

ADVICE ON
Surfaces for Horses

The
British
Horse
Society



The term multi-use path is used throughout for simplicity to include any path or track with horse access. In England and Wales this covers bridleways, restricted byways, byways open to all traffic, unsurfaced unclassified roads ('green lanes') and permissive routes.

Introduction

Many multi-use paths are tracks of natural low growth vegetation and beaten earth, perhaps with some stone embedded in the consolidated surface. These unsurfaced paths are ideal for equestrian use and capable of sustaining such use if they are adequately drained and kept clear of excess vegetation (overhanging and surface).

The level of intervention or maintenance required to establish or maintain natural paths is closely related to topography, underlying geology and drainage. On many paths, regularly cutting vegetation well back and maintaining drains will avoid the need for more extensive works.

On free-draining soils, artificial surfacing is generally unnecessary as the track will usually remain useable even where farm traffic or other use causes minor erosion. Extreme erosion from heavy use may justify intervention by consolidating the existing surface or preventing material being carried away, rather than introducing artificial surfaces.

On all soils or substrates, even poorly draining ones, successful drainage is often a cheaper, easier and more sustainable way to resolve poaching, erosion or other issues than artificial surfaces. The benefits of attention to drainage cannot be over-emphasised.

Where the soil type is clay, or drainage cannot be improved and use is higher than the surface will bear without poaching, then artificial surfacing may be required for the route to remain passable for all users. If a badly poached or rutted surface dries at some times of year to resemble deeply uneven rock, this too may need attention as it is unpleasant and potentially dangerous for all users.

Successful construction and maintenance of multi-use paths will be aided by an understanding of horses, their physiology and action; the effect that horses may have on a surface, and the effect of a surface on a horse.

Facts about horses

- The average weight of a horse is 500kg and larger riding horses can be 700kg, added to which is the weight of the rider.
- The size of a horse's foot varies from 110mm to 250mm diameter.

- Depending on gait and speed, there may be one, two or three hooves in contact with the ground simultaneously, so a considerable weight can be concentrated on a very small area, particularly as a single foot bearing the full weight will be at the highest speed.
- The point load may be as much as 8.12kN.
- The live load of a horse is around 5kN, which is important where surfaces are suspended, such as bridges or boardwalk.
- A horse's anatomical action flexes the joints in and immediately above the hoof, so at faster paces the toe will dig in and the angle of load will be back as well as down (20 to 40 degrees from vertical). This is more apparent with some horses depending on the flexibility of joints and natural action, which can vary with breed. This is only of relevance at high speed or on a slope, on soft ground or wood.



- The horse's hoof comprises an insensitive outer layer of horn, which surrounds and protects sensitive inner structures. Most horses in regular work are shod with metal shoes to protect the bearing surface of the hoof wall from excessive wear from hard surfaces. The disadvantage is that the metal shoes, especially when well worn, can slip on some artificial surfaces depending on their polished stone value¹.
- The sole of the hoof appears hard but is relatively thin and easily bruised (comparable with human nails). On flat, compacted surfaces it will not come into contact with the path because of its natural arch, but on unconsolidated stone surfaces sharp edges of stones may protrude into and bruise the sole of the foot, causing lameness. (Put pressure on your nail with a stone to feel what it may be like.)
- Loose stones may also become wedged between the shoe and the sole, exerting painful pressure on the underlying tissues. Infection within the hoof resulting from stone punctures or bruising to the sole can cause serious problems requiring veterinary attention. A stone-free surface is therefore preferred to avoid injury to horses.
- The level of concussion to both the hoof and horses' legs increases with the hardness of the surface and with the speed at which the horse is moving. This is exactly comparable to humans – running on a pavement transfers a lot more stress to the bones, joints and soft tissues than running on a grass sward, with typical increased wear and risk of deterioration and injury – therefore, riders avoid hard surfaces where possible.
- The greatest risks for horses are:
 - ◆ Slippery tarmac or other sealed surface
 - ◆ Sharp stones which may bruise or puncture the soles of hooves
 - ◆ Boggy ground, holes or deep mud in which they may strain a tendon or break a leg
- As with humans, slopes or steps (natural or created) change the force through each footfall which may increase stress on the surface. Going up, the thrust is backwards and down; going down a slope, there is a tendency to slide; down a step will cause a concentrated downward force in a small area at the base of the step. The greater weight of a horse (and four feet) puts more stress on a slope or below a drop than a human and is often underestimated.

¹ Common measurement of slippage

Ideal Path Surface

The ideal path surface preferred by horses and their riders or drivers will therefore be:

- ◆ Non slip
- ◆ Resilient, with some give (25 to 50mm at point load)
- ◆ Well drained
- ◆ Adequate bearing capacity to avoid erosion or poaching
- ◆ Free from stones, especially if angular or sharp edged

Path Types

Types of path surface, in descending order of preference, are:

- 1 Short, firm, well-drained turf, which is ideal for riding and walking, and usually firm enough for cycling.
- 2 Vegetated paths on a firm base such as grassed over forest roads or disused railway tracks stripped of ballast to expose consolidated ash solum, which are ideal for supporting year-round multi-use, provided they are well drained.
- 3 Paths where the natural vegetation is protected or reinforced by some type of partial surfacing, such as embedded stone.
- 4 Formally constructed paths with firm, non-slip surface.
- 5 Sealed surfaces may be necessary to facilitate cycle or wheelchair access, but care should be taken to ensure that the finished surface is not hazardous to horses (see Bituminous Surface Treatment page 13).

Hard surfaces

On paths where horses are legally included and may be a common user – bridleways and restricted byways – a surface more appropriate to their use than to motor traffic or cycles should be provided. If this is not practical, or other users are in the majority then a compromise, in consultation with local BHS representatives, may be reached, preferably in providing parallel surfaces for different users.

On tracks where a hard surface is necessary for vehicles, a grass or other vegetated central or parallel strip offers a better surface for horses while providing reinforced wheel tracks and offers a good compromise solution. It is important that the unsurfaced strip has even ground and grass growth is controlled by use or cutting because if it obscures potential hazards riders

are less likely to use it. It must be free from loose stones or debris that could be a trip hazard or cause injury. Care must be taken during maintenance of the hard surface that spoil or debris is not dumped on the grass strips.

On paths such as cycle tracks or permissive paths where horses are included as vulnerable road users but are not the majority user, a less than ideal equestrian surface may be acceptable where such a path gives equestrians a route free of motor vehicles.

Recent successes have occurred using resin-bound rubber crumb to provide a hard surface that can look like tarmac, is easily used by cycles and wheelchairs but is also excellent under foot for pedestrians and riders. This is a surface that the BHS recommends for shared use construction.

Path Construction

Where a constructed surface is required, the three elements of a good multi-use path construction to be considered are drainage, foundation and surface. The factors influencing all three will depend on local geology, gradient, nature of the path (such as holloway, in woodland, open and windy), local materials and use.

Points of particular importance on paths for equestrian use

- Weight of horses and effect of horses' hooves must be taken into account in constructing or surfacing any paths and in ensuring drainage level will be adequate to prevent poaching.
- Where hard edged drainage grips or cut-offs have been created in the path, the space between the sides should ideally be less than 100mm or more than 300mm to prevent a horse's foot becoming stuck. They should be clearly visible.
- Brash or fascines traditionally used as floating rafts to support paths over wet ground are not usually recommended on equestrian paths because of risk of horses' hooves slipping through surfacing to penetrate branches below, leading to potential injury. However, they have been used successfully in Northumberland with geotextile to prevent the surfacing sinking into the fascines.
- Free-draining sandy or chalk soils are usually able to withstand horse use without need for surfacing.
- Clay soils are particularly prone to damage by horses. Well-used paths on such soils soon become a sticky mess impassable to walkers, cyclists or riders and may still be impassable in the driest weather if a badly poached surface hardens to jagged uneven rock. Clay paths will usually

therefore need attention to drainage to avoid areas becoming wet and perhaps amelioration of the surface with other substances to reduce its overall clay content.

Drainage, foundation and surface

Drainage is crucial to the suitability and longevity of a path surface

If drainage is inadequate or inappropriate, any other work may be completely wasted. This is unfortunately too common, so the importance of getting the drainage right cannot be emphasised enough.

In many situations, attention to the drainage may be all that is required for a considerable improvement. It may be feasible to undertake drainage on a project then check how it works for a period before further work to finish the surface. The need for more drainage work may be identified which can then be undertaken without loss of a new surface (because it has not been laid) or it may become apparent that drainage alone has been the solution, or that less surfacing work than originally planned is required.

Drains take many forms in construction, depending on geology, space, gradient and catchment. For routes used by horses, it is important to remember:

- 1 the much greater weight and point load of a horse compared with a pedestrian or cycle, so more drainage may be necessary for the surface to remain sound; and
- 2 that surface drains, cut-offs or other cross slope structures to slow and divert surface water must take account of hoof size as well as potential as a trip or slip hazard.

Guidance on drainage and construction of paths is well covered elsewhere: On the Right Track: Surface Requirements for Shared Use Routes (Countryside Agency), Making the Best of Byways (Defra) and Paths for All (produced in partnership with, and available from, BHS Scotland, www.bhs.org.uk/scotland).

Once a firm foundation has been prepared a bearing surface layer will be required to spread the loads imposed by the equestrian traffic and to assist in protecting the foundation. The material chosen for the surfacing should preferably be readily available from local sources so that topping up can easily be undertaken as the need arises.

Cross drains

Cross drains are often required on sloping paths or tracks and can pose a

particular problem to horses. It is important that drains are of a construction where a horse's hoof is unlikely to go into the drain and particularly not to be caught by it. Wide shallow drains are therefore safer than narrow deep ones unless the latter are slits or covered, in which case buried pipes are probably better as covers can be slippery. The sides of a cross-drain should form a concave profile, not vertical and particularly not convex as these are more likely to cause injury.



Good and bad profiles

Metal gratings should be avoided as they are likely to be slippery to metal-shod horses and should never extend over the full width of a track. Metal gratings covering a gully across a tarmac road are a common engineering solution. In a case where this is deemed necessary, a 'bridge' should be made of at least 500mm so that horses can cross without touching the gratings, or gratings should have a finish which is non-slip to shod and unshod horses.

The wide variety of weather conditions and run-off rates in most areas means that drains will have to be constructed dependent on the requirements of any individual site. A width between 70 and 200 mm should be avoided as a potential 'hoof trap' unless the drain is constructed with a shallow V profile.

Surfacing options

Grass paths should always be the first choice for multi-use, but sustainability depends on drainage and soil type. Regular use will help maintain a short sward suitable for all users, and provided trampling from use does not

exceed plant growth, virtually no maintenance will be required.

Some mixes of grass species are more resistant to wear than others. Annual meadow grass is one of the most resistant species and can be introduced to or the proportion increased in most swards to improve wear resistance (subject to conservation controls). Usual treatments for grass sward – aerating, scarifying, fertilising, rolling and mowing – can make the sward stronger and denser.

Where use is high and vegetation is unable to keep up with wear resulting in deterioration of the sward despite attention to drainage and the sward quality, artificial surfacing may be required.

Well-drained short grass can provide a suitable year-round alternative parallel to a surfaced path, but it will be avoided if boggy or litter-strewn or where hidden hazards may be concealed by long vegetation. Riders will avoid vegetation that may obscure holes, drainage channels or debris because of risk of injury to the horse. Mowing may be necessary where use is insufficient to restrict grass growth.

On vehicular tracks a grass or other vegetated central or parallel strip offers a better surface for horses while providing reinforced wheel tracks. If the grass growth is not controlled by use or cutting, riders may avoid it in case of obscured hazards.

Rough, tussocky moorland grass is unsuitable for most horses.

Reinforced grass paths are where cellular grids of plastic or concrete (geocell) are filled with earth or aggregate. If planted or seeded, the resultant turf may be protected from excess wear, especially by vehicles, because the grid takes most of the contact. The grass can be mown and treated the same as with no reinforcement and the grid can be almost undetectable. Its success depends on the drainage quality of the subsurface and earth, the degree of wear and quality of turf.

Geocell may also be used simply to confine aggregate on a difficult surface or to provide a temporary route for construction traffic without intention of it being vegetated.

If considered for use where there is horse access, care must be taken to identify grids which are not slippery – some are dangerous in providing no grip at all to shod horses. The cell size must be smaller than a horse's foot so that if the earth contents erodes the cell will not form a hole which could trap a horse's foot.

If use of geocell is essential, the cell contents should be frequently checked and topped up if necessary to ensure it is as high as the grid to provide a

safe path for horses.

Woodchips may be popular with riders but are unsuitable for wheelchairs and cyclists. They are difficult to contain to the path and rot relatively quickly, requiring regular removal and/or replacement. They are not recommended.

Recycled materials such as shredded tyres, chopped plastic cable casing, and synthetic fabric scraps incorporated with sand, each on a well-draining substrate, can provide an excellent surface for horses. A border may be needed to contain the material within the path width as it is unbound. It can be a good solution on the horse section of multi-use paths with separate tracks for different user types. Care must be taken to ensure there are no metal or other foreign parts included in the material.

Some rubber crumb or shred materials can be bound with resin to form an excellent firm surface that is ideal for horses.

Resin-bound rubber crumb has been used successfully on bridleways well-used by horses, even on a 1:4 gradient to provide a hard surface that can look like tarmac, is easily used by cycles and wheelchairs but is also excellent under foot for pedestrians and riders. This is a surface that the BHS recommends on bridleways or shared use paths where a natural surface is not sustainable.

Rubber compound interlocking mats, blocks and pavers or hot spray application have been successful in many equestrian applications around race tracks and training yards. It is expensive but may be a solution for short stretches such as a bridge or ramp. On inclined surfaces, consideration must be given to the force of hooves which will be much greater than on the flat. Applications will need to be secure so that they do not tear away from anchor points (mats) or separate from the sub surface (spray applications).

Boardwalk is not always appropriate for horse use but some situations have no other solution, although a form of Irish ford (adjacent pipes laid laterally across the path width with surface on top so water can pass through) or causeways have been used successfully where a boardwalk was suggested.

As with a bridge, solidity and anti-slip finish are important with good landings at the ends, clear sightlines so that any users can choose to wait rather than share the boardwalk and be of adequate width – 2m is recommended but BHS representatives may agree a lesser width in local circumstances where it is practical. Passing places may be required on long lengths.

Wire mesh must not be used to attempt a non-slip surface as it may catch

the nails used in horse shoes. There are grit products which can be applied to boards which are successful for all users, particularly if used from new. A kickboard along edges may increase safety.

Stone flags have been used commonly historically to provide safe paths across boggy uplands, in particular, and modern flags have been used successfully on such as the Pennine Bridleway. There is a danger where such paths are narrow if the ground immediately next to the path is boggy and a horse could step off the path when attempting to pass others. Additional flags or other hard surfacing should be used to create passing places wide enough for users to comfortably pass each other or for a horse to turn if necessary on long sections or where the full length cannot be seen. Ideally users should be able to see before setting foot on the flags whether the next section of the path is clear.

Soil reversal uses a digger to invert the soil, burying the top soil, with sub soil on the surface which is then profiled to provide drainage and base for a new surface, sometimes stone or stone on geotextile, or left as a natural surface to vegetate. It has been used successfully on many bridleways over poorly drained ground in northern England.

Sand is popular with riders, provided it is not too deep (recommended 75mm on 150mm depth of free-draining sub-base) but it is usually difficult to contain on a path. It can be good on horse-only sections.

Stone pitching is not ideal for horses but may be necessary to provide a firm entry/exit to a ford, and may be the only option on some heavily used steep hill paths. Smaller random (rather than dressed) stones laid to provide a slightly irregular finished surface will allow more grip than large, flat stone faces, but only if the horse's hoof can be placed flat on their top surface. Stones should be pitched vertically with the longest face into the slope. Adjoining stones should be pitched to provide a foothold of minimum 200mm width. Downhill gradient of foothold should be less than five degrees. Stone which may become polished and slippery through wear (such as limestone) should be avoided.

Steps can be used by horses, particularly if there is room to allow all four feet to stand together between risers, but wherever possible an alternative should be found, such as a graded ramp which is better for most users, including those with impaired mobility and cyclists. Where steps are the only option the following dimensions are ideal but may be adjusted in consultation with local BHS representatives:

- Riser height should be minimum 150mm, maximum 250mm
- Tread depth (distance from front to back of step) should be minimum

2000mm

Quarried aggregate without a consolidated dust wearing course is not appropriate for multi-use paths because the physiology of horses' feet mean that angular stones are damaging and may result in mild or serious lameness. Where it is used as a substrate or structural layer, the surface must be finished with 75-100mm depth compacted MOT type 1 (40mm-dust) dressed with dust to fill the spaces between the stones and consolidated to withstand rainfall.

Aggregate surfaces may occur naturally or where erosion has removed an upper surface layer. Such a surface is 'out of repair' as it limits use by legitimate users (horse riders) and should be topped off with a consolidated dust layer.

A specification for an aggregate surface should always include clauses for topping-off as required to a uniform consolidated dust finish and checking after so many months with subsequent top-off as appropriate. This is because aggregate quality is variable; it may settle in transit to give inconsistent levels of fines throughout the laid length of track or may wash through if there is heavy rain before consolidation.

Any new construction or path restoration project should always provide a finished surface to this standard. It is not acceptable to leave an unconsolidated surface of stones following work. Any stony tracks may need improvement by topping-off with consolidated dust to avoid injury to horses.

Rubble or similar recycled material may be used as a substrate but must be finished with a wearing surface as for aggregate. It is very important that it is 'clean', that is, not contaminated by material such as wire, glass or nails that could work to the surface and cause puncture wounds or trip hazards. Specifications should state non-recycled MOT type 1 or clean rubble as a requirement.

Bredon gravel and hoggin are specific types of aggregate which are considered self-binding. They can be very successful for horse use. Such aggregates tend to improve with weathering, which assists the consolidation process. Care may be required in their first year of use in gateways or inclines where horses' hooves may dig into and loosen the surface. Periodic compaction over the first year may be required to ensure the surface does not loosen and start to scatter or degrade.

Due to closure of quarries, such material is less easily available. The alternatives of Coxwell self-binding gravel and Hydraulically Bound Materials have been used with success.

Road planings are used successfully and relatively cheaply to form a base

course, on top of geotextile if the subsurface is wet, rolled and consolidated then topped with whinstone 3mm to dust (or similar local stone). This is a popular solution for railway trails as it provides some give for horse and pedestrian use but is still smooth enough for cycles. Planings can be consolidated, sometimes with added bitumen to form a sealed surface again, but this is not recommended because it forms a slippery surface for horses. Planings must be screened to ensure there are no metal, glass, wire or other foreign bodies included in the material.

Examples:

Broughton in Furness disused railway line was surfaced with a **combination of crushed slate** from Burlington slate quarry, mainly MOT grade stone (25mm to dust), topped off with 10mm to dust to form a smooth surface. The stone was laid and spread with a tracked excavator and rolled in with a vibrating roller top a hard surface. It has performed well as a bridleway and cycle route, with some occasional vehicle traffic from land owners. Grass has grown back through the surface in places which needs cutting back or spraying at different times but the slate surface remains very good and fit for purpose.

Durham Railway Paths use **road planings** extensively throughout their 100 miles with alternatives of dolomite base course where environment dictates and bitumen on slopes where water erosion is a problem. For the latter, asphalt has proved to be the only affordable solution, but is acknowledged as not being ideal for horses. Grass or gravel verges or mounting blocks have been provided where possible.

Coxwell gravel supplied by Grundon was used on a Berkshire byway 15 years ago and still provides a good surface. It has also been used successfully in Richmond Park and for cycle tracks. Grundon's website, www.grundon.com/ provides construction specifications.

Concrete gives highly variable results depending on its composition and it can become very dangerously slippery. Consequently, the Society would not normally find it acceptable as a new surface unless local BHS representatives approve its use in the circumstances. Only the specification of concrete that is most likely to be safe (see below) should be used. Remedial action will be required if the surface should become dangerous, which could be more costly than using the specified mix.

The concrete mix most likely to give a safe surface is RC 35/45 CEM1, without added water, as it is least likely to polish and become slippery. The final tamped and highly roughened surface should be covered to cure slowly and completely. A lower quality concrete may either become polished mortar or, if the aggregate becomes exposed, the aggregate may polish to

become slippery. Some gravel aggregates are more likely to become smooth with wear. Crusher run carboniferous limestone or granite is more likely to remain rough even if partially exposed. Aggregate of high Polished Stone Value (gritty when worn) should be used if there is risk of the mortar wearing.

Concrete which has become slippery can be treated with machinery to roughen the surface by cutting grooves, sometimes in a set pattern of squares. This is commonly undertaken by contractors on dairy farms where slurry degrades the concrete and it has been successful even on slopes.

If concrete is required for vehicular access, a safe surface in between concrete wheel tracks or alongside a concrete track may be a solution.

If use of concrete is unavoidable for short distances, such as a bridge or its transition ramps, then care must be taken to ensure the surface is well roughened and ridged across the width by hard tamping (raising and lowering the compacting beam). Brushing does not usually give a durable rough finish.

Concrete blocks, pavements, setts or bricks may be slippery for horses unless the blocks have been specifically made with high Polished Stone Value (PSV: a high PSV is gritty when worn, a low PSV is very smooth and potentially slippery). The quality of cement used in manufacture can also affect slip hazard, as in concrete slab above. It is important to check with manufacturers that blocks sold as non-slip include being non-slip to shod and unshod horses, not only to vehicles and pedestrians.

Bituminous Surface Treatment/Stone Mastic Asphalt 'Tarmac'

Tarmac is a standard carriageway surface in UK for highways or private roads. It is not appropriate on multi-use paths because it is designed to provide grip for motor vehicle tyres, not for metal horse shoes, and is often dangerously slippery for horses, a problem that may increase or decrease with wear depending on the exact compound in use and its final surface treatment.

Bituminous surfaces consist of a wearing layer of aggregate bound with bitumen. Aggregate and bitumen compounds vary depending on specifications and area. The bitumen forms a film over the stone which is gradually removed by wear.

All bituminous surfaces have the potential to be slippery unless appropriate preventative action is taken and this applies even more to horses than to

vehicles as the surface treatments are designed for motor vehicles. The result is a surface that results in horses having to proceed unnaturally slowly and carefully, much as a car in icy conditions, which is unreasonable.

For motor vehicles, the increased skid potential of the unworn film may be reduced in key areas (e.g. junction approaches) by mechanically removal using grit brushing. This can be helpful on parts of the surface which are less used by vehicles but more used by horses such as close to the edge of the road.

The high skid risk can last for an unpredictable length of time depending on the variables of volume and type of traffic, construction method, stone and bitumen types and surface treatments. Vehicular wear can bring about an improvement quite effectively but only in the wheel tracks.

Horses may take different paths which remain slippery for longer periods particularly as horses are likely to keep close to the edge on busy roads where there is little vehicular wear so the slip hazard may remain for a long time. Top dressing with grit on routes used by horses is strongly recommended with attention to the usual path of the horses (i.e. road edge on a busy route).

Provided that the aggregates used within the mixes have a high resistance to polishing (high polished stone value means that the stone retains a surface grittiness even when worn) and once the bituminous film has been suitably worn by vehicular traffic may produce an acceptable surface, but not necessarily as wear by wheeled traffic can result in an embedded surface that is more slippery to horses. Embedment due to high surface pressure is a common cause of failure of surface dressing therefore any surface of this type must be laid on a high quality base layer.

Stone mastic asphalt is such a problem that the BHS worked with an association of highway engineers (CSS, now ADEPT) to produce Horses and Highway Surfacing – A guidance note for highway authorities. Reported incidents of horses slipping on asphalt have increased since the guidance was published in 2005, indicating that it is a continuing and increasing problem. The report recommends grit during construction (e.g. 3mm quartzite at 1kg/m²) or post application of dry uncoated grit spread at 1kg/m² and rolled with a steel roller to abrade the bituminous film. It is important that the specification to contractors includes such measures as appropriate during construction to minimise the slip or skid incidences.

² Where trees or bushes overhang the track for more than half its width in total, or have reduced the width, clearing these back to provide the maximum width will let sun and wind into the track to assist in keeping the surface firm and dry, and improve the available width for all users.

Hot rolled asphalt is usually better than stone mastic asphalt in terms of slip hazard for horses.

Where a tarmac surface is unavoidable, a top dressing of calcined bauxite has been used (Lousy Hill, Littlebeck, North Yorkshire) and was successful initially (subsequent condition unknown) but it is likely that such treatments need repeating periodically. A treatment of 10mm close graded wearing course of dry steel slag aggregate applied while the surface was still hot (Middleham, North Yorkshire) was not successful.

Considerations for Shared Use or Cycle Tracks

Bituminous surfaces consist of a wearing layer of aggregate bound with bitumen. Aggregate and bitumen compounds vary depending on specifications and area. The bitumen forms a film over the stone which is gradually removed by wear. Softer surfaces are more ideal for horses than any hard sealed surface, although where a horse-friendly surface is considered impossible because the majority use is cycling there are ways in which horses can be accommodated so that off-road routes are available to all vulnerable road users.

Increasingly:

- Off-road routes are being provided for cycling which could benefit riders who are also vulnerable road users; and
- Surfaces of routes with rights for riders or carriage drivers are being changed to facilitate cycling but to the detriment of equestrian access.

This is particularly influenced by current funding initiatives making provision for cycling. However, with more awareness in the planning stages, it is obvious that all non-motorised vulnerable road users can benefit from all off-road tracks and none need be excluded. Importantly, it is sensible and cost-effective to include all who wish to exercise and transport themselves in safety away from the danger and pollution of motor traffic and with care for the environment, rather than only accommodating one section of society.

Bound rubber-crumb-aggregate mixes (see page 10) have been found to be appropriate for all users and very acceptable for horses on multi-user paths. Although the initial cost may be higher than for tarmac, it has many advantages in construction, particularly on sites with limited access, and in not requiring edging (unlike tarmac) as well as providing a more beneficial surface for pedestrian and equestrian users without detriment to vehicles. Its porosity means it is safer for all users in icy conditions, there will no puddles and dung will quickly wash through. It has a very much longer life

³ 'Soft' does not necessarily mean 'unstrengthened'. For instance, an old railway line has a certain amount of inherent strength that might only need attention at selected spots.

guarantee than tarmac.

Where equestrian rights exist, natural surfaces are best managed by drainage, strengthening and unsealed surfacing as appropriate to the local conditions rather than seeking a sealed surface. On shared use routes where this has failed or is judged insufficient, the following approach is recommended:

- 1 If a sealed surface is judged to be essential (by the highway authority's rights of way officer), the first choice should be two metres of surface suitable for horses alongside the sealed surface, by dedicating additional width as multi-use path if appropriate.

If it is not possible to have different surfaces alongside one another, then the options should be, in order of preference:

- 2 Two sealed strips for wheels either side of a central softer strip for horses. This is particularly important where there is tall side vegetation², as is often the case with old railways, as it allows the tallest users – the horse riders whose head height is often over three metres – to be in the centre away from the overhanging vegetation. The two sealed strips can also act as wheel tracks for maintenance vehicles and encourage 'keep to the left' use by cyclists. Signs should be used to encourage user separation.
- 3 Divide the surface along the length down the middle with one side sealed, the other half softer³. This would be acceptable if one or both sides of the track did not have overhanging vegetation.
4. Where a sealed surface is created, care should be taken to make it non-slip for horses. Surface treatments that have been found to be safest for horses are included on page 14.

N.B. Putting a tarmac strip down the middle and leaving two narrow verges, too narrow for horses, is a common bad practice. It forces all users onto the tarmac strip when they would be better served by a choice of surfaces, each of appropriate width. It may cause congestion or conflict between users and excessive wear of one part of the width. It is much better to put the tarmac strip as far to one side as possible.

In certain circumstances, a single surface for all users, designed for the majority user, may be appropriate as an off-road route is better and safer for all than pushing horses onto roads with motor traffic.

In Scotland horses have a right of responsible access to most land, but paths and tracks are of high importance for equestrian access. Please refer to the companion advice note for Scotland or contact Helene

Mauchlen, BHS National Manager for Scotland, helene.mauchlen@bhs.org.uk, 02476 840727. In Northern Ireland, contact Susan Spratt, BHS National Manager for Ireland, s.spratt@bhs.org.uk, 02476 840736 or 07808 141079.

If this advice note is a printed copy, please check for the latest version on
www.bhs.org.uk/access-and-bridleways. Revised 12/2016

For more information on The British Horse Society's rights of way work contact:

Access and Rights of Way Department,
The British Horse Society, Abbey Park, Stareton, Kenilworth,
Warwickshire CV8 2XZ
Telephone: 02476 840581 Email: access@bhs.org.uk

This advice note applies to England and Wales. For information on
Scotland, contact Helene Mauchlen, National Manager for Scotland,
Woodburn, Crieff, Perthshire PH7 3RG
Telephone: 02476 840727 Email: helene.mauchlen@bhs.org.uk

For information on Northern Ireland please contact
Susan Spratt, National Manager for Ireland, Hawks Hill Cottage,
26 Portaferry Road, Greyabbey, Newtownards, Co. Down BT22 2RU
Telephone: 02476 840736 Mobile: 07808 141079 Email: susan.spratt@bhs.org.uk

The logo for The British Horse Society, featuring the text "The British Horse Society" in a serif font, stacked vertically, within a white rectangular box.