

Paddington's 'Cube' takes shape – how the team behind the Shard is reshaping London's skyline

13 OCT 2021 | BY PAUL THOMPSON



In west London, a new addition to the skyline is set to transform the area around one of the capital's most famous railway stations. *Paul Thompson* reports

Project : Paddington Square

Client : Sellar for Great Western Developments

Main contractor: Mace

Contract type: Design & Build

Contract value: £350m

Start date: May 2018

Completion date: Summer 2022

Of all of London's major rail transport hubs, Paddington is arguably the least visually appealing.

Although the brilliant engineer Isambard Kingdom Brunel and his architect associate Matthew Digby Wyatt did a fine job on the station itself, over the years its expansion and the ever-changing built environment surrounding it have done Paddington no favours. Passengers from destinations west of London are currently faced with a stark choice: disappear down the darkened throat of the London Underground ticket hall, or follow the whiff of travellers' freshly-lit cigarettes and trudge up the station's former carriage ramp to Praed Street.

Here, despite standing a stone's throw from some of London's most expensive real estate, weary travellers soon realise that the area immediately surrounding Paddington is, to put it bluntly, a bit grim.

But a new development next to the station is set to reinvigorate this part of west London and provide visitors with a more suitable gateway to the capital.

Paddington Square is the latest project from the developer, architect and contractor that put The Shard on the London skyline. Once complete, it will provide more than 35,000 square metres of office space, 8,000 square metres of retail and leisure space as well as 5,500 square metres of public realm improvements, plus a new Bakerloo line ticket hall for London Underground.

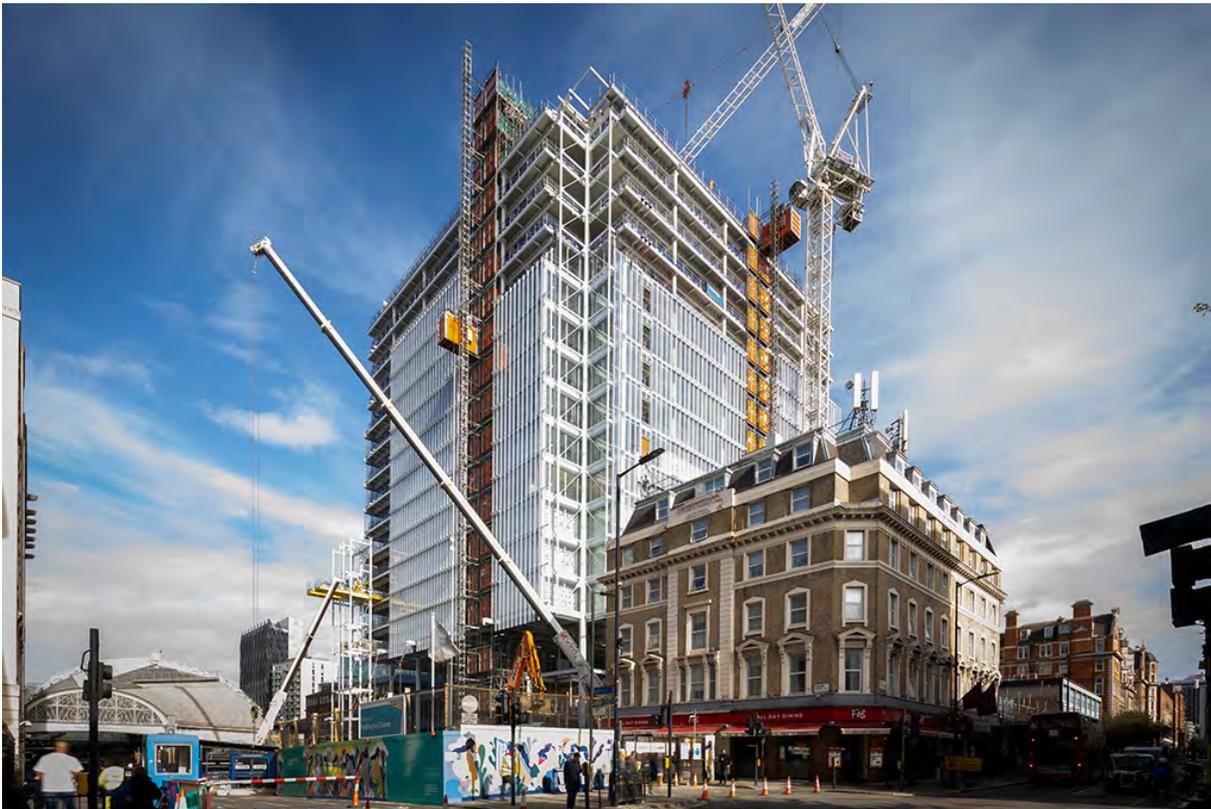


“It will be a tremendous addition to Paddington,” says Paul Flexney-Briscoe, construction director at project developer Sellar, adding: “The public realm space alone will provide a much more attractive entrance to the city for passengers. For those that have travelled into London on the express train from Heathrow Airport, this is their first glimpse of the capital.”

Sleek design

Designed by famed architect Renzo Piano through his firm Renzo Piano Building Workshop, the 18-storey building features a steel frame structure with sleek glazed cladding at all levels. The design, alongside its truncated height (see box, below), has seen it nicknamed ‘The Cube’.

But its sophisticated final design hides much more prosaic roots – the permanent closure of a section of London Street that ran across the southern boundary of the site. Without this seemingly innocuous move the team would have struggled to deliver the scheme.



Paddington Square will provide more than 35,000 square metres of office space and 8,000 square metres of retail and leisure units

“Without being granted permission to close that section of road, divert all the services that ran along it and open a completely new road around the site, it would be very difficult to build as designed. Getting the new road in is key to the delivery of the project,” Flexney-Briscoe says.

The new road – Tanner Lane – has been named in honour of Sir Henry Tanner, the architect who designed the former Royal Mail sorting office that occupied the site before specialist contractor Erith took the demolition and enabling works contract in May 2018 and got on with fulfilling it.

Paddington Cube: be square to be there

Getting the Paddington Square project even onto site has been a long haul for the Sellar team.

Initially the plan had been to erect a 72-storey mixed use tower with residential, retail, office and leisure space looming over the station and offering views across the city and beyond, in much the same way as that other Sellar/Renzo Piano collaboration ‘The Shard’ does a few miles across town.

But objections from locals and campaign groups saw that vision poleaxed with the shorter, revised Paddington Cube scheme clearing the planning process.

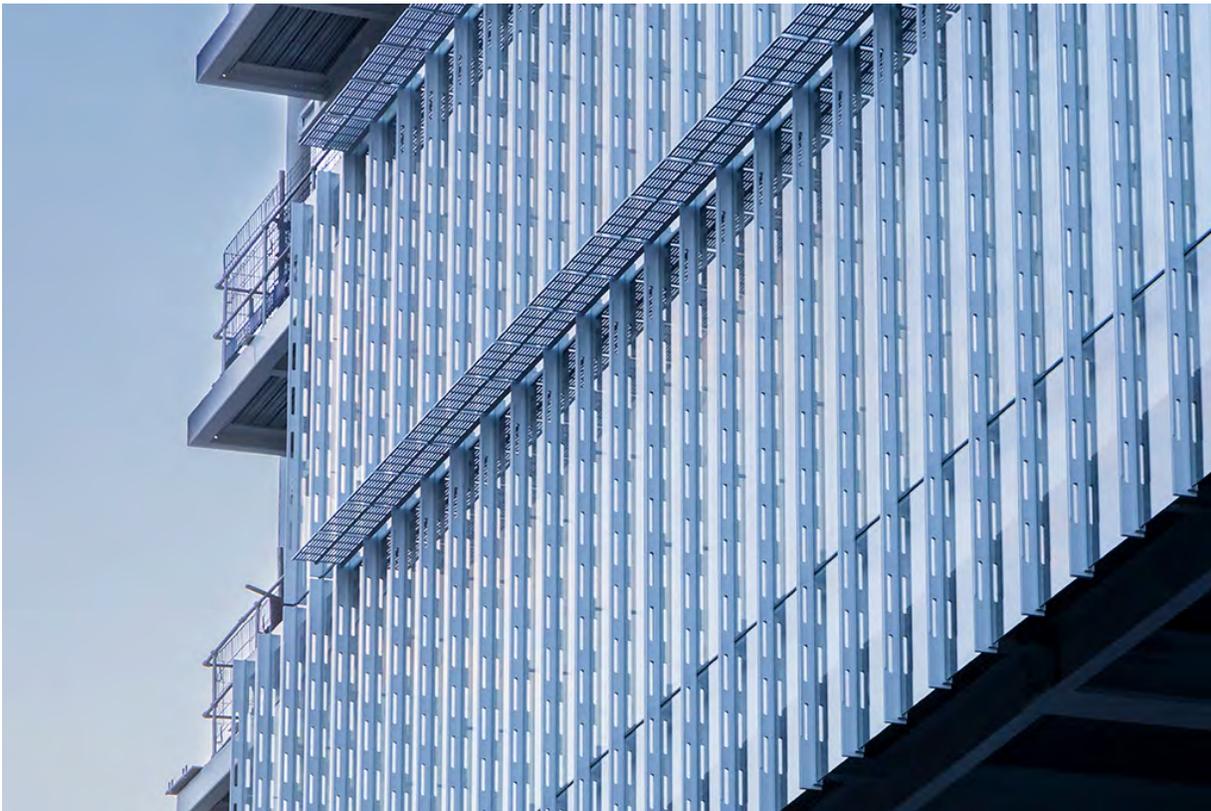


By February the following year Erith had been named as principal contractor for the substructure and concrete core works on the project, working alongside piling contractor Expanded and concrete specialist firm Morrisroe.

“From a programme point of view, it made sense for Erith to continue on the project and, alongside Morrisroe and Expanded, deliver the substructure work,” Flexney-Briscoe says.

Piling and reinforced concrete basement work began in August 2020. The team had to work carefully around mail tunnels – a legacy of the site's sorting office history – as well as those of London Underground's Bakerloo Line and its passenger interchange and ticketing structures, to deliver the four-level basement box.

Steel is the material of choice for the bulk of the structural frame. This launches from the 350mm-thick reinforced concrete transfer slab at Praed Street level and was chosen so that the final structure could provide the sleek, column-free design that the architect craved. There was never a debate about any other frame material explains John Kennedy, project director at Mace, the firm brought in as main contractor under a £350m design and build contract.



Renzo Piano's design features sleek glazed cladding at all 18 levels

He says: “It was the only material capable of providing the ‘transparent’ design that Renzo Piano Building Workshop and Sellar wanted. Using steel enables the bigger spans with fewer columns and a less congested floorplate that the designers were looking for.”

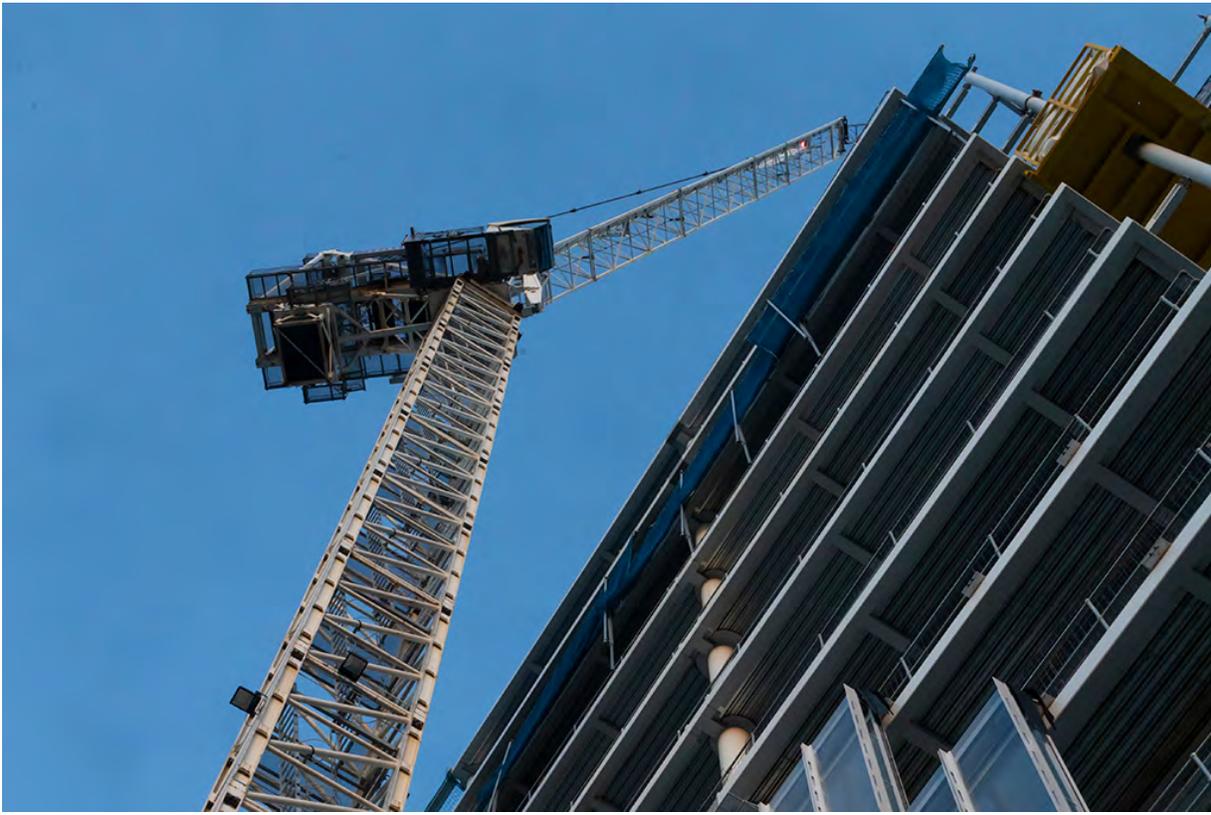
Perimeter columns are hollow, circular-section steel tubes at 9-metre centres, a grid that is repeated at all levels of the structure, although the steel frame of the building does step out 4 metres beyond its ground floor footprint at third floor slab level. This shape continues to the 16th floor slab where the frame steps back in for the restaurant and bars at its upper two levels. The perimeter columns rake at around 25-degrees from vertical between the third and the sixth-floor slabs to support the 4-metre offset, returning to vertical orientation above.

Perfect finish

Cellular steel beams span across the 9-metre grid with the largest span being 18 metres. Services will pass through the web of these beams, which will support the 150mm thick composite steel/concrete slabs. Floor slab to ceiling soffit height will be 2,920mm. Much of the 5,500 tonnes of steel is to be left exposed. The team, led by steelwork subcontractor William Hare, has a robust regime in place to check the integrity of the intumescent paint.



“With the steel being left exposed it is vitally important – both from a fire safety and aesthetic point of view – that the intumescent paint finish is perfect. It is pre-applied and then we inspect it once the steel has been fixed. Thankfully, we are more than happy with the quality of the finish [so far],” Kennedy says.



Steel was the only material considered for the bulk of the structural frame

The Cube is being built to hit the BREEAM 'Excellent' standard, with rainwater harvesting featuring in the scheme, a large photovoltaic array on the roof and smart technology installed throughout to help reduce energy consumption once the building has been completed.

Fundamental to the building's design is its glass cladding, which is being installed by Italian firm Focchi. It is this cladding that gives the building its sleek look and will allow light to pour into even its darkest recesses. To overcome potential overheating from solar gain, the Focchi team is installing a double glass-skin unitised curtain wall system with integrated venetian blinds sitting between the two skins across the bulk of the structure with a stick system facade at ground floor to level 3 and levels 15 to 17.

“This is a very design-led project and the glazed cladding is an extremely important part of the vision that Renzo Piano has,” Flexney-Briscoe says.

There is still some way to go before construction work at the Paddington Cube is complete but despite all of the potential setbacks faced by the team – the COVID-19 pandemic, material shortages and ratcheting prices – the project is still on course for handover in Summer 2022.

Then, at last, travellers coming into Paddington will finally have a gateway to the capital that befits Brunel's brilliance.

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Piling into Paddington

A fundamental part of the Paddington Square development is the work going on beneath the surface.

In the four levels that lie directly underneath the building the project team is creating a new, larger ticket hall for the Bakerloo underground line, with step-free access from street level as well as two floors of retail space plus bike and scooter parking, plant rooms and changing and showering facilities for occupiers.

The Erith, Morrisroe and Expanded team was responsible for the construction of the basement which features a mixture of techniques. The installation of 1.2-metre diameter perimeter secant piled walls around the site enabled its excavation with a 2.4-metre deep reinforced concrete raft across the bulk of the basement. Similarly sized plunge columns beneath the core reach 33-metres into the London Clay strata beneath the site.

The concrete core itself was constructed by Morrisroe using slipform techniques. Even at the height of the pandemic the team was able to maintain staffing levels and social distancing requirements throughout the process.

“We have been extremely fortunate that thanks to the experience of our supply chain we have managed to continue to work safely throughout the pandemic. Distancing meant that staffing of the slipforms had to be kept to a minimum but that hasn't affected the project programme,” Flexney-Briscoe says.

