

# Howgate Close.

**Regional Small Scale Project of the Year**





# concept.

When examining the ideal staging ground for the project, the small parish of Eakring in the Newark and Sherwood district of Nottinghamshire stood out. Eakring has a storied past when it comes to oil extraction. Eakring operated one of Britain's largest inland oil fields throughout its 27-year operative history. The memory of the past is immortalised with 6 restored 'donkeys' littering the Eakring area.

The civil parish is firmly on its way to decarbonisation; three wind turbines have been erected, a 12mW solar farm has been built, and over 250mW of roof-mounted photovoltaics are installed. A crucial issue with becoming self-sufficient when considering energy supply is the current extortionate costs of energy storage.





# inspiration.

The architects behind the project are the renowned autonomous living experts, Professors Brenda and Robert Vale. Their Hockerton Housing Project has now been in operation for 24 years, and adheres to the mission statement:

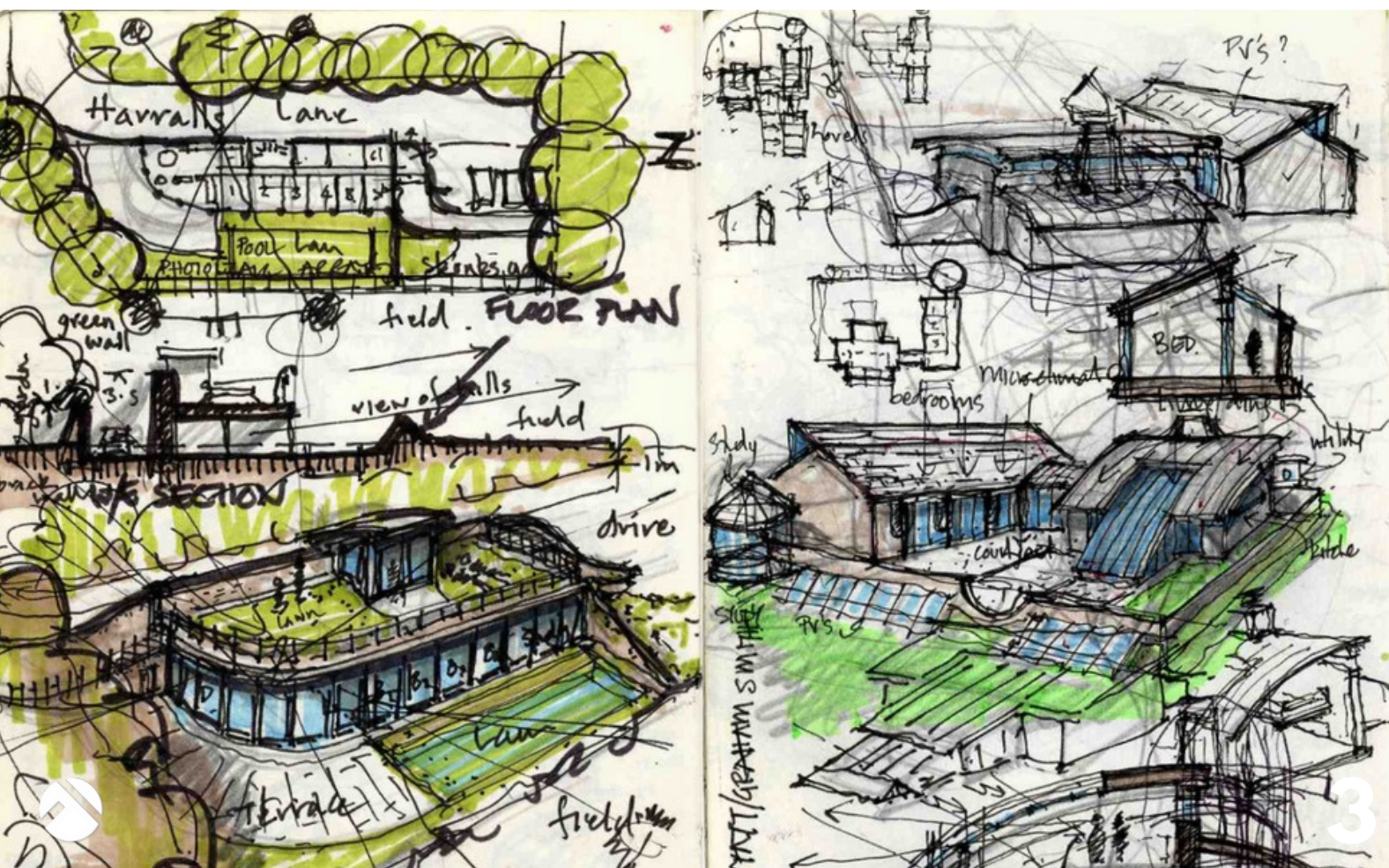
“The Hockerton Housing Project is the UK’s first earth-sheltered self-sufficient ecological housing development. The residents of the five houses generate their own clean energy, harvest their own water and recycle waste materials, causing no pollution or CO2 emissions. The houses are still amongst the most energy-efficient purpose-built dwellings in Europe.”





# design.

The brains trust behind the project also includes Dr Jerry Harrall who specialises exclusively in architectural design for fossil-fuel-free designs fit for a post-hydrocarbon era. Despite the experience that was behind this project, gaining planning permission was taxing. Eco-project designs must display something particularly innovative to sway the determining council to supply planning and building permission.



# planning.

The planning process behind the project was a collaborative effort. Our expertise was utilised to produce detailed U-value calculations, as well as extensive recommendations on the products used.

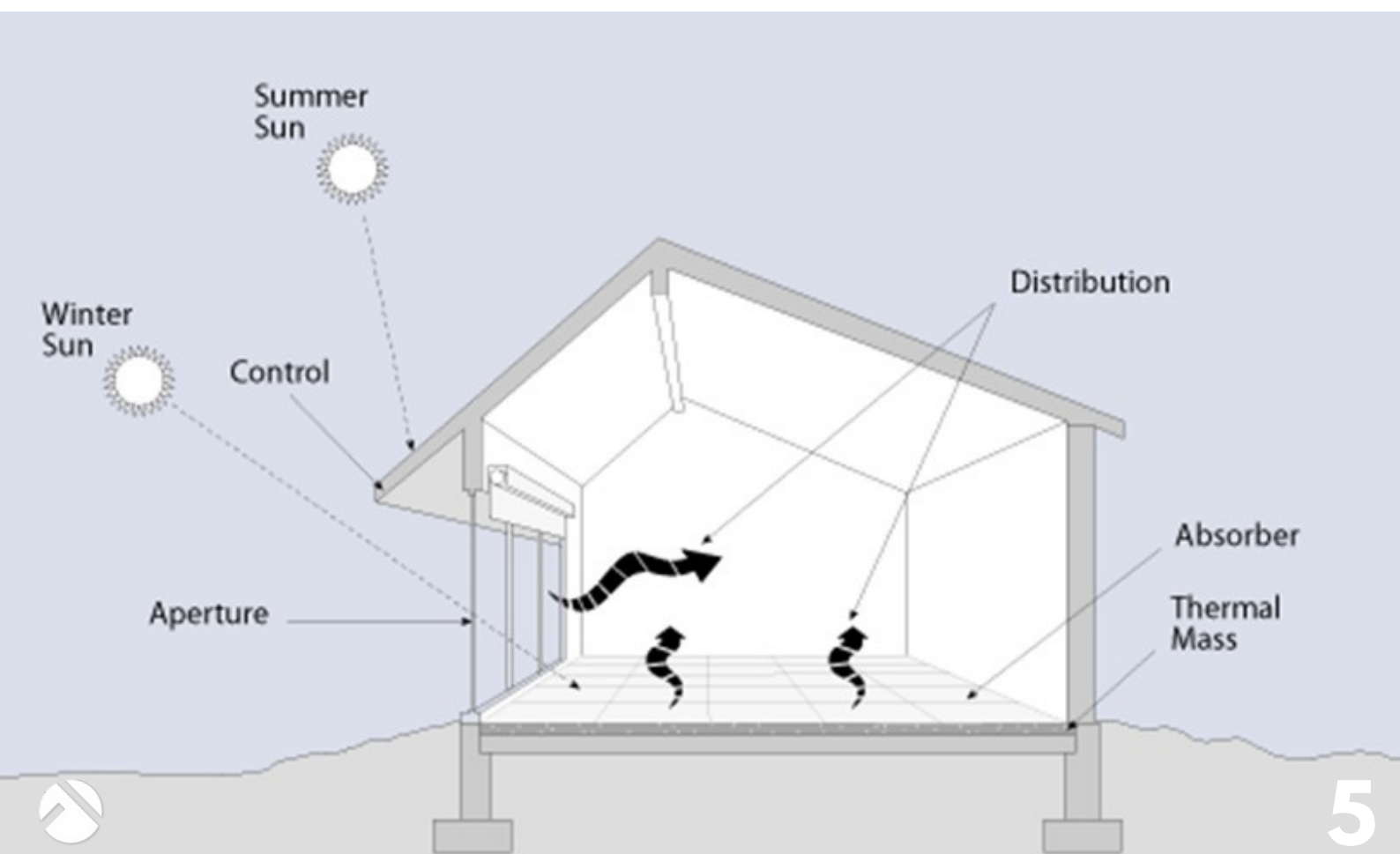




# principles.

At its core, the Howgate Close project puts sound scientific ideals into practice. The passive solar design relies on utilising the climate, the building's location, and materials to minimise energy usage, summarised in the following four principles:

- Southerly building orientation – optimising solar gains for heating, lighting and ventilation
- Selective glazing locations – maximising glazing on the south elevation for solar gains, reducing glazing to the north, east and west to reduce heat loss
- High thermal mass structure – using dense building materials to act as a large storage radiator, stabilising internal air temperatures
- Super-insulation envelope – which reduces the rate of heat loss from the buildings while increasing their capacity for retaining stored heat.



# principles cont.

The principles themselves are millennia old, and well-practised throughout history. Our ancestors often occupied southern-facing caves to ensure maximum thermal comfort. With these principles in mind, Howgate Close delivers spectacularly. Based on the fossil fuel-free operation, and renewable energy provisions, the 9-house settlement currently has the theoretical capabilities to supply another settlement of the same size with the required energy. The energy provisions include 60KW of roof-mounted photovoltaic cells. A truly remarkable renewable energy achievement.



# execution.

The major contribution to this project on our side was the supply of materials to form the super-insulation envelope. Achieving passive house status is crucial to an effective energy efficiency strategy, and insulation forms the most important element. Ultimately, you are trying to eliminate thermal bridges throughout the whole construction. The following products were utilised to effectively deliver this envelope that ensures that the ambient temperature of the structure remains at 23 degrees Centigrade:

- 230mm of EPS
- EWI-225 Premium Basecoat
- Fibreglass orange mesh
- EWI-076 in 20001 Premium Bio Silicone Render





# results.

The finished product is a spectacular achievement for passive solar design and external wall insulation. The properties blend seamlessly with the surrounding rural environment, and the project achieves more than thermal comfort.

The Howgate Close project under Dr Chris Parsons promotes the process of rewilding a 10-acre area, including 10,000 trees, hedgerows, wildflowers, and a wildlife pond treating effluent discharge. Based on the material composition of the whole build, it is expected to achieve an SAP score of 142A which places it into the highest of brackets for energy efficiency. Only 0.01% of properties registered in the UK are reaching that standard.



# impact.

The newly formed community at Howgate Close also gains access to woodland pasture meadows, as part of the rewilding project. The architects also project that the rewilding part of the project, in conjunction with the housing being built-in into the environment, will result in a net biodiversity gain.

The final impact of the project is best discerned through the testimonials of the residents. The concept of passive solar design delivers a fascinating template that is not only capable of self-sustenance but also the production of sufficient energy supply for another settlement of the same design. The cyclical and sustainable nature of the project is a testament to the brilliance of the design and efficiency of our products.

6 March 5, 2023 The Sunday Times

## Home



As rural prices outpace salaries, one farmer has built affordable eco homes on his land. By Sharon Smith

**C**hris Parsons was driving past his 1,500-acre arable farm one day when he had an idea. "I suddenly thought, 'What if I build some earth-bundled houses on top of the hill with fabulous views over the countryside?'" he says.

In Harrall's upgrade, each house is constructed as a high thermal mass concrete box with triple-glazed, south-facing windows. The windows measure 3m x 4m in the one-bedroom house, and 3m x 5m in the two-bedroom property, and are net gatherers of heat.

