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## **Tustin Estate Low Rise Repairs**

### **Structural Repairs to Blocks of Flats**

**Ref:** 200535/J Ham

**Approved By:** G Johns

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## **1.0 INTRODUCTION**

1.1 Conisbee has been appointed by Sophie Hall-Thompson of Southwark Council, organised by Robert Forrest of Hunters. Our brief is to carry out visual inspections and report on the current structural condition and remedial structural works required at the following blocks on the Tustin Estate:

- Heversham House
- Kentmere House
- Bowness House
- Ullswater House
- Hill Beck Close

1.2 James Ham of Conisbee attended site to carry out an initial external visual inspection on 31<sup>st</sup> July 2020. A follow up inspection with internal access was carried out on 14<sup>th</sup> August 2020. No opening up was carried out and the inspections were visual only.

1.3 This report is intended for the use of our client, Hunters, and their client, Southwark Council, and no liability can be accepted for use by any third party. Furthermore whilst this investigation has been taken far enough to satisfy the requirements of the brief, it has, of necessity, not been exhaustive. The findings cannot therefore be warranted to apply to areas of the building not inspected or investigated.

## **2.0 PROPERTY TYPE, CONSTRUCTION & CONTEXT**

2.1 Heversham House, Kentmere House and Bowness House are all blocks of flats comprising reinforced concrete frames and brickwork infill panels.

2.2 Heversham House includes a long block of six storeys, made up of maisonettes with external walkways at second and fourth floors with three communal stairways. There is a second smaller block at the south end of the main block with linking bridges at each floor level. The smaller block comprises five storeys of flats, with access walkways at each level, over a podium structure. Significant features include: jettied bays at the upper floor of each maisonette, supported by concrete columns; reinforced concrete lift shafts; and rear balconies at lower floors to each maisonette.

- 2.3 Kentmere House is mostly of three storeys, but lowers to two storeys at one end. Floors and cantilever walkways are of reinforced concrete construction. It is unclear whether the brickwork walls are load bearing, or whether there are concealed concrete columns within the building. Window lintels are formed of reinforced concrete beams which appear to be downstands from the floor slabs. There are breaks in the second floor to form open external drying areas.
- 2.4 Bowness House is a five storey block with commercial street facing units at ground floor level and maisonettes above. The commercial units extend significantly to the front beyond the footprint of the storeys above. The two storey maisonettes are accessed from communal external walkways at first and third floor levels to the rear of the block. There are inset balconies at first and third floor levels to the front elevation. The shop fronts include a cantilevered concrete canopy with a slender upstand to the front edge.
- 2.5 Ullswater House and Hill Beck Close are of a similar architectural style. Ullswater House comprises a larger block with the central courtyard. Hill Beck Close comprises four smaller blocks. The blocks are interconnected by glazed covered walkways. As the dwellings within are single storey units, it is thought that the first floor construction is reinforced concrete. Flat roofs are likely to comprise timber joists. External walls are largely stretcher bond brickwork. At ground and first floor levels there are pre-cast concrete elements forming continuous bands around the buildings. Window openings are full storey height with a composite panel below window cill level.

### **3.0 DESK STUDY**

- 3.1 Martech carried out investigations at all blocks covered by this report. No significant chloride concentrations were identified.
- 3.2 At Kentmere House the carbonation front has exceeded the cover depth in some elements. At the downstand beams the average carbonation depth of 38mm significantly exceeds the average cover of 14mm, representing a high risk of deterioration.
- 3.3 At Heversham House the average cover depth generally exceeds the average depth of the carbonation front. There is, however, some overlap of the ranges meaning that in places the carbonation will exceed the cover, leading to concrete defects.
- 3.4 At Bowness House the pattern is similar to Kentmere House, with some overlap in the range of recordings for cover and carbonation.

3.5 At Ullswater House and Hill Beck Close the depth of carbonation is very low. Even though some of the cover is also quite low, the ranges do not overlap. This is likely to reflect the better quality achieved in the factory production of pre-cast concrete elements, compared with on-site in-situ concrete casting.

#### 4.0 OBSERVATIONS

##### 4.1 Heversham House

4.1.1 Concrete durability defects were observed at the exposed reinforced concrete elements including:

- external walkway soffits (see Photograph 1) and parapets
- downstand beams over window openings (see Photograph 2)
- concrete columns
- exposed slab edges
- roof level parapets.

4.1.2 Pigmented coatings have been applied to all exposed concrete elements. The coatings are failing in places.

4.1.3 Brickwork nibs at party walls project to the rear elevation. In places there is vertical cracking through the nibs (see Photograph 3). This may result from differential thermal movement of the brick and concrete elements over the length of the building.

4.1.4 Whilst the brickwork generally appeared to be in reasonable condition, it is likely that on close-up inspection some areas of weathering are found.

4.1.5 There is an accumulation of cables and ducting applied to the front of the building. This may require temporary removal in order to carry out repairs.

4.1.6 There is damage the supporting walls at the door hangers to a bin store. It is not clear whether this results from reinforced concrete defects or if the wall is in infill masonry panel.

##### 4.2 Kentmere House

4.2.1 Concrete durability defects were observed at the exposed reinforced concrete elements including:

- cantilevered walkway soffits and parapets
- downstand beams over window openings (see Photograph 4)
- exposed slab edges
- spandrel panels below windows

- roof level parapets

- 4.2.2 Pigmented coatings have been applied to all exposed concrete elements. The coatings are failing in places.
- 4.2.3 There are slip bricks covering concrete elements at the top of infill brickwork panels. In places the slip bricks have burst (see Photograph 5), possibly indicating concrete defects behind. It have also result from lack of a soft joint at the top of the brickwork and/or inadequate adhesion to the concrete behind.
- 4.2.4 Cracking to brickwork and opening up of mortar joints at second floor level is visible from the clothes drying areas at second floor level (see Photograph 6). This may result from inadequate bonding of brickwork, differential movement of concrete and brickwork elements or a combination of the two factors.
- 4.2.5 Whilst the brickwork generally appeared to be in reasonable condition, it is likely that on close-up inspection some areas of weathering are found.

#### 4.3 Bowness House

- 4.3.1 Concrete durability defects are widespread. This applies to all exposed reinforced concrete elements including:
- exposed slab soffits
  - exposed slab edges
  - parapets (see Photograph 7)
  - the external stair
  - shop front canopies (see Photograph 8)
  - concrete columns
  - RC external walls.
- 4.3.2 Previous concrete repairs have been carried out including recreation of exposed aggregate finishes. Repairs are failing which appears to be due to not having been carried out in accordance with best practice.
- 4.3.3 Exposed concrete elements feature an exposed aggregate finish
- 4.3.4 There is extensive brickwork staining to all elevations. This, along with weathering, may be hiding mortar loss and damaged brickwork.
- 4.3.5 Brickwork nibs at party walls project to the front elevation. In places there is vertical cracking thought the front face and side faces of the nibs (see Photograph 9). This may result from deterioration of nearby concrete elements embedded in the brickwork.

4.3.6 Vegetation has become established at high level horizontal surfaces. This may have resulted in damage to the brickwork.

4.4 Ullswater House and Hill Beck Close

4.4.1 There is occasional spalling to the pre-cast concrete band elements (see Photograph 10).

4.4.2 No significant brickwork defects were observed to external elevations. However it is likely that on close-up inspection some areas of weathering are found.

**5.0 CONCLUSIONS AND RECOMMENDATIONS**

5.1 Based upon our visual inspections and the Martech testing data, the blocks concerned were generally found to be in a fair structural condition for their type and age. A lack of meaningful maintenance has resulted in localised reinforced concrete defects and some associated brickwork defects.

5.2 The extent of concrete spalling is such that there is a clear risk to users of the building of fabric becoming detached and falling. We recommend that immediate action is taken to manage and minimise the risk by carried out one or a combination of the following measures: a safety survey to remove loose material; an exclusion zone; a protective fan; and encapsulation.

5.3 In order to maintain the useful working lives of these buildings structural repairs should be carried out. The defects observed may be remedied using normal brickwork and concrete repair techniques in accordance with BS EN 1504.

5.4 Concrete repairs:

5.4.1 Carbonation occurs to concrete as a natural process where the concrete changes chemically where exposed to external environments. When cast the concrete is alkaline, forming a protective alkaline passive environment for the embedded steel. As the carbonation front advances from the external face, the concrete becomes acidic, no longer providing the passive environment and creating the conditions for the electrochemical process of corrosion to begin. When the carbonation depth exceeds the cover provided to embedded steel bars the corrosion cycle can take place.

5.4.2 The advancement of the carbonation front can be controlled with protective coatings. Corrosion to steel in an already acidic environment may be mitigated with migrating corrosion inhibitors which may be surface applied or installed as pellets in drilled holes.

- 5.4.3 Chlorides are commonly found chemically embedded in concrete structures. In buildings of a certain age this may be cast in as a consequence of its use as an accelerator to the curing process. It may also occur by water ingress associated with the use of de-icing salts. High concentrations may require more advanced methods to manage corrosion, such as galvanic anodes and impressed current cathodic protection.
- 5.4.4 Concrete defects at all blocks do not appear to have caused any significant structural weakening of the blocks and repairs may be carried out by conventional means, using a proprietary repair system of slurry primers, bonding agents and hand applied repair mortars.
- 5.4.5 As chloride concentrations are low, corrosion inhibitors should be applied through the structures to manage the advancement of carbonation.
- 5.4.6 At the time the buildings were designed and built, the relevant concrete design code was CP114. This document stated that cover to embedded reinforcement bars should be 1½ inches, or 40mm, in an external exposed location. Whilst this requirement is met or exceeded by the maximum and even average cover depths, there are significant cases of inadequate cover. This is a common defect resulting from the variable workmanship found on site in such building projects and poor detailing such as drip profiles and asphalt tucks.
- 5.4.7 As coatings have already been applied at Kentmere House and Heversham House pigmented anti-carbonation elastomeric protective coatings may be applied. A scoring adhesion/cross-hatch test must be carried out prior to application to verify the suitability of the substrate for application of new coatings.
- 5.4.8 Concrete elements at Bowness House, Ullswater House and Hill Beck Close feature exposed aggregate finishes. In order to maintain the existing appearance a pore filler is required prior to over-coating with clear protective coatings. This is likely to be a more expensive process and clear coatings have a shorter service life than pigmented equivalents. The concrete repairs to exposed aggregate finishes to match the existing appearance, whilst technically possible, are also likely to be more time consuming and costly, using dyes and finishing techniques. On the other hand, to apply pigmented coatings to these blocks will significantly alter their external appearance, which may have planning implications. It may be considered by the client that pigmented coatings present the opportunity to enhance the appearance of the estate.
- 5.4.9 Elastomeric protective coatings should not be applied to soffits, where inelastic finishes are more appropriate.

5.4.10 The client must ensure that adequate maintenance, repairs and, where appropriate, replacement of deck surface membranes is carried out to prevent water ingress to the concrete structure. This is to be in conjunction with normal building maintenance, such as clearing drains, gutters and downpipes to manage standing water on the structure.

5.4.11 Repair works are likely to comprise a combination of the following, according to the requirements of each block.

- Cleaning all surfaces (such as jet washing, wet abrasive, poultice/mechanical techniques as may be required) to remove loose coatings and dirt.
- Close up hands-on and hammer tap surveys.
- Breakout defective concrete.
- Clean and prime exposed and corroded steel bars.
- Apply a bonding slurry and apply proprietary concrete repair mortars by hand.
- Apply corrosion inhibitors.
- Apply surface treatment, such as pore fillers.
- Apply protective coatings.

5.4.12 The works required at each block are detailed by element type in the four Conisbee Specification documents.

## 5.5 Brickwork repairs

5.5.1 The brickwork repairs may be completed with normal building repair techniques. Some localised investigations may be required to identify the underlying causes to inform repairs. Repairs are likely to comprise a combination of stainless steel helical bar stitching, localised repairs and rebuilding and re-pointing.

5.5.2 Slip brick defects will require hammer tap surveys to identify loose and/or damaged units. Any underlying defects must be dealt with before slip bricks are re-applied. Slip bricks may be reused where in adequate condition, but replacement units are likely to be required. Suitable resin anchor systems should be used as required to restrain slip bricks, and a soft joint should be provided between slip bricks and the soffit above.

5.5.3 Localised repointing should be allowed for at each block. Following jet washing weathering of mortar joints is likely to be identified during close up surveys from the scaffold.

## 5.6 Cost Estimates

- 5.6.1 We have prepared cost estimates for undertaking the recommended repairs to blocks, based on their current condition. These are detailed in a separate document titled *Approximate Estimate for Concrete Repairs, Surface Treatments and Brickwork Repairs*, by David Parker dated January 2021. It should be noted that these estimates are for costing purposes only and are not prepared for tender.
- 5.6.2 Martech technical reports and cost plans were used to inform our cost estimates, appended to this report. It should be noted that our estimates supersede those by Martech following a more detailed assessment by our quantity surveyor as well as taking in structural works beyond concrete maintenance and repair contained within the Martech cost plan.
- 5.6.3 Cyclical maintenance will be required to sustain the protection provided to the concrete structures by the remedial systems used. Failure to do so will result in the protective coatings breaking down and the possibly resumption of concrete durability defects.
- 5.6.4 A typical outline maintenance regime may include visual inspection at year five to assess the condition of concrete structures. Providing products are performing as expected a further visual inspection at year ten (following the completion of repairs) along with redecoration with specialist concrete protective coatings. A similar cycle can then be anticipated, with a visual inspection at year fifteen, followed by a further visual inspection and a further round of redecorations. With a further five year period before the next round of visual inspections, the client may expect a design life of twenty-five years providing the maintenance plan of protective coating is observed.

6.0 PHOTOGRAPHS



Photograph 1 – Heversham House – spalling to soffits.



Photograph 2 – Heversham House – Spalling to downstand beams over window openings.



**Photograph 3 – Heversham House – Vertical cracking through brickwork nibs.**



**Photograph 4 – Kentmere House – Spalling to downstand beams over window openings.**



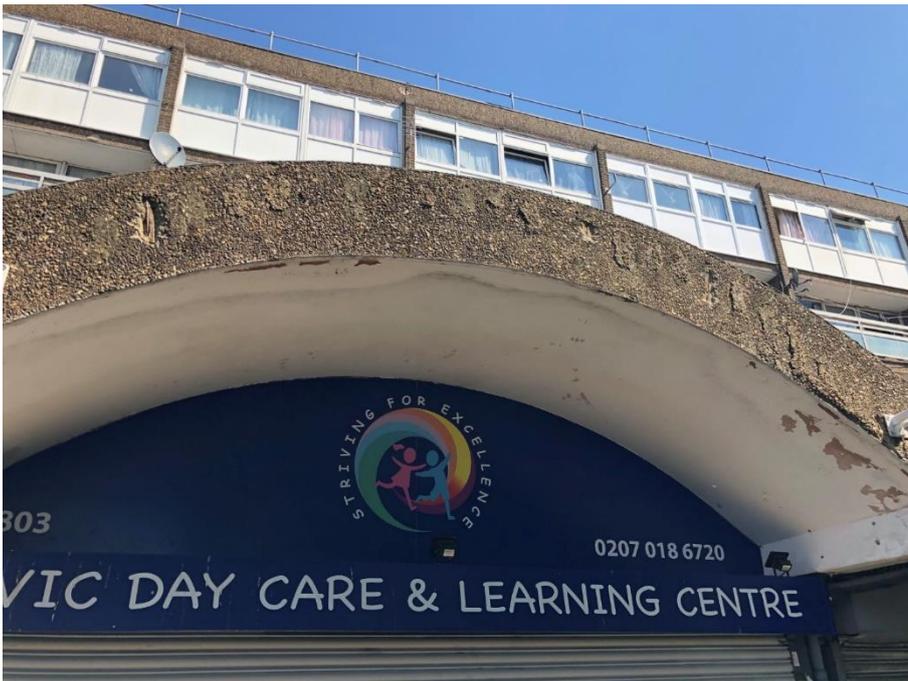
**Photograph 5 – Kentmere House – Damage to slip bricks.**



**Photograph 6 – Kentmere House – Vertical cracking to external brickwork at second floor level.**



**Photograph 7 – Bowness House – Spalling to rear face of parapet over shop fronts.**



**Photograph 8 – Bowness House – Spalling to slender concrete upstand to shop front canopies.**



**Photograph 9 – Bowness House – Vertical cracking to external brickwork at second floor level.**



**Photograph 10 – Typical concrete defect at Ullswater House and Hill Beck Close.**

**APPENDIX A – CONISBEE REPAIR SPECIFICATIONS**









**APPENDIX B – APPROXIMATE COST ESIMATES**

**REVISED APPROXIMATE ESTIMATE**

**FOR**

**CONCRETE REPAIRS, SURFACE TREATMENTS AND  
BRICKWORK REPAIRS**

**TO**

**EXTERNAL ELEVATIONS**

**AT**

**TUSTIN ESTATE, LONDON, SE15 1EJ**

**FOR**

**LONDON BOROUGH OF SOUTHWARK**

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JANUARY 2021

# TUSTIN ESTATE, LONDON, SE15 1EJ

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**1.00 INTRODUCTION**

This report has been produced in order to provide an Approximate Estimate of Costs for carrying out essential concrete and brick repairs, sealant and treatment works to external elevations to Kentmere, Heversham, Ullswater, Hill Beck and Bowness Houses on the Tustin Estate, London, SE15 1EJ for The London Borough of Southwark.

**2.00 INFORMATION USED**

The following information prepared by Conisbee has been used in formulating the estimate:

- Structural repairs low rise repairs dated 27/08/2020.
- Specification schedules dated 27/08/2020.

**3.00 BASIS OF ESTIMATING**

The estimate has been set out on an elemental basis with separate sections for each block of apartments/units and using quantities measured on site using allowances stated by Conisbee and priced upon current competitive tender return levels.

It has been assumed that the works will be carried out as one contract but works split into phases with a maximum of two blocks being worked on at the same time with an anticipated overall contract period of 18 months.

The location and vicinity of the other buildings has been considered in the preparation of this estimate.

Where concrete and brickwork repairs occur the repairs would be carried out to match existing including replicating existing profiles, drip details, existing textured and exposed aggregate finishes to all surfaces.

<b>4.00</b>	<b>APPROXIMATE ESTIMATE OF COSTS – HOUSES</b>		
<b>4.01</b>	<b>KENTMERE HOUSE</b>		
1.	<u>Preparation</u>		
-	Move tenants' possessions, temporarily relocate all cables, satellite dishes and refix on completion of the works	Subtotal 1	10,000
2.	<u>Scaffolding</u>		
-	Fully scaffold, net, crash deck to all elevations.	Subtotal 2	65,000
3.	<u>Inspection and testing</u>		
-	Surface preparation of concrete by means of high pressure water jet.		
-	- Concrete soffits (410m <sup>2</sup> ).	2,000	
-	- Walls, parapets, roof banding, banding (1450m <sup>2</sup> ).	7,300	
-	Ditto brick walls.	13,000	
-	Visual and hammertap defects.		
-	- Concrete soffits (410m <sup>2</sup> ).	1,000	
-	- Walls, parapets, roof banding, banding (1450m <sup>2</sup> ).	3,000	
-	Visual inspection of brickwork and report.	2,000	
		Subtotal 3	28,300
4.	<u>Concrete treatments/repairs</u>		
-	Cut out and repair defective concrete in small areas including reinforcement, reinstate to match existing.		
-	- Concrete soffits 410m <sup>2</sup> x 2% = 8m <sup>2</sup> .	3,200	
-	- Concrete walls, parapets, roof banding, banding 1450m <sup>2</sup> x 2%= 29m <sup>2</sup> .	11,600	
-	Application of corrosion inhibitors, anti carbonation pigmented protective coatings.		
-	- Concrete soffits (410m <sup>2</sup> ).	12,300	
-	- Concrete walls, parapets, roof banding, banding (1450m <sup>2</sup> ).	43,500	
-	Application of paint to match existing to all concrete surfaces (incl above).		
-	- Concrete soffits (410m <sup>2</sup> ).	-	
-	- Concrete walls, parapets, roof banding, banding (1450m <sup>2</sup> ).	-	
		Subtotal 4	70,600
5.	<u>Brickwork repairs</u>		
-	Repointing defective areas – minor say 350m <sup>2</sup> .	14,000	
		C/F £	14,000
			173,900

<b>4.00</b>	<b>APPROXIMATE ESTIMATE OF COSTS (CONT)</b>		
<b>4.01</b>	<b>KENTMERE HOUSE (CONT)</b>		
		B/F £	
			14,000
			173,900
5.	<u>Brickwork repairs (cont)</u>		
-	Cut out and replace defective brickwork including brick stitching and stainless steel helical bar stitching (nibs and sundry areas and also brick slips in various areas) – minor say 100m <sup>2</sup> .		25,000
		Subtotal 5	39,000
6.	<u>Sundries</u>		
-	Repairs to defective movement joints – say.	Subtotal 6	3,000
			212,900
	MAIN CONTRACTORS PRELIMINARIES		35,300
			248,200
	MAIN CONTRACTORS OVERHEAD AND PROFIT 10%		24,800
	CONTINGENCY 10%		24,800
	<b>TOTAL KENTMERE HOUSE COSTS</b>		<b>£297,800</b>
<b>4.02</b>	<b>HEVERSHAM HOUSE</b>		
1.	<u>Preparation</u>		
-	Move tenants' possessions, temporarily relocate all cables, satellite dishes and refix on completion of the works	Subtotal 1	15,000
2.	<u>Scaffolding</u>		
-	Fully scaffold, net, crash deck to all elevations.	Subtotal 2	140,000
3.	<u>Inspection and testing</u>		
-	Surface preparation of concrete by means of high pressure water jet.		
-	Concrete soffits (1050m <sup>2</sup> ).		5,300
-	Walls, parapets, roof banding, banding, columns, boiler room chimney, stair walls (5065m <sup>2</sup> ).		25,300
-	Ditto brick walls.		100,000
		C/F £	130,600
			155,000

<b>4.00</b>	<b>APPROXIMATE ESTIMATE OF COSTS (CONT)</b>		
<b>4.02</b>	<b>HEVERSHAM HOUSE (CONT)</b>		
		B/F £	130,600
3.	<u>Inspection and testing (cont)</u>		
-	Visual and hammer tap defects.		
	- Concrete soffits (1050m <sup>2</sup> ).	2,600	
	- Walls, parapets, roof banding, banding, columns, boiler room chimney, stair walls (5065m <sup>2</sup> ).	10,700	
-	Visual inspection of brickwork and report.	7,000	
		Subtotal 3	150,900
4.	<u>Concrete treatments/repairs</u>		
-	Cut out and repair defective concrete in small areas including reinforcement, reinstate to match existing.		
	- Concrete soffits 1050m <sup>2</sup> x 2% = 21m <sup>2</sup> .	8,400	
	- Concrete walls, parapets, roof banding, banding, columns, boiler room chimney, stair walls 5065m <sup>2</sup> x 2% = 101m <sup>2</sup> .	40,000	
-	Application of corrosion inhibitors, anti carbonation pigmented protective coatings.		
	- Concrete soffits (1050m <sup>2</sup> ).	31,500	
	- Walls, parapets, roof banding, banding, columns, boiler room chimney, stair walls (5065m <sup>2</sup> ).	152,000	
-	Application of paint to match existing to all concrete surfaces (incl above).		
	- Concrete soffits (1050m <sup>2</sup> ).	-	
	- Walls, parapets, roof banding, banding, columns, boiler room chimney, stair walls (5065m <sup>2</sup> ).	-	
		Subtotal 4	231,900
5.	<u>Brickwork repairs</u>		
-	Repointing defective areas – minor say 500m <sup>2</sup> .	20,000	
-	Cut out and replace defective brickwork including brick stitching and stainless steel helical bar stitching (nibs and sundry areas and also brick slips in various areas) – minor say 150m <sup>2</sup> .	37,500	
		Subtotal 5	57,500
6.	<u>Sundries</u>		
-	Repairs to defective movement joints – say.	Subtotal 6	3,000
		C/F £	598,300

<b>4.00</b>	<b>APPROXIMATE ESTIMATE OF COSTS (CONT)</b>		
<b>4.02</b>	<b>HEVERSHAM HOUSE (CONT)</b>		
		B/F £	598,300
	MAIN CONTRACTORS PRELIMINARIES		98,700
			697,000
	MAIN CONTRACTORS OVERHEAD AND PROFIT 10%		69,700
	CONTINGENCY 10%		69,700
	<b>TOTAL HEVERSHAM HOUSE COSTS</b>		<b>£836,400</b>
<b>4.03</b>	<b>ULLSWATER HOUSE</b>		
1.	<u>Scaffolding</u>		
-	Fully scaffold to all elevations and provide crashdeck over entrances.	Subtotal 1	50,000
2.	<u>Inspection and testing</u>		
-	Visual and hammer tap defects.		
-	- Concrete banding at ground, first and roof (500m <sup>2</sup> ).	1,500	
-	- Visual inspection of brickwork and report,	1,500	
		Subtotal 2	3,000
3.	<u>Concrete treatments/repairs</u>		
-	Cut out and repair defective concrete in small areas including reinforcement, reinstate to match existing (10m <sup>2</sup> ).	4,000	
-	Application of corrosion inhibitors to areas around repaired areas.	500	
		Subtotal 3	4,500
4.	<u>Brickwork repairs</u>		
-	Repointing defective areas – minor say 100m <sup>2</sup> .	4,000	
-	Cut out and replace defective brickwork including brick – minor say 20m <sup>2</sup> .	5,000	
		Subtotal 4	9,000
	MAIN CONTRACTORS PRELIMINARIES		66,500
			10,000
			76,500
	MAIN CONTRACTORS OVERHEAD AND PROFIT 10%		7,700
	CONTINGENCY 10%		7,700
	<b>TOTAL ULLSWATER HOUSE COSTS</b>		<b>£91,900</b>

<b>4.00</b>	<b>APPROXIMATE ESTIMATE OF COSTS (CONT)</b>		
<b>4.04</b>	<b>HILLBECK CLOSE</b>		
1.	<u>Scaffolding</u>		
-	Fully scaffold to all elevations and provide crashdeck over entrances.	Subtotal 1	70,000
2.	<u>Inspection and testing</u>		
-	Visual and hammertap defects.		
-	Concrete banding at ground, first and roof (750m <sup>2</sup> ).	2,300	
-	Visual inspection of brickwork and report,	2,300	
		Subtotal 2	4,600
3.	<u>Concrete treatments/repairs</u>		
-	Cut out and repair defective concrete in small areas including reinforcement, reinstate to match existing (15m <sup>2</sup> ).	6,000	
-	Application of corrosion inhibitors to areas around repaired areas.	900	
		Subtotal 3	6,900
4.	<u>Brickwork repairs</u>		
-	Repointing defective areas – minor say 125m <sup>2</sup> .	5,000	
-	Cut out and replace defective brickwork including brick – minor say 20m <sup>2</sup> .	5,000	
		Subtotal 4	10,000
			91,500
	MAIN CONTRACTORS PRELIMINARIES		13,700
			105,200
	MAIN CONTRACTORS OVERHEAD AND PROFIT 10%		10,500
	CONTINGENCY 10%		10,500
	<b>TOTAL HILLBECK CLOSE COSTS</b>		<b>£126,200</b>
<b>4.05</b>	<b>BOWNESS HOUSE</b>		
1.	<u>Preparation</u>		
-	Move tenants' possessions, temporarily relocate all cables, satellite dishes and refix on completion of the works.	Subtotal 1	15,000
2.	<u>Scaffolding</u>		
-	Fully scaffold, net, crash deck to all elevations.	Subtotal 2	160,000
		C/F £	175,000

<b>4.00</b>	<b>APPROXIMATE ESTIMATE OF COSTS (CONT)</b>		
<b>4.05</b>	<b>BOWNESS HOUSE (CONT)</b>		
		B/F £	175,000
3.	<u>Inspection and testing (Note: includes church, shop facades, staircase soffits and walls)</u>		
-	Surface preparation of concrete by means of high pressure water jet (excludes soffits covered in panelling).		
-	- Concrete soffits including curved soffits (600m <sup>2</sup> ).	3,000	
-	- Walls, parapets, roof banding, banding, columns, stair walls (1,300m <sup>2</sup> ).	6,500	
-	Ditto brick walls.	50,000	
-	Visual and hammertap defects.		
-	- Concrete soffits including curved soffits (600m <sup>2</sup> ).	1,500	
-	- Walls, parapets, roof banding, banding, columns, stair walls (1,300m <sup>2</sup> ).	3,300	
-	Visual inspection of brickwork and report.	3,000	
		Subtotal 3	67,300
4.	<u>Concrete treatments/repairs</u>		
-	Cut out and repair defective concrete in small areas including reinforcement, reinstate to match existing.		
-	- Concrete soffits 600m <sup>2</sup> x 5% = 30m <sup>2</sup> .	12,000	
-	- Concrete walls, parapets, roof banding, banding, columns, stair walls 1300m <sup>2</sup> x 5% = 65m <sup>2</sup> .	26,000	
-	- Additional repairs over shop units, front parapets.	15,000	
-	Application of pore fillers/fairing coats, corrosion inhibitors, anti carbonation coatings, protective coatings.		
-	- Concrete soffits.	18,000	
-	- Concrete walls, parapets, roof banding, banding, columns, stair walls.	39,000	
		Subtotal 4	110,000
5.	<u>Brickwork repairs</u>		
-	Repointing defective areas – minor say 500m <sup>2</sup> .	20,000	
-	Cut out and replace defective brickwork including brick stitching and stainless steel helical bar stitching (nibs and sundry areas and also brick slips in various areas) – minor say 200m <sup>2</sup> .	50,000	
		Subtotal 5	70,000
		C/F £	422,300

<b>4.00</b>	<b>APPROXIMATE ESTIMATE OF COSTS (CONT)</b>		
<b>4.05</b>	<b>BOWNESS HOUSE (CONT)</b>		
		B/F £	422,300
6.	<u>Sundries</u>		
-	Repairs to defective movement joints – say.	Subtotal 6	3,000
			425,300
	MAIN CONTRACTORS PRELIMINARIES		64,000
			489,300
	MAIN CONTRACTORS OVERHEAD AND PROFIT 10%		48,900
	CONTINGENCY 10%		48,900
	<b>TOTAL BOWNESS HOUSE COSTS</b>		<b>£587,100</b>
<b>5.00</b>	<b>COST SUMMARY (Kentmere, Heversham, Ullswater, Hillbeck and Bowness House)</b>		
<b>4.01</b>	<b>KENTMERE HOUSE</b>		297,800
<b>4.02</b>	<b>HEVERSHAM HOUSE</b>		836,400
<b>4.03</b>	<b>ULLSWATER HOUSE</b>		91,900
<b>4.04</b>	<b>HILLBECK CLOSE</b>		126,200
<b>4.05</b>	<b>BOWNESS HOUSE</b>		587,100
	<b>TOTAL APPROXIMATE ESTIMATE OF COSTS FOR KENTMERE, HEVERSHAM, ULLSWATER, HILLBECK AND BOWNESS HOUSE</b>		<b>£1,939,400</b>
<b>6.00</b>	<b>EXCLUSIONS</b>		
-	VAT @ 20%.		
-	Professional fees.		

<b>7.00</b>	<b>COSTS FOR THIRTY YEAR DESIGN LIFE</b>		
	The below costs reflect current costs but over a 30 year period.		
7.01	<u>Kentmere, Heversham, Ullswater, Hillbeck and Bowness House</u>		
a.	Visual inspection after 5 years from accessible areas.		15,000
b.	Carry out repairs and inspection after year 10 all as section 4 costs above (excludes concrete repairs, corrosion inhibitors).		
	Kentmere House		263,200
	Heversham House		739,200
	Ullswater House		81,200
	Hillbeck Close		111,500
	Bowness House		518,900
	Total		1,714,000
c.	Visual inspection after 15 years from accessible areas.		15,000
d.	Carry out repairs and inspections after year 20 all as section 4 costs above (ditto).		
	Kentmere House		263,200
	Heversham House		739,200
	Ullswater House		81,200
	Hillbeck Close		111,500
	Bowness House		518,900
	Total		1,714,000