



Guide to Planning & Installing **Natural Paving**

Planning Ahead

- Work out the dimensions of your area, use dimensions that minimise cuts. Peg it out to help you picture it. Calculate the paving you need in M² and add 10% to allow for cuts, wastage and any damages.
- Consider the type of use and traffic your area will be exposed to, and design in adequate foundations to give you many years of service.
- For new or extended driveways consider planning permission requirements around water management and providing appropriate drainage to avoid run off onto the public highway. Alternatively, our Resiscape system range can be installed fully SuDS compliant.
- For when digging out, consider where your services are, e.g. drains, underground and overhead cables.
- Consider how deep you need to dig depending on your specific site and how high the water table is.
- Consider if tree roots are an issue.
- Consider what type of soil you have, (sub-grade). Our guidelines on depth of excavations are very general but you may require local expert advice.
- Consider where you can store and stack the product during install, where will you have your mixer and aggregates. Don't forget your skip.
- Remember, groundwork and installation are heavy work. Ensure you have the appropriate PPE and tools for the job.
- Fully read our Understanding Natural Paving Guide for more tips and advice, particularly, if you are inexperienced in installing our Natural Paving ranges.
- Before embarking on a DIY project, research other sources and techniques, if in any doubt, ask an expert for advice.
- This guide is our suggested methods, there are many others out there. Where there is a specific product guidance, this is borne from our experience with our products.
- Product specifications, with design guidance, are available on request through your merchant.

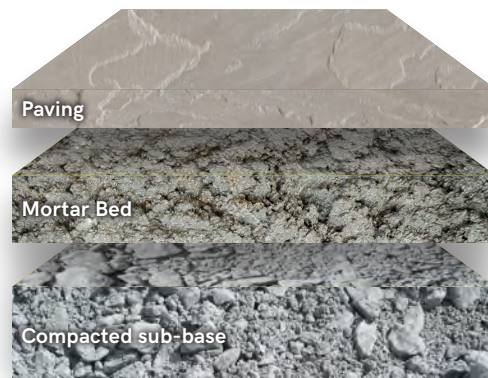
Plan Your Levels

- Think ahead, regarding the finished levels of your paving. The paving surface must always be a minimum of 150mm below the damp course (DPC).
- Unless installing a permeable SuDS system, always incorporate a fall to allow water to run off the paving surface to adequate drainage. For most domestic settings, 1:60 is usually adequate, for riven paving you may want to consider 1:40.

Groundwork & Foundations

- Peg out the area to be excavated using stringlines as boundary lines.
- Dig out to allow for sub-base depth + laying bed depth + paving depth.

- Commonly for a garden patio, a compacted 100mm–150mm sub-base is adequate. Commonly for a domestic driveway, a compacted 150mm–200mm sub-base is adequate. For example, if you were installing a 20mm thick flagstone, on a domestic patio with a 100mm sub-base and 30mm mortar bed, you'd need to dig down approximately 150mm. If you were installing a 50mm thick block paver, on a driveway with a 150mm sub-base and 40mm sand screed, you'd need to dig down approximately 240mm.



- Remember to account for the required gradient too when digging out.
- Saturated ground may need to be allowed to dry out. For certain ground conditions a geotextile membrane maybe required to stop migration of the hardcore sub-base into the sub-grade.
- Infill your sub-base with hardcore, MOT Type 1 (DTp 1) is generally appropriate for most domestic installations. Some ground conditions and heavier vehicle-type usage may require consideration of a Hydraulically Bound Material instead to create a fully bound construction.
- Rake it out evenly, damp it down before compacting, easiest and most effective with a Vibrating Plate Compactor. Fully compact in layers of approx. 75mm until desired depth is reached.



Natural Stone Patio Paving Laying Guide



Before You Start

- Check your product, ensure it is to your expectations. Never lay products that are not to expectations, report them to your merchant straight away.
- Dry laying as a trial run is a great way of seeing the blend of products and confirming your laying pattern is how you like it.
- Mix from several crates at a time to achieve a natural blend. Protect edges when stacking them pre-laying
- Do not lay in temperatures of 5°C and falling.

Laying

- Set out string lines as a guide when laying, check lines and levels regularly.
- Make up a slightly wet mortar mix. Five or six-parts sharp sand to one-part cement is usually adequate for patios. A good guide is that there should be sufficient water to allow the mix to be moulded into a ball without falling apart, but not so much that water would run out of it were it to be squeezed in the hand. Remember, it shouldn't be so wet that it cannot support the weight of the slab or so dry, it won't bond to the back of the stone and/or can't be tapped down to the desired level.
- Where stronger mortar is required, consider your Pointing method. Where polymeric jointing compounds are going to be used, such as Pavetuf Jointing Compound, you may need drainage holes to allow water to drain through to the sub-base during early curing.
- You may wish to consider adding a plasticiser to the mix to increase workability and reduce water demand.



- Always prepare a full bed of mortar for each slab so it tamps down to approximately 30mm. It must support the entire slab.
- Never spot bed or ring bed!
- Certain stone types may benefit from applying Pavetuf Priming Slurry to the back of the slab, immediately prior to laying, to aid adhesion to the bed.
- If laying riven stone, consider how water will best run off the surface of the slab, with the gradient, without being held in a puddle.
- Place the slab and tap down using a rubber mallet. Check the level to your stringlines or using a spirit level.
- Repeat with each individual slab to your chosen laying pattern and maintaining your joint widths.
- Never butt joint!



Cutting

- Use a diamond tipped blade with an appropriate powered disc cutter. Those with a water feed are ideal in order to suppress dust and lengthen the blade life, but not essential for most natural stones.

After Laying

- Do not walk on the paving for at least 24 hours.
- Point as soon as possible.

Pointing / Jointing

- On patios and paths, for easy, all-weather joint filling on all our stone ranges, you can use Pavetuf Jointing Compound. For joint widths of 3mm – 20mm, minimum depth of 20mm. Refer to www.pavetuf.com for full details.
- For use on patios and driveways, a stronger, rapid setting mortar that is suitable all our stone ranges, use our Pavetuf Jointing Mortar. More suited to professional installers, for joint widths of 3mm – 50mm and minimum depth of 200mm. Refer to www.pavetuf.com or full details.
- Alternatively, you can point with a traditional mortar joint. Mix four-parts building sand with one-part cement. Add as little water as possible to bind the mortar, use a plasticiser as directed. Use a small pointing trowel to feed the pointing mortar into empty joints from the edge of a larger trowel and then use a pointing bar/ iron to press it down, taking care to clean the edges of the slabs with a wet soapy sponge as you go.



Domestic Driveways

- None of our Premiastone, Cragstone or Classicstone ranges are recommended specifically for Driveway use.
- All of our Fossestone and Cobblestone ranges are suitable for driveway use.
- Paving surfaces may exhibit tyre marks, particularly lighter colours, and particularly when under braking and power assisted steering.
- Use a four-parts sand to one-part cement moist mortar mix when laying our Natural Stone Block Paving. Lay a small number at a time, maintaining the desired level, checking your lines and joint widths throughout.
- Cobblestone can be laid following the Patio Paving Laying Guide. We'd recommend a mortar bed of minimum 50mm and consider using Pavetuf Priming Slurry on the bottom of each cobble to aid adhesion.
- Fossestone can be laid following both the Patio Paving Laying Guide above and the Natural Stone Block Paving Guide below.
- Pavetuf Jointing Mortar is suitable for use on driveways, when laid on a mortar bed, as above.
- Specific consideration is required on the entire foundation and construction for the potential traffic and it is the responsibility of the user to check its adequacy.

Indoor Use

- Check with our Customer Experience Team what products are suitable for use indoors and with underfloor heating.
- We'd recommend appropriate proprietary sealants are used to assist maintenance and cleaning.



Around Swimming Pools

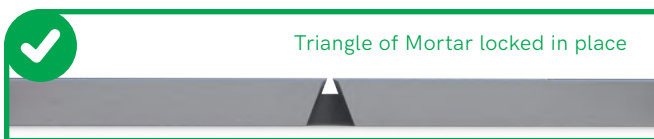
- Check with our Customer Experience Team what products are suitable for use around swimming pools.



Specific Product Guidance

Cragstone and Classicstone.

Always lay largest face (and uncalibrated, riven face) upwards.



Premiastone Slate, Cragstone Tuscan, Classicstone's Harbour Grey, Carbon Black & Steel Blue.
Consider using Pavetuf Slurry Primer to aid adhesion to the mortar bed.

Premiastone's Cornsilk, Maple, Cedar, Ivory

Due to the smooth face of these products, bed transparency may be more apparent than on more rustic surface finishes. Predominantly, down to moisture migration from site conditions, bed transparency is a natural occurrence, particularly on less well drained constructions. The risk can be reduced, speak to our Customer Experience team for more advice.

Classicstone Carbon Black

This product can lighten with weathering and washing. Avoid chemical cleaners and consider sealing them with our Pavetuf Back to Black, either pre or post-install.

All the above advice is for guidance purposes only and with domestic installations in mind. Local building regulations should be followed at all times and 'BS7533 - Pavements constructed with clay, natural stone or concrete pavers', where appropriate. If in doubt, ask a local expert.



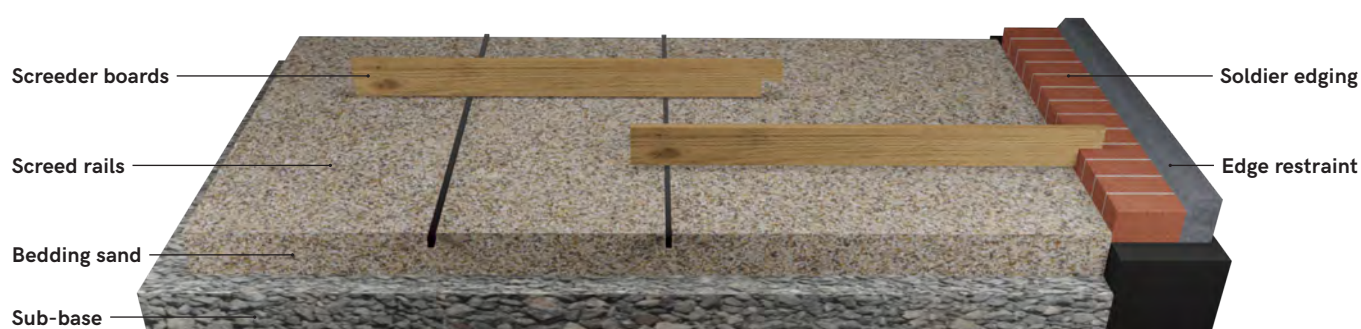


Natural Stone Block Paving Laying Guide

IMPORTANT - All block paving, whether it's a patio, a pathway, a terrace or a driveway requires at least three layers: a sub-base to give it strength; a laying course of sharp sand to support the blocks; and the paving blocks themselves. It also needs to have firm edges to hold the paving securely in place, and the right kind of jointing to fill the gaps.

Edge Restraints

- Set up taut string lines as necessary to act as guides to alignment and levels.
- The entire paved areas must be framed by a firm edge restraint to stop the blocks and sand bed creeping.
- For driveways, we have a range of Kerbs and Edgings to complement our ranges.
- For patios and pathways, in addition to the Kerbs and Edgings, we have a range of walling that may be suitable to be utilised as edging options, they also complement the ranges. Otherwise, consider if haunching in the blocks themselves or an alternative colour is suitable, to create a great looking frame.
- Haunch in your restraint units on a bed of concrete approximately 100-125mm deep to give a really solid edge, six-parts ballast to one-part cement is usually adequate. Tap down, with a rubber mallet, to your required level.
- Allow to fully cure before using a Vibrating Plate Compactor in the area.



Sand Screed / Bedding Sand

- This is not as easy as it may look to some. Getting the levels right is an art. Only do in dry weather.
- The finished screed should leave the blocks approximately 5mm proud of desired finished paving level.
- Rake out a thin layer of sharp sand and compact down using a Vibrating Plate Compactor. One technique to acquire the desired level is to then place screeding rails in the sand and set to the finished level you require. Add more sand, covering your rails and compact again. For the DIY'er a couple of gas pipes is a good acquisition for this purpose.
- Use a straight edge or straight timber and scrape back to the level of the embedded rails.
- Do not walk on the compacted screed.
- Remove the rails, taking care to back fill the void and compact back down by hand using a float to maintain your nice flat screed.

Laying the Blocks

- Mix from crates, ensure you have enough product to finish the job.
- Always work 'uphill'.
- Start at a corner or straight edge.
- Place each block carefully onto the screed bed. Try to place the blocks straight down onto the bed so that sand isn't trapped in the joints.
- To avoid spalling and/or chipping of the blocks, a joint of 2-5mm is required (never butt joint). Consider using spacers.
- Use stringlines throughout to maintain your lines, adjust joints between 2-5mm as required to allow for product tolerances.
- Lay all full blocks first.

Cutting

- Blocks to fill any gaps at the edges or around drainage fittings can be cut to size.
- Use a block splitter or diamond tipped blade with an appropriate powered disc cutter. Those with a water feed are ideal in order to suppress dust and lengthen the blade life, but not essential for most natural stones.
- Avoid very small cuts that are less than one-third the size of a full block. Instead, remove the full block just laid and then cut this along with another full block, each being more than half a block, and use these to fill the gap.

Vibrating & Jointing

- The joints between adjacent blocks are filled (jointed) by sweeping kiln-dried sand over the surface to fill them completely.
- Use a mat on your Vibrating Plate Compactor to avoid heavy scuffing.
- Then travel across the paving in several directions, compacting down the blocks and settling the jointing sand. Once completed, the blocks should be at the set desired level.
- Some joints may need topping-up with extra sand.
- Your area is then ready for immediate use.
- Check the jointing sand again every 3-4 weeks (or after the first heavy rain) as it may have settled further and keep checking until the joints have stabilised.
- Repeat after any maintenance that potentially washes out the joints. Fully topped-up joints will ensure the paving gives you many years of reliable service.

Domestic Driveways

- Specific consideration is required on the entire foundation and construction for the potential traffic.
- For driveways with a steeper incline, maintenance of the joints needs to be considered due to the greater potential for wash out, particularly when in excess of 15°. For steeper inclines, it may be worth considering a rigid construction or the Patio Paving Laying Guide instruction above.
- Blocks may exhibit tyre marks, particularly lighter colours, and particularly when under braking and power assisted steering.

Specific Product Guidance

Fossestone

Use a mat on your Vibrating Plate Compactor and never butt-joint.

Fossestone Midnight Blue

This range can exhibit mineral veins and bedding lines. Individual blocks may display very minor delamination in the early stages. These conditions do not affect performance or long-term durability.

All the above advice is for guidance purposes only and with domestic installations in mind. Local building regulations should be followed at all times and 'BS7533 - Pavements constructed with clay, natural stone or concrete pavers', where appropriate. If in doubt, ask a local expert.



Health & Safety

HEALTH AND SAFETY MUST BE ADHERED TO. A number of items within Natural Paving's product range are heavy or awkward in shape to lift. We recommend that when moving pieces over 25kg, more than one person helps in completing the lift, or that suitable lifting equipment is used.

Furthermore, we would also recommend that gloves, a safety boot with steel toe caps and oil resistant sole, ear defenders and protective clothing should be worn. When cutting our products either with chisels or a rotary disk, it is essential that suitable eye protection is also worn. Always ensure that suitable respiratory protection is worn to avoid the inhalation of dust particles produced by high speed cutting devices. Training may be needed to operate certain equipment; it is your responsibility to ensure this takes place where necessary

Silica Dust

Silica dust is a natural substance found in most rocks, in varying amounts. The dust is generated from cutting and chiseling natural stone materials. Silica dust in some cases can cause serious health issues, therefore it is extremely important that when cutting and chiseling any natural stone products, adequate respiratory protection is worn. For further information on Silica dust please visit www.hse.gov.uk

For further information on Health & Safety, please visit the knowledge hub on www.naturalpaving.co.uk

It is your responsibility to ensure that you comply with all applicable health and safety legislation and guidelines.



Face Protection



Protective Gloves



Eye Protection



Hearing Protection



www.naturalpaving.co.uk

For further information or technical advice call
0330 333 8030

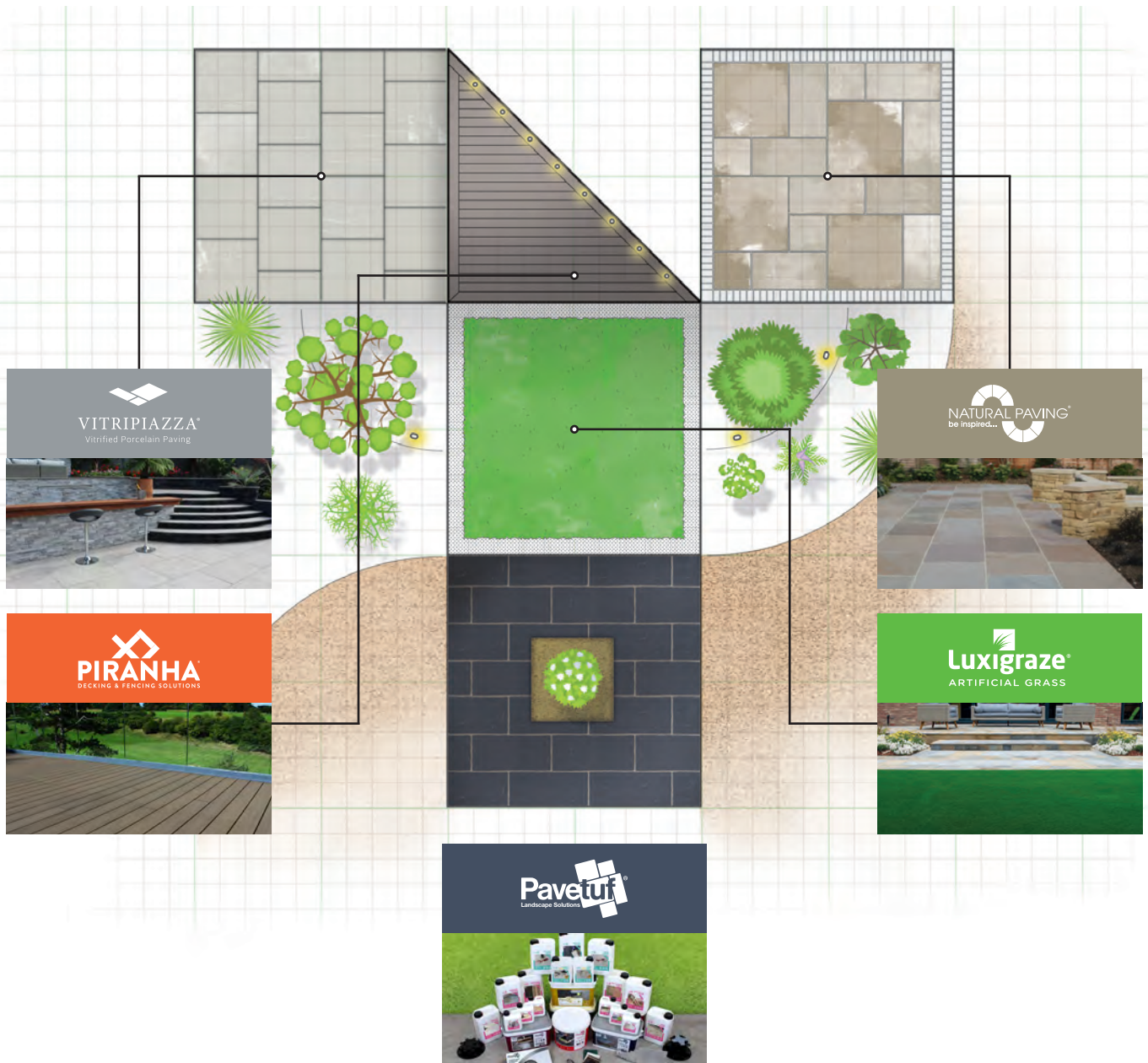
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