CARTER·CLACK
PARTNERSHIP

BARLEY MOW ESTATE

FEASIBILITY CONSULTANCY

STAGE 1 REPORT

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1.0 INTRODUCTION

This stage 1 report aims to explain the present situation with regard to the information available and its review, results of the physical surveys, assessment of defects and options for repair works. A review of the stage 2 programme is also included.

2.0 INFORMATION AVAILABLE

The information available for use is as follows :-

- S P Christie & Partners stage 1 report.
- Scott Wilson Kirkpatrick & Partners Report, Volume 1 only.
- Drawings from Phillips Consultants showing the podium structure and limited information on the superstructure precast panels.
- Schematic details of the Limehouse Link.

Information of structural significance that has not been made available for our use is as follows :-

- S P Christie & Partners stage 2 report.
- Scott Wilson Kirkpatrick & Partners report, Volumes 2 to 5 inclusive.
- Calculations from Phillips Consultants.
- Details of the angle strengthening works to the tower block superstructure.

- Structural drawings and calculations for Kiln and Oast.

Some of the abovementioned information is known to be in existence.

3.0 ANALYSIS OF AVAILABLE INFORMATION

3.1 Risby, Maltings, Brewster and Barleycorn Way.

We have been able to establish the structural layout of the blocks, the location and construction of the precast concrete panel units and the detail of the main flank wall to floor joint known as H2. We do not know the detail of any other joints, however, none are as critical as the H2 joint.

The blocks were constructed in 1967. Following the Ronan Point collapse in 1968 the tower blocks were strengthened in 1969 to resist an accidental loading of $17kn/m^2$. The blocks were first inhabited during late 1969.

Reports on the structural condition of the blocks comment on the resistance to the $17kn/m^2$ accident load. These reports indicate that the tower blocks in their present condition will not resist this load due to the inadequacy of the bolts securing the strengthening angles.

3.2 Kiln and Oast Court

Due to a lack of information it is difficult to assess the structural layout of these blocks. They were however constructed during 1975 and appear to be framed in reinforced concrete with non load bearing brick infill cladding panels.

3.3 Limehouse Link

Schematic information has been obtained from the LDDC outlining the general nature and construction of the link. The specific brief of the S P Christie/Sir Alexander Gibb report is to assess the influence of the link construction on the estate. Although part 2 of the report is not available yet it is understood that, from a structural view;

a) Risby House will be adversely effected by the link road construction. A decision has been made to demolish this block.

b) 37-72 Barleycorn Way will also be adversely effected. We understand the LDDC are to engage a structural consultant to report on the condition of this block and any strengthening works required. It is believed that the block will be temporarily shored if permanent repairs are not complete before construction of the critical link road operations begin.

c) Maltings House will not be adversely effected by the works.

4.0 RESULTS OF THE PHYSICAL STRUCTURAL SURVEYS

The S P Christie and Scott Wilson Kirkpatrick reports have been used as the basis for establishing the structural condition of the blocks. Further inspections have been made by ourselves and, together with information from the BRE, a schedule of the major defects has been establish.

4.1 Maltings and Brewster House

The main defects are as follows :-

a) Flank Wall Joint H2 - cracks at levelling nuts.

b) Flank Wall Joint H2 - defective and insufficient mortar and/or concrete infill.

c) Strengthening Angles - insufficient edge distance to bolts.

d) Window Panels - overstressed support nibs.

e) Window Panels - horizontal bowing of panels causing horizontal gaps between floor units and window panels.

f) Window Panels - cracking at window lintels.

g) Wall Junctions - vertical gaps between non-load bearing internal walls and external window panels.

There are other minor defects which will be assessed further during stage 2.

4.2 1-36 and 37-72 Barleycorn Way

The defects in 4.1 above apply, excluding c). No strengthening angles have been applied, they are not required by legislation because Barleycorn Way is less than five storeys high.

4.3 Kiln and Oast Court

A structural survey of kiln and Oast has not been carried out.

5.0 OPTIONS FOR REPAIR

At this stage repair options will be discussed in isolation from re-development schemes, i.e. on the basis that the structural layout of the blocks remains unchanged. Re-development options will be considered in stage 2.

Five repair options have been considered ranging from 'Do Nothing' to complete demolition. These options are summarised on the next page.

Option 3 offers perhaps the most interesting level of strengthening because it will be the cheapest scheme where the end result may achieve dwellings which are mortgageable. The reasons why option 4 will not be considered in detail are discussed later in this report.

6.0 WHAT DO WE DO?

1. DO NOTHING (structurally)

   - no design life
   - will not comply to 17kn/m^2
   - normal loads, okay
   - no decant

2. STRENGTHEN LEVEL A

   - guestimate of design life only
   - complies to 17kn/m^2
   - normal loads, okay
   - no decant

3. STRENGTHEN LEVEL B

   - design for 30 year life
   - complies to 17kn/m^2
   - normal loads, okay
   - still no gas allowed
   - rolling or full decant

4. STRENGTHEN LEVEL C

- design for 30 year life
- complies to 34kn/m^2 progressive collapse.
- can use gas
- may be prohibitively expensive
- full decant

5. DEMOLISH AND RE-BUILD

- 30 year design life
- may be better overall value than Option 4.
- full decant

7.0 GAS INSTALLATION AND PROGRESSIVE COLLAPSE

Option 4 considers the re-introduction of a gas supply within the tower blocks and strengthening to resist a progressive collapse from an abnormal load of 34kn/m^2. Firstly we believe that a scheme could be evolved to strengthen the blocks to 34kn/m^2, this was achieved on Ronan Point and seven other similar TWA blocks. The cost of these works would be considerable however and a demolition option may offer better value.

Secondly, although the Building Regulations imply a gas supply may be provided for tall buildings capable of withstanding the 34kn/m^2 design load, gas has not been reintroduced to any TWA block strengthened to this standard. Consideration must therefore be given to the possible delicate nature of the decision making process to achieve the reintroduction of a gas supply. Informal discussions so far with the relevant authorities has highlighted a definite reluctance to the reintroduction of gas.

As a compromise TWA blocks have been strengthened to resist a design pressure of 17kn/m^2 without the reintroduction of gas. The weak link of an unstrengthened block is the capacity of the panel joints. These joints were strengthened in 1969 using angles and this enabled the failing capacity of a typical floor unit to be achieved. This figure was established from Ronan Point investigations to be 17kn/m^2. The BRE report on 'Ronan Point and other TWA buildings' suggests that the concept of 17kn/m^2 with no gas provision is acceptable. This is the basis for our option 3 strengthening proposals.

8.0 REVIEW OF STAGE 2 PROGRAMME

a) Further development of the repair option schemes.

b) Establishing structural alteration, refurbishment and new build schemes in conjunction with ECD.

c) Evaluation of additional drawing and calculation information if it becomes available.