

A nighttime photograph of the Melbourne skyline. The image shows several illuminated skyscrapers, including the Eureka Tower on the left and the 100 Collins Street tower in the center. The city lights are reflected in the water of the Yarra River in the foreground. A semi-transparent dark blue banner is overlaid across the middle of the image, containing the title text.

Permeable paving – what's the concrete evidence?

Date: 6 June 2018
Presenter: Candace Jordan and Dale Browne

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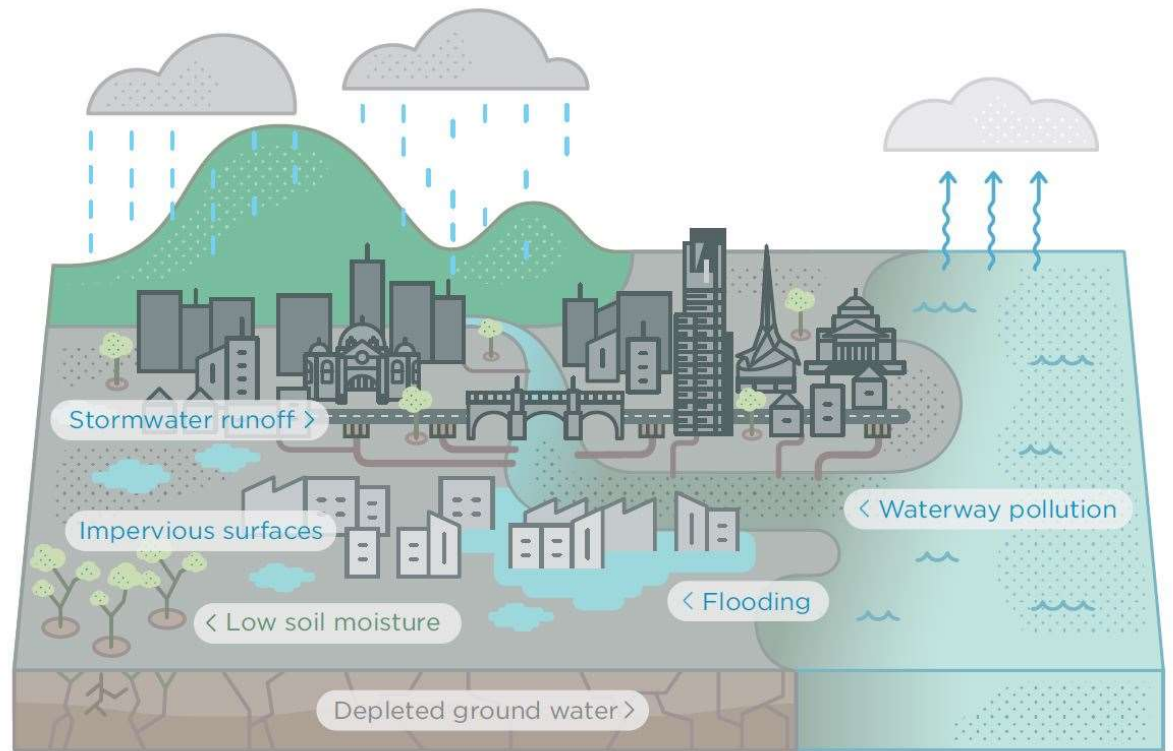
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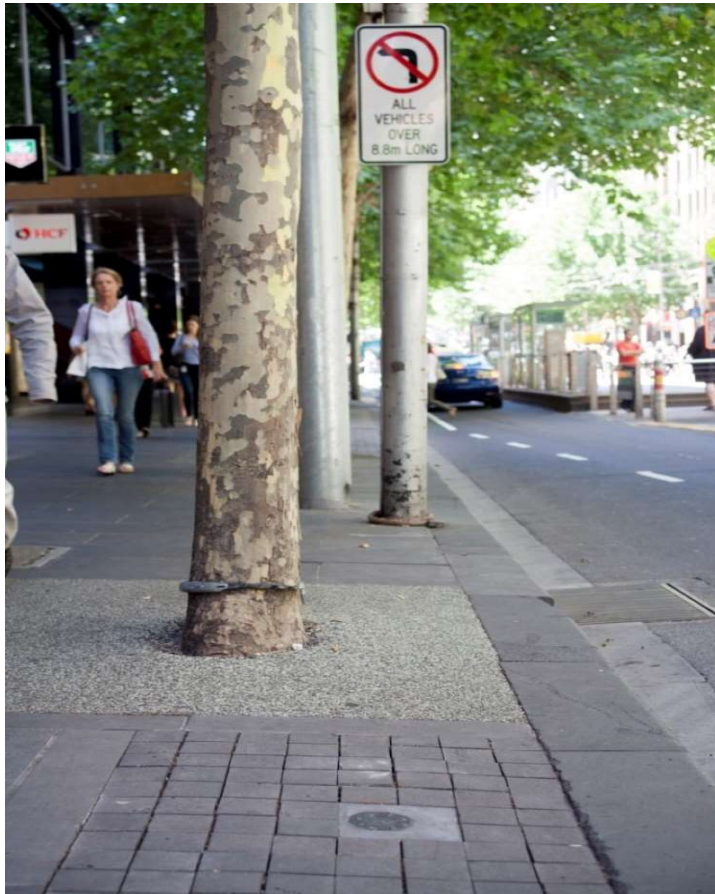
Further testing and other sites



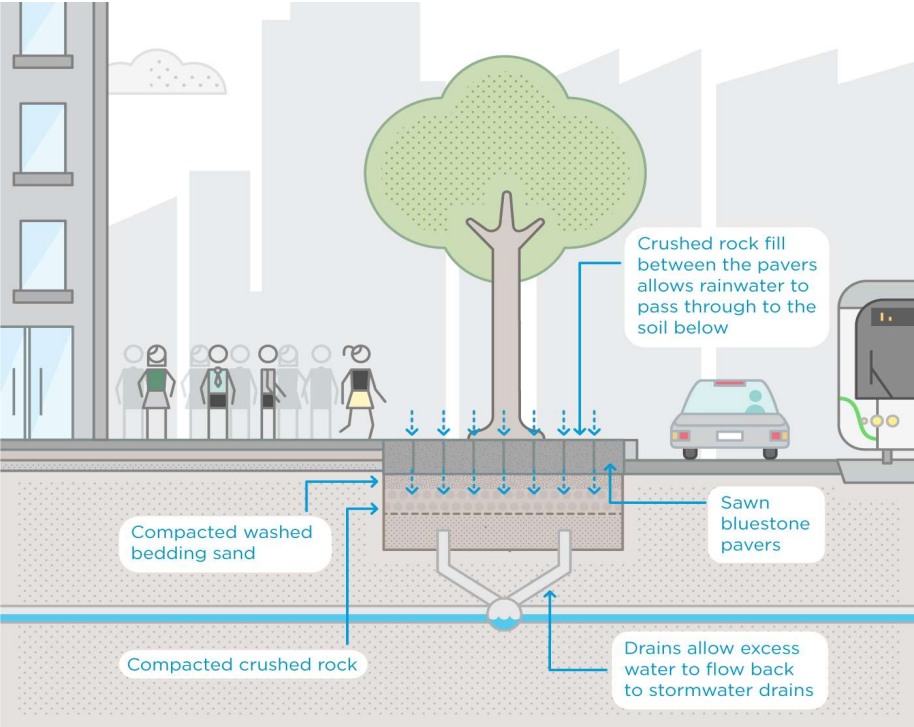
The issue





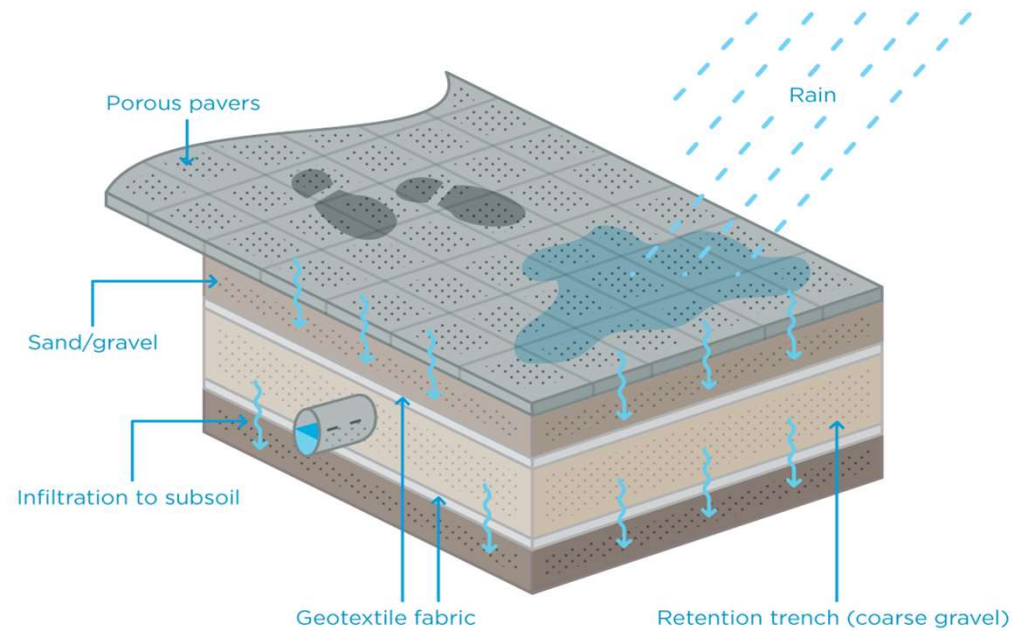


Collins Street





Eades Place

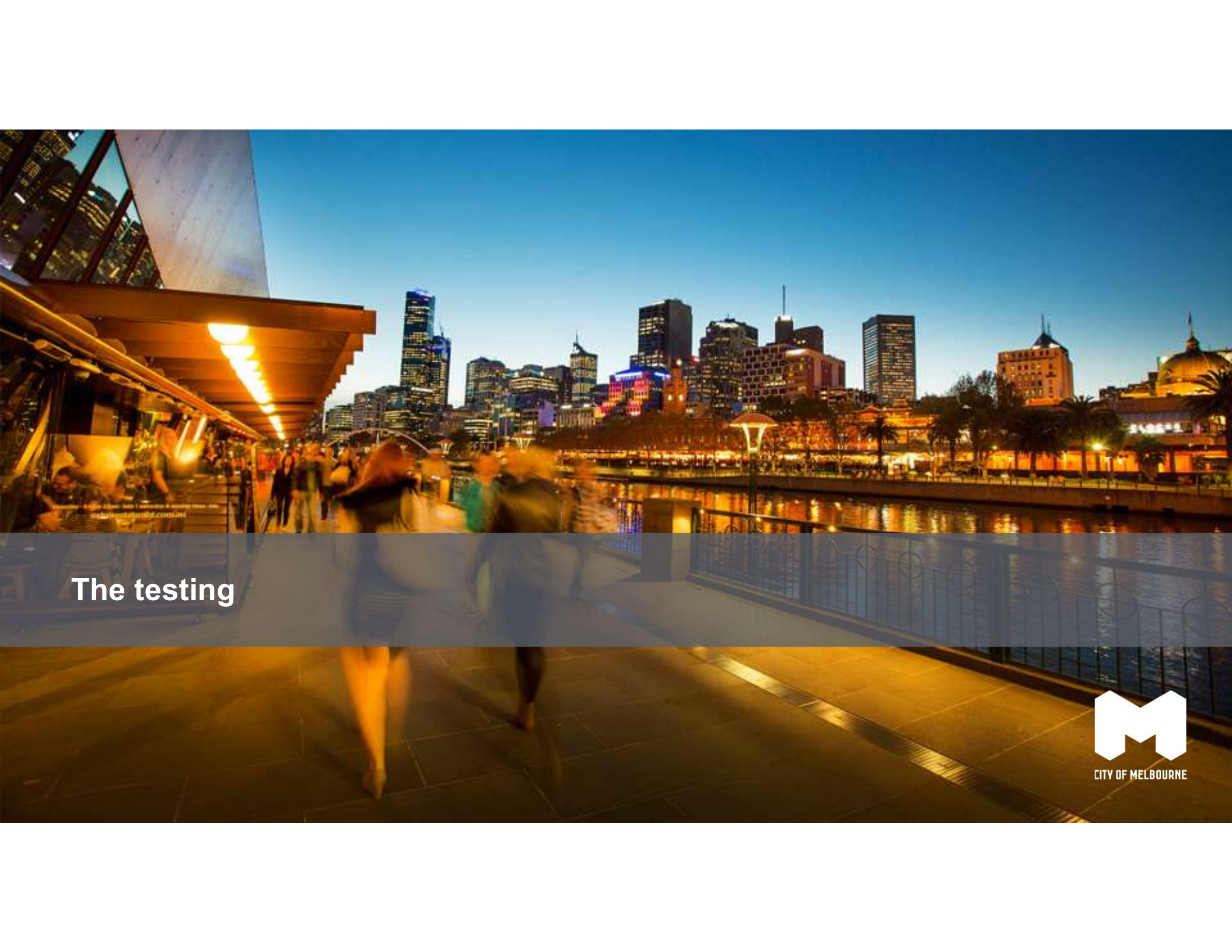


What is the issue?

Section 1

Effectiveness unknown



A nighttime photograph of the Melbourne skyline as seen from a waterfront promenade. The foreground shows a paved walkway with a metal railing overlooking the water. In the background, numerous skyscrapers are illuminated against a dark blue sky. The city lights are reflected in the water. A semi-transparent dark blue banner is overlaid across the middle of the image.

The testing

Project Scope

The project scope was to:

- assess four existing permeable pavement installations to determine whether they are functioning effectively and whether maintenance is required.
- confirm whether certain maintenance activities are effective in restoring functional performance.

Modular paving - Collins St, Melbourne



Permeable asphalt - Eades Place, West Melbourne

Permeable asphalt - Harris St, North Melbourne

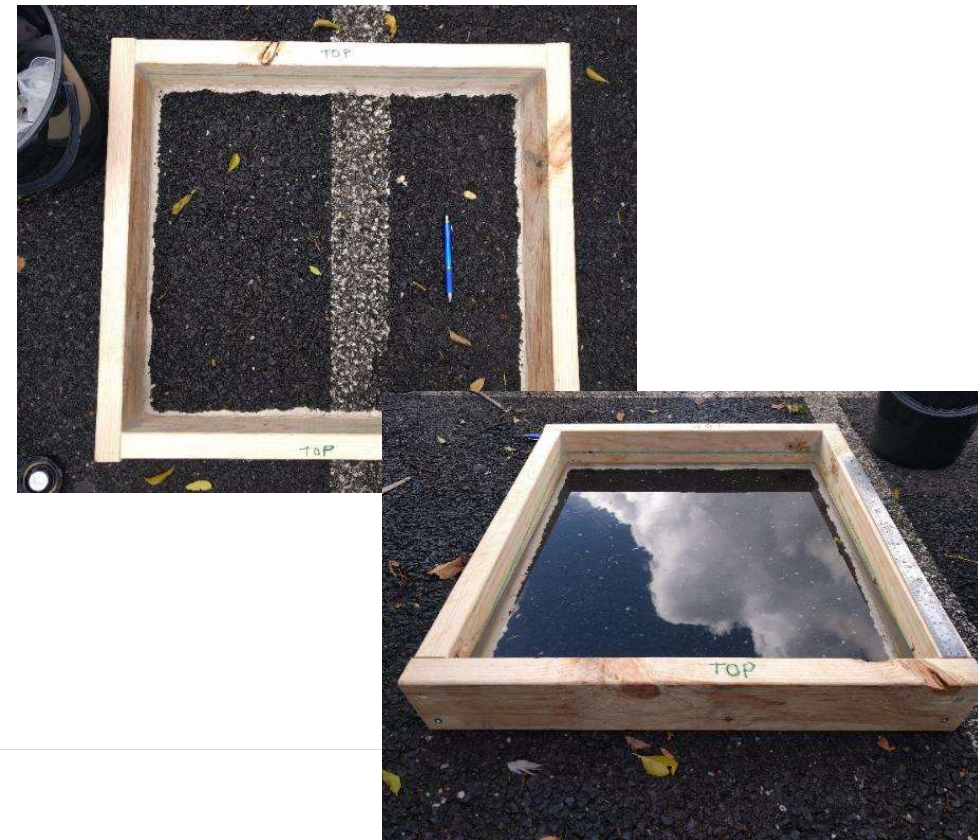


Permeable asphalt - Abbotsford St, North Melbourne

Standard test method: ASTM C 1701/C 1701M – 09)



Simple Infiltration Test (SIT) (Winston, 2016)







Site	Pre-clean Infiltration rate (mm/hr)
Collins St	525
Eades Place	200
Harris St	0.01
Abbotsford St	0.01


200-500 is ok, still infiltrates most storms
0.01 is no good





Visually effective, but does it improve infiltration?

Permeable Pavement System	Pre-clean Infiltration rate (mm/hr)	Post-clean Infiltration rate (mm/hr)
Collins St	525	16,200
Eades Place	200	5,700
Harris St	0.01	5,600
Abbotsford St	0.01	2,500



Yes! A clear benefit of cleaning was demonstrated

Systems are clogged

Some are not functioning at all

Some are probably at 50-70% effectiveness

Cleaning is required

Cleaning is effective

Cleaning will improve functionality

Post cleaning, expect infiltration rates will drop exponentially. Important to recognize that initial rates are not expected or needed to be sustained.

Objective to keep infiltration rates in the hundreds of mm/hour or higher or above 10% of initial rates

Further investigations needed to determine frequency of cleaning needed and investigate alternate methods

Learnings

The City of Melbourne can continue installing permeable pavements with confidence – but must be committed to cleaning them at regular intervals (maybe 2-5 years)



The next steps

Next phase – understanding the appropriate cleaning schedule to maintain effectiveness:

- Developing maintenance guidelines, including what it costs to maintain the asset
- Build capacity within council and our contractors
- Provide evidence for further installation of these systems

Trial and test other permeable paving types:

- University Square ‘living lab’





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