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UK: 100-acre low-carbon greenhouse enters planning

With a 100-acre low-carbon greenhouse, supplied with energy and CO₂ by a nearby waste management facility, Rivenhall Greenhouse Limited aims to reduce the UK's reliance on Mediterranean imports, which they see as increasingly at risk due to climate change. "If the recent Valencian storm had occurred only 200 kilometres further south, the implications for production regions would have been severe, resulting in food inflation throughout Europe," says Project Director Ed Moorhouse. Pending the due planning process, financing, and construction, the new Essex greenhouse site could be operational by 2027, marking a shift away from conventional hydrocarbon-based models.

Planning process underway

Rivenhall Greenhouse Limited has submitted planning documents for the 100-acre greenhouse and vertical farming complex in North Essex to Essex County Council. The site, located on land reclaimed from former quarry activity, is expected to proceed through planning consultation in Q3-4 2025, with construction potentially beginning shortly after. According to the current schedule, planting in the unlit sections could begin by December 2027, with earlier planting possible under more optimistic projections.

Energy fixed for 10 years

The Rivenhall site will operate adjacent to the Indaver Integrated Waste Management Facility, which will supply heat, electricity, and recycled CO_2 to the greenhouses. According to Project Director Ed Moorhouse, the project's energy model is based on a long-term price agreement, fixed for 10 years, and benchmarked below comparable Dutch CHP models.

"It allows us to enter long-term conversations with retailers," he explains. "That ability to de-risk energy pricing gives us leverage to discuss longer-term contracts."

Ed Moorhouse



A planning application for a dedicated Carbon Capture, Usage and Storage (CCUS) facility has also been submitted by Indaver. Once operational, it is expected to supply the greenhouse with approximately 20,000 tonnes of CO_2 annually.

"We are delighted to submit our planning application for this innovative project. We believe our project represents a forward-thinking approach to energy efficiency and sustainability and it represents a significant step in our commitment to reducing carbon emissions and supporting the transition to the circular economy."

Micheál Geary, Indaver's Commercial and Business Development Director



The development also includes a comprehensive biodiversity net gain strategy that will deliver wetlands, flower meadows, and tree planting, alongside additional footpaths and bridleways.



Retail talks

The greenhouse design allows for crop planning based on retailer requirements. While tomatoes are the initial focus— Rivenhall Greenhouse will be capable of producing 30,000 tonnes of tomatoes per year, equating to circa 7.5% of current imports, or circa 6% of domestic consumption —the site can also switch to cucumbers, peppers, or aubergines, depending on market demand.

"The site's configuration allows us to deploy 13 hectares lit and 27 hectares unlit," Ed explains. "If a supermarket is more concerned about cucumbers, we can grow 13 hectares of cucumbers or peppers and serve as a one-stop shop for retailers sourcing vine crops."

He sees strong interest in this flexibility from the market.

"UK retail organisations are increasingly concerned about the environmental impact and growing difficulty of sourcing from traditional countries. Supply security is a key risk, and oneyear contracts don't provide adequate resilience."

Ed Moorhouse



Climate risk and food inflation

The greenhouse aims to mitigate sourcing risks posed by climate volatility. "Retailers are becoming more aware of the challenges in southern Spain and North Africa," says Ed. "Water availability is decreasing, pollination reliability is impacted by rising temperatures, and grid instability adds further risk. If storms like the recent one in Valencia shift slightly south, the implications for regions like Almería, and the European food security, are serious."

He warns of wider risks for the UK specifically: "If 20,000–40,000 hectares of production are lost in the EU due to extreme weather, it creates a rational case for export controls to limit domestic food inflation. We're raising these issues with UK policymakers to prompt strategic discussions around food security and trade resilience."



Vertical farming

A vertical farming facility, repurposing an existing RAF hangar, will produce an additional 375 tonnes of leafy greens annually. Ed acknowledges the challenges of vertical farming: "CAPEX is high and margins are tight, but with the same energy pricing as the greenhouse, it's a strategic asset," he says. The vertical farm may also serve as a propagation centre, providing operational flexibility in the face of shifting border controls or trade friction.

Future developments and education

The Rivenhall site is part of a broader development strategy. Several additional sites in Northern and Southern England are under consideration, with potential to add 60–70 hectares of greenhouse capacity using the same waste-to-energy model. "In the UK, we have radiation levels comparable to the Netherlands, and more water—perhaps even too much. If you can fix energy costs, maintain stable temperatures for pollination, and use rainfall to support self-sufficiency, it makes sense to reshore production."

Biodiversity and employment

In addition to food production, the site includes a biodiversity net gain strategy, delivering new wetlands, tree planting, wildflower meadows, and accessible pathways. Approximately 420 full-time roles are expected to be created, with an additional 80 seasonal workers and over 300 indirect jobs anticipated across the wider supply chain.

Labour, automation, and integrationt

Labour remains a key concern for UK greenhouse production. "Much of the current UK infrastructure is fragmented—small glass units that aren't integrated or designed for automation," Moorhouse says.

"We've taken a different approach, designing for full integration of technology and labour-saving systems from the outset."

Ed Moorhouse

At the same time, discussions are ongoing with politicians and institutions such as Essex University to support Rivenhall's educational goals. The aim is to strengthen the horticultural talent pipeline and embed the sector more deeply within the UK's economic and strategic priorities.



Milestone

"Today's submission marks a critical milestone in the development of Rivenhall as a leading UK and European fresh produce growing facility", Ed summarizes.

"Key to the project is the ongoing collaboration with Indaver and the development of a new low-carbon horticultural energy model. This will set a new benchmark for UK horticulture, delivering a blueprint for the accelerated reshoring of UK fresh produce production. We look forward to working with Essex County Council in the coming weeks and furthermore to delivering our plans to create local green jobs, whilst reinforcing UK food security and resilience in an increasingly uncertain world."

Ed Moorhouse