



# HOW TO GUIDE SLATE PAVING

ROOFING CLADDING  
PAVING FLOORING  
LANDSCAPING

# How to guide: Slate paving

## Planning & Preparation



### STEP 1: The Plan

**The best projects start with a plan – the better the plan – the better the end product**

Draw a simple plan of the project you have in mind, sketching the areas you intend to be paved, using graph paper is recommended.

You may wish to give some thought to the dimensions of tiles to match the planned area to minimise the amount of cutting required.

Similarly the pattern of the paving that you are about to lay is also important since this will impact on the materials you order and the pattern you choose is yours to enjoy (hopefully) for many years. Sometimes it is useful to lay the paving out in the chosen pattern to ensure that you are happy before starting the actual work – this will allow you to properly visualise how it will look when completed, you then may or may not choose to amend your design. Why not take a photo at this point for reference as you progress with the project?

Draw up your quantified list of materials (*see below*).

Be aware that most paving calculators do not allow for any spacing between flags and may also make an allowance for wastage (typically 10% as a rule of thumb).

Understand the lay of the land, if your patio is directly next to your house, then you'll need to lay it so that it is 150mm below the damp proof course. To encourage rainwater run-off, your patio should have a fall that runs away from the house or outbuildings. A 1:60 (17mm per linear metre) fall is generally recommended.



### STEP 2: Materials, Tools and Equipment

#### Materials:

- Paving flags
- Sub-base material (mot type 1)
- Building sand
- Cement
- Washed sharp sand
- Sbr bonding agent / primer

#### Tools:

- Brick and / or pointing trowel
- String line and pegs
- Lump hammer
- Set square
- Rubber mallet
- Builders square
- Rake
- Spade and / or shovel
- Spirit level
- Sweeping brush
- Timber straight edge
- Wheelbarrow
- Pick axe
- Tape measure
- Vibrating plate compactor
- Diamond disc cutter (optional)
- Mini-excavator (optional)
- Cement mixer (optional)
- Skip (optional)

#### Personal Protective Equipment (PPE):

- Gloves
- Eye protection
- Dust mask
- Ear protectors
- Knee pads
- Safety footwear



### STEP 3: Health & Safety

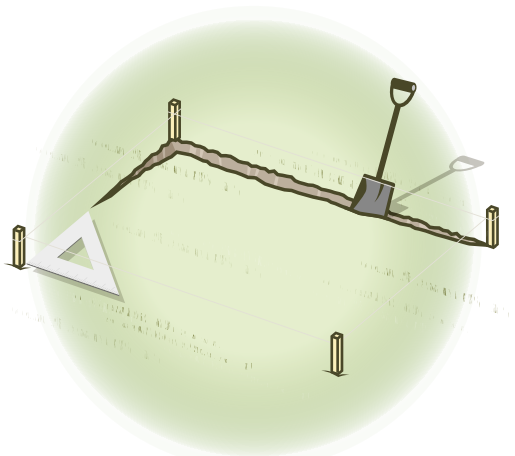
**On any project health and safety considerations are paramount at all times. Be aware of all manufacturer's instructions and safety advice at all times.**

#### PLEASE ENSURE THAT ALL PPE IS WORN AS REQUIRED:

- Wear suitable footwear and gloves when handling flags, sand, gravel or cement, and when digging
- When using a mortar mix wear a dust mask, safety goggles and protective gloves and be sure to follow manufacturer's instructions
- When mixing concrete always wear protective gloves, safety goggles, and a dust mask
- Wet and dry cement can cause irritation and burns, so handle carefully, covering skin and immediately washing off any cement that accidentally makes contact, where necessary consult a medical professional
- If using a vibrating plate compactor, you should wear ear protectors and steel toe-capped safety shoes or boots. Do not attempt to lift anything that may seem difficult or awkward, if you're using heavy paving slabs or lifting any other heavy items, ask someone to help. Use the correct tools for the appropriate application. Make sure you are aware of where there may be underground cables, pipes or other obstructions where you intend to work.

# How to guide: Slate paving

## The Paving Process

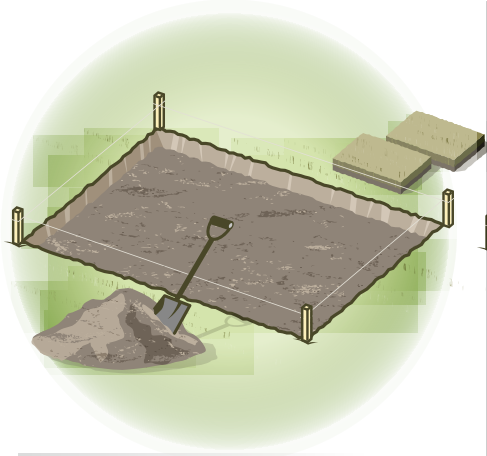


### STEP 4: Preparation

**Before starting make sure there are no hidden cables or pipes where you intend to dig.**

Measure the required area and using the string line and pegs mark out the position of your intended paving, ensure the squareness of the corners with your set square and make any necessary adjustments. A handy tip is to mark the required depth of your excavation on the pegs which will allow you to take account of any slope that you may need to include to ensure water runs away from buildings.

With your spade mark the edge of the area you intend to excavate – a lawn edger might provide a slightly straighter edge than a spade if available.



### STEP 5: Assess The Area

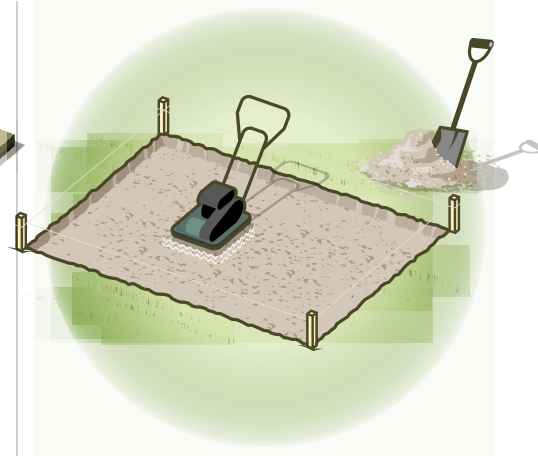
**The sub-base beneath your paved area depends on the intended use of the area and the ground conditions.**

For light pedestrian use – a typical family patio area – on level compact ground a base layer of 40mm of compacted sharp sand would be sufficient, however for wetter ground and uneven conditions a deeper more substantial sub-base may be required.

You will need to dig out the area to allow for the depth of sub-base required, plus the mortar mix and your flag paving – the overall depth will slightly vary depending on the thickness of your chosen paving sub-base construction.

As you proceed keep an eye on the fall required for the ultimate surface water drainage. Check for soft spots that may require additional excavation and backfilling and when complete, use the tape to measure the relevant depths. If appropriate use the vibrating plate compactor on the soil base prior to final check for levels.

When removing the turf, it may be useful to put some on one side to fill in any gaps between paved area and lawn when the paving is complete.



### STEP 6: Sub-Base

**Should the area to be excavated require the use of mini-excavator or similar ensure that the manufacturers operating instructions are rigorously followed.**

Add half the required amount of sub-base and rake to an approximate level then use the vibrating plate compactor to form a stable base layer; then add the remaining sub-base and compact again to make up the finished depth of 100mm. Undertake a final check on flatness and fall.

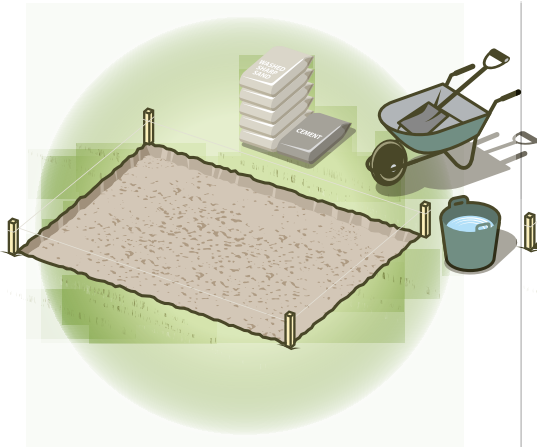
**As with all machinery please follow the necessary instructions** – with vibrating plate compactors make sure that the levels of exposure for hearing protection are not exceeded.





# How to guide: Slate paving

## The Paving Process

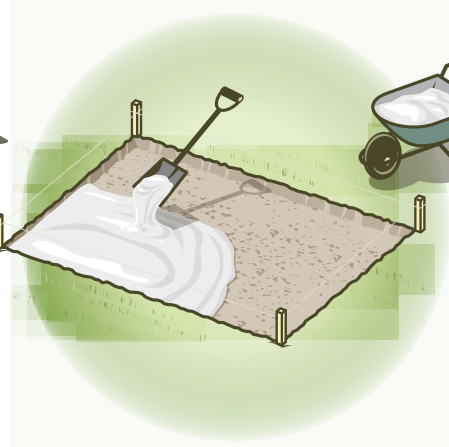


### STEP 7: Setting Out

**Your paving area is now prepared.**

The mortar mix to be used typically consists of 5 parts washed sharp sand to 1 part cement with water added to create a “dough-like” consistency i.e. moist but not overly wet and runny.

Depending on quantities required this may be mixed by hand using the shovel and wheelbarrow or in the cement mixer – the second option being time saving and less labour intensive, noting that mortar once laid quickly starts to set and needs to be in place within 60 minutes of mixing. Mixing in batches may be more appropriate for larger paved areas.



### STEP 8: Adding The Mortar

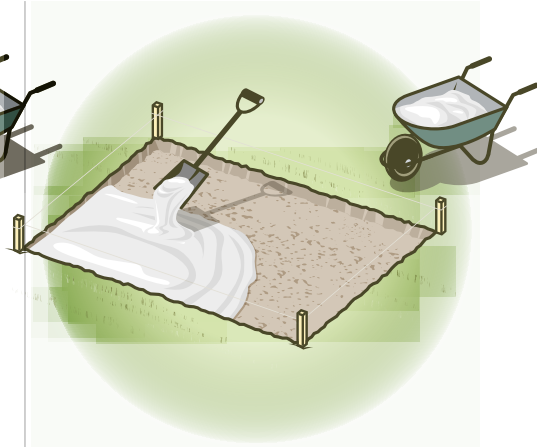
Starting at the highest point, i.e. to work down the slope / fall, place the mixed mortar onto an area that extends at least 1 metre beyond the area of the first few flags. Advice on the depth of mortar required varies in the range 25mm to 60mm but this depends on preference and may also be affected by the ground conditions; typical mortar depths are quoted in the range 35mm to 50mm, consistency is the key. The laid flag stone needs to embed slightly into the mortar so ensure that the mortar is not compressed.

Note that a full mortar bed is recommended as the “5-spot” method could lead to future problems, not least because the flag is not fully supported, but also because the voids beneath may allow for pooling of water and future instability.

The surface of the mortar should be rippled slightly to allow for some “give” as the flag is placed. This is important when laying natural stone that may not be calibrated on the underside and there may be certain variations in both the surface and underside textures. This allows for the surface to be as flat as required, noting the nature of the material.

Additionally use of a SBR bonding agent / primer is recommended for coating the back of slate paving to enable the slab to bond with the cement mortar. The manufacturers application guidance should be followed.

**Take care when lifting and placing the flags and if required ask someone to assist.**



### STEP 9: Laying Flags

As you lower the first flag into position, holding it diagonally will make it easier to lower it. It needs to settle cleanly into the mortar to form a good bond between flag and mortar. Try not to wiggle it around as this serves to compact the mortar unnecessarily. It is important that this first flag is square so make sure you line it up with the string lines and gently tap it into the mortar using the rubber mallet. Check for level, this flag sets the template for the rest of the project, so it needs to be as square and level as is possible.

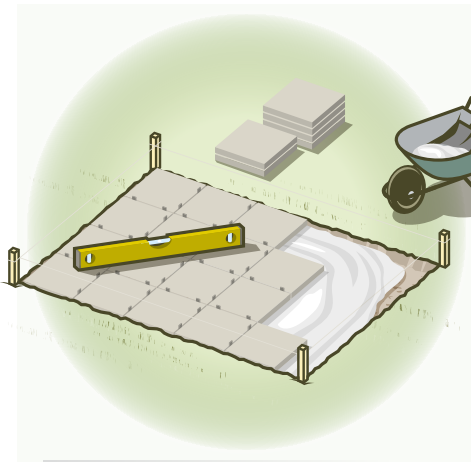
Repeat the process, continuously checking against the string line and using the spirit level to check the surface is at the correct level and fall. With natural stone paving the tolerance in thickness needs to be taken account of and as the paved area grows then it may make more sense to use the timber straight edge with the spirit level.

**Natural stone does vary;** for a large paved area it would be appropriate to select flags from 3 or 4 different packs (if possible) as the paving is laid. This will allow for the natural shade variations to blend.



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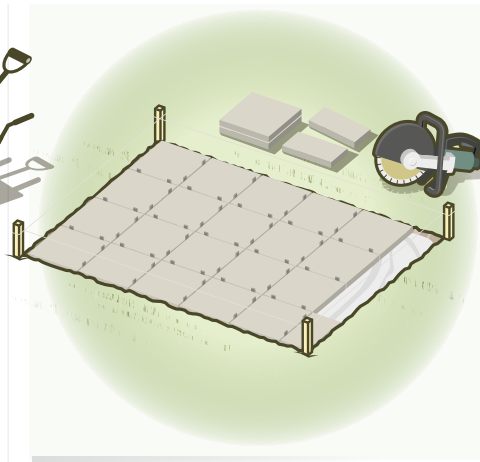
## The Paving Process



### STEP 10: Spacing

Don't forget to leave spaces between each flag stone, again the spacing may depend on preference but ideally leave a gap of 10-15mm between the flags. Another handy hint is to use small pieces of wood as spacers to maintain the consistency of the gaps.

Continue the process until the required area is fully paved in accordance with your design, remembering to regularly check the levels and fall.

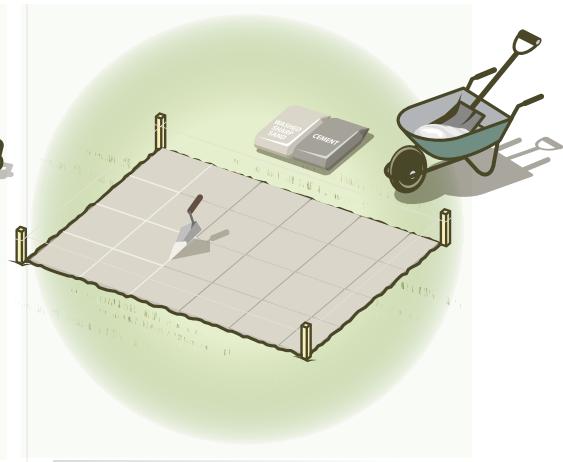


### STEP 11: Cutting

If your project involves a lot of cutting it is advisable to hire a powered cutting tool incorporating a diamond tipped blade (advise the hire shop of what you are intending to cut, and ensure that a suitable diamond tipped blade is selected). The use of this equipment will ensure clean cuts and save time.

Please use such equipment with extreme care, use the appropriate personal protective equipment and in full accordance with the manufacturer's instructions.

Leave the slabs for at least 24 hours so that the mortar mix can set.



### STEP 12: Pointing

**Once the mortar mix is set the paved area is ready to be pointed.**

A mix made up of 5 parts building sand to 1 part cement should be prepared but only with sufficient water to provide for a mortar of damp, semi-dry consistency.

The mix should be firmed into the joints using the pointing trowel and compacted into the gaps, finishing with a neat groove.

Noting that the pointing process is necessarily quite slow it is advisable – again – to prepare the mix in batches to ensure that it remains workable as required and has not set such that it becomes unusable.

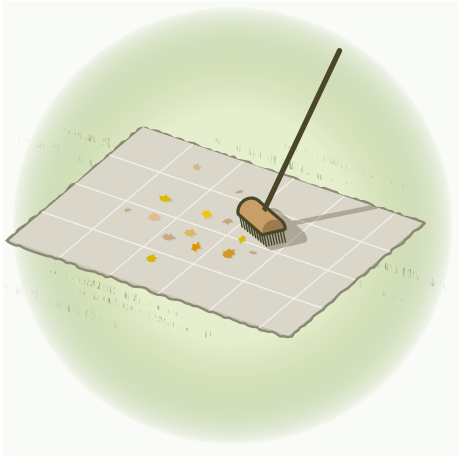
Carefully remove any excess mortar used for pointing using trowel and sweeping brush such that it does not set and stain the surface of the paving.

Alternatives to the mortar mix are available as off-the-shelf ready mix compounds.



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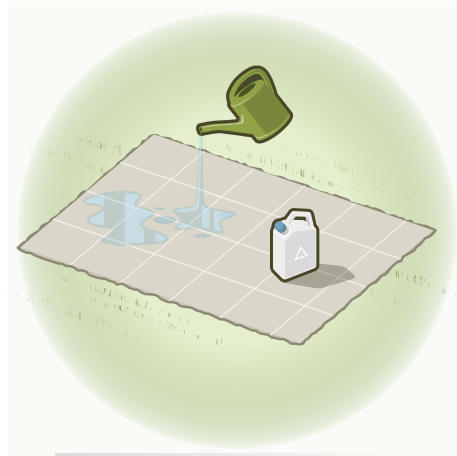
## Maintenance



### STEP 13: Aftercare & Maintenance

The simplest form of aftercare for any paved area is regular brushing. This clears away the day-to-day accumulation of leaves and other wind-blown detritus such as berries and twigs before they have the chance to potentially stain the surface.

Similarly regular hosing down is unlikely to do any specific damage to a well-installed paved area, the use of such things as power-jet washers could lead to developing damage in hairline cracks or similar that would otherwise go un-noticed.



### STEP 14: Cleaning

If the paving quickly becomes dirty owing to overhanging trees or nearby roads then consideration of treatment with a good quality sealant as protection and prevention would be warranted.

Should staining or the growth of algae, lichens and moss be problematic then there are proprietary applications available; however weakened bleach solutions applied to a wet surface which is then washed off some 20 minutes later will suffice on a fairly regular basis. It is important when

using this method not to allow the bleach solution to dry, wash off sooner if this is likely to be the case and repeat the treatment if necessary.

Mortar will likely degrade and crumble over time - if this occurs then it should be repaired as soon as is practical. Cut out the damaged mortar to a minimum depth of 25mm - any less would not ensure a good bond - and replace with a new slightly stronger mix of 3 parts building sand to 1 part cement.



- Roofing
- Cladding
- Paving
- Flooring
- Landscaping

How to guides are provided to assist you in your project. if you do not feel confident, we recommend you use a specialist contractor.

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