Glastir Small Grants

Carbon – Capital Works
Technical Guidance Booklet
Glastir Small Grants Scheme – Carbon

Glastir Small Grants is a programme of capital works available to farming businesses across Wales to carry out projects that will help to lock up carbon.

Capital Works items will be identified as ‘Main’ and ‘Supportive’ Work(s) which, together, form a ‘Project’.

The Project will be;

• The Main Capital Work, which will address the theme objectives
• The Supportive Capital Work(s), which will allow the Main Capital Work to be undertaken, e.g. Hedge planting (option 900), is the Main Capital Work, while post and wire fencing (option 594), to protect the new hedge from damage, would be a Mandatory Supportive Capital Work, and Hardwood Timber Field Gates (option 599) would be an Optional Supportive Capital Work.

The Carbon Theme offers Capital Works that have been chosen for their broad and general environmental benefits and their ability to deliver the Welsh Government’s ambitions on increasing carbon sequestration. Carbon sequestration is the long-term storage of carbon dioxide and has been proposed as a way to slow the atmospheric accumulation of greenhouse gases.

Enhancing carbon removal
All trees and shrubs absorb carbon dioxide during growth. The goal of agricultural carbon removal is to use hedgerows and trees and their relation to the carbon cycle to sequester carbon dioxide.

Hedgerows are highly valued for stock management, providing shelter for livestock, as well as an effective barrier to reduce the spread of animal diseases.

The Welsh Government recognises the importance of hedgerows as part of our cultural heritage and for their great value to wildlife and the landscape. Increasingly, they are also valued for the major role they have to play in preventing soil loss and reducing diffuse pollution.

An increase in hedgerows and trees throughout Wales will positively affect climate change by taking greenhouse gases out of the atmosphere through carbon storage in biomass. Agricultural carbon sequestration practices have positive effects on soil, air and water quality, as well as biodiversity.

Expression of Interest (EoI)
www.gov.wales/glastir

Selection and scoring
www.gov.wales/glastir

Glastir Small Grants Contracts
www.gov.wales/glastir
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647 Spiral Rabbit Guards
905 Bramble/Scrub Control (Hand Knapsack Sprayer)
A Glastir Small Grants Project will be made up of one Main Capital Work underwritten with one or multiple Supporting Capital Works. Please note that Supporting Capital Works are mandatory, optional or unavailable, depending which Main Capital Work is being supported within that Project. See table below:

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<th>Code</th>
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### Supportive Capital Works

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**900 New Hedge Planting**

This technical note describes the minimum standard of work required in order to receive payments for ‘New Hedge Planting’. Where there are local traditional methods or styles which vary from this standard these can be used, but any significant variation must be approved by the Welsh Government.

This technical note describes best practice for:
- planting new hedges;
- hedgerow trees;
- fencing and other protective measures

**New Hedge Planting**

New planting can be carried out in the winter months from November to March. The soil may first be rotovated, ploughed or can be dug over the previous summer, provided this can be done without causing damage to any existing historic hedge banks. On poorer soils, some well-rotted manure may be incorporated. Locally common trees and shrubs should be used in a mix of at least three hedging species, with no one component of the mix comprising more than 75% of the total.

Due to Ash dieback disease (Chalara fraxinea), no ash should be included in any planting mix, either for woodlands or when establishing or restoring hedgerows.

Plants should be 3-4 years old and 45-60cm high with a well-developed root system and a strong leader shoot. Planting stock derived from locally collected seed or cuttings is preferable, as this is likely to survive better and support more species of native wildlife. During planting, it is essential that root balls are kept damp.

New hedgerows should be planted at a density of 7 plants per metre in a staggered double row, with 20cm between each row. To encourage new growth the transplants should be trimmed back. Subsequent management should ensure that the plants are kept clear of weeds and watered liberally in dry spells until established. Any dead plants must be replaced.

Weeds can be controlled by using a mulch of wood chippings or by securely pegging down a 500-gauge black polythene sheet, 1-2m wide at the base of the transplants. Chemical control of grasses, thistles, docks and ragwort may be undertaken. Any chemical used must have a label recommendation for use on the listed species and for the intended method of application. All manufacturers’ label recommendations regarding application of the herbicide must be strictly adhered to.

**Hedgerow Trees**

Hedgerow trees contribute to an attractive landscape and can increase the wildlife value of the hedge.

New hedgerow trees should be planted at the same time as the new hedge planting operations are carried out. Choose tree species that grow well in local hedges.

The tree should be a 1 metre or taller whip (option 612 Trees and Shrubs – whips), together with a 120cm tree tube and stake (option 608 Tree Shelter with stake). It is also sensible to tag the tree when it emerges from its tube since this will help to avoid accidental damage when hedge trimming.

**Fencing and Other Protective Measures**

Fences must be set at least 1m from new plantings. There must be a gap of least 3m between double fence-lines.

Trees and shrubs must not be used as strainers or fencing posts nor may they be used to support fencing wire, staples or netting.

Spiral guards can be used to protect the hedge from rabbits, although in certain areas rabbit fencing may be a more effective deterrent.

Following new planting, hedges must be fenced to protect them from livestock.

Detailed specifications for guards and fencing are set out in other technical notes.
This technical note describes the minimum standard of work required in order to receive payments for ‘Hedge Coppicing and Gapping-up’. Where there are local traditional methods or styles which vary from this standard these can be used, but any significant variation must be approved by the Welsh Government.

This technical note describes best practice for:
- coppicing;
- gapping-up coppiced hedges;
- hedgerow trees;
- fencing and other protective measures

**Coppicing**

Coppicing is an ancient system of tree management that is based on the ability of many broad-leaved trees and shrubs to produce new shoots from a cut stem or trunk. Coppicing is generally undertaken when a hedge stem is too thick (more than 10cm in width) to lay properly. In some circumstances, the stems may be so thick that a Forestry Commission Felling Licence is required. It is your responsibility to check whether or not this is the case.

During coppicing the hedge is cut down to within 7.5cm or less of ground level and allowed to re-shoot. Cutting should be carried out during the winter months, in spells of mild weather. The coppice re-growth can be managed as follows:

- the shoots can be trimmed in the first two years to produce a dense bushy growth low down;
- left to grow and then laid after about 5-8 years;
- left to grow and then coppiced again after 5-20 years.

**Gapping-up Coppiced Hedges**

Although gaps will be evident in a coppiced hedge, certain species such as blackthorn can produce shoots from roots growing close to the surface. In previously un-coppiced hedges however, the gaps should be thoroughly cleared of vegetation and the hedge cut back to healthy growth on each side. This will allow the new plants sufficient light to establish. Holly is a suitable species for gapping up below hedgerow trees where light levels may be low.

Gapping-up can be carried out in the winter months from November to March. The soil may first be rotovated, or can be dug over the previous summer, provided this can be done without causing damage to existing hedge bank. On poorer soils, some well-rotted manure may be incorporated. Locally common trees and shrubs should be used in a mix of at least three hedging species, with no one component of the mix comprising more than 75% of the total.

Due to Ash dieback disease (Chalara fraxinea), no ash should be included in any planting mix, either for woodlands or when establishing or restoring hedgerows.

Plants should be 3-4 years old and 45-60cm high with a well-developed root system and a strong leader shoot. Planting stock derived from locally collected seed or cuttings is preferable, as this is likely to survive better and support more species of native wildlife. During planting, it is essential that root balls are kept damp.

Gaps should be planted at a density of 7 plants per metre in a staggered double row, with 20cm between each row. To encourage new growth the transplants should be trimmed back. Subsequent management should ensure that the plants are kept clear of weeds and watered liberally in dry spells until established. Any dead plants must be replaced.

Weeds can be controlled by using a mulch of wood chippings or by securely pegging down a 500-gauge black polythene sheet, 1-2m wide at the base of the transplants. Chemical control of grasses, thistles, docks and ragwort may be undertaken. Any chemical used must have a label recommendation for use on the listed species and for the intended method of application. All manufacturers label recommendations regarding application of the herbicide must be strictly adhered to.
Hedgerow Trees
Hedgerow trees contribute to an attractive landscape and can increase the wildlife value of the hedge. They can be newly planted or established by allowing saplings already present to develop further.

Sufficient saplings and hedgerow trees must be retained during hedge coppicing operations, aim for a density of 1-2 per 100m. Existing ash trees should be maintained wherever possible.

New hedgerow trees should be planted at the same time as gapping-up operations are carried out. Choose tree species that grow well in local hedges.

The tree should be a 1 meter or taller whip (option 612 Trees and Shrubs – whips), together with a 120cm tree tube and stake (option 608 Tree Shelter with stake). It is also sensible to tag the tree when it emerges from its tube since this will help to avoid accidental damage when hedge trimming.

Fencing and Other Protective Measures
Fences must be set at least 1m from new plantings and coppice stools. There must be a gap of least 3m between double fence-lines.

Trees and shrubs must not be used as strainers or fencing posts nor may they be used to support fencing wire, staples or netting.

Spiral guards can be used to protect the hedge from rabbits, although in certain areas rabbit fencing may be a more effective deterrent.

Next it is sensible to tag the tree when it emerges from its tube since this will help to avoid accidental damage when hedge trimming.

Hedge Laying
Hedge laying revitalises hedgerows. New growth from the base of laid stems allows a return to a renewed programme of trimming within a short space of time. Ideally, the stems for laying should be about 5-10cm thick at the base, and 2.5-3.5m in height. Beyond this stage coppicing should be considered as a more suitable alternative.

The best time for laying is in the winter months between mid-November and early March. Refer to the Farmers’ Guide to Cross Compliance on the Welsh Government website (www.wales.gov.uk) for further information on cutting and laying dates. Periods of laying vary between 10 years and 30 years, with trimming taking place 2-5 years after the restoration work has been carried out.

Whenever possible, hedge laying should follow local traditional methods and customs and should aim to produce a stock-proof barrier (see diagram be). Before laying, any old fencing or wire should be removed. In the interest of biodiversity, remove only as much elder as is necessary and cut back any bramble, briar or other climbing growth where this impedes laying operations.

Laying involves the partial cutting at ground level, at an angle of about 30°, of selected main stems (pleaches) which are then held in position by vertical stakes. In some instances the stakes are then secured along the top by woven lengths of springy growth called binders. Wire or baler twine must not be used to secure either the stakes or cut stems. Hedge laying should aim to be upslope and in the same direction wherever possible.

Fencing and Other Protective Measures
Spiral guards can be used to protect the hedge from rabbits, although in certain areas rabbit fencing may be a more effective deterrent.
Following laying, hedges must be fenced to protect them from livestock. Fences must be set at least 1m from new plantings and there must be a gap of least 3m between double fence-lines.

Trees and shrubs must not be used as strainers or fencing posts nor may they be used to support fencing wire, staples or netting.

Example of the ‘stake and pleach’ style of hedge laying

610 Trees (Standards)
611 Trees And Shrubs (Transplants)
612 Trees and Shrubs (Whips)

This technical note describe the minimum standard of work required in order to receive payments for ‘Tree Shelter (60cm with stake)’, ‘Trees and Shrubs (Standards, Transplants and Whips)’ and ‘Spiral Rabbit Guards’ as specified in your Glastir Contract. Where there are local traditional methods or styles which vary from this standard these can be used, but any significant variation must be approved by Welsh Government. It illustrates best practice for:

• Selection of trees and shrubs
• Planting times
• Ordering and delivery
• Planting techniques
• Use of tree guards
• Maintenance

Payments are available towards the cost of putting up tree shelters and guards where an agreed management plan has been drawn up with Welsh Government.

The selection and use of tree guards is described in more detail in a separate technical note.

This capital item can be used to plant blocks up to 0.25ha in size at a density of between 100 -2500 trees per Ha.

Selection of Trees and Shrubs

Transplants – used to establish small woodlands – these are sturdy 1 -2 year-old plants with a large proportion of root in relation to shoot, which gives them good powers of survival especially in poor soils and on exposed sites. They will generally outgrow whips in a few years to produce healthier better formed trees. A high degree of protection from machinery and animals is needed. Careful maintenance during the first few years is essential. They are considerably cheaper than whips and standards and are usually purchased in bulk.

Whips – used for individual tree planting and for hedgerow trees – trees of 1meter or taller with little branching. These should be used occasionally, in specific circumstances. Although more expensive and less sturdy than transplants, they are cheaper and more easy to establish than standards. Usually short enough not to require stakes and ties, they are tall enough to prevent the leading shoots being damaged by hares and are easier to protect from rabbits than transplants. Weeding is less critical but they will need protection from browsing animals and machinery.

Standards – used in registered parks – trees with at least 1.8m of clear stem before the branches. These should be chosen where individual or small groups of trees are required for an immediate effect. They are typically planted for landscaping purposes. They are less vulnerable to competition from weeds but more expensive and being drought susceptible, more difficult to establish than transplants and whips. They require tree stakes, ties and protection from machinery and browsing animals.

All plants used as part of an agreed management programme must be at least 50cm in height.
Planting Times
The planting season normally runs from 1 October to 30 April. Autumn planting is preferred for broadleaved trees and shrubs, since roots will grow in warm spells and thus lessen the effect of any subsequent spring drought. In exposed sites or areas where winter gales are likely, spring planting may be preferable.

Ordering and Delivery
Only native tree species should be planted unless otherwise agreed with the Welsh Government. Due to Ash dieback disease (*Chalara fraxinea*), no ash should be included in any planting mix, either for woodlands or when establishing or restoring hedgerows.

Decide when the trees and shrubs are required. To ensure delivery by this date and to obtain the best stock order as far in advance as possible. Wherever possible try to obtain plants grown from locally obtained seeds or cuttings (native provenance), since these will do better under local conditions and are more valuable for wildlife than imported stock. Request that plants are delivered as close as possible to the planting date.

It is best to choose an established local nursery because they will usually have a reputation to maintain and your transport costs should be lower. In addition, the plants will be out of the ground for the minimum length of time.

Try to be on hand when plants arrive so that you can ensure they are in good physical condition. Keep the roots covered at all times before planting to prevent damage and drying out. Whilst cold is unlikely to be harmful, hot sun and any form of drying such as an east wind, can very quickly cause damage or kill the plants. If immediate planting is not possible, dig a trench before delivery and store plants in this with the roots covered so they are kept moist and cool. Protect the plants from animals, including rabbits and hares.

Planting Techniques
The four main methods of planting using a spade are illustrated at the end of this note. More specialised tools are available for use on large scale plantings.
**Tree Guards and stakes**

Newly planted trees and shrubs need protection where animals or machinery might damage them. Post and wire fencing will usually provide the most economic protection against machinery or large browsing animals for groups of trees and shrubs. Individual protection against hares and rabbits can then be provided, using plastic tubes or spiral rabbit guards. Small stakes are needed to hold spiral guards in place, whilst larger trees will require their own stake and tree tie. See Technical Guidance Notes Tree Guards

Use individual tree guards and stakes where lengths of fencing would be uneconomic or unsightly, such as single or widely spaced trees in parklands, or where damage from machinery is possible. Such guards can be a proprietary brand or constructed on the farm, but make sure that they are sturdy as the guard will have to last for the remainder of your agreement.

**Maintenance**

Annual maintenance is essential to ensure both survival and healthy growth. Plants should be watered both regularly and liberally during prolonged dry spells. It is advisable to apply water slowly so it has time to soak into the ground adjacent to the tree. A mulch may serve to reduce the frequency with which watering is needed. Plants should be kept clear of competing weeds and grasses (weeding will also reduce mouse and vole damage). Control can be achieved with thick mulch of bark chippings or by using a 500-gauge black polythene sheet and pegging down securely. Alternatively, carefully cut back grass and other vegetation in the area above the tree roots.

Weeding is advisable twice in the first year after planting and once a year thereafter, until the tree is clear of surrounding vegetation. Cut weeds by hand or use a herbicide to control grasses, docks, thistles and ragwort (hand weeding may be effective against some annual herbaceous species but may promote the development of grasses). If using a strimmer take care to protect the tree stem from damage. Any chemicals used must have a label recommendation for use on the target species and for the intended method of application. All manufacturers label recommendations regarding method of application must be strictly adhered to.

Any plants that have been loosened or partly lifted by winds and winter frosts should be trodden back in carefully. Regularly inspect fencing, tree guards, stakes and tree ties (loosen tight ties as these will constrict tree growth) and prevent trees growing through or chafing against tree guards.

**645 Orchard Trees Plus Guard and Stake**

This technical note describes the minimum standard of work required in order to receive payments for an ‘Orchard Trees plus Guard and Stake’. Where there are local traditional methods or styles which vary from this standard these can be used, but any significant variation must be approved.

A century ago almost every farm would have had an orchard, growing many varieties of fruit for domestic use and for marketing locally. As the trees aged these orchards fell into decay; the few surviving examples are a distinctive feature in the countryside and often have a high wildlife value.

The retention of old orchard trees is a priority over re-planting as old trees are important for biodiversity value and can be pruned to prolong their life.
Example of Orchard tree plus guard and stake

The tree guard is made with 6 stakes, 6 rails and netting

646 Sabre Planting

This technical note describes the standard of work required in order to receive payments for ‘Sabre Planting’. Pioneered by an independent local charity ‘Bugeiliaid y Coed’ (Tree Shepherds), the No Fence Planting technique mimics the way in which self-sown trees establish themselves naturally on grazed farmland. Trees over one metre in height can be ‘sabre-planted’ perpendicular to steep ground (rather than pointing straight up) so that the leading shoots cannot be reached by browsing sheep and cattle. Such trees typically have a ‘sabre-shaped’ profile and can be seen growing in most valleys in Wales.

Planting Method

Trees can be planted amongst gorse and also ‘sabre-planted’ at an angle perpendicular to the slope on steep ground. Steep and broken ground with bracken is ideal for ‘Sabre Planting’. Other no-fence methods include the planting of 1.5–2 m trees. Wherever possible try to obtain plants grown from locally obtained seeds or cuttings (native provenance), since these will do better under local conditions and are more valuable for wildlife than imported stock.

Examples of Sabre Planted trees;

Mature self-sown tree

Young Sabre Planted tree
Supporting Capital Works

514 Ladder Stile

This technical note describes the minimum standard of work required in order to receive payments for ‘Ladder Stile’.

Standard payments are available for the provision of facilities to assist public use of permissive access paths and areas.

Ladder stiles are commonly used to allow walkers to cross walls and banks. They must be constructed from pressure treated softwood or hardwood.

Ladder stiles are not suitable for a Public Right of Way (PROW). All furniture on a PROW must be compliant with BS5709:2006. The least restrictive furniture must be used on a PROW, e.g. a gate is less restrictive than a stile. BS5709:2006 states that new structures on a PROW shall not be stile, although a step stile can be used if exceptional circumstances require them.

Timber dimensions must be no less than those shown in the diagram.

The Step-ladder Stile

The steps can either be rebated into the ‘A’ frames or supported by extra pieces of timber.

Where the top of the wall or bank is wide, a platform may have to be constructed across the top of the ladder.

A stile must be secured on both sides by burying the ends of the ‘A’ frame at least 30cm in the ground and anchoring them with stobs as shown. The use of concrete should be avoided as it can lead to rotting of the supports at ground level.

Example of a Step Ladder Stile

516 Timber Bridle Gate and Posts

This technical note describes the minimum standard of work required in order to receive payments for ‘Timber Bridle Gate and Posts’.

Where there are local traditional methods or styles which vary from this standard these can be used, but any significant variation must be approved by the Welsh Government.

Payments are available for the provision of facilities to assist public use of permissive access paths and areas. You should contact your local authority if you consider that a bridle gate is needed on a Public Right of Way.

Timber Bridle Gates and Posts must be constructed in either pressure treated softwood or hardwood.

Gates must be at least 1.5m wide and 1.3m high. Ideally there should be space on one side of the gate for the horse to stand while the gate is being opened.
The gate should be hung as shown so that it can be opened from both directions. An ‘extended’ or a ‘drop-over’ latch will allow the gate to be opened without the rider dismounting. In areas prone to vandalism, the top hook can be reversed to prevent the gate being lifted off.

**Posts**
- Hanging posts must be at least 15cm diameter
- Shutting posts must be at least 12cm in diameter
- Posts must be set at least 70cm into the ground. In general, the use of concrete to set the posts should be avoided, as it can lead to rotting of the posts at ground level.

**Example of a Step Ladder Stile**

![Diagram of a Step Ladder Stile]

**517 Timber Kissing Gate and Posts**

This technical note describes the minimum standard of work required in order to receive payments for ‘Timber Kissing Gate and Posts’, as specified in your Glastir Contract. Where there are local traditional methods or styles which vary from this standard these can be used, but any significant variation must be approved by the Welsh Government.

Payments are available for the provision of facilities to assist with public use of permissive access paths and areas.

All timber kissing gates and posts must be constructed in pressure treated softwood or hardwood.

The kissing gate needs to meet the following requirements:
- to be stock proof with the gate in any position, yet allowing free passage for pedestrians;
- to be an effective barrier against motorcycles or horses.
- to be compliant with BS5709:2006. The least restrictive furniture must be used on a Public right of way, e.g. a gate is less restrictive than a stile.

Ready made gates can be purchased and must be hung as shown. The gate must be 1.2m wide and 1.2m high. A 1m cylinder, with axis vertical, must be able to pass through. Note that the ‘throat’ dimension (the narrowest space to pass through when the gate is opened) must be at least 1m.

**Dimensions of Posts and Rails**
- Uprights should be at least 10cm x 7.5cm in cross section.
- Rails should be 7.5cm x 2.5cm in cross section except the top rail which should be 10cm x 7.5cm
- Hanging posts must be at least 15cm diameter
- Shutting posts must be at least 12cm in diameter
- Posts must be set at least 70cm into the ground. In general the use of concrete should be avoided as it can lead to rotting of the posts at ground level.

The gate hooks must be ‘offset’ by 3cm. This will cause the gate to close against one of the side posts when released. For added protection against stock, a self-closing latch can be fitted. In areas prone to vandalism, the top hook can be reversed to prevent the gate being lifted off.
Example of wooden kissing gate
This conforms to the BS5709, subject of course to such a structure being the least restrictive structure for its situation and being put in correctly (no barbed wire, firm ground etc).

This technical note describes the minimum standard of work required in order to receive payments for 'Wooden Stiles', as specified in your Glastir Contract. Where there are local traditional methods or styles which vary from this standard these can be used, but any significant variation must be approved by the Welsh Government.

Standard payments are available for the provision of facilities to assist with public use of permissive access paths and areas.

There are many variations in stile design and construction. The stile should be compliant with BS5709:2006. The least restrictive furniture must be used on a Public Right of Way (PROW), e.g. a gate is less restrictive than a stile. BS5709:2006 states that new structures on a PROW shall not be stile unless exceptional circumstances require them.

Two commonly used designs are illustrated and are examples of a wide and a narrow stile. Dimensions are in millimetres. Both are available in 'kit' form from local manufacturers. Stiles must be constructed from pressure treated softwood or hardwood.

For both wide and narrow stilts:
- Step width should be 200 min
- Hand posts should be 70 to 100 mm diameter or across faces
- Posts should not be used as straining posts for fencing
- Steps should level in all directions to 1 in 30

Where the stile route is on a steep slope the downhill side may have a third step. This step must be twice the width of a standard step and the 300 mm step height rule applies.

Whatever the design for a specific site, it is essential that the step tread board does not touch the cross-rails of the stile as a see-saw effect may develop, making the stile unsafe to use.
533 Badger Gate

This technical note describes the minimum standard of work required in order to receive payments for ‘Badger Gates’. Where there are local traditional methods or styles which vary from this standard these can be used, but any significant variation must be approved by the Welsh Government.

Badgers normally follow the same route when moving around their territory. Fencing to manage an area of habitat should take into account established badger runs.

In order to encourage the use of the gate by badgers, gates must be located directly on existing badger runs.

The fence on either side of the gate must be buried to a minimum of 15 cm into the ground. A wooden or stone base will prevent erosion of the ground under the gate. Timbers should be treated with a non-toxic, odourless preservative.

The following diagram illustrates best practice.

Example of a Badger Gate

![Diagram of a Badger Gate]

573 Water Gate

This technical note describes the minimum standard of work required in order to receive payments for ‘Watergate’. Where there are local traditional methods or styles that vary from this standard these can be used, but any significant variation must be approved.

Watergates are required where fence lines cross rivers and streams. Suitable crossing points will have a hard river bottom and reasonable access from both banks. The correct choice of crossing points will make both construction and maintenance easier.

Water gates are essential for protecting fences where the water level varies considerably throughout the year. All gates must be substantial constructions. Even on small streams a mixture of leaves and branches will float downstream each year and collect at the fence line. This puts pressure on both wires and stakes and can result in the subsequent disappearance of an entire section of fence.

As illustrated in the accompanying diagrams, a water gate must be separated from the main fence line by short lengths of wooden rail or netting fixed to suitably positioned straining posts. The gate itself consists of a series of wooden droppers attached to a length of cable or a round wooden rail which is suspended horizontally between the straining posts. Each gate has to be constructed to fit the profile of the individual stream.

Droppers must be at least 5cm square in cross section and constructed from sawn untreated timber which has been drilled and then threaded onto the cable or fencing wire with 15cm lengths of plastic pipe acting as spacers. As a result, each dropper is 15cm apart. Where the stream gully is over 1.5m deep, 7cm square untreated timber is used to make up a gate which is hung on a round wooden pole using loops of fencing wire. It can be made in several sections. This reduces the chance that the whole gate will get washed away during severe floods.

Hanging the gate separately from the main fence and then joining the two with loose fitted netting or lightly nailed rails, allows the gate to be pulled off and carried down stream during heavy floods without damaging the main fence. Minimum damage will be caused to the gate which can then be recovered, repaired and replaced both quickly and easily.
Gates should be hung at an angle, with the bottom of the gate resting on the stream bed on the down stream side. A gate which hangs vertically with the droppers just touching the water, will allow livestock to pass through when the water level drops.

**Examples of Water Gates**

![Diagram of Hanging Water Gates]

- **Hanging Water Gates**
  - For wide spans
  - Straining posts
  - 12.5 cm diameter

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### 563 Piped Water Supply

### 574 Water Troughs

This technical note describes the minimum standard of work required in order to receive payments for ‘Piped Water Supply’.

Piping used for the supply of drinking water to stock includes the need to graze areas of habitat currently lacking a water supply. Alternatively, the original water source may no longer be available to livestock as a result of fencing installed to meet environmental requirements.

All water supply work must conform to current British Standards Codes of Practice. Due care must be taken when pipe laying to prevent damage to other services such as water supply, waste, gas, electricity and telephone.

A range of factors should be taken into account when determining pipe diameter. These include: water pressure, water capacity, variable flow, length of pipe, and change in altitude, volume of water required, number of troughs, number and type of stock using each trough. To qualify for payment under a Glastir Contract, a water pipe must apply sufficient cold potable water to continuously refill all the water troughs along its length throughout the year within 10 minutes.

Pipework must be medium density blue polyethylene (BS 6572) with a minimum external diameter of 2.5 cm. All joints must be made of brass or plastic, watertight and meet British Standards. Where joints are buried underground, it is advisable to mark their locations, on fence posts for example, to assist with future maintenance.
Pipework must be buried to a minimum depth of 60cm, although this may need to be deeper if future deep ploughing or subsoiling is envisaged. Pipe laying may be done by trenching, mole plough or subsoiler, depending on soil type and machinery available. The ground must be reinstated to the original vegetation and to a standard agreed with the Welsh Government.

When crossing open ditches, the pipe must be covered by a tubular steel guard or sleeve pipe, laid 60cm below the ditch to allow space for ditch cleaning. When crossing farm tracks, the pipe must be laid on a 7.5cm bed of sand and then covered by further 10cm of sand before being overlaid by backfill.

Any pipework emerging from the ground must be protected against frost. Where stock are present, such as around a water trough, the pipework must be protected from animal damage.

The water supply must be controlled by isolating valves/stop cocks at the point of supply and at each trough. The isolating valves/stop cocks must be protected against frost and damage from stock, and must be easily accessible. Where valve/stopcocks are buried, this must be at a minimum of 60cm and access should be available through a covered inspection chamber. One solution is to combine field drains and valve positions.

This technical note describes the minimum standard of work required in order to receive payments for ‘Water Troughs’. Where there are local traditional methods or styles which vary from this standard these can be used, but any significant variation must be approved.

Water troughs used for the supply of drinking water to livestock includes the need to graze areas of habitat currently lacking a water supply. Alternatively, the original water source may no longer be available to livestock as a result of fencing installed to meet environmental requirements.

Standards
All water supply works must conform to current British Standard Codes of Practice.

Water troughs must be of galvanised steel, plastic or concrete. They should be of a recognised style and designed specifically for the purpose. The material chosen must have the minimum impact when viewed as part of the surrounding landscape.

Troughs must be of at least 1.8m length and of sufficient size to supply the type and number of stock in the field with their water requirements. More than one trough may be needed. They must either be connected to a water supply or supplied from a bowser on a regular basis, in order to provide sufficient potable water for the needs of the stock which are present. The standard payment includes the cost of fittings such as ball cocks etc.

Water troughs must be erected and maintained so that they neither spill nor leak water. The standard payment includes an allowance for wooden posts or other base supports. Any water that collects on the soil surface should be drained away. Where poaching is a particular problem, a hardcore standing area must be constructed.

Location
Whilst water troughs should be sited to provide stock with easy access to water, they must not be located in gateways or near footpaths, where they may cause an access problem. Areas of particular botanical or wildlife interest should also be avoided. Wet ground is particularly unsuitable due to the risk of poaching.

Minimum landscape impact is likely to take place when troughs are located at the edge of fields.

Examples of suitable Water Troughs

- Lockable cover
- Floatvalve outlet min 25mm above top edge of drinking compartment
- Sectional typemin. 200mm square
- Drain plug
- Supported above ground level
- Fixing cleat
- Pipe guard with water supply pipe lagged
- Chamber for underground stopvalves
- Stop valve as B5 5433 min 750mm below ground
593 Post and Rail Fencing

This technical note describes the minimum standard of work required in order to receive payments for ‘Post and Rail Fencing’, as specified in your Glastir Contract. Where there are local traditional methods or styles which vary from this standard these can be used.

Standard payments are available for fencing associated with the management of wildlife, landscape and archaeological features. The type of fence will vary according to need.

The standard payments allow for the dismantling, removal and safe disposal of derelict fences.

Standard payments are available for post and rail fencing in situations where it is appropriate in the landscape, normally in parkland areas or for stock control along water-side features.

All post and rail fencing must be constructed in either pressure treated softwood or hardwood.

All post and rail fencing must be no less than 1m high from ground level to the top of the uppermost rail.

Posts
These must be:
- At least 1.8m in length
- Square or rectangular and no less than 12.5cm x 7.5cm cross section.

- Set at centres not exceeding 2m. (normally 1.8m as the standard length of rails is 3.6m)

All posts must be set at least 70cm into the ground and the face of the post must be square to the fence line. Post holes must be dug and the posts secured with rammed earth and stone. In general, concrete should not be used as it promotes rotting of the posts at ground level. If the tops of the posts are sawn after setting, the cut surfaces must be treated with a suitable preserving fluid of the same colour as the original timber treatment.

Rails
There must be at least three rails of 3.8cm x 8.7cm sawn timber, skew nailed to the posts. Rails must be nailed on the ‘stock’ side of the posts. Joints between rails must be alternated on the posts, as shown on the diagram. Additional rails may be added where necessary.

Additional stock proofing can be achieved in appropriate situations by attaching woven wire to the posts. The payment rate will be as for the woven wire supplement.

Trees and shrubs must not be used as strainers or fencing posts nor may they be used to support fencing wire, staples or netting.

Post and Rail Fence
Suitable for use with horses and cattle.
594 Post and Wire Fencing

This technical note describes the minimum standard of work required in order to receive payments for 'Post and Wire Fencing', as specified in your Glastir Contract. Any variation from the standards set out must be approved by the Welsh Government prior to starting the work.

Certain works you may be carrying out under Glastir may require permission, consent or a license before they are undertaken. You must ensure that you carry out the works in line with the licenses, consents or permission.

Fencing timber must comprise either hardwood or pressure treated softwood.

Trees and shrubs must not be used as strainers or fencing posts, nor may they be used to support fencing wire, staples or netting.

Fencing timbers, line wire, netting and staples used to construct approved fence lines must always consist of new materials. The standard payments include an allowance for the dismantling, removal and safe disposal of existing derelict fences. All materials and construction standards must also conform to the following detailed specifications in addition to British Standards EN 10223-1:2012.

Post and Wire Fencing

Post and wire fencing must comprise at least three lines of wire made up of either galvanized mild steel wire (4mm gauge) or two ply twisted barbed wire (2.5mm gauge). The top wires of any fencing erected next to public access routes must consist of plain wire or an additional line of plain wire must be affixed to the outside of the posts closest to the route in question.

Straining posts must be a minimum of 12.5cm cross section and at least 2m long of which 1m must be below ground level, unless otherwise agreed with the Welsh Government. Straining posts must be placed at either end of the fence line and at centres of 100m or less, as well as at every horizontal or vertical change of direction.

Straining posts must be strutted at each end of the fence line and at all changes of slope and direction. Struts must have a top diameter of at least 6.5cm and must be supported with either a base plate or a suitably positioned intermediate post.

Intermediate posts must not be less than 6.5cm diameter (round posts and sawn timber) and at least 1.7m long. Half round posts are acceptable provided they measure at least 6.5cm from the mid point of the sawn side to the mid point of the round side.

Intermediate posts must be set at centres of 3m or less. All wire must be affixed to the posts with galvanized staples with the distance from the ground to the top wire no less than 1.05m.

Example of a Three Line Wire Fence

Post and Wire Fencing with Stock Netting

This technical note describes the minimum standard of work required in order to receive payment for 'Post and Wire Fencing with Stock Netting', as specified in your Glastir Contract. Any variation from the standards set out must be approved by the Welsh Government prior to starting the work.

Certain works you may be carrying out under your Glastir Contract may require permission, consent or a license before they are undertaken. You must ensure that you carry out the works in line with the licenses, consents or permissions.
Fencing timber must comprise either hardwood or pressure treated softwood. 

Trees and shrubs must not be used as strainers or fencing posts, nor may they be used to support fencing wire, staples or netting.

Fencing timbers, line wire, netting and staples used to construct approved fence lines must always consist of new materials. The standard payments include an allowance for the dismantling, removal and safe disposal of existing derelict fences. All materials and construction standards must also conform to the following detailed specifications in addition to British Standards EN 10223-1:2012.

Post and Wire with Stock Netting

All stock netting must be protected by galvanizing and at least one line wire must be used above the top of the netting. The distance from the ground to the top wire must be no less than 1.05m. In cases where there is heavy pressure from sheep or cattle, a second line wire on top of the netting as well as an additional wire at the bottom should be added. The top wires of any fencing erected next to public access routes must consist of plain wire or an additional line of plain wire must be affixed to the outside of the posts closest to the route in question.

Straining posts must be a minimum of 12.5cm cross section and at least 2m long of which 1m must be below ground level, unless otherwise agreed with the Welsh Government. Straining posts must be placed at either end of the fence line and at centres of 100m or less, as well as at every horizontal or vertical change of direction.

Straining posts must be strutted at each end of the fence line and at all changes of slope and direction. Struts must have a top diameter of at least 6.5cm and must be supported with either a base plate or a suitably positioned intermediate post.

Intermediate posts must not be less than 6.5cm diameter (round posts and sawn timber) and at least 1.7m long. Half round posts are acceptable provided they measure at least 6.5cm from the mid point of the sawn side to the mid point of the round side.

Intermediate posts must be set at centres of 3m or less. All wire must be affixed to the posts with galvanized staples with the distance from the ground to the top wire no less than 1.05m.

All netting and wire must be affixed to the posts with galvanized staples.

Example of Post and Wire Fencing with Stock Netting

596 Rabbit Fencing

This technical note describes the minimum standard of work required in order to receive payments for ‘Rabbit Fencing’.

Standard payments are available for fencing associated with the management of wildlife, landscape and archaeological features. The type of fence will vary according to its specific purpose.

Fencing timber must comprise either hardwood or pressure treated softwood

Trees and shrubs must not be used as strainers or fencing posts, nor may they be used to support fencing wire, staples or netting.

Fencing timbers, line wire, netting and staples used to construct approved fence lines must always consist of new materials. The standard payments include an allowance for the dismantling, removal and safe disposal of existing derelict fences. All materials and construction standards must also conform to the following detailed specifications in addition to British Standards EN 10223-1:2012.
**Rabbit Fencing**

Proofing against rabbits and hares should be carried out using galvanized wire netting, not less than 1.05m high, with a mesh no larger than 3cm. The top edge of the netting must be no less than 0.75m above ground level.

The netting should be fastened to the fencing with the bottom edge of the netting buried in the ground to a depth of 15cm and then turned outwards a further 15cm and anchored securely.

Strainers and intermediate posts must be erected according to the specifications for post and wire fencing. At least two strands of line wire must be affixed above the netting and there must be no less than 1.05m from ground level to the top wire. All netting and wire must be affixed with galvanized staples. All gates in rabbit proofed fences must likewise be proofed.

![Example of Rabbit Fencing](image)

**Example of Rabbit Fencing**

**600 Timber Field Gates (Softwood)**

This technical note describes the minimum standard of work required in order to receive payment for ‘Timber Field Gates (Softwood)’, as specified in your Glastir Contract. Where there are local traditional methods or styles which vary from this standard these can be used, but any significant variation must be approved by the Welsh Government.

Timber field gates and supporting posts must be constructed from hardwood. Second hand materials may only be used in exceptional circumstances and these must always be approved in advance by the Welsh Government.

All timber field gates must be hung on timber gate posts unless otherwise agreed with the Welsh Government. All posts must be at least 2.1m long. Hanging posts must be at least 200mm x 200mm in cross section whilst shutting posts must be at least 175mm x 175mm.

All gateposts must be set correctly into the ground, using concrete if necessary and fitted with appropriate hangings and latches.

Neither hanging posts nor shutting posts may be used as straining posts for fencing. A short length of split timber should be used to form a horizontal strut between the gate post and adjacent straining post.

**599 Timber Field Gates (Hardwood)**

This technical note describes the minimum standard of work required in order to receive payments for ‘Timber Field Gates (Hardwood)’, as specified in your Glastir Contract. Where there are local traditional methods or styles which vary from this standard these can be used, but any significant variation must be approved by the Welsh Government prior to starting the work.

Timber field gates and supporting posts must be constructed of pressure treated softwood. Second hand materials may only be used in exceptional circumstances and these must always be approved in advance by the Welsh Government.
All timber field gates must conform to the specifications set out overleaf in addition to those of British Standard 5709:2006.

Timber field gates must be at least 2.4m and no more than 4.2m wide. Any openings greater than 4.2m must have two leaves. Timber field gates must be constructed from members cut to the sizes illustrated in the table below.

All timber field gates must be hung on timber gate posts unless otherwise agreed with the Welsh Government. All posts must be at least 2.1m long.

Hanging posts must be at least 200mm x 200mm in cross section whilst shutting posts must be at least 175mm x 175mm. All gateposts must be set correctly into the ground, using concrete if necessary and fitted with appropriate hangings and latches.

Hanging posts and shutting posts must not be used as straining posts for fencing. A short length of split timber should be used to form a horizontal strut between the gate post and adjacent straining post.

Example of a Timber Field Gate (Hardwood or Softwood)

604 Parkland Tree Stock Guards

This technical note describes the minimum standard of work required in order to receive payments for ‘Parkland Tree Stock Guards’, as specified in your Glastir Contract. Where there are local traditional methods or styles that vary from this standard, these can be used. Any significant variation must be approved by the Welsh Government.

Type of Guard

The choice of tree guard will depend upon:

- The size of tree to be protected
- The type of damage expected, e.g. browsing, bark stripping, fraying.

- Type of animal most likely to cause damage
- Period of time the tree is at risk from damage
- The visual appearance of the guard (UKWAS General Forest Practice 24 – Consider the impact of fencing on landscape)

Height and Positioning of Guards

All guards constructed from timber rails must be at least 1.2 m high and set at least 1m from the tree to protect against sheep (or 1.5m to protect against cattle and horses.)

Construction

Use a combination of vertical posts and horizontal rails to build a rigid structure. Fix wire netting around it to prevent access by livestock.
The horizontal rails will prevent the posts from being loosened. A variety of stock might have access to the parkland over time so the guard must be strong enough to withstand the worse case scenario. Do not try to increase the distance of the top rail from the tree by slanting the posts outwards. This will make it difficult to fix the netting securely in place.

It is not necessary to top the enclosure with barbed wire as this is unlikely to stop animals leaning over, and you will make it more difficult to get into the enclosure to tend the tree. Barbed wire may also cause injury to both you and your livestock.

**Design**

Triangular shaped enclosures are only acceptable in parklands where sheep are the sole livestock. Such enclosures should be a minimum of 1.2m high with a width of at least 0.8m on each of the three sides. It is important to remember that as the tree grows it may be necessary to widen the guard.

Square or rectangular enclosures are the preferred design. Each of the 4 corner posts should have a minimum diameter of 10cm x 10cm. At least four wooden rails with a minimum diameter of 10cm x 5cm should be fixed to the outside of the posts. Galvanised netting should then be fixed around the outside of the structure and held in place with galvanised staples. An additional set of rails may also be placed mid way up the posts to provide additional strength. All timbers, netting and staples must consist of new materials. Timber must comprise either pressure treated softwood or hardwood.

**Metal Guards**

These are the traditional types of guards used in long established parklands. It is important that they are checked regularly to ensure that the tree does not grow into the metal work and become deformed. Such guards were originally made out of wrought iron but are now available in mild steel.

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**Examples of Parkland Tree Guards**

1. **Post and Rail Type**
   - a) Suitable for use with sheep
     
     ![Diagram of Post and Rail Type]
     
     - Corner posts: 10cm x 10cm
     - Rails: 10cm x 5cm
     - Width: 1.2m
     - Height: 3m

   - b) Suitable for use with horses and cattle
     
     ![Diagram of Post and Rail Type]
     
     - Corner posts: 10cm x 10cm
     - Rails: 10cm x 5cm
     - Width: 1.2m
     - Height: 2m

2. **Traditional Metal Types**

   ![Diagram of Traditional Metal Types]
608  Tree Shelter  
(60cm with Stake)

647  Spiral Rabbit Guards

This technical note describe the minimum standard of work required in order to receive payments for 'Tree Shelter (60cm with stake)' and 'Spiral Rabbit Guards' as specified in your Glastir Contract. Where there are local traditional methods or styles which vary from this standard these can be used, but any significant variation must be approved by Welsh Government. It illustrates best practice for:

• Use of tree guards
• Maintenance

This capital item can be used to plant blocks up to 0.25ha in size at a density of between 1600 -2500 trees per Ha.

Spiral Rabbit Guards
Spiral rabbit guards are the most widely used form of tree protection against rabbits and voles. They are made from a plastic material and are available in three sizes, (45cm, 60cm and 75cm). Each guard needs to be supported by a bamboo cane and should be no taller than the tree it is protecting at the time of planting. Following tree planting, a bamboo cane is pushed into the ground alongside the tree. The guard is then wound or spiralled around both tree and cane so that small mammals are excluded.

Tree Shelters
Tree shelters are translucent plastic tubes up to 2m in height which are used to protect young trees. Each shelter is attached to a stake and should provide support and protection for some 5–10 years before it bio-degrades.

Shelters provide a convenient solution to many of the problems faced when establishing new woodland. Such problems include both weed control and severe animal damage. In small scale operations where fencing and cultivation are relatively expensive, the use of tree shelters may often be the most practical solution.

Size and Construction
To protect against grazing animals, the shelter needs to be above the browse height of the animal. This can vary from 60cm for rabbits and hares to 2m for Roe deer. Sheep can browse at 1.2m–1.5m high. Deer would normally be excluded from the area with a proper deer fence.

Most tree shelters have a diameter or side of 8–12cm and are constructed of twin wall polypropylene. Although shelters come in a range of colours, there is little difference between them in terms of tree growth. When planting under established trees, where light intensity is likely to be low, it is generally better to use clear translucent tubes.

Staking
All tree shelters must be fixed to a stake with wire or plastic cable clips. The stake should have a diameter of 2.5cm x 2.5cm on sheltered sites and 3cm x 3cm on more exposed sites. The stake must be put in vertically and must not extend above the top of the shelter or else the tree might be damaged as it grows beyond the shelter.

905  Bramble/Scrub Control –  
Hand Knapsack Spraying

This technical note describes the minimum standard of work required in order to receive payments for control of 'Bramble / Scrub Control – Hand Knapsack Spraying', as specified in your Glastir Contract.

Bramble is a very common, successful, native species that occurs in a wide variety of habitats throughout Britain including woodlands, heaths, dunes, mires and grassland. Several features may explain the success of bramble: it can survive long periods in the seed-bank; spreads vigorously by vegetative growth; is semi-evergreen, in mild winters the leaves persist on first year canes; can be spread long distances by birds. In favourable conditions it can grow to produce dense thickets that can have adverse competitive effects on other vegetation.
Where agreed with the Welsh Government, chemical control may be carried out using a knapsack sprayer. This method should not be used in areas where scrub or bramble exceeds waist height as coverage and ultimately control, will be impaired. This option is useful for small areas but is tiring due to the weight of water carried, the need for frequent refilling and the effort of keeping the boom above the bramble.

The use of any chemical other than Glyphosate should be agreed beforehand the Welsh Government, and in all cases a chemical must have a label recommendation for use on bramble and for the intended method of application. All manufacturers label recommendations regarding application of the herbicide, should be strictly adhered to.

**Use of Herbicides**

In all cases the herbicide used must have a label recommendation for your intended use, and for the intended method of application.

You are advised to follow the recommendations in the ‘Green Code’ (Approved Code of Practice for the Safe Use of Pesticides on Farms and Holdings, MAFF, 1998) along with recommendations contained in UKFS Guidelines: General Forest Practice (1-3, 23), Forest and Water (56 - 65), Forests and Soil (5)

http://adlib.everysite.co.uk/adlib/defra/content.aspx?doc=155712&id=155809