



The Green Point Dome is one of only a dozen dome structures like this that have been built worldwide.

An engineered solution for a traditional dome

South Africa's first mass-timber dome, based in Green Point Urban Park, opened in November 2024.

Developed by the City of Cape Town's Environmental Management Department, the distinctive dome-shaped educational facility is a pivotal component of the ongoing construction of the city's Experiential Education Garden (EEG), situated on the park's periphery.

This three-dimensional (3D) structure will feature a permanent Khoekhoen exhibition and offer educational programmes to share the history of the First Nations People (Khoisan, Khwe and San).

It will also serve as an outdoor environmental education space for learners and a safe place for visitors to immerse themselves in nature.

Design inspiration

The inspiration for the dome's design was the simple yet clever traditional Khoi dome-shaped huts. In essence, the structures were a skeleton of flexible branches covered with a patchwork of reed matjies (mats) to give shade in the summer, warmth in the winter and good ventilation.

These huts were perfectly suited to the Khoi's "nomadic lifestyle", as they could be disassembled and carried when the tribe moved on in search of new grazing.

International acclaim

The Green Point Educational Dome is an ingenious example of eco-conscious environmentally sustainable construction, and it is attracting global attention.

This dome structure has never been built in South Africa before, making it a first of its kind. It is also the first mass-timber structure internationally to be covered in 3D ply, the first 3D mass-timber dome ever built and the first ever to use curved steel plates to form a perfect 3D roof, designed with hand-drawn geometry not used for more than 60 years.

What makes the dome even more interesting, is that only about twelve mass timber dome structures like this have been built worldwide, none of which are perfectly 3D.



The timber ring itself is a piece of craftsmanship, 400mm high, 1,5m in diameter and built from 20 angled segments.



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Engineering excellence

Engineering firm, MEWA, was selected to build the dome. Founded in Cape Town in 1926, it has specialised in customised engineering in steel and timber for almost a century. The factory is situated in the heart of Darling in the Western Cape, South Africa, just an hour's drive from Cape Town.

The company designs and builds structures, joinery and furniture custom made to clients' specifications, which are often classified as functional art. Its speciality is custom made curved engineered timber into all shapes and sizes.

The Green Point Educational Dome is a project culminating after seven years of planning by the City of Cape Town.

Engineering the dome

The Green Point Dome is different from all the others around the world. It has 15 x 3D circles of different sizes attached to the main beams, which form the footing for 3D quadrangular panels built from marine ply. This became the actual perfectly rounded dome before the roofing was added.

A total of 20 massive, curved timber beams come together at the top in a ring of timber and anchor to the base with steel brackets. The beams slot into the upper ring with massive dovetail joints.

The timber ring itself is a piece of craftsmanship, 400mm high, 1,5m in diameter (like a giant donut) and built from 20 angled segments, cross-laminated many times for strength. 3D ply has not been made in South Africa before and shows that the old-fashioned craftsman skills passed down by skilled forefathers have not been lost in today's technological world.

Local is lekker

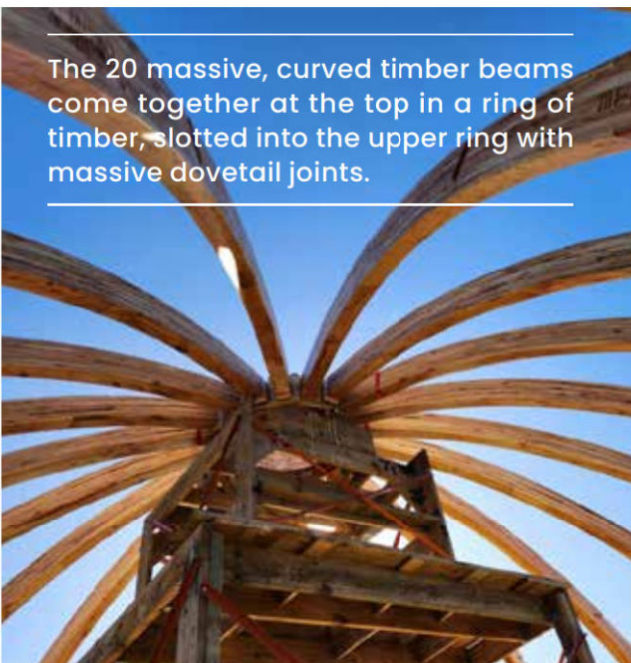
MEWA manufactured all the components for the dome in its Darling factory and then assembled it in the Green Point Urban Park.





Manufactured at MEWA's Darling factory, the massive beams were cross-laminated many times for strength.

A first-of-its-kind across several fronts, the Green Point Educational Dome project highlights the possibilities of mass timber and robust engineering.



The 20 massive, curved timber beams come together at the top in a ring of timber, slotted into the upper ring with massive dovetail joints.

The landscape structures mirror the dome structure and are full of curved beams. The team is proud to confirm that almost all the materials were locally sourced, especially the timber.

After many months of planning, MEWA's highly skilled team of craftsmen finally started building the dome components and completed the final assembly for the official opening in November 2024.

Full thanks and acknowledgement go to <https://www.mewa.co.za/> and <https://www.capetown.gov.za/> for the information in this article. Images courtesy of MEWA and photographer ©Frank Malaba. WR