



The project consists of two buildings, Print in the foreground, and Ink to the right.

Low carbon offices

A hybrid steel and CLT solution, combined with a retained 1950s structure is said to have played a major role in reducing construction related CO₂ on a commercial scheme in London.

Targeting the highest sustainability ratings, a commercial scheme in Southwark, south London is said to be an exemplary model of design, providing an industry-wide precedent for the reuse of existing structures and exceeding recognised carbon targets.

Timber Square consists of two buildings that are situated a short distance from the capital's South Bank and the Tate Modern. One building is a transformed 1950s-built printworks (now simply known as Print), where 80% of the existing structure is being reused and five new floors added to the top, forming a nine-storey office block. Next door, the other structure (known as Ink) is a new build 14-storey office building.

This is Landsec's latest steel-framed project in Southwark, following the delivery of the nearby Forge scheme (see [NSC Nov/Dec 2021](#)), which is said to be the UK's first net-zero commercial building designed in line with the [UKGBC's](#) framework. It was completed by Mace and its joint venture partner, Sir Robert McAlpine.

Rob Dudley, Mace Construct Project Director for Timber Square, says: "Building on our experience delivering The Forge, we are working closely with the Landsec team to maximise the retention and use of recycled materials.

"Combined with the integration of a complex steel hybrid structure and the application of

advanced offsite methods, with Timber Square we are pioneering the next generation of low-carbon buildings."

To this end, both buildings are steel-framed structures, a solution that has allowed the design to benefit from a lighter and quicker framing solution as well as one that can easily create the long clear internal spans wanted by office tenants.

The retained structure in Print is a steel frame supporting in situ concrete floors. However, above this for the new floors, a hybrid solution of steelwork supporting cross laminated timber (CLT) flooring has been used. This solution has also been utilised for the entire superstructure for Ink, making this structure the largest in the UK to be designed with a steel/CLT frame.

Further enhancing the project's sustainability credentials, approximately 70% of the steelwork fabricated, supplied and erected by William Hare was sourced from Electric Arc Furnace's (EAF) production facilities.

EAF steelwork is considered to be much greener and more efficient in terms of energy consumption for the production process, as it can utilise renewable energy from wind farms instead of carbon fuels such as oil and gas.

Another carbon saving has been generated by using 120t of reused steelwork sourced from Cleveland Steel & Tubes, who have a stock of

reclaimed material. This steelwork has been fabricated into around 500 beams, used primarily in and around the cores in both buildings.

As Print was originally built for industrial use, a cut and carve construction programme has been undertaken, whereby the retained structure has been extensively remodelled to create a modern office environment. This work required a significant amount of new strengthening steelwork to be erected within the retained structure, providing support and allowing voids to be cut through the concrete floors. Four new steel-framed cores for lifts and stairs have been erected through these voids. Extending upwards into the new uppermost floors, the cores are braced and provide stability to the building.

According to Landsec, the existing commercial building has been sensitively redesigned to cater for a mixed tenure alongside additional retail units at ground floor level. Representing both environmental and social sustainability, the building places the health and wellbeing of its occupants at the centre of the development with increased light levels, natural material palettes and access to outdoor terraces.

A double height ground floor reception has been created at the front elevation (facing Lavington street), from what was originally a large loading bay. Above this, a series of seven large steel transfer beams have been installed to support and create a new set-back and terrace at third floor level.

The majority of the steelwork erection for both buildings has been carried out using the project's three tower cranes. However, the transfer beams each weigh 8t and required a mobile crane to be brought to site for their installation.

Creating the new upper floors, steelwork follows the retained structure's original column grid, while also wrapping around a new full-height central atrium. As the existing structure is encased

FACT FILE
Timber Square, London
 Main client: Landsec
 Architect: Bennetts Associates
 Main contractor: Mace
 Structural engineer: Heyne Tillett Steel
 Steelwork contractor: William Hare
 Steel tonnage: 2,600t

in concrete, the old steelwork is in good condition, and once areas have been broken out, new steel-to-steel connections have been made.

Forming the new office spaces are a series of 850mm-deep Warren trusses, which are up to 14m-long. The trusses each weigh up to 3t, and were brought to site as fully-assembled sections and erected straight from the delivery truck.

In the Print building, finishes are kept to a minimum and steelwork, flooring, structural joints and services are visible, creating a modern industrial aesthetic. This design includes the retained structure, where the predominantly concrete encased columns and floors will be on view, while the upper floors, trusses and the underside of the CLT flooring will also be left exposed.

This exposed design aesthetic is also present in Ink, as this building's entire frame, services and underside of the flooring will be left on view.

Based around two centrally-positioned stability-giving concrete cores, the steelwork in the 14-storey Ink building is based around a 6m x 10.5m column grid. Sat above a two-level basement, the steel-framed structure will form 17,781m² of new flexible workspace, with floor plates ranging from 733m² up to 1,514m². Ground floor retail units can be accessed from a pedestrianised square that sits between the project's two buildings.

Throughout the Ink building, cellular beams have been used to support the CLT flooring and accommodate the services within their depth. Fabricated from EAF-sourced UB sections, the beams had bespoke service holes cut into them at William Hare's factory.

As well as accommodating modern office workspaces, Ink will feature a number of balconies and terraces, providing outdoor breakout areas for the tenants.

The largest terrace is on the fifth floor, along the Lavington Street elevation, where the building steps back to accommodate the outdoor space. Meanwhile, the seventh floor cantilevers out over the terrace.

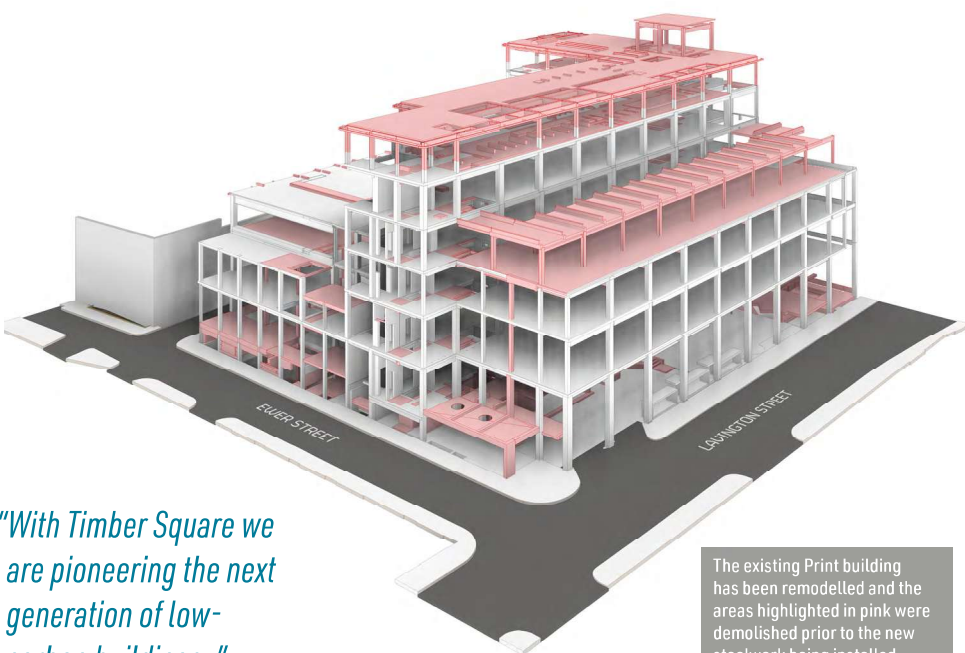
This feature is formed by a large single-storey-high (3.8m) truss, measuring 24m-long. Positioned along the perimeter of the building, the truss supports the column lines that extend upwards from the eighth floor to the roof.

Summing up, James Rowbotham, Head of Workplace Development at Landsec, says: "We're delivering two highly sustainable buildings centred around a new public square which combine a breadth of amenities with highly efficient space.

"Timber Square, along with our wider Southwark pipeline will deliver much needed capacity to a supply constrained market and allow us to respond to the growing demand for space in the borough." ■



Cellular beams, supporting CLT flooring, form all of the levels in the Ink building.



"With Timber Square we are pioneering the next generation of low-carbon buildings.."

The existing Print building has been remodelled and the areas highlighted in pink were demolished prior to the new steelwork being installed.



A series of Warren trusses form the new upper floors of the Print building.