the resilience of public infrastructure facilities to cope with extreme weather. In addition, they would continue to undertake various protection and mitigation works against storm surges, wave attack and flooding in districts.

As regards the four parts of the question raised by the Hon Tse, the bureau has consulted the views of relevant bureaux and departments and provided below a consolidated response.

(1) The Government has been actively handling the clearance work in the aftermath of super typhoon. According to the information provided by the relevant bureaux, government departments and their service contractors (if any) have co-operated in dealing with the aftermath of Super Typhoon Mangkhut after its passage in Hong Kong last year, details shown in the Annex. As for Super Typhoon Hato which attacked Hong Kong as early as 2017, relevant departments have not archived the information on its post-typhoon clearance work.

(2) to (4) The Government has been concerned about the impact of extreme weather on low-lying coastal and windy locations (including Lei Yue Mun) and is committed to strengthening the resilience and protection measures in those areas. To this end, the Civil Engineering and Development Department (CEDD) has commissioned a consultant in this April to undertake a feasibility study entitled "Coastal Hazards under Climate Change and Extreme Weather and Formulation of Improvement Measures". The study aims to conduct a comprehensive review of the low-lying coastal and windy locations (including the seashore of Lei Yue Mun and areas adjacent to its lighthouse), and to carry out relevant investigations on storm surge and wave in order to assess the impacts of extreme weather on the low-lying coastal and windy locations. Based on the outcome of the study, the Government will formulate appropriate protection measures, including improvement works, management measures, and

other options, to strengthen the resilience to wave impacts at the coastal areas in the long run.

As to the enhancement measures against wave impacts on the seashore of Lei Yue Mun, after the passage of Super Typhoon Hato in 2017, various government departments joined hands to carry out a series of protective measures in the Lei Yue Mun areas. Among them, the CEDD constructed rock-armoured bunds/gabion walls along the seashore of Lei Yue Mun to relieve wave overtopping the seawalls; the Home Affairs Department built concrete wave walls behind the rock-armoured bunds along an existing footpath to alleviate the influx of wave into the villages; the Drainage Services Department (DSD) deployed emergency response teams for inspections and assistance in clearing drainage facilities, as well as assisted villagers for installation of flood boards and placement of sandbags to reduce the risks of seawater getting into their houses. In addition, in order to enable villagers to better understand the possible increase in sea level before storm surge, the DSD installed water gauges at Lei Yue Mun with indications of the highest water level records (in Chart Datum) of the previous super typhoons on the water gauges, thus increasing the awareness of villagers on flooding prevention.

The above protection measures were substantially completed before the onset of typhoon season in 2018. Therefore, during the passage of Super Typhoon Mangkhut in 2018, despite its recorded maximum wind and maximum water level being higher than those of Hato, the above protection measures greatly alleviated the impacts of Mangkhut on Lei Yue Mun and effectively reduced damage arising from flooding. The villagers of Lei Yue Mun gave compliment on the work by relevant departments and their effectiveness. At present, the CEDD and the Architectural Services Department continue to liaise with the Tourism Commission to explore the feasibility of introducing resilient design against the threats of seawater inundation to the coastal areas, such as an existing observatory platform adjacent to the lighthouse of Lei Yue Mun, under the "Lei Yue Mun Waterfront Enhancement Project". About the quantity of sand brought to Lei Yue Mun by the super typhoons and storm surges, as well as the related financial loss, they are hard to quantify and relevant departments have not made such estimates.