



CASE STUDY 3 | ANTARCTICA

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Conservation in Antarctica

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Location: 6 sites on the Antarctic peninsula. So far: Horseshoe (Base Y), Stonington (Base E and U.S. Base), Port Lockroy (Base A), Damoy

Scope: Conservation management plans, gazetteers, technical research, briefing the site team for emergency repairs, condition surveys, room data sheets, recording. Enabling site inspection reports by lay visitors. Developing policies and strategies for long-term conservation.

Timeline: Each austral summer, a team of conservation practitioners is "sent south" to survey and repair a Base, under the guidance of the architects, from the comfort of their London office.

Team: Kennedy O'Callaghan Architects, Heritage project manager, client logistics team, artefact conservators, BRE researchers, paint consultants, heritage BIM consultant, British Antarctic Survey 3-d imagers and archivists

United Kingdom Antarctic Heritage Trust (UKAHT) is responsible for the conservation of six former British bases on the Antarctic peninsula, that represent the birthplace of British science in Antarctica. The charity's mission is "to help current and future generations discover, understand, value and protect" the bases, on behalf of British Antarctic Survey, for the Foreign Office.

In 2016 the client approached Kennedy O'Callaghan Architects because they had conserved the wartime huts at Blechley Park with a light touch conservation approach. The brief was to provide conservation advice on the management of the sites in the short-term and long-term. Most of the sites have been derelict since the 1970s, but Port Lockroy is managed as a tourist attraction, museum and post office and some huts continue to be occupied from time to time as emergency shelters and have been maintained, albeit in an ad-hoc manner. Many of the outbuildings had fallen into an advanced state of decay. Some of the sites had been visited rarely and their condition was unknown.

The sites generally consist of a "base hut" in which the scientists "over-wintered", a "gen shed" (for coal-fired generators), a dog shed and pup pens (for breeding working dogs), a balloon shed (for meteorology), a workshop

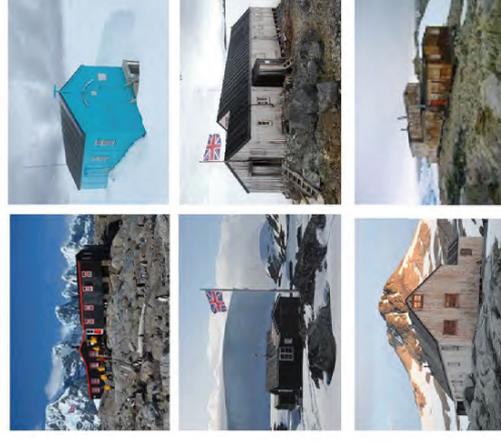
with "chippie store", an emergency store, radio masts, Stevenson's screens, water tanks and some have a boat shed. The landing site can be 1km from the Base across rough terrain and only accessible in summer. Sea ice can make the sites inaccessible and the duration of stay unpredictable.

The bases were built in phases from 1944 to 1975, adapted and sometimes moved from one site to another, so piecing together their history was like a complex jigsaw.

The plan is to assess each site, amass survey data, carry out condition surveys, emergency repairs, develop policies, and plan the implementation stage to ensure the sites, artefacts, stories and historic environment will be preserved for future generations.

Base Y (Horseshoe Island) was the pilot project in 2016, where a team of four undertook measured and condition surveys, photogrammetry and emergency repairs.

The six weeks on site required a 3-month expedition. The following year a team of six visited Base E (Stonington), a larger and more complex site. Next were Base A (Port Lockroy) and Damoy. The 2020-21 expeditions were cancelled due to Covid. Over the coming years surveys will be undertaken at the remaining sites and the implementation plan will begin.





meticulous recording and investigation on site, so that appropriate materials can be obtained, and future works can be planned in the UK. Antarctic environmental protocols are embraced. The conservation strategy is based on ICOMOS and UNESCO guidance, the Burra charter and the Australian "Significance 2.0" guidance for artefact conservation.

Preparation

Technical research, materials analysis and site trials will determine what materials and working methods are appropriate. The architects prepared drawings, schedules and templates using the Uniclass system to ensure a common approach to documenting each site, with any gaps in knowledge identified in red, for the site team to annotate. Documents are iterative and updated each season. Suppliers have assisted research and donated materials for trials of roofing felt, bitumen and paint to test suitability for application in the cold climate.

Conservation Management Plans

The CMPs and gazetteers incorporate archival images, together with the architects' significance and chronology diagrams. Significance was assessed in accordance with Historic England's 2008 'Conservation Principles Policies and Guidance for the Sustainable management of the Historic Environment'.

The Conservation Review Panel

In 2019 a Conservation Panel was established as a professional advisory group to provide expert advice in support of the Antarctic Peninsula Heritage Conservation Programme. They review strategy, programme, policy, methodology and documentation on a macro and micro level. The panel includes the heritage project manager-cum-carpenter, conservation architect, artefact conservator, logistics expert, a representative from Historic England and trustees.

Team

The team includes project manager, artefact conservators, heritage BIM consultant, asbestos consultant, British Antarctic Survey's geomatic imaging team, ecologists and archivists, members of New Zealand Antarctic Heritage Trust, Scott Polar Research Institute, and IAATO, a member organization that advocates safe and environmentally

Site Surveys

Each site has a unique climate and landscape. The working season is short due to logistical restrictions imposed by snow, sea ice, melt water and wildlife. The site team for Base Y provided panoramas and photogrammetry which was processed by British Antarctic Survey's Mapping and Geographic Information Centre, which the architect developed into a Sketch-up model. Base A and E have had laser and drone surveys and the point cloud data is being developed for audience engagement, with grant funding. <http://ukahit.org/latest-news/2020/new-project-will-bring-antarctic-heritage-to-life/>

Causes of decay

The remoteness, dereliction, lack of maintenance and extreme weather have led to damage by wind snow ingress, ice build-up and ice abrasion. Visitors have caused damage and condensation. Ice build-up from artefacts stored under the huts has led to mould. Huts have been propped where they have failed. One hut on the American base is entirely filled with ice. The 2-storey hut at Base E has a catwalk at first floor level, which traps snow and poor detailing led to saturation of the facades, water ingress and collapsed asbestos flues.

Strategy

Each site is being surveyed and appraised so that appropriate conservation can be implemented over the coming years. Emergency repairs are carried out with

Research

British Antarctic Survey's archive has annual reports since the 1930s, photographs, negatives, film, objects, drawings and oral history records, but much was uncatalogued and some of the information was censored by the foreign office. The Bolton and Paul archive in Norwich held information about the prefabricated huts. ICOMOS articles provided contact details for research on Antarctic mould, climate and materials analysis. The New Zealand Antarctic Heritage Trust lends experience from their conservation of Scott's hut and other sites in the Ross Sea.

Significance

The bases have rich historical, cultural and intangible significance. They were strategically important nationalistic symbols as well as scientific bases.

Construction

The huts were prefabricated, assembled by the scientists and adapted in phases from 1944-1994. Most huts are constructed on concrete footings with a timber frame clad in timber, with tarred felt roofs held down with guy wires supported on cairns. Facades were painted or creosoted. Base E has a 2-storey steel frame with plywood cladding. The sites relied on all the outbuildings functioning independently and the buildings were separated to reduce risk of fire.

responsible private-sector travel to the Antarctic. Site samples were scoped by BRE materials scientists and paint consultants. The site teams include international conservation multi-skilled practitioners, many of whom have extensive experience in Antarctica.

Progress

The archivist has catalogued the data from site surveys and emergency repairs at four sites so far. A conservation implementation plan has been drafted for Base Y, including a Visitor Experience Proposal. Field seasons will resume in 2023.

Conclusion

It is a pleasure to be part of a committed team who is passionate about conserving the historic bases in Antarctica. With adequate planning, it is possible to work remotely, with the aid of a point cloud model and a great team.

Intangible significance

By serendipity I learnt that "ME" on the back of a photo of Base Y in 1956, was Malcolm Evans, a family friend from Australia. We exchanged emails and his diaries have now been transcribed and his artefacts will be returned to Horseshoe, to facilitate interpretation, as was his dying wish.

