

The self-confessed “building bore” Judith Leary-Joyce has lived in a three-bedroom end-of-terrace house in an unassuming cul-de-sac in St Albans, Hertfordshire, since 1979. Over the years she and her husband, John, 70, have made many improvements to their “cold, dark and draughty” 1901 home, the most recent round culminating in a 75 per cent reduction in energy consumption.

In August 2020 the couple decided to pull down their large conservatory — “freezing in the winter and too hot in the summer” — and extended the footprint of their kitchen to create a more liveable space year-round. Leary-Joyce, 75, admits that she has never been much of a fan of open-plan because “it’s so easy to use too much energy”, but she was keen to improve the eco-efficiency of the home, which was so “bitterly cold” during winter that it necessitated layers of cashmere. Plus they’d wanted to install an air source heat pump, so it seemed like the ideal opportunity.

To oversee the works the couple hired an architect, who explained partway through the build that no matter how well their new extension would be insulated in preparation for the heat pump, much of the warmth would be lost through the rest of the leaky house. This was a penny-drop moment, spurring the Leary-Joyces to kick-start the process of retrofitting their home.

“We didn’t know what we didn’t know,” Leary-Joyce writes in the *Beginner’s Guide to Eco Renovation*, the book she wrote after the project. A retired social worker, psychotherapist and leadership coach, she was a speaker at the TEDx St Albans conference in 2023 and has built a sizeable community on social media, dishing out down-to-earth, no-nonsense, eco-conscious tips to her 44,000-strong following on Instagram (@corenovationhome).

“It’s often more about the questions we ask than the knowledge we have,” she says. “The moment I decided I would write the book was the day I discovered the word ‘retrofit’. I kept looking up renovation, which was giving me loads about gorgeous design but wasn’t telling me about insulation and so on. Then I discovered retrofitting and a whole world opened up.”

The couple’s sustainability journey has boiled down to four main factors: insulation, airtightness, ventilation and breathability. None of these should be looked at in isolation, she explains from her toasty open-plan kitchen/living room.

“Most Victorian buildings are just a single brick, as ours is, and you lose something like 24 per cent [of the heat] through the walls. The idea with retrofit is that it is like a big blanket round your house, cutting out all the uncontrolled air. But then you’ve got to put back in controlled air, because it also has to move the moisture. Each family produces about 14 litres of moisture a day and it’s got to go somewhere.”

Many builders use polyisocyanurate (PIR) — a cheap, common type of rigid foam insulation covered with a foil-like material that is nonbreathable, made with petrochemicals — which Leary-Joyce notes is “terrible for the environment” and “gives off volatile organic compounds [VOCs].”

When designing their extension the architect’s recommendation was to put a

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Their improvements have resulted in a 75 per cent reduction in energy consumption”



Judith Leary-Joyce in her St Albans house with her daughters, Miriam and Martha

Our retrofit has made us warmer, greener and richer

A couple slashed their energy bills with a green renovation of their draughty Victorian house. By Victoria Brzezinski

breathable membrane across the wall; build a stud frame to hold the insulation and put 8cm of wood fibre insulation batts (Pavaflex) into each gap in the framework. This was covered with 4cm boards of Isolair (“the wood-fibre equivalent of plasterboard”). Stuffing the Pavaflex batts (cut with a saw) into the wood frame was something the couple did themselves — “it does require an eye for perfection, because each gap means more draughts”, Leary-Joyce says. The final layer is lime plaster (ordinary plaster isn’t breathable). Other types of sustainable insulation include a combination of recycled denim, cotton and velvet (which has been used in the Leary-Joyces’ roof), cork, hemp, sheep’s

wool and Diathonite (a thermal plaster) used around the awkwardly shaped living room bay window.

However, PIR insulation was installed under the concrete floors in the extension. In hindsight the Leary-Joyces would have used eco-friendly alternatives to the insulation and concrete, such as hempcrete (a biocomposite). “If your budget is limited, you live in a non-breathable house and your only option is to use PIR, that’s better than not insulating at all,” she adds.

Particular attention was paid to minimising draughts, which can

leak as much as 20 per cent of the heat created. To improve the airtightness of the new extension consideration was given to how the walls join together, ensuring there was no break between walls and the floor and fitting the windows tightly into the frame.

For ventilation, single-room individual heat recovery units were installed in six rooms. These save 85 per cent of the heat, and are “much more effective” than trickle vents (background ventilators integrated into window frames).

“Breathability is relevant to houses built before 1930,” Leary-Joyce says. “It relates to the management of vapour in the structure of the building. When the houses were built all materials were vapour permeable, so vapour can move through them easily from both outside and inside, reducing condensation. Problems arise if a nonbreathable (non-vapour permeable) material is used alongside breathable.”

“When moist air travels through the breathable material then hits again the nonbreathable barrier it will condense, and over time this will cause damage to the structure and you can end up with damp and mould. So once breathable, always breathable.” From the outset if you’re working on new-builds, “you need to decide either to build with modern, rigid, nonbreathable materials that block the movement of moisture altogether

or go with breathable materials.” The Leary-Joyces’ builders were not specifically eco-trained, but they were open to ideas. “There is a reason we have so many old and Victorian buildings today — the breathable system works.”

Other eco-upgrades include solar panels on the roof, triple-glazed windows (Leary-Joyce notes that care must be taken during fitting) and Pavatex insulation under the suspended ground floor. The air source heat pump — a Mitsubishi Ecodan 8.5kW R32, one of the quietest on the market — has been fitted above the roof of the extension. “We often hear complaints about [air source heat pumps]. From what I understand this is more likely to be human error. It’s new technology, so not many people are yet skilled in fitting.”

Midway through they decided to take out the chimney breast — “just a dirty great hole into the house that makes the place freezing”. She adds that their 15-month renovation took much longer than it needed to. “People need not to judge by our journey — we kept adding new bits and we were learning as we went along, working with the builders to get them to be as thorough as we could, because a lot of retrofit is about being nitpicky.” For instance, checking airtightness and making sure the insulation is really thorough.

“Last summer we did our bedroom, the final big piece of the puzzle, which we initially cut out of the thermal envelope of our home [any structure in your home that separates the air inside your home from the air outside] as I always like to sleep with the window open at night. We put a door closer on and the door was constantly closed.”

During the bedroom renovation builders pulled off the old plaster to strip



Insulation in the bathroom window



The Leary-Joyces pulled down their conservatory, extended the kitchen and added environmentally friendly insulation and triple glazing



Residents Kit Smithson and Felicitas Reichett at Woodvale Estate community garden in south London

How street art can transform rundown estates

Residents invited artists to decorate their building — and they’re thrilled with the results. Sasha Nugara reports

Graffiti may have negative connotations, but street art is being used to brighten up rundown estates — with the residents’ permission. Kit Smithson, 34, head of the neighbourhood committee at Woodvale Estate in West Norwood, south London, invited the organisation Global Street Art to decorate the building after arranging for children on the estate to spray-paint unused bollards. “They had a good time. We had about six kids and a few adults keen to see how a spray can worked,” Smithson, an architect, says. “Street art was my creative outlet as a teenager, so I already had that positive association and I didn’t have any hang-ups with it.”

Smithson has lived in a three-bedroom house on the estate for six years with his partner, Felicitas Reichett, and their four-year-old son has grown up there. After contacting Global Street Art and agreeing the project with Lambeth council they commissioned a group of artists to transform some of the estate’s walls. Six pieces were commissioned and painted over four days, including an abstract wall by Jake Attewell, a London-based artist who grew up in Seoul, and a bright floral piece by Andrew Werdna.

“It’s giving a little seed of something unloved to be loved and then it might lead to something bigger,” Smithson says. “It was the first thing we did that required some collaboration with the council, and it started some dialogue in a more positive way, as opposed to people complaining. So

it helped with that relationship a little bit, and that allowed us to do some other things as well, such as the allotment.

“I wouldn’t oversell the impact of it as a way of resolving the issue of illegal dumping — that’s an issue on its own — but I think it’s a small improvement. It’s a moment of colour in everyday life.”

Claudia Evans, 33, who has lived on the estate for five years with her partner, Robert Sedgwick, 34, says: “I’m quite happy. I find this quite joyful as I walk past. It was one of the first things we did as a new TRA [Tenants and Residents Association].”

Smithson is handing over the role of committee head to Spencer Adams, 53, who has lived on the estate for 24 years in a three-bedroom house. He lives there with his wife and two teenage children. “Over the past 20 years it’s changed a lot. When I first moved in there were a lot of kids



The organisation Global Street Art brightened up the estate

hanging around, bored and acting aggressive, but it feels really positive here now,” says Adams, also an architect. “[Fly-tipping] happens everywhere, but you can get distracted by doing something fun. I couldn’t bear to move, and the kids love it here actually.”

The success of the project means the estate has approved more of its walls to be painted for this year’s London Mural Festival in September.

Lee Bofkin, 43, is the founder of Global Street Art, which paints murals for high-end brands including Valentino, Just Eat, Absolut and Levi’s. The organisation invests its profits into its community project Art for Estates, where the team decorate unloved spaces. They don’t charge councils for the murals and they use leftover paints from commercial projects.

“In the early days it was just knocking on doors and asking: ‘Hey, can my friend paint here?’” Bofkin says. “Ten landlords would say no, and one would say: ‘Yeah, go on then.’ It would look brilliant because it was colourful, and much better than the dreary grey around it — then the neighbours would say yes as well.”

A year after the project started almost the whole of White Church Lane in east London was painted, and Bofkin felt the perception of street art begin to change. “People recognise fundamentally that art is a really powerful tool for changing the prospects of neighbourhoods,” he says. “The UK used to have a lot of legal graffiti spaces. I hope more of those get returned, but I’m not necessarily confident they will, because there’s still a prevailing nimbby culture of locals worrying about tagging. Which is a real shame because that’s still a form of expression.”

“Our programme Art for Estates has put several hundred murals in estates, and no one else is doing anything like that,” he says. “The biggest challenge in art is how it interacts with public policy as well, because painting a neighbourhood does change people’s perceptions of that neighbourhood and it makes it more attractive, and there’s a risk that more people want to move there and it pushes artists out. What I’d like to see is artists getting equity in those spaces.”

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