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Recording, monitoring and managing the conservation of historic sites: a new application for BGS·SIGMA

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The principles behind, and the methods of, digital data capture can be applied across many scientific, and other, disciplines, as can be demonstrated by the use of a custom modified version of the British Geological Survey's System for Integrated Geoscience Mapping, (BGS·SIGMA), for the capture of data for use in the conservation of Scottish built heritage.

Historic Environment Scotland (HES), an executive agency of the Scottish Government charged with safeguarding the nation's historic environment, is directly responsible for 345 sites of national significance, most of which are built from stone. In common with many other heritage organisations, HES needs a system that can capture, store and present conservation, maintenance and condition indicator information for single or multiple historic sites; this system would then be used to better target and plan effective programmes of maintenance and repair. To meet this need, the British Geological Survey (BGS) has worked with HES to develop an integrated digital site assessment system that provides a refined survey process for stone-built (and other) historic sites. Based on BGS·SIGMA—an integrated workflow underpinned by a geo-spatial platform for data capture and interpretation—the new system is built on top of ESRI's ArcGIS software, and underpinned by a relational database. Users can, in the field or in the office, populate custom-built data entry forms to record maintenance issues and repair specifications for architectural elements ranging from individual blocks of stone to entire building elevations. Photographs, sketches, and digital documents can be linked to architectural elements to enhance the usability of the data. Predetermined data fields and supporting dictionaries constrain the input parameters, ensuring a high degree of standardisation in the datasets and, therefore, enabling highly consistent data extraction and querying. The GIS presentation of the data provides a powerful and versatile planning tool for scheduling works, specifying materials, identifying the skills needed for repairs, and allocating resources more effectively and efficiently. Physical alterations and changes in the overall condition of a single site, or a group of sites can be monitored accurately over time by repeating the original survey (e.g. every 5 years). Other datasets can be linked to the database and other geospatially referenced datasets can be superimposed in GIS, adding considerably to the scope and utility of the system. The system can be applied to any geospatially referenced object in a wide range of situations thus providing many potential applications in conservation, archaeology and other related fields.