

RSPB Environment and Education Centre, Purfleet

Introduction

The Rainham Marshes RSPB nature reserve is a flagship natural green space. The Environment and Education Centre building serves the wider reserve, and in support of the RSPB's corporate approach, it provides a high quality and inspirational community resource and a model for sustainable development.

The Client's Brief

The RSPB required the new Environment and Education Centre to be an example of environmental excellence, a focus for community work and the catalyst for social and economic regeneration in the area. The building provides high quality visitor and education facilities, as well as a generous viewing area and access onto the Reserve, the largest remaining area of grazing marsh left on the Inner Thames, where as many as 250 species of birds have been recorded. Working space for permanent staff and volunteers is provided as well as a retail unit and catering facilities/cafe. The brief also demanded the highest standards of sustainable development. This includes the sensitive selection of construction materials, the conservation of energy and resources, the consideration of generation and use of renewable energy, the treatment of waste products and the impact of the construction process.

The RSPB held a design competition, and we were chosen to lead the team of consultants. The competition entry benefited from having our whole office working on it in some way or another. Some of the best ideas, like the dazzle-pattern boarding, came out of our group discussions. From the outset, the brief demanded the achievement of BREEAM 'Excellent' and the aspiration to deliver a building that was carbon neutral in operation. That required particularly detailed collaborative design teamwork; we were also responsible for administering the contract. It was our first building to achieve BREEAM 'Excellent'.

Planning Constraints

The RSPB worked hand in hand with a number of different agencies since July 2000 in order to bring this project to fruition. These organisations included very supportive local planners (Thurrock Council) and the Environment Agency (EA). The main areas of concern expressed by the EA, and conditioned to the planning approval, were in relation to the location of the building so close to the river wall. As well as the provision of a Flood Risk Assessment in accordance with the requirements of PPG25, which identified fully the engineering measures that would have to be taken in the design (including the agreement that provision would be incorporated within the design for the future raising of the flood defence wall by 500mm) further substantiation of the "uniqueness" of the development was required to justify the location. This was all successfully provided and achieved in a collaborative submission by design team and client.

Design Approach

The building is two storeys high and its concept is based on separating by floor, the two different types of accommodation, 'people' and 'services'. With the majority of the 'people' accommodation on the first floor, taking advantage of the views afforded over the river and the Reserve and significantly larger than the 'services' ground floor, the building has a section where the ground floor is oversailed by the first. This provides a desirable form to protect the building from burglary and vandalism, to which its location makes it particularly prone. The projecting first floor, with its more vulnerable accommodation, is approached and exited via bridges and drawbridges, which,

when raised, effectively cut off access, creating a dry moat around the building. The 'services' accommodation, with less need for daylighting, is made defensible by minimising the number openings and utilising strong doors/shutters to close the building off at night.

Materials and Method of Construction

The superstructure is a deliberately heavy mass, rough cast insitu concrete frame. It sits on deep-bore rammed piles sunk 19 m into the ground and is clad in a double skin of (sheep wool insulated) cavity wall blockwork at ground level and horizontal sawn, painted larch timber boards to the first floor. There is very limited use of aluminium and no plywood on the project because its source is untraceable. Glazing type is specified to provide the optimum opportunities for a clear view of birds from a distance. External steelwork is all galvanised, contributing to the hardy yet crafted aesthetic of the building. As required by a BREEAM 'Excellent' project, materials chosen are durable and will not damage the environment through their exploitation, or through their production. Natural stack ventilation is employed, with air being drawn in through vents at ground floor level and around the perimeter of the first floor and expelled through outlets in the top of the polycarbonate cones on the roof. A rain-harvesting tank is sunk below the car park, and grey water is used for all flushing toilets, while the urinals are waterless. The RSPB also aspires to erect a 15KW wind turbine soon to further contribute to the building's energy requirements.

Sustainability

Ecology

The building development is deemed to have a positive influence on the overall site ecology. The following BREEAM credits have been secured: Change in Ecological Value, Ecological Enhancement Advice, Protection of Ecological Features, Long Term Impact on Biodiversity and Topsoil re-use.

Sociology

The reserve provides a fantastic amenity for local residents in a relatively disadvantaged part of the borough with historically poor access to the river. It aims to be a centre of excellence for environmental technologies as well as providing a focus for community work and a catalyst for social and economic regeneration, particularly in Thurrock.

Energy efficiency and water conservation

The general energy, and water strategy was always to minimise the demand as a priority and then meet the demand by the most efficient methods available, preferably from passive or renewable sources. The following specific features are included:

- Low or zero flush WCs coupled with rainwater harvesting.
- Automatic mains leak detection.
- Insulation and air tightness better than L2 regs.
- Complimented with passive solar heating and ground source heat pump results in 75% reduction in CO2 emissions for space heating.
- No fans in main spaces, ventilation and cooling by natural ventilation, night cooling of thermal mass and passive cooling.
- Priority daylight design coupled with high efficiency automatically dimmed electric lights.
- 10kWp Photovoltaic array and 15kW wind turbine renewable energy generation.

The building's environmental performance including the energy and water systems are being monitored and refined as an ongoing process. There are digital notice boards that show in simple

layman's terms the energy being saved by the building's systems, all part of the education process for the users.

Use of natural and low impact materials of construction

In general materials are chosen to be low embodied energy, low toxicity, durable and low maintenance. Where possible natural, recycled or recyclable materials have been used and were tested against the BRE's Green Guide to Specification in the selection process. Environmental impact is judged by a cradle to grave assessment.

Examples include:

- Recycled aggregates for building and landscape
- Insulants with zero Ozone Depletion Potential and Global Warming Potential < 5 used throughout. Eg Sheep wool insulation.
- No PVC used in the building.
- A deliberately heavy mass frame superstructure
- It is clad in a double skin of (sheep wool insulated) cavity wall blockwork at ground level and horizontal sawn, painted larch timber boards to the first floor.
- Glazing type is specified to provide the optimum opportunities for a clear view of birds from a distance whilst providing a high standard of thermal insulation.
- External steelwork is all galvanised, contributing to the hardy yet crafted aesthetic of the building.

Transport links and transport strategy

The reserve has excellent rail and road links from both London and Essex, with 1.3m people living within a 30-minute drive and 5.6m people within 60 minutes. Cyclists are encouraged to use the reserve and there a cycle paths, and ample racks for secure parking. This is all embedded in the Transport Credits of the BREEAM assessment.

Benefit to the community

The ultimate benefit to the community has been to give free access to the reserve to local people. The trail and paths network was designed with a range of needs in mind from the serious birdwatcher to family groups or people who just want to be able to do a shorter walk or experience the riverside views. A full and varied programme of activities is run to attract a range of different audiences to the reserve. Staff also do outreach work with local communities by visiting schools, retail centres and community facilities such as libraries. Community work is focused on groups that might not otherwise visit a nature reserve, such as disabled and minority groups and vulnerable adults.

The actual building itself is both as flexible and adaptable as possible making future uses as simple as possible to accommodate if ever required. The building is framed, and all partitions are non-load bearing, so there is opportunity to review its use as and when appropriate in the future.

Client / Royal Society For The Protection Of Birds

Value / £4m

Area / 546m²

Date / 2006

Location / Kent

Our Role / Architect And Lead Consultant