Local Value-Add Case Study East Whins eco-village

> Local value and impact, together with a strong focus on sustainability, was at the heart of this project from concept to delivery

Scottish

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The project: **East Whins eco-village** Project value: **£3.6m** 

From airbase to ecovillage The development of East Whins ecovillage in Findhorn, Forres, was led by community from start to finish

The eco-village approach was adopted by the Findhorn Foundation near Forres to create environmentally responsible and sustainable housing for their growing community. During the 1980s, the Foundation began an intensive building programme, which created more than 100 homes over the following 40 years. In 2014 the community formed Duneland, a development business that would deliver 25 additional homes.

#### **THE BACKGROUND**

In 1997 Duneland bought 360 acres of land next to the original eco-village. Around 175 acres would be preserved as natural parkland and opened up for public access, and 30 used as managed woodland. Building the new homes would cover 16 acres of brownfield land, which still bore the evidence of previous use as an RAF base.

Residents were involved from the early stages of this development, right the way through to the final result.

**Matt Bridgestock**, Project Director, John Gilbert Architects

## **THE BRIEF**

The ecological principles adopted by the Findhorn Foundation were embedded into the concept from the start. Duneland's aspiration was for low-carbon, low-emission living based on a cohousing model.

Funded by a combination of philanthropic contributions and community support, the project was based on community principles, beginning with community discussions about how the land should be used and detailed consultations on initial planning and design.

The brief was to create 25 homes in a cohousing development, consisting of ten two-bedroom and three three-bedroom houses and 12 two-bedroom flats, as well as communal spaces like a common room and laundry, workshop and bike store. Car parking would be outside the main development to encourage more cycling and walking. Locally-sourced materials were to be used wherever possible, and the sensitive ecology of the largely dune and gorse site had to be protected.



Planning was a dual process between the community and the local council. We went through every step of the process along with the client.

Matt Bridgestock, Project Director, John Gilbert Architects

# **LOCAL EXPECTATION VS CONSTRUCTION REALITY - OVERCOMING CHALLENGES**

Any development, whatever the model, will run into challenges occasionally. The creation of East Whins threw up a number of issues related to maintaining sustainability without creating unrealistic costs.

Initially, for example, the community's plans suggested ModCel straw bale insulation and a district heating system. On further investigation, it became apparent that those solutions were not cost-effective, so the architect and planning team agreed on a well-insulated timber frame construction method with individual air source heat pumps and MVHR instead.



While the local authority was generally supportive of the community's plans, it took 18 months to approve them. It also insisted on an affordable housing element, which Duneland was happy to provide in the shape of two homes for rent and two shared equity properties.

The council, Duneland and the Findhorn Foundation worked together to develop an allocations policy for the rental properties, with rents set using the council's social housing rent formula.

Further issues arose when the initial timber framing company was bought out by another, which proved less receptive to the ethos and principles surrounding the build. Changing that mindset was one of the biggest challenges Duneland, the architects and the community had to face.

They were successful in the end, but the delays involved in the planning and construction processes stretched the project's timeframe considerably, which meant keeping the project moving, with everyone on board, was a challenge in itself.



We experienced all the problems you'd expect in any project over this time frame. But this one was created by a community that had come together to build these houses. So we also had all the challenges presented by a self-build project. Matt Bridgestock, Project Director, John Gilbert Architects

# LOCAL, GREEN AND RECYCLED MATERIALS AND ECO-CONSCIOUS DESIGN

Timber and cross-laminated timber for the overall structure of the development came from two suppliers in the Highlands, reducing the amount of transport needed and waste generated throughout the project.

Offsite construction elements like timber cassette roofs, timber kit walls and cross-laminated timber slab floors also reduced traffic on site, by concentrating deliveries into large and infrequent loads. All timber offcuts and cardboard waste went to the local community, where it was thoroughly recycled - a neighbouring workshop, for example, was entirely reclad in offcuts from the Scottish larch used to clad the walls.

Thick warmcel insulation brings the fabric performance very close to Passivhaus standards. Created from recycled cellulose, it's manufactured from newspapers collected from offices, schools, kerbsides and printing overruns using a process that needs very little energy.

The development's key feature is the passive solar design. All houses and flats have sunspaces to maximise natural light and heat. South-facing roof pitch makes the most of the solar panels during the spring and autumn equinox, when solar energy is most beneficial, and there is plenty of additional south-facing roof space to allow future installation of photovoltaic panels.

The whole community's heating system is designed to use solar thermal panels in the first instance, backed by underfloor heating powered by air source heat pumps - a highly efficient method of using electricity as a primary energy source. What's more, East Whins is connected to the wider Findhorn community wind turbine power supply, which in turn is connected to the national grid. That makes the whole community net exporters of electrical power, giving it zero carbon status.

Where cost and/or quality issues meant that materials could not be sourced within Scotland or the UK, all parties on the project worked together to scrutinise alternatives and ensure they were acceptable as part of both the ethos of the project and the final design.





# LOCAL INVOLVEMENT FROM START TO FINISH

As well as specifying the plans, conditions, materials and methods to be used in the creation of the East Whins village, the Findhorn community took total responsibility for the final landscaping.

The surrounding area is a pristine dune ecosystem, which Duneland and the residents now manage and maintain.

Each resident of East Whins has created their own design for permaculture and soft landscaping around the development, meaning the final landscape reflects the individual, sustainable, environmentally-responsible philosophy that has characterised the entire build.

#### **LOCAL BENEFITS AT A GLANCE:**

#### 25 homes

12 two-bed flats10 two-bed houses3 three-bed houses



## Additional community facilities:

Common room Kitchen Meeting room Laundry Bike storage 2 community care flats



Ground floor accessible, barrier free

# U-values: Walls - 0.14W/m2K

Floors - 0.08W/m2K Roofs - 0.09W/m2K

217 tonnes of CO2 sequestered Using Scottish larch cladding

## 20% cost savings

through terraced construction compared to detached properties







As a model for involvement and community action, East Whins may be specific to the Findhorn community - but it's very, very good. Matt Bridgestock, Project Director, John Gilbert Architects

CONSTRUCTION SCOTLAND INNOVATION CENTRE

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