

Committee:	Date(s):	Item no.
Residents' Consultation Committee	12 March 2012	8
Barbican Residential Committee	26 March 2012	
Subject: Concrete Investigation – Barbican Towers		
Report of: Director of Community and Children's Services		Public
<p style="text-align: center;"><u>Summary</u></p> <p>1. This report provides a background to the concrete investigations and remedial works being undertaken to the three tower blocks. The general conclusion is that the concrete has been assessed to be in remarkably good condition for its age and that further works of this nature should not be necessary for 20 to 30 years.</p> <p style="text-align: center;">Recommendation</p> <p>2. The contents of this report are noted.</p>		

Background

1. Cromwell Tower, Lauderdale Tower and Shakespeare Tower were completed respectively in 1973, 1974 and 1976. They are Grade II listed buildings.
2. In June 2011, a section of concrete to Shakespeare Tower was reported as being loose. This was immediately removed and made safe. A firm of building pathology specialists, Bickerdike Allen Partners were engaged to advise on how best to proceed. Their advice was that all three blocks, due to the health and safety risks, should be inspected for loose concrete fragments, for concrete and reinforcement deterioration, and concrete samples taken from all elevations for laboratory analysis.
3. A specification was prepared and tenders invited for the work. The contract was subsequently awarded to Structural Renovations Ltd.

The Inspections

4. The elevations to the three blocks were examined by engineers using abseiling techniques combined with protection at ground level using

scaffolding. Hammer tests were carried out to all parts and any loose material was safely removed.

5. Tests carried out on the concrete included cover to the reinforcement, carbonation, cement content, half cell and resistivity tests (to record corrosion) and chloride contamination.

Results Obtained

6. In general it was noted that although the structures do have a significant number of visible concrete defects in the areas surveyed it is generally free of visible concrete defects as a whole, i.e. considering the amount of exposed concrete and its age, indicating a generally good quality, well-constructed concrete structure. The following extract from the specialist's report provides a summary of the findings:

The test and investigation results obtained indicate that the concrete elements are generally in a good / satisfactory condition although there are localised areas of significant deterioration predominantly as a result of poor compaction and / or low original cover and carbonation.

The visual inspection of the facades found a number of defects to the elements and any immediately loose material found in areas accessed at the time of inspection was safely removed.

The cover and carbonation test results indicated that generally reinforcement is within alkaline (uncarbonated) concrete. The mean covers were all >40mm and the mean carbonation results were around 10mm or less. The mean carbonation results were slightly skewed by the results in localised areas of poor compaction. The minimum recorded covers were generally low and indicative of localised areas of low cover, notably to the balcony top edges and landing beams.

The vast majority of the chloride test results were considered to be of low risk, edging into moderate risk, except for one high risk result (suggesting very localised contamination). Therefore chlorides were not considered a significant factor in the deterioration found at this time (although in some areas they may have exacerbated corrosion).

The half cell test results and resistivity testing (at 9 test areas) generally indicated low, if any, levels of corrosion activity at the time of testing.

Estimated Costs

7. Based on budget costings for the additional repair works, the following costs per block are anticipated:

Shakespeare Tower (works commenced 30th January, for completion w/c 26th March)

The estimated works cost of £143,253.50 plus staff costs (15%) of £21,488.03, gives a total of £164,741.53.

The original Section 20 notice amount was £98,253.70, so the estimated extra over amount for the block would be £66,487.83.

Lauderdale Tower (works expected to commence w/c 13th February for completion w/c 26th March)

The estimated works cost of £137,862.00 plus staff costs (15%) of £20,679.30, gives a total of £158,541.30.

The original Section 20 notice amount was £85,395.55, so the estimated extra over amount for the block would be £73,145.75.

Cromwell Tower (works expected to commence w/c 27th February for completion w/c 26th March)

The estimated works cost of £153,866.50 plus staff costs (15%) of £23,079.98, gives a total of £176,946.48.

The need for a road closure to deal with the Silk Street elevation of Cromwell Tower has been a significant factor in the increased costs for this block, relative to the other two.

The original Section 20 notice amount was £99,004.65, so the estimated extra over amount for the block would be £77,941.83

Under the Landlord and Tenant Act, a further notice will be issued to residents informing them of the increased costs.

Insurance Issues

8. With respect to an insurance claim for the work, the City's Buildings

Insurance Cover specifically excludes damage by wear and tear or damage “that happens gradually”. As the defects have occurred over time, the works are not covered by the City’s insurance.

Conclusion

9. The tests and investigations were required to be undertaken to ensure the safety of residents and the public and to maintain the building fabric. The repair works using specialist products to localised areas, are considered to be very minor in structural terms. This will help preserve the durability of the structure for the future.

Background Papers:

Minutes of Residents’ Consultation Committee 30 January 2012

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