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## PCA AWARDS 2016

### PROJECT OF THE YEAR AWARD

#### INTRODUCTION

Like so many areas in the county, the village of Goring in Oxfordshire suffered from significant flooding in early 2014. A large thatched Thames side period property, the Boat House which dates back to the 1800's, and is owned by Mr and Mrs Taylor was severely flooded during this period.

The water flooded the lower level utility room and the large lounge area causing significant damage and disruption. When the flood waters had receded, Mr and Mrs Taylor were determined to find a flood prevention solution that would secure their property in the future. A friend of the Taylors suggested that they contact Biocraft, since we were in the process of restoring and waterproofing a local riverside development of 10 properties, and came highly recommended.

Biocraft prepared a bespoke flood defence scheme in collaboration with Woolhampton Design Centre, combining permanent static flood defences, non-return drain valves, cement grout injection, internal flood barriers and an internal cavity drainage waterproofing system with a high capacity emergency back-up generator.

The £200k project, which involved external and internal works was carried out over 12 months and was completed in October 2015.

The nature and age of the buildings (although built in 1800's as a boat house and dock, the Boat House had been modernised and extended several times over the years) presented challenges in developing a design that would provide the necessary levels of flood protection without compromising the historic fabric of the building or altering its external appearance. The timber frame substructure combined with the reinforced concrete piled retrofit foundations presented technical challenges to the design and implementation of the scheme. The inner flood defence had to be constructed without compromising the breathability of the timber structure and the reinforced concrete substructure had to be strengthened to deal with the failure due to a historically inadequate engineering design.

The external works included:

- construction of new sections of walls, and increasing existing wall heights
- underpinning existing walls to resist increased forces associated with higher water levels
- installation of non-return valves to foul drains
- high pressure cement grout injection of the ground to fill voids and make the ground less permeable in the areas surrounding the property and beneath the property itself.
- the installation of a series of 6 external sumps and 12 submersible pumps to discharge any permeating water to the outside of the fixed flood wall.

A high capacity diesel generator was installed on a raised plinth to provide emergency back-up power to the 20 pumps inside and outside the property. One unexpected issue was the practicality of accessing a small riverside village and the work-site with a 70 tonne mobile crane to hoist the generator into position.

The internal works were carried out to the two lower areas of the property (utility room and lounge/hallway). The areas were stripped back to substrate, which was a mix of reinforced concrete, brickwork and timber frame. Framing timbers were repaired and treated with a deep penetrating fungicidal preservative. New reinforced concrete floors were laid with underpinning where necessary, and then an inner skin of concrete block-work was constructed as an inner flood defence. The concrete floor and walls were tanked with a cementitious slurry and then CDM was applied throughout the two areas with two double-pump sump chambers in each area. Floors and walls were insulated and underfloor heating was added. Floors were screeded, walls plastered and the shower room reinstalled. During the project it became apparent that there were structural defects in the existing reinforced concrete. We made the necessary repairs using heavily reinforced concrete spanning beams as detailed by our structural engineer.

## SUMMARY

The project was well managed and the client was kept informed and involved throughout the process. We encountered a number of unexpected difficulties, in particular, the lack of structural integrity of the reinforced concrete works that had been carried out when the property was significantly refurbished approximately 20 years ago. Our experience with remedial structural repairs meant that we were able to design and implement solutions to the problems that we encountered.

The job highlights the full range of Biocraft's staff skills in particular those of traditional construction methods, cavity drainage membrane waterproofing and timber treatment and repair. We carried out all aspects of the project including ground works, brickwork, cementitious and cavity drainage waterproofing, cement grout injection, water repellent application, sump and pump installation, reinforced concreting, structural repairs and alterations, underpinning, timber repairs and timber treatment, screeding, studworks, thermal insulation, plastering, shower room fitting and second fix carpentry...up to and including decorative floor coverings and tiling.

We developed an innovative and comprehensive flood defence scheme in collaboration with our structural engineer and succeeded in exceeding the clients' expectations, providing them with security and peace of mind against future flooding.

**Client comments:** *Biocraft were a very competent, polite and professional crew, led by Martin Fosbrook the MD who was meticulous in his attention to detail. The team were working in the main living part of our home and at all times were polite and friendly and showed special attention to respecting that it was our living space, leaving it clean and tidy each evening. The work was completed on time and with no problems, any small issues that arose were dealt with in a friendly and amicable manner. The end result has been amazing and we can't speak highly enough of the whole team at Biocraft for their work.*

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## BIOCRAFT

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