How to build raised beds

Thrive
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Carry on Gardening

This leaflet has information to help you if you want to build a raised bed yourself or if you need information to give to a professional contractor.

This information should be read in conjunction with Thrive's general information leaflet, *Raised beds*, which has information on how to decide whether a raised bed is what you need, where to put a raised bed in your garden, different ways to construct the beds and what to grow. This leaflet is available as a download from Thrive's website, **www.carryongardening.org.uk**, or you can call us on 0118 988 5688.

What is the recommended height and width for a raised bed?

- It's important to think about what's most comfortable and practical for you when you are gardening. Also, consider where the bed will be positioned and whether you can stand or sit next to one side of the bed, or whether both sides are accessible.

- **Width**
  The width of a raised bed, which you can access from both sides, can be up to 1,000mm wide. At this width you should be able to reach all areas of the bed with ease. The length of the bed will then be determined by the space you have available and how big you want the bed to be.

  If you can only access the bed from one side, the maximum width is around 500mm.

- **Height**
  The height of a raised bed will be determined by what's best for you. Think about whether you garden standing, sitting or kneeling, whether you'd like to sit on the edge of the bed and how it will look in your garden.

  This table is a guide to the height and width of raised beds, but check the measurements suit you before deciding.

Your needs:	Height of bed	Maximum width of bed with access one side only
Standing	900–1,000mm	500mm
Sitting	690–760mm	500mm
Wheelchair user	615mm	500mm

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Construction and safety

Whether you choose to build the bed yourself, or employ a professional builder, will depend on your skill and budget. Beds using stone or brick might be best left to experts unless you have building experience.

Safety is extremely important – the bed must be capable of bearing the weight of the soil. If in doubt, always consult a professional.

What material do I choose?

- Does the material fit in with your garden and other landscaping materials?
- Does it suit you? For instance, a wide top to the bed increases the distance you need to reach across to get to the soil.
- Is the material easy to use, and does it match your budget?

What does each of the construction materials offer?

Paving slabs

One of the simplest ways to build a raised bed is with old concrete paving slabs (900mm x 600mm x 50mm). Set in the ground on end, these can be used to make a simple raised bed to a maximum height of 600mm.

The positives of paving slabs are:

- they are relatively cheap and long lasting and the narrow profile makes it easier for you to reach over the slab and into the bed
- paving offers a choice of interesting colours and textures but consider carefully before choosing.

The things to consider are:

- paving slabs can look stark and box-like, and you can only build rectangular or square designs in multiples of the slab sizes (unless you cut the slabs with a specialist tool)
- slabs need to be installed with care, or they will lean outwards and become unstable and will look unsightly.

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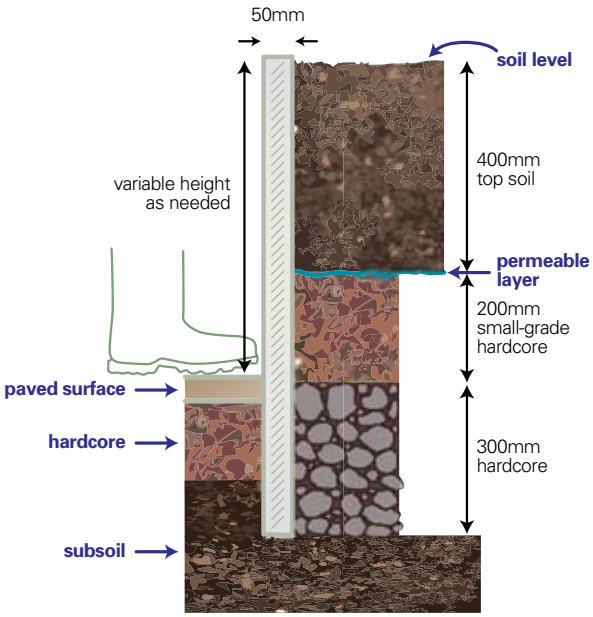
How do I build it using paving slabs?

To make a stable bed it should be butted against paving with one third of the 900mm slab length (300mm) buried in the ground. If however, you are building in soil with no paving, the slab must be buried deeper, around 60 per cent below ground level (600mm). Take care handling the slabs – they are very heavy and awkward to move.

- Dig out the ground to a depth of 300mm (see above) and to the width and length of bed, leaving straight sides.
- Break up the trench surface with a fork, for drainage.
- Put in your slabs, and fix into place with a loose 300mm layer of hardcore.
- Level the slabs vertically and horizontally, using a spirit level.
- Seal the gaps between slabs with heavy-duty adhesive tape.
- Tamp the hardcore down very well with a tamper tool.
- Add a 200mm layer of small-grade hardcore and tamp down.
- Lay down a permeable membrane to keep the hardcore in place.
- Fill with topsoil or compost suitable for your planting.

Diagram 1: Construction using paving slabs



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Softwood boards

For a relatively cheap, rustic look, you could opt for a bed using pressure-treated softwood boards fixed horizontally onto stakes driven into the ground.

The positives of softwood boards are:

- softwood is cheap and doesn't need a great deal of skill or strength to use
- there is no need for foundations
- the wood can be painted or stained to look attractive and fit with your garden.

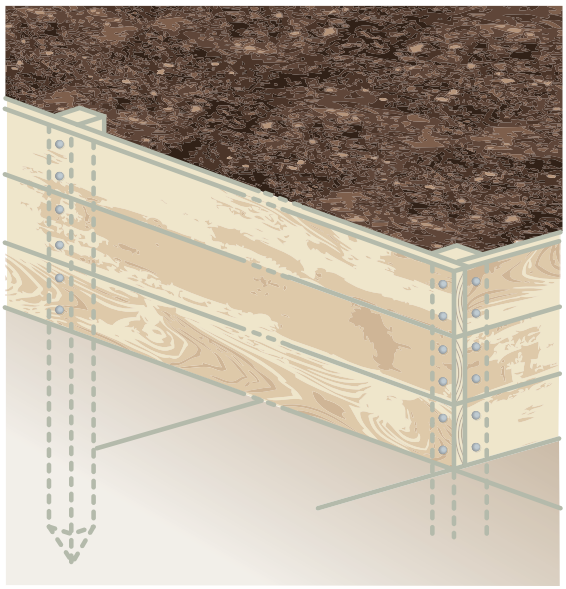
The things to consider are:

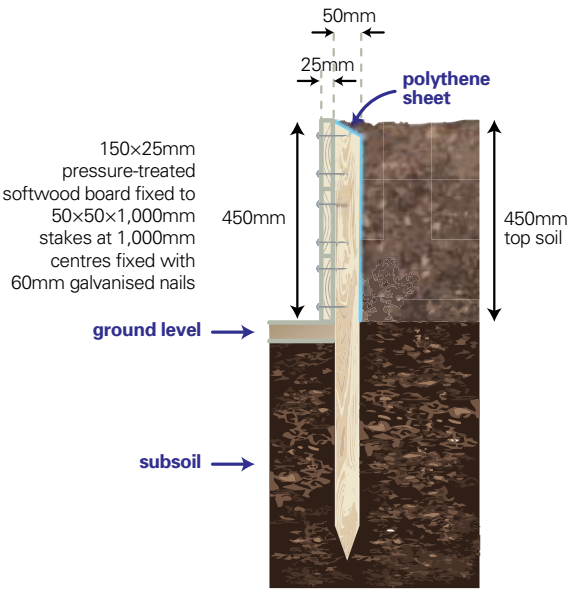
- the wood has a limited lifespan
- as the wood is not particularly strong, the maximum height of the bed is 450mm.

How do I build it using softwood boards?

- Use 25mm x 150mm pressure treated softwood board, which you'll need to cut to the lengths required.
- Place 1,000mm x 50mm x 50mm stakes at corners and at every 1m length.
- Drive the stakes into the ground, to leave 450mm above ground. In soft conditions, use a longer stake if necessary.
- Check the stakes are straight vertically and horizontally with a spirit level and also check they are all in the ground to the same height.
- Set the lowest boards 50mm below ground level. After checking the level, fix the boards to the stakes with galvanised nails or screws. Butt the next row of boards up to the first and fix, and so on.
- Seal any gaps with waterproof self-adhesive tape on the inside.
- To improve drainage in the bed, break the soil surface up to a depth of 300mm with a garden fork.
- Fill with soil or compost to suit.

Diagram 2: Construction using softwood boards





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Timber posts or 'palisades'

Using strong upright timber posts can give you an attractive natural look, and offers more flexibility in the design. This wood is available in 75–200mm thicknesses, in a round or square section – and in a range of lengths.

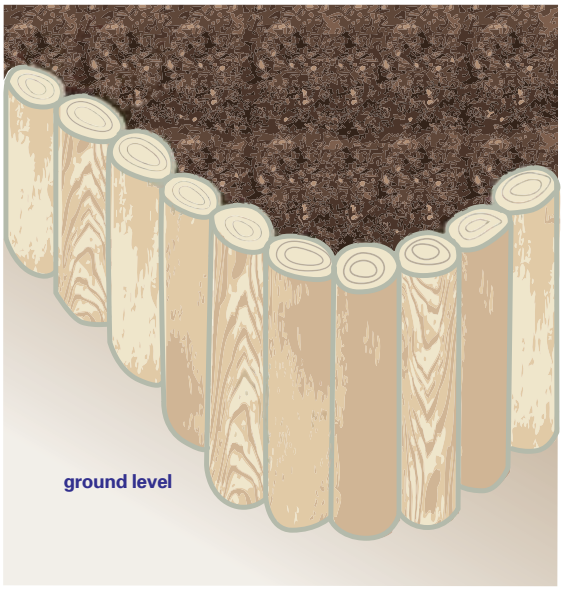
The positives of timber posts are:
- o a natural, attractive and sturdy design
- o you can choose a more varied shape, with curves or height variations
- o no joints are needed
- o relatively strong and long lasting.

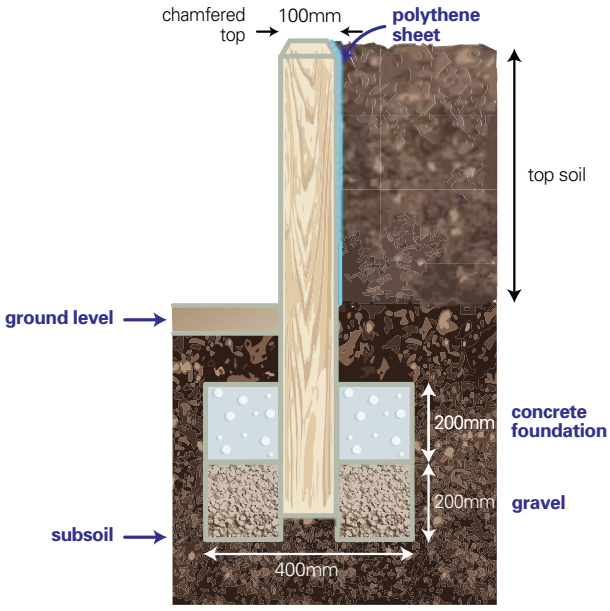
The things to consider are:
- o foundations are needed
- o handling and cutting the posts needs some strength.

How do I build it using timber posts?

- Mark out the dimensions of your bed.
- Dig a 400mm wide trench and make it the same depth as the height you want the bed to be above the ground level. Your bed outline is the centre of the trench.
- Put in a 200mm layer of gravel.
- Set the upright posts in place in the middle of the trench, butted together.
- Check that they are level vertically and that the tops are flush and level.
- Pour in a 200mm layer of concrete to fix the posts in place.
- Put soil into the trench to ground level.
- Line the sides of the bed with a waterproof membrane.
- Break up the soil surface with a fork.

Diagram 3: Construction using timber posts





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Railway sleepers

A bed made from railway sleepers will be extremely strong and long lasting, with an attractive natural look. Sleepers come in a standard size of 250mm × 200mm × 2,400mm.

You can use them horizontally, or cut them in length and lay them in the same way as timber posts.

Sleepers are wide, which means you have to reach further to get to the soil. To help minimise reaching across, you can lay them on their edge.

The positives of railway sleepers are:

- they are fairly easy to source
- they are attractive
- long lasting – some can be guaranteed for 15 years
- you can use the extra width to give you seating, or leaning places.

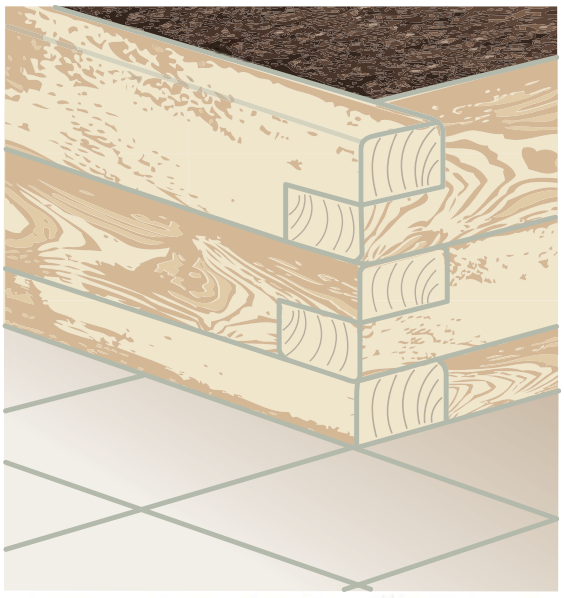
The things to consider are:

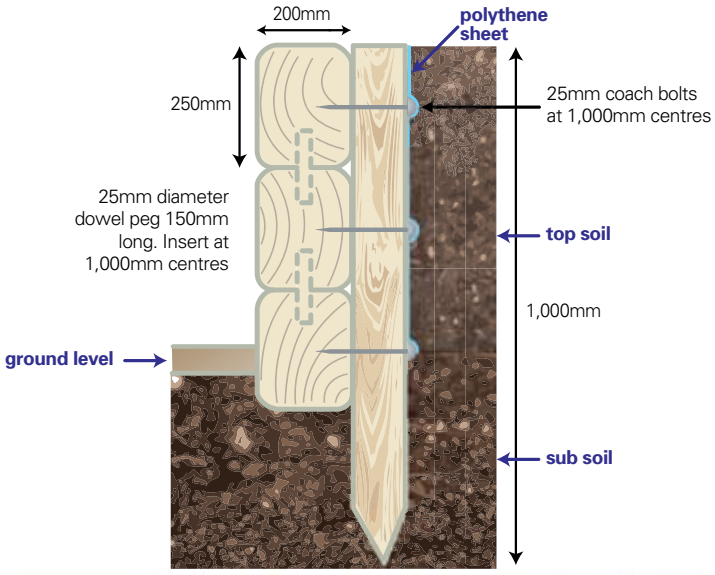
- used lengthways, you can only make square or rectangular beds
- very heavy to handle
- transport can be costly – find a local source
- fixing requires skill, strength and power tools
- the preservative can be toxic to some plants and can stain clothes and hands.

How do I build it using railway sleepers?

- Mark out your bed area.
- Cut the sleepers to length and cut the ends to overlap at corners (see Diagram 4).
- Sink the bottom sleepers into the ground to half their depth.
- Drill holes in the sleepers at 1m centres, 25mm wide by 75mm deep.
- Tap 150mm long dowels into the holes.
- Fix the next layer of sleepers by locking dowels into matching holes.
- Drill and fix the next layer of sleepers.
- At corners and 1m intervals drive 1,000mm × 75mm × 75mm stakes into the ground inside your bed, burying half their length.
- Attach each sleeper to the support stakes using 200mm coach bolts.
- Line the bed walls with polythene to stop preservative leaching into the soil.
- Lay hardcore, permeable membrane and then the soil.

Diagram 4: Construction using railway sleepers





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Brick

Brick is attractive, versatile and long lasting. If you feel confident, a simple vertical wall bed below 600mm high could be built as a DIY project. You will need to use an expert if you are planning anything over 600mm high or 6m long.

The positives of brick are:

- brick is the most versatile material, with a range of colours and textures
- flexible – you can vary the height, make indentations, and even curves
- durable.

The things to consider are:

- cost of materials and labour
- needs experienced labour for anything more than a simple, straight, low structure.

How do I build it using brick?

- Mark out your bed area.
- Dig a 500mm wide trench 375mm deep with the bed outline as the trench centre.
- Lay a concrete foundation 150mm deep using 1 part cement to 2½ parts sand, 3½ parts gravel.
- Lay three courses of bricks, two bricks wide, in the centre of the trench. The mortar mix is 1 part cement to 3 parts sand.
- You have now reached ground level. Lay two courses of engineering or class 5 bricks as a damp course, using waterproof mortar.
- Leave 75mm drainage holes every 2m at the base.
- Continue with courses of standard bricks.
- Top with chamfered coping brick, fixed with waterproof mortar.
- Prepare the bed with hardcore, permeable membrane and then the soil.
- The ground surface should slope away from the bed walls slightly for drainage.

Diagram 5: Construction using brick

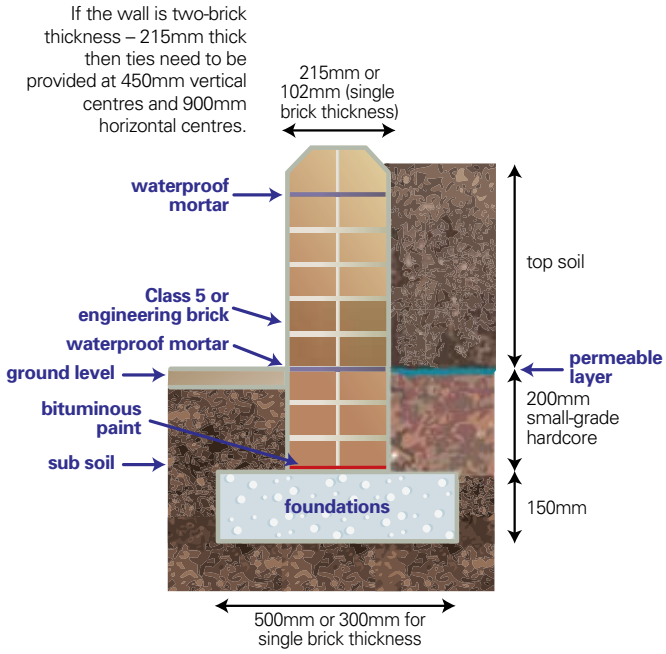
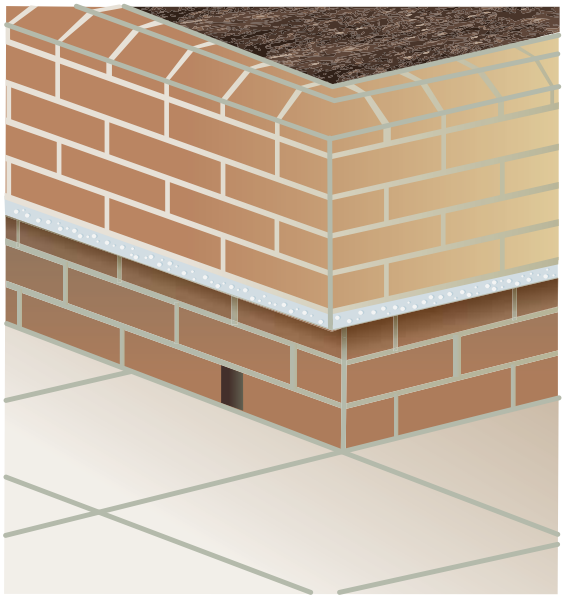


Diagram 6: Construction using brick with toe hole for close working



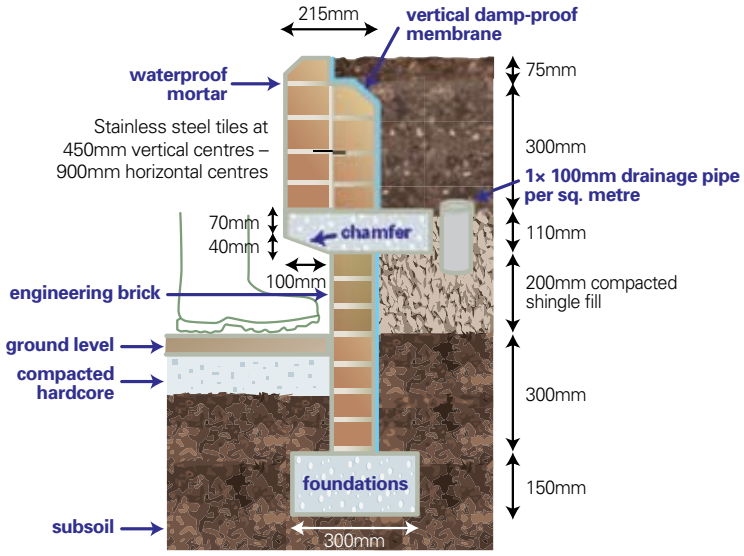


Diagram 6 shows a more sophisticated recessed design with a full length toe hole for more comfortable working if you want to garden facing forwards.

Like brick, reconstituted stone has similar versatile qualities, and comes in standard sizes for ease of use. Take advice from your supplier about the best way to lay it.

Soil

The bonus of using raised beds is that you can choose the soil that will best suit your planting. If you plan an alpine bed, or a bed for plants that like limey soil, prepare the bed accordingly.

As a general rule, smaller raised beds are likely to lose soil nutrients sooner. Ideally, a mix of 50 per cent sterilised garden soil or loam, 50 per cent peat based or peat substitute compost, and slow release fertilizer should give you good results in the first year.

The bed may need topping up with soil/compost again in 12 months. After a year, top dressings of liquid feeds or fertilizer should keep nutrients to a good level.

To improve moisture holding in the bed, apply a mulch of your choice such as fine bark chippings or gravel.

The soil in the bed will take time to settle and will need topping up – this settlement could take a few years in high raised beds so just plant annuals or vegetables to start with and leave permanent planting for later.

We hope this information has been of help.

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