mpa Precast

Edition 2 – September 2025

Case Study Compendium

Case studies highlighting innovation, applications and modern methods of construction (MMC)

Mineral Products Association

Contents

Introduction

Precast concrete is one of the most versatile and robust construction materials available today, used across a huge range of applications, from domestic driveways to major national infrastructure projects. Whether delivering repeatable elements for platform-based construction approaches or enabling bespoke, architecturally stunning designs, precast concrete plays a crucial role in modern construction.

A clear example of the efficiencies offered by precast concrete is the prison building programme featured in this publication, where repetition of products across multiple builds has resulted in significant time and cost savings. Yet precast is not limited to repetition; it also supports the creation of unique structures, realising creative architectural visions and solving complex engineering challenges.

This compendium captures a selection of projects from across the precast concrete product range. It showcases the flexibility and innovation of the sector, although it is by no means exhaustive - hundreds more applications exist. For the latest project updates and further inspiration, we encourage you to visit the MPA Precast website: www.mpaprecast.org

Across the case studies presented here, six common benefits of precast concrete emerge:

Modern Methods of Construction (MMC)
Precast concrete is at the forefront of MMC, incorporating new technologies through innovative offsite manufacturing and advanced onsite installation techniques. As a mature stable construction products sector, concrete today offers solutions that align with multiple MMC categories.

Programme Efficiency
Precast concrete enables significant time savings. Smart casting sequences, just-in-time deliveries, reduced reliance on associated trades and rapid installation methods mean faster, more predictable construction programmes.

High-Quality and Robustness
Factory-controlled environments ensure consistent, high-quality products that are often superior to those produced using lightweight, traditional methods - especially when weather conditions or labour shortages could impact quality onsite.

Enhanced Safety
Precast construction reduces risks during both manufacturing and installation, particularly by limiting work at height and in confined spaces. Offsite production and smaller onsite teams reduce noise, dust and general disruption, while the material's A1 fire rating provides long-term safety benefits post-construction.

Predictability and Reliability
Modern digital construction techniques, coupled with a mature UK concrete supply chain, ensure precast products are predictable, traceable and resilient - offering reliability throughout their lifecycle and even enhancing insurability.

Sustainability and Circular Economy Benefits
Precast concrete assets are long-lasting, adaptable and can be designed with disassembly and reuse in mind, supporting sustainable construction practices. Precast concretes thermal mass, fire performance and acoustic benefits also contribute to comfortable, resilient and efficient buildings.

The projects featured here are from the membership of MPA Precast, the trade association representing the UK precast concrete sector. MPA Precast's mission is to promote the use of precast concrete in construction, disseminate industry guidance, and provide added value to members through knowledge-sharing and advocacy. With over 50 precast manufacturers and more than 100 supply chain associate members, MPA Precast stands as a hub of expertise, innovation, and best practice in precast concrete.

Techrete (UK) Ltd

Goods Yard, Stoke-on-Trent

Goods Yard is a bold new mixed-use development located in the heart of Stoke-on-Trent, adjacent to the Trent and Mersey Canal and a short walk from Stoke railway station. The site, steeped in industrial heritage, was once a bustling hub for materials and goods transport. Today, the development seeks to reinvigorate the area by providing high-quality, affordable rental homes aimed at retaining and attracting young residents and supporting local regeneration.

At the centre of Goods Yard stands a striking ten-storey block of 174 apartments, designed to echo the scale and rhythm of the Victorian mills and warehouses that once defined the town's skyline. Measuring 76m long by 20m wide, the building's form and detailing nod to Stoke's industrial past while embracing modern construction efficiencies.

The key challenge was to deliver an architecturally detailed façade within a tight budget, where rents are modest. The design team wanted to avoid plain, flat cladding panels and instead sought a solution that could recreate the depth and texture of traditional Victorian ornamentation while using modern methods of construction to control costs and speed up delivery.

Techrete supplied 360 terracotta-coloured precast concrete panels that define the building's unique scalloped façade. The vast majority of these panels were produced from just three moulds, corresponding to the building's lower, middle, and upper floors, with custom edge panels for the corners.

Each panel measures 6m by 3m and weighs around 7 tonnes. The scalloped profile creates dynamic shadows and visual interest when viewed from a distance, ideal for passing motorists and train travellers, while the panels' finely fluted vertical grooves add texture and craftsmanship detail appreciated by pedestrians at close quarters.

> " The design team wanted to avoid plain, flat cladding panels and instead sought a solution that could recreate the depth and texture of traditional Victorian ornamentation... "

Techrete's innovative manufacturing process combined reusable timber formwork with off-the-shelf ribbed rubber mouldings to create the fluted texture efficiently and cost-effectively. This approach avoided the expense of bespoke tooling while achieving the desired intricate detailing.

To streamline on-site installation and reduce construction time, panels were delivered pre-fitted with windows, Juliet balconies, and interior insulation. This offsite assembly approach minimised trades onsite and helped maintain high quality standards.

The terracotta colouring was achieved through the addition of iron oxide pigment to the concrete mix, reflecting Stoke's local brick heritage and its historic role as a ceramics centre. The design draws inspiration from Josiah Wedgwood's pioneering ceramic work, reinterpreting his ethos of combining beauty and mass production in a contemporary context.

The use of Techrete's precast panels allowed the Goods Yard development to deliver a façade that marries historic architectural reference with modern construction efficiency. The project was completed at approximately £220 per ft^2, demonstrating the economic benefits of carefully optimised precast design to help meet the demands of today's rental market.

Cornish Concrete Products Ltd

11 Belgrave Road, Victoria

The £135m redevelopment of 11 Belgrave Road, Victoria, has transformed a 1950s office building into 108,000 square feet of net zero carbon Grade A office accommodation. Designed by Eric Parry Architects with structural engineering by Heyne Tillett Steel, FMDC and Max Fordham Engineering Consultants and constructed by BAM Construction, the project has been designed to achieve net zero carbon in both construction and operation, surpassing the RIBA 2030 Climate Challenge embodied carbon target by 38%.

Cornish Concrete Products Ltd was appointed to manufacture and supply the architectural precast concrete cladding for the scheme. In total, 300 bespoke units were produced at the company's Truro facility, using a white dolomite aggregate concrete mix.

Elements included large precast planters and porches at first floor level, supported on precast columns designed as a free-standing structure, alongside a grid arrangement of panels, spandrels and mullions to the upper storeys. The largest units spanned 11 metres and weighed more than 15 tonnes. Each piece was finished with a combination of etched and polished surfaces to achieve the required aesthetic quality and durability.

The new 68-metre-long façade along Belgrave Road extends from the retained lightwell level to the sixth floor. The precast façade was designed as a rainscreen solution, with glazing and curtain walling completed prior to the installation of the precast units. Restraint fixing points were incorporated into the curtain walling system, enabling each precast element to be lifted into position by the site tower crane, with all connections made externally.

> " The largest units spanned 11 metres and weighed more than 15 tonnes. Each piece was finished with a combination of etched and polished surfaces to achieve the required aesthetic quality and durability. "

Retention of 35% of the existing structure and foundations reduced the embodied carbon of the build, while also presenting logistical and design challenges. The installation of the precast units required careful sequencing within a constrained city centre site. Cornish Concrete worked closely with the site team to ensure each element met precise dimensional tolerances and aligned with the façade design.

The completed building includes 14,000 sq ft of communal spaces, a 3,300 sq ft café, a 4,600 sq ft gym, 13,000 sq ft of green space, multiple terraces and a rooftop platform. Facilities include storage for 178 bicycles, spa-style changing rooms with 19 showers and 177 smart lockers. The building is the first in the UK to achieve an Excellent 5.5-star NABERS UK design-reviewed target rating for building efficiency, and one of only three to be pre-certified nationally.

Elite Precast Concrete Ltd

Furzebrook facility in Dorset

IMERYS, a mineral-based speciality solutions company, has recently completed a major refurbishment of its Furzebrook facility in Dorset. The works addressed the replacement of ageing steel columns and wooden sleeper walls, which had deteriorated over time, causing structural failures. These failures were limiting storage capacity and allowing cross-contamination between different grades of stored materials, undermining product quality, profitability and overall operational standards.

IMERYS commissioned RSG Structures to deliver a solution capable of meeting the facility's demanding requirements. The project presented several challenges, including a complex building layout with numerous supporting stanchions that complicated wall installation, uneven floor levels that limited the use of traditional walling methods and the need to store ball clay, a material with a bulk density of 1,300 kg/m^3, to heights of up to four metres, with additional surcharge loads. The new walling also had to integrate with the existing steel frame and accommodate unique flooring and structural conditions.

RSG Structures developed a two-part solution combining in-situ concrete plinths with Legato® precast concrete block walls supplied by Elite Precast Concrete Ltd. The in-situ plinths provided a stable, level base, overcoming the issue of uneven floors, and incorporated a rubbing bar to protect the new walls from damage during shovel bucket material handling. The modular design of the Legato® walling enabled walls to be positioned close to existing steel supports, optimising space and maintaining structural compatibility. The system was engineered to withstand the significant loads associated with storing ball clay, with steel plates installed where supports interrupted the wall line to ensure stability. Layalocka straps were used throughout to enhance anchoring and structural cohesion.

Once designs were finalised, construction was phased to allow IMERYS to maintain operations in unaffected areas, minimising downtime and ensuring productivity throughout the works.

The completed installation has delivered immediate benefits, including a significant reduction in cross-contamination between material grades, leading to improved product quality and increased profitability. Storage capacity has been optimised and material handling processes streamlined. The robust new walling will also protect the facility's structural steel from accidental damage caused by heavy machinery, contributing to the long-term sustainability of the refurbishment.

PCE Ltd

Space House, London

Bringing new life to one of London's most distinctive landmarks, Space House, a Grade II listed building in London. PCE Ltd designed and delivered the structural solution for the new cruciform units.

This involved manufacturing level 15, whereby the cruciform components spanned across levels 15 and 16, plus the re-installation of the refurbished roof T parapet units at level 17. The iconic Space House, designed by Richard Seifert & Partners and known for its innovative architecture and a striking concrete cruciform façade, dates back to 1968 where it was first occupied by the Civil Aviation Authority. This historic landmark underwent a comprehensive redevelopment in a project that aimed to transform the building into a highly sustainable, smart structure designed to BREEAM's Outstanding standards.

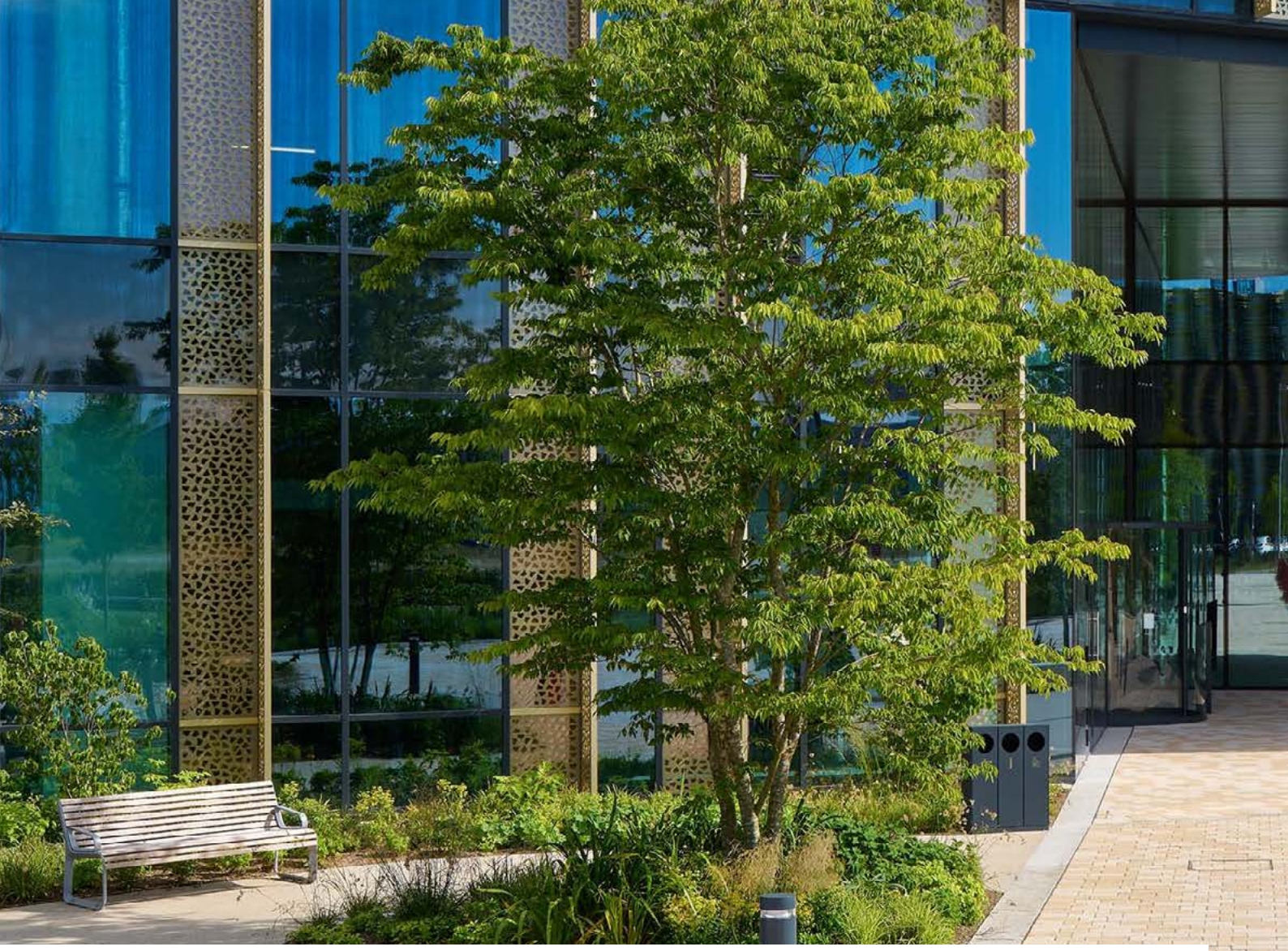
The project saw the removal, repair and reinstallation of Space House's existing top layer, plus the introduction of level 15. This required the offsite manufacture of 48 reinforced precast concrete cruciform components manufactured by **Techrete (UK) Ltd**, which spanned from level 15 to level 16. It was imperative to manufacture the new cruciform components with absolute precision, creating an exact replication of the originals. Once manufactured, the cruciform components were connected to the structures existing components using the PCE HybriDfMA approaches' smart connectivity, aiding in the ease, speed and quality of installation. To help achieve this, the structures' reinforcing bars were strategically placed to coordinate with the existing structures constraints with predictability and efficiency. The absence of back propping, improved access, reduced risk and increased the speed and ease of installation. Throughout all phases of the structural solution, attention to detail was pivotal to ensuring success.

Space House's modular origins are poignant to the success of the refurbishment. Modular construction facilitates easier changes by providing greater flexibility for design modifications. The existing modular nature of the structure highlighted the adaptability, longevity, and sustainability modular construction provides.

Techrete (UK) Ltd, were instrumental in working alongside PCE to successfully overcome the challenge of creating components that closely replicated the original cruciforms, demonstrating what can be achieved through effective collaboration. With PCE Precast Coordinators supporting the supply chain with quality control and monitoring, the project benefitted from the opportunity to check, review and validate components offsite, ensuring every element was manufactured to the highest quality standards.

Reattaching the top layer posed significant challenges due to the circular geometry of the structure. Integration of the new levels and reconnection of the removed top structural layer was aided by clearly designed load paths, helping effectively distribute the load of the new structure. Once the design phase was complete, production of the cruciform replicas commenced. The existing cruciform details, originally designed by Pell Frischmann in 1965, were made available to aid in a direct replication of the original intent. To produce an accurate cruciform replica, PCE first created unique moulds that exactly matched the 1965 originals. This required the consideration of several factors, including weathering and elemental exposure, as well as general ageing impact on the original concrete. The material testing and sampling process was rigorous, ensuring an exact replica required fastidious depth of detail, from materiality to textural characteristics. Drawing on its expertise in modular construction and standardised methodologies, PCE were able to diligently map out the safest, fastest and most efficient installation plan, with a predetermined strategy ensuring assembly adhered strictly to design drawings and content, whilst navigating logistical complexities.

The project team were also well prepared and well equipped to execute the plan with precision and minimal disruption, achieving a just-in time delivery schedule. PCE were able to complete the construction phase of Space House with just 4 multiskilled operatives, delivering each level in only 2 weeks whilst recording 0 incidents.



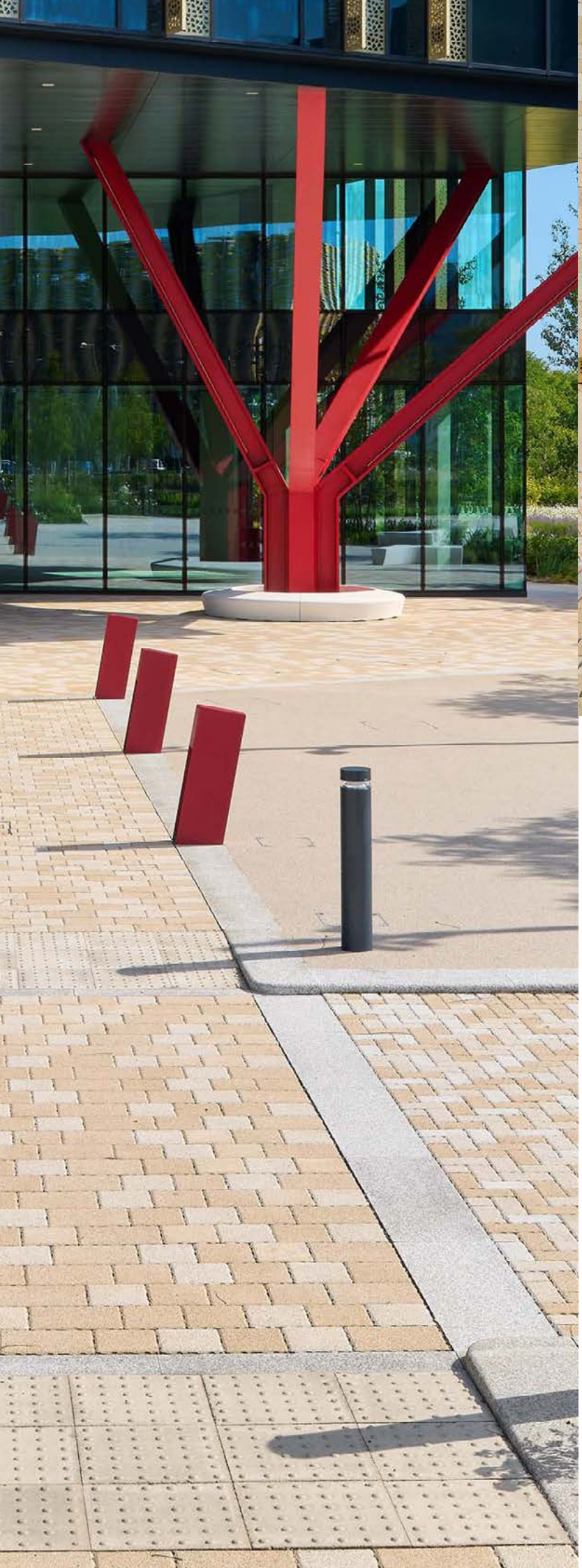
Marshalls plc

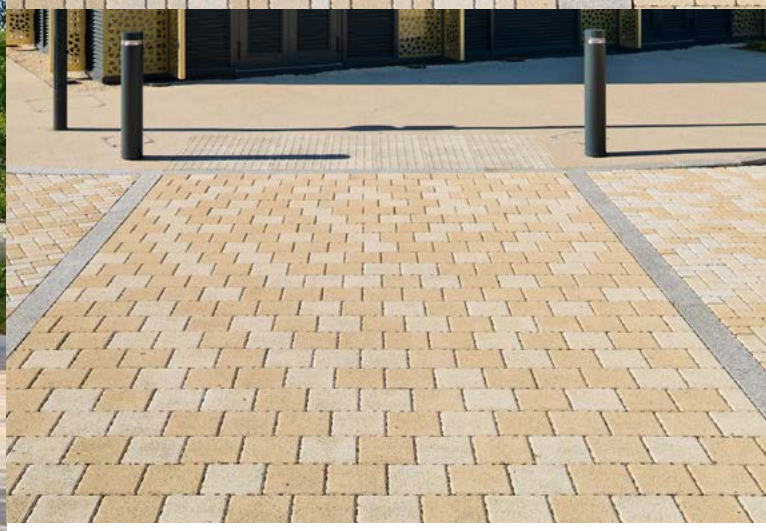
1000 Discover Drive, Cambridge Biomedical Campus

Cambridge Biomedical Campus is a world-class life sciences, research, medical innovation and healthcare hub. As part of key expansion plans, architects Scott Brownrigg designed a new five-storey flexible lab and office space, 1000 Discovery Drive. This 103,000 sq. ft. facility houses a variety of biotech and life science businesses, enhancing the ecosystem of clinical, academic and commercial pursuits. With a vision for connectivity and community engagement, the project also includes amenities such as a café and a community centre, aiming to create an inviting and explorable environment.

Marshalls Plc supplied paving and landscape products from their reimagined Modal X concrete paving range, complemented by natural stone elements. Manufactured in the UK at Marshalls' dual block plant using MaxiMix® technology.

The selected materials are designed to withstand high foot traffic and varying weather conditions, ensuring longevity and minimal maintenance. Installed in an unbound format, the system enabled contractors SDC Construction Group to reduce both construction costs and embodied carbon when compared with traditional granite setts, supporting the sustainability objectives of the scheme.





A mixture of plan sizes and colours were selected to create interest across the paved areas, with Modal X Priora incorporated as a matching permeable option to manage surface water. The combination provided a clean, durable and sophisticated surface finish that enhances the character of the campus.

Tarvos natural stone setts and kerbs were also used to frame carriageways, pathways, and landscaped zones, complementing the Modal X paving and providing definition throughout the site.

> " Installed in an unbound format, the system enabled contractors SDC Construction Group to reduce both construction costs and embodied carbon when compared with traditional granite setts... "

Explore Manufacturing Ltd – Part of Laing O'Rourke

The Whiteley, London

Completed in 2024, the historic Whiteleys store in Bayswater, London, underwent a major redevelopment that transformed the site into a vibrant mixed use destination. It features a cinema, retail outlets, cafes, restaurants, 153 apartments and the UK's first Six Senses hotel and spa, comprising of 111 rooms and 14 residences. The project aimed to protect and restore the Grade II-listed façade while enhancing the retail offered and to support a pedestrian-friendly Queensway. At the heart of the development is a new public courtyard, accessible via a retail arcade through the original central entrance.

Explore Manufacturing Ltd – Part of Laing O'Rourke, was the main supplier of precast concrete elements, over 860 precast columns, 3,100 twin walls, 300 copings and 800 façade panels were installed across the 1 million square foot development, all while retaining the Grade II listed façade. The project involved constructing a deep, three level basement and a ten storey superstructure, both requiring robust structural support. Precast concrete's inherent strength and durability provided the necessary load bearing capacity, facilitating these complex engineering requirements and guaranteeing long term structural integrity.

Explore Manufacturing's Design for Manufacture and Assembly (DfMA) approach delivered a 12 week programme saving compared to traditional in-situ methods, underscoring the efficiency gains achieved.

> " ...over 860 precast columns, 3,100 twin walls, 300 copings and 800 façade panels were installed across the 1 million square foot development, all while retaining the Grade II listed façade. "

A key feature of the project was the adoption of a 'top-down' basement construction technique, enabling construction above ground to proceed simultaneously with excavation below. This innovative approach, combined with extensive use of precast concrete, accelerated the construction programme and helped mitigate challenges associated with the congested urban site. The controlled manufacturing process of precast concrete ensured high quality, consistent finishes essential to preserving the historic façade while integrating modern architectural elements. This blend of heritage and contemporary design highlights the versatility of precast concrete as a construction solution.

Sustainability was a core consideration throughout the redevelopment, with the project targeting a BREEAM Excellent rating. Precast concrete's environmentally efficient manufacturing process reduced material waste and onsite disturbance, contributing positively to the project's overall sustainability credentials. Safety benefits were also realised through the offsite fabrication of precast elements, which minimised onsite work and reduced reliance on scaffolding. This led to a safer working environment and contributed to the smooth and efficient progress of construction activities.

Plean Precast Ltd

Barclays Glasgow Campus

As part of the landmark regeneration of Glasgow's South Bank, the historic Beco Building has been preserved and revitalised as a focal point, Dragonfly Plot 4, within the new Barclays Glasgow Campus masterplan. Built in 1878 as a draper's warehouse and showroom, the Beco had fallen into disrepair and was slated for demolition, until Historic Environment Scotland intervened. Its restoration became a cornerstone of the development, blending heritage conservation with bold, contemporary placemaking.

The landscape design, led by OOBE in collaboration with Stallan Brand, draws inspiration from the natural movement of sea and sand, expressed through the 'Social Stream' concept. This vision channels pedestrian movement from the city and River Clyde into the heart of the campus, merging the site's formal building grid with biophilic hexagonal geometries to create a dynamic, nature-rich environment.

Architectural precast concrete played a pivotal role in realising the Social Stream's vision, offering the flexibility to achieve complex geometries, the durability to withstand urban use and the aesthetic quality to complement both historic and contemporary elements. Plean Precast Ltd was appointed to manufacture and supply the precast components to bring this landscape to life.

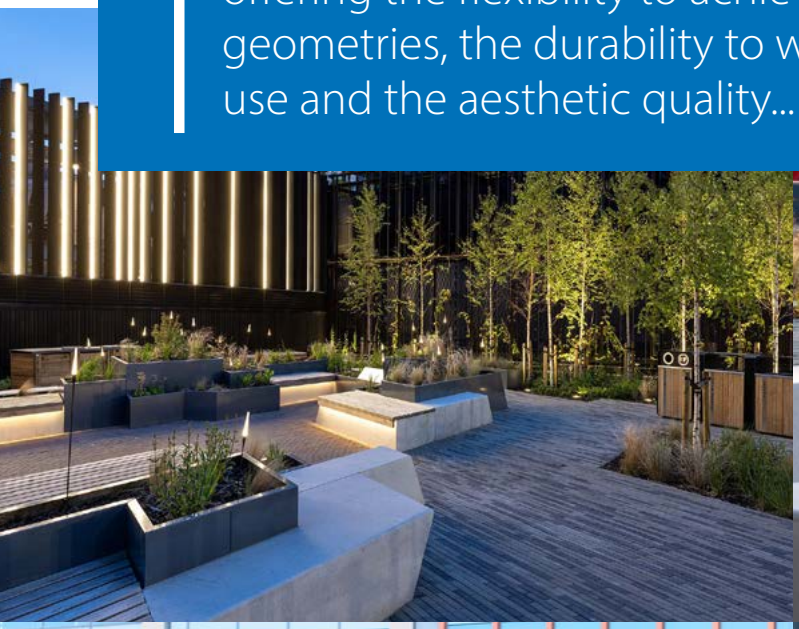
In total, around 480 bespoke elements, including bench units, seating steps, slabs and copings, were produced, weighing over 73 tonnes. Each piece was cast in a bespoke Granite White concrete mix, finished with a light acid-etch to achieve a clean, durable surface with subtle texture.

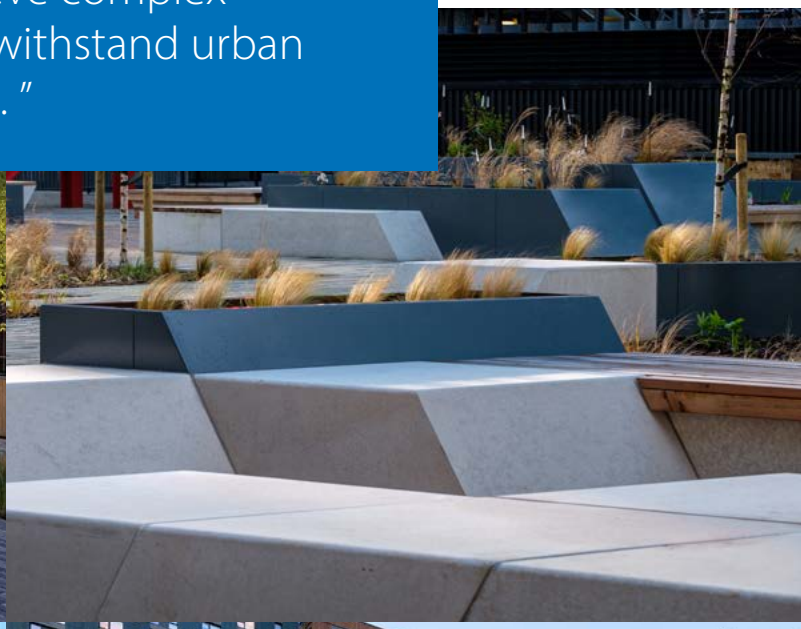
The tight city-centre location required advance planning and site constraints meant each unit had to be delivered and installed in a pre-agreed sequence, with minimal lay-down space. Plean Precast had to ensure that each element met the precise dimensional tolerances and aligned with the designers' intent.

Durability and versatility were central to the design. The modular furniture integrates planting at multiple levels and is engineered to withstand intensive urban use, including skateboarding, roller skating and parkour, while maintaining both finish quality and structural integrity. Fixings, reinforcement and lifting points were designed to remain concealed, preserving the clean lines of the scheme. The completed landscape forms a multifunctional civic space, adaptable for informal meetings, pop-up food and drink outlets, live performances and community events.

As cities evolve, projects like Dragonfly Plot 4 demonstrate how thoughtful design and precision manufacturing can reclaim neglected spaces and transform them into vibrant, inclusive public areas. The Beco Building's Dragonfly Plot 4 landscape has been shortlisted for the 2025 Pineapple Awards for Public Space, recognising its contribution to high-quality urban design and regeneration in the heart of Glasgow.

> " Architectural precast concrete played a pivotal role in realising the Social Stream's vision, offering the flexibility to achieve complex geometries, the durability to withstand urban use and the aesthetic quality... "





ABM Precast Solutions Ltd

SIXEP Continuity Plant, Sellafield

The SIXEP Continuity Plant at Sellafield, Cumbria, is one of the UK's most significant nuclear infrastructure projects. Designed to replace and operate in parallel with the original Site Ion Exchange Effluent Plant (SIXEP), which has been in service since 1985, the new facility will treat radioactive effluent from existing treatment streams across the Sellafield site. It is expected to remain operational until at least 2060, supporting the safe decommissioning and clean-up of nuclear facilities.

Careys, the main contractor, was responsible for the construction of the Process and Services Buildings. Within this contract, ABM Precast Solutions Ltd was appointed to design, manufacture and supply prestressed beams for the top floor structure of the Process Building.

ABM supplied a total of 200 prestressed beams, manufactured in over two dozen variants and ranging from 4 to 11 metres in length. These beams formed a key part of the multi-bay roof structure, supporting reinforcement and service installations within the upper levels of the building.

Careys, responsible for procurement and design of the multi-bay roof, worked with ABM to deliver the sequence of prestressed beams. Each beam was craned into position in a carefully managed order, immediately followed by the installation of encast mechanical equipment. High tensile steel web bars were threaded through the beams to form the lower reinforcement mat. These were then complemented by prefabricated reinforcement cages and preassembled shutters brought from Careys' yards on site to suit the restricted working areas.

Once the beam cages were in position, the top mat of reinforcement was assembled and each bay was checked and cleaned before concreting. The slab was cast in three separate pours, including a major 420m^3 pour completed ahead of programme in December 2023.

The successful delivery of the roof structure required precise coordination between manufacturing, transport and installation. ABM worked to strict scheduling to ensure beams arrived in line with the construction sequence. The accuracy of supply was critical in achieving the millimetre tolerances required for integration with reinforcement, encast units and service installations.

Brett Landscaping & Building Products

Tay Road Bridge, Scotland

A vital transport link between Dundee and Fife, the Tay Road Bridge carries tens of thousands of vehicles daily across the River Tay. Spanning 2,250 metres, the bridge is a critical route for commuters, freight and visitors. But over 50 years since its original opening, sections of the structure required significant refurbishment to ensure ongoing safety, durability and serviceability.

As part of a multi-phase maintenance programme led by WSP, Brett Landscaping & Building Products Ltd were brought in to deliver a high-performance kerb solution that could meet strict technical requirements while accommodating the logistical challenges of bridge deck construction. The project involved replacing the existing parapet protection system with Trief GST2 containment kerbs, units independently impact-tested to BS EN 1317 parts 1 & 2, providing proven vehicle restraint and safety performance.

The key to the specification was weight control. Bridge loading restrictions meant the weight of each unit has to be carefully controlled to ensure the load on the bridge remained under 1.795 kN/m. Working closely with the client and engineers, Brett developed bespoke GST2 units with a maximum width of 336mm. The precise sizing allowed installation without reducing lane width, enabling traffic to flow freely throughout the works and causing minimal disruption, a crucial factor on one of Scotland's busiest routes.

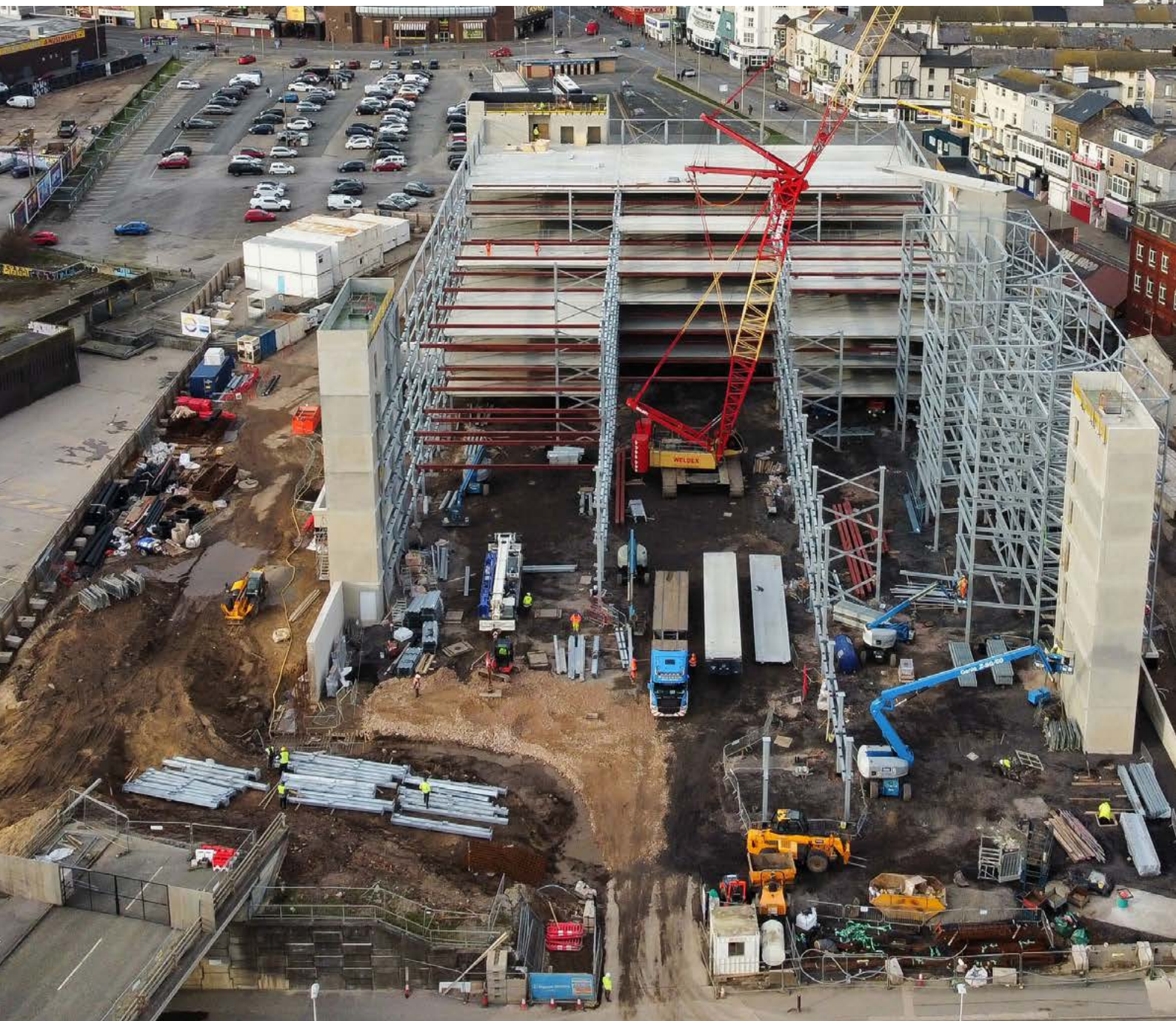
Efficient sequencing was essential. With minimal lay-down space available on the bridge, deliveries had to be timed to match the installation rate, enabling crews to fit up to 400 kerbs per day. Phase 1, covering the northbound carriageway, was successfully completed in spring 2023, with Phase 2 on the Fife-bound side completed in early 2024.

Banagher Precast Concrete Ltd

Multi-Storey Car Park, Blackpool

As part of the wider regeneration of Blackpool town centre, the Multi-Storey Car Park (MSCP) has been delivered as a landmark project, providing 1,306 parking spaces. The MSCP forms a multifunctional asset within Blackpool's town centre, supporting visitor access, commercial activity and local transport connectivity.

Traditional MSCP construction often relies on hollowcore or standard prestressed double-tee units with a separate in-situ concrete topping. However, the introduction of pre-topped units in Blackpool's MSCP removes the need for this in-situ deck entirely, eliminating steel and screed, significantly reducing the carbon footprint and speeding up construction. This also eliminates the need for follow-on trades, creating a unique, de-mountable structure that is efficient, sustainable and innovative.



> " The design of these units was carefully engineered to ensure they met a minimum 3.5 Hz natural frequency for vibration control, all while maintaining a lightweight profile. "

Banagher Precast Concrete Ltd in partnership with contractor Ballast Nedam, supplied 726 pre-topped Double-tees for the project. The design of these units was carefully engineered to ensure they met a minimum 3.5 Hz natural frequency for vibration control, all while maintaining a lightweight profile. By increasing the top flange thickness from 60 mm to 115 mm, Banagher eliminated the need for an additional deck layer, reducing the overall deck depth by 60 mm and saving delivering time, reducing material use and carbon.

The benefits of this innovation are wide-ranging. The lighter design allowed for two units to be transported per load, cutting transport by 363 loads and offering substantial carbon and cost savings. The units were designed with longevity in mind, utilising bolted connections and sealant between joints to create a fully de-mountable structure. This "Design for Deconstruction" approach supports long-term sustainability by ensuring that components can be reused or repurposed at the end of their life. Given Blackpool's coastal location, the top surfaces were designed to meet rigorous exposure standards, ensuring durability over a 50-year lifespan without the need for waterproofing.

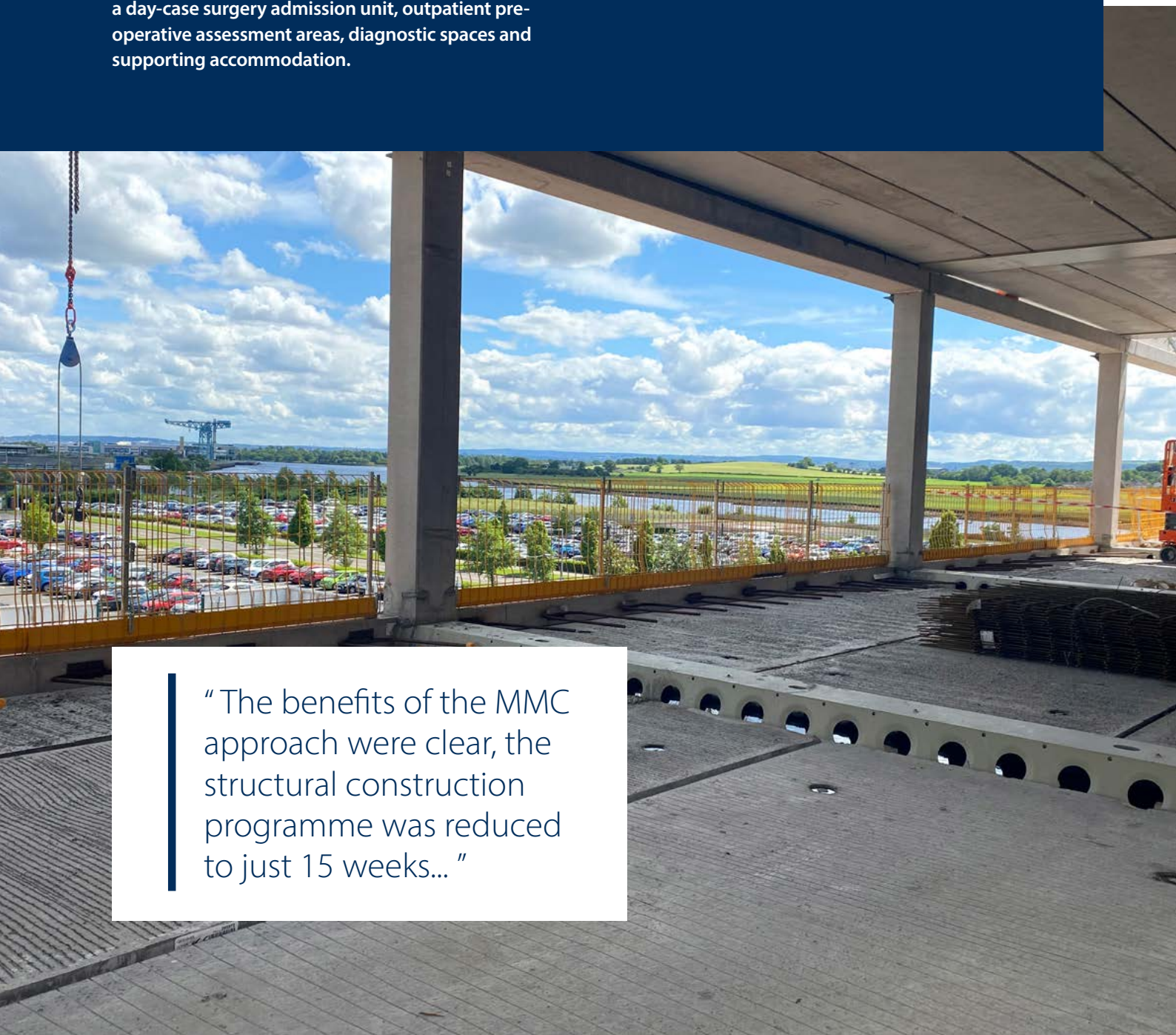
Banagher manufactured and supplied the units with an anti-slip finish, ensuring compliance with safety standards while reducing on-site construction time. Detailed technical guidance was provided throughout, ensuring that each unit met exacting dimensional tolerances and was installed in a coordinated sequence to align precisely with the designers' intent.

PCE Ltd

Golden Jubilee Hospital Surgical Centre Extension, Clydebank, Scotland

The NHS Golden Jubilee Foundation commissioned a £36 million project to expand services at Glasgow's Golden Jubilee Hospital. Stage Two of this plan focused on delivering a new three-storey Surgical Centre extension, designed by IBI Group, to enable more patients to be treated. The development provides additional operating theatres for orthopaedic surgery, a day-case surgery admission unit, outpatient pre-operative assessment areas, diagnostic spaces and supporting accommodation.

Kier Construction Scotland, appointed as Main Contractor, oversaw the delivery of the project in collaboration with consulting engineers Curtins Glasgow, cost consultant AECOM and M&E engineers TUV SUD & NG Bailey. Project management was led by Adam Clarke, ensuring that the design, budget and programme objectives were met.



> " The benefits of the MMC approach were clear, the structural construction programme was reduced to just 15 weeks... "

The original Stage 3 design intent specified a post-tensioned in-situ concrete structure with a traditional brickwork façade. However, Kier identified opportunities to enhance the scheme through a Modern Methods of Construction (MMC) approach. This allowed the project to fully comply with NHS Health Technical Memoranda (HTMs), which set out guidance for the design, installation and operation of specialised healthcare building and engineering systems. The revised structural grid approach provided future flexibility, while digital design techniques and sustainable construction practices supported the NHS target of achieving Net Zero Carbon for its Core Carbon Footprint by 2040.

Kier commissioned PCE Ltd to deliver the scheme using its HybriDfMA Frame System, an offsite manufactured 'kit of parts' solution that replicated the original design's layout and performance while introducing the speed and efficiency benefits of MMC. The new system incorporated a modular, non-loadbearing brick-faced precast concrete panel façade, designed and supplied by **Techrete (UK) Ltd**, which worked closely with IBI Group to develop large-format cladding panels with brick and decorative finishes, pre-installed glazing and louvres. **Explore Manufacturing Ltd – Part of Laing O'Rourke** produced the precast twin walls in a controlled factory environment for consistent quality and dimensional accuracy. **FP McCann Ltd** delivered a range of structural elements, including precast columns, beams, stairs, landings, parapet beams, lift shafts, capping slabs, roof plinths and ancillary walls. All of which contributed to a total of 1,184 structural components and 177 façade panels, complemented by 1,350m^3 of in-situ reinforced concrete.

The benefits of the MMC approach were clear, the structural construction programme was reduced to just 15 weeks, 12 weeks faster than the original in-situ design, while the modular system cut site deliveries by around 350. This significantly limited noise, dust, and disruption for hospital staff, patients and neighbouring residents. The reduced on-site workforce and shorter programme saved over 50,000 operative hours, improving safety and operational efficiency. The building's suspended floors were designed with low vibration susceptibility, essential for sensitive operating theatre equipment. Composite construction using concrete/steel Deltabeams and prestressed concrete floor units created flat soffits, simplifying M&E service installation and future adaptability.

The three-storey structure spans a suspended floor and roof area of 7,650 m^2, with a façade area of 3,500 m^2. A standardised 8.4 m^2 grid and 400 mm structural floor zone allowed a 4.5 m storey height, seamlessly aligning with the existing hospital building, with a precise 50 mm connection gap. Large façade panels, some up to 4.5 m high and weighing 16.13 tonnes, arrived on site pre-glazed and fitted with louvres, reducing high-risk on-site work. Precast stair and lift cores provided rapid vertical circulation and full-scale dynamic testing of the operating theatre floorplates demonstrated exceptionally low vibration levels, confirming the design's suitability for high-performance healthcare environments.

Offsite manufacturing was coordinated across PCE's supply chain, with rigorous inspections ensuring the highest standards of accuracy and finish. The close collaboration between Kier Construction Scotland, the NHS Golden Jubilee Foundation, IBI Group, Curtins Glasgow, AECOM, TUV SUD & NG Bailey, Project Manager Adam Clarke, and the specialist precast suppliers delivered a high-quality healthcare facility efficiently and sustainably.

The Golden Jubilee Surgical Centre officially opened at the end of 2024, enhancing NHS Golden Jubilee's capacity to provide high-quality planned care to meet Scotland's growing healthcare needs.

Creagh Concrete Products Ltd

Guildford Crescent

As part of a major high-rise residential development in Cardiff city centre, The Rise, also known as Guildford Crescent, officially became Cardiff's tallest building upon the completion of precast installation in June 2025. The development delivers 272 private rented sector (PRS) apartments, together with ground-floor retail units and amenity spaces on the ground, first and 27th floors. Designed by AHR Architects for Lloyds Living, with Galliford Try Investments acting as client, the scheme comprises three interlocking blocks of 31, 26 and 22 storeys.

Creagh Concrete Products Ltd manufactured and installed the precast concrete façade, hollowcore flooring, internal walls and stairwells for the scheme. But the project's location posed significant logistical challenges, with the adjacent train line and main road, Churchill Way, restricting access and eliminating the possibility of traditional build methods. Limited laydown space meant installation was carried out exclusively via tower crane, with components delivered in a precise sequence.

The development utilised Creagh's offsite crosswall build system, Rapidres®, compromising of a full precast frame, stairs and landings, stair and lift cores, hollowcore flooring and optional components such as balconies. The façades consisted of high performance insulated sandwich panels manufactured offsite, with internal finishes prepared for decoration and incorporating cast-in conduits, electrics and ventilation. The panels were supplied with pre-installed windows and doors, reducing installation time on site. External finishes included brick, etched surfaces and concrete formliners, allowing for variation across the building's elevations.

The use of precast construction allowed the building to be made weather-tight quickly, enabling earlier access for follow on trades to commence sooner, significantly reducing overall build times. For The Rise, the use of insulated precast panels combined the durability and robustness of traditional construction with the speed of modular assembly, delivering Cardiff's tallest building on an accelerated schedule. The build was completed in 36 weeks, almost three months ahead of schedule.

Naylor Concrete Products Ltd

Milthorp Apartments

The conversion of a 1927-built textile mill into nine luxury apartments on the banks of the River Wharfe in Yorkshire required materials that would preserve the character of the original structure while delivering a refined, modern finish. Located in a prominent riverside setting with uninterrupted views over open countryside, the development demanded architectural quality and robust performance, particularly across the external façade.

To meet these requirements, fair faced lintels from Naylor Concrete Ltd, were specified and installed across the exterior of the building. Designed for use in exposed conditions where higher load capacities are required, the prestressed lintels offered structural reliability and an architectural finish without the need for additional surface treatments. Their consistent, smooth appearance helped highlight original features of the mill while enhancing the overall visual quality of the conversion.

Naylor's fair faced lintels are manufactured offsite using steel moulds to achieve a Type C Fair Faced finish. This ensures colour uniformity and surface consistency across the full range of section sizes, which include 14 options in standard widths of 100mm, 140mm, 190mm and 215mm and lengths ranging from 900mm to 4800mm depending on the section.

Offsite production enabled efficient delivery and installation, supporting build programme timelines and reducing site labour requirements. The lintels can be cut to size without compromising performance, offering design flexibility and simplifying handling on site. Their prestressed design optimises load-bearing capacity and offers a 30-minute fire rating in line with the development's fire safety requirements.

The use of architectural precast elements contributed to the project's goal of retaining and enhancing the mill's original aesthetic while delivering long-term durability. The fair faced lintels provided a low-maintenance, high-quality solution that will continue to perform in exposed external conditions, supporting both the structural and visual ambitions of the scheme.

FP McCann Ltd

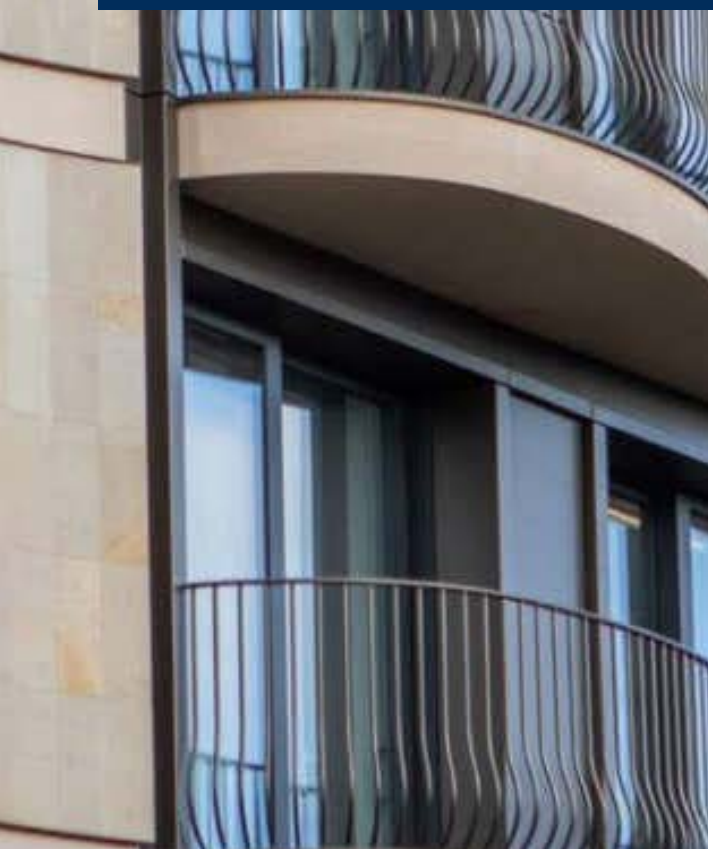
Park Modern Residential Development, London

The Park Modern project, completed in 2024, as part of a £500 million design and build contract for client Fenton Whelan, is situated on the prestigious edge of Hyde Park. Park Modern is a distinctive residential development that redefines luxury living through its seamless blend of architectural innovation and natural inspiration. The nine storey, 57 high end apartments ranging from one to six bedrooms, offers residents an exclusive lifestyle complete with amenities including valet parking, a lounge, a 25 metre pool, gym, spa, cinema and treatment salon.

The architectural design by PLP Architecture takes inspiration from the surrounding parkland, featuring an undulating façade finished in acid etched precast concrete in a sandstone colour. Complemented by natural stone inlaid panels and curved precast balconies, creating a facade that integrates with the landscape while delivering a distinctive architectural expression.

FP McCann's architectural façade division was commissioned to design, manufacture, and install the precast concrete cladding and balcony elements. A total of 192 bespoke precast cladding units were supplied and installed by structural partner RLH Construction Ltd. Of these, 106 panels featured an acid etched sandstone coloured finish with curved profiles and 86 panels incorporated inlaid natural stone slips. Additionally, 96 colour matched curved precast concrete balconies were supplied on a delivery only basis and installed by Modebest, specialists in building frame construction.

> " Complemented by natural stone inlaid panels and curved precast balconies, creating a facade that integrates with the landscape... "



The precast components were manufactured at FP McCann's Littleport facility in Cambridgeshire and delivered on a just in time basis to meet the project schedule. The use of tower cranes on site allowed for efficient panel installation, significantly reducing the need for scaffolding.

This off site manufacturing approach delivered notable efficiencies compared to traditional construction methods. It ensured high product quality and consistency while enabling faster on site installation. The ability to minimise waste and carry out work uninterrupted by weather conditions contributed to maintaining the construction programme. The external precast façade system eliminated the need for scaffolding and wet trades, reducing health and safety risks related to working at height.

Evans Concrete Products by Shay Murtagh

Stratford Waterfront, Queen Elizabeth Olympic Park

Stratford Waterfront forms a central element of East Bank, a landmark £1.1 billion cultural and educational development at Queen Elizabeth Olympic Park. Bringing together the V&A East, Sadler's Wells, BBC and the London College of Fashion, the scheme is designed to become London's next major cultural destination, providing an accessible and vibrant public realm for performance, learning and community activity. The landscape design, led by LDA Design in collaboration with Allies & Morrison, sought to unify the diverse collection of buildings while creating multifunctional outdoor spaces.

Architectural precast concrete played a pivotal role in realising the vision for Stratford Waterfront, offering the flexibility to achieve complex geometries, the durability to withstand intensive public use and the aesthetic quality to complement the contemporary architecture. Evans Concrete Products by Shay Murtagh was first approached by cost consultants Gardiner & Theobald for early-stage design and costing advice, providing expertise that would shape the precast strategy from concept to completion. The team worked closely with LDA Design to progress the design, contributing to early modelling, panelisation of precast units, bespoke concrete mix development and on-site client consultations to finalise specifications.

> " Over 700 bespoke precast units were manufactured, including terraces, stairs, landings, walls, benches, planters and paving. "

Following the appointment of Careys as main contractor in early 2022, Evans undertook full Tekla 3D modelling for all precast elements to ensure constructability and coordination across the complex landscape. Over 700 bespoke precast units were manufactured, including terraces, stairs, landings, walls, benches, planters and paving. Each unit was cast in an OPC/SWF 50–50 concrete blend and finished with medium to heavy acid etching to provide a durable, tactile surface capable of withstanding heavy footfall while maintaining a refined aesthetic.

The tight integration with multiple key areas, including the main seating terraces, Waterfront Square, Stratford Walk and the entrance stairs to Sadler's Wells Theatre and V&A East, demanded meticulous planning. Every element was produced to precise dimensional tolerances, with reinforcement, fixings and lifting points designed to remain discreet, preserving the clean lines and visual integrity of the landscape.

The Stratford Waterfront scheme represents the largest cultural investment in London since the Festival of Britain and South Bank in the 1950s. The public realm plays a central role in unifying diverse buildings, offering inclusive and welcoming spaces for art, performance and community activity.

MPA Precast represents the UK precast concrete manufacturers and members of the supply chain. We develop and disseminate best practice guidance to promote precast concrete in construction.

Web www.mpaprecast.org

LinkedIn @mpaprecast

MPA Precast is a product group of the Mineral Products Association, the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and industrial sand industries.
www.mineralproducts.org

Mineral Products Association