



permitted . paving



planning rules for retrofitting paving on domestic & commercial premises – guidance for professionals including:

- Planners
- Surveyors
- Conveyancing lawyers
- Designers
- Landscapers
- Contractors

Edition 2

Interpave

THE PRECAST CONCRETE PAVING
AND KERB ASSOCIATION



www.paving.org.uk

Introduction

Taking a responsible approach to drainage is essential to reduce flooding and pollution from impermeable surfaces. Government has recognised this issue with important changes to permitted development rules and other recent legislation requiring sustainable drainage systems (SuDS) for paving. Failure to implement these measures will substantially damage the fight against flooding and lead to a less sustainable local environment.

This guide aims to help local authorities to understand the importance of the measures and how to interpret them so that they can be correctly applied on the ground. It also provides surveyors, conveyancing lawyers, designers, contractors, landscapers and other professionals with the information they need to advise their clients correctly, avoiding issues of planning enforcement and complications with property sales. Other documents referred to in this guide are numbered and their details given at the end, together with a Glossary of Terms.

Interpave is the trade association for precast concrete paving and has been involved with SuDS and permeable paving from the start, working alongside governmental and other organisations. In fact, government guidance^① on paving front drives refers specifically to the Interpave website and guides. More information can be found on our website www.paving.org.uk, where the Commercial section has a wealth of information for all professional users. There is also a dedicated Domestic section for householders.

Background

To begin with, it's worth explaining what the problems are with drainage today, how they came about and why the government has introduced new rules to solve them.

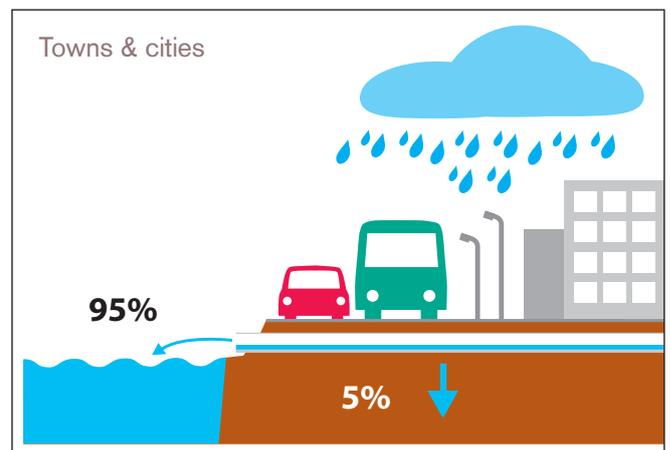
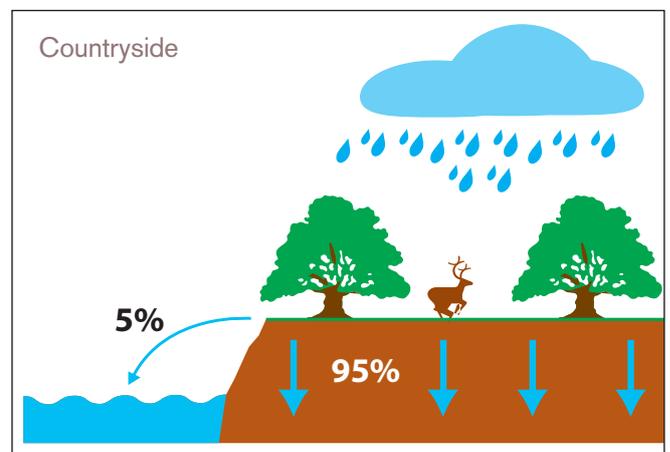
What's wrong with our drainage?

Most rainwater falling on natural countryside simply passes into the ground. But continuing growth of our towns and cities is causing an increasing amount to be captured on impermeable surfaces and flow into sewers. Today, most rainfall running off drives, parking and other paving around buildings will end up in the sewer.

In the past, sewers and roads were designed to remove water as quickly as possible to stop flooding occurring where the rainfall hit the ground – and they are still good at this job most of the time. When the Victorians built the sewer networks still in use today, Britain was far less populated and towns and cities much smaller. So, these sewers, and some later systems, did not put too much water into rivers and streams in the past. But as more and more development has taken place the amount of rainfall running off streets, car parks, building roofs and drives has increased. Existing drainage systems cannot cope and this causes flooding of rivers and streams. This problem is even worse with heavy storms and more of them are predicted in future with climate change.

Why are our rivers and streams polluted?

The surfaces of roads, car parks and driveways collect pollution – from car exhausts, tyre-wear, oil leaks and other sources – and when it rains this gets washed into rivers and streams. Again, as towns and cities have grown this has become more noticeable and is causing real problems for the environment.



A lot of older sewers are known as 'combined sewers' carrying both rainwater and 'foul water' from toilets, baths, sinks, etc. They often have overflows that operate in heavy rain, diverting all the flows – including raw sewage – into rivers and streams, with serious consequences. As development increases and more rainwater runs into the sewers, the overflows are operating more often and therefore increasing pollution.

What other problems are being caused?

Sealing up areas with impermeable materials such as asphalt (or 'tarmac') or solid concrete stops rainfall soaking into the ground. Without this 'groundwater', the water table levels drop which makes water shortages worse, with streams and ponds drying up. It also causes damage to nearby trees as they are deprived of water and could also affect the foundations of a home, particularly on clay soils that dry out and shrink. All these problems are made worse when gardens are covered with impermeable paving to make a parking space or patio which just let the water run straight onto the road or into the sewers.

What difference does paving around buildings make?

Of course, a small area of paving in isolation is not going to cause major flooding – but it is the cumulative impact of lots of areas around homes and commercial properties being sealed up that creates real problems. For example, The Greater London Authority^② has estimated that paving over front gardens for car parking that has already occurred in the city is equivalent to an area around 22 times the size of Hyde Park or 16 times the size of the new Olympic Park or the size of 5,200 football pitches. Just imagine the rainwater runoff in a storm from an area that large.

Why do we need to act now?

There is no doubt that climate change is resulting in more frequent and heavy rainstorms, particularly in summer. Simply allowing rainwater to run straight off roofs and impermeable paving into drains increases the chance of sewers flooding local homes, as well as streams and rivers flooding vulnerable towns and cities. Remember the summer floods of 2007? The Environment Agency estimated that over two thirds of the 57,000 homes

affected were flooded not by swollen rivers but by water running off paving or overloaded drainage systems serving them.



So, what can be done about it?

It is now well recognised that Sustainable Drainage Systems (or SuDS) technology must play an essential role in curbing flooding and pollution from rainwater runoff. SuDS manages surface water by slowing it down (known as attenuation) and cleaning it up (by filtering). It uses techniques that aim to replicate, as closely as possible, the natural drainage from a site before any building work or paving. The new government rules and guidance in this document are all based on established SuDS principles.



The New Rules

A government-backed report (The Pitt Review^③) which looked at the 2007 summer floods and government strategy (Future Water) both made various recommendations for use of SuDS and new controls to paving and drainage – some affecting retrofitted paving around homes and other properties. These recommendations have been taken up with changes to planning rules in England, Scotland and, most recently, Wales.

How will SuDS be implemented?

Many planning authorities have already embraced SuDS and incorporated requirements for them in local policies being implemented now. This stance is supported by The National Planning Policy Framework (NPPF), which came into force in March 2012, and previous national policies^⑤. SuDS are also an important part of the 'Code for Sustainable Homes'. Recent Planning Permitted Development rules aim to apply SuDS techniques to new or replacement paving around existing homes and various non-domestic buildings. Along with Interpave's guidance, they are based on established SuDS principles.

Permitted Development

Before the changes, paving anywhere in a garden related to a house or bungalow, or within various non-residential properties (industrial, warehouse, office and shop premises), with any materials was considered to be 'permitted development' – effectively, an automatic planning permission without needing a planning application. However, permitted development does not apply to paving around blocks of flats and



maisonettes, or in the curtilage of listed buildings or within conservation areas – all of which still require planning permission.

Houses and Bungalows

For domestic properties, the changes take away permitted development rights from new or replacement drives or other paving between a house and the street, unless it is permeable paving or drains water onto a permeable garden area within the property. Otherwise planning permission will be needed before installing new, or replacing existing paving.

The measures have applied in England^④ since 2008 and take effect in Wales^⑬ from 30 September 2013.

They apply to paving:

- over 5m² (replacement paving only in Wales)
- in the front garden only.

In Scotland, similar measures^⑪ apply to work initiated after 6 February 2012 and apply to paving:

- of any size
- between the house and any street (therefore not just front gardens).

All three governments refer to a guide^① on permeable paving from the Department of Communities and Local Government and this, in turn, refers to the Interpave website, this document and our homeowners' guidance^⑧ for more information.



Non-Residential Properties

For industrial, warehouse, office and shop premises, similar changes take away permitted development rights from new or replacement paving on a property, unless it is permeable paving or drains water onto a permeable area within the curtilage of the property. Otherwise planning permission will be needed.

In England, these measures^⑫ took effect in April 2010.

In Scotland, similar measures were being considered at the time of publication.



What happens if property owners decide to apply for permission?

If the proposed paving does not meet the 'permeable' requirements for permitted development, a planning application will be required, along with drawings and a fee, which could take at least 8 weeks to process. Anyway, government planning policies^⑤ encourage planners to insist on SuDS (such as permeable paving), so an application should be rejected.

What if property owners go ahead anyway?

If property owners go ahead without permission, the local authority Planning Enforcement Officer should take action demanding an application or removal of the unlawful paving. Increasingly, local residents and Parish Councils concerned about flooding are alerting Enforcement Officers about unauthorised, non-permeable paving in their areas. The application of these rules has now been reinforced by a recent planning appeal decision^⑩ clarifying several aspects of acceptable 'permeable paving'.

What happens when a property is sold?

Both vendors' and buyers' solicitors will want to make sure that all necessary planning permissions are in place, otherwise this could be a problem for the buyer in future. Solicitors are becoming more aware of the new rules and should be making specific pre-contract enquiries about any paving changes which may have been carried out after the relevant measures took effect.



Without planning permission, new or replacement paving that doesn't meet the rules could delay or even stop a property sale and add to costs. Where permeable paving or other SuDS systems have been used correctly, permitted development will apply and solicitors' enquiries will simply be satisfied. For the same reasons, valuers and surveyors should also check the lawfulness of paving changes when inspecting a property, to avoid any problems early.

Flood and Water Management Act

New legislation^⑥, covering England and Wales, will include requirements for SuDS on any construction work which affects the ability of the ground to absorb water, when it takes effect (probably in 2014). Related draft National Standards and other regulations are still under discussion at the time of publishing this guide and include some proposed exemptions.

In particular, the requirements will not apply to the 'permitted development' discussed earlier (using permeable paving or draining water onto a permeable garden area), as long as the work does not cover 100m² or more. If the proposed paving does not meet the 'permeable' requirements for permitted development, an application for permission will be needed to the 'SuDS Approving Body', which could well be turned down. There will also be enforcement procedures if unapproved work is actually carried out and the same problems with selling a property discussed earlier could occur.

Simply visit the Interpave Commercial website www.paving.org.uk for the latest information on progress with the act.

Other Measures

The government is also considering other steps suggested in the Pitt Review. Local authorities already have 'Article 4' powers^⑦ to suspend 'permitted development' rights and stop the laying of sealed-up surfaces where they pose a local flooding problem – for example onto a neighbouring property or a road. This is now a simpler and quicker process for local authorities than in the past. Creation of a new 'Statutory Nuisance' is also being considered which could be served by local authorities on property owners to reverse work carried out that aggravates surface runoff flood risk.

Satisfying Permitted Development Requirements

The aim of the Permitted Development requirements is to hold back (attenuate) water on the property during heavy storms to avoid downstream flooding and treat it to remove or trap pollution. What happens after that depends on the ability of the ground to absorb water (permeability) and whether it is intended to make use of it (rainwater harvesting).

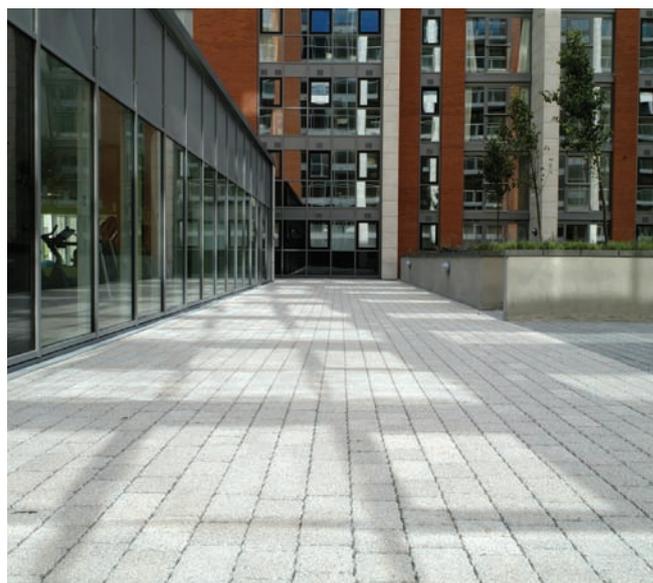
With good ground permeability (such as sandy soil), the water can simply soak away into the ground. This is the cheapest option and helps replenish the water table, as well as sustain plants and trees. With poor ground permeability (such as heavy clay), some of the stored water is collected and gradually soaks away, or discharges into sewers or streams – but with far less impact than direct drains.

It is also worth remembering that water is an increasingly rare asset and we need to take a more sustainable approach to using it. Rainwater can be stored for some time below permeable paving then pumped up for watering plants and car washing – even during hosepipe bans – or to flush toilets.

Different techniques can be taken to satisfy the requirements:

Permeable Surfaces – as long as they have long-term capability to transfer water through, including:

- concrete block permeable paving (discussed later in detail)
- cellular concrete units for grass to grow through
- other permeable paving materials (which are not subject to clogging-up)
- paved wheel tracks in impermeable paving with gravel or planting between
- gravel (although accessibility issues need to be considered).



Impermeable Surfaces – such as conventional concrete block paving with sand joints, draining on-site to:

- adjacent concrete block permeable paving (which can accept runoff from double its area)
- rain gardens (our homeowners guidance[®] provides information on designing rain gardens)
- soakaways (although these are subject to building proximity limitations).

It is for the local planning authority to decide whether a particular proposal will meet the aims of the Permitted Development Order: the following guidelines will help demonstrate this for concrete block permeable paving.



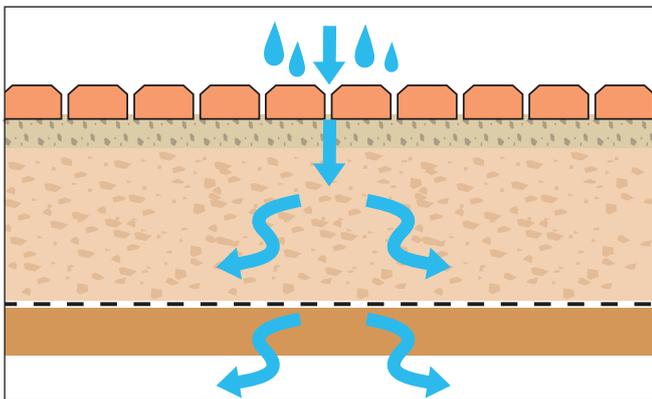
Concrete Block Permeable Paving

There is a growing choice of concrete blocks and paving slabs available from Interpave manufacturers, designed specifically for permeable paving. Essentially they have the same impressive performance as conventional precast concrete paving products, being slip resistant, durable, strong and sustainable. And today there are more shapes, styles, finishes and colours than ever to give you real freedom of choice.

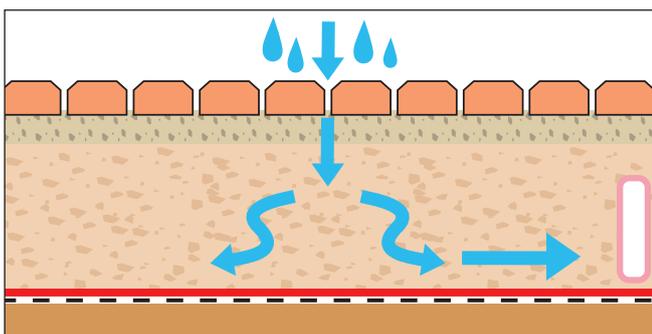
The difference with permeable paving is its enlarged joints, filled with a permeable aggregate specifically chosen for each product – but never sand (which is used with conventional block paving). This ensures that water will continue to pass through the joints over many years. The materials used below the blocks are also specifically selected to accommodate water, unlike conventional drive and road construction.

How does permeable paving work?

Permeable paving is specifically designed for a dual role, acting as the drainage system as well as supporting vehicles. At the same time, many pollutants are substantially removed and treated within the paving layers before the water leaves it.



Concrete block permeable paving with infiltration to the ground.

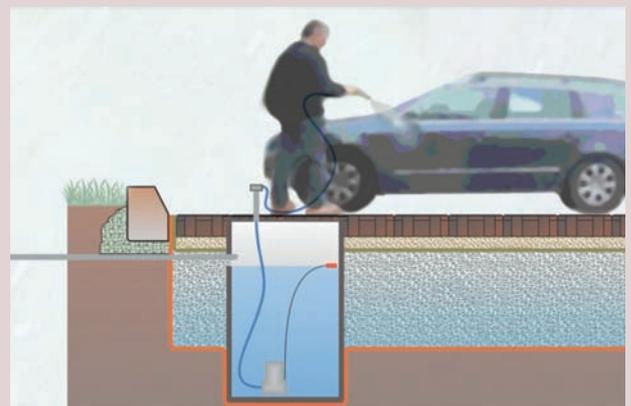


Concrete block permeable paving with pipe to drains or harvesting system.

Concrete block permeable paving can be laid level and still avoids puddles without the need for drainage gulleys and pipes. It also provides a safe, firm surface for everyone, including wheelchair users and people pushing prams, unlike gravel and other loose materials that may also satisfy the permeability rules. But the Accessibility Building Regulations[©] don't allow these loose materials for entry paths and drives to new homes.



Around this home, rainwater runoff collected from all impermeable surfaces including roofs and paths, together with the 60m² permeable drive itself, passes into the lined permeable pavement which contains a concealed sump. Here, a small pump is used to draw off the harvested water, in this case for outside uses, via a tap and hosepipe.



This is a more sustainable approach to car washing with most of the water automatically treated for reuse as it passes through the permeable paving.

How can you tell the difference?

Conventional block paving is not designed to be permeable. Its sand filled joints soon clog up to provide a sealed-up surface and the material below is not intended to handle water. Although looking similar to conventional block paving, permeable paving should have permeable aggregate (looking like coarse, sharp or crushed stone) filling the joints and under the blocks, not sand. In addition, a recent planning appeal decision¹⁰ highlights that a permeable sub-base must also be used below to comply, not standard 'Type 1' aggregate, which has sand and silt filling voids (as shown).



Type 1 aggregate for conventional block paving is not permeable when compacted.



Typical permeable sub-base aggregate has voids between for water.

What design guidance should be used?

Our homeowners guide⁸, referred to in government guidance¹, provides straightforward information on how to design and construct permeable paving for private driveways and other lightly trafficked areas (over 20m²), based on calculations using sound engineering principles.



Generally, smaller areas and long, narrow paths of impermeable paving can simply be drained onto adjacent garden areas with falls away from buildings – although care should be taken not to affect neighbouring properties.

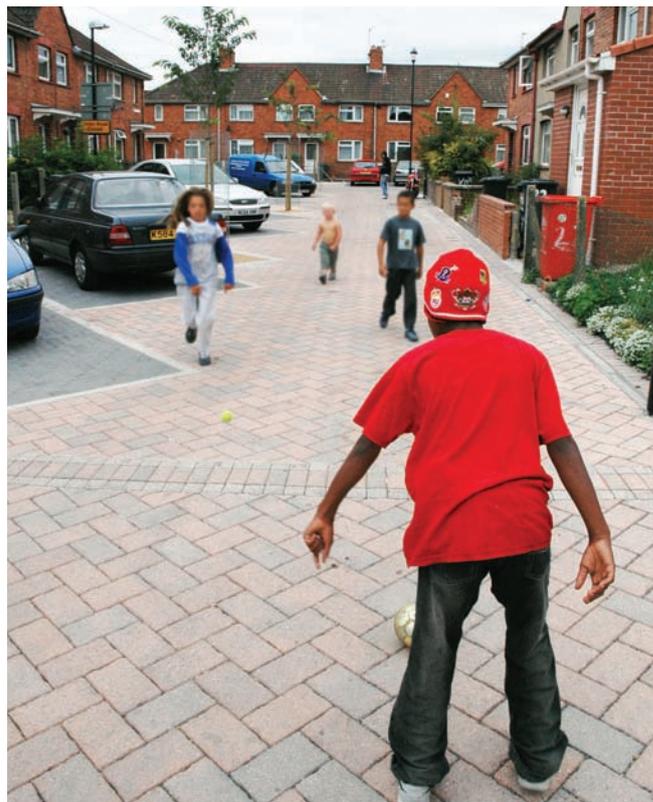
Our Permeable Paving Design and Construction Information¹⁴ document provides the definitive guidance for commercial paving and forms the basis of the British Standard.



How do you know that permeable paving complies?

Local authorities should ask property owners for evidence that new permeable paving has been designed in accordance with the appropriate Interpave guidance (overleaf) and installed correctly by reputable contractors, trained in permeable paving, to satisfy Permitted Development requirements.

To be sure, only paving contractors who are members of Interlay: www.interlay.org.uk or registered with an Interpave manufacturer member's scheme should be used. Interpave also supports independent installer accreditation schemes under development for commercial paving (National Highways Sector Scheme 30) and domestic paving. It is expected that, once in place, these schemes will enable project certification confirming compliance.



Where can you find out more about permeable paving?

Interpave's *Understanding Permeable Paving*[®] provides additional guidance for professionals on this essential Sustainable Drainage System (SuDS) technique. It deals with regulatory as well as practical issues and explains the different systems and techniques available, and how they can be used to meet current demands. It considers statutory requirements, the planning process, overall design, long-term performance, costs and adoption issues.

Each Interpave manufacturer Member offers a specific permeable paving system with impressive choices of designs, surfaces and colours to suit every type of property. Simply visit their websites – via www.paving.org.uk – for more information.

Glossary

Sub-base aggregate (for conventional concrete block paving) – A dense mixture of sand and gravel compacted to give a hard surface on which to build the paving. Often referred to as DoT 'Type 1' aggregate.

Type 1 Aggregate – see above.



Permeable pavement sub-base aggregate – Crushed rock or similar material that does not have fine material in the spaces between rock pieces, allowing water to flow easily through the voids. Proprietary coarse graded aggregates specifically for permeable paving are available from many suppliers.

Permeable Aggregate – see above.



Attenuation – Slowing down and temporarily storing rainwater flow from hard surfaces, so it can enter the drains more slowly, as it would from grassed areas.

Permeability – A measure of how fast water can flow through the ground.

Water table level – The level at the top of the water in the ground. If a hole is dug in the ground that goes below the water table it is the level of standing water in the hole after it has stabilised.

Conventional concrete block paving and flags – Block paving and slabs that do not allow water to soak through them into the sub-base.

Concrete block permeable paving – Strictly speaking, this is the surface of block paving with special gaps between each block that allows water to soak into the sub-base. Sometimes it also describes a concrete block permeable pavement – the whole construction including the concrete block permeable paving, laying course and the layer of permeable pavement sub-base aggregate.

Laying course aggregate – A layer of fine aggregate that is placed over the sub-base to make it easier to lay the blocks to the required levels and falls. For conventional concrete block paving and flags this is sand. For concrete block permeable paving it must allow water to flow through it easily and so a fine (nominal 6mm) aggregate is used.

Impermeable Membrane Liner – A plastic sheet that is water tight. It should be 0.5mm thick (2000 gauge).

Surface Water Sewer – A pipe in the ground that conveys collected water and removes it from a site. Older sewers remove sewage (known as foul water) as well as rainwater and are known as combined sewers. New developments have separate sewers for foul and rainwater.

Drain – Common name for smaller sewers that are located within the boundary of a house and connect into main sewers that are usually (but not always) in the street.

Conventional drainage system – The network of sewers below an area, including private drains, main sewers and ancillary structures such as manholes and gullies.

Dished channel – U-shaped precast concrete units available from Interpave members in a range of colours which can match the paving if desired.

Fin Drain – A flat drainage system which channels water through a filter into a drainage core before it enters a drainage pipe, thereby reducing the likelihood of the pipe becoming blocked with silt. Fin drains take up little room and work efficiently.

Geotextile – A fabric, made of plastic fibres, that is permeable to water but stops soil being washed through.

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