

Doc Type	HA
Paper No	HA 28/95
Title	Kwai Chung Estate
CONTENTS	<p>HA 28/95 BC 110/95 MOC 60/95</p> <p>THE HONG KONG HOUSING AUTHORITY</p> <p>Memorandum for the Housing Authority, Building Committee and Management and Operations Committee</p> <p>Kwai Chung Estate</p> <p>PURPOSE</p> <p>To advise Members of the structural condition of Kwai Chung Estate and action taken on Blocks 16 and 17.</p> <p>BACKGROUND</p> <p>2. On 11 June 1995, there was a spalling failure to a ceiling of a flat in Block 17. This has attracted considerable media interest and public concern.</p> <p>3. Kwai Chung Estate comprises 32 Mark III blocks and was constructed between 1964-1965 by the former Public Works Department. There are 6,823 flats in the estate. A typical Mark III block contains 130 to 270 flats. They are a central corridor shearwall design, parts of the buildings are framed.</p> <p>BLOCK 17</p> <p>4. At about 4 a.m. on 11 June 1995, there was a spalling failure to the living room ceiling of flat no. 701 at Block 17. As a consequence of the incident the tenant has been offered alternative accommodation. A detailed investigation is being conducted to determine cause of the spalling which had been covered by a false ceiling erected by the tenant. Laboratory testing is in progress and a report is expected by the end of June.</p> <p>STRUCTURAL INVESTIGATIONS</p> <p>5. Between 1983 and 1986, a structural investigation was carried out on all buildings constructed before 1981. Concrete samples were taken from 843 buildings including Kwai Chung Estate. The buildings were ranked in order of need for detailed investigations. In addition visual surveys were carried out, both externally and within flats. The results of the structural investigation were published.</p>

6. Structural appraisal standards were developed by a team of three international consultants, who also sought the views of international experts. All structural integrity appraisals are assessed against these standards.

7. The investigations indicated that there are two types of problems that had to be addressed -

(a) Concrete strength - Low strength concrete can result in reduced margins of safety or reserves of strength in buildings. In some cases, strengthening of the building is required.

(b) Spalling - This results from the low cover to reinforcement and poor concrete quality. Except in serious cases, spalling does not affect the overall structural integrity of the building. Spalling can, however, result in localized failures, and is of concern. In the worst cases, floor slabs may need to be recast. On-going repairs are required throughout the life of the building.

8. Of the 32 blocks in Kwai Chung estate, ten blocks were identified as requiring detailed structural appraisals including block 17. The appraisals were completed between 1991-1995. As a result, five blocks require strengthening. Three blocks have been completed and two blocks are scheduled for completion in 1995.

9. Structural monitoring of all buildings in Kwai Chung is undertaken by the Department's Structural Monitoring Unit on a two year cycle. The first inspection was completed in 1993 and the second in May 1995. The inspections include external and public areas, together with a sample of flats. There is no indication that the overall structural integrity of any building in Kwai Chung has been impaired by spalling.

FLAT TO FLAT INSPECTIONS

10. Estate staff undertake a flat to flat inspection on an 18-month cycle using a standard checklist. The last cycle at Kwai Chung was completed in November 1994. In March 1995, the Housing Manager wrote to all tenants asking them to report defects inside their flats. 281 responded and repairs have been completed for 273 flats.

11. Technical staff will carry out a further flat to flat inspection of all 6,823 flats in the estate within two weeks, backed by Maintenance Surveyors and Structural Engineers. Contractors have also been mobilized for prompt follow-up action.

SPALLING REPAIRS

12. The Maintenance Division has undertaken the following spalling repairs at Kwai Chung Estate over the last three years -

External	No. Flats	No. Flats Recast	Common Areas	
			Walls	
1993/94	311	7	\$780,000	\$1.3 million
1994/95	393	6	not available	\$1.0

million				
1995/96	135	2	\$175,000	\$267,000

ACTION TAKEN

13. The tenant of flat 701 at Block 17 has been rehoused. To address the anxieties of the tenants on the top floors of Blocks 16 and 17, they have been offered alternative temporary accommodation, if they wish to move out while inspection takes place. They will also be given the option to move out permanently now, slightly ahead of the normal decantation period of 18 to 24 months prior to demolition since Kwai Chung Estate is due for redevelopment in 1998/99. A hotline has been established for tenants' queries and reports.

14. Roofing work is in progress in blocks 16 and 17. This involves laying a new waterproofing membrane over the existing roof without the removal of the existing asphalt. In view of the possibility that roof leaks may have contributed to the failure and in response to recent concerns, consultants have been asked to carry out a re-appraisal of blocks 16 and 17 as a precaution. A preliminary report will be made within two weeks and a full report within two months once the results of laboratory testing of concrete is received.

REDEVELOPMENT

15. The estate is scheduled for redevelopment in 1998 and 1999 under the Comprehensive Redevelopment Programme. We have to await the consultant's re-appraisal report and the results of the flat to flat inspection before making any decision as to whether it is necessary to bring forward the redevelopment. Due to a lack of reception accommodation in the area, any such decision will have a domino effect on the redevelopment programme of other estates in the district.

WAY FORWARD

16. Spalling will require on-going maintenance throughout the remaining limited life of Kwai Chung Estate. It is proposed to step up the existing flat to flat inspection of all Mark III flats by strengthening the inspection team to include Maintenance Surveyors, Structural Engineers and, where necessary, consultants. Over 20,000 flats are involved.

17. We shall also step up publicity to encourage tenants to report defects. Pamphlets explaining the causes and symptoms of spalling and reporting procedures will be distributed to tenants to allay their concerns and encourage early reporting of defects.

18. The incident has highlighted the difficulties resulting from the erection of false ceilings. It will be necessary to require tenants to remove parts of any ceiling erected by them in order to permit a thorough inspection to be carried out.

FINANCIAL IMPLICATIONS

19. Where it is necessary to appoint consultant, the approval of the Building Committee will be sought in the usual way.

PUBLICITY

20. There has been considerable media interest in Kwai Chung Estate. The Housing Authority has taken a very thorough, systematic and responsible approach to structural investigations and repairs. Any incident of this type is regrettable.

21. Publicity will emphasise that spalling problems are local and that there is no concern with the overall structural stability of the building. Tenants will be urged to report defects early. It is anticipated that some tenants may object to the removal of false ceilings for inspection and to repairs being undertaken, but we will explain to them the importance of this and the need for repairs.

DISCUSSION

22. This paper is issued for information, and discussion at the Building Committee on 22 June 1995, and the Management and Operations Committee on 24 June 1995 if members so wish.

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