Native Woodland Establishment GPC9 & GPC10

Silvicultural Standards

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Content

1. Introduction

The Forest Service of the Department of Agriculture, Food & the Marine operates a package of measures under the Forestry Programme 2014-2020, aimed specifically at promoting the proactive protection and expansion of Ireland's native woodland resource. These measures represents a key biodiversity component within Ireland's national forest policy.

These measures are as follows:

- Native Woodland Establishment (as represented by Grant & Premium Categories (GPCs) 9 and 10 under the Afforestation Grant & Premium Scheme), which funds the establishment of *new* native woodland on open 'greenfield' sites; and
- Native Woodland Conservation Scheme (NWS Conservation), which promotes the appropriate restoration of existing native woodland (including the conversion of non-native forest to native woodland), through the provision of financial support to forest holders towards the cost of appropriate works.

Both measures have been developed and implemented in partnership with Woodlands of Ireland, the National Parks & Wildlife Service (NPWS), the Heritage Council, Inland Fisheries Ireland (IFI) and other native woodland stakeholders, and are supported by a multi-annual training programme and a continuously-evolving package of supporting literature for practitioners (see Annex 6 for available resources). It is envisaged that both measures will continue to develop over the coming years, based on the ongoing partnership, experiences gained, and evolving priorities.

This document, which represents a section of the Forest Service *Forestry Standards & Procedures Manual*, sets out the specific silvicultural standards that apply to the Native Woodland Establishment GPC9 & GPC10. This document should be read in conjunction with the *Forestry Standards & Procedures Manual*, which is available along with various circulars at www.agriculture.gov.ie/forestservice/publications/ and www.agriculture.gov.ie/forestservice/grantandpremiumschemes/

Native Woodland Establishment GPC9 & GPC10 form part of the general Afforestation Grant and Premium Scheme, and are therefore subject to the terms and conditions of that scheme, as set out in the document *Afforestation Grant & Premium Scheme 2014-2020*, available at www.agriculture.gov.ie/forestservice

(The corresponding silvicultural standards for NWS Conservation are set out in Annex 4 of the Forest Service document *Native Woodland Conservation Scheme.*)

2. Objectives of Native Woodland Establishment GPC9 & GPC10

The aim of Native Woodland Establishment is to support the creation of new native woodland on open 'greenfield' sites by farmers and other landowners, in order to promote the expansion of Ireland's native woodland resource and associated biodiversity. Each new woodland must reflect the appropriate native woodland type (or types) identified during the application process as being the most ecologically appropriate for the site. Support is available in the form of grant payment of up to €5,750 / ha for approved establishment works, and a 15-year annual premium payment of €635 / ha / year - see *Afforestation Grant & Premium Scheme 2014-2020* for details.

In addition to the above, Native Woodland Establishment GPC9 & GPC10 also support the

realisation of wider ecosystem functions and services that new native woodlands can deliver. In particular, these include the protection and enhancement of water quality, aquatic habitats and in-stream species, the creation of linkage between semi-natural habitats at a landscape level, and carbon sequestration as part of Ireland's contribution to combating climate change. Annex 4 describes the potential application of Native Woodland Establishment in relation to the protection of watercourses and aquatic habitats and species. Annex 5 sets out the requirement for afforestation projects within water sensitive areas, to incorporate native woodland plots (GPC9 and / or GPC10), to capitalise on this role.

Many sites under Native Woodland Establishment GPC9 & GPC10 will be suitable for growing quality timber and other wood products on an ongoing long-term basis. Applicants are encouraged to pursue this potential, where compatible with the native woodland ecosystem objectives and prevailing site conditions. This entails the use of 'close-to-nature' Continuous Cover Forestry (CCF) based on shelterwood, selection and coppicing systems that mimic natural processes and minimise site impacts. Realising wood (and non-wood) products from the woodland generates valuable income for the owner, and an economic basis for the ongoing management of many of Ireland's native woodlands, beyond the scheme itself.

Native woodland established under GPC9 and GPC10 will present opportunities for implementing traditional forms of woodland management that form part of our countryside heritage, including coppicing. Other important benefits include landscape enhancement and cohesion, the strengthening of the cultural and historical heritage associated with Ireland's native woodlands, and the provision of local amenities and opportunities for woodland interpretation and environmental education.

Native Woodland Establishment GPC9 & GPC10 has an overriding ecological focus, demonstrated by, for example, its emphasis on minimal site disturbance, species selection based on the most appropriate native woodland type, the use of native planting stock, and long-term 'close-to-nature' management. With this focus, this measure creates opportunities for landowners within environmentally-sensitive areas to create woodlands which have the potential for wood production and income generation, and which also contribute towards addressing the various environmental sensitivities involved (e.g. NATURA sites, Acid Sensitive Areas, high status waterbodies, fisheries sensitive areas and Freshwater Pearl Mussel catchments). This is achieved through cooperation between the owners, foresters, the Forest Service and other statutory bodies and scheme partners, and the application of the Forest Service Appropriate Assessment Procedure and other safeguards.

Applicants may wish to establish native woodland over the entire site. In such cases, the application will comprise GPC9 and / or GPC10 only. Alternatively, applicants can apply to establish a native woodland plot(s) as part of a larger plantation that also comprises other GPCs, e.g. GPC3 (Sitka spruce with 10% broadleaves). This allows for the integration of native woodland into standard forest design, specifically for the purpose of realising associated ecosystem services. (This integration is a requirement within certain water sensitive areas - see Annex 5.)

The aim of Native Woodland Establishment GPC9 & GPC10 is to support the creation of 2,700 hectares of new native woodland under the Forestry Programme 2014-2020.

3. Targeting of Native Woodland Establishment GPC9 & GPC10

Prioritisation of site types does not apply under Native Woodland Establishment GPC9 & GPC10. However, the general focus is on the creation of new native woodland – either as a

stand-alone project or as part of a wider afforestation project – which is capable of delivering a broad range of ecosystem services in addition to native woodland biodiversity.

These ecosystem services include:

- the consolidation and expansion of existing native woodlands (particularly woodlands designated for conservation purposes under European and / or national legislation, due to their native woodland type / habitat),
- designated woodlands),
- the protection of watercourses and associated habitats and species, and
- the creation of linkage between native woodland and other semi-natural habitats in the landscape.

Also encouraged are projects involving the creation of a native woodland amenity for public access and recreation, woodland interpretation and environmental education (including projects integrated with the NeighbourWood Scheme).

4. Native Woodland Establishment GPC9 & GPC10 or NWS Conservation?

Separate standards and procedures apply to Native Woodland Establishment GPC9 & GPC10 and NWS Conservation. Therefore, Native Woodland Establishment and NWS Conservation ***must be applied for separately, and not as part of the same application***.

To assist in differentiating between the two measures, the following applies:

- Areas submitted under Native Woodland Establishment GPC9 & GPC10 can contain a portion of scrub, as per the standard Area for Biodiversity Enhancement (ABE) eligibility criteria - see the *Forestry Standards & Procedures Manual*.
- Areas submitted under NWS Conservation can initially comprise up to one-third open space. Within the Native Woodland Plan, existing open spaces can then be treated as a combination of retained habitats and open spaces under the 15% ABE requirement, and areas for planting / natural regeneration.

5. Eligible operations

Eligible operations under Native Woodland Establishment GPC9 & GPC10 are as follows:

- Ground preparation, where appropriate
- Cost of suitable native planting stock
- Planting
- Fertiliser application (if appropriate)
- Management of competing vegetation
- Filling-in planting (to replace mortalities)
- Shaping of broadleaves
- Mapping
- Fencing and tree protection (note, the standard Afforestation Grant & Premium

Scheme fencing caps apply)

- Establishment of firebreaks
- Management and supervision
- On application, other related operations, as deemed appropriate and as approved by the Forest Service.

6. Site requirements

The following site requirements apply under Native Woodland Establishment GPC9 & GPC10:

- The site must be capable of supporting the vigorous growth and sustainable long-term development of the most appropriate native woodland type(s) identified for that site. This must be achievable without the need for fertiliser input (with the possible exception of a once-off hand application at establishment, to boost initial growth).
- Sites subject to severe and persistent threats that could undermine the long-term sustainability of any new native woodland, may not be accepted (e.g. sites within a locality heavily infested with rhododendron or within a deer 'hotspot').
- Restrictions relating to land type, soil, elevation, aspect, shell marl, flooding(*) and other site factors, as set out in *Forestry Standards & Procedures Manual*, apply to GPC9 and GPC10.

(* GPC9 and GPC10 plots on natural floodplains subjected to flooding may be acceptable, as a component of a larger application or as part of a wider multi-site project developed with input from other statutory bodies and aimed at the strategic development of native woodland along a sensitive watercourse, for water protection purposes. This is in recognition of the rarity of riparian woodlands and also the role this habitat plays in the protection of water and aquatic habitats and associated species.)

Note, areas previously under scrub woodland and cleared within the 5-year period prior to the application date, will not be eligible under GPC9 or GPC10, as this represents the removal of native woodland habitat. All woodlands are protected by the Forestry Act 1946 (and any Act that succeeds or replaces that Act), which controls felling of trees. Under this Act, with certain exceptions, it is illegal to cut down any tree unless a Felling Licence has been obtained from the Forest Service.

7. Area, size and width

There is no upper area limit for individual applications under Native Woodland Establishment GPC9 & GPC10. However, note the requirement for an EIS for afforestation projects 50 ha of greater, under S.I.558 of 2010.

The minimum plot size and width requirements set out in the *Forestry Procedures & Standards Manual* apply to GPC9 and GPC10, *with the following exception*: GPC9 and GPC10 plots must be 20 metres or greater in width, as measured tree-to-tree (i.e. excluding open spaces such as aquatic buffer zones, public road setbacks and archaeological exclusion zones).

8. Acid Sensitivity Protocol for Afforestation

Water sampling under the Acid Sensitivity Protocol for Afforestation is not required for

afforestation applications within Acid Sensitive Areas (ASAs) that comprise Native Woodland Establishment GPC9 & GPC10.

This amendment to the protocol, agreed with the Environmental Protection Agency (EPA) (see Forest Service Circular 4/2013), is limited to applications that comprise solely of Native Woodland Establishment GPC9 and / or GPC10 (plus ABEs, as required) on enclosed / improved land only. Strict adherence to minimum site disturbance will apply during planting and establishment, with the additional requirement that no fertiliser application takes place.

Note: Several ASAs also overlap with Freshwater Pearl Mussel (FPM) catchments. Native Woodland Establishment applications must incorporate appropriate measures to ensure that no silt, nutrients or herbicides enter receiving waters. This is a key requirement within FPM catchments.

9. Native woodland type

Each project under Native Woodland Establishment GPC9 & GPC10 must promote the native woodland type or types identified as being the most appropriate for that particular site. Identification of the most appropriate native woodland type(s) is made during the development of the initial application, as set out below.

Promoting the most appropriate native woodland type(s) for the site becomes the principle planning and management objective and will influence subsequent operations. Under GPC9 and GPC10, it will have a direct bearing on species selection and planting mixtures.

The identification of the most appropriate native woodland type is made by the NWS Forester(*) during the development of the application, using the Native Woodland Establishment Framework set out (with guidance) in Annex 2.

This framework is a core part of any application under GPC9 and GPC10. Using it, the NWS Forester appraises the site by assessing soil type, location (including elevation and aspect) and the main habitats / vegetation present, and matches it to one of four native woodland establishment scenarios. This process determines the most appropriate native woodland type to promote, along with a prescribed planting mixture consistent with that woodland type, and the relevant GPC to apply under, using the Afforestation Form 1.

The native woodland establishment scenarios and corresponding soil types and native woodland types are as follows:

- Scenario 1 (Podzols / Oak-Birch-Holly Woodland)
- Scenario 2 (Brown Podzolics / Oak-Birch-Holly with Hazel Woodland)
- Scenario 3 (Brown Earths / Oak-Ash-Hazel Woodland)
- Scenario 4 (Gleys / Alder-Oak-Ash Woodland)

Annex 3 gives guidance on undertaking a ‘free’ soil survey and subsequent soil classification, to support of the use of the Native Woodland Establishment Framework.

(* Annex 1 sets out the relevant criteria for NWS Foresters.)

10. Acceptable species

All tree species proposed for planting under Native Woodland Estabishment GPC9 & GPC10

must be: (i) native to the island of Ireland; (ii) representative of the native woodland type or types being promoted on site: ***and*** (iii) acceptable to the Forest Service.

Under GPC9 and GPC10, these requirements are met by the outcome of the Native Woodland Establishment Framework, as described above and in Annex 2.

11. Species mix, composition and layout

Under GPC9 and GPC10, the species mix, composition and layout are defined by the Native Woodland Establishment Framework (Annex 2).

The species mix, composition and layout set out under the scenario (or scenarios) identified for the site must be adhered to in order to be eligible under the corresponding GPC. These specifications are formulated to initiate the appropriate native woodland type.

Native species other than those prescribed in the framework may be acceptable to the Forest Service, on application (e.g. species with a very localised natural range).

The spacing of 2.0 m x 1.5 m is required for both GPC9 and GPC10, giving a planting density of 3,300 trees / ha. These specifications are aimed at promoting rapid establishment and the development of a vibrant emerging canopy in those areas planted.

Any variation on the above requirements regarding species mix, composition and layout, mst be agreed in advance with the Forest Service.

Note the exclusion of ash due to *Chalara fraxinea* ash dieback disease, as set out in Forest Service Circular 04/2013.

12. Natural regeneration

Natural regeneration is the establishment of new trees and shrubs from seed arriving naturally (by animals, wind, water, etc.) on site from overhead sources or from outside sources, typically adjoining or nearby, and occasionally distant.

Natural regeneration has many advantages over planting (e.g. the conservation of the local genetic biodiversity, lower site inputs and disturbance, reduced pressure on limited planting stock). However, it is difficult to predict whether or not natural regeneration will occur on a given site within the available timeframe under Native Woodland Establishment GPC9 & GPC10.

It is envisaged that natural regeneration of native species will occur on many sites under GPC9 and GPC10, particularly along hedgerows and adjoining woodlands. This will enrich species diversity within the young emerging woodland, and should be encouraged and retained as part of the developing woodland ecosystem. However, due to its unpredictability and the scheme timeframe, natural regeneration cannot form part of the species area being applied for under GPC9 and GPC10. Instead, all of the species area submitted must be planted at the outset.

13. Areas of Biodiversity Enhancement (ABEs)

Standard requirements regarding ABEs and afforestation apply to Native Woodland Establishment GPC9 & GPC10. See the *Forestry Standards & Procedures Manual* for details.

14. Planting material

14.1 Suitable sources

In order to promote the conservation of genetic biodiversity, all planting material used under Native Woodland Establishment GPC9 & GPC10 must be: (i) derived from suitable seed sources from within Ireland; and (ii) fully traceable from seed collection to the planting site.

All planting material used under GPC9 and GPC10 is subject to EU and / or national requirements, to ensure suitability for use and traceability from source to final planting site. See the *Forestry Standards & Procedures Manual* for details and requirements.

Further requirements apply under GPC9 and GPC10:

- Table 1 lists the source or sources acceptable for each species eligible under GPC9 and GPC10. ***All sources must be from within the island of Ireland*** (other than in exceptional circumstances clearly defined by the Forest Service(*)).
- Furthermore, all planting material used within a woodland designated for conservation purposes under European and / or national legislation, due to its native woodland type / habitat, must originate from reproductive material collected from within that site or vicinity, or from an alternative site acceptable to both the Forest Service and NPWS.

(* Note that the Forest Service may occasionally permit material from other defined sources in order to alleviate planting stock shortages, specifically oak. Such changes are announced *via* periodic Forest Service Circulars (e.g. Circular 1/2015).)

Table 1 Acceptable sources for planting material, for eligible species under Native Woodland Establishment GPC9 & GPC10.

	Pedunculate & sessile oak	Scots pine	All other eligible species
A seed stand registered in the National List of Basic Material in the category 'Selected', and regarded as being indigenous	✓		✓
A seed stand registered in the National List of Basic Material for the purpose of gene conservation	✓	✓	✓
An Ancient Woodland oak stand included in the National List of Basic Material as 'Source Identified' for the purpose of gene conservation	✓		
A seed stand registered in the National List of Basic Material in the category 'Selected', and of Scottish origin		✓	
A seed orchard registered in the National List of Basic Material in the category 'Qualified' or 'Tested', and of Scottish origin		✓	
A seed source or stand registered in the National List of Basic Material in the categories 'Source Identified', 'Selected' or 'Qualified', and regarded as being indigenous and heterogenous			✓

The National Register of Basic Material (maintained by the Department of Agriculture, Food & the Marine) incorporates all approved seed sources, seed stands, seed orchards, seed categories, ownership details, current status and maps. ***Landowners who wish to have stands considered for inclusion in the National Register should apply to the Forest Service of the Department (contact FRM@agriculture.gov.ie). The registration of stands for understorey and minor species is particularly welcome. Of particular relevance is that stands may be registered for the purpose of gene conservation.***

14.2 Willow

Often the most effective way to establish willow is to insert (or 'strike') cuttings directly into the ground. As set out in Annex 2, grey willow is a required species under Scenario 4 (Gleys / Alder-Oak-Ash Woodland), which is eligible for funding under GPC10. As with other eligible species, this material is subject to certain requirements, to ensure suitability and traceability.

To facilitate the sourcing of suitable grey willow planting material for a specific GCP10 plot, cuttings taken from existing grey willow trees found onsite or on contiguous land, and subsequently struck directly into the site as part of the project, may be acceptable, subject to the following:

- Operators taking cuttings must be registered in advance with the Forest Service as Registered Seed Collectors. Furthermore, operators must inform the Forest Service in advance of the cutting operation, by applying for a Seed / Cutting Collection Permit. This will generate a Master Certificate of Provenance and users will be required to issue a 'Provenance Declaring Form' for the material.
- The material can only be cut for the sole purpose of providing planting material for the GPC10 plot in question.
- Full details of the operation (including the location of source trees) must be included in the Native Woodland Establishment application, as supplementary documentation.
- Operators must be familiar with the identification of native willow species, and must follow good practice regarding the taking of cuttings and the timing of the operation (typically late November to early March), in order to prevent lasting damage to the source tree(s). The People's Millennium Forests (2000) publication *Our Trees*(*) provides basic guidance on growing from cuttings.
- Operators must also be aware of possible restrictions regarding the taking of cuttings within protected areas, and seek prior consent from the relevant authority.
- The onus is entirely on the applicant to seek and attain the relevant permission from any other landowner on whose land the proposed source trees are located.

(* Available at www.woodlandsofireland.com/publications)

14.3 Plant Passports

In the context of Ireland's special Protected Zone status with respect to specific harmful forest pests and diseases, plants of those species acceptable under GPC9 and GPC10 and listed below should only be purchased from nurseries / brokers registered under the EU Plant Health Directive, and must be accompanied by a valid EU Plant Passport to certify the absence of the relevant pests and diseases:

- Scots pine (*Pinus sylvestris*): Protected Zone Code ZP CONF.
- Sessile oak (*Quercus petraea*): Protected Zone Code ZP A16
- Pedunculate oak (*Quercus robur*): Protected Zone Code ZP A16
- Rowan (*Sorbus aucuparia*): Protected Zone Code ZP B2
- Hawthorn (*Crataegus monogyna*): Protected Zone Code ZP B2
- Crab apple (*Malus sylvestris*): Protected Zone Code ZP B2

Regarding wild cherry (*Prunus avium*), a Protected Zone Code is not applicable, but a standard Plant Passport is required.

See the *Forestry Standards & Procedures Manual* for further details and requirements.

15. Pests and diseases

Forest Service policy is to maintain a healthy forest environment by ensuring good management, and by identifying risks and maintaining a sustained commitment to measures that prevent the entry and establishment of destructive forest pests and diseases, including those which may impact negatively on native woodland.

*Everyone involved in a Native Woodland Establishment project, or in any other tree- or forest-related activity, should be vigilant and immediately contact the Forest Service, Department of Agriculture, Food & the Marine, if any **unusual** pest or disease is observed.*

For this purpose, the Forest Service can be contacted by e-mail at forestprotection@agriculture.gov.ie or by phoning 01-607 2651. Alternatively, unusual pests or diseases can also be reported on the Forest Service TreeCheck app. (see www.treecheck.net).

16. Ground preparation, drainage, fertiliser application

Under Native Woodland Establishment GPC9 & GPC10, all operations must be carefully tailored in order to promote the relevant native woodland type(s) with the minimum amount of site disturbance possible. The focus is on retaining natural site conditions and to facilitate the emergence of the native woodland type (or types) that would occur naturally on the site. This consideration influences ground preparation, drainage and fertiliser application.

Ground preparation is largely limited to inverted mounding, scrap mounding, shallow ripping, pit planting and auger planting.

Drainage should generally be avoided under GPC9 and GPC10. However, localised drainage may be acceptable in certain circumstances to aid establishment – full details must be provided at the application stage. The blocking of existing drains may be acceptable, to reinstate natural wet conditions and to improve the functionality of aquatic buffer zones regarding the protection of adjoining watercourses.

(Note, in relation to works undertaken as part of Native Woodland Establishment projects within Freshwater Pearl Mussel catchments, the fundamental objective is to ensure that no silt, nutrients and / or herbicides enter the receiving waters. Therefore, great care must be exercised in the selection and implementation of establishment methods, to meet this fundamental objective.)

Fertiliser application is acceptable under GPC9 and GPC10 in certain circumstances, for example, as a once-off application at planting to boost growth for a specific ecological purpose. The appropriate fertiliser must be applied by hand around the base of each tree. Slow release, organic formulations are recommended. (Note, fertiliser application is not permitted on Native Woodland Establishment projects within Acid Sensitive Areas.)

17. Vegetation management

Under Native Woodland Establishment GPC9 & GPC10, the control of competing vegetation such as grasses, herbaceous plants, brambles, bracken, etc. is critical for the rapid establishment and growth of young trees. Inadequate vegetation management will result in mortality, loss of growth and vigour, and the need for further inputs subsequently (e.g. beating up).

Non-herbicide control (trampling, mulches, mats, etc.) is generally realistic only on small sites and in highly sensitive areas (e.g. aquatic buffer zones). Otherwise, targeted herbicide application represents the most practical, effective and economical method of vegetation management.

Pre- and post-planting herbicide application must be kept to the minimum required to ensure success, and should be used in combination with other methods to control competing vegetation, e.g. the use of larger planting stock. Post-planting application should be carried out using a knapsack sprayer, with the aim of maintaining a 1-metre wide control area around the base of each tree until they are free of competing vegetation.

For further information and requirements, see the *Forestry Standards & Procedures Manual*.

Under the *Forestry & Water Quality Guidelines*, herbicide use is generally not permitted inside the aquatic buffer zone. However, exceptional circumstances may pertain, where the limited and targeted use of herbicides in this zone may be acceptable to the Forest Service, following consultation (where appropriate) with Inland Fisheries Ireland and the National Parks & Wildlife Service, e.g. the stem injection of rhododendron.

For health, safety and environmental reasons, herbicide use must adhere to the *Forestry & Water Quality Guidelines*, *Forest Protection Guidelines*, and the *Guidelines for the Use of Herbicides in Forestry*.

The new Sustainable Use Directive will also be an important feature of Native Woodland Establishment GPC9 & GPC10, ensuring proper use of pesticides.

18. Protection against grazing

Native Woodland Establishment sites must be fully protected from the time of planting. All existing fences and boundaries must be to a standard which excludes domestic stock and protects the emerging woodland. Additionally, sites must be protected from other grazing animals, including deer, feral goats, rabbits and hares, as required. Basic fencing requirements are specified in the *Forestry Standards & Procedures Manual*.

Alternative fencing and barriers, including A-frame fencing (see Photo 1), 'dead hedging' (using conifer brash, cut rhododendron and other woody material), stonewall repair and hedge laying, may be considered eligible on a case-by-case basis – full details must be provided at the application stage.

Tree guards for protection against rabbit, hare and deer browsing should be used where

Photo 1 A-frame fencing and other alternative fencing and barriers, may be acceptable under Native Woodland Establishment GPC9 and GPC10, on application.

appropriate, e.g. small sites, single or group planting within aquatic buffer zones. As well as protecting against grazing, tree guards also highlight the location of individual trees, for follow-up maintenance.

Consider providing access for desirable mammals, e.g. a badger gate positioned where the fenceline crosses an established track.

All protective measures should be inspected on a regular basis, with maintenance carried out, as required.

If necessary, incorporate measures into the overall woodland layout and design to facilitate the ongoing control of grazers. These include strategic sight lines, deer lawns and elevated hides. Note, sites heavily populated with deer, or located in a deer 'hotspot' area, may not be accepted under Native Woodland Establishment GPC9 or GPC10, as native woodland restoration may not currently be a realistic and sustainable proposition.

19. Protection against fire

Fire risk is relevant to Native Woodland Establishment GPC9 & GPC10, particularly in upland areas. Requirements for firebreaks, a fire plan, etc., apply, as set out in the *Forestry Standards & Procedures Manual*.

20. Treatment of non-native tree species

Under Native Woodland Establishment GPC9 & GPC10, any non-native tree present within the project area must be removed from the site by the second grant instalment, unless clear ecological, silvicultural or cultural considerations presented in the application justify a more gradual approach.

Any natural regeneration of non-native trees must also be removed on an ongoing basis. This includes naturally regenerating trees originating from adjoining property.

Due to their biodiversity, cultural and landscape value, non-native veteran trees can be retained indefinitely. However, their position must be marked on the Biodiversity Map as

small features of biodiversity value, and all associated natural regeneration must be controlled on an ongoing basis. Similarly, non-native but naturalised species of willow already present within any natural riparian areas should be retained. These include white willow (*Salix alba*), crack willow (*S. fragilis*) and osier (*S. viminalis*).

(Native Woodland Establishment projects must adhere to the 1946 Forestry Act (and to the replacement 2014 Forestry Act, once commenced). Applications for a Felling Licence should be made prior to or in tandem with the initial application, to avoid delays after any approval is issued.)

21. Treatment of exotic invasive species

A number of invasive exotic and naturalised plant species represent a serious threat to native woodlands, depending on site and soil types. These include rhododendron, cherry laurel, red osier dogwood, Japanese knotweed and snowberry. These have the potential to rapid colonise sites and to out-compete native trees, shrubs and ground flora, thereby substituting native communities over time. Under Native Woodland Establishment, these species must be effectively controlled and removed if present on the site, through the application of current best practice appropriate to the site (i.e. cutting and stump treatment, stem injection, foliar spray, mechanical flaying or uprooting, etc.). A long-term strategic approach is required, based on initial and follow-up treatment, simultaneous control on adjoining sites (where possible), and ongoing monitoring.

Rhododendron and cherry laurel represent a particularly significant threat, and treatment includes cutting and stump treatment, the spraying of regrowth, stem injection and mechanical uprooting and removal. The Woodlands of Ireland Native Woodland Information Note No. 3, entitled *The Control of Rhododendron in Native Woodlands*, sets out a range of appropriate options.

Note that heavily infested sites or sites within a heavily infested locality may not be accepted under GPC9 or GPC10, as native woodland establishment may not currently be a realistic or sustainable proposition in severe cases.

22. Formative shaping

Under Native Woodland Establishment, where quality wood production is an objective, formative shaping should be applied to young trees, following the rules set out in the *Forestry Standards & Procedures Manual*. This will promote good stem quality at an early stage, thereby increasing the scope for compatible hardwood production within the native woodland in the future.

Potentially, formative shaping can also be applied to any native trees that occur onsite through natural regeneration.

23. Integration with the NeighbourWood Scheme

Projects under Native Woodland Establishment GPC9 & GPC10 may have potential for compatible development as local amenities, with particular emphasis on:

- appropriate levels of public access and types of recreational use,

- interpretative / educational features promoting awareness and understanding of native woodlands, and
- educational tie-in with local schools.

In order to facilitate this type of development, projects under Native Woodland Establishment can be accompanied by parallel applications under Element 3 of the NeighbourWood Scheme, a separate Forest Service grant package supporting the development of 'close-to-home' woodland amenities developed in partnership with local communities and other interested recreational 'user groups', for public use and enjoyment.

Element 3 of The NeigbourWood Scheme provides funding for the installation and upgrade of appropriate recreational facilities within woodlands. Facilities can be general in nature (e.g. footpaths, signage, waymarkers, car-parking, seating and picnic tables) or specialised for a particular activity or use (e.g. dedicated nature trails, bird-watching hides).

All facilities must satisfy specific criteria focused on quality, durability, and sensitive layout and design.

The criteria and available grant levels under Element 3 of the NeighbourWood Scheme are set out in the documentation for that scheme. Applicants under Native Woodland Establishment wishing to avail of NeighbourWood Scheme Element 3 are required to highlight in the Afforestation Scheme Form 1 any parallel application under the NeighbourWood Scheme.

24. Future management

The future long-term management of sites established under Native Woodland Establishment GPC9 & GPC10 must be consistent with:

- the promotion of the native woodland type(s) identified for the site, and associated native woodland ecosystem(s),
- the delivery of related ecosystem functions and services that native woodlands can deliver, in particular, the protection and enhancement of water quality and aquatic habitats and species, and the creation of linkage between semi-natural habitats in the surrounding area,
- other objectives identified by the applicant, including wood production(*), the provision of local amenities, and opportunities for woodland interpretation and environmental education,
- any specific conditions of approval set out by the Forest Service.

(* Many sites under Native Woodland Establishment will be suitable for growing quality timber and other wood products on an ongoing long-term basis. Applicants under the scheme are encouraged to pursue this potential, where compatible with the native woodland ecosystem and site conditions.)

Annexes

Annex 1
NWS Foresters

Relevant criteria

Foresters wishing to develop applications under Native Woodland Establishment GPC9 & GPC10 must satisfy the Forest Service in advance that they have the necessary knowledge and expertise to undertake the specialised work involved in developing and implementing projects under these GPCs. In this regard, individuals must fulfil certain criteria, as set out below(*).

Foresters must first be listed as a NWS Forester on the Forest Service List of Registered Foresters (as indicated by the entry 'Yes' in the 'NWS' column - see www.agriculture.gov.ie/forestservice/forestservicegeneralinformation/). To be listed as such, an individual must already be included on the Forest Service list of Registered Foresters (having fulfilled the respective criteria regarding qualifications and professional indemnity insurance) and must also have completed the Native Woodland Training Course held periodically by the Forest Service in association with Woodlands of Ireland.

Individuals can have their names added to the notification list for future courses, by contacting the Forest Service (forestryappenq@agriculture.gov.ie) or Woodlands of Ireland (woodsofireland@iol.ie).

(* Note, larger afforestation applications that include up to 2 ha of GPC9 and / or GPC10, do not require the input of a NWS Forester. However, the Registered Forester involved must be fully aware of the requirements under GPC9 and GPC10.)

Annex 2
Native Woodland Establishment Framework

Overview on use

Under Native Woodland Establishment GPC9 & GPC10, the identification of the most appropriate native woodland type is made by the NWS Forester during the development of the application, using the Native Woodland Establishment Framework.

This framework is a fundamental part of applications under GPC9 and GPC10. Using it, the NWS Forester appraises the site in terms of soil, location and main habitats / vegetation, and matches it to one of four scenarios. From this assessment flows the most appropriate native woodland type to promote, a prescribed planting mixture consistent with that woodland type, and the relevant GPC (i.e. GPC9 or GPC10) to apply under, using the Afforestation Scheme Form 1.

The following outlines the use of the Native Woodland Establishment Framework in the development of a Native Woodland Establishment GPC9 and GCP10 application.

- Referring to the framework, the NWS Forester appraises the site in terms of: landscape position (elevation and aspect); soil type and key soil properties (Annex 3 sets out the procedure for undertaking a 'free' soil survey); main habitats and vegetation present on site and in adjacent open fields, hedgerows and semi-natural woodlands (if present).
- Using this information, s/he matches the site to one of four scenarios. These scenarios, labelled by basic soil type and woodland type, are: Scenario 1 (Podzols / Oak-Birch-Holly Woodland); Scenario 2 (Brown Podzolics / Oak-Birch-Holly with Hazel Woodland); Scenario 3 (Brown Earths / Oak-Ash-Hazel Woodland); and Scenario 4 (Gleys / Alder-Oak-Ash Woodland). (An additional scenario, Scenario 5, applies to unenclosed / unimproved land – see over for details.)
- The framework identifies the major native woodland type associated with each of the Scenarios 1-4. (This woodland classification used is derived from the National Native Woodland Survey and subsequently tailored for the Native Woodland Establishment GPC9 and GCP10.) This woodland type then becomes the 'target' woodland to promote onsite. The characteristic trees, shrubs and ground flora of each major native woodland type are presented in the framework, together with an image depicting the woodland type involved.
- The framework then sets out the prescribed species mixture, composition and layout designed to initiate the development of the relevant native woodland type. This represents a basic woodland 'starter kit' – other native species (including ground flora) will colonise naturally over time. This species mixture, composition and layout must be adhered to at establishment in order for the project to be eligible under the corresponding GPC – see below.
- The specific GPC for each scenario is stated, and this links to the specific grant and premium level that applies. The corresponding GPCs are as follows: GPC 9 For Scenarios 1-3; GPC 10 for Scenario 4; and GPC 1 for Scenario 5.

- Note, different scenarios and associated native woodland types may apply to different areas of the same site. This will generate separate plots, each with its own prescribed planting mixture and corresponding GPC. Also, each native woodland scenario must be represented by a separate plot, even if the same GPC applies.
- The NWS Forester incorporated the relevant plot details, Native Woodland Scenario and corresponding GPC(s) into the Afforestation Form 1, and preparation of the application proceeds, incorporating other Native Woodland Establishment GPC9 and GCP10 requirements, general afforestation scheme specifications (e.g. fencing), and standard mapping conventions (including a Certified Species Map, Biodiversity Map).

(The following Native Woodland Establishment Framework incorporates changes introduced in Forest Service Circular 4/2013, taking account of the suspension of the grant aiding of ash planting in response to the *Chalara fraxinea* ash dieback disease. The four planting mixtures set out in the framework have been adjusted accordingly.)

The Native Woodland Establishment Framework has been developed with input from Woodlands of Ireland and the National Parks & Wildlife Service, and will be kept under review.

(Photos within the Native Woodland Establishment Framework by J.Cross, D.Little and the Forest Service.)

If…

Location: Upland valley sides & hillsides on free-draining slopes.

Soil: Podzols (acid, infertile soils), average pH c.4.5.

Main habitats & vegetation:

Greenfield containing bracken, bilberry, heathers & gorse, with *Molinia* grass on flushed sites.

Semi-natural woodland dominated by / hedgerows containing: sessile oak, downy birch, rowan & holly, with bilberry, ling heather & woodrush.

⇩

Scenario 1: Podzols / Oak-Birch-Holly Woodland

⇩

Most appropriate Major Native Woodland Type: QL Sessile oak–woodrush.

Predominant trees & shrubs: Sessile oak, downy birch, rowan & holly.

Predominant ground flora: Bilberry, ling heather, woodrush, hard fen, broad buckler-fern & honeysuckle.

⇩

Planting mixture: Sessile oak (30%) and Scots pine (30%), with Downy birch (15%), rowan (15%) and holly (10%).

Sessile oak planted in predominantly pure groups, with Downy birch (3%), holly (2%) & rowan (2%) scattered intimately throughout oak. Scots pine planted in small pure groups, focusing on parts of the plot with free-draining soil (if present) and away from any watercourses adjoining or crossing the plot. Remaining rowan (13%), Downy birch (12%) and holly (8%) planted as an intimate mixture in remaining areas of the plot.

⇩

Relevant GPC: GPC 9 for enclosed / improved sites

(GPC 1 for unenclosed / unimproved sites – see Scenario 5)

A typical upland greenfield site (sandwiched between two sessile oak/downy birch-dominated native woods) where the soil type on the slope is predominantly podzols.

A podzol profile with a topsoil comprising an acid, peaty, fibrous upper layer that overlies a leached, grey/white, infertile mineral layer. The subsoil is dark brown & iron-rich, with organic matter derived from the leached topsoil. The subsoil overlies the parent material from which the soil is derived.

QL Sessile oak–woodrush woodland, Derrycrag Nature Reserve, Co. Galway.

If…

Location: Uplands (especially in the east), on shale & base-rich glacial till & at the base of free-draining valley & hillside slopes.
Soil: Brown podzolics (acid, moderately fertile soils), average pH c.4.9.
Main habitats & vegetation:
Greenfield containing gorse, bracken, bramble, coarse grasses (e.g. Yorkshire fog), or improved grassland.
Semi-natural woodland dominated by / hedgerows containing: sessile oak, downy birch, ash, hazel, rowan & holly, with bramble, bluebell, violet, herb-Robert & wood avens.

⇩

Scenario 2: Brown podzolics / Oak-Birch-Holly with Hazel Woodland

⇩

Most appropriate Major Native Woodland Type: QL3 Bramble–hazel (subtype of QL Sessile oak–woodrush).
Predominant trees & shrubs: Sessile oak, downy birch, ash, hazel, rowan & holly.
Predominant ground flora: Bramble, ivy, broad buckler-fern, wood sorrel, bluebell, violet, woodrush & wood avens. Dwarf shrubs largely absent.

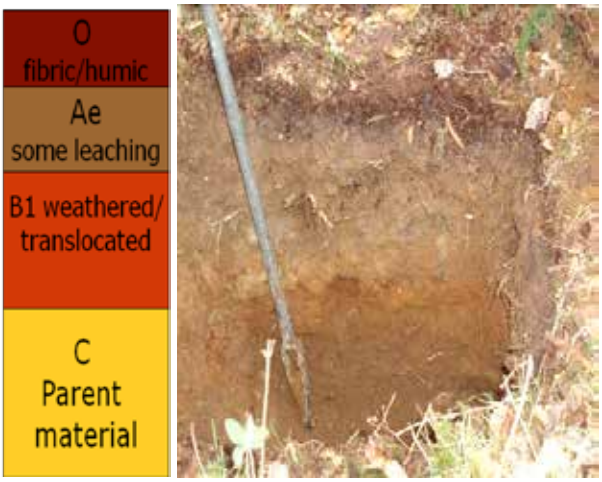
⇩

Planting mixture: Sessile oak (50%), with hazel (15%) and downy birch (10%) scattered intimately throughout, and with wild cherry (5%) planted in groups of 5 to 10 trees. Scots pine (10%) planted in small pure groups on free-draining areas of the plot, particularly on slopes. Minor species (10%) to comprise *at least two of the following*, positioned alongside planned woodland edges & glades: hawthorn, holly, rowan, crab apple.

⇩

Relevant GPC: GPC 9 for enclosed / improved sites
(GPC 1 for unenclosed / unimproved sites – see Scenario 5)

Recently planted sessile oak/downy birch-dominated native woodland at the footslope of an upland landscape. Brown podzolic soils often occur at the foot slopes and/or where moderately base-rich till is a component of the soil parent material. Bluebell is present in the foreground.



A brown podzolic profile with a topsoil comprising a thin, acid, peaty, upper layer overlying a yellow-brown lower topsoil layer, which in turn overlies a red-brown, iron-rich subsoil. Beneath the subsoil is the parent material from which the soil is derived.

A good example of the QL3 Bramble–hazel woodland type, Co. Cavan.

If…

Location: Lowlands on calcareous soils.
Soil: (Acid) Brown earths, fertile, heavy/moist to light/dry. Average pH c. 5.9.
Main habitats & vegetation: Greenfield typically improved or semi-improved grassland seeded with perennial rye-grass, often mixed with red clover.
Semi-natural woodland dominated by / hedgerows containing: ash, pedunculate oak, downy birch, rowan, hazel, hawthorn, holly, spindle & blackthorn. Field layer indicators include bramble, ivy, wood avens, wood sorrel, wood speedwell, wild arum, herb Robert & bluebell.

⇩

Scenario 3: Brown earths / Oak-Ash-Hazel Woodland

⇩

Most appropriate Major Native Woodland Type: FH Ash–ivy.
Predominant trees & shrubs: Ash, hazel, pedunculate oak, downy birch, elm, rowan, hawthorn, holly, spindle & blackthorn.
Predominant ground flora: Bramble, honeysuckle, ivy, wood avens, wood sorrel, wood speedwell, barren & true strawberry, wild arum, wood sanicle, bluebell, violet, wood brome & enchanter's nightshade.

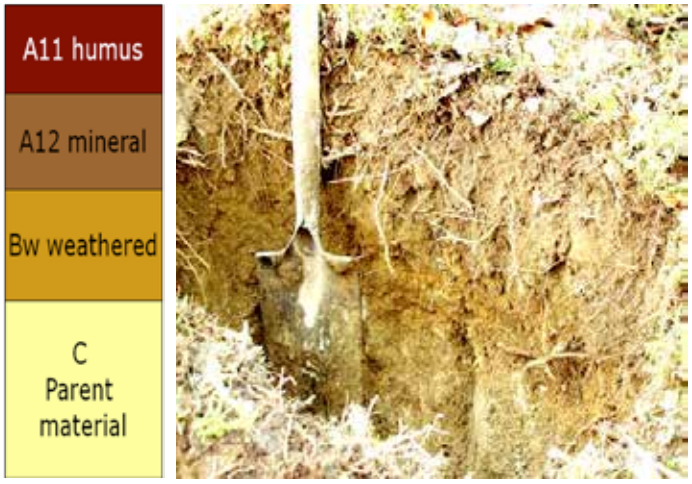
⇩

Planting mixture: Pedunculate oak (40%). Downy birch (20%), hazel (20%) & hawthorn (5%) scattered throughout. Wild cherry (5%), planted in groups of 5 to 10 trees. Minor species (10%) to comprise *at least three of the following,* positioned alongside planned woodland edges & glades: holly, spindle, rowan, crab apple & (on wetter areas of the plot) alder.

⇩

Relevant GPC: GPC 9

A typical lowland, semi-improved grassland site on limestone with a base-rich till comprising the soil parent material. This site at Ballyvary, Co. Mayo, was planted, predominantly with hazel & ash, to develop a new native woodland.



A brown earth profile with a well-structured & aerated brown, friable topsoil with well decomposed organic material. This fertile topsoil gradually diffuses into the yellow-brown subsoil (below the main rooting zone), which in turn overlies a light grey-brown calcareous parent material from which the soil is derived.

One of the finest examples of the FH Ash–ivy woodland type in Ireland, Charleville, Co. Offaly.

If…

Location: Drumlins, river valleys, lake shores & water-logged hollows.

Soil: Mineral & peaty gleys (very wet soils, generally fertile). Average pH *c.*5.9.

Main habitats & vegetation:

Wet, rushy grassland with yellow flag.

Semi-natural woodland dominated by / hedgerows containing: alder, ash, grey willow, hazel, hawthorn, spindle & blackthorn. Field layer indicators include bramble, meadowsweet, creeping buttercup, remote sedge.

⇩

Scenario 4: Gleys / Alder-Oak-Ash Woodland)

⇩

Most appropriate Major Native Woodland Type: AF Alder–meadowsweet.

Predominant trees & shrubs: Alder, grey willow & ash.

Predominant ground flora: Meadowsweet, remote sedge, creeping buttercup, yellow flag & water mint.

⇩

Planting mixture: Pure groups (30-40 trees) of alder (50%), grey willow (10%) & downy birch (10%). Groups interspersed alternately. Pedunculate oak (10%) on drier areas. Hawthorn (5%) scattered throughout.

Minor species (15%) to comprise *at least two of the following,* positioned between the above pure groups: holly, hazel, guelder rose.

Note: The above interspersed group planting of major species is carried out to improve stability & robustness, & to prevent the development of an alder monoculture.

⇩

Relevant GPC: GPC 10 for enclosed / improved sites

(GPC 1 for unenclosed / unimproved sites – see Scenario 5)

A typical 'rushy' field with heavy, wet gley soils. These are sometimes semi-improved for pasture & are common in drumlin belts, low-lying, & poorly drained locations.

A very poorly-drained 'dauby' gley soil profile with a clay-rich topsoil approx. 30 cm deep, which overlies a saturated & mottled, blue-grey & red-brown subsoil. The subsoil overlies a very compact parent material derived from glacial till.

A typical AF Alder–meadowsweet alluvial woodland on gley soil. Hazelwood, Co. Sligo.

If…

Unenclosed / Unimproved land, as per Forest Circular 18/2011…

Scenario 5: Unenclosed land

As set out in Forest Service Circular 10/2010, the amount of unenclosed land in any application for financial approval under NWS Est. cannot exceed 20% of the total area.

Typically, within the context of NWS Est., unenclosed land will lie upslope of enclosed land. Soils are most often peaty podzols or brown podzolics, or a gleyed version of either type. (Other types of unenclosed land may be considered under NWS Est., on a case-by-case basis.)

Based on the assessment (i.e. location, soil type, main habitats & vegetation) of the unenclosed site, go to Scenario 1 (Podzols), Scenario 2 (Brown podzolics) or Scenario 4 (Gleys) for details on native woodland type & the planting prescription to be applied.

Note: As unenclosed land, GPC 1 applies, regardless of the woodland classification & planting prescription identified for the site.

Note: Scenario 5 is not relevant within Acid Sensitive Areas. In these areas, sites must wholly comprise enclosed land, as per Circular 04/2013.

Annex 3
Soil Surveying and Classification for the Native Woodland Establishment Framework

1. Overview

Soil type provides the primary basis for differentiating between the scenarios presented in the Native Woodland Establishment Framework. A simple walkover soil survey is therefore required when assessing a site. In many cases, NWS Foresters will be able to discern soil types onsite, based on experience and the use of a soil stick or soil auger.

The following notes on soil surveying and soil classification are presented as guidance, and will assist in the identification of soil types when applying the Native Woodland Establishment Framework, particularly on complex sites. This annex is also relevant to site and woodland assessment under NWS Conservation.

2. Soil surveying

When assessing a site for Native Woodland Establishment GPC9 & GPC10, a simple walkover soil survey is needed to identify the soil type(s) present.

Firstly, note the 'lie of the land' in the greenfield to be surveyed, dividing the site into basic soil units. Variations in topography (such as wet hollows and rocky knolls) and areas where vegetation changes abruptly should all be treated as separate soil units, as different soil types may be present (Figure 1). After dividing the site into basic soil units, the walkover soil survey can be conducted. This is achieved by sampling along a transect within each soil unit, using a soil stick or (ideally) a soil auger(*) (Figure 2).

Figure 1 illustrates an example of a simple transect or 'free' soil survey, where transect points 1 to 7 occur in one soil unit across a free-draining slope (brown earth), and transect points 8 to 10 occur on a wet foot slope or low-lying area (gleyed brown earth).

As illustrated in Figure 3, the soil profile sequence can be replicated by simply augering to the depth of the auger chamber length, and by laying out each auger sample in sequence on the ground adjacent to the coring site. A white background (such as a sheet of paper or a plastic fertiliser bag) is useful to observe the contrast between soil horizon layers, particularly when the change in soil colour between layers is gradual. The white background is also useful if photographs are being taken. An approximate pH value can be obtained from the topsoil by using pH papers available from most garden centres, or alternatively, a soil pH meter designed for use in the field.

(* Contact Woodlands of Ireland (e-mail woodsofireland@iol.ie / web www.woodlandsofireland.com) for further information on potential suppliers.)

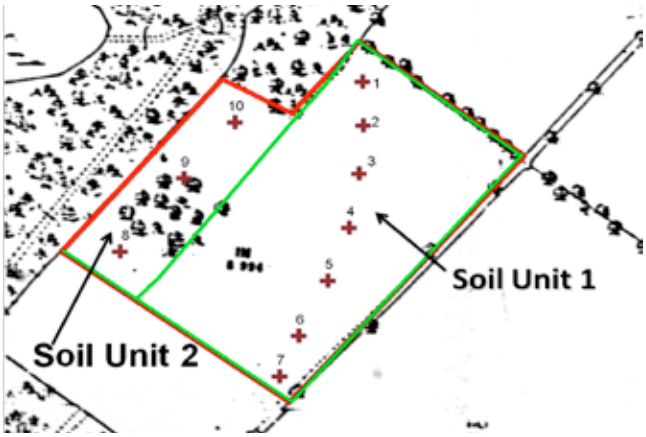


Figure 1 An outline of a 'free' soil survey on a greenfield site adjoining semi-natural woodland. Two basic soil units were identified – a free-draining slope (Soil Unit 1) and a wet footslope (Soil Unit 2). Each unit was subsequently transected, with core samples 1-7 and 8-10, respectively.

Figure 2 A topsoil core sample taken with a Dutch soil auger.

Figure 3 A soil profile derived with a Dutch soil auger. Samples are taken from the same core site and laid out in sequence (i.e. topsoil above subsoil above parent material) to ascertain the soil type.

3. Soil classification

The Irish soil classification system presented in *Soil Associations of Ireland and their Land Use Potential* (Gardiner & Radford, 1980) is used to describe the soil type underpinning each scenario presented in the Native Woodland Establishment Framework. The relevant soil types are podzols, brown podzolics, brown earths and gleys.

As one becomes familiar with identifying soil layers or horizons, it becomes relatively easy to differentiate between the various soil types in the field. To help in soil identification, the basic components of a soil profile should be understood, i.e. topsoil (A horizon), subsoil (B horizon) and parent material (C horizon) (Figure 4). The lettering and numbering of soil horizons help to describe properties within each soil layer, e.g. A1, A2, Bw (weathered), Bg (gleyed), O (organic), Cx (extremely compacted).

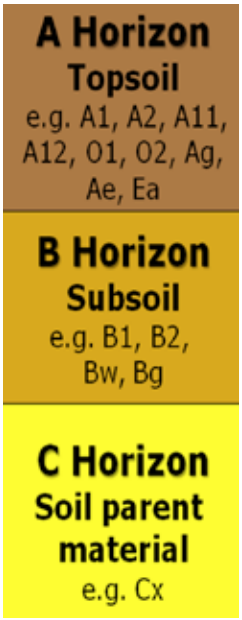


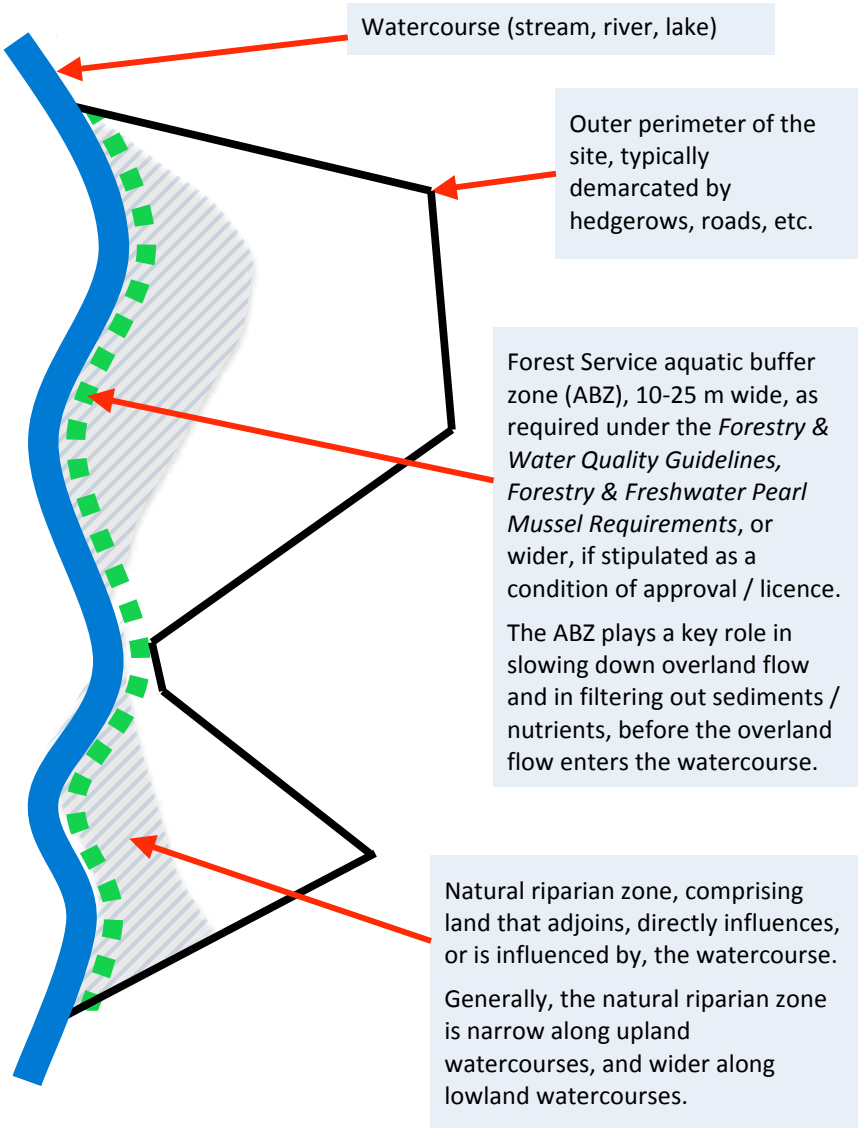
Figure 4 A typical mature soil profile showing A, B and C horizons, with designation letters which denote different soil properties present (Gardiner & Radford, 1980).

Annex 4
Native Woodland and Watercourses

1. Overview

This annex sets out different scenarios describing how Native Woodland Establishment GPC9 & GPC10 and the Native Woodland Conservation Scheme (NWS Conservation) can be applied on sites adjoining watercourses, to deliver ecosystem services relating to the protection of water, aquatic habitats and associated species. The general approach regarding the treatment of the natural riparian zone and the Forest Service-stipulated 10-25 metre wide aquatic buffer zone (ABZ) is also described.

Before setting out the scenarios, the following diagram represents a 'typical' site adjoining a watercourse.



2. Scenarios

Scenario A: Native Woodland Establishment GPC9 & GPC10 project involving the creation of <u>new</u> native woodland on a greenfield site adjoining a watercourse

<u>Within the Forest Service-stipulated ABZ directly adjoining the watercourse:</u>

- Introduce an ABZ of an appropriate width. Note that the ABZ represents part of the Area for Biodiversity Enhancement (ABE) requirement for the overall site.
- During establishment, exclude all machine traffic from the ABZ and adopt a sensitive, low impact approach to all operations deemed necessary within this area.
- Assess existing land drains and consider installing appropriate measures (e.g. baffles, dams) outside (i.e. upslope) of the ABZ, to slow down water flow and to reduce possible nutrient and sediment inputs into the aquatic zone.
- Allow the natural ground vegetation to develop undisturbed.
- Where appropriate and using suitable native riparian species, develop approximately 10% - 20% tree cover within the ABZ, to deliver direct benefits to the aquatic habitat in the form of selective shading and cooling, riverbank stabilisation and the input of food into the aquatic system. Achieve this through the strategic planting of groups and / or the natural regeneration of suitable species.
- Monitor the development of the ABZ on an ongoing basis. With the cooperation of the relevant statutory agencies, eliminate invasive exotics and control any excessive tunnelling by native trees. Aim to maintain the ABZ as a mosaic of native riparian scrub and open habitats (including localised wetlands).

<u>Elsewhere within the natural riparian zone (if applicable):</u>

- With minimum site disturbance and inputs, establish the most appropriate native riparian woodland type, as identified by the Native Woodland Establishment Site Appraisal Framework.
- Where sought as a co-objective by the forest owner and where appropriate to the site (in relation to soil conditions, fertility, slope, overall water-related sensitivities, etc.), plan for future wood production based on low impact CCF management and appropriate extraction systems for sensitive sites (e.g. 'iron horses').

Scenario B: NWS Conservation project involving appropriate restoration works within an existing native woodland adjoining a watercourse

<u>Within the natural riparian zone:</u>

- With minimum site disturbance and inputs, undertake appropriate restoration works to promote the most appropriate native riparian woodland type, *via* understorey planting, coupe planting, natural regeneration, fencing, the removal of non-natives (e.g. sycamore) and invasive exotics (e.g. rhododendron), etc.
- Where sought as a co-objective by the forest owner and where appropriate to the site (in relation to soil conditions, fertility, slope, overall water-related sensitivities, etc.), plan for future wood production based on low impact CCF management and appropriate extraction systems for sensitive sites (e.g. 'iron horses').
- Adopt a *de facto* 10 - 20 metre wide ABZ. Within this area, exclude all machine traffic and adopt a sensitive, low impact approach to all operations deemed necessary. Also, wood production within the ABZ should not be pursued. Monitor the woodland edge along the watercourse on an ongoing basis. With the cooperation of the relevant statutory agencies, eliminate invasive exotics and control any excessive tunnelling by native trees.

Scenario C: NWS Conservation project involving the conversion to native woodland, of non-native forest adjoining a watercourse

Within the Forest Service-stipulated ABZ directly adjoining the watercourse:

- Sensitive removal of the existing non-native canopy, focused on avoiding the disturbance of, and the entry of sediment and woody debris into, the watercourse. Practice extreme care where the existing canopy directly adjoins the water's edge.
- Introduce an ABZ of an appropriate width as part of the reforestation of the site. Note that the ABZ represents part of the Area for Biodiversity Enhancement (ABE) requirement for the overall site.
- Assess existing forest drains and consider installing appropriate measures (e.g. baffles, dams) outside (i.e. upslope) of the ABZ, to slow down water flow and to reduce possible nutrient and sediment inputs into the aquatic zone.
- Throughout subsequent site development, exclude all machine traffic from the ABZ and adopt a sensitive, low impact approach to all operations deemed necessary within this area.
- Allow the natural ground vegetation to develop undisturbed.
- Where appropriate and using suitable native riparian species, develop approximately 10% - 20% tree cover within the ABZ, to deliver direct benefits to the aquatic habitat in the form of selective shading and cooling, riverbank stabilisation and the input of food into the aquatic system. Achieve this through the strategic planting of groups and / or the natural regeneration of suitable species.
- Monitor the development of the ABZ on an ongoing basis. With the cooperation of the relevant statutory agencies, eliminate invasive exotics and control any excessive tunnelling by native trees. Aim to maintain the ABZ as a mosaic of native riparian scrub and open habitats (including localised wetlands).

Elsewhere within the natural riparian zone (if applicable):

- Sensitive removal of existing non-native canopy, focused on avoiding the disturbance of, and the entry of sediment and woody debris into, the watercourse.
- With minimum site disturbance and inputs, establish the most appropriate native

riparian woodland type (*via* planting and / or natural regeneration).

- Where sought as a co-objective by the forest owner and where appropriate to the site (in relation to soil conditions, fertility, slope, overall water-related sensitivities, etc.), plan for future wood production based on low impact CCF management and appropriate extraction systems for sensitive sites (e.g. 'iron horses').

3. Common considerations for Scenarios A-C

- Across the entire site, all planting and natural regeneration must reflect the most appropriate native woodland type(s) for that site. Typically, this will involve a native riparian woodland type within the natural riparian zone, phasing into non-riparian native woodland type(s) upslope, as soil and drainage conditions change.
- The Forest Service *Forestry & Water Quality Guidelines* apply. Preventing the entry of sediment, nutrients, chemicals and woody debris into the watercourse is paramount. Within the ABZ, all machine operations and herbicide applications are excluded or limited to essential work (such as the pit-planting of small groups of native riparian trees, the removal of existing conifers, or the treatment of large rhododendron by stem injection).
- In areas where the *Forest Service Forestry & Freshwater Pearl Mussel Requirements* apply, a 25 metre wide ABZ is stipulated.
- Details regarding the design and treatment of the ABZ and the natural riparian zone should be site-specific. Adopting the Forest Service requirement as the minimum width, the actual width of the ABZ can be increased at various points along its length, to reflect factors that may heighten the risk of sedimentation at particular locations (e.g. natural hollows and other preferred flowpaths, where water gravitates towards as it approaches the receiving watercourse). This will maximise the level of protection against the runoff of sediment and nutrients into the stream or river. Varying the width of the ABZ (particularly in relation to sunlight) will also increase the biodiversity 'edge effect' between the ABZ and the native woodland canopy.
- Further guidance is contained in the Woodlands of Ireland NWS Information Note No. 4 (*Native Riparian Woodlands – A Guide to Identification, Design, Establishment and Management*) (Little *et al.*, 2008).
- Activities within the ABZ may be subject to the agreement of Inland Fisheries Ireland and (where relevant) the National Parks & Wildlife Service.
- Where required, maintain access for anglers, i.e. stiles and setbacks for casting.

Annex 5

Requirement for Native Woodland Establishment in Water Sensitive Areas

1. Overview

Native woodland – created either through planting on 'greenfield' sites (under Native Woodland Establishment GPC9 & GPC10) or through conversion from conifer forest (under the Native Woodland Conservation Scheme) – delivers important ecosystem services relating to water quality and aquatic ecosystems, as follows.

- Native woodlands created on strategically selected sites along watercourses and managed under CCF, create semi-natural habitats that physically separate water from more intensive landuses such as agriculture and commercial forestry, act as permanent buffers that filter out sediment and nutrients from overland flow, contribute to the prevention of erosion on slopes, and help restore the natural dynamics between the terrestrial, riparian and aquatic systems.
- Benefits arising from native woodland development on sites adjoining watercourses include: bank stabilisation through rooting; the provision of dappled shade; the regulation of water temperatures; and the provision of appropriate woody and non-woody inputs that enhance instream diversity.

Native Woodland Establishment GPC9 & GPC10 entail the development of permanent native woodland through minimal site disturbance and the use of native planting mixtures based on ecological criteria. As outlined above, this woodland has the potential to protect and enhance water quality.

To utilise this role, measures to comply with the 10% broadleaf rule (see the *Forestry Standards & Procedures Manual*) within any afforestation project located within, or partially within, specified water sensitive areas (see below) must include a GPC 9 and / or GPC 10 plot (or plots) along watercourses adjoining or crossing the site. Specific requirements are set out below.

Note This measure is *not* required if a forest plot(s) adjoining the ABZ already comprises broadleaf GPCs 5, 6, 7, 8 or 11.

2. Specific requirements

- The plot (minimum width of 20 metres tree-to-tree) is *in addition* to the aquatic buffer zone (ABZ) required under the *Forestry & Water Quality Guidelines* (or, if applicable, the wider ABZ required under the *Forestry & Freshwater Pearl Mussel Requirements*). This will result in the creation of an area 30 metres or greater in width, alongside the watercourse, within which site inputs are minimised and the development of natural vegetation cover (including native trees and shrubs) is promoted.
- The plot(s) must adhere to the requirements of GPC9 and GPC10 regarding the use

of the Native Woodland Framework, requirements regarding planting stock and site preparation, etc.

- Drains originating from other parts of the forest plantation must terminate in appropriate silt traps located *outside* of the GPC9 / GPC10 plot, unless otherwise agreed by the Forest Service.
- These areas must be allowed to develop as undisturbed native woodlands (with the appropriate control of non-native and invasive species) or may be managed under CCF for limited wood production (restricted to outside the ABZ), where compatible with site conditions.
- The GPC 9 / GPC10 plot must, at a minimum, be positioned in areas of the site where site factors indicate the potential for an increased risk to water quality (e.g. areas with steep slopes, drain confluences). They should be extended along the watercourse(s) as far as practical, within the confines of the 10% broadleaf rule and the 20 metres width requirement, to maximise the beneficial impacts. Applicants are encouraged to extend the plot beyond the confines of the 10% broadleaf rule and the 20 metres width requirement, site permitting.

3. Water sensitive areas

Water sensitive areas where this measure applies include aquatic-based SACs, Freshwater Pearl Mussel 6 km zones, Fisheries Sensitive Areas and Acid Sensitive Areas. The measure is optional elsewhere, but may form a condition of afforestation approval on a case-by-case basis, if deemed necessary by the Forest Service.

Note that the ABZ set by the *Forestry & Water Quality Guidelines* is mandatory for all GPCs. As detailed in those guidelines, the ABZ must remain unplanted (apart from single or small groups of suitable native riparian trees) and left undisturbed.

4. Input of a NWS Forester

Larger afforestation applications that include up to 2 ha of GPC9 and / or GPC10, do not require the input of a NWS Forester. However, the Registered Forester involved must be fully aware of the requirements under GPC9 and GPC10.

Annex 6
References and Further Reading

Barron, C. 2007. The Control of Rhododendron in Native Woodlands. Native Woodland Scheme Information Note No. 3. Woodlands of Ireland. Available at www.woodlandsofireland.com/publications

Bullock, C. & Hawe, J. 2014. The Natural Capital Values of Ireland's Native Woodland. A Report Commissioned by Woodlands of Ireland. Available at www.woodlandsofireland.com/publications

Byrnes, E. 2007a. A History of Woodland Management in Ireland: An Overview. Native Woodland Scheme Information Note No. 2. Woodlands of Ireland. Available at www.woodlandsofireland.com/publications

Byrnes, E. 2007b. Cartographic and Historical Sources for Native Woodlands. Native Woodland Scheme Information Note No. 1. Woodlands of Ireland. Available at www.woodlandsofireland.com/publications

Collins, K. Goodwin, R., Hayden, D., McGorman, H., McConville, J., Sheridan, F., & Carr, G. 2010. Amenity Trees and Woodlands: A Guide to their Management in Ireland. Published by the Tree Council of Ireland in association with the Arboricultural Association (Irish Branch) and the Society of Irish Foresters. Tree Council of Ireland, Ireland.

Cross, J., Perrin, P. & Little, D. 2010. The Classification of Native Woodlands in Ireland and its Application to Native Woodland Management. Native Woodland Information Note No. 6. Woodlands of Ireland, Ireland. Available at www.woodlandsofireland.com/publications

Forest Service. 2000a. Irish National Forest Standard. Forest Service, Department of Agriculture, Food & the Marine (DAFM), Johnstown Castle Estate, Co. Wexford.

Forest Service. 2000b. Code of Best Forest Practice – Ireland. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Forest Service. 2000c. Forest Biodiversity Guidelines. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Forest Service. 2000d. Forestry and Water Quality Guidelines. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Forest Service. 2000e. Forestry and Archaeology Guidelines. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Forest Service. 2000f. Forestry and the Landscape Guidelines. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Forest Service. 2000g. Forest Harvesting and the Environment Guidelines. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Forest Service. 2002. Forest Protection Guidelines. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Forest Service. 2006. Forest Recreation in Ireland: A Guide for Forest Owners and Managers. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Forest Service. 2008. Forestry and Freshwater Pearl Mussel Requirements: Site Assessment and Mitigation Measures. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Forest Service. 2012. Forest Service Appropriate Assessment Procedure: Information Note. March 2012. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Forest Service. 2015a. Forestry Standards and Procedures Manual, January 2015. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Forest Service. 2015b. Forestry Programme 2014-2020: Ireland. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Forest Service. 2015c. Forestry Scheme Penalty Schedules. Forest Service, DAFM, Johnstown Castle Estate, Co. Wexford.

Fossitt, J. 2000. A Guide to Habitats in Ireland. The Heritage Council, Ireland. Available at www.heritagecouncil.ie

Gardiner, M.J. & Radford, T. 1980. Soil Associations of Ireland and Their Land Use Potential: Explanatory Bulletin to Soil Map of Ireland 1980. National Soil Survey of Ireland. Soil Survey Bulletin No. 36. An Foras Talúntais, Ireland. Available at www.agresearch.teagasc.ie

Little, D., Collins, K., Cross, J., Cooke, D., McGinnity, P. 2008. Native Riparian Woodlands – A Guide to Identification, Design, Establishment and Management. Native Woodland Scheme Information Note No. 4. Woodlands of Ireland. Available at www.woodlandsofireland.com/publications

Little, D. & Cross, J. 2005. Realising Quality Wood from Ireland's Native Woodlands: Silvicultural Guidelines for Wood Production in the Context of the Native Woodland Scheme. Woodlands of Ireland. Available at www.woodlandsofireland.com/publications

O'Neill, F.H., Martin, J.R., Devaney, F.M. & Perrin, P.M. 2013. The Irish semi-natural grasslands survey 2007-2012. Irish Wildlife Manuals No. 78. National Parks & Wildlife Service, Department of Arts, Heritage & the Gaeltacht, Ireland. Available at www.npws.ie

People's Millennium Forests. 2000. Our Trees: A Guide to Growing Ireland's Native Trees in Celebration of a New Millennium. Available at www.woodlandsofireland.com/publications

Perrin, P.M., Barron, S.J., Roche, J.R. & O'Hanrahan, B. 2014. Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland. Version 2.0. Irish Wildlife Manuals No. 79. National Parks & Wildlife Service, Department of Arts, Heritage & the Gaeltacht, Dublin, Ireland. Available at www.npws.ie

Smith, G.F., O'Donoghue, P., O'Hora, K. & Delaney, E. 2011. Best Practice Guidance for Habitat Survey and Mapping. The Heritage Council, Ireland. Available at www.heritagecouncil.ie