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SCOUSE HOUSE

RESTORING LIVERPOOL'S VICTORIAN
GEM TO ITS FORMER GLORY



STRUCTURES: GLADSTONE CONSERVATORY

A TOUCH OF GLASS

Engineers have meticulously dismantled and reassembled a listed Victorian glasshouse in Liverpool. **Jessica Rowson** reports from historic Stanley Park.

Stanley Park sits between rival Merseyside football clubs Everton and Liverpool. It was originally opened as a grand Victorian leisure park in 1859, and since then the area has had its ups and downs.

Nowadays it is most famous for its proximity to the football grounds. But regeneration works to return the park to its original Victorian splendour are intended to make the park an attraction in its own right.

The centrepiece of the park is the grade II listed Gladstone Conservatory, now undergoing a £3.1M refurbishment.

The glasshouse is approximately 20m long by 10m wide and comprises cast iron columns

with lattice beams made from wrought iron and a structural perimeter beam made from an early form of steel.

"The structure was manufactured in Scotland by MacKenzie & Monk," says Liverpool City Council special projects officer for parks and green spaces Steve Perkins. "It was the MFJ flatpack of the day. You could look in the catalogue and choose parts, but each building was still unique."

By the time the restoration team got its hands on it, the building had seen better days.

"The structure was in a perilous state because the joints were failing," says specialist consultant Euro Conservation's director Richard Balster.

"The structural beam that



gies across the top was also bad – on the point of collapse. However, other parts like the columns were OK.”

Restoration of the building started in December 2007 and involved an eight week process where the structure was completely and carefully dismantled with each piece logged and repaired.

“Our job was to protect the structure, retaining as much of the original fabric as possible,” says Baister.

“We carefully dismantled the frame. There are around 3,115 pieces, not including bolts. We tagged each piece in a database, photographed them, referenced them so we could track each one, took them all to the workshop

“It was the MFI flatpack of the day. You could look in the catalogue and choose parts”

Steve Perkins,
Liverpool City Council

and assessed them. We had to keep a record of each individual piece and its repairs.”

Some pieces were so badly damaged that they had to be replaced, but these were few. They were replaced like for like, cast iron elements with cast iron

and wrought iron elements with wrought iron.

The only exception was at the top of the columns, where cast iron pieces were replaced with pieces made from a stronger modern equivalent called spherical graphite cast iron.

In the workshop pieces to be retained were blast cleaned using a process that removes corrosion but doesn't damage the parent metal.

“It's a challenge,” says contractor DCT contracts manager Ray Birch. “You take things down and then put them back and assume it works. However it's naive to think that you can take down a Victorian building and expect it to fit [back together]. Six thousand pieces have to fit like a jigsaw.”

With the superstructure removed, the site team took the opportunity to create a basement under the original building.

The greenhouse now sits about 5m higher than before, with a new building underneath that will house a cafe, toilets and kitchens. Despite this, the team had to be careful not to change the load paths of the existing structure. This meant locating the load bearing elements of the basement directly below the superstructure columns.

“At the bottom of each column are four studs, like location tabs,” says consultant Liverpool 2020 senior project manager Ian Polgrave-Neath. “There are no big bolts. The whole structure stays there by gravity. We couldn't change the way it carries load because we would have needed to test it, and we couldn't test it because we'd have to break it, so we had to replicate it.”

The superstructure was back on site in July 2008 and watertight by January 2009.

The change of use from tropical greenhouse to events venue caused a few problems when it came to creating a dry atmosphere at a temperature that would be comfortable for visitors. The existing glazing seals were not up to modern standards and prone to leaking. The team had to come up with an idea that would maintain modern standards of glazing without changing the existing greenhouse frame or burdening the structure with extra load.

“Greenhouses are interesting historically, but they are usually basic structures with basic glazing that could leak,” explains

Polgrave-Neath.

“Modern day requirements are more stringent, and it was difficult to adapt. The structure wouldn't be able to support the extra weight of a second layer of glazing.”

Instead the team is installing glazing in new leak-proof frames directly above its original locations, while retaining the original but empty frames inside. These new frames have modern seals and do not alter the existing structure or add significantly to loadings.

Solar gain inside the building, which had been originally designed to capture heat from the sun for plants, was also a problem the design team had to overcome.

“We used a film on the glass,” explains Baister. “Reflects film rejects 70% of solar energy. It looks like slight tinting but gives it bomb blast qualities too.”

“We tested a glass panel with film on,” adds Polgrave-Neath. “We threw brick and bolts, but they just bounced off the glass. It stayed intact.”

A drainage system also had to be added. Previously, rainwater just ran off the roof onto the surrounding grounds, but in a normal downpour it would have made the ground boggy. Drain pipes were installed to take the water inside the building, down to the basement and out through the basement wall to an existing sewer.

The conservatory is part of a wider £14M plan to regenerate Stanley Park and the surrounding area.

“The Gladstone conservatory is going to be the jewel in the crown of the Stanley Park regeneration,” says Birch.

“The site is also long all together and we're restoring lots of structures. There are five other timber-roofed pavilions that were in a state of disrepair. We've taken the timber roofs off and put slate back on, restoring them to how they would have looked. The pavilions are part of the ornamental gardens and terraces.”

The spruced up bandstand, which stands in front of the conservatory, arrives back on site this month. It has undergone a similar procedure to the conservatory – dismantled and reassembled in a workshop before being re-erected. Restoration of the park is due to be complete in June.



Watertight: Modern glazing will prevent rain leaking into the building

IN THE BEGINNING

The 110-year-old Gladstone Conservatory originally cost £12,000 to build. It is a greenhouse, originally used to display exotic plants grown in the surrounding greenhouses.

The greenhouses have long since vanished, leaving the Gladstone Conservatory alone and unused.

The structure was refurbished as a restaurant in the 1980s, but to no great success. Since then it has fallen into disrepair and, before the restoration, had barely a glass panel left to its name.

“Stanley Park was a major Victorian park, a place for a promenade and a lung of the city,” says Perkins.

“With the development of the

new football grounds, it quickly attracted a weekend migration of crowds. However in the 1970s the plant house closed and it deteriorated. Now we are putting it back into new use in the 21st century.”

Proposals to refurbish the grade II listed structure and surrounding parklands came as part of a planning application from Liverpool Football Club, which wanted to build part of its new stadium on the site.

Now those plans look like they might not happen, but the refurbishment of the park is weeks away from completion.

From then, the pavilion can look forward to a new life as an events venue.