

Leicester's multi-million pound Net Zero bus station

Leicester City Council
Friday 26 May 2023

Summary

Leicester City Council has transformed the St Margaret's Bus Station into a multi-million-pound transport hub whose 390 solar panels generate all the energy it needs. The bus station is Net Zero in operation and includes improved facilities for cyclists and pedestrians. The pioneering hub is also helping to ensure cleaner air and attract more visitors to the city.

Deputy city mayor Adam Clarke, who leads on environment and transportation, said:

"The new St Margaret's Bus Station represents an ambitious and important step forwards in our efforts to become a carbon neutral city. We believe that this is the first Net Zero carbon bus station building in the UK.

"It shows our commitment to decarbonising our public buildings and will build on our work to promote sustainable transport and help improve services for bus passengers in and around the city, through our new Leicester Buses Partnership with local operators."

The problem

Based on the need to limit the 1.5C increase of global warming, our ambition is for Leicester to be carbon neutral by 2030 or sooner. St Margaret's Bus Station is believed to be the UK's first zero carbon bus station. It is one of many ways Leicester City Council is working to achieve its ambition of being Net carbon Zero by 2030. Traffic emissions impact hugely on Leicester's own pollution targets, and we take this massive challenge for the city seriously.

Our vision for transport in Leicester includes:

- less traffic and reduced need to own a car with great alternatives available
- good online services that mean fewer journeys
- decent local facilities that mean shorter trips
- more walking and cycling with a safe and convenient network of routes and plenty of bike parking
- increased bus and train use that is affordable, reliable, and convenient, with bus routes throughout the city
- petrol and diesel motor vehicles replaced with cleaner, low carbon, and carbon-neutral alternatives, with charge points where people need them

The solution

Leicester City Council has transformed a bus station into a multi-million-pound transport hub whose 390 solar panels generate all the energy it needs. The bus station is Net Zero in operation. It has hundreds of solar panels on the roof and no reliance on the use of fossil fuels onsite. That means the building achieves a better than Net Zero carbon figure from its operational emissions.

The energy created from the solar panels is used to heat the building via electric radiant panels. Hot water is supplied by hot-water heaters rather than the use of gas-fired boilers. All that has helped the station acquire an energy performance certificate with the highest possible rating of A+ and a score of -4.

Complete redesign

The new building creates a striking gateway into the city centre. We completely redesigned the building with a:

- glazed concourse to maximise natural lighting and cut energy consumption
- curved roof where 390 powerful solar panels generate 142,333 kWh per year
- spacious internal layout that includes comfy seating, a new café, modern, accessible toilets, and real-time digital passenger information
- secure storage space for up to 100 bicycles

The new station now has 24 bus bays (it used to have 18), meaning capacity for national and regional services has jumped by a third.

We've also improved footpaths and roads next to the bus station. These include new and improved facilities for cyclists and pedestrians, safer pedestrian crossings, new landscaping, and more tree planting.

St Margaret's will help improve links between important development sites and the city centre. This includes the new Savoy Street: a quicker, more direct pedestrian route between St Margaret's and Haymarket bus stations.

Achieving our sustainability and Net Zero goals

As the station uses no fossil fuels onsite, it helps us achieve our ambition of Net Zero carbon by 2030. And being in a central location, it is an important part of the city's sustainable transport network.

Net Zero in operation

A 'zero carbon building in operation' is highly energy efficient, is powered by on-site or off-site renewables, and offsets any remaining carbon balance. That's according to the definition in UK Green Building Council's (UKGBC) 'Net Zero Carbon Framework'.

The solar panels on the roof of St Margaret's generate all the energy the council-controlled areas of the station need. This means there are no emissions from fossil fuels to offset and makes the building Net Zero carbon in operation under the UKGBC definition.

We are however only achieving Net Zero carbon in operation, not in construction. Despite that, we did save an equivalent of over 575 tonnes of embodied carbon during construction by:

- reusing major elements of the previous building in line with the project's high eco standards, including its main steelwork frame
- retaining and repairing the existing concrete in the area where buses arrive and depart

The elements we reused and their embodied carbon savings in kilograms of CO₂e were:

- steel frames: 129,695 kg CO₂e
- concrete foundations: 36,046 kg CO₂e
- concrete drainage pipes: 5,569 kg CO₂e
- concrete block paving: 102,292 kg CO₂e

- sand: 14,445 kg CO2e
- concrete in area where buses arrive and depart: 290,791 kg CO2e

Timeline

December 2020: Planning approval obtained and final bus departures from old bus station

January 2021: Demolition commences

July 2021: Construction commences

August 2021: Highway improvement works commence

26 June 2022: Formal opening of the bus station

27 June 2022: New and improved St Margaret's Bus Station opens to passengers and cyclists as 20 local bus services return to the station after 18 months of construction.

These milestones show we were on a tight, 18-month programme to demolish and redevelop St Margaret's and complete all of the highway improvement works. This was to meet funding deadlines set by Ministry of Housing, Government and Local Communities and to minimise disruption to the public.

Stakeholders

There were several key stakeholders, from UK government to local businesses.

Ministry of Housing, Government and Local Communities

The department provided £10.5 million of funding for the redevelopment of St Margaret's Bus Station with its 'Getting Building Fund'.

Leicester Buses Partnership

We kept local operators informed on progress, where services would temporarily be operating from, and when services could resume from the new bus station.

Arriva

One of the larger operators within the station and a tenant within the building.

Coach operators

These included National Express, which has a ticket office within the building.

Bus station tenants

We involved businesses throughout the project to ensure the new facilities met their needs. We also worked with them to arrange when they could return to the building, complete fit-out requirements, and reopen.

Leicester Transport Accessibility Panel

The panel advised on design elements both internally and externally to ensure the new building was accessible to all.

Local businesses

We needed to give updates to businesses about road closures and activities on site that would affect them. The site manager visited local businesses who raised any queries during construction.

Local residents

The contractor kept residents informed of road closures and the project's progress with frequent letter drops. We kept the public informed about the relocation of services while the station was closed, road closures during construction, and the date for reopening.

The project team

The team comprised of:

- council officers from internal teams including development, public transport, highways, estates and building services, legal, and planning
- consultants Marrons, Arcadis, BDP, and Couch Perry Wilkes, who supported the project
- contractors Morgan Sindall, the main contractor, and Danaher and Walsh, who completed the highways works

Impact

From providing cleaner air to attracting more people to the city, the new bus station has several key impacts.

Supporting wider efforts at decarbonisation

This development is supporting a wider effort to decarbonise the city by providing cleaner air and helping to improve health and wellbeing of Leicester residents. The new bus station does not create carbon emissions (within the areas under the council's control). That's because power needed to run the bus station is generated from the solar panels on the roof. Further investment in electric buses will also help support decarbonisation efforts in Leicester.

Improving transport facilities and environment for Leicester

This development is contributing towards our continuing efforts to create a better environment for the people of Leicester. Investment in modern and energy efficient transport hubs and highway and public realm improvements contribute to the key vision for transport in Leicester.

This includes:

- creating a safer network for pedestrians and cyclists
- reducing traffic on the roads
- increasing the number of journeys made by public transport
- making public transport accessible, reliable, and affordable for all: the new station hosts many bus services travelling county-wide, beyond the city's boundary

Since St Margaret's Bus Station has reopened, bus services departing from there have increased from 21 to 29. New operators such as Vectare and Flixbus are also now operating from St Margaret's too.

Co-benefits

The new bus station brings with it several co-benefits. First, reduced traffic ensures cleaner air, particularly in the city centre. Second, a welcoming hub has helped to attract more bus travellers, who help the city centre's economy recover after the pandemic. Third, the station has brought new facilities for the young, elderly, and women for whom bus travel is an important means of transport.

Lessons learned

Delivering a Net Zero carbon building on this scale within time and budget was not without its challenges.

This was partly because of the project:

- having to spend the government grant money in just 18 months (the government's Getting Building Fund is intended for 'shovel-ready' projects)
- being within a constrained city-centre site
- creating huge operational adjustments for buses, coaches, and tenants that operate out of the bus station
- informing members of the public

One of the key lessons learnt on this project is that delivering a Net Zero carbon bus station is possible. Because it is believed to be the first Net Zero carbon bus station in the UK, there were no previous examples to draw experience from.

Having consultants to advise on how we could achieve Net Zero carbon was important. For example, any amendment to design or change in mechanical equipment installed had to be recalculated. This was to ensure the change did not undermine our goal of achieving Net Zero carbon.

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The bus station redevelopment is part of the £14.3 million St Margaret's Gateway regeneration project. This includes £10.5 million from the government's Getting Building Fund awarded to the Leicester and Leicestershire Enterprise Partnership. The Getting Building Fund helps to finance 'shovel-ready' infrastructure projects to help create jobs and support economic recovery across the UK.

The project also received:

- £3 million from Leicester City Council's economic action plan
- £95,000 from the European Regional Development Fund towards the solar panels
- funding from the Transforming Cities Fund and anti-terrorism fund

Next steps

There are 2 clear next steps to getting the city closer to Net Zero.

Encouraging future development

St Margaret's Bus Station and the accompanying highway improvements are acting as a catalyst for further regeneration in the area. Private developers have already proposed investments in this part of the city. It's anticipated that the new bus station's modern, practical, energy-efficient architecture will help future development within the city continue on this pathway.

Expanding electric bus routes

The redevelopment of St Margaret's Bus Station is just one part of our wider plan to provide improved, greener transport and infrastructure within the city. The Leicester Bus Partnership, which includes all local bus companies, is increasing the number of electric buses in operation. There are 24 council-owned electric buses on the road, with funding coming from the government's Transforming Cities Fund and Zero Emission Bus Regional Areas scheme.

We use these electric buses for the city's park and ride service, 'hospital hopper', and orbital route that connects important sites around Leicester. Most recently, we introduced the 'Hop!' service, which provides users with free travel around the city centre. This new service launched in April 2023 and runs on a 10-minute loop 6 days a week from 8am to 6pm.

The Leicester Bus Partnership is also improving bus travel for Leicester with:

- real-time information at bus stops
- new bus shelters
- 'best fare' contactless ticketing for passengers
- several more improvements planned as part of the partnership

Links, contacts, and credits

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