



Diagnosis, Refurbishment and Repair

BRE has extensive experience and understanding of the problems associated with materials building components and whole structures. Our services range from initial problem diagnosis to the provision of advice on repair and remediation.

How we can help

- Monitoring of refurbishment projects during and after construction
- Advanced durability and structural monitoring and non-destructive testing (NDT).
- Structural assessment and testing
- Advice on new construction issues
- On-site sampling and testing and assessment of current conditions
- In-depth laboratory and site studies using the most advanced techniques available
- Problem diagnosis and prognosis for future performance and recommendations for remedial measures
- Advice to designers on conversions or change-in-use projects.

Expertise

Our expertise enables us to advise on a wide range of materials and repair options including concrete, masonry, timber, coatings, flooring, aggregates, patch repair materials, corrosion inhibitors, desalination/re-alkalisation, structural repairs & strengthening and Heritage concrete

Condition assessment

BRE can provide a prognosis for the future maintenance burden and life expectancy of structures. We also advise on the likely success and value of remedial measures in relation to clients' future use of structures and ensure that topics such as service life predictions are addressed.

Durability monitoring and NDT

BRE's multidisciplinary team of materials scientists and structural engineers have developed and implemented many monitoring and non-destructive testing solutions. These solutions have been applied to a wide range of building and structures from non-traditional housing to the Tees Barrage

Diagnosis of durability

BRE provides advice on problems related to concrete or other materials in existing buildings. Our team of materials scientists and engineers provides a complete service from on-site sampling to recommendations for remedial measures. We can determine the causes and effects of deleterious processes like sulphate attack, aggregate instability, frost damage, chloride ingress and reinforcement corrosion and advice on remedies.

Heritage concrete

The structural and decorative elements of historic or listed concrete structures pose special problems during refurbishment as they have the same legislative protection as any other historic material or finish. The cleaning of a soiled or weathered concrete façade needs particular care. BRE can advise on suitable remedial schemes.

Case Study

Degradation of pre-cast concrete components of a commercial building

Severe cracking of the soffits of two beams had been identified in a boiler room during a routine inspection. BRE was asked by the building owners to advise on any action or remedial works required in the deteriorated areas and to provide a prognosis for the future durability and structural adequacy of the components throughout the building.

Samples were taken from a number of beams and the condition of the exposed steel was inspected. Chemical and material analysis was also undertaken. The findings showed that the localised cracking was due to reinforcement corrosion associated with leaking water pipes used for disposal of cleaning fluids that contained chlorides. The concrete units in these areas were also at further risk from reinforcement corrosion in the presence of persistent moisture.

The remedial works recommended by BRE were the provision of permanent strengthening measures for the deteriorated areas. Epoxy bonded carbon fibre plates were used to enhance the strength in the critical areas. A programme of regular maintenance and inspection was also recommended to ensure that these and other units are not placed at risk in the future.

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