



BUNHILL 2 ENERGY CENTRE

Cullinan Studio
McGurk Architects

Awards: Winner, Sustainability, RIAI Architecture Awards 2019
Client: Islington Borough Council

Architects
Architects for Concept to Planning Approval: Cullinan Studio
Architects for Planning Approval to Completion: McGurk Architects

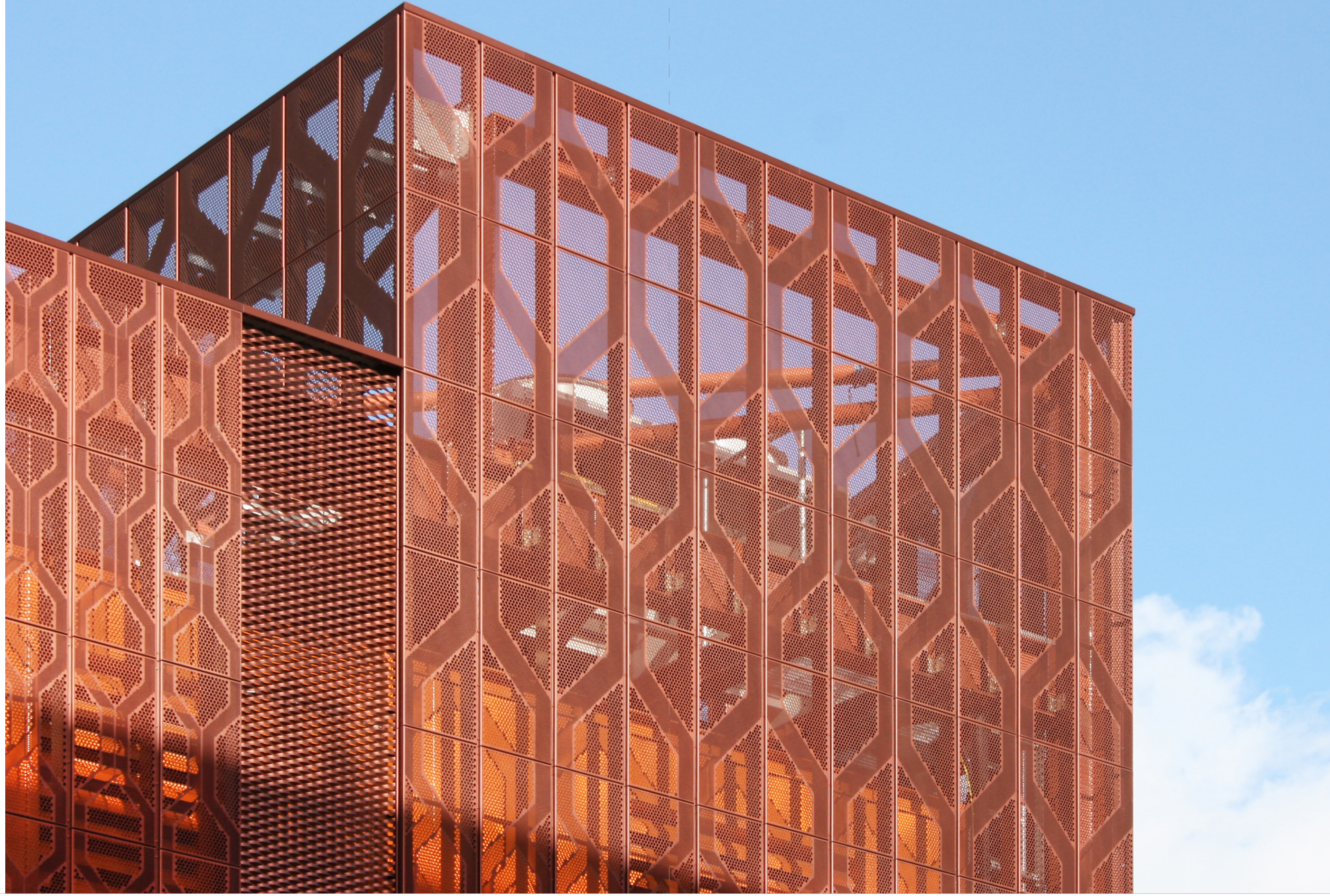
Image
Bunhill 2 is a pioneering 'energy centre' in Islington that captures waste heat from the Underground system to heat local homes

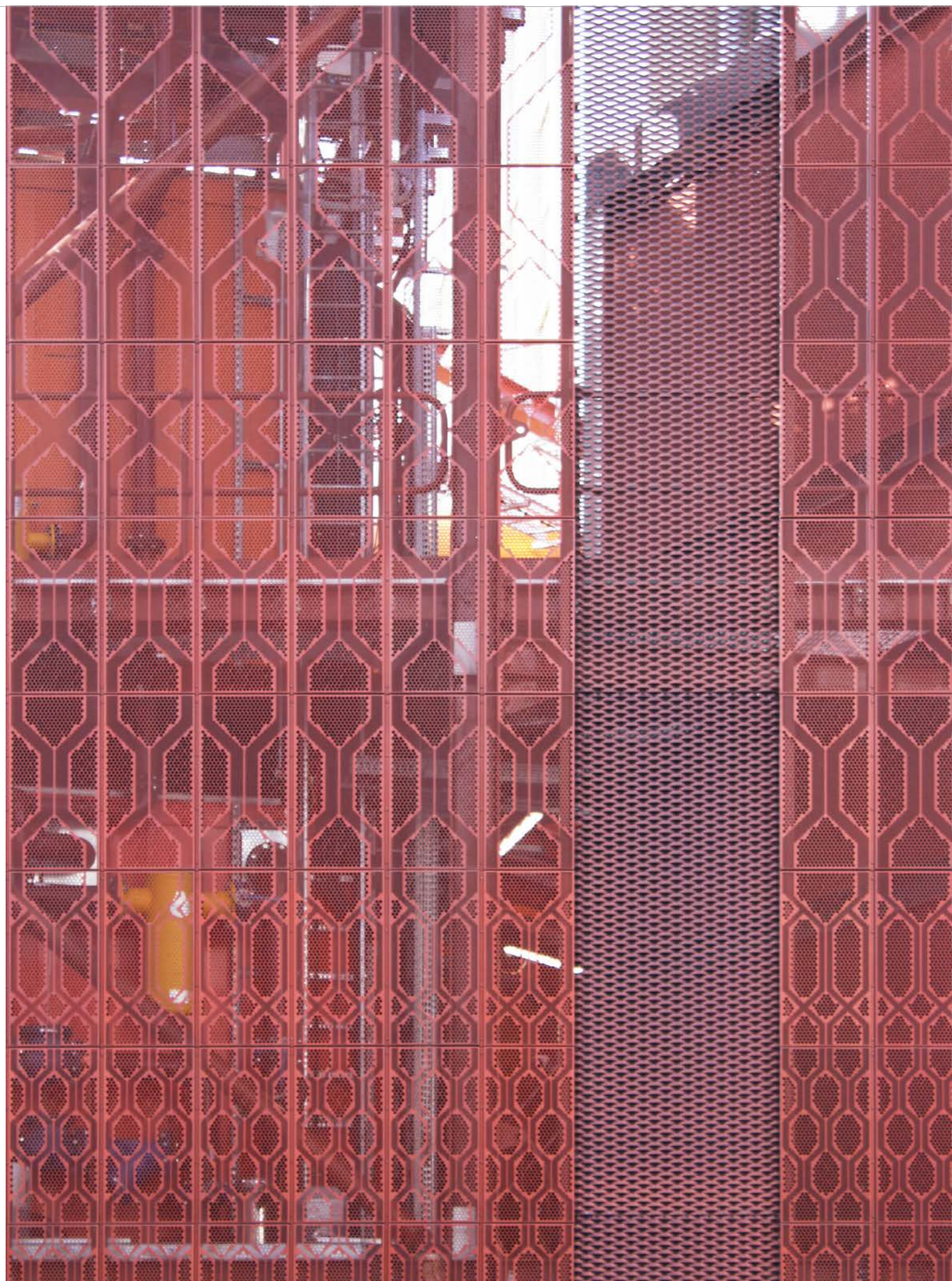
Project Photography: Fergal Rainey

Location: Islington, London, United Kingdom



Image
Glasgow-based artist Toby Paterson designed the intricate perforated panels that enclose the plant





LOW CARBON HEAT FOR HOMES FROM THE LONDON UNDER- GROUND

Angela Brady FRIAI OBE



—
Image
3 The perforated panel concept in anodised aluminium looks like tracery with its geometrical Moorish design patterns

I went on my bike to visit the Bunhill 2 Energy Centre in Islington, London which occupies the site of the former City Road underground station on the Northern Line. The station opened in 1901, an intermediate stop between Angel and Old Street, and closed just 21 years later due to underuse leaving only a four-metre-tall ventilation shaft at this busy urban intersection, now surrounded by tall social housing and office blocks.

You could pass this building by and not know what it is. At a first glance, it could be the windowless side of an industrial building or an art installation. Closer inspection, however, reveals that the elaborate screen of metallic elevation panels is, in fact, disguising an 18-metre-high air-handling plant just visible behind it – a new type of civic industrial architecture. The Islington Council poster on this cladding informs curious passers-by that hiding behind this colourful red façade is “*Bunhill 2 – Cheaper, greener heat for the community*”.

A Pioneering Waste Heat Project

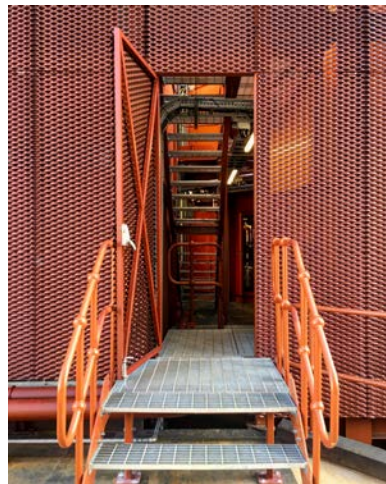
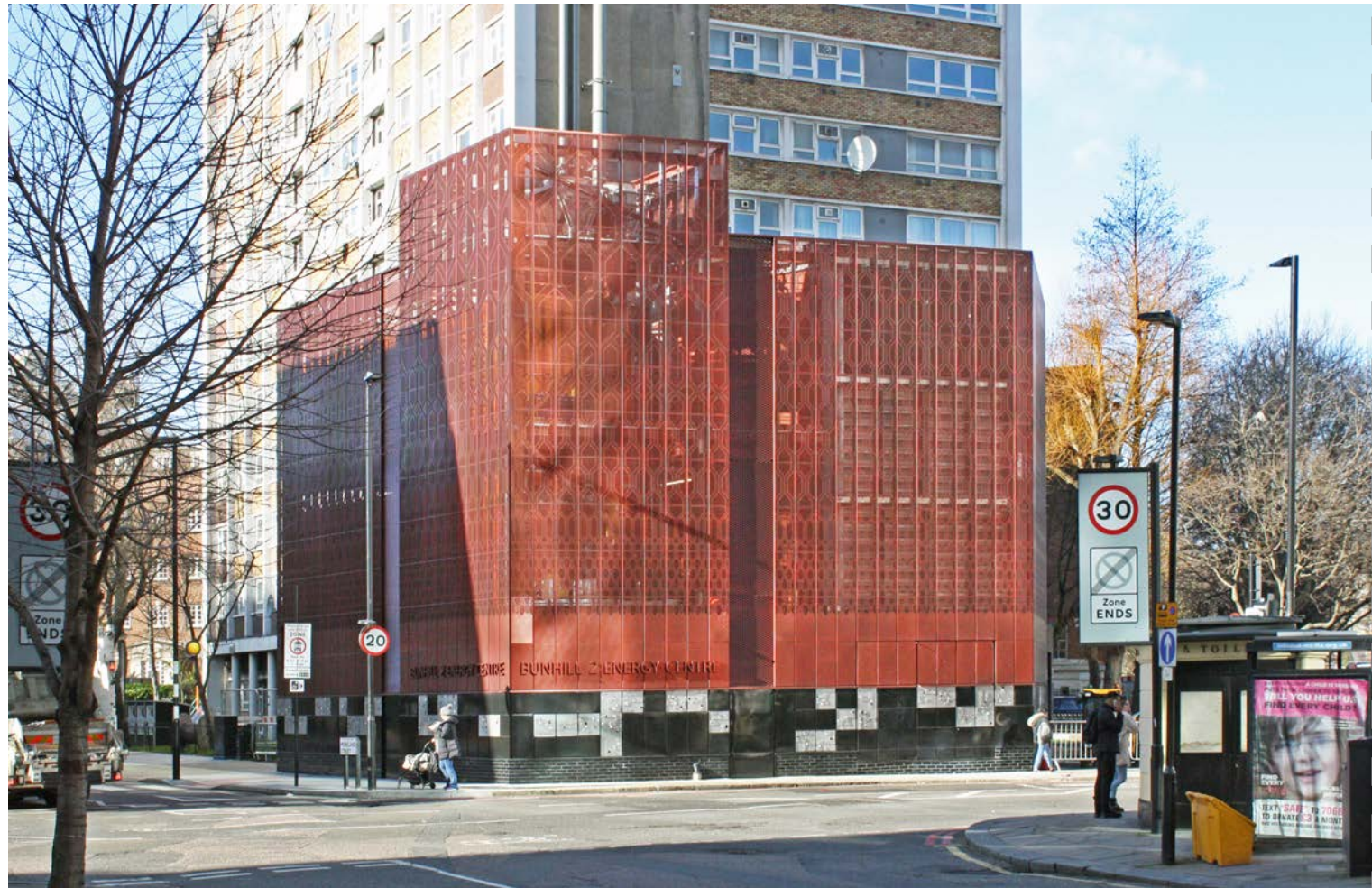
Bunhill 2 is an ‘energy centre’, part of a pioneering project to capture waste heat from the Underground system down below to heat local homes and cut energy bills. The scheme is part of Islington Council’s innovative Bunhill District Heat and Power Network, which serves 1,200 local homes with cheaper, greener heating. The new energy centre captures heat from the Northern Line ventilation shaft, raises it to a higher temperature and supplies 500 additional local homes and Moreland Primary School, cutting energy bills for hundreds more local people. It is also a reversible system that can cool the buildings and the underground system in summer, and any surplus electricity generated is put back into the grid earning income for Islington Council, helping offset the £16 million cost of the project. This is the first of its type in the world and 56 other ventilation shafts are currently being assessed by the Greater London Authority who estimate there is enough heat wasted in London to meet 38% of the city’s heating demand. Coupled with the expansion of district heating networks, this could rise to 63% of demand by 2050.

Cullinan Studio Architects designed Bunhill 2 to planning approval, having won the project via an Islington Council open tender. “The planners wanted a colourful building, using quality materials, that was durable and reminiscent of the London underground in some way”, recalled Cullinan director Carol Costello. McGurk Architects took over the project for the construction drawings and delivery stages, following a post-planning design and build tender process.

The commission also involved extensive community consultation and children from the local primary school took part in understanding the design process and made videos that tell the story of how the heat exchange works, which can be found on YouTube. This innovative project also caught the eye of the BBC’s *The One Show*, featuring its cool design, created in collaboration with artist Toby Paterson.

Wrapping the Project in Art

In order to find out more about the facade design, I contacted the Glasgow-based artist Toby Paterson, the first person appointed to the design team by Islington Council. Paterson recalled that



THIS IS A HUGELY POSITIVE AND SUCCESSFUL PROJECT IN COMBATING THE CLIMATE EMERGENCY AND THE CONCEPT CAN BE REPLICATED AROUND THE UK AND INDEED AROUND THE WORLD WHERE SIMILAR UNDERGROUND TRAIN SYSTEMS EXIST.

“the key to the whole project was the great relationship with the design teams of Cullinan Studio and McGurk Architects, and rather than the public art being stuck onto the front of the building it became a genuine collaboration. We were working on how to wrap the envelope around the massing of the various steel containers and plant machinery for air heating and cooling and the masses of pipework connecting down to the underground ventilation system”.

The perforated panel concept in anodised aluminium looks like tracery with its geometrical Moorish design patterns and is both aesthetic and functional, regulating the air needed for the heavy energy equipment - the higher up it goes the more open it becomes. These different gradations through the screen create variety in the facade when viewed from far and near.

I was particularly impressed by the 70 square panels at street eye level. These have all been hand cast using recycled aluminium in the same forge that prepares the London Underground enamel tube signs, making the link with the Underground heritage. The panels represent the floor plans of the housing towers of the 1960s neighbouring King’s Square, which according to the artist “evoke a connection of family and community to the wider area”. “The relief elements of the panels are the plan form of the solid voids of the homes”, explains Paterson. They are quite tactile, durable and colourful and the whole facade screen can be removed should large plant parts need replacing in the future. The base of the building has a seat made from shiny black ceramic brick slips and the façade facing the nearby tall block of flats has white ceramic slips to reflect more light into the ground floor flats.

The project was a hugely complicated coordination process for the whole design team, which included Ramboll Engineers and the contractor Colloide Engineering as well as the Islington Council and TfL teams. Colm McGurk and his project leader Fergal Rainey stressed how complex the coordination was on so many levels – quite literally – and how they wanted to remain true to the original design.

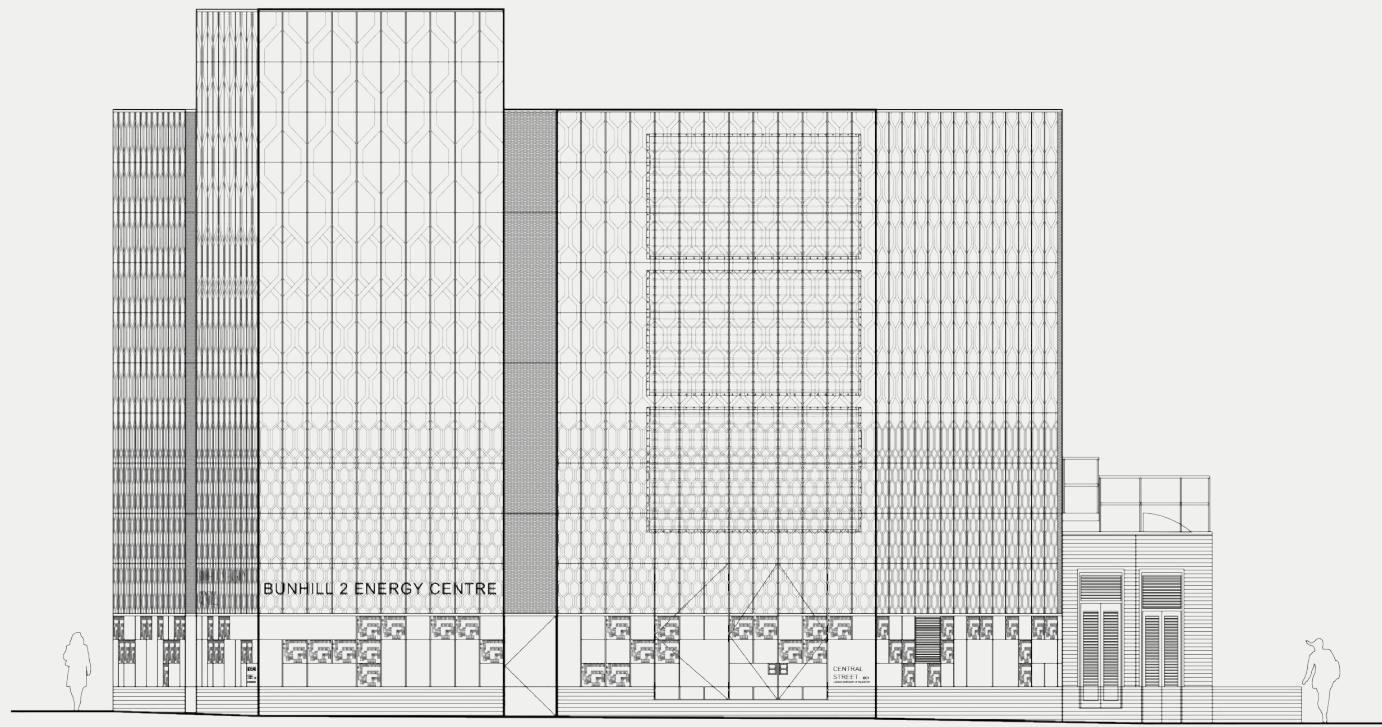
A lot has been learnt from this pilot project in the six years it has taken to complete. This is a hugely positive and successful project in combating the Climate Emergency and the concept can be replicated around the UK and indeed around the world where similar underground train systems exist. The companies involved that I spoke to are all already working on new prototypes in green energy and I hope that this new type of civic industrial architecture will become commonplace in our urban environment reminding us to preserve energy to preserve ourselves and our planet.

Angela Brady FRIAI OBE is an architect, broadcaster and design champion. She set up Brady Mallalieu Architects with Robin Mallalieu 30 years ago. The practice specialises in sustainable people-led projects.

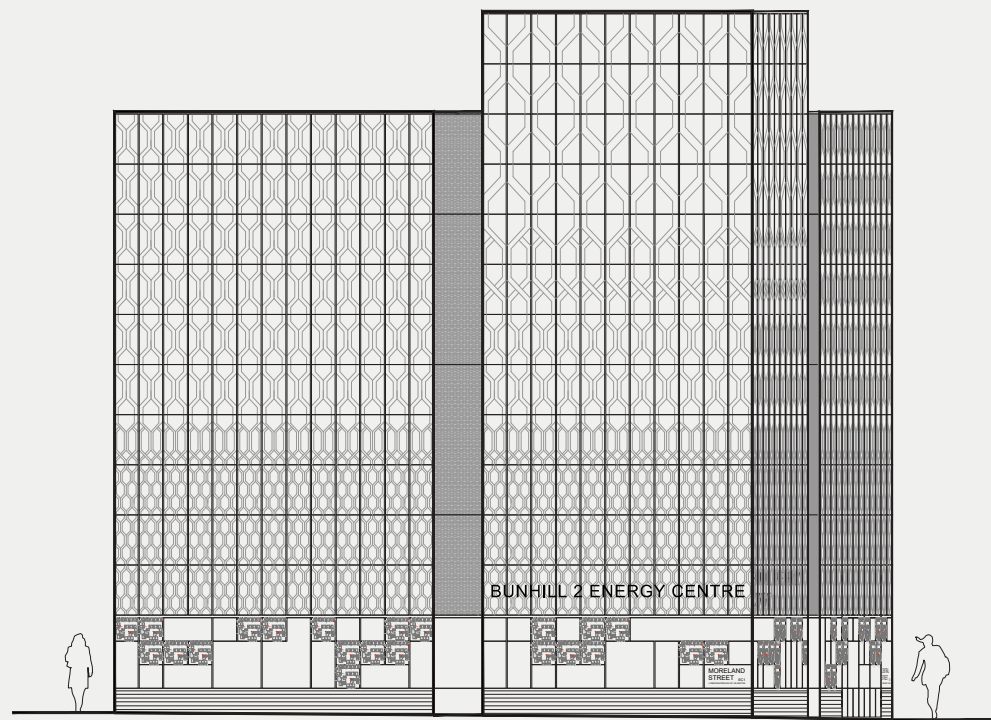
4	
5	6
7	

Image

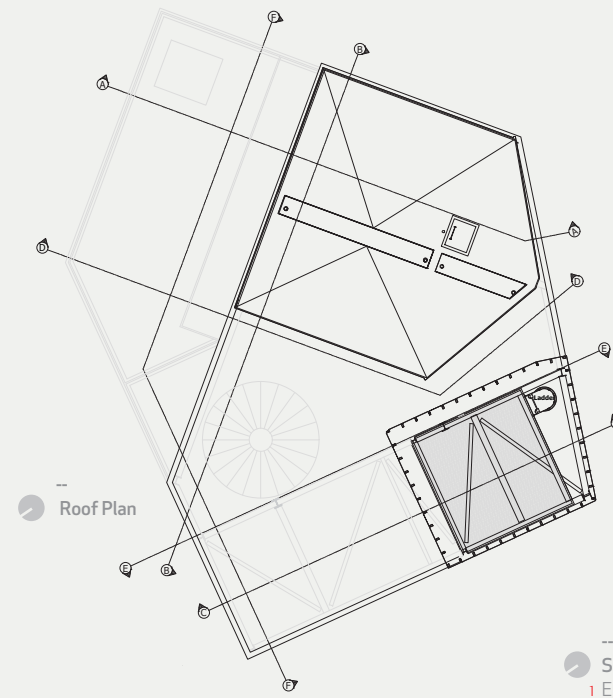
- 4 View of the energy centre from Moreland Street junction
- 5 Internal infrastructure and maintenance circulation
- 6 Rear elevation with first floor access
- 7 Panels at street eye level represent the floor plans of the housing towers of the 1960s neighbouring King’s Square



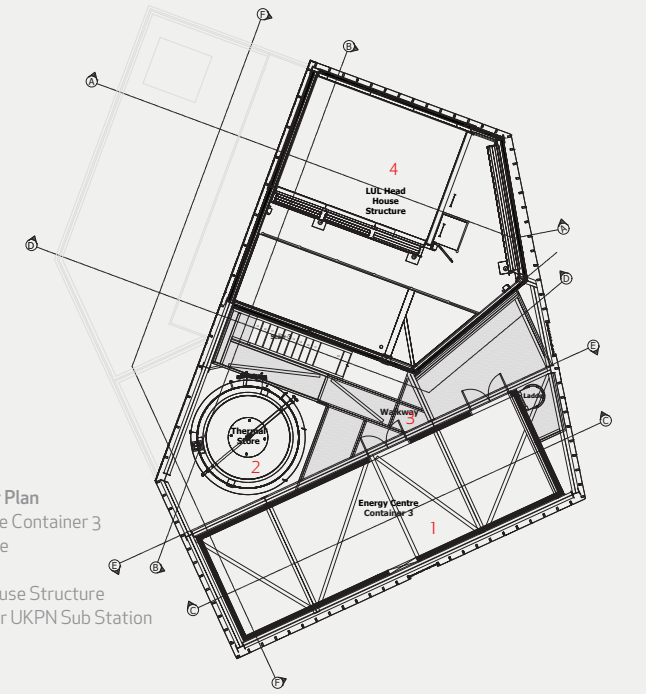
Elevation



Elevation

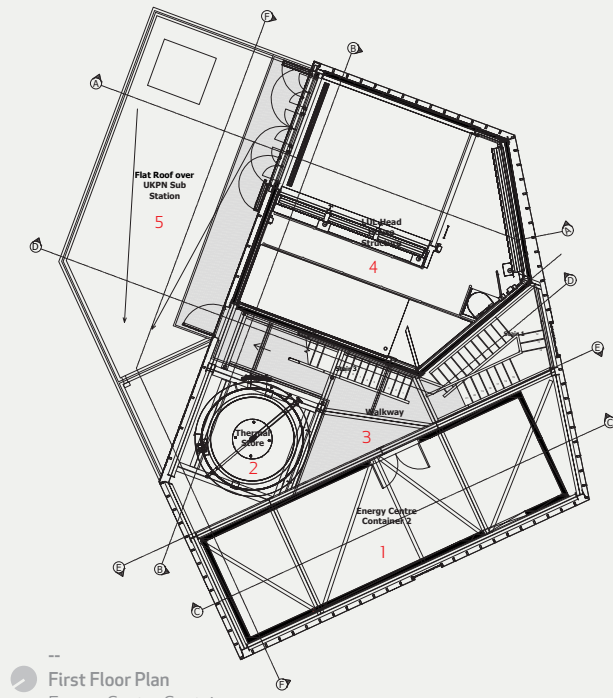


Roof Plan



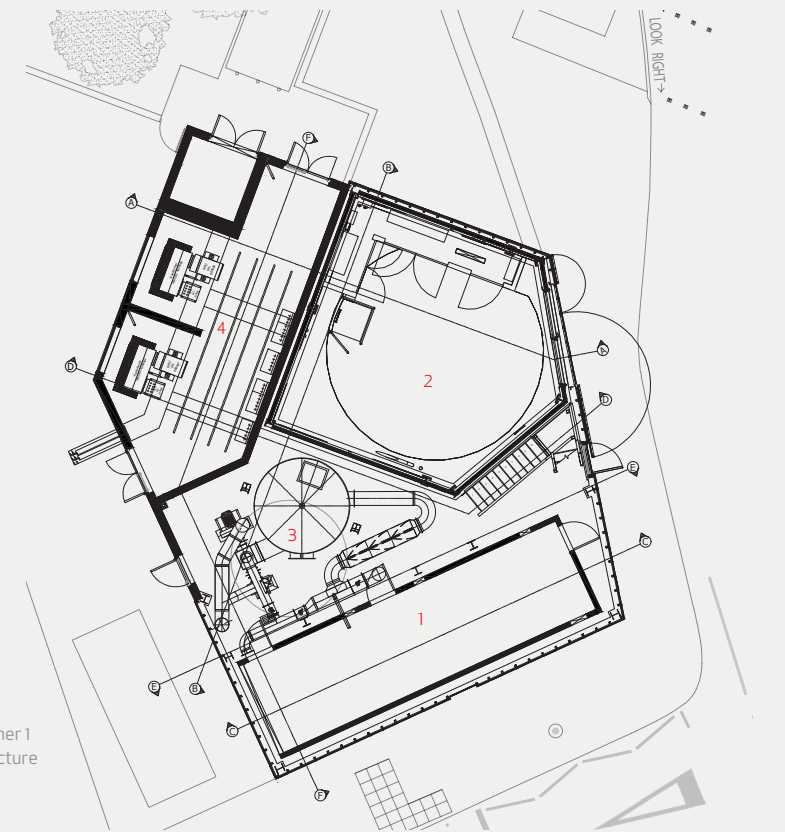
Second Floor Plan

- 1 Energy Centre Container 3
- 2 Thermal Store
- 3 Walkway
- 4 LUL Head House Structure
- 5 Flat Roof over UKPN Sub Station



First Floor Plan

- 1 Energy Centre Container 2
- 2 Thermal Store
- 3 Walkway
- 4 LUL Head House Structure
- 5 Flat Roof over UKPN Sub Station



Ground Floor Plan

- 1 Energy Centre Container 1
- 2 LUL Head House Structure
- 3 Scrubber
- 4 UKPN Sub Station
- 5 LUL Stairs