The Palm House at Kew Garden's journey to a



Spring arrives at Kew's Palm House. Credit: Ollie Dixon.

The project will sustainably renovate the home of globally important tropical plants and help audiences learn about the natural world along the way.

The Victorian Palm House sits at the heart of Royal Botanical Garden (RBG) Kew's UNESCO World Heritage Site in London. It was last refurbished in the 1980s and now needs significant work as the high humidity and poor ventilation impact the structure.

The glasshouse is home to plants, many which are endangered or extinct in the wild, that support vital research into medicine, biodiversity loss and future foods.

The £60million project – which we've committed a potential £10m towards – is aiming to set a new standard for sustainably renovating complex heritage buildings and engaging visitors with nature.

Creating an environmentally sustainable future

Reuben Briggs, Head of Estates Projects at Kew Gardens, says: "From the start, we wanted to make the project as sustainable as possible.

“The Palm House is one of the biggest energy users on the site. As it’s a tropical glasshouse, it must be kept at 20 degrees all year round, which takes around 15% of all the gas we use."

Kew’s ambition is not only to decarbonise the Palm House, but make it a net-zero project.

“That includes improving the performance of the building, doing whole life carbon assessments on all the materials we're using, thinking about reducing emissions during the construction process and the operation of the building, including appropriate green energy tariffs.

“The project is complicated by the fact the Palm House is such a unique building and so we’ve had to create a bespoke net-zero framework.”

How RBG Kew is developing its plans

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There are 1,300 plants in Kew’s iconic Palm House. Credit: Ollie Dixon.

The team is using condition surveys to explore how the building performs and identify what improvements can be made.

Reuben says: “We can't fit double glazing or vacuum glazing into the structure and so the best way we can make thermal improvements is through reducing the amount of warm air that's lost.

“We looked at how we might replace the glass and what type of seal might work best. In the end we developed an extruded silicon seal, which fits in between where the glass overlaps.”

The team is also using modelling to understand how to get the best heat coverage within the building and exploring the best location to install the air source heat pumps to minimise space, visual and acoustic impacts. It's also working with The World Monument Fund's Greener Glasshouses Network to learn from and inform other UK and international sites.

Engaging audiences along the way

Alongside the renovation, the project will explore how RBG Kew can engage visitors with the Palm House and the collection held within.

Reuben says: "We want to use it to tell the story of what Kew does in terms of botanic science and how that helps the natural world.

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Botanical horticulturists tend to over 50,000 plants on the Palm House Parterre at Kew Gardens. Credit: Ollie Dixon.

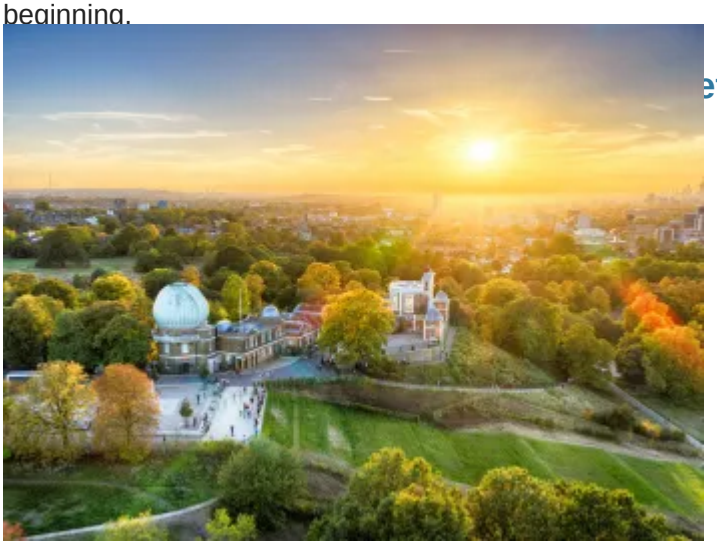
Kew will embed what it learns into the site's interpretation and activity plan. Some of its ideas include:

- a digital rainforest experience to allow children to learn about the importance of the natural environment
- a model climate change conference to bring together young people to talk about the environment crisis
- interpretation to showcase sustainable conservation in action

Kew plans to share learnings across its networks and the heritage sector to inspire other organisations to explore decarbonising their buildings. Reuben says he welcomes any questions.

Running a heritage project?

Protecting the environment is one of the four investment principles we ask all projects to take into account. If you're thinking of applying for heritage funding, look at our environmental sustainability guidance to help you build it in from the beginning.



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The Royal Observatory. Credit: Chris Gorman / The Big Ladder.



wich £9.7million to inspire more awe and wonder

Freshwater Millennium wetlands, looking east with Heron's Wing hide in foreground. Credit: WWT.



n Wales

Blyth Tall Ship has created inspiring volunteer opportunities in the north east. Photo: Colin McLean Photography.

Get advice from heritage grantees