



**Landscape Management Plan
Lapstone Playing Fields,
Pavillion Close,
Fair Oak,
Eastleigh
SO50 7PS**

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BACKGROUND

1.1 Site description

The site is located within the parish of Fair Oak, Eastleigh and is surrounded by fields and woodland to the south and west with Wyvern School located to the north and low density housing to the east. A new housing development '1 Horton Heath' is to be created to the south west of the site (planning portal reference: O/20/89498).

1.1.1 Drainage: An underground drainage channel runs east-west across the northern extent of the site, issuing into a culvert in the western reaches of the playing fields. This eventually drains into Quobleigh pond in the woodlands to the west, creating a wet woodland habitat.

1.1.2 Access: There are a number of pedestrian access points round the periphery of the playing fields with the main vehicular access via Pavilion way to the north east. This access point is gated but can be opened for construction plant. The access to the south leads to a board walk, of approximately 50 metres in length and bridges a boggy area of mainly goat willow with bramble. As the land rises out of the boggy area, it becomes dryer and leads to an area of woodland where the board walk stops. It is this area of woodland where the new footpath is proposed.

1.2 Trees

The tree population is concentrated around the periphery of the playing fields, where hedges and boundary trees connect the site to the surrounding landscape. The tree species around the periphery, and within the adjacent woodland to the south and west, are predominantly pedunculate oak (*Quercus robur*) with ash (*Fraxinus excelsior*) and are of mixed ages. The edges of the woodland to the south and west are dominated by goat willow (*Salix caprea*) with oak interspersed. The hedges demarcating the southern and western site boundary comprise mainly black thorn (*Prunus spinosa*) and hawthorn (*Crataegus monogyna*) and have become leggy and suppressed with bramble (*Rubus fruticosus*). The area of woodland shown on plan HB1 is dominated by hazel (*Corylus avellana*) with self seeded specimens of bird cherry (*Prunus avium*). It is likely that the hazel has been managed as a 'working' copse in the past, providing hazel products for agriculture and such. As the cope is no longer managed, the hazel trees, or stools, have become congested with a significant amount of dead wood with very little light reaching the woodland floor. The other trees in this area are generally in poor health with considerable dieback, which is likely to be due to the dark growing conditions. Further details are available in the tree schedule at Appendix 1 with photographs of the trees in context at Appendix 2. A plan of the site (HB1) showing the tree locations is at Appendix 4 and 5.

1.2.1 The culverted channel in the northern reaches of the site issues into a boggy gully which descends by approximately 2-3 metres and is approximately

50 metres in length. The banks of this gully have become colonised with goat willow (*Salix caprea*), a 'pioneer' species, which is one of the first tree species to colonise hostile sites, preparing the ground for other longer living species. As one of the UK's most common tree species, goat willow is also extremely tolerant of wet growing conditions and is able to readily colonise where other species cannot grow. They are one of the smaller species rarely exceeding 10 metres in height and are relatively short lived compared to other counterparts such as oak and beech. In essence, I do not consider this habitat to be significant in arboricultural terms as this species is not at all rare and will easily colonise any scrub or wet land. The trees form a group of a similar age (approximately 20-30 years old), and is therefore lacking in age and species diversity.

1.2.2 The goat willow dominates this area, as it typically will do, casting numerous seeds with a high colonisation rate, although it could, potentially, prepare the ground for a more diverse 'wet woodland' to develop: Wet woodland is a protected habitat due to widespread pressure to drain land for agriculture and to accommodate housing. At present, this group of trees does not constitute 'wet woodland' or 'willow carr' however, Eastleigh Borough Council has expressed concern over the loss of these trees due to their potential to develop into a wet woodland.

2.0 THE PROPOSAL

This report relates specifically to two aspects of the proposed application; firstly, to create two natural turf cricket pitches within Lapstone playing fields and secondly, to install a footpath which would connect with the southern end of the existing board walk, joining the sports pitches to 'One Horton Heath' to the southwest of the site. Both proposals are shown on the 'TGMS sports turf consultants' proposed layout drawing number TGMS1111.9-1 Revision 3, dated 20/6/22 at a scale of 1:500 at A2. This drawing has been annotated with tree locations and is attached as plan HB1 at Appendix 4.

3.0 ISSUES RELEVANT TO THE TREES

3.1 Creation of sports pitches

The installation of the most northerly sports pitch would result in the extension of the existing culvert to meet the western boundary while the current gully would be in-filled and turfed to accommodate the new sports pitch. A feasibility study carried out by TGSM (Report reference TGMS1111.9 Rev 6, dated 20/06/22) indicates that the changing character of the drainage system should not moderate the water flow and is therefore unlikely to affect residual trees on the periphery of the site. That said, it will however be necessary to remove the group of goat willow trees marked as G1 on plan HB1 in order to facilitate the proposal (see Appendix 4): This equates to approximately 50 trees, 50% of which are multi-stemmed. The existing stream channel is approximately 1.5 metres in width, extending to 8 metres in width, including the banks and 50m in

length, giving a total area of 400 m². Mitigation for the loss of the trees will be addressed in the method statement in section 2.

3.2 **Woodland footpath construction**

The proposed footpath route will meander around the trees, taking the line of least resistance, avoiding the hazel bases and allowing a minimum of 60 cm clearance from the footpath edge to the base of the trees. The proposed footpath surface will adhere to the protocol put forward by Hampshire County Council, which states in its footpath surfacing guidance (attached at Appendix 2) *“For all except urban paths, a non-metalled surface (ie ‘gravel’ path - not tarmac) is strongly preferred. This should be smooth, of adequate width, well compacted and firm underfoot (but with a little ‘give’). It should also be well-drained and useable in all weathers.”* With this in mind and given the woodland setting and projected low level pedestrian use of the path, the proposed footpath will comprise timber edging of approximately 1.5 metre width with a surface of bark chippings. A gravel surface was considered inappropriate for the setting as it would be too conspicuous and may unbalance the natural soil pH. Where the footpath meets the drainage channel, which flanks the western boundary, a small boardwalk 3-4m long will be built to span the drainage channel. The Hampshire Countryside boardwalk specification is proposed for this section (see ‘designstandards-boardwalks’ attached), which is consistent with the specification of the existing boardwalk on the footpath route. Further details regarding the footpath surface are available in the method statement in section 2.

- 3.3 **Wildlife and Countryside Act 1991:** It is an offence to take, damage or destroy the nest of any wild bird while the nest is in use or being built. It is therefore advisable to trim hedges in January or February to avoid the destruction of birds. This allows birds and mammals to forage the hedgerows for berries. The native hedging should be cut no more than every two-three years to allow thick nesting cover to develop and this also increases the berry crop available to over wintering birds.

3.4 **Boundaries**

There is currently a post and rail fence demarcating the northern boundary of the site with informal hedges along the other boundaries. No additional boundary treatment fencing is proposed.

4.0 LANDSCAPING SCHEME

4.1 Overview

The landscaping scheme has been designed to provide a naturalistic backdrop to the sports pitches, which will both enhance the amenity value of the site while blending it into the natural landscape. This will be achieved by using predominantly native species which are typical of a woodland-grassland setting, softening the existing woodland edges so they taper rather than following a hard line and creating neutral grassland areas. In addition to the native tree planting, we have introduced trees for their seasonal interest, such as the Judas tree (*Cercidiphyllum japonicum*) purple leaved crab apple (*Malus purpurea*), Manna ash (*Fraxinus ornus*) and black elder (*Sambucus nigra*).

4.2 Wet woodland creation

The scheme also mitigates the loss of a number of goat willow trees (*Salix caprea*), which are to be replanted, using sapling cuttings from the original trees on site to ensure the same genetic stock is retained. In addition, Alder (*alnus glutinosa*), black poplar (*Populus nigra ssp. betulifolia*), crack willow (*Salix fragilis*), Oak (*Quercus rubur*), downy birch (*B. pubescens*) and white willow (*Salix alba*) are also to be planted in the new wetland habitat area. Silver birch (*Betula pendula*) will also be planted here but restricted to the drier areas on the edge of the wet woodland area. Once established, it is intended that the trees will create the optimum ambient conditions for ground flora such as sedges, ferns and mosses to colonise. However, I do not recommend including these in the planting scheme as the efficacy of the new drainage system and subsequent wetting of the area is unknown and would be wasteful if the ground layer was either washed away or dried out due to lack of water. This should be reviewed in 3 years time however, at which point sedges and ferns may be introduced to the ground layer.

- 4.3 **Tree planting:** A methodology for tree planting is detailed in Appendix 3 and follows current best practice and the recommendations of BS4428 'Recommendations for general Landscape operations'. Particular regard should be given to biosecurity when sourcing the planting stock to ensure regulations regarding the transmission of pests and diseases are adhered to. It is also worth including a root irrigation system during planting so that watering can reach roots efficiently. Trees should be planted in the first planting season (October-March) post development phase. Trees should be 12-14 cm diameter standards and may be container grown or bare root. The exceptions are the *Betula jaquemontii* (shown as number 8 on plan LS1R), which are multi-stemmed trees.

4.3.1 **Alder (*Alnus glutinosa*) Goat willow (*Salix caprea*):** The area marked '22' comprises a mix of the species listed in paragraph 4.2 above. **Appendix 2** shows the quantities of each species. The goat willow are prolific colonisers and establish easily from seed or cuttings. I therefore recommend taking cuttings of approximately 30cm in length (either hard wood cuttings in the winter or softwood in early summer) from existing goat willow trees on site and pushing them into the ground in the desired growing area. As a pioneer species, these should establish readily and will grow rapidly attaining heights of 2-3 metres in the first five years.

- 4.4 **Watering:** With the exception of the willow and alder which will be planted in the newly established wet area, during the first 24 months post development, the trees will be watered during periods of low rainfall in the summer months when the trees are in leaf (when precipitation is below 0.5mm/Hr). Established trees (10-12cm) will require 20 Litres of water three times a week in the height of summer, reducing to once or twice a week in cooler temperatures. Watering should not be necessary during the months of October to March. Incorporating a watering system which targets the roots is also advised at the planting stage (see Appendix 4).
- 4.5 **Mulching:** An organic mulch applied at the base of the tree and within a 1m radius of the tree/hedge base will help to retain the soil moisture levels and will also suppress weeds. Ideally, the mulch would comprise leaf litter collected from the nearby woodland as this will also import mycorrhizal fungi and a seed bank to aid the hedge establishment.
- 4.6 **Formative pruning:** During the first 10 years of growth it may be necessary to formatively prune the 10-12 cm girth trees to ensure they retain good form into maturity. This is particularly relevant where co-dominant stems or crossing branches have been produced. If the work is carried out while the trees are young, the pruning cuts will be kept to a minimum, reducing the shock endured by the tree and also tree's exposure to pathogen infection.
- 4.7 **Tree Staking:** Ideally, trees would be planted and secured with minimal staking, such as a diagonally driven stake at the base of the tree, to encourage the young trees to develop their root systems in response to wind loading. In this case however, it would be prudent to adopt a more robust system of staking such as that described at Appendix 4, where trees are secured with two or three stakes as this will discourage the temptation to snap the young trees and other anti-social behaviour.
- 4.8 **Tree replacements:** The trees will be checked annually following planting to ensure stakes, protective guards and ties are still in place, and replaced as necessary. During this period, any dead or diseased trees will be replaced, like with like, as close as possible to the original planting position although this will be dictated by prevailing conditions which may have caused the tree to die. For example, if the tree has become overshadowed by a neighbour, it would be appropriate to move it to a clearing. The proposed monitoring objectives will be brought into effect once the trees have been planted. Following the initial five year monitoring period, the trees will be checked on a five yearly bases for the next 20 years.

4.9 Summary of 5 year management plan:

Action	Year 1	Year 2	Year 3	Year 4	Year 5
Watering	•	•			
Check planted trees; loosen tree ties and check planting tubes are not damaged	•	•	•	•	•
Check trees for disease, dieback and butt rot and replace if necessary	•	•	•	•	•
Carry out formative pruning		•			•
Asses soil moisture and plant ferns, sedges and grasses if appropriate			•		•

4.10 Neutral grassland overview

Neutral grasslands occur throughout the UK on soils where the pH is within the range 5 to 6.5. Sometimes referred to as mesotrophic grasslands, they are characterised by vegetation dominated by grasses and herbs, which thrive at a neutral soil pH. They include grasslands which are cut for hay and pastures where livestock raising is the main land use. Nutrient input is generally low, which helps maintain the neutral pH balance. Commonly occurring neutral grassland species include common bent (*Agrostis capillaries*), meadow foxtail (*Alopecurus pratensis*), sweet vernal-grass (*Anthoxanthum odoratum*), common knapweed (*Centaurea nigra*), crested dog's-tail (*Cynosurus cristatus*), cock's-foot (*Dactylis glomerata*), lady's bedstraw (*Galium verum*), oxeye daisy (*Leucanthemum vulgare*), perennial rye-grass (*Lolium perenne*), common bird's-foot-trefoil (*Lotus corniculatus*), meadow-grasses (*Poa spp.*), meadow Buttercup (*Ranunculus acris*) meadow Fescue (*Schedonorus pratensis*) and red Clover (*trifolium pratense*).

4.11 Neutral grassland creation and maintenance

This ecosystem requires sensitive management to ensure its successful establishment and longevity. The protocol advised by Forest Research 'BPG NOTE 17: Best Practice Guidance for Land Regeneration' is attached at Appendix 6.

5.0 HARDLANDSCAPING

There will be no changes to car park surfacing or any other hard landscaping on this site other than the creation of new footpaths as shown on plan LSR3, attached at **Appendix 3**.

5.1 Footpaths

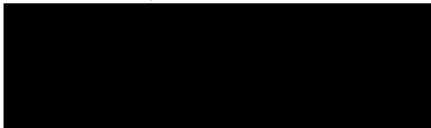
The footpath runs from the north east of the site and flanks the eastern boundary, following the natural curve in the southern end of the playing fields and curving to the west. Here the footpath will comprise scalplings or a natural stone aggregate (40mm-dust) according to Hampshire Countryside Service Design Standards (2020) attached at **Appendix 6**.

5.2 Footpath specifications

In the south western reaches of the site, the footpath leaves the park, joins an existing board walk then extends beyond the board walk for approximately 30m before reaching the southern boundary. The latter section is expected to bear low levels of pedestrian activity and will have a deciduous bark chip surface which will allow sufficient load bearing to protect the tree roots from compression. The bark chip will be held in place with timber edging and under laid with a geotex membrane. The footpath surface will comprise 100mm of deciduous bark chip with a sub base comprising 50mm thick layer of geotextile membrane (TRP 4000). The bark chip has sufficient load bearing capacity to protect the tree roots from low level pedestrian use while the geotextile membrane is permeable to allow water percolation and gaseous exchange. Where adjoining rolls of textile membrane meet, there will be an overlap of 300mm to ensure bark chip does not mix with the soil beneath. Excavation will be limited to the removal of a nominal soil layer no deeper than 50mm, to be carried out by hand. The geotextile membrane will be retained by an edging of wooden boards secured by driven wooden pegs. A detailed specification for the footpath is attached as **Appendix 6**.

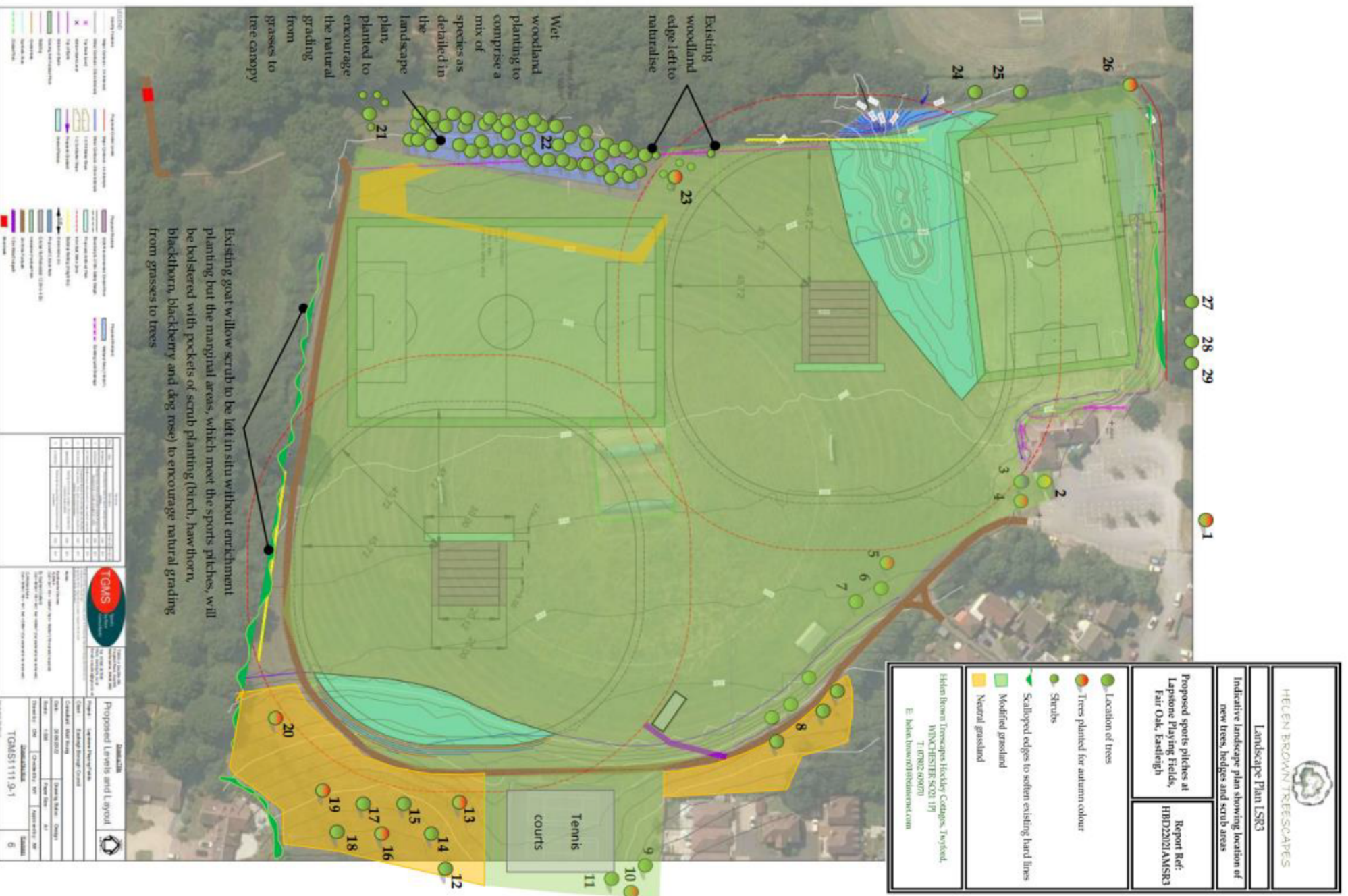
6.0 SUMMARY

The detail set out in this document ensures a diverse range of species will be planted to enhance the amenity value of this site. There will also be a net gain in the tree habitat as the tree and hedge planting will bolster the existing biodiversity value, providing more habitat niches and linking the site to habitat corridors within the local landscape. It is important that the planting protocol is followed and a post planting management regime of watering and mulching is adhered to if the trees are to survive in perpetuity.



MScFor TechCert(ArborA)
CertArb(RFS); TechArborA

APPENDIX 1

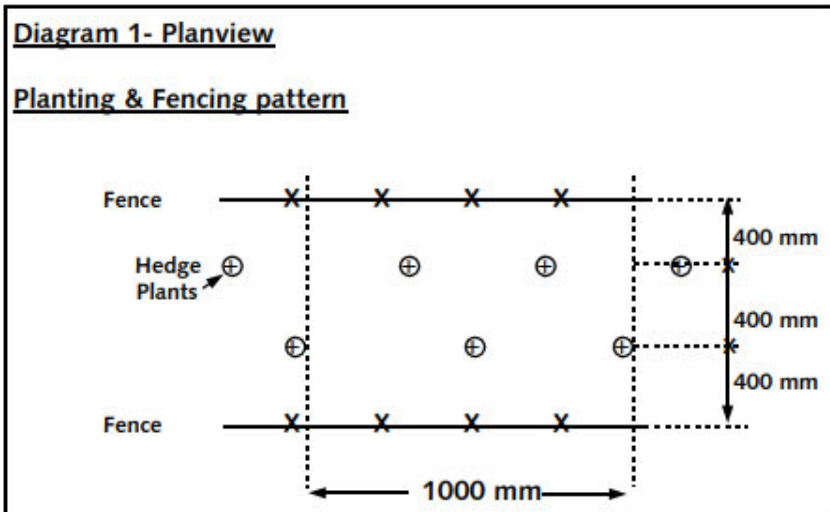


APPENDIX 2 TREE SPECIES

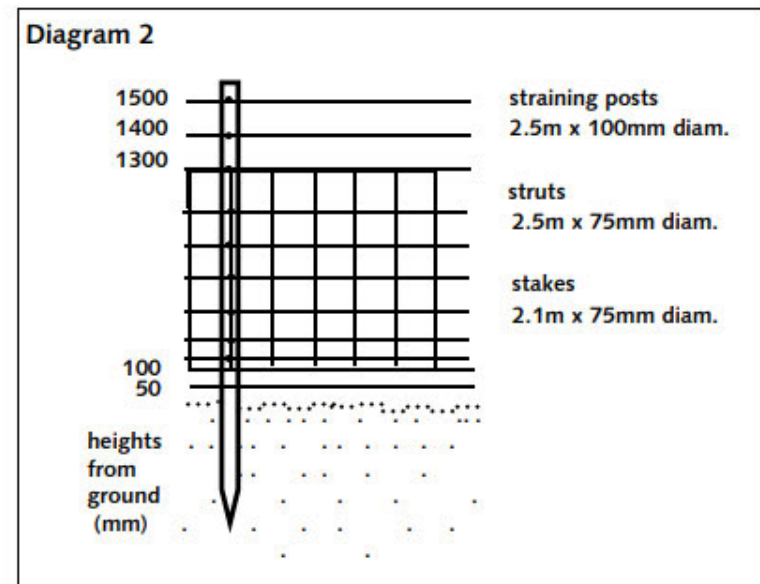
Tree number	Common name	Latin
1, 20,23	Red oak	<i>Quercus rubra</i>
2	Judas	<i>Cercis silaquestrum</i>
3	American red bud	<i>Cercis Canadensis 'forest pansy'</i>
4 , 11	Crab apple	<i>Malus purpuraea 'crimson cascade'</i>
6, 16	Crab	<i>Malus 'golden hornet'</i>
8	White birch (multi-stemmed) (x 6)	<i>Betula utilis jaquemontii</i>
5 , 26	Manna ash	<i>Fraxinus ornus</i>
7	Mountain ash	<i>Sorbus aucupara</i>
9	Holly	<i>Ilex aquifolium</i>
10	Pin oak	<i>Quercus palustris</i>
11	Bird cherry	<i>Prunus padus</i>
12	Field maple	<i>Acer campesre</i>
13	Red maple	<i>Acer rubrum</i>
14,17	Eating apple	<i>Malus domestica</i>
15	Pear	<i>Pyrus 'Doyenne Du Comice'</i>
18	Hawthorn	<i>Crataegus monogyna</i>
19,27, 28, 29	Birch	<i>Betula pendula</i>
21, 24	English oak	<i>Quercus rubur</i>
22	Alder x 3 Goat willow x 20 Black poplar x 3 Crack willow x 5 Oak x 3 Downy birch x 3 Silver birch x 3 White willow x 3	<i>Alnus glutinosa</i> <i>Salix caprea</i> <i>Populus nigra ssp. betulifolia,</i> <i>Salix fragilis</i> <i>Quercus rubur</i> <i>Betula pubescens</i> <i>Betula pendula</i> <i>Salix alba</i>
24	Sessile oak	<i>Quercus patraea</i>
25	Field maple	<i>Acer campestre</i>

APPENDIX 3 HEDGE PLANTING PROTOCOL

Hedging should be planted in two, staggered rows at a density of not less than 5 per meter (see diagram 1), with approximately 450mm between plants in the same row, and 300-400mm between rows. The interplant whips/transplants should be planted within this pattern in groups of 2/3. The **density of planting and distances between plants should be specified in the hedgerow scheme details.**



When planting a new hedge, protection from grazing animals, both livestock and wild animals such as deer and rabbits must be considered. **Specify how planting is to be protected.** The level of protection will depend on the level of perceived grazing. If protecting from livestock, then permanent fencing will probably be required of sufficient height to restrict grazing over the top. Where a double fence is applicable, the fences must be a minimum width of 2 metres apart. The fences should be of treated wooden posts with galvanised stock netting and wire to a height of 1.4m (see diagram 2).



APPENDIX 4 TREE PLANTING PROTOCOL

Tree planting specification: (With kind permission from Winchester City Council)

1. Specification for the supply of trees.

- Bare root trees shall be bagged to avoid drying out.
- All tree(s) shall have their central leaders and growing tip undamaged
- All Tree(s) shall have a balanced crown with active bud and shoot formation consummate to its species from formative pruning, and that there is a balanced branching framework typical of the species.
- All lateral branches are subordinate to the central leader and evenly spaced along the central stem. Lateral branch diameter should not exceed 50% of stem diameter at the point of branch attachment.
- Tree stems shall be straight with a clearly defined taper and have had all the epicormic shoots removed
- Trees shall be free of pest and disease.
- Trees shall be free of co dominant leaders, weak, dead or crossing branches.
- Graft and budding unions will be compatible
- Bare root trees shall have least 4 anchor roots evenly spaced with a high amount of fibrous roots.
- Trees supplied with root ball trees should be moist and have their wire or hessian root ball wrapper in place. There shall be no movement of the tree stem within the root ball.
- Containerised stock will be weed free or moss free on compost surface.
- Roots of containerised stock will not be spiralling or girdling in pot and shall not be pot bound with roots growing out of pot.
- All containerised stock will be supplied with moist compost.
- Containerised trees shall not be potted too deep, i.e. grafting point should be clear of soil.
- The foliage colour of containerised stock shall be healthy and not showing signs of nutrient deficiency
- Canes or supporting stakes of containerised stock shall not be damaging the plant stems.
- All trees supplied shall be true to type or species.

APPENDIX 4 TREE PLANTING PROTOCOL

2. Specification for Tree Planting

At no time are tree roots to be exposed to wind or drying out. Bags that protect bare root trees are to be kept in place until placing of the tree into the planting pit.

Remove the turf / surfacing and dig a square hole to required depth and size to accommodate all roots of tree. The planting hole should be deep and wide enough to accommodate all of the roots. Removing or reduction of tree roots to fit excavated pit is prohibited. Break sides and base of tree planting pit to assist with drainage.

The finished planting depth of bare root trees is the soil mark on the base of the tree and for root ball and container trees the top of the container and root ball should be just under the finished level of the soil.

Before planting containerised trees they shall be thoroughly watered, remove the pot, tease the roots out gently from the root ball to encourage roots to grow outwards from the tree and not to continue growing in a circle direction in the planting pit.

For bare root trees remove protective packing from the root system, inspect the root system and prune any damaged roots, re-bag/ cover tree roots until placing in the tree planting pit.

For root ball trees leave the wire mesh or hessian sacking around root ball.

Bare root trees and root ball trees shall be placed in the centre of the tree planting pit, and the cross bar staking shall be constructed before the tree is fully planted. Remove the tree from the planting pit to avoid damage to it and recover the root system to stop the roots from drying out whilst constructing the support system

Once the staking system is installed remove root protection and place the tree in the tree planting pit with the root soaker installed to the manufactures recommendation.

A minimum of 10L of organic matter thoroughly mixed into the back fill soil when planting the tree, bare root trees will require periodically shaking to work fine soil into the tree root system. Continue to back fill the planting pit with soil and organic matter in layers and firm soil to ensure that there are no air pockets in the tree planting pit.

For root ball and bare root trees Install the tree tie and cushion to the cross bar ensuring the tree is upright.

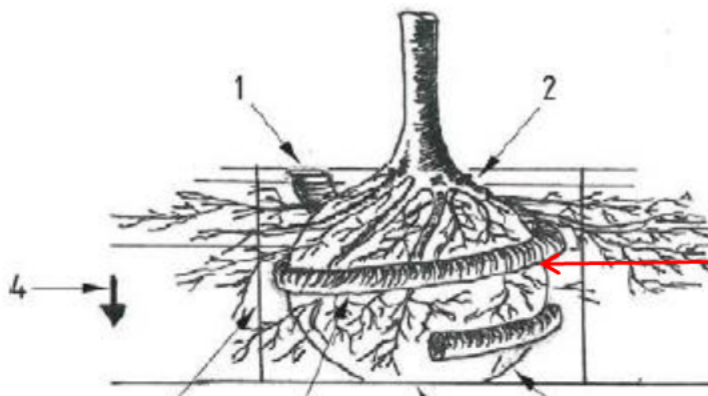
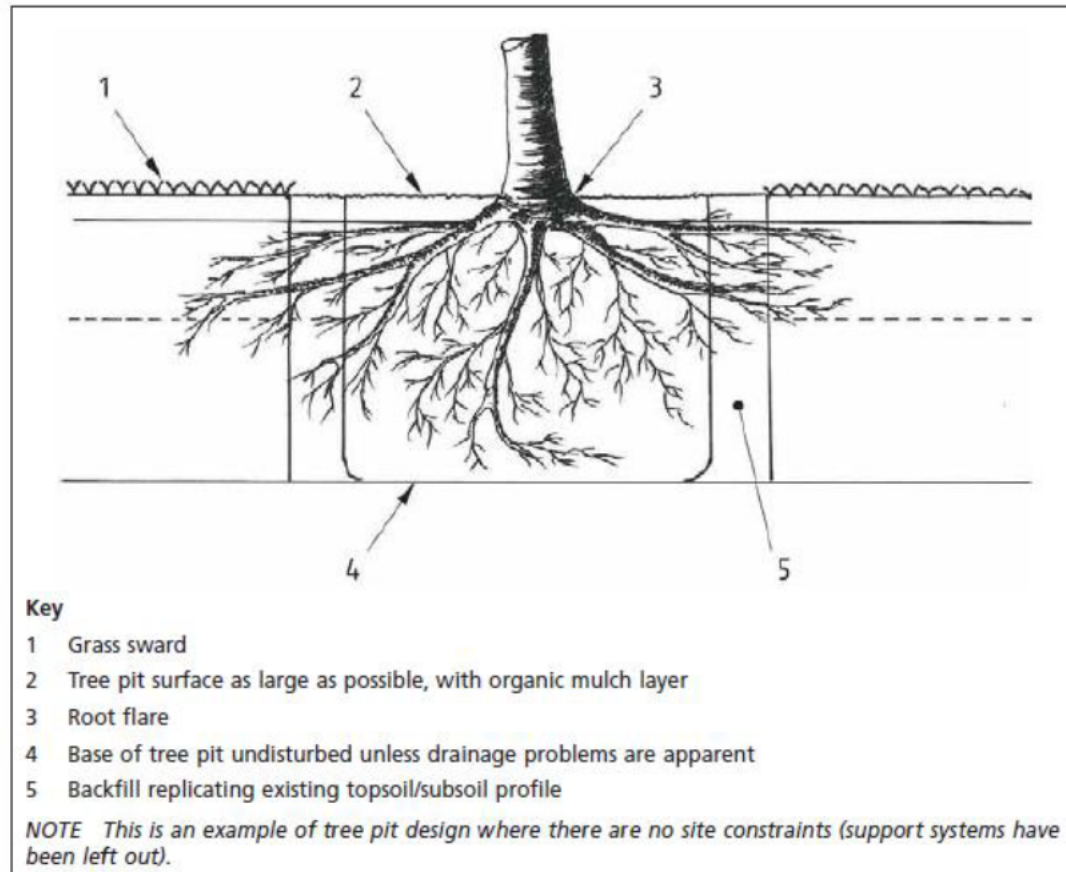
For containerised trees install the tree stake at an angle to the side of the trees root ball to avoid damage to it.

The tree must be planted in the middle of the planting pit and the surface covered with a 60mm layer of well rotted wood chip mulch to a finished level of the soil mark at the base of the tree.

The tree should be planted in accordance with the recommendations in BS8545 2014 page 56 figures F1 as shown below.

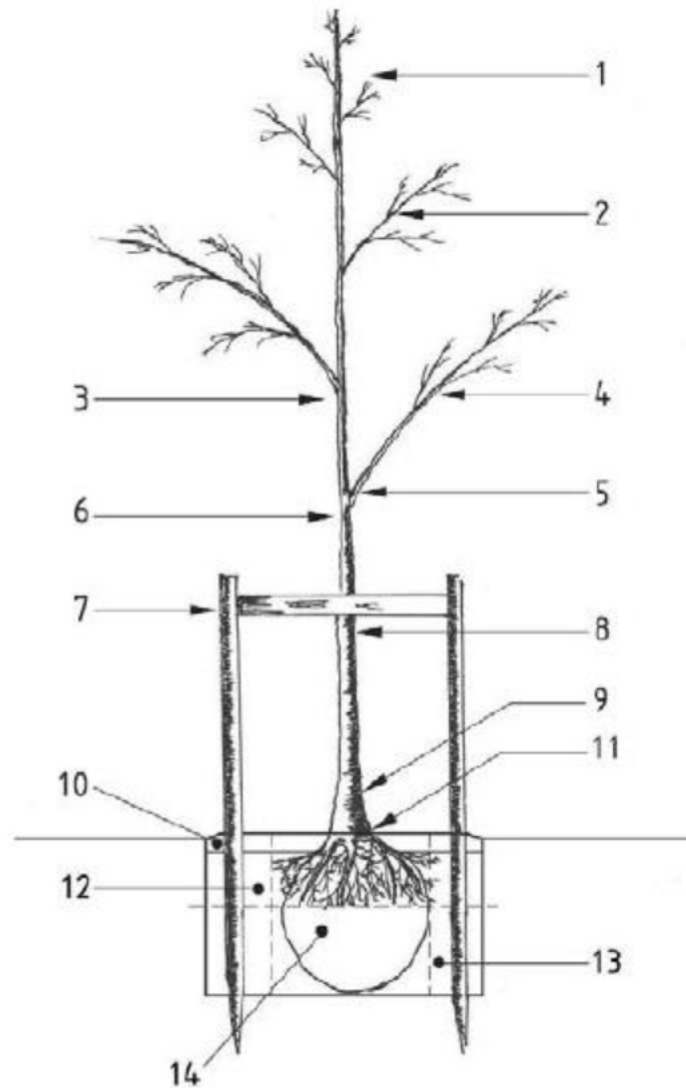
APPENDIX 4 TREE PLANTING PROTOCOL

Figure F.1 Tree pit design: Planting in grass



Drawing showing installation of root soaker pipe and cap.

APPENDIX 4 TREE PLANTING PROTOCOL



Layout
drawing
of tree
and
staking

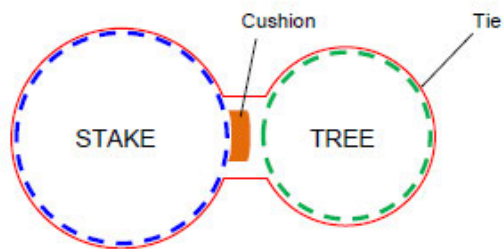
Key

1 Straight leader	8 Clear stem
2 Formative pruning, as necessary	9 Bud/graft union
3 Size	10 Mulch
4 Lateral branch subordination, as necessary	11 Root flare
5 Branch union with no included bark	12 Irrigation
6 Height/stem diameter ratio	13 Soil volume
7 Support	14 Type and condition of root system

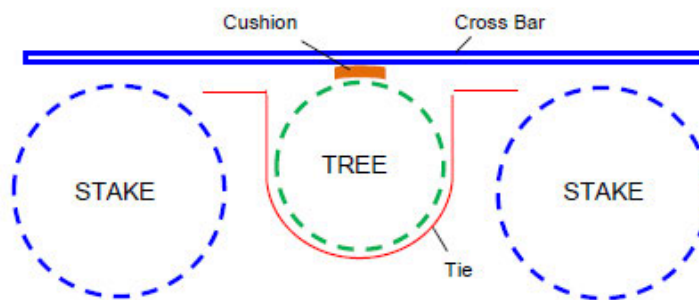
APPENDIX 4 TREE PLANTING PROTOCOL

Tree Staking Methods

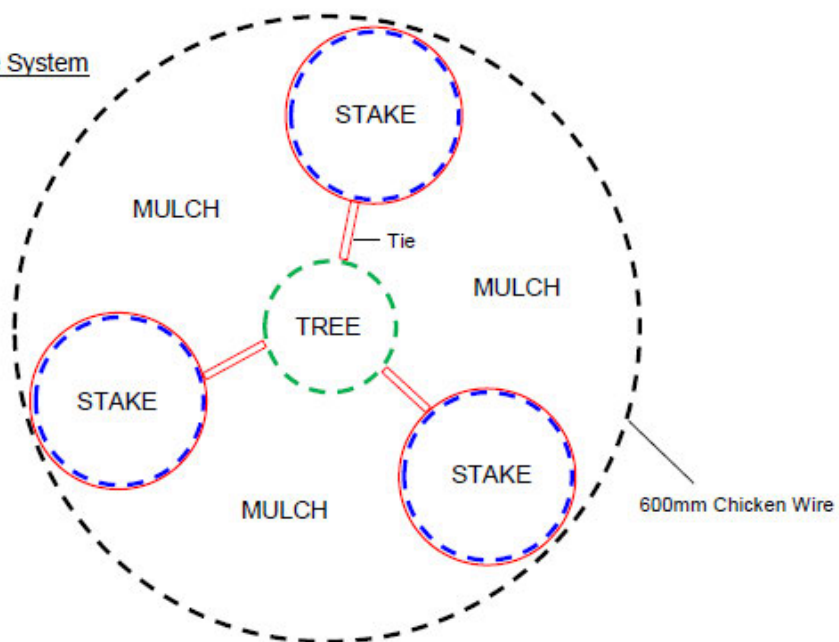
One Stake System with/without wire guard



Two Stake System + Cross Bar



Three Stake System



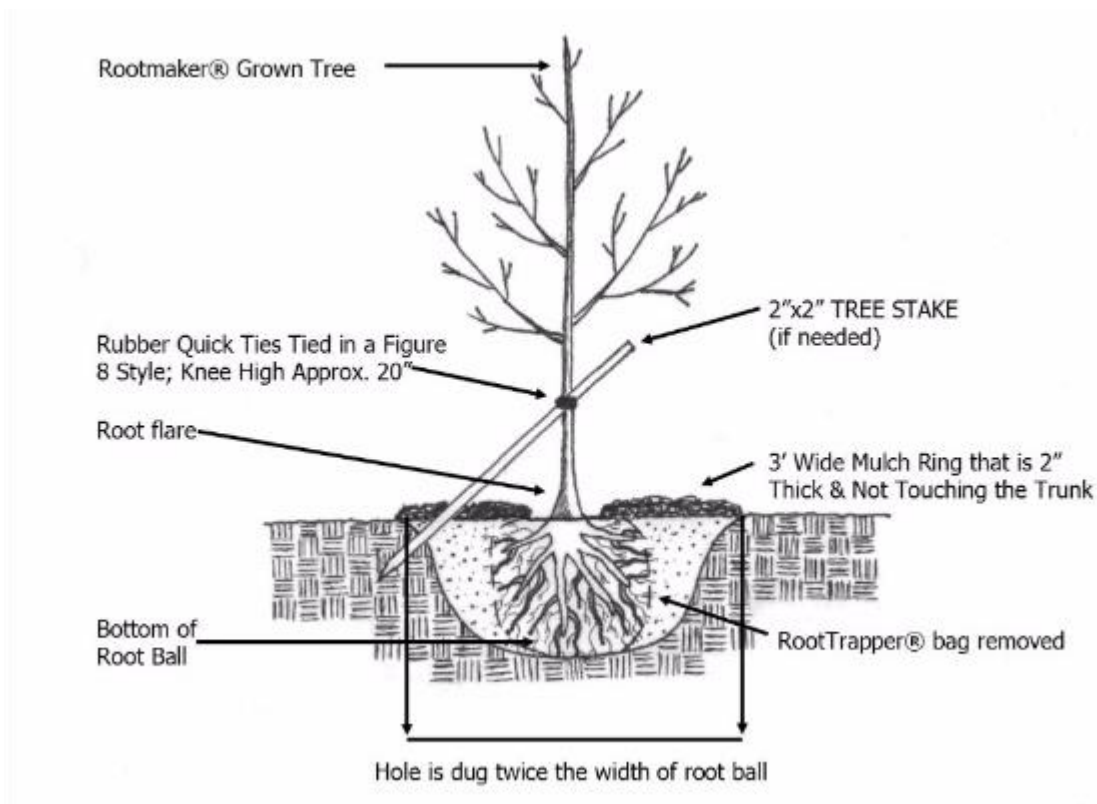
APPENDIX 4 TREE PLANTING PROTOCOL



Example of
a 3 stake
system with
chicken
wire.

APPENDIX 4 TREE PLANTING PROTOCOL

4. Staking of a Containerised tree or Evergreen



5. Maintenance

- If the tree fails to transplant and establish fully, it must be replaced within the dormant period and maintained for 12 months after the planting date.
- The tree will be watered with 30litres of water per tree per visit via the root soaker as necessary depending on weather patterns to ensure the tree survives hot weather.
- Newly planted trees shall be inspected and formatively pruned to remove dead, crossing and weak branches or broken branches , co- dominant leaders and epicormic growth. (After leaf flush but before leaf fall. (Jun to Sept)
- A 0.5m radius circle around the tree base with a 60mm depth of well rotted woodchip mulch will be maintained.
- Ensure root soaker water tube is clear of debris and filler cap is fitted.
- The mulch layer around the tree is topped to a depth of 60mm.
- The tree ties and cushion have been adjusted to account for the trees new growth.

APPENDIX 5

FOREST RESEARCH BPG NOTE 17: BEST PRACTICE GUIDANCE FOR NEUTRAL GRASSLAND REGENERATION

Habitat creation and establishment practice

Where the site surveys demonstrate that the site and soil substrate are suitable to do so, neutral grassland can be created on reclaimed land. Substrate, desired time frame and site proximity to areas of grassland similar to the target type will dictate which establishment techniques are most appropriate. Three options are considered below. Natural colonisation of bare substrates may be suitable where long establishment time frames are acceptable. While this option is preferable as plants establishing will be from local genetic stock adapted to soils and local conditions, it is only suitable if neutral grasslands are adjacent. Natural colonisation tends to be a very slow process as it requires the habitat to expand in from these local areas and bare ground will remain during this time that will be prone to colonisation by rank plant species. These will need to be controlled if they become dominant and limit the natural colonisation process. Natural colonisation can be accelerated through the selective introduction of grassland species via seeding or green-hay strewing.

Seeding can be undertaken using seed collected from a local donor site, subject to obtaining the permission of the landowner or tenant. Care must be taken not to deplete the donor site of seed by over-harvesting. When ripe, seeds should be collected and stored in airtight containers in a dark place at a temperature of between 2 and 5°C until required.

Alternatively, a seed mix may be bought. A reputable seed house will be able to supply a mix suited to the climate and principal soil conditions of your site. Local provenance should be preferred, where available. Seed is normally sown in September/October, either by hand or using agricultural machinery such as slot seeders and seed drills, which maximise the area sown for the amount of seed used (Crofts and Jefferson, 1999). If sowing by hand, mix with damp sand to help ensure the seed is evenly distributed and lightly roll or tread the soil surface. Raking should be avoided as it can concentrate seed distribution or bury the seed too deep. If there is a prolonged dry period, the seeded area may be lightly watered. Birds and other seed predators should be kept off the land as much as possible.

Green-hay strewing can also be effective. This involves taking freshly cut hay from a local grassland which will contain seeds, and spreading this over the site to be colonised. Identify a suitable local donor site and ensure the hay is cut after flowering but while the seeds are still attached. At the donor site, keep hay turning to a minimum and collect and spread (strew) at the receptor site as soon as possible after cutting to minimise seed losses. The hay should be removed from the receptor site after a few weeks once the seed has dropped. Using a local source means that a closer match can be made between the new and existing grasslands. Biosecurity (the objective of reducing the transmission of pests and diseases) is important and good working practice should be observed when using the green hay strewing or seeding techniques to minimise the risk of transporting harmful organisms between sites. For example, clean and disinfect tools and boots before leaving donor and regeneration sites. BPG NOTE 17 PAGE 5 Habitat management and monitoring To ensure long-term value, neutral grassland must be maintained. The exact maintenance requirements are site specific as they depend on whether the site is to be cut for hay or managed as pasture. Either way, without maintenance, natural succession results in a shift towards scrub and woodland. Grazing, cutting, or a mix of both prevent change to a species-poor sward dominated by coarse grasses and succession to woodland.

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Where grazing is selected, aim to produce a mosaic of grassland of varying lengths and small patches (no more than 25%) of scrub. For example, livestock have a random effect on the growth and distribution of plant species; different types of grazing animals are selective in the plants that they eat and can be used to create the mosaic. Cattle consume coarser herbage and trample more heavily than sheep. The trampled patches create gaps for new plants to establish. During the first 3 years, grazing should be controlled or prevented to allow the grassland to become established; that is, for seedlings to develop sufficient root systems to prevent uprooting when grazed. Once the grassland is established, light grazing can begin. Exact stocking requirements are specific to the site objectives, though a rule of thumb is to use 0.5 cattle or 2.5 sheep ha⁻¹ yr⁻¹ (Department of Transport, 1993). In winter and during prolonged wet conditions, livestock should be removed to prevent poaching – the compaction or physical breakdown of soil structure under the feet of heavy animals.

More detailed information on management can be found in Crofts and Jefferson (1999). Where mowing is the selected maintenance method, the emerging meadow needs to be cut in the first year in order to maintain a vegetation height of 100–150 mm, and not below 50 mm. Mowing must be timed to avoid conflict with ground-nesting birds. In the second year and thereafter, the meadow requires cutting at least once, preferably in late summer/early autumn, to a height of 50 mm after the plants have flowered. A spring cut, as necessary, will keep rank species in check; cuttings will contain seed from these plants and so should be removed. Overly intensive management can be damaging. All-year-round grazing or mowing too often can inhibit flowering, reducing species richness of the sward. Ploughing and application of herbicides or inorganic fertilisers should be restricted. Under controlled circumstances, neutral grasslands can be treated with agricultural chemicals to improve the nutritional value of the sward as part of a defined management programme. Even where the creation works take place in a very suitable location, evaluation of the management practices is required to get the right mix for establishment and long term success. A site-specific long-term management plan is required. This should include a monitoring and evaluation programme that will enable the management regime to be adapted as necessary. The JNCC (2004) reports that monitoring of lowland grassland habitats should include: n
Extent of the grassland establishment: % ground cover, bald patches and presence of leaf litter. Sward composition: grass to herb ratio, positive indicator species, negative indicator species, species with local distinctiveness.

In Summary:

1. The grassland should be cut annually to approximately 5cm between September and late October (ideally at the latter period as this is better for biodiversity). This allows plants to flower late (good for invertebrates) and for seeds to be dispersed.
2. Cuttings must be removed during the same period ('cut-and-collect'). This is particularly important since any dead vegetation (thatch) will smother any seeds trying to germinate and will also allow nutrient to build up. Most species-rich grasslands are associated with lower fertility soils.
3. A pedestrian mower or brushcutter or rake would be sufficient for the task.
4. Cutting repeated over a number of years has demonstrable impact on reducing soil fertility, increasing plant diversity.

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5. This should create areas of bare earth to allow germination and provide additional habitat for invertebrates.
6. Standard annual condition assessment (as per Biodiversity Metric 4.0) may be applied but this has been redefined for the site and fundamentally broken down into very simple criteria.
7. The existing grassland has <9 species per sqm (typical of amenity grassland) with more than 30% grasses with low cover of forbs such as creeping buttercup (*Ranunculus repens*) and white clover (*Trifolium repens*). Therefore this grassland provides significant potential for enhancement.
8. The aim is to increase to >9 species per sqm (typical of higher quality grassland) within 5 years.
9. Prior to management a detailed botanical survey will be undertaken.
10. Botanical assessments must be undertaken by a competent person, defined here as an experienced botanist at Field Identification Skills Certificate (FISC) level of at least 4 (competent) and ideally 5 (professional).
11. The survey should show an annual increase in species over 5 years. If this is not achieved, then remedial options should be considered including a more intensive management regime for a short period (2 annual cuts for 2 years) or seeding with locally sourced wild flower seeds (ensuring all species commonly occur locally with the Borough and are suitable for neutral grasslands)

APPENDIX 6 PATH SURFACING



Path Surfacing

Countryside Service Design Standards (2020)

Many countryside paths have a natural surface; this is often trodden earth within Hampshire. In most cases, this is fitting, works well, and requires only a minimum amount of maintenance. Where paths cross clay or marshy areas, or are habitually muddy through heavy use, then it may be appropriate to surface them. Solutions will be site-specific; it is strongly recommended that advice be sought from County Council officers at the design stage.

Responsibilities

The County Council is legally responsible for ensuring that the surface of rights of way is suitable for the public to use, including taking action if the surface is damaged by farm vehicles or utility works.

Is it necessary to surface the route?

Many countryside paths have a natural surface which is adequate for public use—this is the preferred surface wherever possible as it is in keeping with its environment and requires minimal maintenance.

Where a path is regularly muddy or waterlogged, the first consideration should be enabling the water to drain or evaporate. Often, a path surface will dry out if the vegetation is cleared to allow light in. Grips or small ditches allow the water to flow off the path onto lower ground (see drainage guide).

When considering any muddy areas, push a stick or space into the mud at various points to see what is underneath. It may be that leaf litter has built up and turned to mud; if this is the case, scraping off the mud with a machine can reveal a good underlying surface which is often sufficient. However, surfacing may be required where drainage and scraping alone will not solve the problem.

Considerations for surfacing work

- Look at the immediate area—is the ground around the path waterlogged? If so, the path level will need to be raised above this. What is the soil type? If very wet or clay, a membrane may need to be used to stop the new surface sinking into it.

This guidance is suitable for most situations in Hampshire; for further advice email countryside@hants.gov.uk or call 0300 555 1391

- Where is water coming from and where could it go to? Is it rainwater draining from neighbouring land? Could it be diverted onto lower ground off the path? Are there ditches or pipes already there which need clearing?
- Can contractors get to the path with machinery and vehicles? Can materials be delivered close to the path? Is landowner permission required to obtain access?
- Are there legal restrictions on path width (see the widths guide) or are permissions needed? For example, if the path has a conservation designation such as SSSI or SPA/SAC, consent will be needed and there may be restrictions on materials.
- Who will undertake maintenance when required? Regular vegetation cutting and clearance of ditches and drainage pipes once or twice a year will considerably lengthen the life of the surface.
- What is the expectation for the finished surface? If it is mainly used by local dog-walkers then a lower spec is appropriate than if it's a path which people walk or cycle to get to work (expecting to use it in work clothes/shoes without getting muddy). Paths which are used by horse-riders or vehicles will need to be more heavily constructed. If a path is heavily used, consider providing a passing place every 150m or so.

Technical Guidance

For all except urban paths, a non-metalled surface (ie 'gravel' path - not tarmac) is strongly preferred. This should be smooth, of adequate width, well compacted and firm underfoot (but with a little 'give'). It should also be well-drained and useable in all weathers.

Most path construction will follow this process:

- Check the path and surroundings for underground services (see 'All Projects' sheet).
- Start by removing the mud down to a reasonably dry, flat base, of the width of the finished path. This is known as a 'path tray', which is usually 60-100mm deep.
- Lay a geo-textile membrane if needed.
- For paths used by cyclists and/or horse-riders (eg bridleways), lay a sub-base of larger material.



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- Acceptable sub-base materials in Hampshire include washed rail ballast (granite), recycled builders' rubble, road planings and washed rejects (flint, chalk, crush).
- For all paths, lay a 'wearing course' of finer material typically 'type 1' which means material of 40mm diameter to dust, or in urban areas or where wheelchair use is likely 20mm-dust, and compact with a vibrating roller or wacker-plate. Acceptable materials in Hampshire include scalpings, natural stone aggregate.
- A camber or crossfall (slope of around 2% across the width) should be used to shed rainwater off the path; choose whichever will lead the water to lower ground.
- A membrane (sometimes referred to as a geo-textile) is matting which is used in wet areas to stop the new surface materials sinking away into the wet ground. Terram, Biddum and Geogrid are commonly used in Hampshire.
- A 3-d cellular containment system (cellweb) can be used where a path crosses tree roots, to protect them.

Timber Edges

- Paths generally do not need timber board edges, and look more fitting without them; they can also trap water on the path once the surface has settled, and can be a slip risk for cycle wheels and horse hooves.
- However, timber edges may be desirable to retain materials if the ground drops away to one side or if the path level is well above that of the surrounding ground (eg in wet areas).

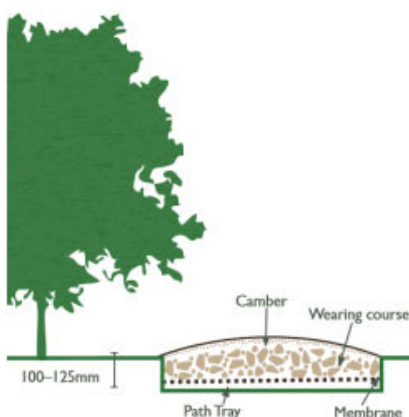
Typical Footpath Specification

The following is suitable for a path used only by walkers. This is a guide and officers' advice should be sought at the design stage.

Path should be 1.5m wide (if possible)

Dig out path tray to path width and 60mm deep, or to dry ground if deeper.

If needed, lay a geotextile membrane or cellular confinement system.



This guidance is suitable for most situations in Hampshire; for further advice email countryside@hants.gov.uk or call 0300 555 1391

Lay wearing course: 100-125mm depth of compacted material (usually scalpings or natural stone aggregate), extending over edges of path tray.

Compact with vibrating roller or wacker-plate, leaving a camber or crossfall as appropriate to shed the water.

Typical Bridleway Specification

The following is suitable for a path used by walkers, cyclists and/or horse-riders. This is a guide and officers' advice should be sought at the design stage.

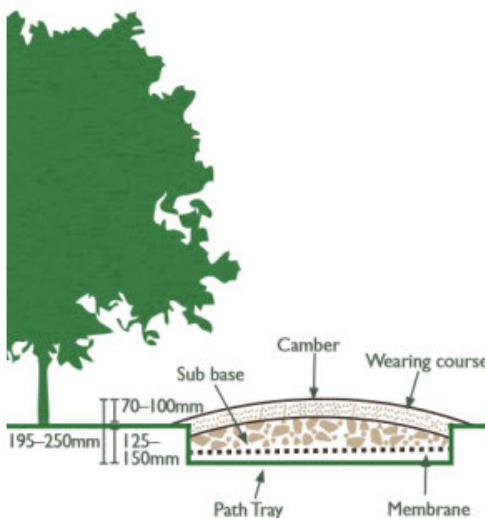
Path should be 2.5m wide (if possible)

Dig out path tray to path width and 100mm deep, or to dry ground if deeper.

If needed, lay a geotextile membrane or cellular confinement system.

Lay sub-base: 125mm-150mm depth of material when compacted, with a camber or crossfall as appropriate.

Lay wearing course: 70-100mm depth of material when compacted, extending over edges of path tray and leaving a camber or cross-fall as appropriate.



For paths which are used by horse and carriages and/or motor vehicles, please seek advice from County Council Officers.