

Taking the floor

A new, low-rise residential development in Newington, Sydney, within a stone's throw of the Sydney Olympic Park facilities, is a showcase for sustainable post-20th century lifestyle development.

EKO by Crown is a multi-unit residential development comprising five blocks of either four or five storeys, with two levels of basement parking, a 35-metre infinity-edge swimming pool, gymnasium, residents' lounge complete with surround sound theatre and two music rooms.

Designed by architects Joshua International to offer residents a taste of 'resort style living', at first glance its luxurious fittings and upscale appearance do not necessarily shout 'environmental performance'.

However, in keeping with the ethos of the entire suburb of Newington, which was first developed for the Sydney Olympics, and in line with its strong green commitment, the complex has been designed and built with the principles of sustainability in mind.

This includes its fundamental infrastructure - and in particular the flooring, which is comprised almost entirely of a number of different precast applications supplied by Ultrafloor - totaling some 41,000 square metres of suspended concrete flooring or around 46 kilometres of precast floor beams and flat slabs.

As is so often the case, planning at the earliest stages helped deliver the optimum result.

"Over many years we have worked extensively with the client, Crown, and the architect and engineer are always mindful of designing the building to suit the use of floor and walling systems, as they see this as a significant benefit," explains Michael Dunne, Ultrafloor's Business Development Engineer.

Project Owner
Crown International

Architect and Project
Superintendent
Joshua International

Service Engineer
VDM Consulting

Precast Manufacturer
Ultrafloor (aust)

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“Our in-house design team comes in very early in the project so that, working together, we can help eliminate load transfers down the building and keep support layouts as typical as possible to aid in repetition.”

In this case, a range of precast flooring applications was used to suit different parts of the development, including pre-stressed beams, infill sheets, flat slabs and precast edge beams. In addition, selected small areas were laid using conventional formwork.

“The flat slabs and precast edge beams were new additions to what we usually supply Crown and were very well received as they greatly reduced construction times,” says Michael. “In fact, the floors and walls were on a 14-day cycle per level, with simultaneous construction of two blocks. The average area installed in this cycle was typically 2,000 to 3,000 square metres.”

Of particular note with this project were the large spans, typically between 8.9m and 10.5m. These required use of the larger 200mm and 250mm deep beams, which provide the performance without increasing the insitu concrete depth. The deeper ribbed slabs are both economical and more structurally efficient, only using concrete exactly where it’s needed.

“As well as the speed of construction, the significant savings in both concrete and reinforcement materials of up to 50% and the enhanced acoustic performance provided by the ribbed soffit, there are great outcomes available in terms of sustainability. The dematerialisation is significant, there is less site labour, less traffic movement, minimal timber formwork requirement and less waste generally,” says Michael.

It is all perfectly in keeping with Newington’s other characteristics, having been built around sustainable energy generation using solar power, water capture techniques and water recycling and featuring extensive public transport networks, cycleways and paths to reduce emissions production.