

# Specialist investigation and remedial specification services for Refurbishment Projects

*H+R provide a wide range of specialist building defect and building material investigation services, and specialise in cost-effective remedial specification for risk management and value engineering*

## + Rothound and preliminary timber decay survey

Identifies areas at risk of damp and decay before and after refurbishment and provides detailed information on representative worst case and best case structures. Rothound dry rot search dogs are used to identify any areas of dry rot activity (*Serpula lacrymans*). The results of the investigation are produced using CAD, digital photography and schedules; in a form suitable for risk assessment, planning and QS purposes, and are most useful prior to the contract phase of a project

## + Detailed investigation of timber decay and decayed timbers

Identifies all decayed, partially decayed and at-risk timber elements in a structure by visual inspection, specialist drilling and damp probing. The results of the investigation are produced in report format with marked up digital photographs and CAD drawings showing location and extent of deep moisture and decay; together with recommended remedial works, and a schedule of current and latent defects with recommendations for remedial works. These investigations can be carried out at any time using non-destructive techniques, but would best be carried out when the maximum possible access and exposure has been achieved during enabling works



### + Detailed investigation of water penetration and damp

Identifies current or latent building defects allowing water penetration, and 'moisture reservoirs' where water has accumulated in building materials; providing the conditions for damage to finishes or services and for damp or decay during and after refurbishment. Damp-proof courses are also checked for integrity. Electrical and gravimetric techniques are used to produce moisture profiles through affected structures. The results are produced as CAD overlays, tables and schedules of defects together with remedial recommendations for the most cost-effective works for controlling damp problems during and after refurbishment. This avoids unnecessary expenditure on the general use of 'injected damp proof courses' or tanking materials. These investigations can be carried out at any time, but are most useful before the detailed design phase

### + Assessment of residual timber strength

Partially decayed and damaged timbers of structural significance are investigated in detail by specialist mini-bore decay detection drilling. The results of these investigations are produced as measured cross-sectional diagrams showing residual timber to enable the engineer to design the most suitable repair. These investigations are best carried out, as necessary, in support of the engineer after the identification of affected structures

assessment of the risk inherent in the likely residual strength of timbers. The results are produced in tabular form and on CAD overlays, as necessary. These investigations may be required if design loadings are to be changed on an original structure, if salvage timbers are to be used, or in support of calculations to determine fire resistance



### + Specialist investigation of masonry, plaster and mortar

Specialist investigations of original masonry brickwork, render, mortars and plasters can be carried out to identify their composition and any defects relevant to the planned refurbishment. Cleaning and cost-effective remedial measures can then be recommended and specified, as necessary, to achieve any desired aesthetic end result, and to minimise any problems of efflorescence, spalling or damp and decay after refurbishment. Specifications and bills of quantities can be prepared. These works are often essential in conjunction with remedial measures to control damp and decay. These works can be undertaken at any time, but are usually most cost-effective prior to and during the detailed design phase

### + Remedial specification and design detailing

Remedial specifications and design details produced by the engineers and architects can be reviewed and 'marked up' in cooperation with the design team so as to build out any latent defects resulting in the risks of damp and decay. H+R can provide sample remedial details and specifications for 'working up' as necessary. These works are best initiated as soon as possible during the design phase and usually include at-risk structures in areas of remedial works and at the interface between new and original construction



### + Timber strength grading and species identification

The species and visual strength grade of timbers are determined to allow existing timber elements to be given a probable strength classification. The number and proportion of timbers investigated depends on a statistical

**+ Snagging and approval of remedial works on site**

Specimen remedial works prepared by sub-contractors can be inspected and approved, or modifications agreed on site, during refurbishment to avoid mistakes in construction and resultant latent defects. Refurbishment work vulnerable to latent defects resulting in damp or decay, can be inspected prior to close-up, on completion and during the latent defect period in support of the project managers. Specialist electronic instruments, high-powered fibre-optics and Rothound search dogs can be used for these investigations. The results of these investigations are given verbally and by marking-up on site, if necessary, and are recorded in sequential site notes which can be produced within 24-hours of survey, including marked-up digital photographs, CAD diagrams, schedules of defects and remedial recommendations. These are then distributed, as required, by the project managers. These works should be undertaken routinely throughout the contract phase so that any snags are identified early; thus avoiding many unnecessary programme or cost overruns. Independent and authoritative information of this sort allows appropriate allocation of costs

**+ Window, door and chimney condition surveys**

H+R can provide a detailed investigation of individual windows, doors and chimneys of any age and type. Record sheets are marked up and information processed to generate schedules of repair and bills of quantities. These are useful for pre-tender pricing by specialist sub-contractors. A photographic record is kept to provide the client with evidence in case of subsequent damage or loss. Ground reading radar and CCTV are utilised to locate and investigate flues

**+ Accelerated drying**

Cost-effective accelerated drying measures can be specified and managed if significant 'moisture reservoirs' are identified, or if significant water penetration occurs during the refurbishment, eg due to defective temporary roofs and roof drainage. These works are often best carried out in conjunction with routine site visits, and avoid any unnecessary programme or cost overruns. Independent and timely information of this sort allows proper allocation of costs for any necessary works, or insurance claims if appropriate



**+ Historic building consultancy**

H+R can act as specialist historic building consultants and advisors providing support to the architects and other design or project management team members in relation to the conservation and refurbishment of the historic fabric of listed buildings and ancient monuments. The information required by the conservation officers and by English Heritage can be prepared and presented in the form they need; and a valuable interface between the project team and the statutory authorities provided. This avoids unnecessary planning delays. This process should be started as soon as possible in the planning process. Conservation management, planning, specification of appropriate remedial action and, where necessary, additional pre- and post-contract professional services can be provided

**+ Sound and fire insulation**

Advice can be given on fire and sound insulation on refurbishment and laboratory or site tests can be carried out if required. This is important in conjunction with remedial detailing and specification works



## + Hazardous materials and environmental health

Potential and actual environmental health problems resulting from potentially hazardous materials on-site, eg mercury and other heavy metals resulting from workshop use, or from the risk of anthrax in animal hair bonded plaster can be investigated mould growth and air quality is also investigated. The results of these investigations are produced in reports including recommendations for remedial works suitable for litigation and expert witnesses. Any specialist remedial works identified can then be specified and managed, if required

## + Pigeon control

Feral pigeon occupancy of the buildings and adjacent areas is investigated. The results of the investigation are produced using digital photography, CAD drawings and schedules describing the factors allowing pigeon occupancy and prioritised recommendations for pigeon control, refurbishment detailing, and long term management. Specifications for specialist culling or pigeon exclusion works can be prepared and specialist works can be supervised, as necessary. These works are best undertaken before the contract works start on site

## + Risk management

H+R recommendations are covered by professional indemnity insurance. This may be provided to clients in the form of a collateral warranty under seal, or as a '30 year guarantee' for mortgage or other purposes. H+R recommendations are welcomed by NHBC, Premier and LABC schemes when supported by the works described above. This allows significant savings in cost and programme by avoiding unnecessary chemical remedial timber treatments, damp proofing and tanking works. These savings are usually significantly more than the budgets which would otherwise be required for these packages. H+R also act as independent experts in legal disputes, allowing cost-effective and fair resolution of disputes

## + Monitoring

H+R design and install the Curator® Building Monitoring Systems and gutter overflow systems to give early warning of blockage and overcharging of roof drainage systems, and to monitor water ingress or dampness of vulnerable materials. These are an aid to facilities managers and conservators especially those managing properties under multiple or intermittent occupancy and buildings of significant historic interest or value

## + Expert witness

H+R act as specialist independent experts providing reports and expert witness for loss adjusters and other parties in legal and insurances cases in the areas discussed above. H+R staff also act as independent experts in disputes involving members of the PCA and their clients

## + Ventilation and condensation

Based on a specialist survey, remedial advice and consultancy can be provided in support of the Design Team so as to avoid risks of interstitial and cold bridge condensation. Advice can be given on provision of insulation and ventilation pathways in accordance with capitalised Building Regulations Parts F and L sensitive to a listed structure

