



AquaPave Permeable Concrete

Continuous pour permeable
concrete product guide

Overview

AquaPave Permeable Concrete is a high porosity specialist concrete with an average strength of 21MPa. This product allows water to pass directly through it, which filters and bio-remediates pollutants, preventing the contamination of surrounding ground and surface waters. This feature reduces the need for separate stormwater retention pits.

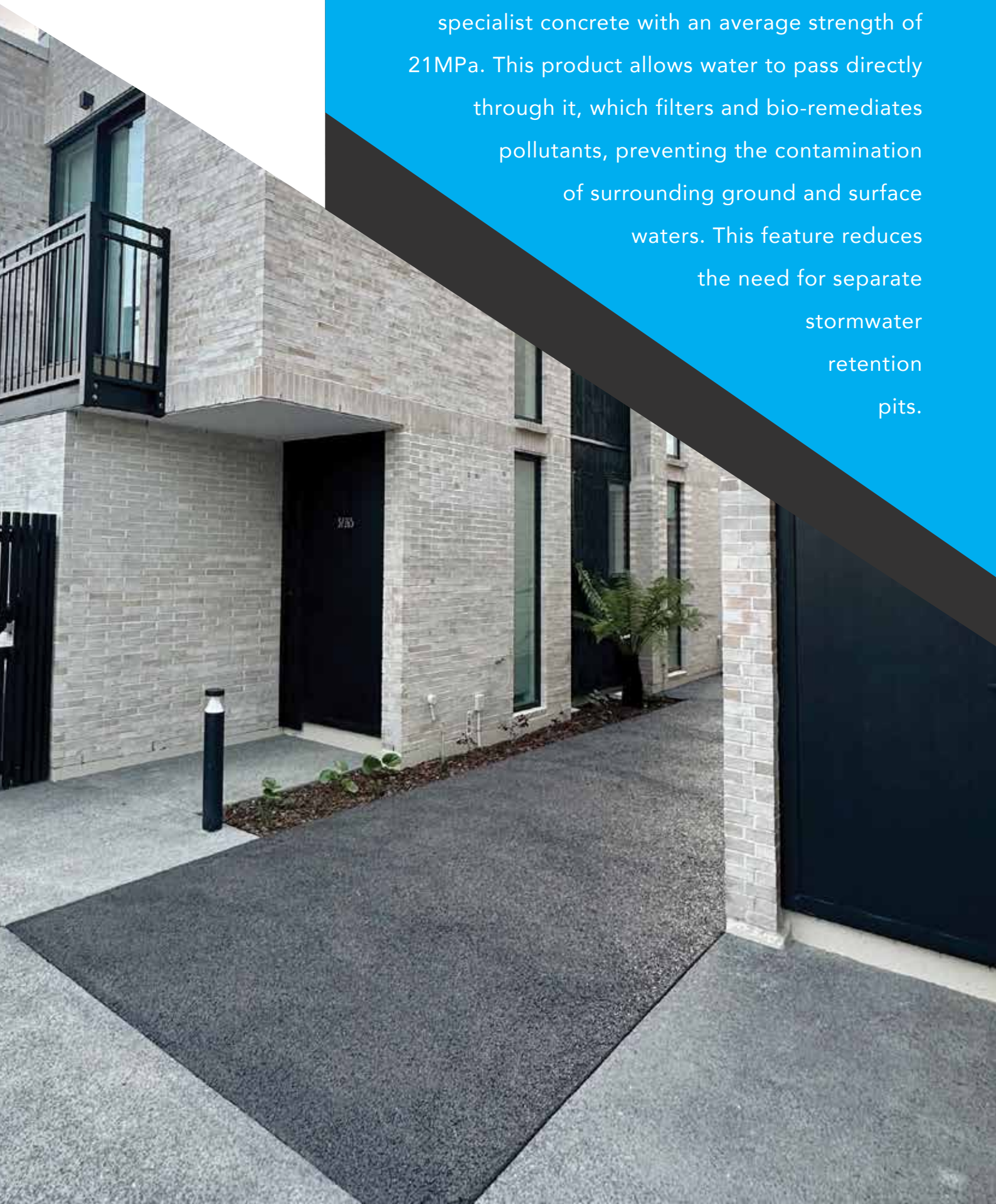


Table of Contents

Overview	2
Table of Contents	3
Applications	4
Footpath & Cycleway Design	5
Driveway Design	6
Light Duty Road Design	7
Car Park Design	7
Construction Materials	8
Indicative Basecourse Thickness	9
Installation Steps	10
General Maintenance	11
Frequently Asked Questions	12



Applications

Common applications for AquaPave include footpaths, driveways, car parks, cycleways, tree protection zones, and patios.



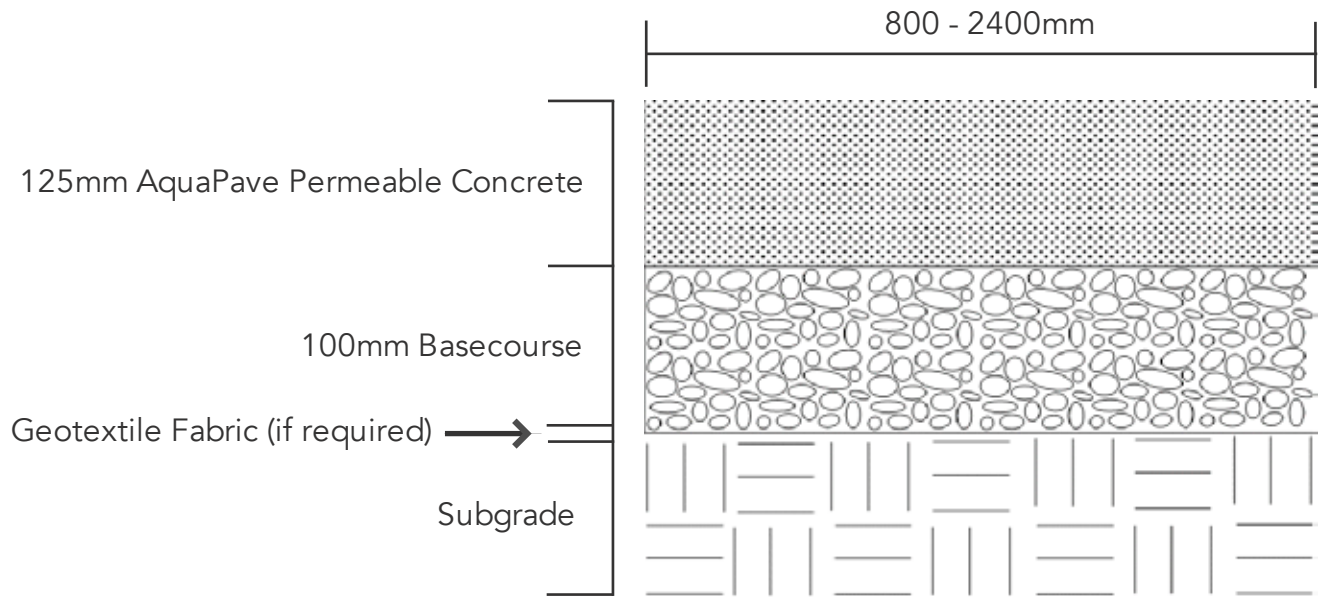
Surface Course

The top surface or wearing course is a layer of AquaPave.

Basecourse

The basecourse, which is the structural drainage layer directly below the surface course, should be a crushed and clean-washed drainage aggregate. This layer provides temporary storage of water within its 40% void content, and it allows the natural filtration of rainwater back into the subgrade.

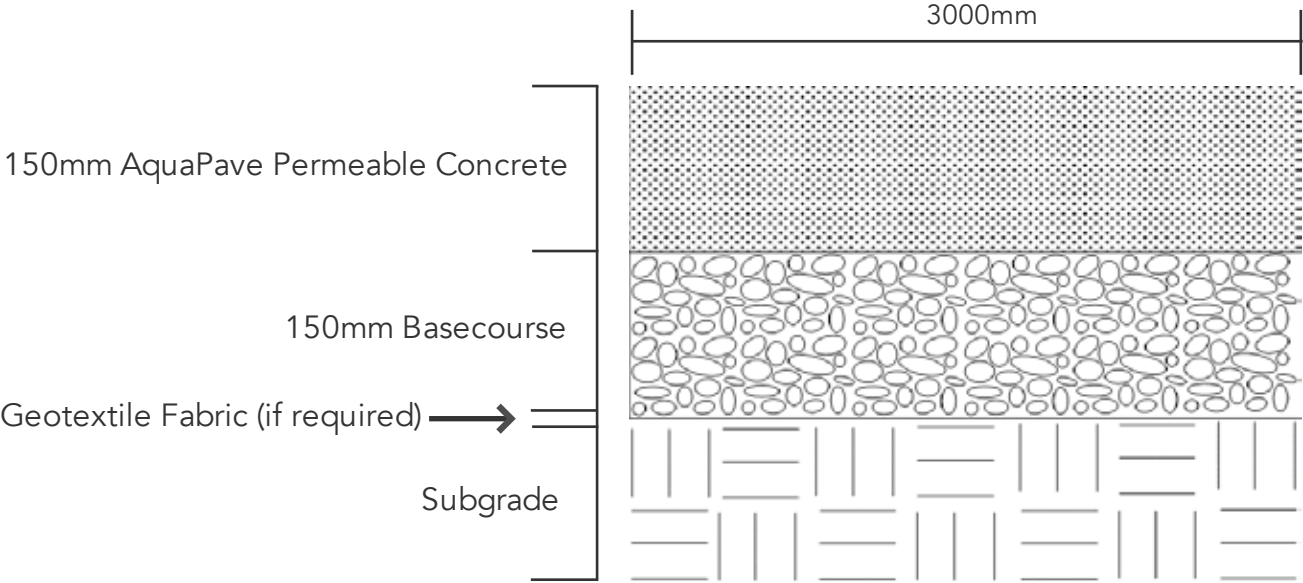
Footpath & Cycleway (Typical Design)



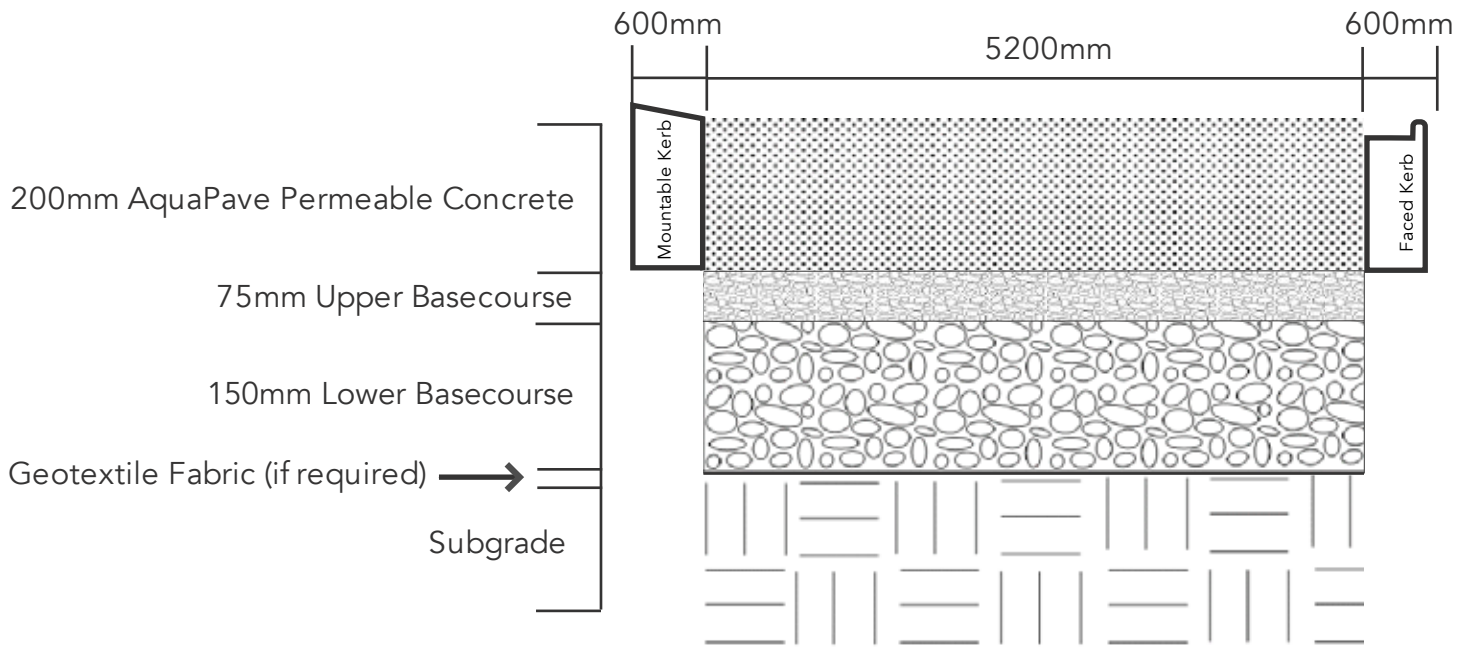
Geotextile Fabric

The filter cloth should be non-woven polypropylene fabric, which allows water to pass through it while preventing sandy fines or clay from migrating from the subgrade up into the basecourse. Geotextile is recommended for areas prone to liquefaction.

Driveway (Typical Design)

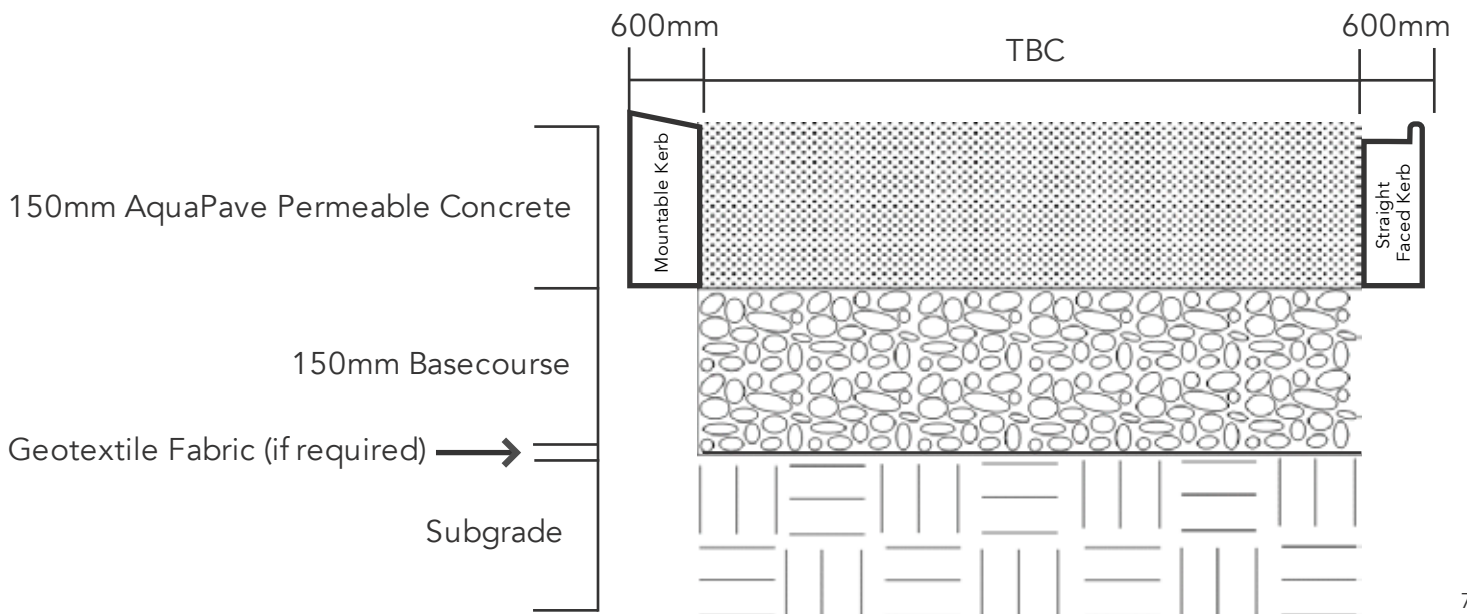


Light Duty Road (Typical Design)



It is essential in the design of a public street that consultation with a qualified civil engineer takes place, with emphasis placed on the moisture sensitivity of the subgrade.

Car Park (Typical Design)



Construction Materials

The required basecourse thickness will need to be calculated based on a combination of figures from Table 1 and recommendations from your geotechnical engineer. On site subgrade CBR Can be determined by Scala Penetrometer Test as per NZS 4402:1986. Specific design is required for any subgrade below CBR 5.



Table 1 - Indicative Basecourse Thickness

Loading Condition	Subgrade Classification (Soaked)		
	Weak CBR 5	Medium CBR 10	Strong CBR >15
Residential Pathway Patio, Footpath Geotextile Filter Cloth	100mm Class C	100mm Class B	Optional, if Basecourse use Class A
Residential Light Duty Single Unit Driveway Geotextile Filter Cloth	150mm Class D	125mm Class C	Optional, if Basecourse use Class B
Residential Medium Duty Multi Unit Driveway Geotextile Filter Cloth	150mm Class D	150mm Class D	125mm Class C
Public Pathway Footpath, Cycleway Geotextile Filter Cloth	100mm Class D	100mm Class C	100mm Class B
Public Medium Duty Car Park Geotextile Filter Cloth	150mm Class D	150mm Class D	150mm Class C
Public Light Duty Road Geotextile Filter Cloth	225mm Class D	225mm Class C	225mm Class B

Compaction of the soil subgrade should be to a minimum of 5% CBR for pedestrian areas and residential driveways, and a minimum of 10% CBR for public vehicular areas. Stabilisation of the soil and/or base material may be necessary with weak or saturated soils, or when designing for high traffic loads. Compaction will reduce the permeability of soils. These conditions may require the use of drains in open graded bases. Where necessary, it is acceptable to apply bedding sand to the subgrade to even out the surface before applying the geotextile. A sloping site will have less storage capacity than a level site, because water will accumulate at the lowest point. This can be overcome by encouraging cross-flow through the installation of weirs or concentrating storage capacity at the lowest point of the design. Alternatively, a drainage coil can be used to disperse water to another drainage system.

Installation Steps

Prepare Site

Mark or peg out where AquaPave is to be placed, ensuring the relevant erosion and sediment control measures are in place. Excavate to required depth.

Fix Geotextile

Lay the geotextile over the subgrade.

Place Basecourse

Place the aggregate basecourse material to the level and depth specified.

Install AquaPave

Pour AquaPave to the level and depth specified.

Apply Curing Compound

Apply curing compound to surface to prevent ravelling.

Restore Site

Remove construction materials and reinstate surrounding areas.

Remove sediment and erosion controls, and re-grass disturbed areas.



General Maintenance

Driveways, Footpaths & Patios

1. Sweep the surface Regularly.
2. In locations where leaves and garden debris fall on the pavement, regular removal with a leaf blower is recommended. This stops organic sediment decomposing on the surface.
3. Annually, clean the surface with a rotary head cleaner or hose.



Car Parks

1. Annually, general inspection is recommended.
2. Every two years, test the permeability of the system. If infiltration rates drop below 300mm per hour, then proceed with corrective maintenance via 2,500-3,500 psi pressure washer with a 25 degree nozzle and/or vacuum sweeper truck.

*For more detailed guidelines, please request a copy of the AquaPave Maintenance Manual.

Frequently Asked Questions

What is the expected lifespan of permeable concrete?

The same as traditional concrete, about 30 to 50 years.

What is the permeability of AquaPave, and how is this tested?

The simple test "ASTM C1701 Standard Test Method for Infiltration Rate of In Place Pervious Concrete" can be conducted on-site to confirm permeability. The average infiltration rate of AquaPave is 20,000mm per hour. If AquaPave clogs to 99%, this reduces to 200mm per hour, which is still more than the most extreme rainfall on record in New Zealand (134mm in one hour, Hokitika Catchment, 2300 hours on 8 January 2004).

How long does it take the system to clog?

Each location presents different sediment loading characteristics. Studies show a 9 year average to reach in-service infiltration rates. Please refer to the AquaPave Maintenance Manual for our recommendations.

Will permeable concrete clog?

Most high quality installations will only need minimal maintenance via sweeping or leaf blower equipment to keep the surface free of debris and clogs. If the surface should ever clog, cleaning with a power washer and/or a vacuum truck will restore the original infiltration rate. One exception is asphalt fines, which will permanently clog the permeable concrete, unless a buffer is installed between the asphalt and AquaPave.

What is the void content of permeable concrete?

The void content of AquaPave is between 19 - 21% in order to maximise the balance between permeability and strength.

Is there a certification for permeable concrete installers?

Yes, the National Ready Mix Concrete Association (NRMCA) is the certifying body. AquaPave is the only certified permeable concrete company in New Zealand.

AquaPave Permeable Concrete Limited

022 425 4906 • www.aquapave.co.nz • [@aquapavenz](https://www.instagram.com/aquapavenz)

