LCQ16: Adopting innovative technologies in building inspections

Following is a question by the Hon Chan Siu-hung and a written reply by the Secretary for Development, Ms Bernadette Linn, in the Legislative Council today (November 1):

Question:

Recently, there have been a number of incidents of fallen concrete or rendering from external walls of buildings in Hong Kong. According to the information of the Buildings Department (BD), as at July this year, about 4 800 buildings have not yet complied with the Mandatory Building Inspection Scheme (MBIS) notices issued by BD. It is learnt that for those buildings which have been served with the MBIS notices but not yet appointed with Registered Inspectors, the BD has already started to identify buildings with potentially higher risks, and has carried out special inspections of the external walls of some of those buildings by using unmanned aircraft systems (UASs) in early August this year. In this connection, will the Government inform this Council:

(1) whether, in conducting the aforesaid inspections, the BD has adopted innovative technologies such as artificial intelligence (AI) to assist in the identification of defects in external walls, thereby aiding the inspection work; if so, of the details; if not, the reasons for that;

(2) whether it has formulated technical standards for the adoption of innovative technologies such as AI in conducting building inspections; if so, of the details; if not, whether it will formulate relevant technical standards or guidelines by drawing reference from the practice of the Building and Construction Authority of Singapore in formulating a Technical Reference on the use of UASs and AI to conduct building facade inspections; and

(3) whether it knows the application and effectiveness of innovative technologies, such as UASs and AI, used by the architectural and surveying sectors in Hong Kong to conduct building safety inspections; if so, of the details; if not, whether it will gain an understanding from the sectors and assist the sectors in applying innovative technology solutions to upgrade or transform their business processes, so as to accelerate the pace of building safety inspections?

Reply:

President,

The Buildings Department (BD) has all along made use of innovative technologies to assist in enforcement work, including using drones to assist

in inspection of dilapidated external walls of buildings, inspection of exterior unauthorised building works and unauthorised site formation works, as well as on-site inspection of emergency incidents at construction sites and buildings.

My reply to the various parts of the question is as follows:

(1) In response to the recent series of incidents of fallen concrete or rendering from external walls of buildings, the Government is adopting a multipronged approach to actively follow up the non-compliant Mandatory Building Inspection Scheme (MBIS) notices, including continuing to collaborate with the Urban Renewal Authority to provide technical and financial support to owners for carrying out building repair, organising district briefings, etc. To better ensure the protection of public safety, starting from August this year, the BD has proactively identified buildings with potentially higher risks (such as older buildings, buildings facing major traffic roads, buildings with reports of dilapidation, "three-nil" buildings, and buildings with balconies/canopies of cantilevered slab structures) among those served with the MBIS notices but have not yet appointed registered inspectors, utilising drones to conduct special surveys with a view to determining the conditions of the external walls and when necessary, arrange emergency works to remove loose concrete or rendering from the external walls. The images and data captured during these surveys could help determining the conditions of the external walls and arrange emergency works, which could also be converted into three dimensional models, further facilitating the BD in assessing the safety conditions of the buildings and undertaking follow up work.

In addition, the BD is collaborating with the University of Hong Kong (HKU) to develop an innovation system that utilises drones, LiDAR technology, artificial intelligence (AI) and other technologies to more effectively and accurately survey and identify defects at external walls of buildings.

(2) and (3) We understand that the industry is positive towards the use of technology to assist in the inspection of external walls of buildings. To take the lead and act as an advocate, apart from the abovementioned joint research with the HKU, the BD has earlier conducted a pilot project in collaboration with an innovation and technology a company to utilise robotic technology as an imaging tool to capture images of the external drainage system of buildings for the identification of drainage defects through the use of AI. In addition, the BD is developing a defective signboards diagnostic system to enhance the effectiveness of patrols and enforcement. The system makes use of a patrolling vehicle equipped with cameras and LiDAR equipment to carry out surveys in various districts, and analyses the images captured to identify defective signboards with AI technology. The BD has been reviewing the system's effectiveness upon the completion of all trial patrols in May this year.

To promote the wider application of technology by the industry to speed up building inspections and improve building management, the BD recently organised the Building Safety Symposium, where relevant government

departments such as the Innovation and Technology Commission (ITC), technology companies and academics were invited to exchange experience and share ideas with the building industry and the property management industry. In addition, the Innovation and Technology Fund operated by the ITC will provide funding support to local enterprises, including architectural and surveying firms, with a view to promoting the application of technology and talent training.

As the adoption of AI for inspection of external walls of buildings is still in the initial stage, the BD will continue to keep in view the development of relevant technologies and accumulate experience in actual application, including the experience of other regions or countries, to prepare for the formulation of relevant technical reference guidelines in the future.