Topic : Upgrading of Fire Protection in Old Buildings - Hong Kong's Experience

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1. Introduction

1.1 The principal legislation providing for fire safety standards in buildings in Hong Kong is the Buildings Ordinance (Cap. 123) and the Fire Services Ordinance (Cap. 95). The Buildings Department (BD) is the authority on the passive fire protection of buildings and the Fire Services Department (FSD) on active fire protection. In other words, the BD is concerned with the fire safety construction requirements whereas the FSD is concerned with the provision and maintenance of fire service installations (FSI) of a building. Owners and occupiers are required to maintain fire safety construction and FSI in accordance with the building plans approved by the authorities and should not carry out unauthorized alterations and addition to the fire safety construction of the buildings. Over time, the fire safety standards have been revised to take account of the advance in fire safety technology and building design. The fire safety provisions in old buildings, though meeting the safety standards at the time of construction, may not be up to the present-day standards.

1.2 To enhance the fire safety level of old buildings for better protection of lives and properties, the Government introduced legislation in 1997 and 2002, empowering the BD and FSD to serve fire safety directions on owners/occupiers, requiring them to provide additional fire safety measures which were not originally included in the approved building plans in certain types of old buildings.

2. Events Leading to the Enactment of Fire Safety Upgrading Ordinances

2.1 In January 1994, a serious fire occurred in a branch of a bank in which 12 members of the staff were killed and 1 injured. On the recommendation of the Investigation Team that probed into the fire and after public consultation, the Hong Kong Government introduced a bill aimed at improving fire safety in banks and similar commercial premises with a relatively high customer population density and frequent turnover of customers on the premises for scrutiny by the legislature. In November 1996 while the bill was still under debate, another disastrous fire broke out

in Garley Building, an old commercial building. The fire raged for 21 hours, claiming 40 lives and injuring 81 people. The Government then urged the legislature to expedite the passing of the bill. **The Fire safety (Commercial Premises) Ordinance** (FS(CP)O) was eventually enacted and brought into operation in May 1997.

2.2 The gist of the FS(CP)O was to require owners and occupiers of certain kinds of commercial premises, termed as "*Prescribed Commercial Premises*" (PCP), to upgrade the fire safety of their premises to the required standards. PCP refer to commercial premises with a total floor area exceeding 230 square metres and in which businesses, which include banks, off-course betting centres, jewellery or goldsmith shops, supermarkets, departmental stores and shopping arcades, are being carried out. Because of the higher fire risk due to the greater number of people normally present, PCP were required to provide additional FSI and meet additional fire safety construction requirements as follows:-

Additional FSIs

- an automatic sprinkler system;
- an automatic cut-off device for a mechanical ventilating system;
- an emergency lighting system;
- manual fire alarm; and
- portable fire extinguishers if the premises are not equipped with a hose reel system;

Additional fire safety construction requirements

- the provision of adequate means of escape from the premises or building in the event of fire (e.g. when more than 30 people are normally present in the PCP, there must be two exits and doors must be open in the direction of exit);
- the provision of adequate means of access for fire fighting and rescue; and
- the provision of measures (such as fire resisting doors) to inhibit the spread of fire and to ensure the integrity of the structure.

2.3 The tragic Garley Building fire also caused widespread public concern about the fire safety of old commercial buildings without automatic sprinkler protection. Consequently, the Government and the public considered that the coverage of the FS(CP)O should be extended to cover all old commercial buildings irrespective of their size and use. In June 1998, **the Fire Safety (Commercial Premises) (Amendment) Ordinance 1998** (FS(CP) Amendment Ordinance 1998)

was brought into operation. The gist of the FS(CP) (Amendment) Ordinance 1998 was to require owners and occupiers of pre-1987 commercial buildings used for the purposes of office, business, trade or any entertainment, termed as "*Specified Commercial Buildings*" (SCBs), to upgrade the fire safety measures, as far as possible, to present-day standards. In enforcing the requirements specified in the Ordinance, the first priority was to deal with the some 400 commercial buildings built before March 1973. As from October 2001, the application of the Ordinance was extended to cover commercial buildings built before March 1987.

2.4 There were reasons behind choosing March 1973 and March 1987 as the cut off dates. The provision of a sprinkler system was not a mandatory requirement for commercial buildings before 1973. But it is a mandatory requirement from 1973 onwards. For buildings with building plans first submitted for approval between 1973 and 1987, the provision of a sprinkler system was a mandatory requirement for all commercial buildings and the commercial portions of composite buildings exceeding 30 metres in height or more than 10 storeys. From March 1987 onwards, it became a mandatory requirement for all commercial buildings with floor area exceeding 230 square metres.

2.5 In early 1998, two other tragic fires at two composite buildings (mixed commercial and domestic uses) triggered public concern about fire safety measures in such buildings, following which the FSD conducted a full-scale territory-wide building survey to assess the fire safety conditions of some 27,000 existing buildings. It was found that the fire safety conditions in only 11% of composite buildings were satisfactory. In the same year, the BD also conducted a sample survey of 1,200 buildings. Its result indicated that 80% of the composite buildings had serious deficiencies in their exit routes. In July 2002, because of the very unsatisfactory fire safety conditions found in composite buildings by the FSD and BD, and in view of the high fire load and heavy traffic of people in the non-domestic (i.e. primarily commercial) parts of composite buildings, **the Fire Safety (Buildings) Ordinance** (FS(B)O) was enacted. Under the FS(B)O, owners and occupiers of pre-1987 composite buildings (known as Target Composite Buildings) and pre-1987 domestic buildings (known as Target Domestic Buildings) were required to upgrade FSI and the fire safety construction in their buildings to meet the present-day standards.

2.6 The fire safety improvement requirements for the non-domestic parts of the Target Composite Buildings are modelled on those stipulated in the FS(CP)O. For the domestic parts of the Target Composite Buildings and for the Target Domestic

Buildings, taking into account their lower fire load and fire risk, only the most essential fire safety improvement items are required (e.g. the provision of fire hydrant/hose reel systems and replacement of those doors nearest to the staircase with doors of the required standard).

2.7 Owing to the old design of some of the buildings, there might be genuine and practical difficulties to comply with the statutory fire safety measures. In this regard, the legislature had raised concern and emphasized the need for more flexibility and reasonable discretion in actual enforcement. The Government noted the concern and had assured the legislature that the FSD and BD would adopt a flexible and pragmatic approach in their enforcement actions.

2.8 Another major concern was the costs of upgrading. Both the Government and legislature agreed that financial assistance should be made available to affected building owners for the upgrading works and that the law should not come into operation until after the passing of the amendments to the Building Management Ordinance (BMO) to the effect that Owners' Corporations (OCs) could borrow from various loan schemes available to cover the missing or irresponsible owners' shares of the costs. The FS(B)O eventually came into operation in July 2007 following the passing of the amendment bill to the BMO.

3. Implementation of the Fire Safety Upgrading Ordinances

3.1 As at 30 June 2013, there were:

(a) 3,035 Prescribed Commercial Premises;
(b) 1,783 Specified Commercial Buildings;
(c) about 9,000 Target Composite Buildings; and
(d) about 3,000 Target Domestic Buildings.

The Hong Kong Government has adopted a phased approach in implementing fire safety improvement programmes under the FS(CP)O and FS(B)O, depending on the age and the assessed level of risk of the buildings/premises.

3.2 Implementation programmes were as follows:-

Prescribed Commercial Premises (PCP)

Phase 1 *(from May 1997)* - PCP in buildings without sprinkler system (mostly

built before 1973);

Phase 2 *(from January 2001)* - PCP in buildings with occupation permits issued before 1980;

Phase 3 *(from March 2005)* - PCP in buildings with occupation permits issued between 1980 and 1990;

Phase 4 *(from September 2009)* - PCP in buildings with occupation permits issued after 1990.

Specified Commercial Buildings (SCB)

Phase 1 *(from June 1998)* - SCB constructed or with building plans first submitted before March 1973;

Phase 2 *(from October 2001)* - SCB constructed or with building plans first submitted between March 1973 and March 1987.

Target Composite Buildings and Target Domestic Buildings

Phase 1 *(from July 2007)* - Target Composite Buildings constructed or with building plans first submitted before March 1987;

Phase 2 - *(Tentatively from January 2016)* Target Domestic Buildings constructed or with building plans first submitted before March 1987.

4. Enforcement Mechanism

4.1 Under the FS(CP)O and FS(B)O, the BD will issue fire safety directions to owners whereas the FSD will issue fire safety directions to owners/occupiers. An owner/occupier who, without reasonable excuses, fails to comply with the fire safety directions issued by the BD or FSD is guilty of an offence. Upon conviction, the owner/occupier is liable to a fine. The BD and FSD may also apply to:

(a) the Magistrate for making a compliance order directing the owner/occupier to comply with the requirements specified in the fire safety directions; and

(b) the District Court for making a use restriction order/prohibition order restricting the use or occupation of the premises/buildings concerned.

4.2 The penalty for failure to comply with a fire safety direction and a court order is summarized below:

(a) ***Non-compliance with Fire Safety Direction*** -

Fine $25,000 + Further fine of $2,500/day;

(b) ***Non-compliance with Compliance Order*** -
Fine $50,000 + Further fine of $5,000/day;

(c) ***Non-compliance with Use Restriction Order/Prohibition Order*** -
Fine $250,000 + Further fine of $25,000/day + Imprisonment of 3 years.

4.3 Under the FS(B)O, the BD and FSD are empowered to register in the Land Registry a fire safety compliance order or a prohibition order against a building or such parts of it to which the order relates. Such registration would make the fact of potential liability known to any prospective property buyers who may be interested to do a land search. It would thus help provide an incentive for a building owner to comply with the outstanding order so as to maintain the value of his property.

5. Flexible and Pragmatic Approach

5.1 There may be practical difficulties for some building owners to comply with some of the fire safety requirements due to the physical constraints and/or structural problems of the buildings/premises. Without compromising fire safety, the BD and FSD have adopted a flexible and pragmatic approach in handling these cases. Some examples are:

(a) ***Extension of time.*** Under the FS(CP)O and FS(B)O, the BD and FSD are empowered to serve fire safety directions on owners/occupiers, directing them to improve the fire safety measures of their buildings/premises within a specified period (usually 12 months). The compliance period could be extended upon application by owners/occupiers if they have genuine difficulties; and

(b) ***Relaxation or exemption of some requirements.*** The BD and FSD will exercise flexibility in granting relaxations or even exemptions of some requirements having regard to the particular circumstances of each case. For instance, if an authorized person or a registered structural engineer certifies that the rooftop of the building cannot support a standard fire service water tank of a hose reel system due to structural problems, the FSD will consider accepting a water tank of smaller capacity. In an exceptional situation where installation of a water tank is not practicable, the FSD will even consider waiving the installation of the entire hose reel system and have it replaced by the provision

of fire extinguishers and manual fire alarm system. As for the fire safety construction, the BD will adopt a flexible and pragmatic approach in granting relaxation or exemption of some requirements on a case-by-case basis if there is site constraint.

6. Financial and Other Assistance

6.1 Various financial assistance schemes are in place to help alleviate possible financial problems that some building owners may encounter. These schemes are operated by the BD and non-governmental organizations as follows:

(a) ***Building Safety Loan Scheme administered by the BD.*** With a rolling fund of $700 million, the scheme provides loans for carrying out improvement works voluntarily or in compliance with statutory orders (including but not limited to those issued under the FS(CP)O and FS(B)O) without any means test and at a no-gain-no-loss interest rate (up to a ceiling of $1 million per unit of accommodation) to carry out the required improvement works. Elderly singletons/couples aged 60 or above eligible for grant of interest-free loan may apply to extend the repayment for an unspecified period until the transfer of title of the property or death of the borrower, whichever is the earlier; and

(b) ***Loans and grants provided by other organizations.*** The Hong Kong Housing Society and the Urban Renewal Authority provide both loan and grant schemes for individual owners and Owners' Corporations (OCs) covering improvement works in individual flats and common areas. For example, the Building Maintenance Grant Scheme for Elderly Owners administered by the Hong Kong Housing Society on commission of the Administration, offers a maximum grant of $40,000. Since 2011, the Hong Kong Housing Society and the Urban Renewal Authority have consolidated their respective schemes and jointly rolled out a one-stop Integrated Building Maintenance Assistance Scheme to provide financial assistance and technical support to property owners. Under the Integrated Scheme, owners can complete an application form for making multiple applications for various grants and loans (including the loan scheme administered by the BD).

6.2 Experience in implementing the FS(CP)O shows that the existence of OCs could help coordinate the works in the common parts of the buildings as required under the fire safety directions. To improve building management, the Home Affairs

Department (HAD), through its liaison networks in various districts, has been making proactive efforts to encourage, advise and assist owners to form OCs. From 2004 to 2007, in preparation for implementing the FS(B)O, the BD and FSD inspected about 3,200 Target Composite Buildings to explain the improvement works requirements and provide technical advice. In addition, they also identified those Target Composite Buildings without OCs so that the HAD could start early in assisting them to form OCs.

7. Progress in Implementing the Improvement Programmes

7.1 The objectives of the FS(CP)O and FS(B)O are to provide better protection from the risk of fire for occupants and users of, and visitors to the target buildings/premises. For example, the provision of an automatic sprinkler system required in a fire safety direction would help control the spread of fire and a fire alarm system would alert occupants in the event of fire. The extent of compliance with the fire safety directions issued by the BD and FSD is an important indicator of the progress made in improving the fire safety measures of these target buildings/premises.

7.2 Analyses of compliance rates of directions issued for PCP, SCB and Target Composite Buildings and the percentages of the premises/buildings having complied with all directions issued are as follows:-

(a) ***Compliance Position of PCP.*** From 1997 (the commencement of the improvement programme) to June 2013, the BD and FSD had inspected 2,269 (75%) of the targeted 3,035 Prescribed Commercial Premises. As at 30 June 2013, the BD had issued cumulatively 3,093 directions for 1,720 Prescribed Commercial Premises while the FSD had issued 13,873 directions for 1,721 Prescribed Commercial Premises. **(***A separate fire safety direction is issued to each owner (and also occupier in case of directions issued by the FSD). As most target buildings/premises require improvement works by more than one owner and occupier, the total number of directions issued is normally greater than the number of target buildings/premises with directions issued.***)**. Of the directions issued, the percentages of directions having been complied with were 58% and 88% respectively. Of the PCP having been issued with directions, the percentages of the premises having complied with all directions were 61% for the BD and 82% for the FSD;

(b) ***Compliance Position of SCB.*** From 1998 (the commencement of the improvement programme) to June 2013, the BD and FSD had inspected 1,573 (88%) of the targeted 1,783 SCB. As at 30 June 2013, the BD had cumulatively issued 27,734 directions for 1,286 SCB while the FSD had issued 66,029 directions for 1,301 SCB. Of the directions issued, the percentages of directions having been complied with were 74% and 90% respectively. Of the SCB having been issued with directions, the percentages of the buildings having complied with all directions were 41% for the BD and 68% for the FSD;

(c) ***Compliance Position of Target Composite Buildings.*** From 2007 (the commencement of the improvement programme) to June 2013, the BD and FSD had inspected 6,461 (72%) of the 9,000 Target Composite Buildings. As at 30 June 2013, the BD had cumulatively issued 35,547 directions for 3,564 Target Composite Buildings while the FSD had issued 83,936 directions for 3,564 Target Composite Buildings. Of the directions issued, the percentages of directions having been complied with were 16% and 27% respectively. Of the SCB having been issued with directions, the percentages of the buildings having complied with all directions were 2.3% for the BD and 1.3% for the FSD.

7.3 As at 30 June 2013, the status of directions issued under the FS(CP)O and FS(B)O was as follows:-

(a) ***Total Number of Directions Issued*** - 230,212 (100%);
(b) ***Total Number of Directions Complied with*** – 122,411 (53%);
(c) ***Total Number of Directions Outstanding or with Compliance Period Not yet Expired*** – 107,801 (47%).

8. Observations

8.1 It is noted that that the compliance situation of both PCP and SCB is less than satisfactory. In particular, the low compliance rates for directions issued for Target Composite Buildings are also a cause of concern. Understandably, implementation of the fire safety improvement programmes for Target Composite Buildings is generally more difficult than that of PCP and SCB. This is because while PCP and SCB are usually owned/occupied by business people, some owners residing in Target Composite Buildings are elderly and may not have the knowledge and means to go about the required works. For Target Composite Buildings without OCs to coordinate the improvement works in the common parts of the buildings, the

difficulty in complying with the fire safety directions is even greater. In these cases, the directions for common parts are issued to all owners. For every change of ownership in any individual unit, the BD and FSD have to reissue the directions with a new compliance period thus prolonging the overall implementation time.

8.2 To facilitate the BD and FSD in their enforcement, the need for OC to be formed in time to coordinate the required improvement works cannot be over emphasized. However, the formation of OC also takes time and liaison efforts by the HAD. It is therefore necessary for the BD and FSD to advise HAD early before the commencement of the BD/FSD's joint inspections so that HAD would have more time to plan its liaison work to provide timely assistance to owners of target composite/domestic buildings which do not have OC. The crux of OC formation is the participation of owners. The HAD's observation is that owners usually become more proactive and are more willing to support the formation of an OC after they have received statutory orders or directions issued by the BD, FSD or other government departments.

8.3 According to a comprehensive survey conducted by FSD in 2003, the common difficulties encountered by owners, occupiers and contractors in complying with directions and reasons for low compliance were:

- High costs of upgrading works;
- Difficulties in coordinating owners/occupiers;
- Frequent changes of occupiers;
- Spatial/structural constraints; and
- The long process of actual upgrading works.

8.4 Owners' financial difficulties to meet the high upgrading cost were also a major factor leading to the low compliance rates. The high upgrading cost was in turn related to the spatial/structural constraints of the PCP/SCBs. While the Building Safety Loam scheme was to help owners address their cash flow problems in fulfilling their obligations to upgrade fire safety of their buildings, BD should, in conjunction with the FSD, review the effectiveness of the scheme in assisting owners to meet their fire safety improvement works and assess if the Government needs to provide more assistance to owners.

8.5 The upgrading works is always time consuming. For example, much time was required for liaising with different building owners, appointment of

Authorized Persons, selection of contractors through tendering and removal of unauthorized structures, if any. Prolonged time was spent in retrofitting standard FSI provision to old commercial premises/buildings, which were often subject to many spatial/structural constraints, rendering it difficult to meet the upgraded requirements and resulting in high upgrading costs.

8.6 While it is the primary responsibility of the owners/occupiers concerned to upgrade the fire safety provisions of their buildings/premises as required under the fire safety directions, the BD and FSD, as the enforcement authorities, should step up efforts to improve the compliance rates of fire safety directions, especially those for Target Composite Buildings by

(a) carrying out statutory duties in an efficient manner, such as promptly issuing directions after inspections of the target buildings/premises;

(b) facilitating owners/occupiers in complying with the directions through acting in a pragmatic and flexible manner, assisting them to form OC, offering technical advice and alternatives as and when required as well as providing financial assistance if they so require; and

(c) taking effective enforcement action including prosecutions as a last resort to compel compliance in warranted cases.

9. Conclusions

9.1 As evident from Hong Kong's experience, upgrading fire safety provisions in old buildings, in particular multi-owner/occupier buildings, is an extremely lengthy process requiring a very long time and enormous effort on the parts of both the enforcement authorities and the owners/occupiers, who also have to invest a lot in the improvement works. For any city intending to embark on similar initiative and scale, the following considerations are crucial to the success of the exercise:-

(a) The improvement programme(s) should be carefully designed for meting out in different phases with higher priorities being accorded to building(s) identified as having a higher fire risk;

(b) Affected building Owners should be encouraged and proactively assisted in

the formation of OC as early as possible. This will definitely facilitate enforcement on the part of the authorities and the coordination of upgrading works on the part of the owners;

(c) Some sort of loan scheme or financial arrangement has to be in place to help owners address their cash flow problems in fulfilling their obligations to upgrade fire safety of their buildings;

(d) Emphasis should be given to the adoption of a reasonable, flexible and pragmatic approach by the authorities in enforcement to allow extension of time for owners/occupiers concerned to comply with the upgrading requirements if there is evidence of "positive action" being taken by them;

(e) The enforcement authorities should readily offer to owners/occupiers alternative means of achieving compliance with the directions to and provide them with advice, assistance and support in the event that they encounter practical difficulties beyond their control;

(f) Prosecution actions should only be considered for long outstanding cases without reasonable excuses; and

(g) Regular review should be conducted to identify areas for improvement in the implementation of the upgrading programme(s).

9.2 The fire safety improvement programmes currently conducted in Hong Kong are unprecedented in terms of extent and scale. The community as a whole will have to invest considerable time, money and efforts in the next decade or two or even longer in their implementation. The payoff will take some time to materialize. However, by the time the programmes are completed, Hong Kong will definitely be a much safer city than it is to work and live in.

Sources of Information:

(1) Report No. 43 of the Director of Audit, HKSAR - Chapter 11 on "Upgrading of fire safety standards in old buildings;

(2) Report No. 61 of the Director of Audit, HKSAR Chapter 7 on "Government's efforts to enhance fire safety of old buildings;

(3) An Introduction to The Fire Safety (Commercial Premises) Ordinance Cap. 502;

(4) An Introduction to the Fire Safety (Buildings) Ordinance Cap. 572;

(5) Introduction on "Integrated Building Maintenance Assistance Scheme";