THE HONG KONG HOUSING AUTHORITY

Memorandum for the Rental Housing Committee

Consultancy Report On
The Risk Assessment of Elderly Housing Designs

PURPOSE

This paper is to inform Members on the findings of the consultancy report of the Risk Assessment study on the various types of housing for the elderly and measures for future implementation.

BACKGROUND

2. To clear the concerns on the design and management aspects of housing for the elderly in view of the high concentration of elderly living in the multi-storey blocks, Building Committee (BC) endorsed the commissioning of the Risk Assessment study (Paper No. BC 33/99 refers).

3. The consultancy report was discussed by the BC on 23 December 1999 (Paper No. BC 212/99 refers). BC Members have noted the paper and have made no adverse comments to the findings and considerations as detailed in paragraphs 8, 13 and 14 of this Paper. BC Members supported the proposal for wider consultation with the providers of services for the elderly in recognition of the importance of the study.

OBJECTIVES

4. The objectives of the study are -

   (a) to review the effectiveness of the current standards;

   (b) to identify the risks that may be encountered in both design and management;
(c) to propose cost-effective solutions to problems where necessary; and

(d) to enhance design guidelines and facilitate the development of emergency evacuation plans.

SMALL FLAT DESIGNS ASSESSED IN THE STUDY

5. The study covered the main types of designs currently being allocated to the elderly -

(a) Self-contained 1P/2P, and 2P/3P flats in Small Households Developments (SHD), Harmony 1 Blocks (H1) and Annex Blocks (NAX).

(b) Hostel type units in Housing for Senior Citizens, Type 1 (HS-1) in Harmony 1 blocks; Type 2 (HS-2) in Ancillary Facilities Block (AFB); Type 3 (HS-3) in SHD; and the older Sheltered Housing for the Elderly (SHE) in Trident Blocks.

(c) Desktop studies on new proposals such as the New Harmony 1 Block Option 6; high rise SHD.

GENERAL RISKS IN THE COMMUNITY

6. Various risk levels that exist in the general community have been examined as follows -

(a) 94.7% of the individual risk of death in the general population is through natural causes and 5.2% from non-fire hazards such as suicides, traffic accidents etc. Hence in total, 99.9% of the individual risk of death would depend on personal factors e.g. health conditions, social background, accidents etc., and are largely beyond the control of the Housing Authority (HA) and the influence of the different standard housing designs.

(b) Only about 0.1% of individual risk of death in the general population is from fire hazards. This is where building design or building management may have an impact.
(c) The most common approach in quantitative risk assessments is to compare the calculated risk with risk acceptability criteria. If the calculated risk is at the same level or a lower level, then the conventional wisdom is that the environment can be considered as ‘acceptably safe’.

(d) However, no risk acceptability level has been developed by any country for fire or non-fire hazards arising in residential housing. Risk acceptability criteria for this study have been derived from the historical record in Hong Kong SAR of deaths by fire in private and public housing based on FSD statistical data, i.e.

(i) Private housing \( 3.0 \times 10^{-6} \) / year

(ii) Public housing (including Housing Authority, PSPS & Housing Society) \( 2.0 \times 10^{-6} \) / year

(iii) Public and Private housing combined \( 2.5 \times 10^{-6} \) / year

7. The risk acceptability criterion has been set at an average individual risk of \( 2.5 \times 10^{-6} \)/year, based on the historical risk for persons living in Private and Public housing combined. This means, in the combined public and private housing in Hong Kong, there is a 2.5-in-a-one-million chances of suffering death from fire in any one year. These risk levels are below those in other developed countries such as UK, USA, Australia and Netherlands where the risk levels range from \( 4.0 \times 10^{-6} \) / year to \( 3.0 \times 10^{-5} \) / year.

**FINDINGS**

8. The findings of the study are summarised in paragraphs. 3.1 to 3.5 of the Executive Summary and with details in Chapters 11 and 12 of the draft Final Report which are available from the Committee Secretary. The main findings are -

(a) The average individual risk level for fire hazards for all of the Authority’s current housing for the elderly has been calculated as \( 1.5 \times 10^{-6} \)/year, which is lower than private housing and other forms of public housing in Hong Kong, and is mainly due to factors such as enhanced fire services installations and warden services.
(b) Non-fire risks are due to both natural and external causes. These risks are higher than fire risks but may be controlled by a variety of management and technical measures which are in place and are considered adequate. These include emergency alarms and rapid first aid in the case of a medical emergency, maintenance of a “persons at risks” register and associated outreach services, building security and education on housekeeping issues.

(c) The management role is critical in hazard management and risk mitigation in buildings. The current management procedures and practices for emergency evacuation are of a high standard and are considered to be adequate though some areas may further be improved, such as improved documentation of interfacing arrangements between different management agencies and FSD, outreaching to vulnerable tenants and improved emergency procedures.

(d) The study has also examined a number of design aspects where risk may be mitigated and where the development potential of projects may be optimised. It shows that a higher concentration of elderly, or increased height of blocks for the elderly will only result in a very small increase in individual risk and this is still considered to be “acceptably safe”. This finding supports the continued use of high rise solutions with a larger proportion of small flats for the elderly or a higher proportion of flats for the elderly in an estate.
CONCLUSION

9. The study has examined the major standard block designs currently in use, either completed, under construction or under planning and has sampled non-standard designs using standard flat modules and following the Model Client Brief for Small Households Developments. It has concluded that risks to occupants are below prevailing risk levels in other types of housing. The findings support the design of the buildings under study and makes suggestions where management support could be strengthened.

10. For design with higher concentration of elderly, it is essential to obtain the agreement of FSD on fire fighting and rescue arrangements, and to resolve other management, planning and social considerations on the higher concentration of elderly. Areas of particular interest to the Authority are to minimise the problems of the isolation of the elderly and the level and type of general supporting facilities.

11. The study also supports the new initiatives in housing for the elderly which are being explored, such as the continued use of high rise buildings for the elderly and higher concentrations of elderly.

12. The Department has commissioned a research consultancy to examine the wider implications of a higher concentration of elderly and the necessary support services. On the risk assessment study, consultation will be conducted with the non-governmental organizations (NGO) who are managing facilities for the elderly. Preparation of Guidelines and adjustments to Clients Requirements may follow the study and will be reported separately.

FURTHER CONSIDERATIONS

13. Members are requested to note the result of the study which shows the current design is considered to be acceptably safe and that no change to the current fire safety provision of the standard designs for elderly is necessary.
14. Members are also requested to note the proposed consultation discussed in paragraph 12 and in particular the further consideration of -

(a) enhancing the management procedures as stated in paragraphs 8(c) focusing on the management issues;

(b) the implication of a higher concentration of elderly in standard blocks and estates as stated in paragraph 8(d); and

(c) the increased height of residential blocks for the elderly as stated in paragraph 8(d).

INFORMATION

15. This paper is issued for Members’ information.

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