

# Permeable paving – what's the concrete evidence?

Date: 6 June 2018  
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## Table of contents

### The issue

City of Melbourne Context

What we've done to date

What is the issue?

### The testing

How did we test it

What were the results

What do the results tell us

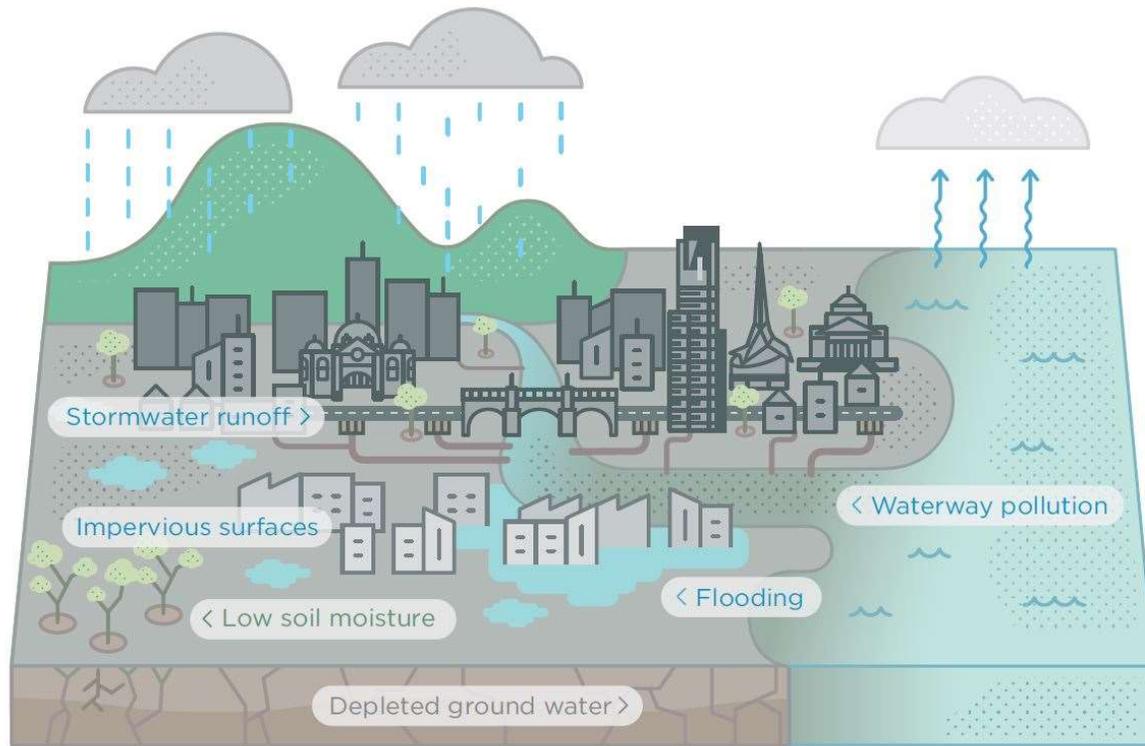
### The next steps

Further testing and other sites

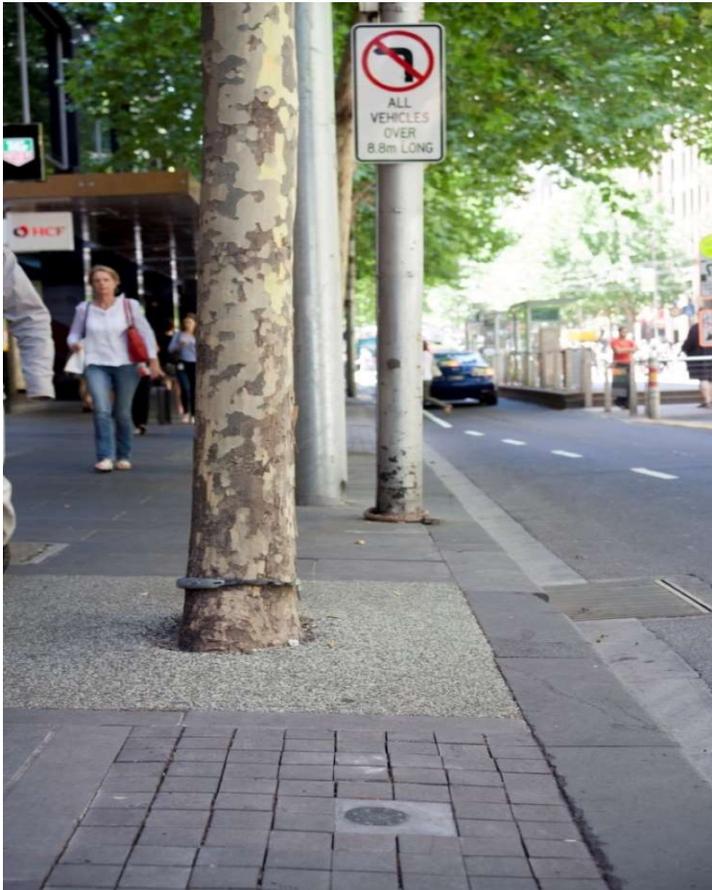


The image is a composite of two photographs. The top half shows a city skyline with several skyscrapers under a blue sky with light clouds. The bottom half shows a park area with a paved walkway, palm trees, and a grassy hillside. Two people are walking on the path in the lower left. A semi-transparent dark grey bar is overlaid across the middle of the image, containing the text 'The issue'.

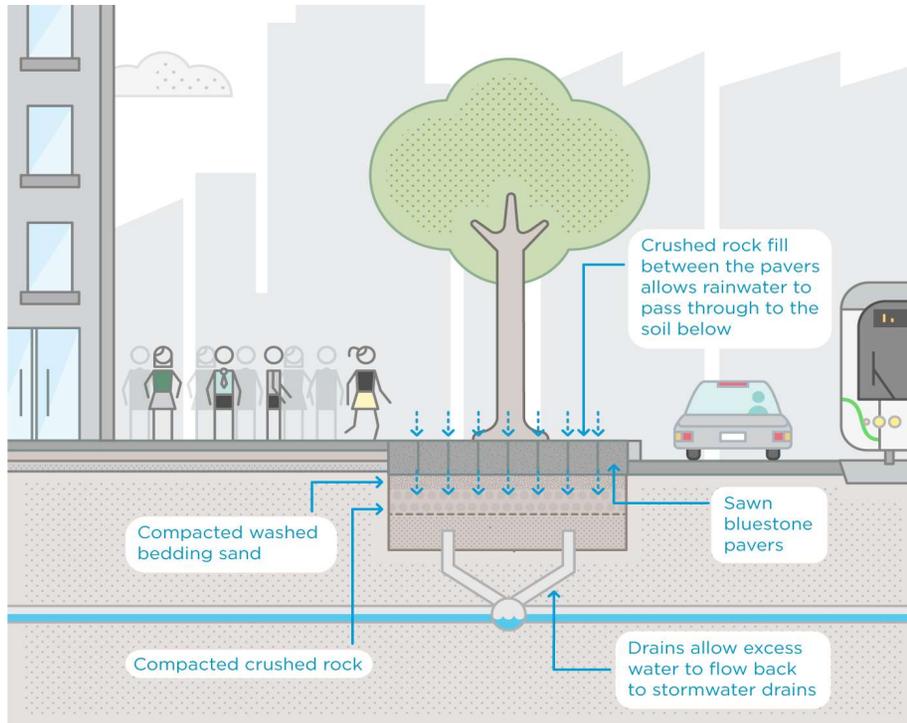
## The issue





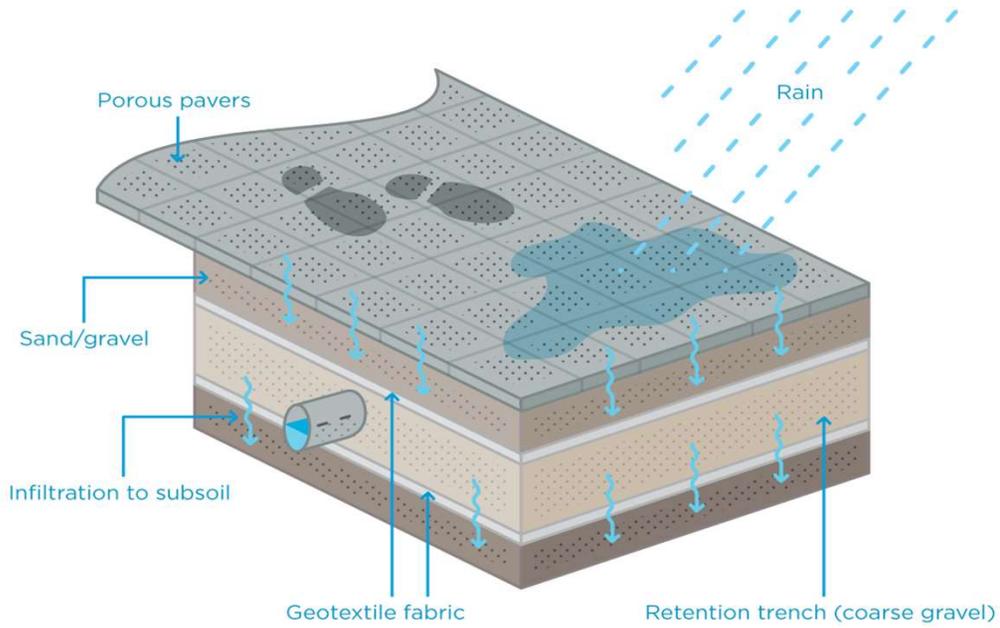


**Collins Street**

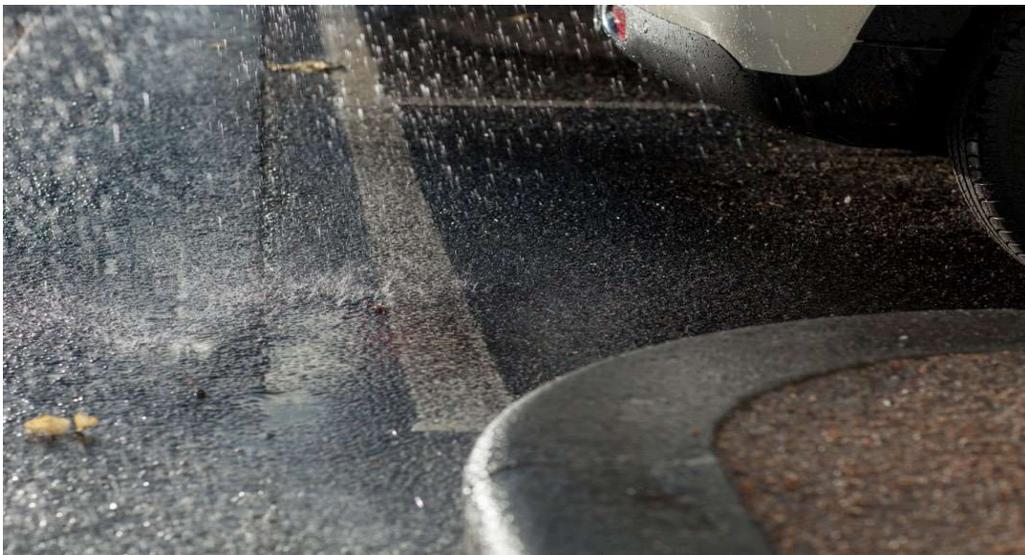




Eades Place



Effectiveness unknown





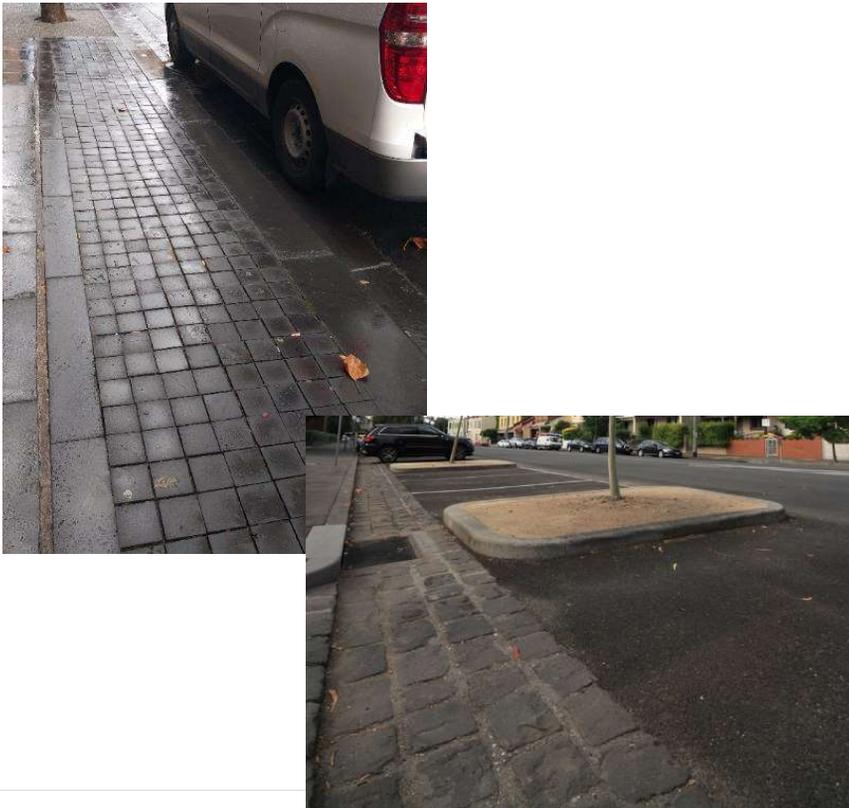
The testing

## 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 - Harris St, North Melbourne



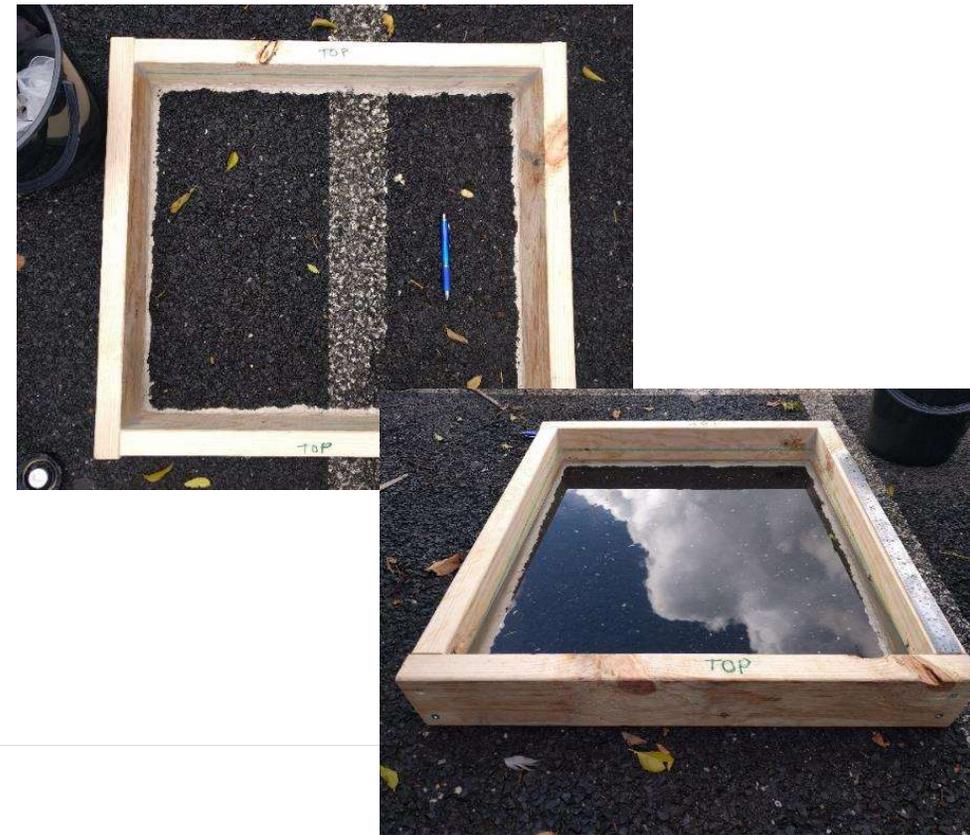
Permeable asphalt - Eades Place, West Melbourne

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

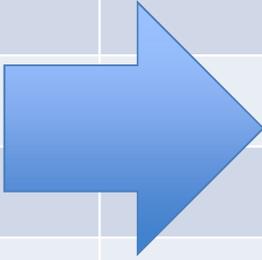
**200-500 is ok, still infiltrates most storms**  
**0.01 is no good**





**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



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**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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