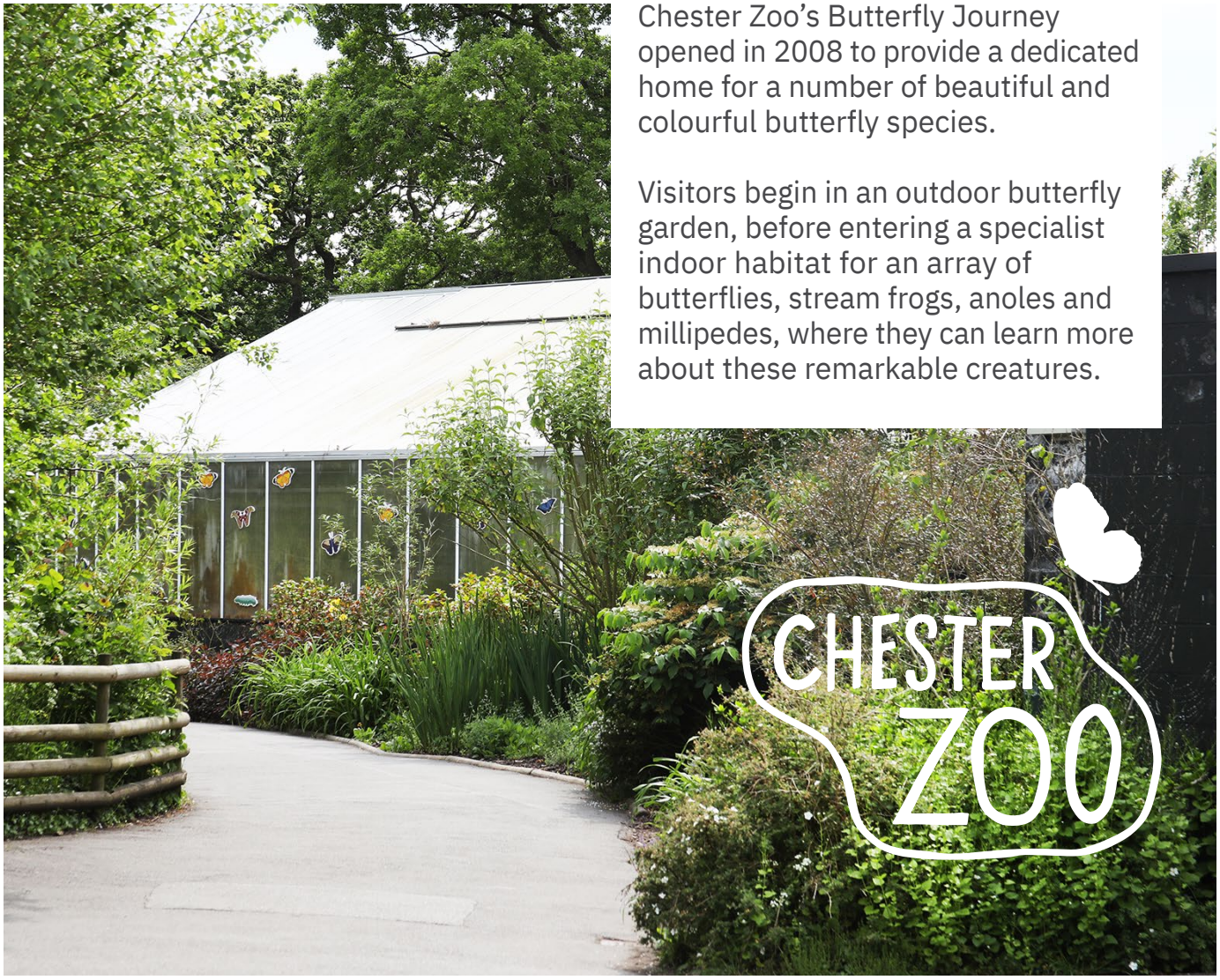
Case Study

Sustainable heating for Chester Zoo's butterflies



Chester Zoo's Butterfly Journey opened in 2008 to provide a dedicated home for a number of beautiful and colourful butterfly species.

Visitors begin in an outdoor butterfly garden, before entering a specialist indoor habitat for an array of butterflies, stream frogs, anoles and millipedes, where they can learn more about these remarkable creatures.

The indoor butterfly habitat is a purpose-built space which is home to many species of butterflies, mainly from South America and Southeast Asia. These species require a very warm environment, kept between 22°C and 25°C, whatever the weather outside in Cheshire.

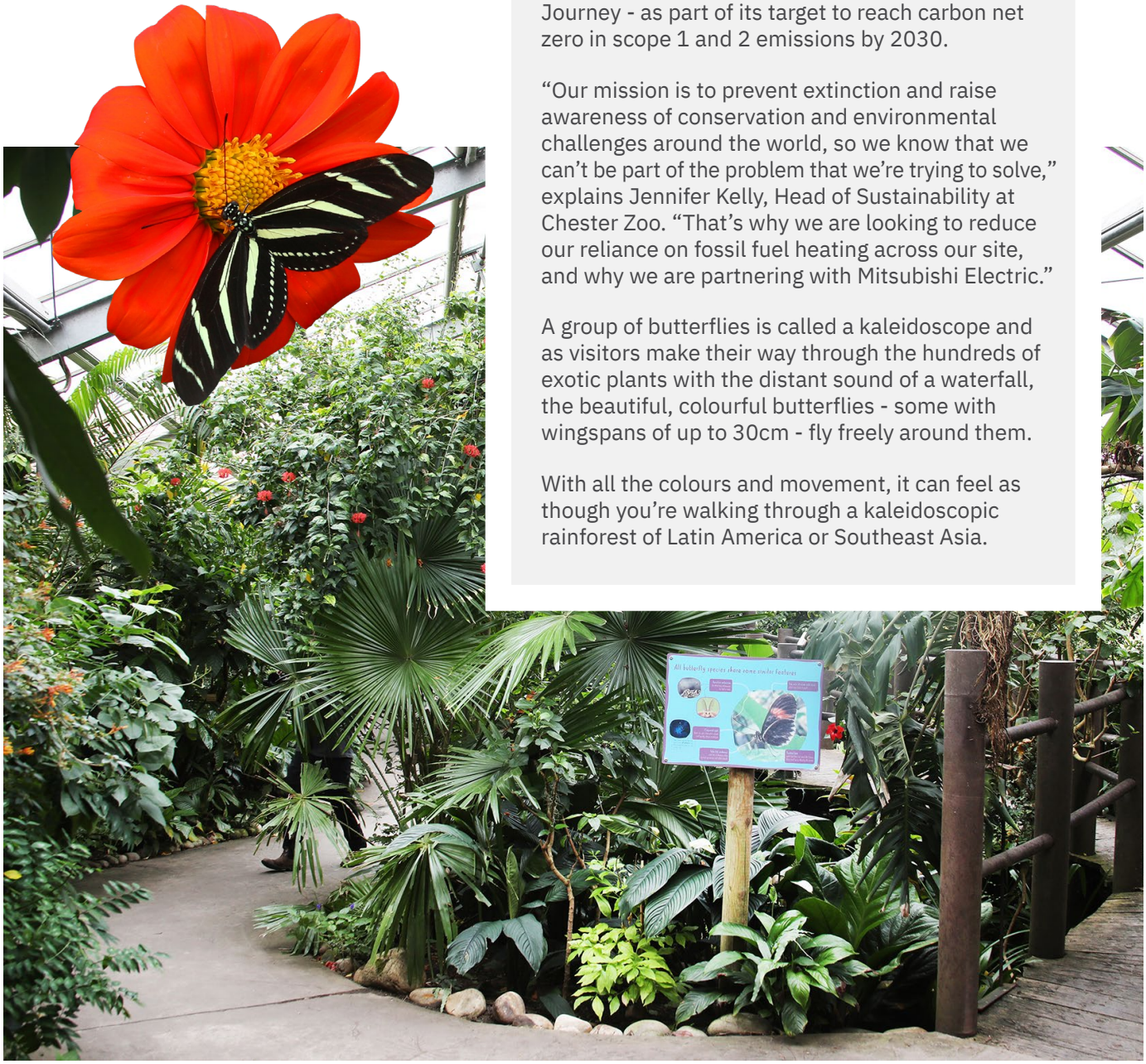
The habitat, which is 471m² and around 10m at its widest part, was previously heated with a liquified petroleum gas (LPG) heating system but is now entirely heated by an air source heat pump system from Mitsubishi Electric.

Chester Zoo, which is a world-leading conservation and education charity, has developed ambitious sustainability plans that will help the zoo reduce carbon emissions and achieve net zero. The zoo has embarked on a strategic partnership with heat pump manufacturer, Mitsubishi Electric, to help to decarbonise heating across its estate - including its Butterfly Journey - as part of its target to reach carbon net zero in scope 1 and 2 emissions by 2030.

“Our mission is to prevent extinction and raise awareness of conservation and environmental challenges around the world, so we know that we can’t be part of the problem that we’re trying to solve,” explains Jennifer Kelly, Head of Sustainability at Chester Zoo. “That’s why we are looking to reduce our reliance on fossil fuel heating across our site, and why we are partnering with Mitsubishi Electric.”

A group of butterflies is called a kaleidoscope and as visitors make their way through the hundreds of exotic plants with the distant sound of a waterfall, the beautiful, colourful butterflies - some with wingspans of up to 30cm - fly freely around them.

With all the colours and movement, it can feel as though you’re walking through a kaleidoscopic rainforest of Latin America or Southeast Asia.



Chester Zoo
Cheshire

All the heating for the butterfly house is now provided from renewable Ecodan air source heat pumps - **a sustainable heating technology.**

Seven heat pumps work in a cascade system to deliver a tropical environment that visitors can wander through as the butterflies free fly around them.

"The zoo has a brilliant M&E project team who we have worked with to look at how we could apply air source heat pumps to the butterfly habitat," explained Chris Newman, Net Zero Carbon Design Manager. "It's part of the longer-term process of decarbonising as much of the zoo as possible, and why we are delighted to partner with them."

Chester Zoo is aiming to be carbon net zero in its scope 1 and 2 emissions by 2030 and carbon net zero in its scope 3 emissions by 2050 at the latest. As part of this, it is actively working to reduce its reliance on fossil fuels across the 128-acre zoo site.

The zoo is the most visited one in the UK, attracting around two million visitors each year, and was recently named as the best zoo in the UK by TripAdvisor. It opened in 1931 and is home to more than 37,000 animals and more than 500 species.

Chester Zoo provides carefully controlled environments for the animal and plant species in its care, with habitats designed to match the natural habitat for each species.

Each of its buildings have very different requirements, based on their use, including the animals and species cared for in them, as well as commercial and events spaces, which often have high energy demands.

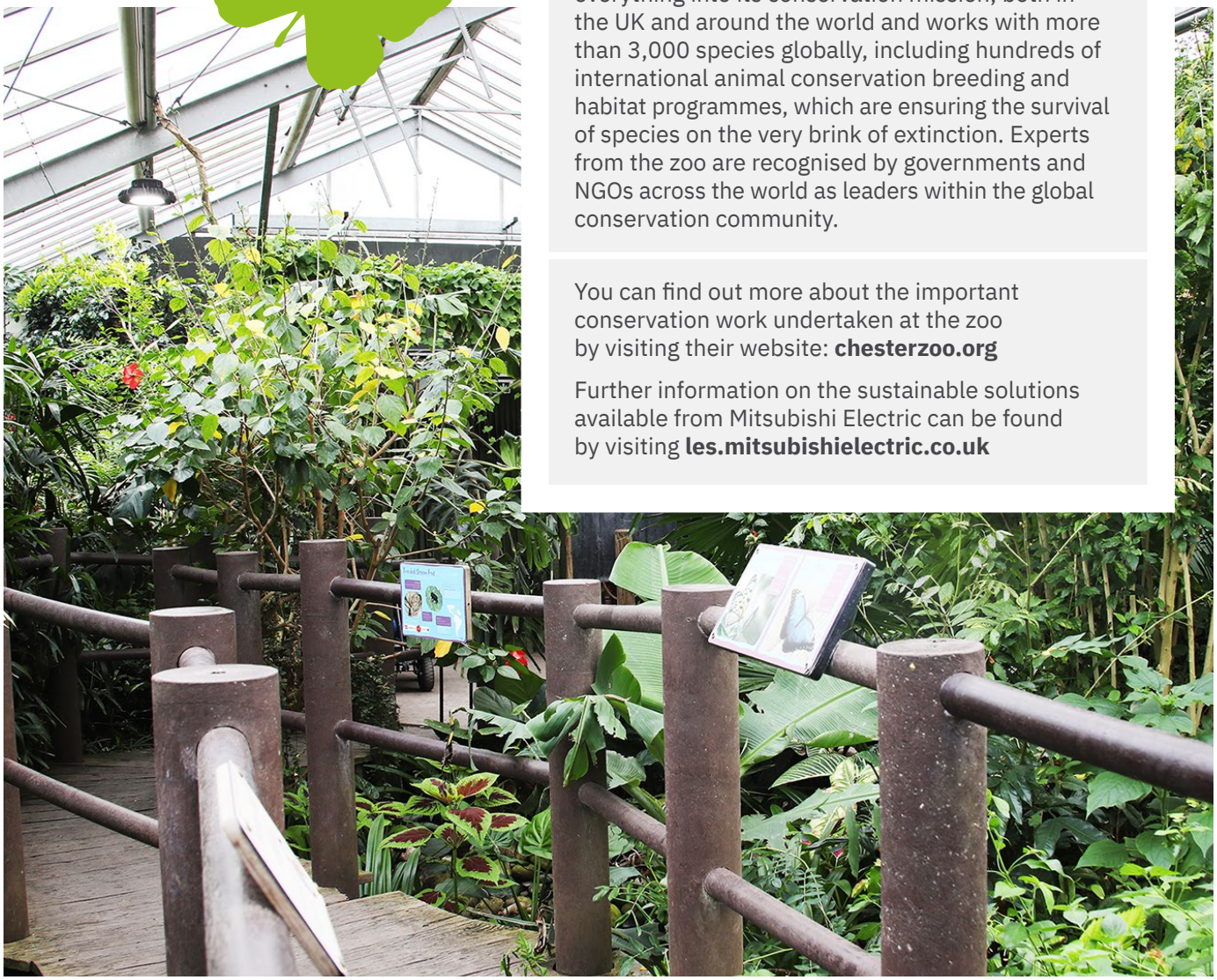
As part of its commitment to sustainability, delivering these requirements in a more sustainable way is key. This involves seeking to reduce energy demand and maximise energy efficiency to reduce carbon emissions, whilst showcasing what's possible to influence others to adopt sustainable practices too.

"We know that reducing carbon emissions and reaching net zero are a critical part of our commitment to sustainability and, to achieve this, we need to be working in collaboration with others towards our common goals," adds Jennifer Kelly. "That's where our partnership with Mitsubishi Electric is so important; collaborating to showcase best practice and inspiring others to act."

As a not-for-profit organisation, the zoo ploughs everything into its conservation mission, both in the UK and around the world and works with more than 3,000 species globally, including hundreds of international animal conservation breeding and habitat programmes, which are ensuring the survival of species on the very brink of extinction. Experts from the zoo are recognised by governments and NGOs across the world as leaders within the global conservation community.

You can find out more about the important conservation work undertaken at the zoo by visiting their website: **chesterzoo.org**

Further information on the sustainable solutions available from Mitsubishi Electric can be found by visiting **les.mitsubishielectric.co.uk**



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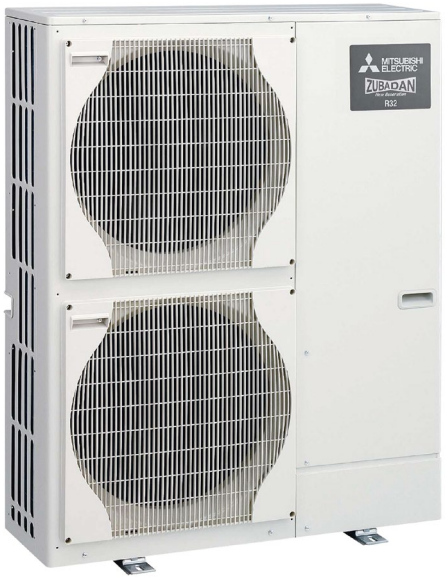
Cheshire

Installation Summary

R32

Outdoor Units:

- 7 x Ecodan R32 Zubadan PUZ monobloc air source heat pump working in a Cascade system



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Click to watch the video:
Heat pumps heating the Butterfly habitat at Chester Zoo

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Note: The fuse rating is for guidance only and please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R290 (GWP:3), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R454C (GWP:148), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R410A (GWP:1975), R32 (GWP:550), R407C (GWP:1650) or R134a (GWP:1300).

Effective as of September 2024

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