

## FROM DERELICT BARN TO ECO EXEMPLAR EDUCATIONAL CENTRE

YORKSHIRE WILDLIFE TRUST'S STIRLEY COMMUNITY FARM HAS RECENTLY COMPLETED A PIONEERING LOW ENERGY REFURBISHMENT THAT HAS TRANSFORMED A DERELICT FARM BUILDING INTO A MULTI-PURPOSE EDUCATIONAL CENTRE AND SPACE.

The Cre8 Barn (funded by the Weolia Environmental Trust), has been refurbished by Huddersfield Passivhaus specialists Green Building Store. The aim was to meet the exacting EnerPHit standard (a variation of the low energy Passivhaus standard, specifically designed for retrofits).

EnerPHit requires high levels of insulation and airtightness and will help the building achieve energy savings of 75-90% compared to the UK average and will require minimal heating. To achieve the EnerPHit standard, projects need to be at least 10 times more airtight than a standard UK new build. The Cre8 Barn project is currently in the process of gaining EnerPHit certification.

Substantial structural work and underpinning was needed on the 19th century cow byre (including complete re-building of one of its walls). A super-insulated timber frame structure was then built inside the existing stone building, preserving the outward appearance of the barn, whilst equipping it for 21st century levels of energy efficiency.

The 'box within a box' timber frame structure made it easier to achieve the thermal performance, and airtightness levels required by the EnerPHit standard. It also offers the additional advantage of supporting and shoring up the original stone building through the use of specially adapted 'wall connectors' with low thermal conductivity.

### Key features

Airtightness - airtight measures include: use of airtightness tapes and membranes at junctions in the timber frame structure (including around windows); use of special airtight timber boarding in walls and OSB board in the roof.

Super insulation - heat retained in the building through super insulation:

- 310mm in walls
- 485mm in roof
- 200mm in ground floor

Triple glazed doors and windows, with insulated frame (whole window U value: 0.77 W/mK)  
Minimising thermal bridging - attention was paid to ensuring continuity of insulation at all junctions. A new form of thermally treated rigid polystyrene insulation was used at the door and window thresholds to help reduce heat loss.

Mechanical Ventilation with Heat Recovery (MVHR) - supplies clean, filtered air to the barn and



BOX WITHIN A BOX - A PIONEERING LOW ENERGY REFURB OF THE CRE8 BARN PROJECT - A 19TH CENTURY COW BYRE. PHOTO COURTESY OF GREEN BUILDING STORE.

removes stale air. The MVHR system retains up to 90% of the heat from the outgoing air by transferring heat to the incoming air through a high efficiency heat exchanger.

### What is Passivhaus?

Developed in Germany in the 1990s, Passivhaus is a quality assured standard and methodology for low

energy building, which can create buildings that use around 90% less energy than standard UK buildings. Based on well researched and proven building physics, the Passivhaus approach has been applied to over 37,000 buildings worldwide and is now taking off in the UK.

Free resources on the project are available at: [www.greenbuildingstore.co.uk/enerphit](http://www.greenbuildingstore.co.uk/enerphit)

## FAST TRACK

### Construction Magazine: What was your first proper job?

I worked for a planning consultant who taught me a lot about how to approach things. It was there I first developed my flair for design and it was actively encouraged to great effect at the time.

### CM: Briefly chart your career to date.

I have worked for a range of small specialist architectural practices and then some larger ones before going into private practice. All of the practices allowed me to study and work at the same time. Which I'm very grateful for as it allowed me to gain a lot of experience at the same time as completing my studies. A very difficult and demanding way to train, but by far the best way in the end. I even ran a builders' drawing office whilst starting out on my architectural studies, which I really enjoyed. They were very understanding, so thank you for that!

### CM: What inspires you to go to work every day?

To hopefully do something creative and worthwhile and enjoy it!

### CM: Would you say you live to work, or work to live?

I'm definitely living for my creative work. I just wouldn't do it if it wasn't fulfilling and enjoyable. I don't see it as working when you get to transform a project in a positive way.

### CM: What advice would you give to someone aspiring to your position in the construction sector?

Be prepared for hard work and long hours. It's not an easy job and so it's important that you love it right from the start. If not change your job and go do something else!

### CM: As a construction industry professional/leader, describe your three main qualities.

Oh that's a difficult one. Well I think they have to be: focus, patience and resolve. You must never lose your cool even if others around you do. You're leading the team so if you do then the team is off balance.

### CM: And your worst quality?

I can be stubborn but then you need to be if you're trying to build architecture. You just wouldn't be able to do it sometimes.

NAME: NIGEL BUCKIE (RIBA)  
POSITION: DIRECTOR  
/ARCHITECT/PRINCIPAL  
COMPANY: OBJECT ARCHITECTURE  
TYPE OF BUSINESS: SMALL  
ARCHITECTURAL PRACTICE  
SPECIALISING IN RESIDENTIAL  
WORKS  
LOCATION: SOUTH WEST LONDON  
WEB:  
[WWW.OBJECTARCHITECTURE.CO.UK](http://WWW.OBJECTARCHITECTURE.CO.UK)



NIGEL BUCKIE

### time of involvement?

The use of materials and their development.

### CM: What has been the most satisfying moment in your career?

Well, definitely completing my professional qualifications. I was looking forward to being able to concentrate on real projects and life. This is when you really start learning.

### CM: What has been your biggest mistake in the business?

I burnt some bridges in my youth, unintentionally in my progression to running my own architectural practice. Not really intended but change is sometimes about a natural growth and it is an organic process. So feel free to get back in touch to mend some bridges!

### CM: If you could work in a completely different field of business, what would it be?

Well, I like product design. I like to just design lots of things not just restricted to architecture.

### CM: What has been the most beneficial development in the construction industry during your

time of involvement?  
The use of materials and their development.

CM: And the most detrimental?  
I think too many changes to the planning system with too few experienced planning officers perhaps.

Architects are the only construction profession trained to design buildings yet we are controlled by those who are not. But I think perhaps even more damaging to potential growth and projects is the 20% VAT on refurbishments and renovation projects. That's the difference between a project going ahead or not.

### CM: If you could employ anybody from the worlds of construction or business who would it be and why?

Mmm, Renzo Piano, or maybe Thomas Heatherwick for their creativity and vitality for good design.

### CM: What are your aspirations for your business for the coming five years?

To continue to be creative and perhaps upscale my project sizes with the same design intentions.