

DATA QUALITY & VISIBILITY

Precast concrete and DfMA plays a huge role in the construction of new prisons, and at HMP Millsike, these have been allied to a cutting-edge workflow and component tracking system that delivers huge efficiencies.



As part of the Ministry of Justice (MoJ) drive to increase speed of delivery while minimising costs, Kier is part of a team using platform design to construct the £400million HMP Millsike, one of four new prisons that form the New Prisons Programme.

Set to provide almost 1,500 additional prison places, the project will use 14,550 precast concrete components and circa 90,000 subcomponents manufactured across nine factories. The pioneering new digital initiative is enabling significant reduction in project costs and time despite the use of multiple components and a complex supply chain. By combining new and existing technologies into a single streamlined process, it is helping to reduce workhours required to check multiple sites, improve quality and minimise risk of errors using a single system – and reduce

time on programme between design, manufacture, logistics, sign-off and installation.

As lead contractor, Kier worked closely with MoJ, PCE and the Ynomia team to develop a bespoke solution for HMP Millsike. The process, supported by software provider Ynomia, provides unprecedented real-time visibility of offsite components, allowing for faster, greener, and more efficient delivery including: time and cost savings, requiring significantly fewer staff to manage component interfaces, reducing carbon footprint by removing multiple factory visits and critically minimising risk through certainty of quality and delivery.

Ynomia uses Bluetooth Low Energy (BLE) tags on components that trigger milestones as they move past beacons. These make direct links to data sources

already in use, such as Viewpoint, that can be accessed via a mobile device. Combining these elements provides a 360 degrees 'live' perspective, tracking components in real time to make decisions quicker and more efficient.

Traditionally the precast process is managed in various non-integrated systems. This can lead to poor visibility and increased potential for human error, resulting in reduced quality and an increase in programme duration. By providing an automated, standardised way to track components from design through to installation, Kier can efficiently monitor quality and progress across multiple factories simultaneously. The 'live' element and integration of new and existing technologies sets it apart from techniques used elsewhere in the industry. The 'digital construction twin', enabled by Ynomia, provides full

visibility of component journeys across multiple locations, where the whole team can access to create a single, datacentric 'source of truth' that can be used throughout the whole offsite supply chain. To make sure Ynomia was implemented successfully up and down the supply chain, a new training programme led by Kier, PCE and the Ynomia teams was introduced.

HMP Millsike, as part of the MoJ's New Prisons Programme, has a high profile with a wide-reaching audience, enabling everyone involved to showcase the benefits of Ynomia across the construction industry. Kier is taking this template and not only applying it to future projects for advanced offsite, MEP and modularised unit management, but also sharing this tool with its supply chain members.

For more information visit:
www.kier.co.uk
www.pceltd.co.uk
www.ynomia.io

Images:

- 01-02. The Ynomia component tracking system is streamlining the understanding of a complex prison project supply chain. Courtesy Kier
03. PCE team on-site at HMP Millsike. Courtesy PCE Ltd



MODEL FOR PRISON CHANGE

HMP Millsike will be the UK's first 'all-electric' prison. The new prison – opening in 2025 – will hold nearly 1,500 prisoners with the site set to be the first prison in the UK to run solely on electricity, with solar panels and heat pump technology meaning it will use 78% less energy than HMP Wormwood Scrubs – a traditional Victorian prison – cutting energy costs to taxpayers by over £1.1million a year. HMP Millsike – situated on land opposite the existing HMP Full Sutton – has been named after Millsike Beck, a local river that runs adjacent to the new jail. The building project is also set to boost jobs in East Yorkshire, with a quarter of those working on the build and 40% of the construction spend falling within 50 miles.

PCE Ltd has been appointed by Kier as its superstructure and façade delivery partner, with the MoJ project having an overall contract value of £400million. This sees PCE's award winning HybridDfMA Secure Prison System being used following the successful completion of HMP Five Wells, at Wellingborough and HMP Fosse Way, Glen Parva.

The plan is for HMP Millsike to operate as zero-carbon in the future, with an all-electric design, solar panels, heat pumps and more efficient lighting systems to reduce energy demand significantly. The new buildings will sit adjacent to the existing HMP Full Sutton and is part of the Government's plan to create thousands of new prison places.

"Through leveraging Hybrid DfMA and an offsite 'kit of parts' philosophy, we do not just embrace modern methods of construction, but revolutionise it," said Simon Harold, Business Development Director at PCE. "This coupled with our shared commitment for continuous improvement with our partners, will help facilitate continued practical progress in a more environmentally friendly, structurally robust and commercially sound approach to design and build."

Liam Cummins, Group Managing Director of Kier Construction, said: "We will deliver this new prison as a cutting-edge facility, built on engineering excellence that we have utilised on other projects, and using innovative sustainable methods which will achieve net zero in operation. Alongside this, we'll create hundreds of jobs throughout the lifecycle of the project, supporting local people and the supply chain, as well as providing opportunities for prisoners on release."

The new site will set a gold-standard for energy efficiency – set to use 68% less energy from the national grid than even the newly-built HMP Five Wells in Wellingborough and draw 18 GWh less energy from the electricity and gas networks every year than HMP Belmarsh – which is equivalent to powering 1,200 homes for a year.