

## **APPENDIX C**

**UP AND UNDER SURVEY UU4779/SHS/SEPT 2016-09-15  
(Extract only)**

**CR ENGINEERING REPORT REPLACEMENT SPACE  
HEATING BLOCKS EFAG AND EFAH**

#### 4 SUMMARY OF INSPECTION FINDINGS

A summary of the findings is provided below. Detailed findings, in the form of schematic drawings are provided in Appendix B. Referenced photographs can be found in Appendix A. For investigation findings refer to section 5.

- 4.1 No movement was detected to any of the concrete panels during tactile inspection.
- 4.2 Three areas of spalling showing exposed reinforcement were noted to the north face of the internal side elevation. The largest of these defects were found to measure 150x440x40mm. Corrosion with pitting was noted to the reinforcement at these locations.  
*Refer to photo: 15.*
- 4.3 Many areas of the panels were found to be misaligned (protruding or recessed), typically by 5mm. These areas were predominantly between window frames between the corners of the windows. At these locations hairline cracks were typically found in the joints.  
*Refer to photo: 16, 17 & 18.*
- 4.4 A single multi directional crack (500x1mm) was noted in a panel (at the northeast corner) in the Side Elevation (Windermere way).  
*Refer to photo: 19.*
- 4.5 Hairline cracks in the paint were noted in the panel joints throughout typically 60% of the total surface area of the cladding panels. These cracks were noticeably more frequent to the panels between corners of the window frames. A number of these were noted to have lichen growth in the cracks.  
*Refer to photo: 17.*
- 4.6 An isolated area of joint mortar loss (between cladding panels) was noted to the front elevation, beneath a window, measuring 100x5x60mm.  
*Refer to photo: 20.*
- 4.7 Areas of paint flaking were evident to several elevations of the structure effecting typically up to 30% of the total surface area of the elevation.  
*Refer to photo 21.*

## 5 CONCRETE TESTING SUMMARY

### 5.1 Chloride Ion Content

Chloride ion readings were found to be below the threshold of 0.3% by mass of cement at test areas 1, 2, and 4. At test area 3 sample depth 0-25mm was slightly above at 0.36%.

Chloride ion content test results do not indicate a trend of chloride ion ingress from external sources, as opposed to 'cast in' chloride ions. This is shown by similar results. Results in excess of 0.3%, found at the depth of reinforcement (25mm+), indicate a higher probability of corrosion. As corrosion is also dependant on the presence of oxygen and water, it may not occur even at areas of high chloride concentrations. Also, some aggregates contain chlorides, which cannot leach into the concrete, but show up on test results.

### 5.2 Depth of Carbonation

The depth of carbonation ranged from 2-5mm at all four test areas.

Several areas of spalling were noted which expose reinforcement between depths of 4mm and 40mm, one of which is shallower than the 5mm depth of carbonation measured. This shows that decay to the passive layers surrounding the reinforcement exists. In addition it should be noted that the carbonation front may not necessarily progress parallel to the surface of the concrete. Areas of poor compaction and faults will allow a greater rate of penetration, therefore corrosion to reinforcing at greater depths is likely.

### 5.3 Cover Survey

The depth of concrete cover varied throughout the test areas. The minimum concrete cover was found to be 13mm, identified at test area #1

Areas of spalling and exposed reinforcing noted throughout the structure showed concrete cover to be significantly thinner than that noted at the test locations. The area of spalling with exposed reinforcement with the shallowest depth measured 250x200x4mm.

### 5.4 Borescope Survey

A localised area of a panel was broken out to allow inspection of the panel fixings with a borescope. Fixings appeared to be covered with grout and were not visible.

**6 COMMENTS**

- 6.1 In the main, the defects noted would not appear to threaten the stability or integrity of the structure. However, durability appears to be compromised.
- 6.2 Areas of spalling appear to be caused by corrosion of the reinforcement which is likely due to shallow cover combined with failure of the protective paint system. Investigation results support this conclusion, as the deterioration of the concrete appears to have occurred in localised areas only.
- 6.3 Consideration should be given to undertaking localised concrete repairs in addition to complete re-painting of the panels to improve durability.



Photo 13: General view showing front elevation C.



Photo 14: General view showing side elevation (Kingsway). Note the paint flaking.



Photo 15: Detailed view showing an area of spalling with exposed reinforcement measuring 150x440x40 at the internal side elevation.



Photo 16: Detailed view showing an area of spalling with exposed reinforcement measuring 250x200x4mm at the internal side elevation.





Photo 17: Detailed view showing an area of spalling with exposed reinforcement measuring 45x550x25mm at the internal side elevation.



Photo 18: View showing a misaligned panel by up to 8mm on the front elevation, towards the south.



Photo 19: General view showing cracks to the paint at the panel joints typical throughout the structure.



Photo 20: View showing a misaligned panel by 5mm to the front elevation which were typical throughout the structure.





Photo 21: View showing a multi-directional crack measuring 500x1mm to side elevation D (Windermere Way).



Photo 22: View showing joint mortar loss to the front elevation measuring 100x5x60mm.



Photo 23: General view showing paint flaking at front elevation B, typical throughout the structure.



Photo 24: View showing paint flaking to front elevation C.



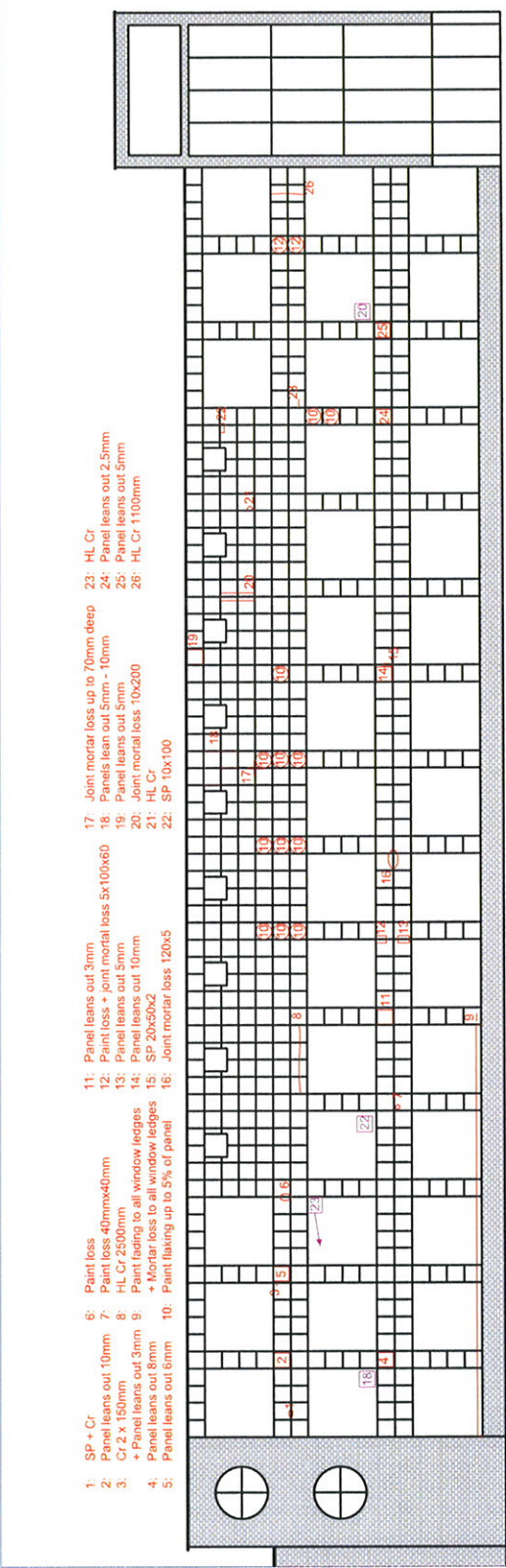
DEFECT KEY	
	SP - SPALL
	ISP - INCIPIENT SPALL
	HS - HOLLOW SOUNDING
	WS - WATER STAINING
	AWS - ACTIVE WATER SEEPAGE
	LD - LEACHATE DEPOSITS
	REPAIR - CONCRETE REPAIR
	Cr - CRACK, HL - HAIRLINE
	ER - EXPOSED REINFORCEMENT
	CS - CORROSION STAINING
	ETV - EXPOSED TIE WIRES
	HC - HONEY COMBING
	PC - POOR COMPACTION

	CONCRETE TEST AREA
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	CONCRETE TEST HOLE
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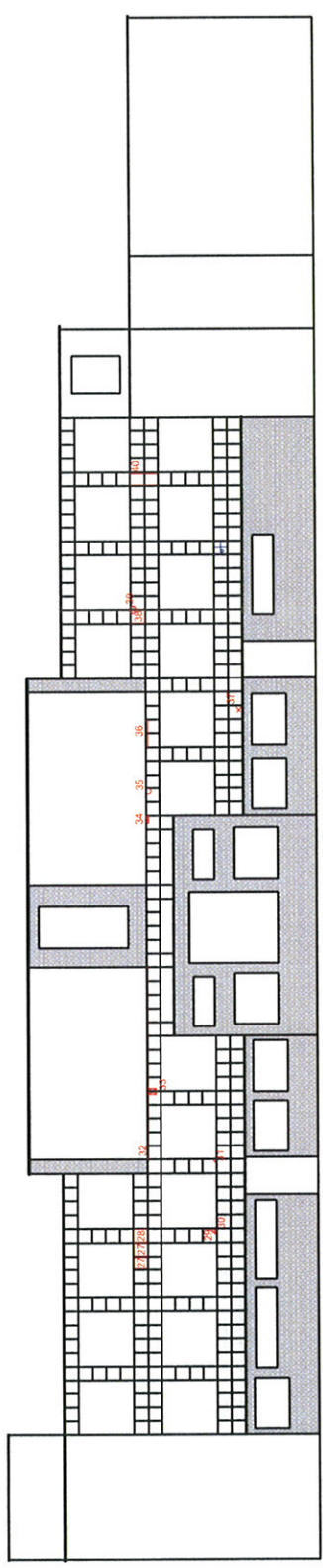
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\* ALL DIMENSIONS IN MM UNLESS OTHERWISE STATED



FRONT ELEVATION

Notes:  
Paint HL cracking at approx. 80% of panel joints



REAR ELEVATION

Notes:  
Paint HL cracking at approx. 80% of panel joints

JAB THE VISUAL INSPECTION & CONCRETE TESTING  
- STOURPORT-ON-SEVERN HIGH SCHOOL

Drawing Title  
**DEFECT SCHEMATIC ELEVATIONS**

UP AND UNDER LIMITED.  
COPPER HOUSE,  
QUAKERS COPPICE,  
CREWE, CHESHIRE CW1 6FA,  
Tel: 01270 589615 Fax: 01270 589761  
info@upandundergroup.com



Drawn	Checked	Rev	Scale
PL	RH	09/09/16	Not to scale
Drawing Number <b>4779/SHS/A3/001</b>			
			REV <b>0</b>

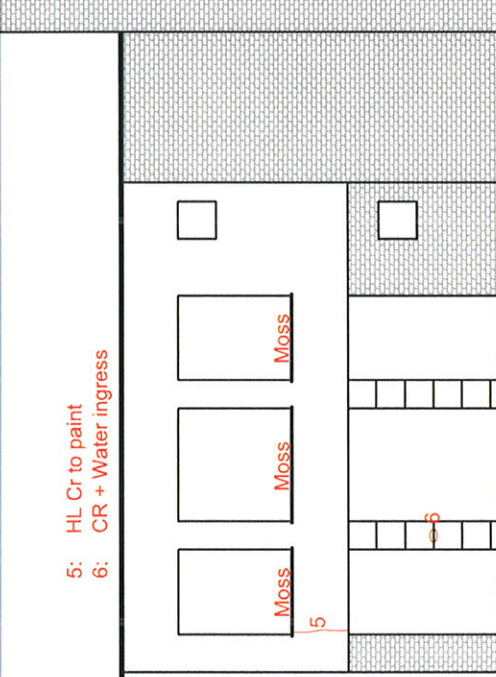
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<input type="checkbox"/> REPAIR - CONCRETE REPAIR	
<input checked="" type="checkbox"/> Cr - CRACK, HL - HAIRLINE	
ER - EXPOSED REINFORCEMENT	
CS - CORROSION STAINING	
ETW - EXPOSED TIE WIRES	
HC - HONEY COMBING	
PC - POOR COMPACTION	

CONCRETE TEST AREA

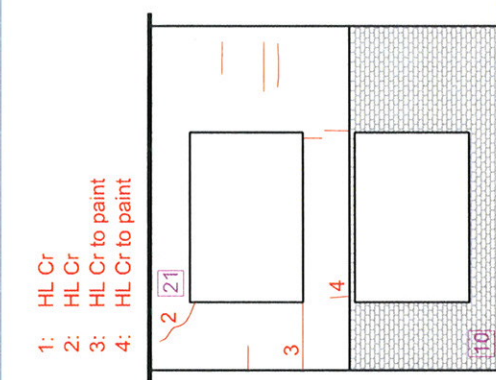
T# CONCRETE TEST HOLE

## PHOTOGRAPH REFERENCE NUMBER

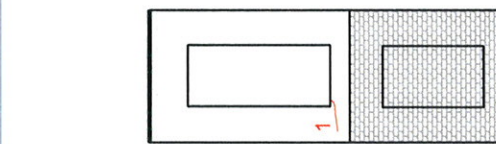
\* ALL DIMENSIONS IN MM UNLESS OTHERWISE STATED



FRONT ELEVATION

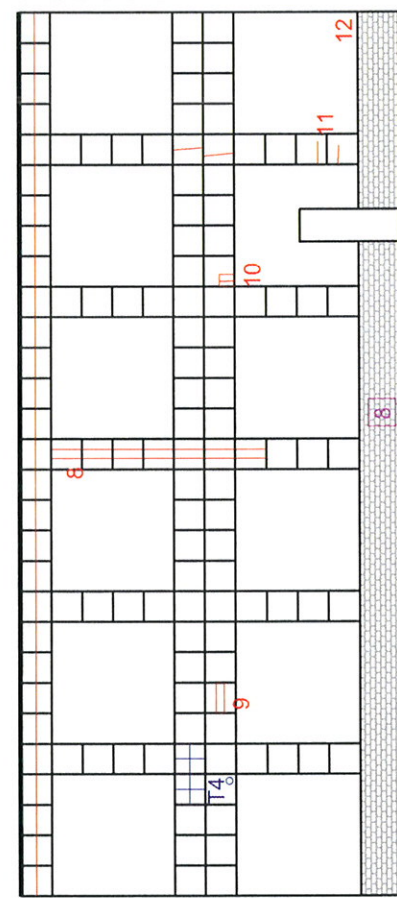


SIDE ELEVATION (windermereway)



SIDE ELEVATION (windermereway)

- 7: Lichen
- 8: Repair good
- 9: Repair good
- 10: HL Cr to repair 10x15
- 11: HL Cr to paint
- 12: Moss to coping covering 20% of overall area



EXTERNAL SIDE ELEVATION (windermereway)





[www.crengineering.co.uk](http://www.crengineering.co.uk)

*Team working with TJR electrical design & consultancy*

FOR

Nov 2020

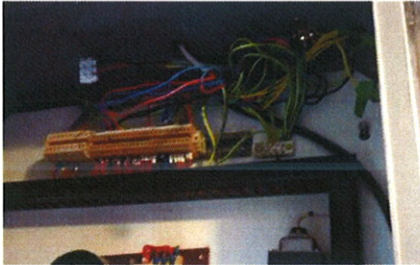
737m<sup>2</sup> { Music ↑ 424m<sup>2</sup> - £83419-00.  
Drama ↓ 313m<sup>2</sup> - £61560-00

Estimate £125,000 + £20,000.

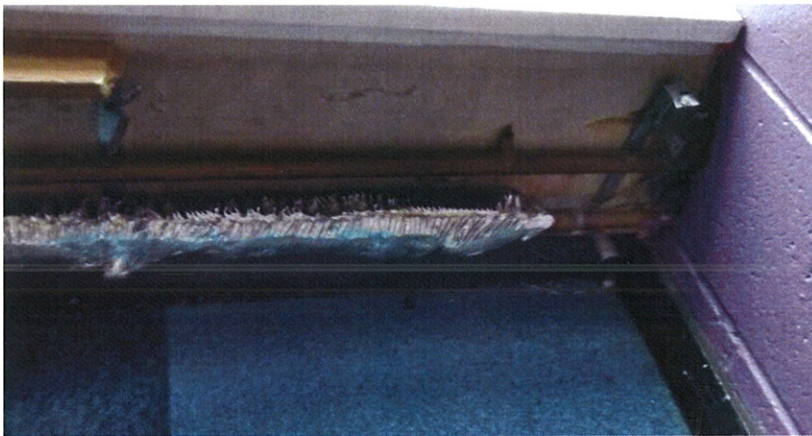
TRACUMB DEWBGB Gross Sal - £20,000.

### EXISTING SERVICES

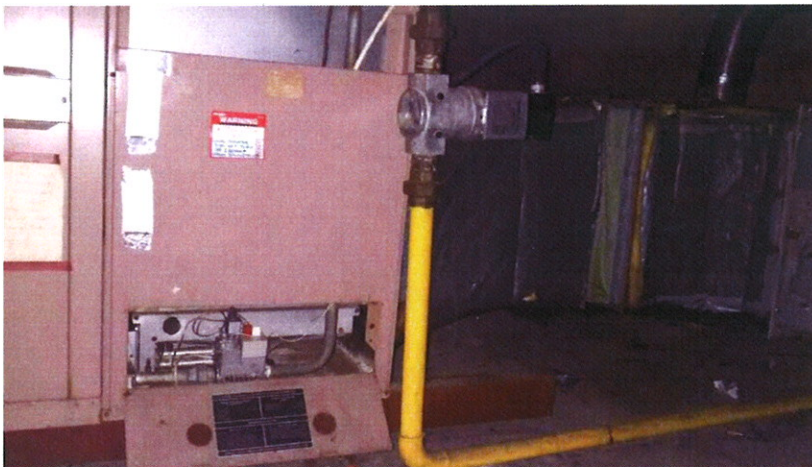
Both blocks have extremely poor and to some extent dysfunctional space heating systems. The Music block has a single heating boiler serving a mix of heat emitters mostly in poor condition. There is no up to date gas safety system. The Drama block features a very dilapidated hot air unit in the roof void. There is no up to date gas safety system in this space either.



Music block heating controls wiring



Music block heat emitters



Drama block hot air heating plant

### **PROPOSED SERVICES**

Strip out the Music block boiler room and refit with new boilers, pipework, electrical wiring, control panel and pumps all sized to serve Music & Drama block.

Completely remove existing Music block space heating installation and replace with conventional two pipe heating system.

Completely remove existing Drama block space heating installation and replace with conventional two pipe heating system served via a pair of buried heating mains from the proposed boiler plant in the Music block.

The proposal is for a new motor control panel including touch screen based control system so that the school can have local control over the settings / times. The touch screen will be the same as that recently installed in the main block boiler room.

The existing gas supply will remain with upgraded pipework and new gas detection & safety system.

### **RISKS & ASSUMPTIONS**

The gas infrastructure will need further investigation to ensure its suitability.

Other risks typical for the type of work.

Information based on survey undertaken in 2016.

### **BUDGET COSTS**

Boiler room for both blocks, buried pipework between the blocks, replacement gas pipe to Music block & space heating installation in Music & Drama blocks £125,000.00

Fees and environmental cleaning not included in the above.

### **REPORT BY**

Geoff Carter CEng MCIBSE

## **APPENDIX D**

### **Limitations on Planned Maintenance and Budget Costings**



## **LIMITATIONS UPON PLANNED MAINTENANCE AND CONDITION SURVEYS**

### **1.0 SITE INSPECTION AND REPORTS**

- 1.1 In making our inspection we have been as thorough as possible in the circumstances though we have not inspected woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that such parts of the property are free of rot, beetle or other defects. We have, however, endeavoured to draw reasonable conclusions from the available evidence. (This will be subject to instructions and scope of services)
- 1.2 Whilst our report includes comments upon the principal elements of the fabric of the building or the demised premises, especially floors, walls and roofs as appropriate, together with general remarks on the finishes and services, it does not extend to a list of minor items that are not relevant to the main advice. Similarly we have examined major outbuildings but have not made detailed comment about light or temporary structures unless specified to the contrary.
- 1.3 External roof surfaces, chimneys, gutters, eaves, fascia boards and other features at high level have been viewed from the ground or from the upper storey windows, unless access to the roof was readily, and safely, obtainable during our inspection. Flat roofs up to 4m in height were assessed via surveyor's ladders.
- 1.4 We have not, except to the extent mentioned in the report, carried out any tests or made any enquiries concerning particular materials nor have we calculated any floor areas or re-appraised original design criteria.
- 1.5 We have visually examined the services to the building where these are not covered up and, as a result, are exposed to such an inspection. We have not carried out any specific or specialist tests of any of the services.
- 1.3 Where we have engaged other consultants on your behalf, we may make reference to the major pertinent conclusions they have reached within our report. Such reference should not be thought of as a substitute for reading their report in its entirety, nor can we take responsibility for their conclusions.

### **2.0 TIME-SCALES**

- 2.1 All quoted time-scales assume a prompt response from parties providing us with the necessary information and access to be freely available when required. We can accept no liability for any delay, which arises due to lack of action or prevarication or obstruction on the part of others.

### **3.0 THIRD PARTIES**

- 3.1 Our reports are for the private and confidential use of the Client(s) for whom the report is prepared and must not be reproduced in whole or in part or relied upon by third parties for any use without our express written authority.

### **4.0 LEASE ANALYSIS**

- 4.1 Our commenting upon lease terms within our report should not be thought of as a substitute for referring to the relevant documents for full provisions made.
- 4.2 We have based our comments upon the documentation made available at the time of our inspection and report. We can take no responsibility where the content of missing or delayed documents conflicts with our assessment.
- 4.3 In the event of any conflict or query upon the documentation, you should obtain your solicitor's view prior to initiating any action.

## **5.0 RISK ANALYSIS**

- 5.1 We have commented upon any major risk hazards we might have seen during the course of our site inspection where specifically requested by you and where we have written accepting such instructions.
- 5.2 The risk hazards commented upon do not result from an exhaustive or detailed investigation but rather relate to such risks or hazards which might reasonably be seen during our inspection and are viewed in light of the weather conditions at the time.
- 5.3 Our comments are not to be thought of as a substitute for your commissioning a full risk assessment survey of the premises concerned.

## **6.0 INTERIM REPORTS**

- 6.1 Any reports, verbal or in writing, given to the client prior to the issue of the completed master survey report, represent our interim views only and we reserve the right to develop further any opinions expressed. In addition, we reserve our right to add further opinions, or more comment upon relevant items, within the master report.

## **7.0 ENVIRONMENTAL/SUSTAINABILITY ISSUES**

- 7.1 In making our site inspections we have specifically not concerned ourselves with the way in which the building or its use may impact upon the environment. We have not therefore considered or investigated the nature and use of potentially environmentally damaging materials that may be found in the building, or the energy efficiency of the building. Nor have we investigated soil stability, mining and geological conditions.

## **8.0 THIRD PARTY DOCUMENTS**

- 8.1 Where we bind in documents produced by third parties in our reports, these are provided for convenience only and to aid placing our report in context. We do not undertake to check such reports or documents for accuracy in any way and cannot be held responsible for any errors contained therein.

## **9.0 DELETERIOUS MATERIALS**

- 9.1 Unless otherwise confirmed by ourselves in writing, we have not inspected for, nor considered the effects of the presence of generally recognised deleterious materials including asbestos. For further information, please see our limitations upon deleterious materials.

## **10.0 LIMITATIONS UPON BUDGET ESTIMATES**

Where we provide costs, they are subject to the following limitations:

- 10.1 All estimates are at current prices and no adjustments have been made for future inflation.
- 10.2 We have not undertaken to investigate whether the cost of carrying out all necessary works immediately, will be different in cost to carrying them out individually, as and when required.
- 10.3 All estimates are quoted as budget estimates only and are not to be thought of as a substitute for obtaining competitive quotations from reputable contractors.
- 10.4 No costs have been included for any investigative works required, unless otherwise noted.
- 10.5 Estimates do not include VAT or professional fees, unless otherwise noted.

- 10.6 No allowance has been made for out of hours working, at night or weekends, nor any associated charges likely to be incurred on the part of the Landlord's security and maintenance staff.
- 10.7 No costs have been included regarding above and below ground drainage or other services within the building, including heating, ventilation, mechanical and electrical plant and equipment, unless otherwise noted.
- 10.8 Where commenting upon financial loss, we have not included for loss of rent, service charge interest, or other heads of claim unless otherwise noted.
- 10.9 No allowance has been made for any loss and/or damage to the works as a direct result of a bomb blast or any other act of terrorism.
- 10.10 We have not included costs associated with the discovery of asbestos or other generally accepted deleterious materials and the consequences of resultant delays to works.
- 10.11 See also separate specific Limitations Upon Budget Estimates document.

#### **11.0 COMPLAINTS HANDLING**

- 11.1 We comply with the Royal Institution of Chartered Surveyors' procedures for complaints handling. A copy of our procedures is available on request.

#### **12.0 LIABILITY**

- 12.1 We hold Professional Indemnity Insurance Liability to a maximum limit of £1,000,000. Any claim against this practice will be limited to this amount. A copy of our current policy and its wording is available upon request.

## **LIMITATIONS UPON BUDGET ESTIMATES**

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- 7 No costs have been included regarding above, and below, ground drainage or other services within the building, including heating, ventilation, mechanical and electrical plant and equipment, unless otherwise noted.
- 8 No allowance has been made for any loss and/or damage to our works as a direct result of a bomb blast, any other act of terrorism, malicious damage, fire, flood, or other acts of God.
- 9 We have not included costs associated with the discovery of asbestos or other generally accepted deleterious materials and the consequences of resultant delay to works.