

UK Case Studies

- Edenside Barn, Cumbria
- Bower Yard, Ironbridge
- Trout Hotel, Cumbria



Before & After



Edenside Barn, Cumbria, UK

- Next to the River Eden with an elevation of 5m AoD
- Protected with 900mm high flood barriers after previous flood
- 2015 floods overtopped the barriers
 - Storm Desmond
 - Prolonged intense rainfall of up to 341.4 mm
- Homeowner out of home for 2 years





Edenside Barn, Cumbria, UK

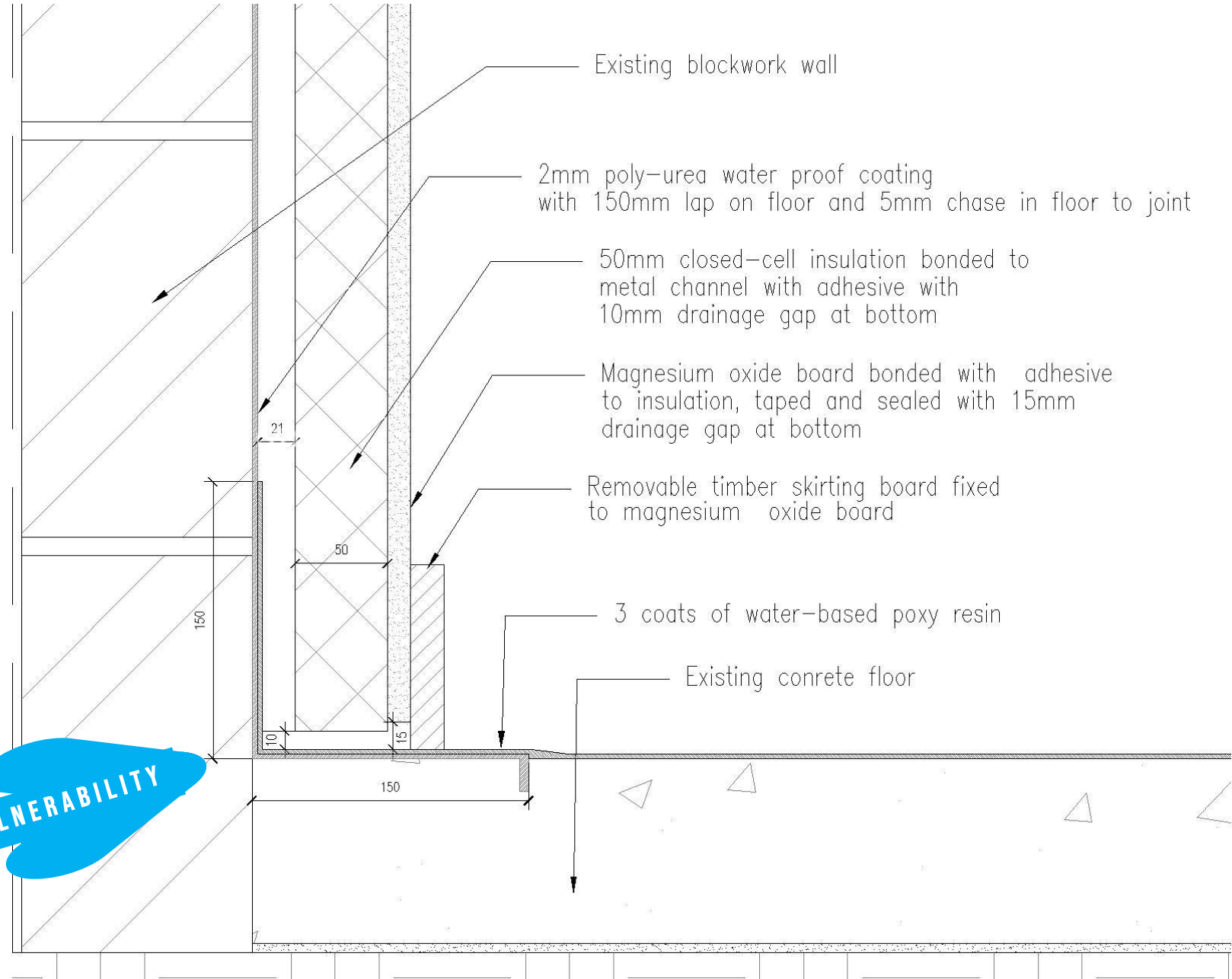
- Wood stud wall replaced with metal frames on perimeter walls
- Closed cell installation panels
 - Introduced Dado rail feature at flood height
- Tiled floor, marine grout & glue
- Dragonboard Vs Gypsum
- Underfloor heating protected



The detailing on the installation is key

**Design
Detail –
External
wall &
floor**

VULNERABILITY



Edenside Barn, Cumbria, UK

- Floodproof kitchen
 - Contemporary designs
 - Engineered wood – floodproof & sterile
 - Drawers in floor units allows content removal with drawer
 - White goods above countertop



The Result

Hose down, dry, decorate
and move back home



Bower Yard, Ironbridge

Survey to identify strategy & design principles

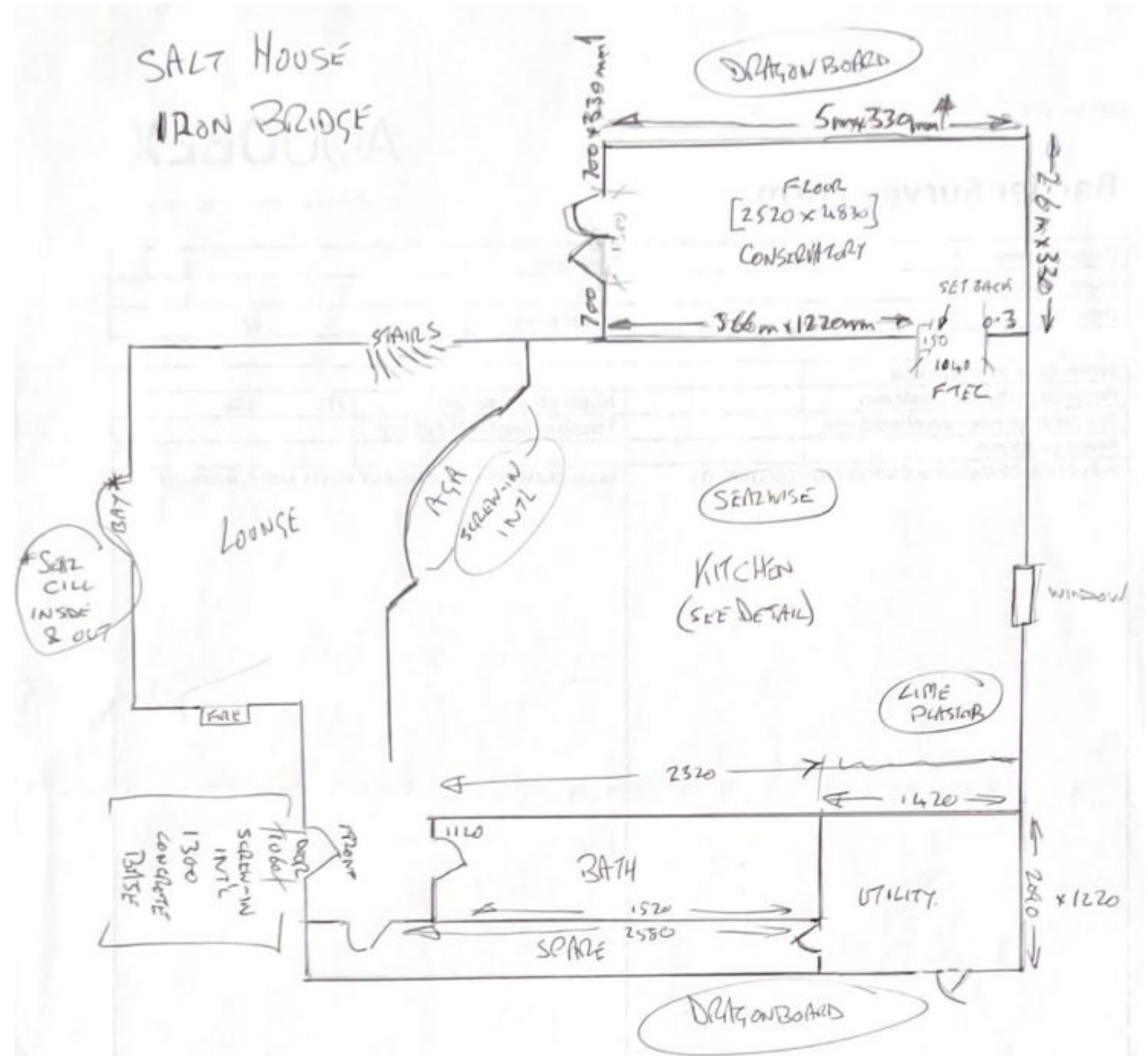
Conservatory (at top) is timber framed & will not withstand > 300mm of hydrostatic load

Flood height 1m to 2m

Flood barriers to protect to 1m

Resilient interior for higher floods

Conservatory is always water entry solution with barrier at entrance to kitchen at 1m high





The Conservatory...

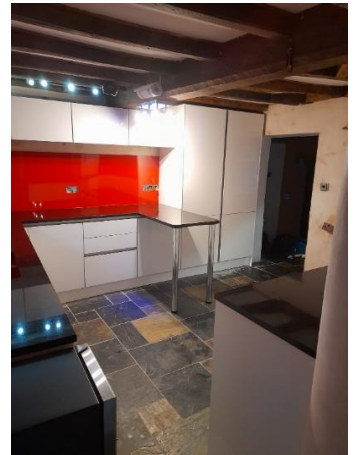
... was never going to keep water out so we let it in

- ✓ Closed cell insulation, with all gaps taped & sealed
- ✓ Painted slurry to wall floor junction with fillet in join
- ✓ Dragonboard to finish, sealed to floorboards
- ✓ Note special (yellow/black) fittings to ensure watertight fixing to wooden studs



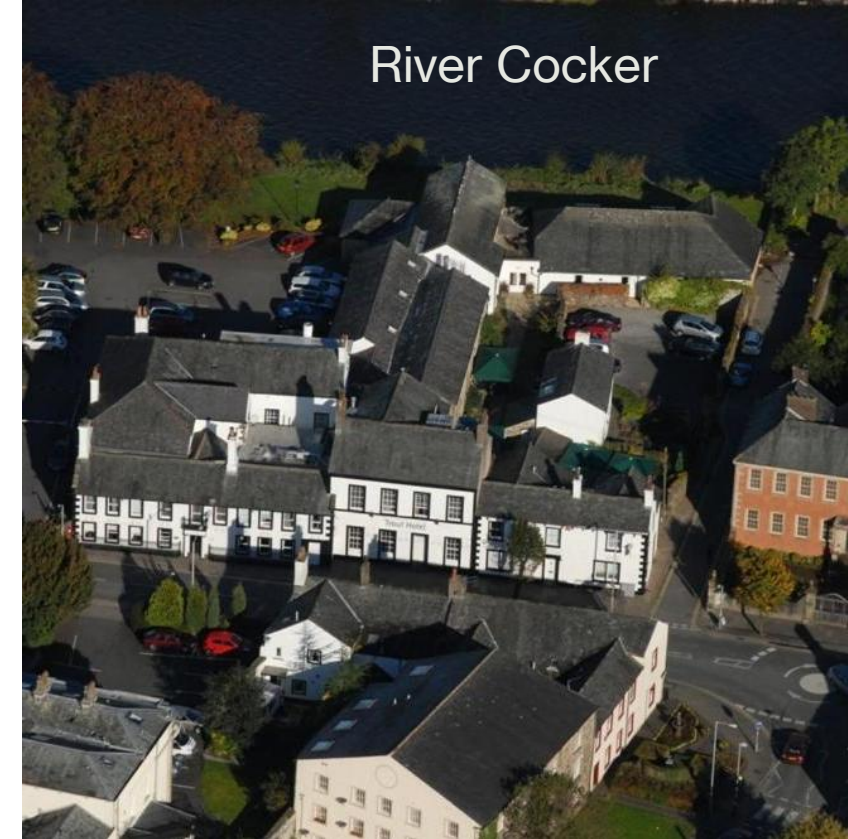
Attention to detail

- Internal stud walls with closed cell insulation at bottom, wool at top
- Heating pipes sealed back & front as they pass through boarding
 - Floor inside stud wall treated with slurry
- Timbers treated with slurry. Could include Boron rods too



How good are floodproof kitchens? Very Good!

A simple hose down, disinfect and allow to dry – Simple!



Trout Hotel, Cockermouth, Lake District

- 1st flood 2009 from river - £8m insurance payout
- 2nd flood 2015 from high street - £5m insurance payout
- Closed for a year on both occasions

The solution



- FOCUS on the core infrastructure
- What gets the hotel back into business the fastest?
- The kitchen, bar and dining room – the heart of the hotel
- Internal barriers in corridors to protect the heart of the hotel
- External flood barriers to doors and windows due to height of flooding
- Creation of **FERP** (Flood Emergency Response Plan) for manually deployed barriers with biannual dry runs
- Kitchen replaced with stainless steel furniture
- Kitchen ring fenced with internal barriers to doorways at 1m high
- Dining room wood walls treated with **nanoshell** with multiple pumps under raised floor

Solution cost **£230,000**

Expected time business closed after next flood is a maximum of 2 weeks

Huge saving for insurer, especially as the cost were borne by the hotelier!

But he did keep his insurance policy

Much better result for hotel owners, customers and staff, in an area of high unemployment



A LOOK AT SOME OF THE SOLUTIONS

- Internal flood barriers to heart of hotel
- External window barrier
- Replacement floodproof window arrays