

CASE STUDY

Concrete Repairs and Deck Waterproofing

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PROJECT

Kingsmead Shopping Centre
Multi-Storey Car Park

STRUCTURE

In-Situ reinforced concrete
frame with coffered slabs

CLIENT

Key Property Investments
(No1) Ltd

CONTRACT



The multi-storey car park at the Meads was constructed in 1960. It is of concrete frame construction with coffered slabs spanning onto spine beams, supported by concrete columns. The car park was refurbished in 2012 – 13 but these works failed to prevent water seepage to the lower decks.

The multi-storey car park is part of the Kingsmead Shopping Centre which consists of a five-floor office block situated in a Shopping Mall. There is a petrol station to the south, McDonalds and car parking to the north and the shopping centre to the west.

The car park was suffering significant leakage from the soffit of the top deck; upper and lower deck of level 5, leaking through to the lower deck 4 below. The Asphalt from the previous refurbishment back in 2012 – 13 had started to crack and de-bond in areas with waterproofing membrane peeling. This allowed water ingress to the concrete surface and with defective day joints in the asphalt; was providing a pathway for water to penetrate through to the lower deck.

An investigation by Sandberg revealed that the refurbishment in 2012-13 which consisted of a RESDEV Deckmaster R waterproofing system was insufficient as cracks in the soffits and deck had formed and was providing a pathway for seepage.

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Before



After

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Cracks



De-bonding



Leaking Joints

The investigation identified that there was a failure to lap the joints as the cracks were long and wide linear cracks and were always associated with joints in the mastic asphalt substrate. The width of the cracks were far in excess of the bridging properties of the RESDEV Deckmaster system and therefore failed to remedy the problems after refurbishment.

The top deck was also experiencing ponding issues of standing water which required remedial works for a drainage channel to be installed to solve the problem.

Preparation of the deck was required and so the top deck was planed to remove the existing resin coating and also 5mm of the asphalt, this included a walkway and undercover stairwell to lift lobby.

The defective day joints were removed with the installation of new joints which were reinforced with fleece along with any identified cracks, providing a bridging capability of up to 0.5mm crack width.

Fleece reinforced banding was used on outlets, drainage outlets and gullies.

The total area of deck coverage was 3555m² and once planed and reinforced was coated with the decking system Triflex Propark HD a fully reinforced car park deck system to existing asphalt substrate which gives a 10-year warranty.



Cracks Reinforced



Water Tight



After

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