

# Bricks made from quarry waste cut carbon on Hackney extension

15 April 2024, Words: Stephen Cousins

Upcycled limestone bricks bring warmth and precision detailing to domestic extension by Draper Studio



The basket weave pattern was conceived to break down the massing of the rear elevation.

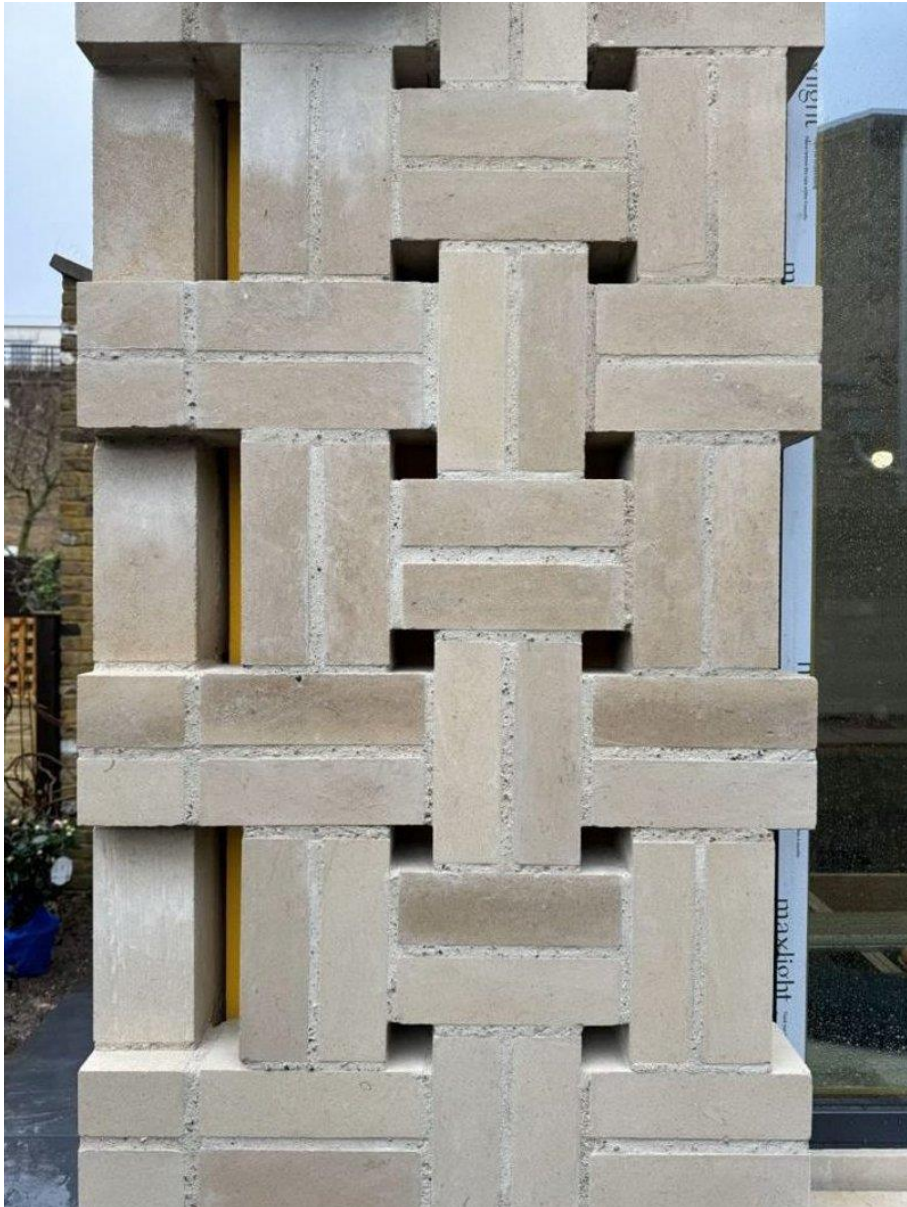
Credit: Draper Studio

Up-cycling waste is key to reducing reliance on carbon-intensive manufactured products, and now architects are turning to discarded stone fragments from quarries to help tackle climate breakdown.

Draper Studio's sensitive rear extension to a Victorian terraced home in Hackney, East London, is one of the first domestic properties in the UK to incorporate Polycor stone bricks. Known as 'A **Better Brick**', these are 86% less carbon intensive to manufacture than traditional terracotta bricks, says the manufacturer.

Sourced from France, the limestone bricks were supplied by UK cladding specialist EH Smith and wrap around the single-storey extension as a decorative rainscreen. The intricate basket-weave pattern of headers and stretchers, with square perforations where the bricks cross, creates crenellated profiles around apertures for the frameless windows.

According to Adam Draper, founder of Draper Studio, the facade was devised as a boundary condition similar to a lightweight fence and the pattern helps to break down visual massing to add interest.



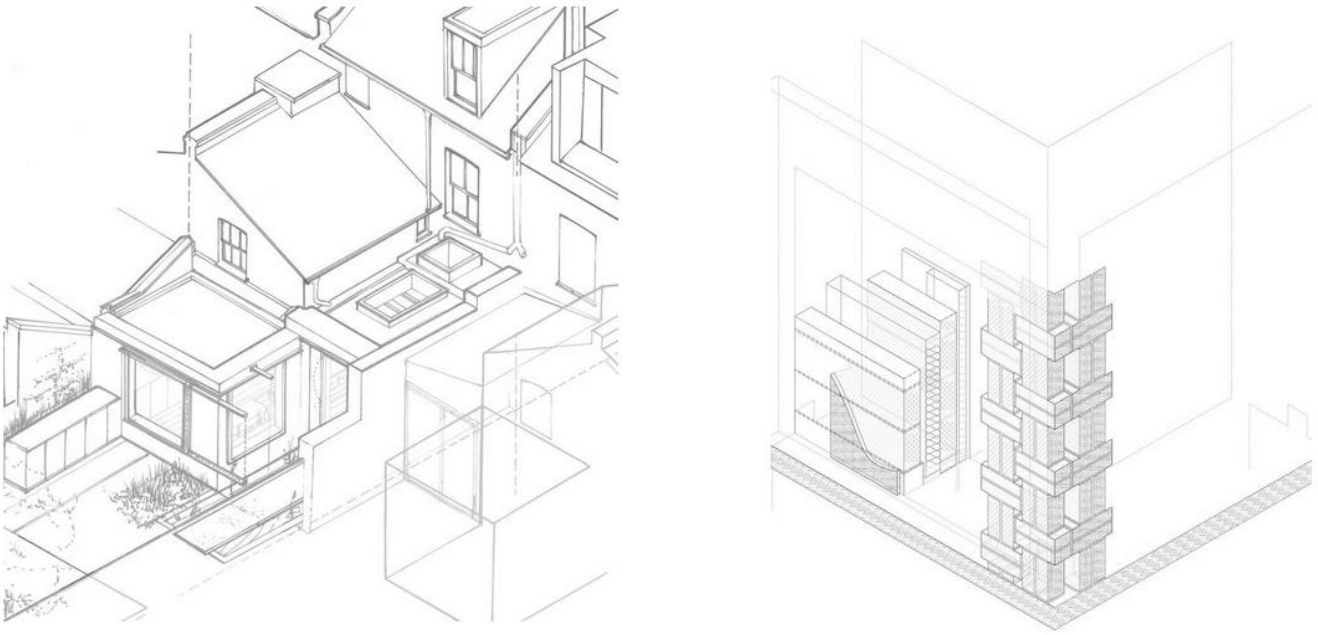
Polycor's stone bricks are cut from waste limestone avoiding the process emissions associated with traditional clay fired bricks.  
Credit: Draper Studio

Polycor's product is reworked from stone fragments created from the so-called first 'break', when large format rocks are cut away from the cliff face. These smaller rock pieces are typically ignored due to the industry's preference for larger slabs, and end up being pulverised. However, when cut to a modular size they can perform much the same function as bricks, without the embodied carbon associated with brick manufacture.

Cutting the product avoids the energy-intensive firing process for traditional clay bricks and can be powered by renewable electricity, rather than polluting gas. On the Hackney project, lime mortar was used to reduce reliance on cementitious products, making the wall entirely demountable and suitable for reuse in future.

Draper reports that the cut stone bricks give a 'very fine edge', making details 'straighter and cleaner compared to London Stock bricks'. However, achieving this on site proved a challenge as European Standards only require one in 10 of the 215 by 65 by 102.5cm bricks to be dimensionally regular – and some were as much as 5mm out. Fortunately, EH Smith was able to provide additional dimensionally-accurate bricks to resolve the shortfall.





**Axonometric drawing showing wall build up and corner detail of limestone brickwork. Credit: Draper Studio**

The wall build-up comprises two layers of concrete blocks, with an insulated cavity between for the thermal envelope, covered by a layer of render and then the brick rainscreen, tied back to the wall. **Sourced from Massangis in France, the limestone is a neutral earth tone with a light beige background, medium grain and occasional shell inclusions.**

The final result is better than what was originally conceived, says Draper: *‘We try to deploy natural materials wherever we can. It will age very well and the whole thing can be dismantled and the bricks infinitely reused. It brings a uniqueness to what is a very typical house type.’*

The logical next step is to use the product in a structural application to take advantage of its high compressive strength, said Draper. As you might expect, Polycor stone bricks are stronger than clay bricks, with a compressive strength of 70N, versus 10-12N.