

PERMEABLE PAVING



# ADBRI MASONRY

Adbri Masonry is Australia's leading masonry manufacturer supplying quality concrete bricks, Besser® blocks, pavers, retaining walls, erosion control products and architectural masonry solutions throughout New South Wales, Queensland, Victoria, South Australia and Tasmania. Adbri Masonry is a wholly owned subsidiary of Adelaide Brighton Limited, a leading integrated construction materials and lime producing group of companies and a member of the S&P/ASX 100 Index.

Adbri Masonry first produced concrete Besser® blocks in 1957 and since then has traded as many household brand names including Besser®, Rocla Pavers and Masonry, Pioneer Building Products, Hanson Building Products Pty Ltd and C&M Brick before rebranding as Adbri Masonry in 2009.

In addition to supplying a full collection of quality concrete building and landscaping products, there are a range of valuable benefits to working with Adbri Masonry including:

- ✓ Access to our Contracting Services Team (in-house design, supply, installation and certification for commercial projects)
- ✓ Confidence that all product lines are tested for quality in our N.A.T.A accredited laboratory
- ✓ Our commitment to environmental sustainability and environmental building products
- ✓ Support from experienced in-house engineers who can provide technical advice and design solutions for civil, commercial and industrial projects
- ✓ The benefit of dealing with knowledgeable local sales teams
- ✓ The ability to create customised product and colour solutions specific to individual projects *(conditions apply)*

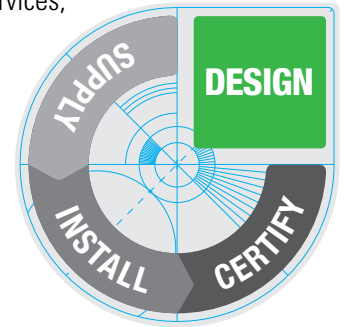


# CONTRACTING SERVICES | DESIGN & CONSTRUCT

Adbri Masonry's Contracting Services Division has been providing building solutions for over 20 years and offer a range of construction and project management services, including a complete design, supply, install and certification package for segmental retaining walls, permeable and standard pavements, erosion control and wall cladding products.

Operating on the East Coast, the Adbri Masonry team can provide the following civil contracting services;

- ✓ The supply and installation of concrete masonry products
- ✓ Preliminary design and technical assistance
- ✓ Preliminary costings
- ✓ Certified design
- ✓ Ongoing project management
- ✓ Access to machine lay technology



*By utilising these services, the quality and structural adequacy of the finished project can be professionally managed and officially certified on your behalf.*

QLD Building Licence Number - 61929

Available only for commercial or industrial projects



Unipave® | Charcoal

# INTRODUCTION TO PERMEABLE PAVING

Permeable paving is already well established, and government regulated, in many countries where development threatens already over-stretched drainage and river systems. As more land is developed and covered with impervious surfaces, our stormwater and river systems are under increasing pressure to manage the high volumes of surface run-off which enters them. This increases the potential for downstream flooding and erosion.

As an alternative to conventional paving (which concentrates water and pollutants within the existing drainage systems) the Adbri Masonry permeable paving series encourages water to infiltrate through the pavement surface and substructure to the ground below, easing the pressure on these already overburdened systems.

## Benefits of Permeable Paving

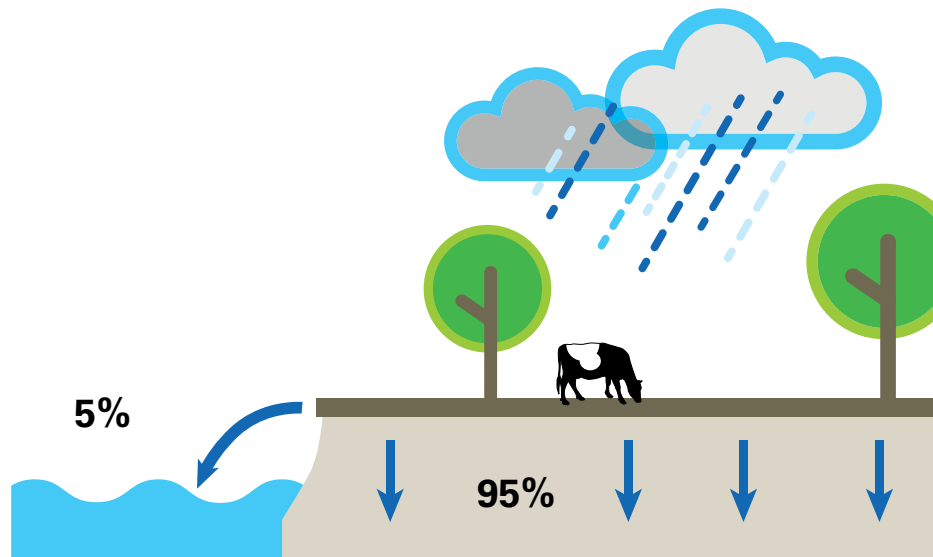
- > Reduces surface run-off
- > Reduces the risk of localised flooding and downstream flooding
- > Reduces likelihood of downstream erosion
- > Recharges groundwater tables
- > Aesthetic appearance
- > Traps pollutants and prevents them from being carried into waterways
- > Facilitates biological decomposition of trapped pollutants
- > Can be used to replace or reduce size of detention / retention basins
- > Allows water and air to access to roots of vegetation
- > Water and air circulation can assist in reducing heat island effects
- > Can be trafficked immediately following installation
- > Paving units are pre-cured preventing shrinkage and removing the need for control joints

## Acknowledgements

Adbri Masonry would like to acknowledge Interpave and CIRIA for their comprehensive guides on the installation and design of permeable pavements. Information from the SUDS manual (CIRIA 2007) has been replicated in this document.

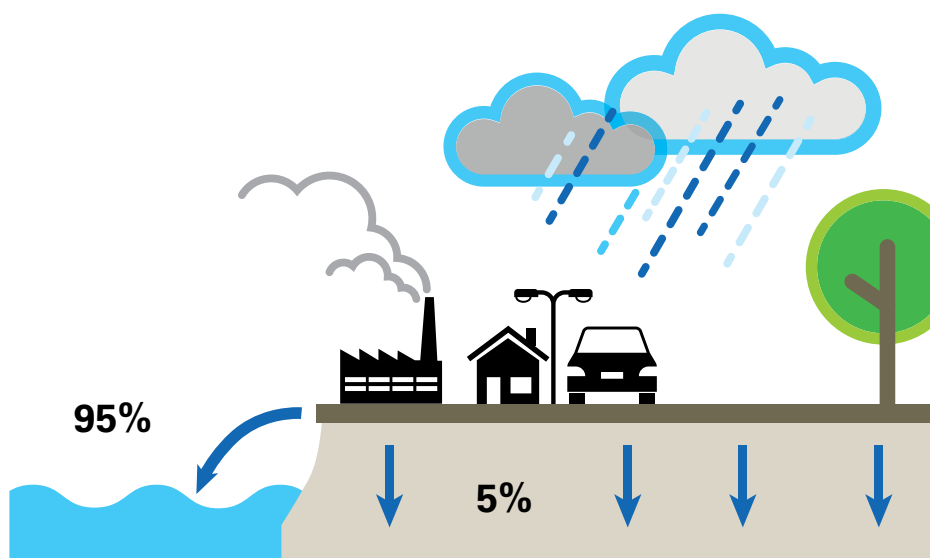
In natural environments, the majority of stormwater is absorbed back into the ground, recharging the local groundwater tables, with very little surface run-off entering the local waterways.

## Countryside



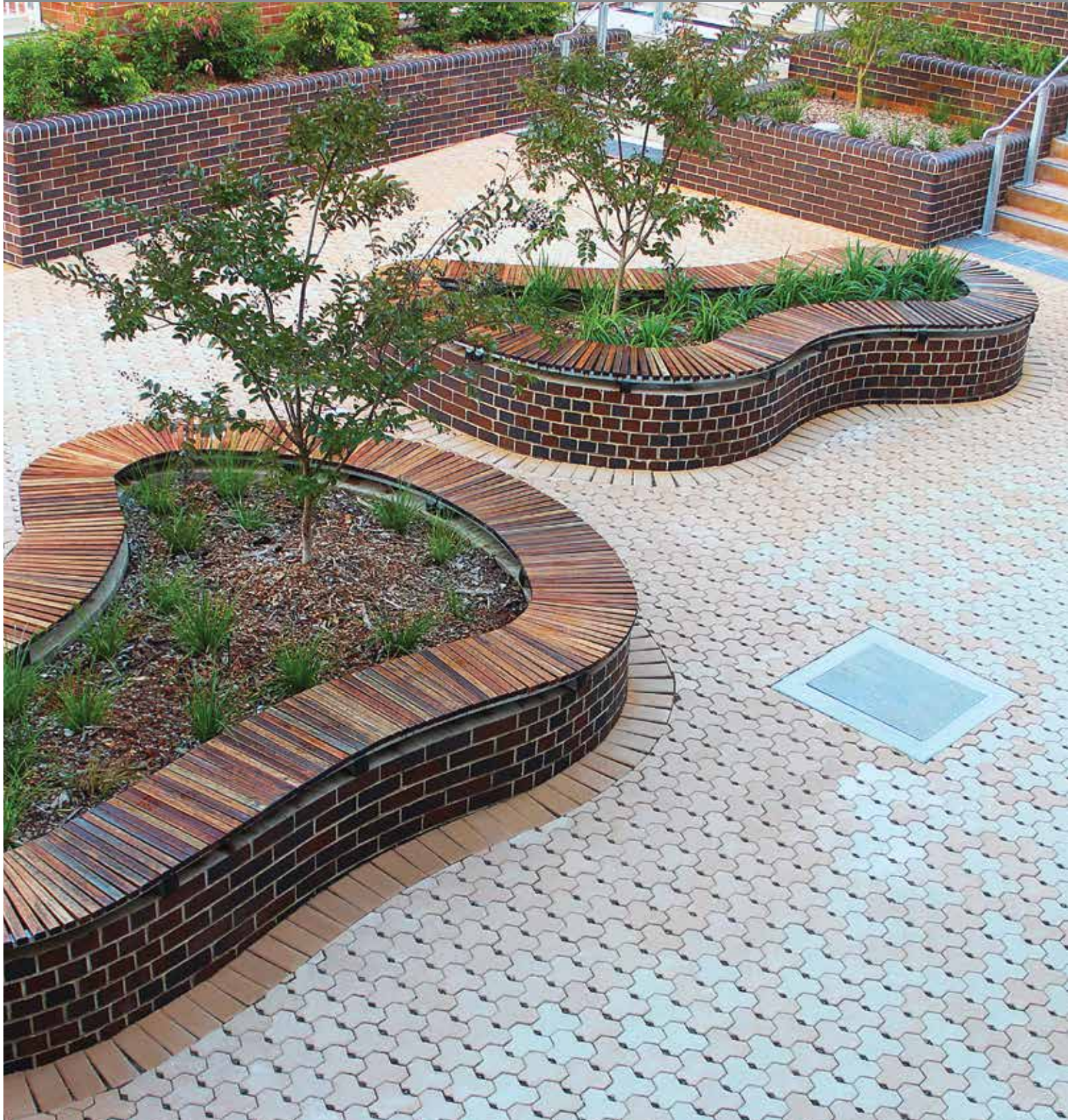
In urban areas the reverse is true. Large areas of impermeable surface result in the majority of stormwater being diverted to the local waterways and very little being absorbed into the ground.

## Towns & Cities



Permeable paving offers an opportunity to restore this balance.





**PROJECT** - Brigidine College - St Ives *New South Wales*

**DETAILS** - Over 1100m<sup>2</sup> of Adbri Masonry's Ecotrihex® permeable pavers, in contrasting colour tones, were installed.

The non directional and flowing aesthetic of these interlocking pavers perfectly compliments the feature garden planter boxes that double as bench seating throughout the area.



Ecotrihex® pavers are industrial strength interlocking pavers that lend themselves to both high pedestrian and vehicular traffic areas. These versatile pavers have the ability to be utilised to create a dynamic pavement solution.

When used in a permeable paving system, Ecotrihex® pavers are an ideal permeable pavement solution, allowing water to permeate into the subgrade or be collected for future use.

## OTHER PROJECTS

- Bus station and forecourt Moore Park. 9,000m<sup>2</sup> of honed Charcoal coloured Ecotrihex® paving for the bus station set-down area located adjacent to the Sydney Cricket Ground, Sydney Football Stadium and Fox Studios.
- Eastern Water Treatment Plant - 1100m<sup>2</sup> Ecotrihex® Charcoal pavers. Large carpark area for the new eastern water treatment plant in Victoria.
- Adelaide Oval - Ecotrihex was used in 'Fig Tree Plaza' to pave a safe and accessible path while maintaining tree & root health.

## APPLICATIONS

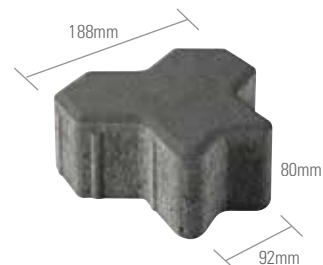
- |   |   |
|---|---|
|  Carparks                 |  Government/Council projects |
|  Streetscapes             |  Road infrastructure         |
|  Footpaths                |  Machine lay                 |
|  Heavy industrial traffic |  Permeable Paver             |

## AVAILABLE SIZES

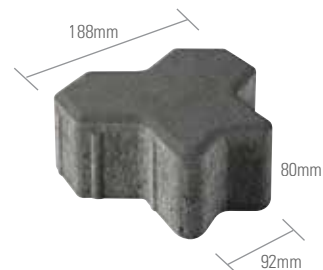
### Queensland / Tasmania



### Victoria



### New South Wales / South Australia

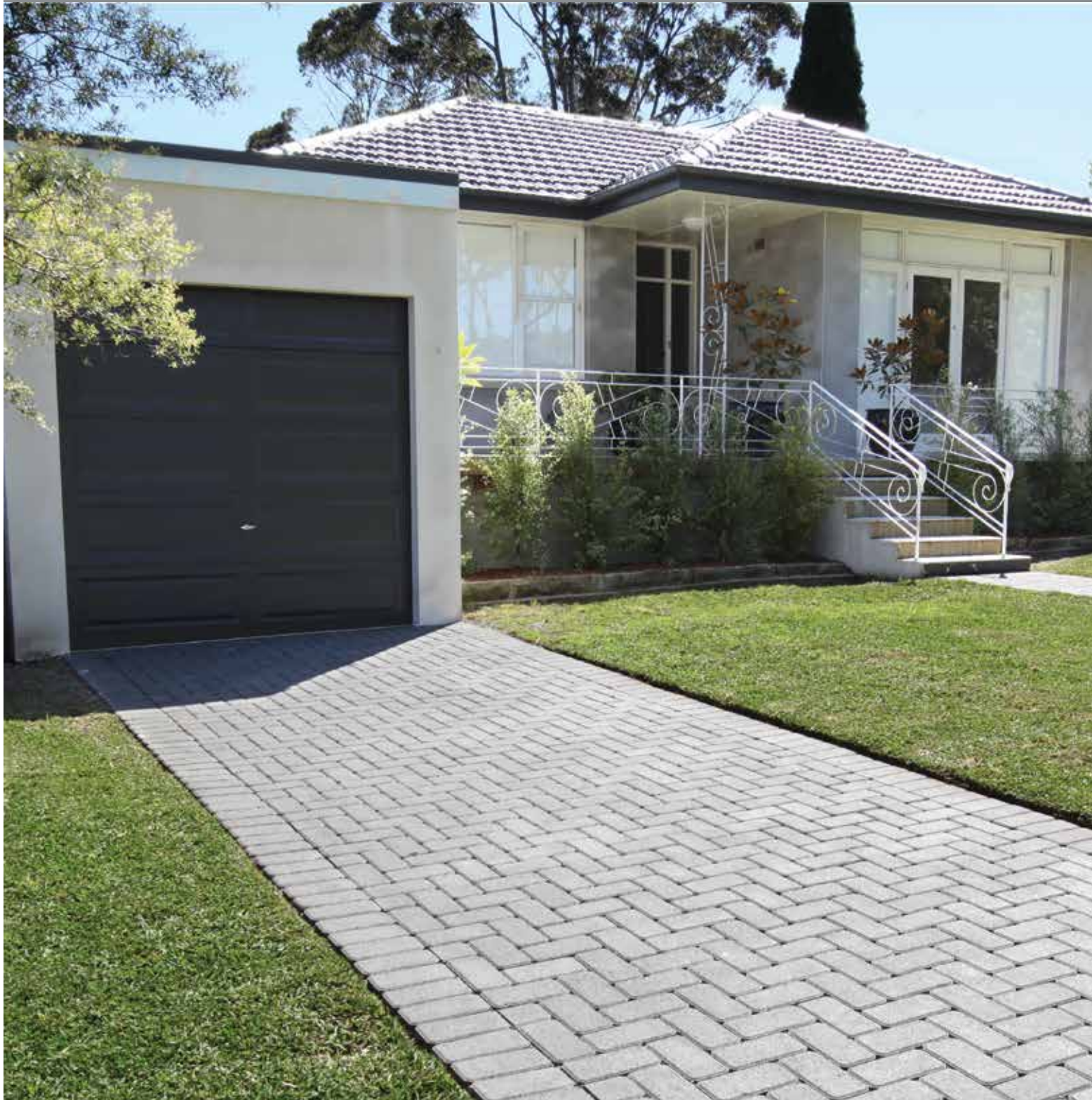


Note: Pavers can be produced in a smooth, honed or shotblast finish.

Please note: Size and thickness vary in each state this is a Made to Order Product.			Dimensions (mm)	Bullnose available	No. per m <sup>2</sup>	Unit Weight (kg)	Shape type (per CMMA Ref T35)	Breaking Load (kN)	Slip Resistance (standard)	Slip Resistance (honed)
<b>QLD</b>	EcoTrihex®	80mm	89 x 181 x 80	N	43.5	3.5	C	10	P5	P5
<b>NSW</b>	EcoTrihex®	80mm	92 x 188 x 80	N	43.5	3.9	C	10	P5	P5
<b>VIC*</b>	EcoTrihex®	80mm	92 x 188 x 80	N	43.5	2.93	C	10	P5	P5
<b>SA</b>	EcoTrihex®	80mm	92 x 181 x 80	N	43.5	3.9	C	10	P5	P5
<b>TAS</b>	EcoTrihex®	80mm	89 x 181 x 80	N	43.5	3.5	C	10	P5	P5

\*60mm available, however minimum quantities apply, please ask your local Adbri Masonry representative for more details.

Note: Greater breaking loads can be achieved for industrial paving if requested. Please refer to your local representative for details.



**PROJECT** - Residential Driveway, *New South Wales*

**DETAILS** - For this project, which utilised 50m<sup>2</sup> of Charcoal Ecopave® pavers, Adbri worked with a local contractor to create a permeable paving solution that maintained a modern aesthetic whilst reducing water pooling and excessive water run off. The system allowed water to filter through the driveway surface and run into the natural water table at lowest point of property.



The Ecopave® permeable paver is a small format Type C segmental concrete paver designed for use in residential, multi-residential and commercial paving applications where sustainable water management must be considered. The Ecopave® paver is available in an easy to install 50mm thickness for residential applications and an 80mm version for commercial and industrial applications with both versions capable of being machine laid.

## APPLICATIONS

- ✓ Permeable Pavements
- ✓ Low speed roads
- ✓ Car parks and driveways
- ✓ Streetscapes
- ✓ Footpaths
- ✓ Heavy Industrial traffic
- ✓ Government/Council projects
- ✓ Road infrastructure

## AVAILABLE SIZES

Queensland / New South Wales / Victoria / South Australia



Ecopave® 50



Ecopave® 80

PRODUCT	Ecopave® 50	Ecopave® 80
Avg. Weight	2.8kg	4.2kg
No. per Tonne	357	238
No. per m²	39.8	39.8
Slip Resistance	P5 - Very Low Risk	P5 - Very Low Risk
Paver Type	C	C





**PROJECT** - Service Road, River Park Drive subdivision, Loganholme *Queensland*

**DETAILS** - Adbri Masonry's Contracting Services team supplied and installed 270m<sup>2</sup> of Turfstone® paving to create a service road for Council vehicles for inspections and maintenance on site. The Turfstone® paving provided a stable platform to carry the loads of service vehicles whilst the grass growing through the Turfstone® pavers complimented the surrounding lake and vegetation.



Adbri Masonry's Turfstone® and Turfgrid™ product are an ideal solution for agricultural, livestock, commercial and residential erosion control projects. These easy to install permeable pavers also maintain an even ground level, whilst stabilising land and allowing water to filtrate through the surface layer, minimising any water run off.

## OTHER PROJECTS

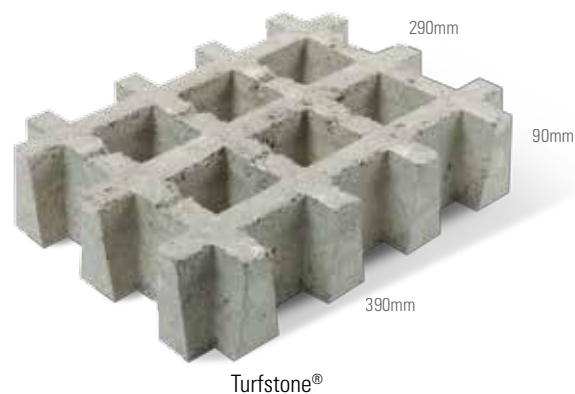
- Beach Road Northshore project, Noosa - 2,500m<sup>2</sup> of Turfstone® paving was utilized in the trailer car park, Beach Road parking and for the Retreat West and East car parks.
- Roseville Chase Oval, NSW used 95m<sup>2</sup> of Turfgrid™ paving to rejuvenate the turf area around change rooms, which had previously been reduced to dirt through year round use.
- Waverly residential driveway and parking project, 80m<sup>2</sup> of Turfgrid™ pavers.
- Northbridge Oval, Turfgrid™ pavers used in parking bays as a permeable paving driveway.

## APPLICATIONS

- ✓ Carparks and driveways
- ✓ Permeable pavements
- ✓ Revetment blocks for creek or river banks
- ✓ Land Stabilisation

## AVAILABLE SIZES

### Queensland / Tasmania



### New South Wales / Victoria / Tasmania



PRODUCT	Turfstone®	Turfgrid™
Avg. Weight	14.7kg	17.9kg
No. per Tonne	68	55
No. per m <sup>2</sup>	8.8	7.5
Resistance to Salt Attack	Exposure Category	Exposure Category
Paver Type	C	C



# PERMEABLE PAVING APPLICATIONS

## Residential

Permeable paving can be used around the home for paths, patios and driveways.



## Light/Medium Traffic

Can be used in shared pedestrian/traffic zones, carparks, residential roads and parking at high volume locations such as shopping centres.



## Storm Water Retention

Can be used in new developments as a substitute for detention/retention/infiltration basins. Make full use of your land by creating your retention under your roads.





## Water Quality Improvement

International research has proven that the use of permeable pavements greatly reduces the occurrence of pollutants in the discharge from the pavement base.



## Irrigation

The captured water can be harvested and reused for irrigation purposes.



## Architectural Effect

The variety of product shapes, colours and finishes available can be used to create visually appealing zones within projects.





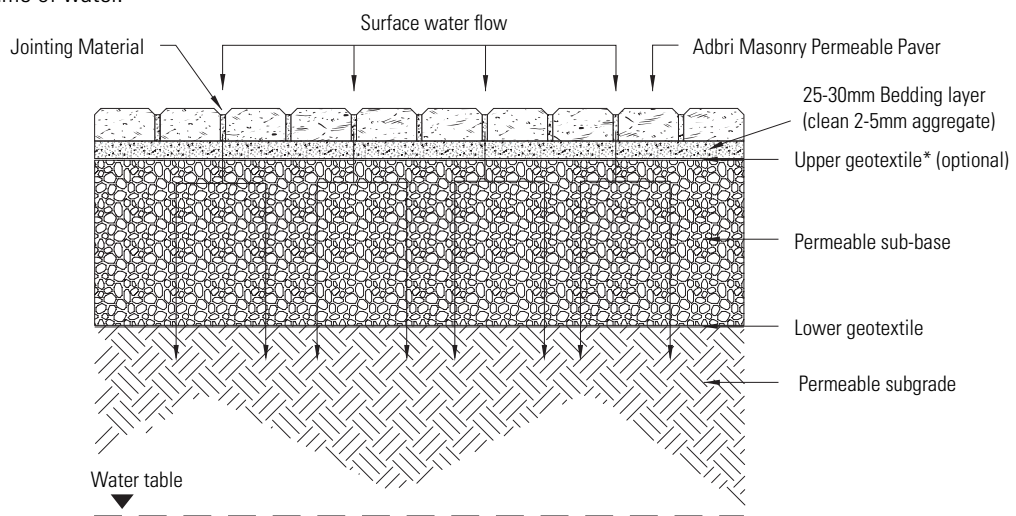
# DESIGN CONSIDERATIONS

There are three principal systems considered, when designing concrete paving as a wearing surface for permeable pavements. These are designated as Systems A, B and C, and are defined below. The below drawings are for conceptual purposes only and full engineer drawings must be sought before laying commences.

## SYSTEM A: TOTAL FILTRATION

System A allows all water falling onto the pavement to infiltrate down through the joint or voids between the paving and pass through the sub-base layers below and into the subgrade. Depending on the design requirement some water may be temporarily stored in the bedding and sub-base layers prior to passing through into the subgrade.

This is also known as a 'Zero Discharge' system, as no additional water from the pavement is discharged into traditional drainage systems, eliminating the need for pipes and stormwater pits. This system is used wherever the permeability of the existing subgrade material is suitable to absorb the captured volume of water.

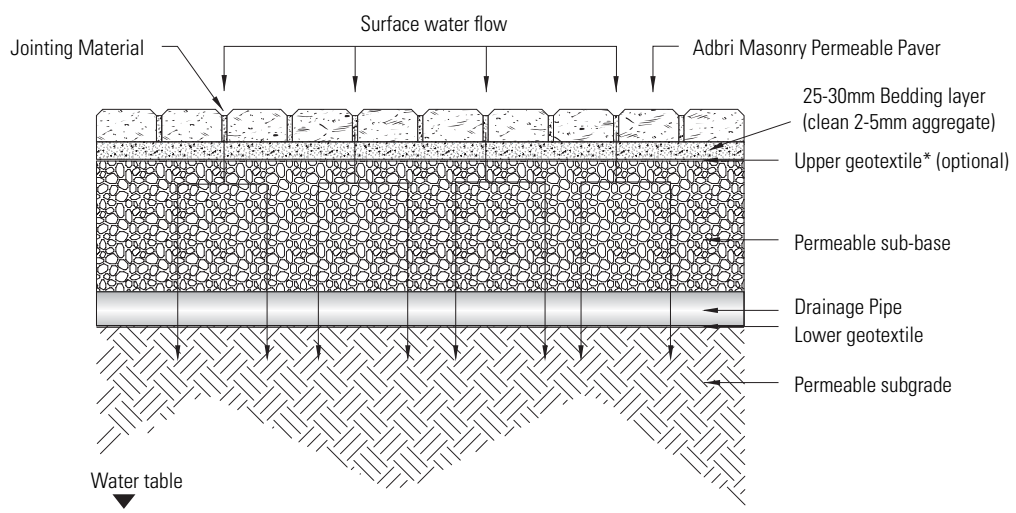


\* Refer notes on Page 22

## SYSTEM B: PARTIAL FILTRATION

System B will normally be used where the existing subgrade may not be able to absorb all of the water. As you can see below, outlet pipes are connected to the permeable sub-base and this allows excess water that can't be absorbed to be drained into other devices such as sewers, swales or watercourses.

This system normally only allows a fixed amount to infiltrate down through the system, which normally represents large percentages of the design rainfall. The excess is then collected and discharged, in accordance with local regulations, into sewers or watercourses. This is one method that reduces the volume of runoff, and will likely remove the need for long term storage.

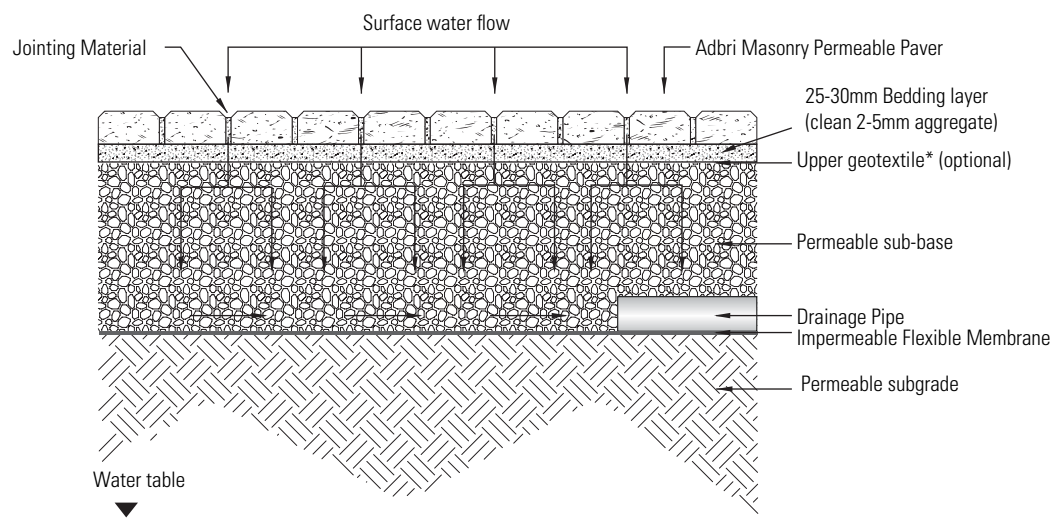


\* Refer notes on Page 22

## SYSTEM C: NO FILTRATION

System C allows for the complete capture of the water using an impermeable flexible membrane placed on top of the subgrade level and up the sides of the permeable sub-base to effectively form a storage tank. It is used in situations where the existing subgrade has a low permeability or low strength and would be damaged by the introduction of additional water, or where the desire is to harvest the water that enters the system. Outlet pipes are used throughout the impermeable membrane at suitable locations to transmit the water to sewers, treatment plants or watercourses.

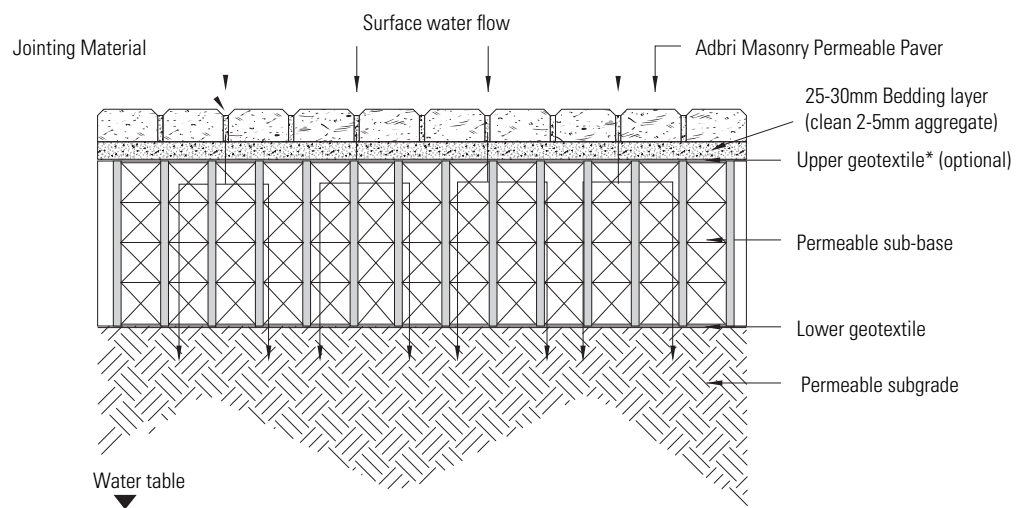
System C works perfectly for contaminated sites, as it prevents pollutants from entering down into the subgrade and eventually getting washed into the groundwater. This system can also act as an underground retention/detention zone, and sometimes the stored or captured water can be harvested and reused for other purposes such as flushing toilets or for irrigation.



\* Refer notes on Page 22

## PERMEABLE SUB-BASE REPLACEMENT SYSTEMS

Another option which can be considered is a permeable sub-base replacement system that can be incorporated into the permeable pavement. The permeable sub-base will normally consist of a series of latticed plastic cellular units connected as a molecular structure replacing some or all of the permeable sub-base, depending on the traffic load.



\* Refer notes on Page 22



# DESIGN CONSIDERATIONS

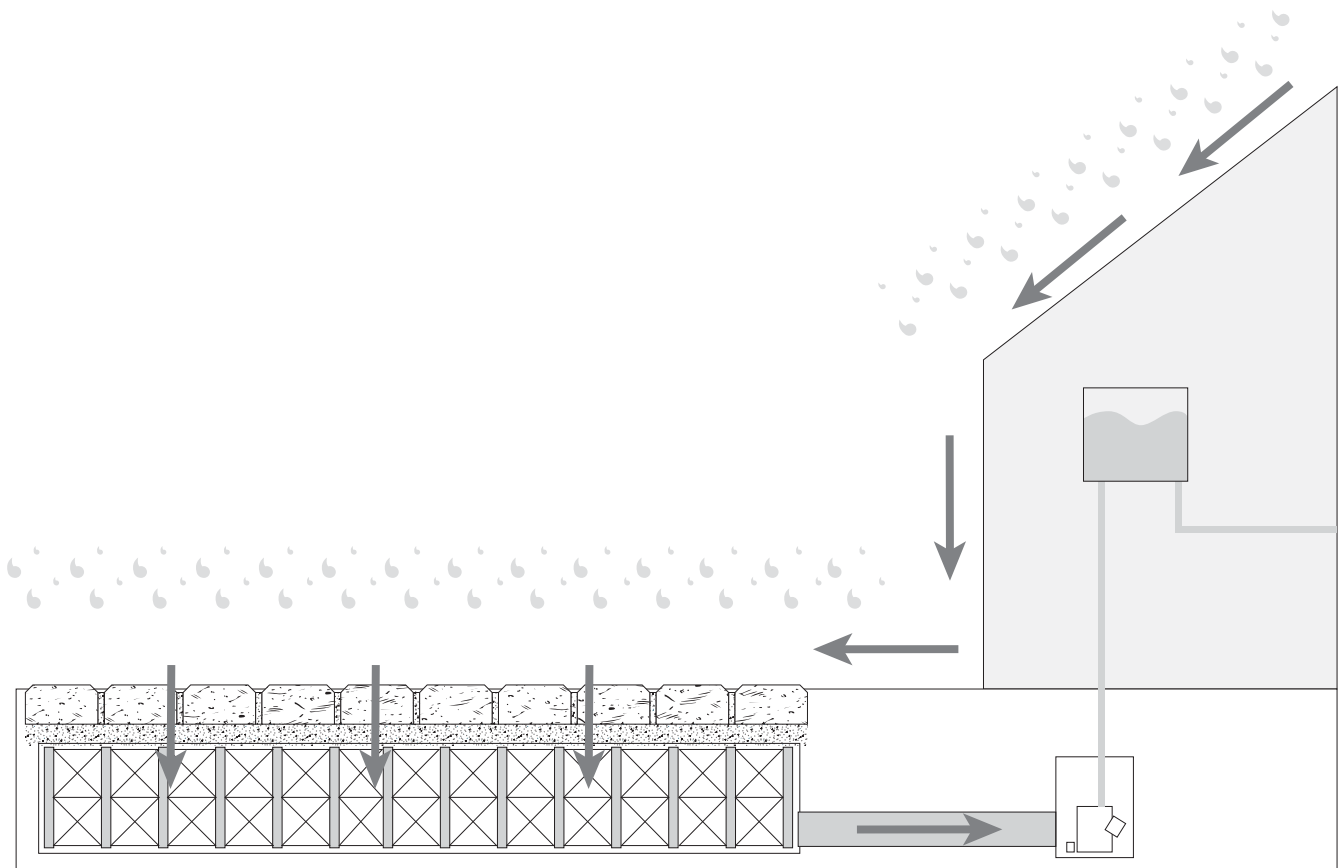
## RAINWATER HARVESTING

This system involves harvesting rainwater from roofs and hard surfaces and using it in or around buildings. The water can be used for a large variety of non-potable uses including, but not limited to, flushing toilets or watering flora. This runoff however must be of reasonable quality and free from debris and sediments. Permeable pavements will provide filtration to achieve this. The stormwater can then be stored in the permeable sub-base below a permeable concrete block pavement, or in a tank installed specifically for this purpose. Rainfall attenuation storage volumes are very different to that of reuse volumes as they both have different requirements

Rainwater Reuse - Needs to be full most of the time to allow the water to be readily available.

Stormwater Attenuation - Needs to be empty to allow it to temporarily store water from the deluge of rainfall events.

The use of a tank in conjunction with the sub-base will accommodate both of these needs. If, however, you opt only to use the base, this will still be effective, it may just result in runoff occurring if numerous rainfall events occur in close proximity to one another.



## SELECTING A PAVEMENT SYSTEM

### Subgrade Permeability

The most important consideration when selecting a Permeable Pavement System is the permeability of the subgrade, which is able to be determined by appropriate testing of the site itself. An infiltration test should be carried out as close to the final formation level of the pavement as possible, which normally means that a lower head of water is to be used to replicate the performance of the permeable pavement.

		System A Total Filtration	System B Partial Filtration	System C No Filtration
Permeability of subgrade defined by coefficient of permeability $k$ (m/s)	$10^{-6}$ to $10^{-3}$	●	●	●
	$10^{-8}$ to $10^{-6}$	-	●	●
	$10^{-10}$ to $10^{-8}$	-	-	●
Highest recorded water table within 1000mm of formation level		-	-	●
Pollutants present in subgrade		-	-	●

Soil Classification	Typical range of coefficient of permeability $K$ (ms)	Typical range of CBR Values
Heavy Clay	$10^{-10}$ to $10^{-9}$	2 to 5
Silty Clay	$10^{-9}$ to $10^{-8}$	3 to 6
Sandy Clay	$10^{-9}$ to $10^{-6}$	5 to 20
Poorly Graded Sand	$5 \times 10^{-7}$ to $5 \times 10^{-6}$	10 to 40
Well Graded Sand	$5 \times 10^{-6}$ to $5 \times 10^{-4}$	10 to 40
Well Graded Sandy Gravel	$10^{-5}$ to $10^{-3}$	30 to 80

### Other Criteria

Concrete block permeable pavement systems are extremely useful where the proximity of trees and other planting is in close contact with the hard surface, as it allows for water and air flow to continue back into the roots of the surrounding flora.

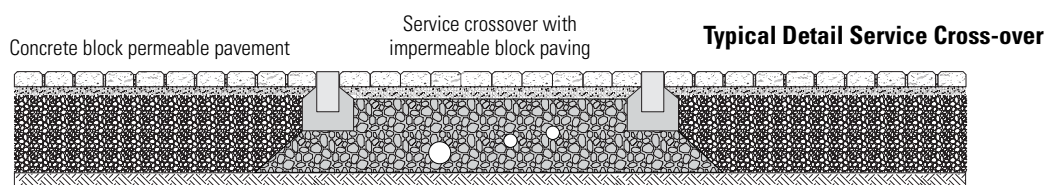
However, as with any drainage system, overflow routes need to be planned in order to cater for extreme circumstances. In addition to this, it is important to maintain statutory service runs in correspondence to the permeable and impermeable paved areas to cater for future maintenance of these specific services

In order to obtain the best possible performance and minimise the issues during construction the following should be considered:

- > DO NOT use permeable pavements where there is potential for heavy silty loads from the proposed use.
- > It is possible to construct part of an area in impermeable materials that will run off onto the permeable pavement.
- > Design of permeable pavements must take account of the overland flow routes of water when the design capacity is exceeded.

### Service Corridors

It is not necessary to design all surface areas as permeable, as CBPP can cope with runoff from adjacent impermeable areas including roofs, up to a ratio of 2:1 impermeable:permeable, depending on anticipated rainfall intensity and base depths.





# DESIGN CONSIDERATIONS

## STRUCTURAL AND HYDRAULIC DESIGN

### Design Criteria

Permeable Pavements must be designed in order to achieve two aims:

- > Support the traffic loads
- > Manage surface water effectively (ie provide sufficient storage)

### Water Storage Design

In the majority of cases it is not plausible to provide a system which will withstand the greatest rainfall that has ever occurred. It is more economical to tolerate a periodic failure than to design for every intense storm recorded.

One of the most common mistakes made when designing permeable pavements is the use of incorrect units. This is because the common parameters are quoted in different units and require conversion when carrying out calculations. The common units and conversions are provided below.

Parameter	Units			
	mm/h	m/h	m/s	l/s/m <sup>2</sup>
Rainfall	20	0.02	$5.6 \times 10^{-5}$	0.0056
Infiltration rate of soil	3.6	0.0036	$1 \times 10^{-6}$	0.001
Flow rate into block surface (through joints) when new	4500	4.5	0.0013	1.31
Adbri's 10yr Design Value	324	0.324	0.00009	0.09

Rainfall Data		Required permeable sub-base thickness (mm)		
		1 in 30 year design event	1 in 100 year event	1 in 100 year event plus 20% climate change
M <sub>5</sub> -60 = 20mm	0.4	120	160	210
	0.3	140	190	240
	0.2	180	250	310
M <sub>5</sub> -60 = 17mm	0.4	100	140	180
	0.3	110	160	210
	0.2	150	210	270
M <sub>5</sub> -60 = 14mm	0.4	-	-	-
	0.3	90	130	170
	0.2	110	160	220

Note - Thickness assumes sub-base has a voids ratio of 30%.  
 Limited discharge rate 7 l/s/m<sup>2</sup>. For System A infiltration rate great than  $1 \times 10^{-6}$  m/s.  
 Factor of safety on infiltration rate for System A = 1.5 (based on CIRIA Report 156). Assumes level site.  
 Factor of safety on overflow for System C = 1. Assumes level site.

## INDICATIVE PAVEMENT DESIGNS

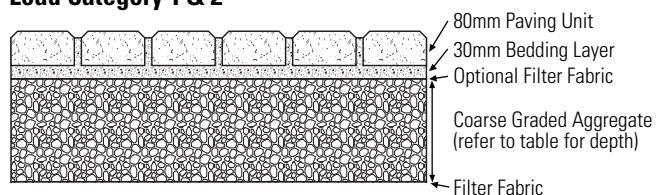
Load Category 1	Load Category 2	Load Category 3
No Large Goods Vehicles	Emergency Large Goods Vehicles Only	One Large Goods Vehicle per week
<b>Zero standard axles</b>	<b>100 standard axles</b>	<b>0.015msa</b>
Patio	Car parking bays and aisles	Town/city pedestrian street
Private drive	Railway station platform	Nursery access
Decorative feature	External car showroom	Parking area to residential development
Enclosed playground	Sports stadium pedestrian route	Garden centre external display area
Footway with zero vehicle overrun	Footway with occasional overrun	Motel parking
Domestic Parking	Private drive/footway crossover	Airport car park with no bus pickup
		Sports centre

\* These pavement designs are indicative only and based on conservative assumptions for some design parameters. Adbri Masonry can assist with site specific preliminary designs. To obtain such a design please contact Adbri Masonry on 1300 365 565 and have readily available the following information:

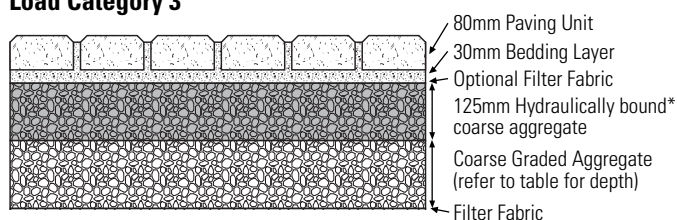
- CBR for site
- Design Life
- Vehicle types and average daily traffic
- Purpose of using permeable paving.

## DEPTH OF COARSE GRADED AGGREGATE - System A and B

### Load Category 1 & 2



### Load Category 3



CBR of Subgrade	Depth of Course Graded Aggregate		
	LC1	LC2	LC3
1%	550	650	450
2%	425	525	325
3%	375	475	275
4%	350	450	250
5%	250	350	150
8%	250	350	150
10%	250	350	150
15%	250	350	150

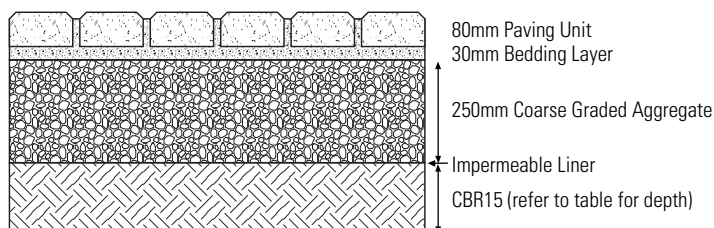
\* Hydraulically bound coarse aggregate refers to No Fines Concrete, 20mm aggregate, min 6:1 aggregate to cement.



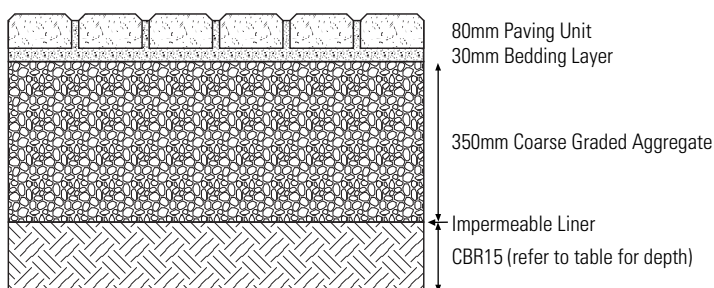
# DESIGN CONSIDERATIONS

## DEPTH OF CBR15 COMPACTED TO 98% - System C

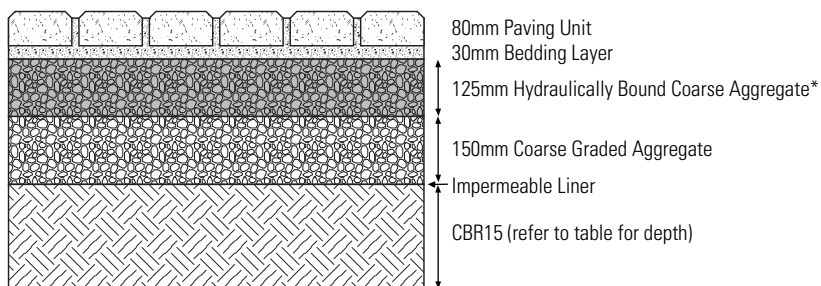
### Load Category 1



### Load Category 2



### Load Category 3



\* These pavement designs are indicative only and based on conservative assumptions for some design parameters. Adbri Masonry can assist with site specific preliminary designs. To obtain such a design please contact Adbri Masonry on 1300 365 565 and have readily available the following information:

- CBR for site
- Design Life
- Vehicle types and average daily traffic
- Purpose of using permeable paving.

CBR of Subgrade	Depth of CBR15 Load Category 1, 2 and 3
1%	600
2%	350
3%	250
4%	200
5%	150
8%	150
10%	150
15%	150

# SPECIFICATIONS OF CONSTRUCTION

## SPECIFICATIONS AND MATERIALS

### Bedding Layers and Jointing Material

A sufficiently coarse bedding layer is required to allow the vertical flow of water whilst preventing its intrusion into the underlying coarse graded aggregate, yet sufficiently fine to permit the accurate installation of the pavers. The bedding layer and jointing material would fall into the Particle Size Distribution table below.

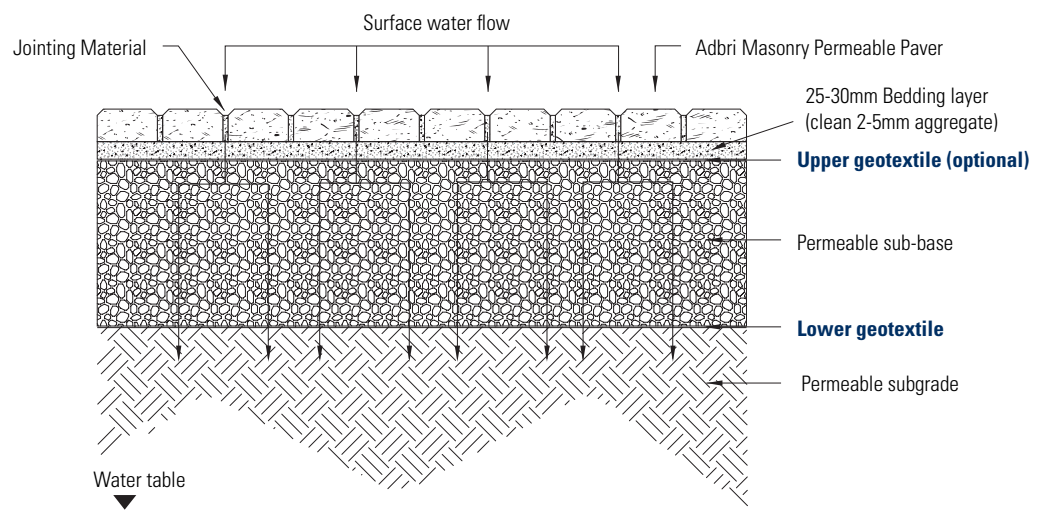
Sieve Size (mm)	Percentage Passing (%)
9.5	100
4.75	85-100
2.36	10-40
1.18	0-10
0.3	0-5

If a geotextile fabric is not used between the sub-base and bedding layer, the different layers of materials must meet conventional soil filter laying course criteria in order to stop the flow of the finer bedding layer material into the sub-base.

### Geotextiles

Geotextile fabrics may be used in two locations within a permeable paving system

- > An upper geotextile (optional) at the laying course/coarse graded aggregate intersection may be included according to the paving block manufacturer's recommendations. Adbri Masonry do not recommend installation of this layer in pavements subject to vehicular traffic as it can cause or create a failure plane.
- > Between the permeable subgrade and permeable sub-base for type A and B pavements





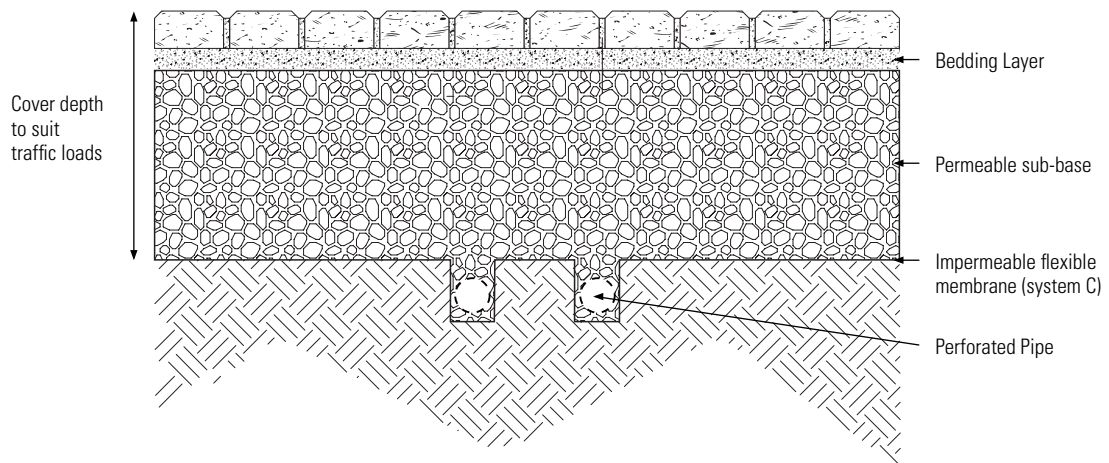
# SPECIFICATIONS OF CONSTRUCTION

## DETAILING

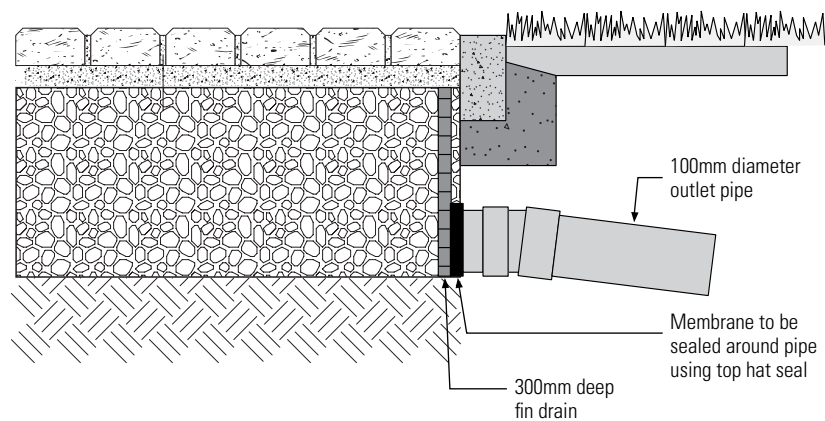
### Outlets and Conveyance

In System B and C, the most effective way of joining the permeable sub-base to the drainage system is to use fin drains or perforated pipes. If using this method however, the pipes will need sufficient cover in order to carry vehicle loads and may need to be installed in a trench below the permeable sub-base to achieve this.

**For Large Areas of Permeable Paving Perforated Collector Pipes in Trenches can be used to Collect the Water**

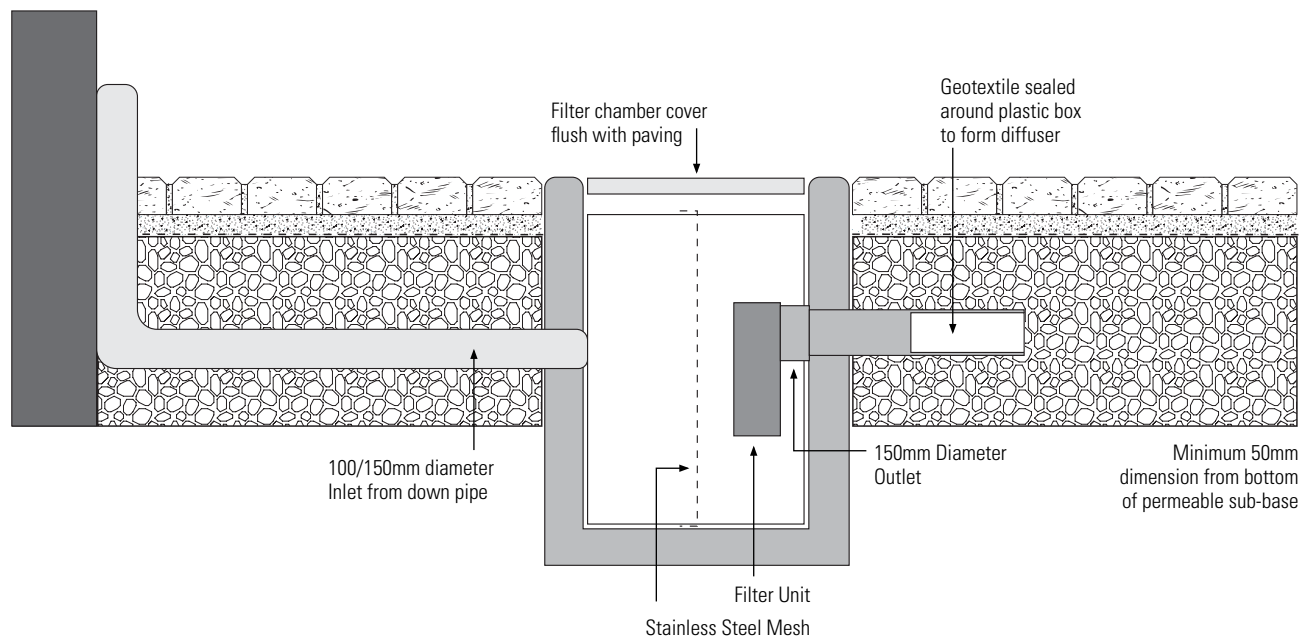


### Collection of Water by Fin Drains

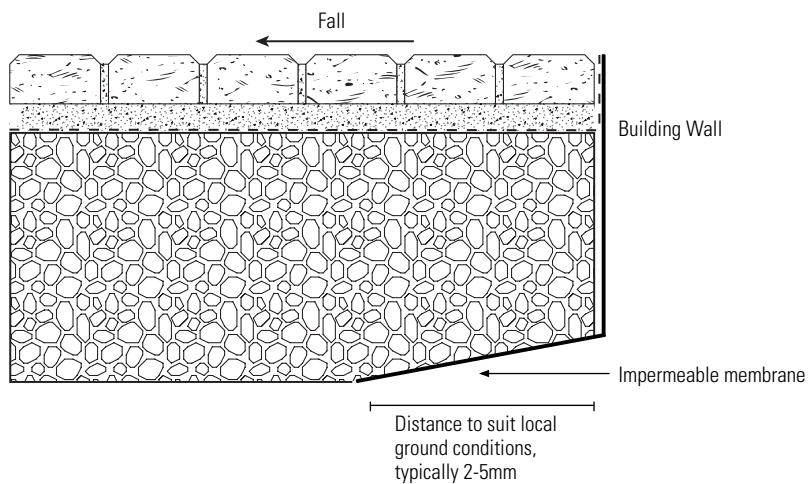


## SPACING OF OUTFLOW PIPES

### Typical Roof Drainage Outlet



### Typical abutment to building





# SPECIFICATIONS OF CONSTRUCTION

## CONSTRUCTION

### **Permeable Sub-Base**

Due to the fact that the permeable sub-base materials lack fines, there is a potential for segregation in the aggregates during transportation and construction. Remedial, corrective action is required if this occurs. The best way to minimise the chance of segregation occurring is to use a triangular, crushed material with a high surface friction.

The nature of grading of the permeable sub-base will vary depending on the source, however it is best to undertake a site trial to determine the best construction methodology.

Laying of the sub-base should be completed in 100-150mm layers and compacted throughout to ensure maximum density is achieved for the particular material type and grading, without either fairly self compacting so heavy compaction is not normally required.

# MAINTENANCE

## PERFORMANCE CHARACTERISTICS

### Surface Infiltration Rates and Clogging

The percolation through joints will vary depending on the blocks laid, and the aggregate used, however a standard value for newly laid system is 4,500mm/hour. The aggregates below in the system will have a much higher value, at least 40,000 mm/hour. The infiltration rates will decrease from the newly laid value, however, this will stabilise with age, due to the build-up of detritus in the jointing aggregate. Through studies the recommended infiltration rate over a 20 year long design life without maintenance will be roughly 10% the initial value, all designs provided in this literature have allowed for this reduced infiltration rate.

## MAINTENANCE

### Maintaining the Pavers

It is recommended that the paving system be swept down twice a year as a precaution against clogging, which is no greater than what is recommended for a traditional pavement system.

If the pavement does clog completely over time it may be possible to be able to rehabilitate the area using a road sweeper. Through tests in the UK and France it has been shown that use of a brush and suction sweeper is less effective than a jet wash and suction sweeper, in cleaning silt from the joints between the blocks.

Soil and other fine materials must always be prevented from contaminating the pavement surface. Water ponding on the surface will almost certainly indicate that the filtration has reached an insufficient level and the joints/voids may require urgent attention, either sweeping clean or in extreme cases replacement. Research has proven that most clogging of the joints or openings in permeable paving only occurs in the top 30-50mm. In extreme circumstances the paving units can be lifted and then relaid with fresh jointing material to create an "as new" pavement.

As with all concrete block pavements, depressions, rutting and cracked or broken blocks, that are considered to be of detriment to the structural performance of the system, or a hazard to users, will require appropriate corrective action.













BRICKS | BESSER® BLOCKS | PAVERS | RETAINING WALLS

## Contact Us



[adbrimasonry.com.au](http://adbrimasonry.com.au)



**1300 365 565**



[enquiries@adbri.com.au](mailto:enquiries@adbri.com.au)

**Free pallet collection service freecall 1800 674 961 or drop pallets back to place of purchase or lodge your pallet pick up online at [adbrimasonry.com.au](http://adbrimasonry.com.au)**

Pallets remain Adbri Masonry property. Please telephone us for collection of pallets and keep pallets empty and stacked in a safe and accessible area for collection.

### Permeable Paving Brochure

ABM1201 - April 2018

Adbri Masonry Pty Ltd

ABN: 31 009 687 521

[adbrimasonry.com.au](http://adbrimasonry.com.au)

Adbri Masonry logo are registered trademarks of Adbri Masonry Pty Ltd.

**adbri**MASONRY  
working together