

Based on the Forest Service Appropriate Assessment Procedure and a forestry operations options matrix, the following measures will incorporate the protection of the Freshwater Pearl Mussel and its habitat within the Priority 8 Freshwater Pearl Mussel Catchments, under the draft Catchment Forest Management Plans.

6.1 Measure 1: Afforestation and Creation of Woodlands

Forest is defined in the National Forest Inventory as land with a minimum area of 0.1 ha under stands of trees 5 m or higher, having a minimum width of 20 m and a canopy cover of 20% or more within the forest boundary; or trees able to reach these thresholds *in situ*. The definition relates to land use rather than land cover, so integral open space and felled areas that are waiting restocking are included as forest. All afforestation will require replanting after clearfell, subject to the relevant legislation governing felling. No State aid under this programme is provided for replanting following normal commercial planting (support maybe provided under the reconstitution measure in relation to storm damage); the cost of replanting must be borne by the forest holder.

One of the aims of Ireland’s forest policy is to encourage planting by private landholders in order to achieve a forest cover of 18% by 2046. The principle means of encouraging private land holders to plant since the 1980s has been the provision of grants to cover the cost of afforestation, and an annual forest premium to compensate for income foregone as a result of converting farm land to forest. The proposal for the Afforestation and Creation of Woodlands measure is to combine it with climate services, forest environment and agro-forestry. The measure will therefore consist of 4 elements as follows:

- (a) Afforestation Scheme
- (b) Native Woodland Establishment Scheme (GPC 9 &10)
- (c) Agro-Forestry Scheme
- (d) Forestry for Fibre Scheme

Planting targets for these schemes are as follows;

Scheme	2015	2016	2017	2018	2019	2020	TOTAL Ha
Afforestation, ha	6,000	6,660	7,140	7,205	8,115	8,290	43,410
<i>of which afforestation</i>	<i>5,440</i>	<i>5,990</i>	<i>6,165</i>	<i>6,215</i>	<i>6,615</i>	<i>6,790</i>	<i>37,215</i>
<i>of Which NWS (est)</i>	<i>450</i>	<i>450</i>	<i>450</i>	<i>450</i>	<i>450</i>	<i>450</i>	<i>2,700</i>
<i>of which Agro-forestry</i>	<i>10</i>	<i>20</i>	<i>25</i>	<i>40</i>	<i>50</i>	<i>50</i>	<i>195</i>
<i>Of which Forestry fibre</i>	<i>100</i>	<i>200</i>	<i>500</i>	<i>500</i>	<i>1,000</i>	<i>1,000</i>	<i>3,300</i>

Table 11: Objectives of afforestation and creation of woodlands Measure

Forest management plans (FMPs) are required at Form 2 stage (application for 1st instalment of the grant). This includes management objectives. FMPs are not sought at the application stage as in Ireland 30% of what is applied for is planted and usually there are changes between the form 1 and form 2 stage which could include species changes. Therefore it is more appropriate to look for FMPs once the forest is planted ie. at the application for grant stage (form 2).

FMP’s are also required for all grant aided forest above 5ha which reach 12 years of age as a condition of support (currently 10 ha for conifers and 5 ha for broadleaves).

6.1.1 *De minimis*

State aid rules only allow for 12 annual premiums. In order to pay an additional 3 premiums for the afforestation scheme, the Department must rely on general *de minimis* rules as set out under *Commission Regulation (EU) No 1407/2013 on the application of Articles 107 and 108 of the treaty on the functioning of the European Union to de minimis aid*, (*Official Journal reference number L:2013:352*). Participants in the scheme must be aware of their obligations in terms of declaring other *de minimis* aid and the possibility that they may not be eligible for payment of premium numbers 13, 14 and 15 (known as *de minimis* premium payments) if the sum total of *de minimis* aid received exceeds €200,000 over a rolling three fiscal year period. This aid is deemed granted on receipt and subsequent approval by the Forest Service of the completed Forms 2, 3 and 4 declaration either on line or in hard copy. Therefore the date of *de minimis* aid is not the date in which the payment is actually made nor is it the date in which the application for payment is submitted but the date on which the payment was actually approved.

Where an applicant applies for *de minimis* premium payments either on line or by hard copy and that aid exceeds the €200,000 threshold, the entire premium is blocked for payment until the following year. Applicants may try again next year. The same *de minimis* payment can only be applied for on three separate occasions. In other words when the *de minimis* premium payment is blocked three times the payment is forfeit. Where *de minimis* aid is paid and it subsequently transpires that this aid exceeded the threshold the Department will deem this payment to be an overpayment and rules regarding penalties and debt recovery will apply.

De minimis premium payments must be cumulated with other forms of *de minimis* aid such as *de minimis* aid in the agriculture sector (Commission Regulation (EU) No 1408/2013). In these cases the threshold is €200,000. The exception to this rule is where *de minimis* aid is granted under Commission Regulation (EU) No 360/2012 (undertakings providing services of general economic interest) where the ceiling allowed is the threshold set out under that Regulation.

De minimis aid is calculated on the basis of aid given to a single undertaking. This means for example that subsidiaries of a parent company are considered a single undertaking and aid to each subsidiary is combined for the purposes of checking that the *de minimis* ceiling has been reached. Linked enterprises are defined in annex I of Commission Regulation (EC) No 800/2008.

De minimis rules will also apply for annual premium payments paid under the forestry for fibre scheme.

6.1.2 *Regulatory Framework*

State Aid	RDR	Focus Area	Code
2.1.1, 2.1.2& 2.3	Article 22, 23 & 34	4(a) & 5(e)	8.1,8.2, 8.3 & 8.4

6.1.3 *Afforestation Scheme Details*

6.1.3.1 Outline

The proposed Afforestation Scheme aims to increase the area under forest in Ireland from its current low base of 10.7% (EU average 38%) to contribute, *inter alia*, towards climate change mitigation; to produce timber; to provide a sustainable source of roundwood for wood product manufacture; to provide biomass for energy production; and to provide sustainable

jobs in the rural economy;. This will be achieved through the provision of financial support for the establishment and maintenance of new forests and woodlands.

Projects must be undertaken in compliance with national and EU legislation and the Department's requirements in relation to minimum area, species planted, standard of work etc.; all of which is set out in the Forestry Schemes Manual, Scheme Documents, Code of Best Practice – Ireland, the suite of environmental guidelines, and relevant procedures and protocols (e.g. Forest Service Appropriate Assessment Procedure, consultation with statutory consultees, adherence to the Acid Sensitivity Protocol). Only projects which receive prior written approval from the Department, and are undertaken in compliance with sustainable forest management and any specific conditions of approval, will be eligible for support. Support will take the form of grants towards the cost of establishment and annual premiums to cover the costs of agricultural income foregone and maintenance.

This measure will be primarily targeted at private land-holders.

6.1.3.2 Establishment Grant

A fixed establishment grant of 100% of total costs, subject to the maximum laid down in the Scheme, will be available to private land-holders for projects which receive the prior written approval of the Department. Aid for the establishment of forests under these measures will be granted solely in connection with the typical cost of establishment and no over-compensation will take place.

Grants will be paid in two instalments. The first instalment, representing approximately 75% of the total grant due, will be payable immediately after planting, based on a payment application and subsequent assessment by the Forest Service. The second instalment (25%) will be payable not sooner than 4 years after planting, again after Forest Service assessment. All grant payments will be conditional on the forest being adequately established and maintained and undertaken in compliance with the silvicultural and environmental conditions of the original approval. The following operations will be eligible for support to establish a plantation:

- ground preparation;
- cost of plants;
- planting, fertiliser;
- management of competing vegetation;
- filling-in planting (to replace mortalities)
- shaping of broadleaves;
- mapping;
- fencing and tree protection;
- The establishment of firebreaks;
- management and supervision;
- Other related operations, on application and as deemed appropriate by the Forest Service.

The proposed scheme will also encourage the use of improved and adapted planting stock from within Ireland. This may be developed further during the programme period and could include for example higher grant and premium rates for using improved planting stock and lower grant and premium rates for using ordinary planting material.

Grants rates are as follows:

GPC	1 st Grant €/ha	2 nd Grant €/ha	Total €/ha	Additional Fencing Allocation €/ha IS436	Alternative Fencing Allocation €/ha Non IS436	Total Available Funding €/ha
1 – Unenclosed*	1575	525	2100	500	350	2600
2 - Sitka spruce / lodgepole pine*	2310	735	3045	500	350	3545
3 – 10% Diverse Conifer	2360	790	3150	500	350	3650
4 – Diverse Conifer	2625	840	3465	500	350	3965
5 – Broadleaf	3780	1155	4935	500	450	5435
6 – Oak	3990	1260	5250	500	450	5750
7 – Beech	3990	1260	5250	500	450	5750
8 – Alder	2520	840	3360	500	450	3860

* All plantations regardless of size must include 10% broadleaves

Table 12a: Afforestation Grant Rates

Fence Type	€/m (IS436 rates)	€/m (non IS436 Rates)	IS436 (120m/ ha cap)	Non IS436 (100m/ha cap)*
Stock	4.20	3.50	Max €500/ha At plantation level	Max €350/ ha for GPC 1,2,3 and 4 and €450 for GPC 5,6,7, 8, 9 and 10
Stock/ Sheep	5.40	4.65		
Stock/ Rabbit	6.30	5.55		
Upgrade to deer	7.00	6.50	€975/ha	€975/ha
Deer	16.25	12.00	All deer fencing must be approved in advance .Only sheltered, fertile sites and where at least 70% of the area enclosed by the deer fence comprises broadleaves and species in the categories GPC 4, 5,6, 7, 8. 9 and 10	
Deer/ Rabbit	16.25 New Deer fencing capped at €1950/ha	12.00 New Deer fencing capped at €1800/ha		
The maximum metres of fencing funded will be based on the total lengths of new fences erected to Forest Service specifications and based on the area of the plantation multiplied by 120 metres, where IS436 is used exclusively irrespective of fence type erected. Maximum fencing cap of €40,000 per plantation. Where non IS436 deer fencing is used a cap of 150 metres/ha will apply to the deer fencing element and capped at €1800/ha				

Table 12b: Fencing Rates

Species	Spacing	Stocking/ha
Lodgepole pine	1.8m X 1.8m	3100
All other Conifers	2.0m X 2.0m	2500
Oak pure	2.0 m X 1.5m	3300
Oak/nurse mix	10 lines of oak and one line of nurse - Oak 2.0m X 1.5m - nurse 2.0m X 1.5m	3300
Beech pure	2.0 m X 1.5m	3300
Beech/nurse mix	10 lines of beech and one line	

	of nurse species	
Ash, Sycamore and other broadleaves	2.0m X 1.5m	3300
Alder	2.0 m x 2.0 m	2500

Table 12c: Planting densities by species

Under the new Programme all plantations, without exception, on improved / enclosed land must contain a minimum of 10% broadleaves. These broadleaves may be planted in a plot or adjoining buffer zones, hedgerows, retained features, neighbouring woodland or along the plantation edge. In some areas, where traditionally broadleaves may not have been planted e.g. due to presence of deer, broadleaves will now have to be planted and may be protected using tree shelters or small enclosures. The flexibility with regard to the location of the broadleaves ensures that the site is planted in a manner that maximises the ecological and landscape benefits.

6.1.3.3 Annual Premium

A forest premium will be payable only for new forests which qualify for an establishment grant under the Afforestation Scheme and are paid to compensate for income forgone and maintenance. Under the Afforestation Scheme, premiums will be payable for a maximum period of 15 years. Land owned by public authorities will not be eligible for a premium.

GPC	Premium Rate	Duration (years)
1 - Unenclosed	185	15
2 - Sitka spruce/lodgepole pine	440	15
3 - 10% Diverse	510	15
4 - Diverse	560	15
5 - Broadleaf	575	15
6 - Oak	615	15
7 - Beech	615	15
8 - Alder	575	15

Table 13: Proposed Premium Rates

The beneficiary shall be required to protect and care for the forest in accordance with best forest practice, at least during the period for which the premium for agricultural income foregone and maintenance is paid. All forests must be managed and maintained in compliance with the relevant statutory legislation irrespective of whether the forest is in receipt of premium.

6.1.3.4 Objectives

- Increase Ireland's forest cover to 18%.
- Establish up to 8,290 hectares of new forests and woodlands per annum (subject to the availability of funds).
- To provide at least 30% of the area afforested with broadleaved species which will include Areas for Biodiversity Enhancement (ABEs), during the programme period.
- Plant larger average forest areas with greater access to the public road network.

- Increase average yield class by 1 yield class, based on the use of superior growing stock planted on better quality land.
- Encourage forest management practices that restore, preserve and enhance forest biodiversity.
- Develop a forest-based biomass resource and generally encourage its use in domestic markets.
- Foster carbon sequestration and climate change mitigation.
- Provide a resource which will contribute to long-term sustainable development in the rural economy.

The broadleaved target of 30% is set at national level. Species composition will be limited to soil suitability, environmental considerations and owner's objectives. In some areas forest owners will plan to plant higher than the national target and in other areas less. The key measureable is to monitor the percentage of broadleaved planting nationally but establish minimum thresholds at plantation level. Currently this is set at 10% and will continue in the new programme at this rate.

6.1.4 *Native Woodland Establishment Scheme (comprising GPC 9 &10)*

6.1.4.1 Outline

The aim of the Native Woodland Establishment Scheme (NWS est.), now captured under new Grant & Premium Categories GPC 9 & 10, is to enhance biodiversity, (predominantly native woodland biodiversity), including in *Natura 2000* areas; to support high nature value farming; to enhance the quality and diversity of Ireland's landscapes; to aid the development and promotion of forestry through the incorporation of practices that enhance biodiversity; to improve water and land management and contribute to meeting the Water Framework Directive objectives; to sustain Ireland's native woodlands on a long term basis; to protect and expand Ireland's native woodland resource; to improve connectivity between existing native woodlands and between other natural and semi-natural habitats; to conserve native genetic biodiversity; to improve soil stability and water quality including high status waters through the creation of native woodland adjoining watercourses; to increase Ireland's woodland cover to contribute positively towards climate change mitigation; to promote the application of close-to-nature forestry and traditional woodland management systems and associated timber and non-timber products and services; and to encourage wood and non-wood production, where compatible with native woodland biodiversity.

The NWS Est. provides financial support for farmers and other landholders. The scheme supports the establishment of new native woodlands on 'green field' sites. NWS Est. provides opportunities to protect and expand Ireland's native woodland resource and associated biodiversity and is a key biodiversity measure within Ireland's national forest policy. It also supports a wide range of other benefits and functions arising from native woodlands, relating to reversing wider habitat fragmentation, the protection and enhancement of water quality, landscape, cultural heritage, wood and non-wood products and services, the practice of traditional woodland management techniques, environmental education, and carbon sequestration. The production of timber is not excluded as an objective of this scheme, where it is realised through appropriate 'close-to-nature' silviculture without compromising the basic native woodland biodiversity objectives of the site. Due to the nature of the scheme, in particular, its focus on minimal site disturbance, native species, and long-term 'close-to-nature' management, NWS Est. presents opportunities for landowners in various environmentally sensitive areas, to create woodlands which are compatible with, and which

contribute towards, the various environmental sensitivities involved (e.g. NATURA sites, acid sensitive areas, high status waterbodies, Freshwater Pearl Mussel catchments).

The designation of NWS Est. as Grant & Premium Categories (i.e. GPC 9 &10) is for the following reasons:

- With this change, applicants can apply to establish native woodland over the entire site (i.e. all GPC 9 and/or GPC 10), or as a plot(s) within a larger afforestation project involving other GPCs, such as GPC 3: 10% Diverse Conifer). This facilitates the greater integration of the various eco-system services and protective functions of native woodland into standard forest design.
- This measure will place more emphasis on identifying the most ecologically-appropriate native woodland type for each site (as per the NWS Est. Framework), and removes the potential that previously existed for a disproportionate focus on particular mixtures, based on differences in GPC rates.
- (The Unenclosed / Unimproved GPC 1 rate may also apply under NWS Est., under the 20% rule.)

NWS Est. (GPC 9 & 10) operates alongside NWS Conservation (see later) as parallel components of the overall Native Woodland Scheme package, developed and implemented by the Forest Service in close cooperation and partnership with Woodlands of Ireland, National Parks & Wildlife Service, the Heritage Council, Inland Fisheries Ireland and others. Since its launch in 2001, the overall Native Woodland Scheme has undergone various refinements and has been supported in its implementation by a range of measures undertaken in partnership, including a multi-annual NWS training package and a range of supporting literature for practitioners, produced by Woodlands of Ireland. It is envisaged that both elements of the Native Woodland Scheme will continue to evolve over the coming years, based on partnership, experiences and priorities.

6.1.4.2 Eligibility and Grant and Premium Rates

Eligibility criteria for NWS Est. are the same as those set out for the Afforestation Scheme. Regarding site requirements, each site under GPC 9 and GPC 10 must be capable of supporting the vigorous growth and sustainable long term development of the most appropriate native woodland type(s) identified for the site. The same regulatory controls also apply. Eligible operations are as per the Afforestation Scheme, with the addition of 'Natural Regeneration'. Furthermore, applications under NWS Est. must be developed by a NWS Participating Forester (i.e. a Registered Forester who has also completed required NWS training provided by the Forest Service and Woodlands of Ireland). The grant and premium rates are as follows;

GPC	1 st Grant €/ha	2 nd Grant €/ha	Total €/ha	Additional Fencing Allocation €/ha IS436	Alternative Fencing Allocation €/ha Non IS436	Total Available Funding €/ha
GPC 9 – Native Woodland Establishment (Scenario 1-3)	3990	1260	5250	500	450	5750

GPC 9 – Native Woodland Establishment (Scenario 4)	3780	1155	4935	500	450	5435
---	------	------	------	-----	-----	------

Scenarios based on Native Woodland Establishment Site Appraisal Framework

GPC	Annual premium / ha	Duration (years)
GPC 9 &10 – Native Woodland Establishment	€635	15

Table 14: NWS establishment grant and premium rates

Strict adherence to the Native Woodland Establishment Site Appraisal Framework will apply in relation to the identification of the most appropriate native woodland type(s) for the site, based on soil, elevation, vegetation, etc., and subsequently, the planting mixture required to realise that woodland type(s). As described above, the incorporation of NWS Est. into two GPCs places more emphasis on identifying the most ecologically-appropriate native woodland type for each site (as per the NWS Est. Framework), and removes the potential that previously existed for a disproportionate focus on particular mixtures, based on differences in GPC rates. Other requirements regarding site preparation, planting stock, spacing and future management under close-to-nature silviculture, (as per the previous NWS Est.) will apply under GPCs 9 &10.

Criteria will be developed to reflect a priority on important native woodland types and opportunities for habitat linkage and on environmentally sensitive areas, with a view to realising wider eco-system services such as water protection. Other criteria may also be applied. The core objective of the Native Woodland Establishment Scheme (GPC 9 &10) is the expansion of Ireland's native woodland resource. Wood production remains an option and is encouraged, once ecologically compatible and undertaken through continuous cover forestry (CCF).

Certain afforestation sites will be required to include a GPC 9 &10 plot as part of the forest design, focusing on water quality. See following section.

6.1.4.3 Native Woodland Establishment GPC 9 &10 and water-sensitive areas

Native Woodland Establishment GPC 9 &10 entails the development of permanent native woodland canopy cover, through minimal site disturbance and the use of native planting mixtures based on ecological criteria. Such woodland has the potential to deliver various eco-system services in addition to native woodland biodiversity, principally the protection and enhancement of water quality.

To harness this potential, within certain water-sensitive areas, the 10% broadleaf requirement¹⁵ for all grant-aided conifer afforestation projects within or partially within various water-sensitive catchments is to include (site permitting) a Native Woodland

¹⁵ May increase to 15%, with ABE requirement reducing to 10%.

Establishment GPC 9 or 10 plot (or plots) along aquatic zones adjoining or crossing the site. This plot (minimum width of 20 metres tree-to-tree) is *in addition* to the required undisturbed Aquatic Buffer Zone. The GPC 9 or GPC 10 grant and premium rate will apply as relevant.

The NWS Est. plot must be positioned in areas of the site where site factors indicate the potential for a heightened risk to water (e.g. those areas with the greatest slope), and extended along the watercourse as far as the 20 metre requirement will allow. Where the broadleaf requirement does not allow for the creation of a GPC 9 or GPC 10 plot along the entire length of the watercourse, applicants are encouraged to extend the plot, site permitting.

Water sensitive areas include aquatic-based Special Areas of Conservation (SACs), Freshwater Pearl Mussel 6 km zones, Fisheries Sensitive Areas, and Acid Sensitive Areas. Other water sensitive areas may also be defined, including those identified through the Water Framework Directive process. The NWS Est. plot must adhere to the NWS Est. Scheme requirements regarding species mixtures, planting stock, site preparation, future management, etc. The measure is optional elsewhere, but may be made a condition of approval / grant aid on a case-by-case basis, if deemed necessary by the Forest Service.

This measure is intended to deliver various eco-system services in terms of biodiversity and habitat linkage, the protection and enhancement of water quality, and greater landscape cohesion. Wood production remains an option and is encouraged, once ecologically compatible and undertaken through CCF. This measure represents a more strategic use of the broadleaf requirement within plantations.

6.1.4.4 Objectives

The objectives of NWS Est. include the following:

- Increase the area of native woodland within Ireland;
- Encourage a diverse range of native woodland types and increase woodland biodiversity, in keeping with site type and ecology.
- Introduce a forestry land use option for farmers in environmentally sensitive areas, including NATURA sites, acid sensitive areas (as agreed with the EPA and detailed in Forest Service Circular 04/13 of 2013), high status waterbodies, Freshwater Pearl Mussel catchments and highly sensitive landscapes.
- Promote the use of native woodland creation to deliver wider eco-system services such as water quality, soil stabilisation, habitat connectivity at a landscape level etc.
- Provide the opportunity for compatible wood production for woodland owners, where appropriate and using 'close-to-nature' silviculture.

Table 11 shows the specific targets for the Native Woodland Establishment (GPC 9 &10) for each year under the Forestry Programme, culminating in the achievement of 2,700 ha of newly created native woodland by 2020.

6.1.5 *Agro-Forestry Scheme details*

6.1.5.1 Outline

This measure has not previously featured in Ireland's forestry support mechanisms and there is little experience of agro-forestry in Ireland. Initially, therefore, the measure will be targeted

at silvopastoral agro-forestry systems which combine forestry and pasture, including grazing and the growing of fodder. Other systems may be considered if the development complies with the definition of forest cover. A stocking rate of 400 - 1000 trees per hectare (equal spacing) is proposed and the minimum eligible plot size and width will be 0.5 ha and 20 metres respectively (agro-forestry must comply with the definition of a forest). The trees will be thinned out over the tree species rotation, so that when the trees are finally ready for felling (using continuous cover forestry principles) there may be as few as 160 – 250 trees / hectare. The initial high numbers will help ensure that a suitable number of final crop trees is achieved. In addition the continuous opening of the crown should ensure sufficient light for grass to grow.

Acceptable broadleaf species will include oak, sycamore and cherry. Other species, including conifers, will be considered on a site-by-site basis, upon application. The performance of species eligible under the scheme will be monitored and reviewed over the course of the programme.

Ideally, sites under the Agro-forestry Scheme should contain free-draining mineral soils and should have no requirement for additional drainage. In general, sites suitable for agro-forestry should not require additional fertiliser for tree growth, apart from the possibility of manual application at the base of individual trees at establishment. However, additional nitrogen (<100 kg / ha) may be permitted to promote grass growth for spring/summer grazing. This can be assessed on a site-by-site basis.

Individual trees must be protected by tree shelters in the early years of establishment. Where an agro-forestry plot forms part of a larger afforestation project, the agro-forestry plot must be fully fenced to prevent animal trespass into the adjacent forest plots.

The following agricultural activities will be permitted, so long as such activity is compatible with protecting the trees;

- Pasture: Grazing by sheep or young domestic stock is permitted during the spring and summer months in the early years, depending on tree growth, but trees must be protected and tree shelters checked regularly. Thereafter, when tree shelters are replaced with plastic mesh, larger animals may be introduced.
- Fodder: Silage and hay production is permitted. It is important that appropriate machinery is used when cutting silage and/or hay so as to ensure that the trees (including stem, roots and crown) are not inadvertently damaged.

Agro-forestry must remain under forestry indefinitely and therefore is subject to a re-planting obligation.

6.1.5.2 [Eligibility and Grant and Premium Rates](#)

Under state aid rules only 80% of eligible costs can be funded under the Agro-Forestry Scheme. Land classified by the Department as '*unimproved/unenclosed*' will not be eligible for support under the scheme. Grant rates and payment structure will be similar to the Afforestation Scheme, with GPC 11 applying (see below). Premiums (again, GPC 11) will be paid for 5 years only and will cover the cost of maintenance only. Once land is converted to agro-forestry, it will be classified as forest land and the provisions of forest legislation will

apply. Support for the establishment of demonstration plots for research purposes may also be considered under this scheme in the context of FORI and DAFM’s research programme.

GPC	1 st Grant €/ha	2 nd Grant €/ha	Total €/ha	Additional Fencing Allocation €/ha IS436	Alternative Fencing Allocation €/ha Non IS436	Total Available Funding €/ha
11 - Agro-forestry	2960	990	3950	500	450	4450

GPC	Annual premium / ha	Duration (years)
11 – Agro-forestry	€260	5

* All plantations regardless of size must include 10% broadleaves

Table 15 Grant and premiums rates for agro-forestry

6.1.5.3 Objectives

The main objectives of the scheme are to as follows.

- Establish agro-forestry as a realistic land use option for future programmes.
- Increase the economic output per land unit.
- Increase biodiversity.
- Produce high quality hardwood timber where appropriate.
- Protect water quality by reducing surface water runoff and protect erosion of river banks.
- Encourage continuous cover forestry and close-to-nature silvicultural techniques.
- Enhance the quality and diversity of landscapes.

Table 11 sets the specific targets for the Agro-Forestry Scheme for each year under the Forestry Programme, culminating in the achievement of 195 ha of newly-created agro-forestry by the year 2020.

Funding will be provided to private land owners only.

6.1.6 Forestry for Fibre Scheme Details

6.1.6.1 Outline

Eligible species under the Forestry for Fibre Scheme are as follows:

Species/genus	Species and clones
Italian Alder	<i>Alnus cordata</i>
Hybrid aspen	<i>Populus tremula x tremuloides</i> (subject to plant availability)
Eucalyptus	<i>E. glaucescens</i> , <i>gunnii</i> , <i>nitens</i> , <i>rodwayi</i> and <i>subcrenulata</i> . (<i>E nitens</i> only to be restricted to within 50 km of coast and frost-prone, low-lying areas also avoided), other species will be considered on application. ¹⁶
Poplar	Clones ¹⁷ 18 71058/2, Fritz Pauley, Trichobel, V.471.xV.24(65)/34, 72030/7, 76004/10 Raspalje 19 and Unal

¹⁶ These additional species may be supported where demonstration plots are established for research purposes.

¹⁷ List of clones subject to final confirmation

Preference will be given to applications that propose to use improved genetic material, such as planting stock from the national and other documented tree improvement programmes. Regarding site requirements, sites must be below 200 m in elevation, enclosed, and with free-draining arable or pasture soils or surface water gleys without a peat layer.

Stocking shall be a minimum of 2000¹⁸ plants per hectare at establishment. Good vegetation control will be needed in the first 2-3 years after establishment to support and maintain vigorous growth. Normally fertilizer application will not be required. Stocking must be maintained at a minimum of 80% over the first 10 years of the period of premium payment.

6.1.6.2 Eligibility, Grants and Premiums

The same eligibility criteria applies as that set out for the Afforestation Scheme. Grants and premium rates for forestry for fibre are as follows;

GPC	1 st Grant €/ha	2 nd Grant €/ha	Total €/ha	Additional Fencing Allocation €/ha IS436	Alternative Fencing Allocation €/ha Non IS436	Total Available Funding €/ha
12 – Forestry for Fibre	1460	490	1950	500	450	2450

GPC	Annual premium / ha	Duration (years)
12 – Forestry for Fibre	€180	10

Table 16 Grant and premiums rates for forestry for fibre

Where Aspen is planted under GPC12 at 1,400 plants per hectare, the grant payment is reduced to 2,165/ha, where the first instalment is paid at €1,245 and the 2nd instalment is €420. Fencing and premium payments are not reduced.

Once land is planted under the Forestry for Fibre Scheme, it will be classified as forest land and the provisions of forest legislation will apply. This means that the land must remain under forestry indefinitely and therefore is subject to a re-planting obligation.

Support for short rotation coppicing, Christmas trees or fast growing trees is not provided for under this scheme. Fast growing trees are defined by Ireland as having 9 years between cuts. Forests planted under the Forestry for Fibre Scheme will be cut between 10 – 15 years and consequently are funded under sub chapter 2.1.1 of the State Aid Guidelines.

All premium payments under Forestry for fibre will be made under general de minimis rules.

6.1.6.3 Objectives

The objective of the Forestry for Fibre Scheme is to meet a forecasted supply-demand gap for fibre for energy and other wood product applications that will arise over the next two

¹⁸ Hybrid aspen can be at a minimum stocking of 1,400 plants/ha at establishment. Grant aid rates to be adjusted accordingly.

decades. The scheme is targeted at growing productive species on fertile sites capable of providing wood biomass yields in the region of 150-300 cubic metres per ha over a 10-15 year period.

Typical afforestation encompasses a range of habitat types but will continue to be predominantly on marginal agricultural land. However, given the relatively short period between cuts, land planted for forestry for fibre will require more fertile sites. Sites must be below 200 m in elevation, enclosed, and with free-draining arable or pasture soils or surface water gleys without a peat layer. Therefore the habitats to be afforested will be predominantly improved agricultural land and arable fields.

Table 11 sets the specific targets for the Forestry for Fibre Scheme for each year under the Forestry Programme, culminating in the achievement of 3,300 ha of newly-created fibre forests by the year 2020.

6.1.7 Programme Specific Output Indicators

Output indicators specific to each of the environmental services are provided in the following sections. The following points relate to additional Programme Specific Output indicators:

- Number of planting applications funded under the afforestation scheme;
- Number of planting applications funded under the Native Woodland Establishment scheme;
- Number of planting applications funded under the agro forestry schemes;
- Number of applications funded under the forestry for fibre scheme;
- Average size of plantation against previous average;
- Achievement of 30% broadleave planting target

In relation to the last bullet point, the 30% target should be achievable based on 2013 planting levels by GPC category.). This is calculated as follows where GPC 5-12 plus 10% of GPC 3 go towards the 34% figure;

GPC	Ha (2015-2020)	% of total
GPC 1	632	1.45%
GPC 2	57	0.13%
GPC 3	26,502	61.05%
<i>of which 10% broadleaves</i>	<i>2650</i>	<i>6.11%</i>
GPC 4	3,952	9.10%
GPC 5	1,030	2.37%
GPC 6	3,535	8.14%
GPC 7	136	0.31%
GPC 8	1,370	3.16%
GPC 9 & 10	2,700	6.22%
GPC 11	195	0.45%
GPC 12	3,300	7.60%
	43,410	100.00%
Total Broadleaves	14,917	34%

Table 17: Programme breakdown by GPC

6.1.8 Ensuring Afforestation in suitable sites

All afforestation under Measure 1: Afforestation and Creation of Woodlands will require consent from the Forest Service under S.I. No. 558 of 2010 (as amended by S.I. No. 442 of 2012). A variety of safeguards are employed by the Forest Service to avoid afforestation on environmentally unsuitable sites, and to ensure that any afforestation that does take place is appropriate to various environmental sensitivities, in terms of site preparation, species selection, etc. Environmental sensitivities include, *inter alia*, habitats and species (including NATURA sites, Freshwater Pearl Mussel and Hen Harrier), water quality (including fisheries sensitive areas, waterbody status, acid sensitive areas), archaeology, landscape, and local sensitivities. The capacity of the site to support a forest crop (or, in the case of NWS Est., a vibrant and sustainable native woodland canopy) is also a key consideration, and incorporates factors such as site fertility, elevation and exposure, and access.

6.1.8.1 Minimum Environmental Requirements

In accordance with point 509 of the Guidelines, details concerning the fulfilment of the minimum environmental requirements must be provided.

Ground preparation options including the soil type

The Forestry Schemes Manual describes land types eligible for grant and premium categories under the afforestation schemes and lists specific land types not eligible for grant aid on silvicultural or environmental grounds including infertile blanket and midland raised bogs; unmodified raised bogs; designated blanket and raised bogs, and plots with rock outcrop and associated shallow soils in excess of 25% of the plot area.

Enclosed/Improved (E/I) land includes land that has been under intensive agricultural use since prior to 1st January 2004 and carries vegetation predominately of pasture grasses and herbaceous plants. On wet soils, there may be a high proportion of rushes. E/I land is typically associated with fertile soil types suitable for a wide range of tree species, and will normally have a plough layer in the soil profile, i.e. a distinctive dark surface horizon in which organic matter has been incorporated with mineral matter. Vegetation on E/I land will typically be that associated with commercial agricultural use, e.g. pasture, grass-herb, grass-rush, tillage crops. This land type may also include grass lands which have partly reverted to bracken and furze. Recent tillage land would also be included in this type.

The soil type influences the type of cultivation used (see Table in Section 9.9.1 of the Forestry Schemes Manual). The predominant cultivation used in Irish forestry is mounding (conventional, inverted), ripping, pit planting or light scarification to aid natural regeneration. Pit planting is suitable for mineral or old woodland sites (i.e. sites where there was woodland in the past but which was cleared of trees) or within and adjoining aquatic buffer zones. It may also be appropriate for steep slopes where other types of preparation may lead to sediment run off.

If there are concerns regarding the soil on a site (e.g. possible presence of marl or calcareous mud) a soil survey may be required. Forest operations are curtailed within buffer zones as this is an area which is managed for environmental protection and enhancement. Within a buffer zone, natural ground vegetation is allowed to develop with the option of additional planting (pit planted) of suitable riparian tree species in certain cases.

Any site submitted for afforestation approval must have adequate drainage or be capable of being drained (drainage survey may be required).

- Conifers should have a minimum free draining rooting depth of 45-60cm throughout the year.
- Broadleaf species require a greater depth.
- Root structure should radiate in all directions on the horizontal plane.
- It is important not to impair harvesting efficiency by creating obstacles.
- Drainage should not impair site access and should be designed in conjunction with the road network.
- Traditional drainage routes must be respected and maintained.

Low lying areas which were liable to flooding historically. These areas must be silviculturally and environmentally capable of establishing a crop to full rotation, if submitted for afforestation approval. The ground cultivation method, for example mounding, may also drain a site. Under the Native Woodland Scheme the focus is on retaining natural site conditions and on selecting native species suited to those conditions, which influences ground preparation, drainage and fertiliser application.

Planting options including plant quality

Ireland's equable climate allows a wide range of native and exotic species to be grown, thus facilitating maximum site productivity for the production of specific wood products and enhancement of the amenity, landscape and biodiversity values of the forests. Species selection to ensure that the most suitable species are planted is guided by 'A Guide to Forest Tree Species Selection and Silviculture in Ireland' (Horgan, Keane, McCarthy, Lally and Thompson), COFORD 2004. Planting under the NWS Est. is restricted to tree species native to the island of Ireland and acceptable under the scheme (as listed in scheme literature).

Planting stock (transplants) must have the following characteristics:-

- (a) A straight stem with a definite leader.
- (b) A well balanced foliage with a good fibrous root system.
- (c) A specified height to provide for size above ground when planted.
- (d) A specified root collar diameter to provide for hardiness.
- (e) Age must not exceed a specified maximum.

Where possible, home collected seed from registered seed stands should be used and applicants are encouraged to ask first for plants from Irish seed. Planting material must be from an accepted seed origins/provenance. For the purpose of the Forest Service grant schemes, all planted material must be covered by a Supplier's Document in the format of a Provenance Declaration Form. Further details can be found in the Forestry Schemes Manual.

Sustainable use of fertiliser

- E/I land type does not normally require phosphorus fertiliser for successful tree growth.
- Fertiliser application shall be in accordance with the Forest Service Forestry and Water Quality Guidelines and the Forestry and Aerial Fertilisation Guidelines
- Foliar analysis may be required when applying for an Aerial Fertilisation Licence
- In addition, very poor sites where a standard application of phosphorus fertiliser (e.g. 350 kg/ha GRP) at the time of establishment is unlikely to provide sufficient phosphorus input to bring the forest to full rotation, are also deemed ineligible for grant aid.

- The Forest Service guidelines and Forestry Schemes Manual set out the practices that must be followed to ensure the sustainable use of fertilisers and to minimise the risk of fertiliser run-off and transport to aquatic zones. These practices include:
 - Proposed fertiliser types and application rates should be included in the afforestation application;
 - Fertiliser should be applied manually after cultivation to afforestation sites avoiding drains, buffer zones, areas within 20 metres of aquatic zones and waterlogged areas.
 - Fertilisers should be prepared and securely stored under shelter on a dry, elevated site at least 50 m from the nearest aquatic zone;
 - Fertiliser should not be applied during or immediately after periods of heavy rainfall. It is best applied in early summer and not outside the period April to August.
 - Granular fertiliser formulations should be used, with the exception of muriate of potash which is not available in granular form.
 - Subsequent application of fertiliser should be undertaken following a prescription resulting from a chemical analysis of foliar samples. Observe the Forestry and Water Quality Guidelines, in particular the section on Fertiliser Application and Storage and Forestry and Aerial Fertiliser Guidelines (where applicable).
 - All fertiliser should be applied broadcast and evenly distributed.
 - Do not apply fertiliser to waterlogged soil.

Sustainable use of Pesticide

- Pesticides (either as insecticides or herbicides) are not routinely used in forest practice
- For example, according to the state forestry company Coillte, their usage accounts for less than 1% of pesticides applied nationally.
- Insecticides are generally used to protect establishing trees against pine weevil either by pre-treating – or ‘dipping’ – young plants in the nursery, and/or by spot application to trees on susceptible reforestation sites, where warranted.
- Mandatory Forest Service guidelines relating to water quality and forest protection set out various environmental safeguards governing when, where and how pesticides are to be used in forests.
- All types of pesticide application is excluded from the 10-25 metre wide aquatic buffer zone, unless undertaken with the explicit agreement of relevant bodies to achieve specific environmental aims, e.g. stem injection to tackle a bankside infestation of rhododendron.

Plantation maintenance such as vegetation control with particular focus on implementation of integrated pest management and herbicide use and nutrition and protection.

Herbicides are generally spot-applied (in a 1m diameter spot or 1m wide band around the base of the tree) to control competing vegetation during the first few years after planting on both afforestation and reforestation sites, as needed. Weed control should be undertaken in accordance with the booklet “*Guidelines for the use of Herbicides in forestry*” published by Coillte Teoranta on behalf of the Forest Service.

The use of chemicals is governed by the Health and Safety at Work Act 2005 and users should be familiar with manufacturer’s instructions. Other forestry-related uses of herbicide include stump treatment to tackle unwanted woody vegetation, e.g. to prevent regrowth from the cut stumps of rhododendron or sycamore, within native woodland restoration sites.

The Forest Service practices Integrated Pest Management throughout its activities in regulating the forestry sector in Ireland. For example, it undertakes mandatory pest and disease surveys and border inspections, as required under the EU Plant Health Directive and other relevant legislation, and also carries out general surveys and the analysis of samples in relation to any unusual pests or incidents of ill-health in trees and forests. Requirements regarding the range of acceptable planting sites, requirements regarding acceptable species, provenances and the need for species diversity, and also the various standards regarding site preparation and maintenance, also ensure the development of healthy and vibrant forests. Contingency planning is undertaken if and when serious biotic threats arise, as demonstrated by the suite of disease control measures, including legislation and support for forest owners, put in place to control the spread of *Hymenoscyphus fraxineus*, (ash dieback disease). The support for forest owners included a large awareness campaign about the disease, a series of 22 regional public meetings, extensive survey of forests and grant aid to forest owners to assist removal of infected plantations and replanting with appropriate alternative species.

Pesticides (either as insecticides or herbicides) are not routinely used in forest practice. Their usage accounts for less than 1% of pesticides applied nationally. Insecticides are generally used to protect establishing trees against Pine Weevil (*Hylobius abietis*) (either by pre-treating – or “dipping” – young plants in the nursery, and/or by spot application to trees on susceptible reforestation sites, where warranted. Insecticides are rarely used on afforestation sites. Herbicides are generally spot-applied to control competing vegetation during the first few years after planting on both afforestation and reforestation sites, as needed.

Mandatory Forest Service “guidelines” relating to water quality and forest protection set out various environmental safeguards governing when, where and how pesticides are to be used in forests. A key measure is the exclusion of the aquatic buffer zone from all types of pesticide application, unless undertaken with the explicit agreement of relevant bodies to achieve specific environmental aims, e.g. stem injection to tackle a bankside infestation of rhododendron.

As outlined above, insecticide application is limited to that used to combat pine weevil, and this is largely limited to Coillte forests, given the age and ownership of the Irish forest estate. Coillte is attempting to further reduce insecticide application. For example, biological control agents have been used as an alternative to chemical insecticides on a number of sites (e.g. insect-killing nematodes were applied to over 500 ha between 2007 and 2010). Other alternative strategies, such as the use of vigorous plants, early entry into restock areas (“hot planting”) and stump removal, are also being used on certain sites.

The following describes the actions taken in dealing with the outbreak of *Chalara Fraxinea*;

Chalara fraxinea, or Ash Dieback as it is commonly known, is a relatively new disease to science. It has spread rapidly in continental Europe over the past 10 years and is now widespread in several countries, including parts of Great Britain where it was first detected in 2012. The Department of Agriculture, Food and the Marine (DAFM) confirmed Ireland’s first positive finding of Ash Dieback in October 2012.

Following confirmation of this finding, a major winter survey of ash plantations was undertaken which focused on trees planted between 2008 and 2012. This exercise included surveying of hedgerows, nurseries, roadside, landscape and farm plantings as well as forest plantations, the outcome of which was the confirmation of further findings of the disease. The

survey was broadened to an ongoing growing season survey of ash planted over a much wider period.

In terms of controlling the disease, arrangements have been put in place to remove all ash trees from the forest sites where the disease has been confirmed and from the associated sites where trees from the same infected batches have also been planted. Eradication is also being carried out under the Department's supervision at the non-forest locations. This work is being undertaken by staff from the Forest Service of DAFM in conjunction with the relevant forestry contractors, the IFA and the landowners to ensure as smooth a process as possible. A Reconstitution Scheme was launched in March 2013 to help forest owners affected by ash dieback to carry out this work. Under the Scheme, a grant of up to a maximum of €1,500 per hectare is available to cover the cost of clearing the site. Additional funding is also available to cover the cost of replanting with an alternative species.

Special national legislative measures were introduced in November 2012 under the Destructive Insects and Pest Acts 1958 and 1991 to regulate the import of ash seed, plants and wood. Similar legislation was introduced in tandem by Northern Ireland and in Great Britain. The introduction of a phytosanitary measure to restrict movement of plants or plant products from within the EU or to restrict imports from outside the EU, requires the submission by the relevant Member State of a formal peer reviewed 'Pest Risk Analysis' of the harmful organism in question. The necessary Chalara Pest Risk Analysis (PRA) for UK and Ireland was published by the Forestry Commission UK following close co-operation and input from officials from the DAFM and officials and experts from Northern Ireland. The purpose of the PRA is to give a more sound legal footing to the measures introduced in 2012. The document will be examined by the EU Standing Committee on Plant Health in relation to the appropriateness of the legal measures introduced.

Another development in relation to the control of Ash dieback was the launch of an "All Ireland Chalara Control Strategy" by Minister of State Tom Hayes and Minister Michelle O'Neill on 9th July 2013. This strategy, developed jointly between the Department of Agriculture, Food and the Marine and the Department of Agriculture and Rural Development Northern Ireland (DARD) establishes an all island framework for the policy of identification, control and eradication of the causal agents of ash dieback.

6.1.8.2 Indicative Forest Statement

Decisions regarding the suitability of sites for afforestation will be supported by the Indicative Forest Statement (IFS) for Ireland. The aim of the IFS is to provide high-level, national guidance in relation to the suitability of land for afforestation¹⁹. One of the key aspects of delivering a balanced programme is to ensure, as far as possible, that new forests integrate, enhance and reflect the diversity and local distinctiveness of the landscape in which they are set. It is also fundamentally important to provide the public and the forest contractors with the earliest indication of the areas where potentially sensitive issues may arise in relation to, for example, landscape, water quality, archaeology and biodiversity.

The IFS is a map-based approach which integrates the many different spatial datasets contained within the Department's iFORIS system which take account of a wide range of environmental factors and other opportunities and constraints. These datasets are regularly updated as new spatial data becomes available. The IFS identifies areas most suitable for

¹⁹ This system will be used to guide the increase in forest cover from 10.7% to 18% by 2046.

planting primarily on the basis of environmental considerations and soil-productivity. The map-based environmental considerations have been captured from a variety of state organisations, such as the National Parks and Wildlife Service, Inland Fisheries Ireland, Environmental Protection Agency and the Local Authorities. The forest productivity map was compiled in co-operation with Teagasc and is based on soil type and elevation, displaying the potential rate of growth of forests throughout the country. Component map layers of the IFS and presented include:

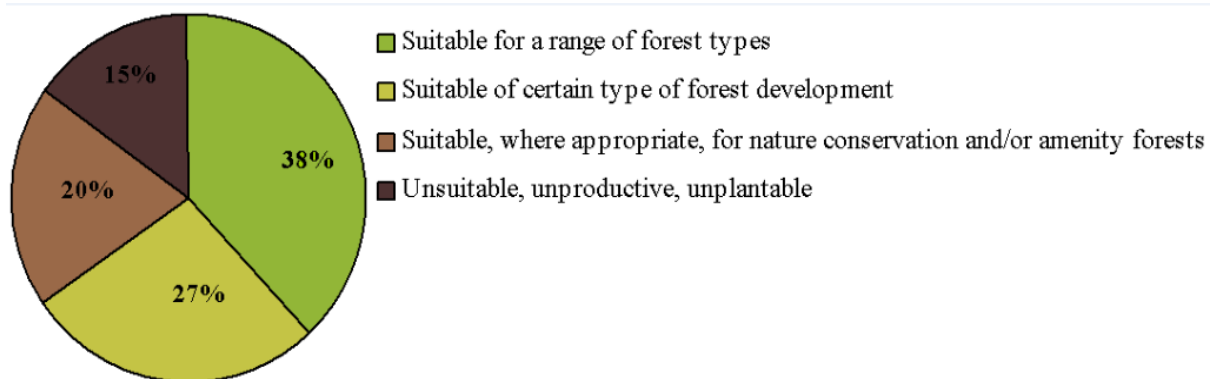
- NPWS spatial data (Special Areas of Conservation, Natural Heritage Areas, Special Protection Areas, Reserves, National Parks)
- Water bodies (streams, lakes, reservoirs)
- Urban Areas
- Fisheries sensitive areas (data compiled in consultation with the Inland Fisheries Ireland)
- Acid sensitive areas
- Forest productivity map (compiled by Forest Service/Teagasc)
- Landscape Sensitivity (compiled by the Forest Service with data supplied by the local authorities)
- Existing agricultural land use (from the Department of Agriculture, Food and the Marine database)
- Existing forest cover

The end-product, the IFS Category map, produced by compiling, reclassifying and overlaying the map layers in a Geographic Information System (GIS), is a comprehensive overview of all the opportunities and constraints which exist for forestry in Ireland, at a national level.

Four broad IFS Categories have been drawn up to identify opportunity and constraint areas for forest development. They are described as

- **Category 1** - “Suitable for a range of forest types”,
- **Category 2** - “Suitable for certain types of forest development”,
- **Category 3** - “Suitable, where appropriate, for nature conservation and/or amenity forests”
- **Category 4** “Unsuitable, unproductive or unplantable areas”.

The following graph shows the distribution of these categories;



The IFS Map identifies the location of areas making up each of the Categories. Each Category has been identified on the basis of the presence (or absence) of specific landscape

and environmental characteristics and each Category may result in consultation with one or more prescribed bodies and appropriate assessment when located inside a Natura 2000 area (Category 3). The table below describes these Categories and the resulting consultation process.

Category	Description	Environmental Designations	Applications Process
Category 1 “Suitable for a range of forest types”	Areas identified as being the most suitable for future forest development, where no environmental designations exist and where soil types indicate that trees will grow satisfactorily.	Area with no environmental constraints.	<ul style="list-style-type: none"> • Forest Service Inspection Procedure • Adherence to the Code of Best Forest Practice, Forestry Schemes Manual and Forest Service Environmental Guidelines. • Consult with DoEHLG if archaeological records of monuments and places are recorded or discovered. • Consult with Local Authority in areas of 25 ha or more. • Full EIA screening procedure (EIA at discretion of Forest Service - mandatory on areas of 50 ha or more).
Category 2 “Suitable for certain types of forest development”	Areas where at least one environmental designation (such as a fisheries sensitive areas) exist. For more details on the consultation system associated with specific environmental designations see Appendix 4.	<ul style="list-style-type: none"> • Acid sensitive areas. • Areas sensitive for fisheries. • Catchment areas of local authority water schemes. • REPs areas. • Areas of moderate landscape sensitivity. 	Process as for “Suitable for a range of forest types” and, in addition: consultation with relevant authority (such as Inland Fisheries Ireland, National Parks and Wildlife Service, Local Authority).
Category 3 “Suitable, where appropriate, for nature conservation and/or amenity forests”	Areas where environmental designations (such as Special Areas of Conservation) exist. For more details on the consultation system associated with specific environmental designations see Appendix 4.	<ul style="list-style-type: none"> • pNHAs, SACs, SPAs and National Parks. • Archaeological sites or monuments with intensive public use. • Areas of high landscape sensitivity identified in county development plans or listed in the Inventory of Outstanding Landscapes. 	Process as for “Suitable for a range of forest types” and, in addition: consultation with the relevant authority (such as Inland Fisheries Ireland, National Parks and Wildlife Service, Local Authority); and formal public consultation by way of newspaper advertisement
Category 4 “Unsuitable, unproductive or unplantable”	Areas where it is considered that trees are unlikely to grow satisfactorily including soil fertility, exposure etc. These areas also include unplantable areas i.e. waterbodies, urban areas and areas of existing forest. Applications for new forest development may be submitted to the Forest Service for consideration where an approved Forester certifies that the site is suitable for growing trees.	N/A	N/A

Table 18: IFS Categories and resulting consultation process

6.1.8.3 EIA System

The EIA Directive (Directive 2011/92/EU) requires that certain types of projects must be assessed to determine the likely environmental effect of the project before consent can be

granted. Where a potential significant effect is considered likely, the proposed project must undergo an Environmental Impact Assessment (EIA). An EIA is the process of examining the potential environmental effects of the proposed project before deciding whether to grant consent for the proposed project.

The Forest Consent System operated by the Forest Service provides for an environmental impact assessment to be carried out in certain cases, in accordance with the EIA Directive. The transposing legal instrument is the European Communities (Forest Consent and Assessment) Regulations 2010 (S.I. No. 558 of 2010), as amended.

Under Irish legislation, EIA is mandatory for the following forestry schemes:

- Initial afforestation which would involve an area of 50 hectares or more (S.I. No. 349 of 1989, as amended)
- Private roads which would exceed 2,000 meters in length (S.I. No. 600 of 2001, as amended)

Under S.I. 558 of 2010 all afforestation and forest road construction projects require the prior consent of the Minister for Agriculture, Food and the Marine. Applications for consent to carry out afforestation and forest road construction projects above the mandatory thresholds listed above must be accompanied by an EIS to enable the Minister to undertake an EIA of the project. An EIS is a statement of the effects, if any, which the proposed development, if carried out, would have on the environment. In addition, the Regulations provide that all afforestation and forest road construction projects below the mandatory thresholds must be screened for EIA and, where a proposed sub-threshold development is considered likely to have a significant environmental effect, the Minister will request the developer to submit an EIS to enable an EIA to be undertaken.

6.1.8.4 Natura 2000 and Appropriate Assessment

The suitability of sites planted under any of the four schemes set out under Measure 1: Afforestation and Creation of Woodlands, in relation to NATURA 2000 sites (i.e. SACs and SPAs) will be evaluated using the Forest Service Appropriate Assessment Procedure (AAP)

The obligation to undertake appropriate assessment is set out under Articles 6(3) and 6(4) of the Habitats Directive, to ensure that any plan or project does not have a negative effect on NATURA sites before a decision is taken whether or not to allow that plan or project to proceed. Appropriate assessment is required where any forestry project is not directly connected with, or necessary for, the management of a NATURA site and is likely to have a significant effect on the conservation of that NATURA site, be it directly (*in-situ*), indirectly (*ex-situ*) and / or in combination with other plans or projects.

In Ireland, the application of appropriate assessment is governed by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). Under these Regulations, and in relation to forestry activities requiring its consent or licensing, the Forest Service must undertake a 'screening' for appropriate assessment, to evaluate whether or not there is a possibility of the project – alone or in combination with other plans or projects – having a significant effect on the conservation objectives and associated qualifying interests of a NATURA 2000 site. If the answer is 'yes' or 'uncertain', an appropriate assessment is required and the applicant must submit a Natura Impact Statement (NIS). Based

on the NIS (and other information), the Forest Service undertakes the appropriate assessment to evaluate:

- whether or not (where previously uncertain) the possibility of a significant effect on a NATURA site exists;
- the nature of the possible significant effect (including in-combination) on the NATURA site; and
- the effectiveness of any proposed mitigation measure(s) designed to avoid the risk of the significant effect.

The project can only receive consent if the Forest Service has determined (either at screening stage or at appropriate assessment stage) that it will not significantly affect the integrity of the NATURA 2000 site.

The Forest Service Appropriate Assessment Procedure²⁰ is applied to all applications for Forest Service grant schemes, licences and approvals before a decision is taken on whether or not to approve the project. This includes the afforestation and creation of woodlands measure. The Forest Service AAP integrates with separate Forest Service procedure and mandatory guidelines regarding Freshwater Pearl Mussel, Hen Harrier, the Kerry slug, and otter.

Afforestation within SACs is only approved where it is compatible with the conservation objectives of the SAC. This is determined by the implementation of the Forest Service AAP and referral process to National Parks and Wildlife Service. All afforestation applications within Natura 2000 sites are referred to National Parks and Wildlife Service for comment and these comments are taken into account by the FS District Inspector when making a decision regarding the application.

Currently there is a policy of no afforestation within Hen Harrier SPAs, pending the formulation of the Threat Response Plan (TRP) for the species, led by National Parks and Wildlife Service (NPWS). DAFM is actively engaged with NPWS in the development of the TRP and it will be integrated into the Programme upon its completion.

With regard to the other SPAs, afforestation may be approved where it is compatible with the conservation objectives of the SPA. This is determined by the implementation of the FS AAP and referral process to National Parks and Wildlife Service

The FS AAP is applied to afforestation applications both within and outside of Natura 2000 sites. The Forest Service may impose conditions of projects outside Natura 2000 sites to ensure that there is no significant adverse effects to the sites. Conditions imposed may include buffer zones, timing of operations, species selection, habitat retention and drainage or cultivation restrictions.

²⁰ Forest Service Appropriate Assessment Procedure Information Note, March 2012
(<http://www.agriculture.gov.ie/media/migration/forestry/publications/ForestServiceAAPInformationNoteMarch12CONSOLIDATED060312.pdf>)

6.1.8.5 Afforestation on unenclosed / unimproved land

Forest Service Circular 10/2010 ‘Changes to Afforestation Grant & Premium Schemes 2011’ introduced restrictions on the afforestation of unenclosed / unimproved land, typically comprising upland sites and peat sites. Under the circular, the amount of unenclosed land in any application for financial approval cannot exceed 20% of the total area. Furthermore, Circular 18/2011 ‘Land Types’ describes land types eligible for grant and premium categories under the afforestation schemes. This circular lists specific land types not eligible for grant aid on silvicultural or environmental grounds. These include:

- infertile blanket and midland raised bogs;
- unmodified raised bogs;
- designated blanket and raised bogs, and
- plots with rock outcrop and associated shallow soils in excess of 25% of the plot area.

In addition, under Circular 18/2011, very poor sites where a standard application of phosphorus fertiliser (e.g. 350 kg/ha GRP) at the time of establishment is unlikely to provide sufficient phosphorus input to bring the forest to full rotation, are also deemed ineligible.

Circulars 10/2010 and 18/2011 combined preclude afforestation from considerable areas of land, typically upland and peat sites with a high sensitivity regarding water quality, habitats and species, and landscape. This eliminates the potential for forestry-related disturbance, both initially and throughout the forest cycle. These measures follow a historical trend for afforestation identified by the National Forest Inventory 2004-06, away from peatland and higher elevations and towards wet mineral soils and lower elevations. This trend is reflected in annual private afforestation figures. Planting on unenclosed land represented 20% of the 15,696 ha planted in 2000. This fell to 10% in 2005, and 4% in 2011.

The draft report on land availability prepared by the COFORD Land Availability Working Group carries a number of recommendations aimed at increasing the level of afforestation, including afforestation on certain types of unenclosed land. The Department is currently considering the report.

6.1.8.6 Peatlands

There are a total of 139 raised bogs designated for protection in Ireland – 53 Special Areas of Conservation (SACs) and 75 Natural Heritage Areas (NHAs), which are designated under the Wildlife (Amendment) Act 2000 and cover an area of approximately 23,000ha. In addition, there are 73 blanket bog NHAs, covering about 37,000ha. Afforestation within SACs is only approved where it is compatible with the conservation objectives of the SAC. This is determined by the implementation of the FS AAP and referral process to National Parks and Wildlife Service. Currently there is a dual consent process for afforestation approval within Natural Heritage Areas. Afforestation requires the approval of the Minister for Agriculture, Food and the Marine and the Minister for Arts, Heritage and the Gaeltacht.

Forest Service Circular 10/2010 ‘Changes to Afforestation Grant & Premium Schemes 2011’ introduced restrictions on the afforestation of unenclosed / unimproved land, typically comprising upland sites and peat sites. Under the circular, the amount of unenclosed land in any application for financial approval cannot exceed 20% of the total area. Areas of unenclosed (peatland) included as Areas for Biodiversity Enhancement within the application.

Forest Service Circular 18/2011 ‘Land Types’ describes land types eligible for grant and premium categories under the afforestation schemes and lists specific land types not eligible

for grant aid on silvicultural or environmental grounds including infertile blanket and midland raised bogs; unmodified raised bogs; designated blanket and raised bogs, and plots with rock outcrop and associated shallow soils in excess of 25% of the plot area.

Sites proposed for afforestation where significant areas have peat depths greater than 0.5 metres will require additional information to determine the potential impacts on the environment and their silvicultural suitability. Silvicultural suitability means the capacity of the site to produce a crop of timber in accordance with the eligibility criteria of the scheme, and further information may be sought from the proponent of the plan to show that this is indeed the case in relation to these peatland sites presented for afforestation approval. In relation to climate change adaptation, additional information may also be sought from the proponent of the plan as part of information on potential impacts on the environment, to satisfy the Forest Service regarding possible climate change impacts. Further information regarding carbon budgets is likely to form part of guidance to be provided on the future afforestation of peat soils, which forms an action for forestry under the draft National Peatlands Strategy.

6.1.8.7 High Nature Value Farmland

High Nature Value (HNV) Farmland has been defined as those areas in Europe where agriculture is a major land use and where that agriculture supports, or is associated with, either a high species and habitat diversity, or the presence of species of European and/or national, and/or regional conservation concern, or both (Heritage Council Fact Sheet No. 13). There are an estimated 1.1 million hectares of High Nature Value farmland but the concept of High Nature Value land is not yet fully established in Ireland and HNV land has not been specifically designated or mapped (DAFM Programme SEA RDP 2014 – 2020).

6.1.8.8 Acid Sensitivity Protocol and Afforestation

The Forest Service continues to implement the surface water acid sensitivity protocol for afforestation, jointly developed with the Environmental Protection Agency (EPA) and the Council for Forest Research and Development (COFORD) in 2002. Under the protocol, afforestation applications within designated acid sensitive areas, as demarcated by specific locations identified by OS Map numbers, must be accompanied by water sampling to determine the acid sensitivity of surface water. Four separate water samples must be collected by the Registered Forester during the months of February, March, April and May, following a prescribed methodology. Following analysis for CaCO_3 in an accredited laboratory, the results are then submitted to the Forest Service with the application. Based on the lowest result among the four samples, various thresholds are then applied:

- If $< 8 \text{ mg CaCO}_3 / \text{l}$ → the afforestation proposal not permitted(*)
- If $8\text{--}15 \text{ mg CaCO}_3 / \text{l}$ → EPA consulted
- If $> 15 \text{ mg CaCO}_3 / \text{l}$ → the afforestation proposal may be permitted, from the perspective of the protocol.

* There are strong indications of self-selection, whereby applications are not submitted to the Forest Service where the water sampling yields a result less than 8 mg/l CaCO_3 .

Approximately 600,000 hectares (representing c.9% of the total land area) are identified as acid-sensitive areas for the purposes of afforestation. These areas are predominantly located in Counties Wicklow, Kerry, Galway and Donegal. The above protocol is fully integrated into iFORIS (the Forest Service GIS/database system), and the results (and EPA recommendations) are assessed by the District Inspector as s/he undertakes the inspection.

Following a proposal developed by the Forest Service in consultation with Woodlands of Ireland, Inland Fisheries Ireland, NPWS and others, the EPA agreed to a change in the protocol whereby applications under the NWS Est. in acid sensitive areas could be submitted and considered by the Forest Service for approval, without water sampling. This was in recognition of the marginal impact regarding native woodland and acidification, and also the other wide range of eco-system services native woodlands could deliver in these landscapes, including the protection and enhancement of water quality. The change to the Acid Sensitivity Protocol was introduced in Forest Service Circular 04/2013, entitled "Native Woodland Establishment Scheme – Acid Sensitivity Protocol for Afforestation and *Chalara fraxinea* ash dieback disease".

6.1.8.9 Fisheries Sensitive Areas and the Water Framework Directive

The Forest Service continues to operate a referral protocol developed with Inland Fisheries Ireland (IFI), in relation to afforestation activities within fisheries sensitive areas, designated based on certain specified OS Sheet numbers. Applications for consent to afforest (with or without grant aid) involving sites greater than 5 ha, adjacent to or traversed by an aquatic zone, and located within a Fisheries Sensitive Area, are referred to IFI. Applications greater than 40 ha, adjacent to or traversed by an aquatic zone, and located outside of a Fisheries Sensitive Area, are also referred. The referral procedure is fully integrated into iFORIS, and recommendations arising from IFI are assessed by the District Inspector as s/he undertakes the inspection and are generally incorporated into the conditions attached to any consent to afforest issued. Consultation protocols will continue to be developed with referral bodies to provide efficiencies and to ensure procedures are followed in implementation.

The Forest Service, as part of the Department of Agriculture, Food and the Marine, is a public authority under the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003), the principle transposing legislation in relation to the European Water Framework Directive (WFD). As set out under SI 722/2003, the Minister must “*exercise functions in a manner which is consistent with the provisions of the [Water Framework] Directive and which achieves or promotes compliance with the requirements of the Directive*”.

The WFD sets out four core objectives regarding (*inter alia*) streams, rivers and lakes, to be achieved by 2015:

- prevent deterioration in status (particularly High Status waterbodies);
- restore Good Status within specific timeframes, mainly by 2015;
- reduce chemical pollution; and
- achieve protected areas objectives in relation to, for example, aquatic-based SACs.

The Forest Service must ensure compliance with the above responsibilities under SI 722/2003 when considering applications for afforestation and other forestry activities. As part of the workflow involved in assessing afforestation applications, the Forest Service queries current information regarding waterbodies integrated into iFORIS, to identify the boundaries, status and objectives of any relevant waterbodies, and this information is factored into the decision to approve (or otherwise), and the formulation of any conditions that might apply.

6.1.8.10 Archaeological heritage

Where afforestation development, forest road development, or felling licence applications falls within 200 metres of a designated archaeological site or monument, e.g. a Recorded Monument, applications are identified for referral to the National Monuments Service. In each and every referred initial afforestation and forest road development application case, a desk-based assessment is undertaken the result of which is the imposition of one or more archaeological conditions. These are taken from a tiered hierarchy of archaeological mitigation responses, with the lowest condition being adherence to the relevant elements of the Forestry and Archaeology Guidelines of the Forest Service. This is followed by the option of increasing the size of archaeological exclusion zone(s), the exclusion of a larger area or areas of archaeological potential, archaeological monitoring of specified areas, the refusal of either part or all of the development without prior archaeological assessment by independent archaeological consultants, or a recommendation for refusal of the entire development.

In recognition of the obligations placed on Competent Authorities under Annex III of the EIA Directive, special consideration is also given to the wider landscape setting of known archaeological sites and monuments, and in particular their relationship with other roughly contemporary or determinably linked sites – that is, identifiable archaeological complexes and landscapes. The recorded or evident inter-visibility of sites and landscape relationships are taken into account for archaeological complexes and areas, with outright refusals or requirements for the maintenance of linkages or whole areas to be left open and unplanted. Areas classified by the NMS as archaeological areas, zones of archaeological potential, or zones of archaeological amenity, as well as listed and tentative World Heritage Sites are also given special consideration.

The application of this archaeological assessment regime, the imposition of a hierarchy of relevant archaeological conditions with approvals, the emphasis on preservation *in situ* of any archaeological remains identified, and the special consideration given to the wider landscape setting of known archaeological sites and monuments, fully accords with the principles and approach as set out in Part III of the Department of Arts, Heritage and the Gealtacht's *Framework and Principles for the Protection of the Archaeological Heritage*.

In conjunction with a phased programme to update the suite of environmental guidelines, including the Forest and Archaeology Guidelines, it is intended that the minimum exclusion distances for archaeological sites and monuments in all new schemes will be increased to 20m to reflect the advice for managing ancient monuments in woodland contained in the Department of Environment, Heritage and Local Government publication *Good Farming Practice and Archaeology*.

Spatial datasets will be provided from DOENI on Natura sites, cultural heritage and archaeology in Northern Ireland. These data will be downloaded onto IForIS and will help assess any possible adverse impacts of forestry development south of the boarder.

6.1.8.11 Pesticides, Herbicides and Fertiliser Pesticides and Herbicides

Pesticides (either as insecticides or herbicides) are not routinely used in forest practice. For example, according to the state forestry company Coillte, their usage accounts for less than 1% of pesticides applied nationally. Insecticides are generally used to protect establishing trees against pine weevil either by pre-treating – or ‘dipping’ – young plants in the nursery, and/or by spot application to trees on susceptible reforestation sites, where warranted.

Herbicides are generally spot-applied to control competing vegetation during the first few years after planting on both afforestation and reforestation sites, as needed. Other forestry-related uses of herbicide include stump treatment to tackle unwanted woody vegetation, e.g. to prevent regrowth from the cut stumps of rhododendron or sycamore, within native woodland restoration sites.

Mandatory Forest Service guidelines relating to water quality and forest protection set out various environmental safeguards governing when, where and how pesticides are to be used in forests. A key measure is the exclusion of all types of pesticide application from the 10-25 metre wide aquatic buffer zone, unless undertaken with the explicit agreement of relevant bodies to achieve specific environmental aims, e.g. stem injection to tackle a bankside infestation of rhododendron.

Fertiliser

Phosphorus (P) is the main nutrient applied to new forests, with nitrogen (N) and potassium (K) occasionally applied as remedial fertilisation. The Forest Service guidelines on forest protection set out the practices that should be followed to minimise the risk of fertiliser run-off and transport to aquatic zones. These include the following;

- Proposed fertiliser types and application rates should be included in the afforestation application;
- Fertiliser should not be applied within the buffer zone or within 20 m of an aquatic zone, whichever is greatest;
- Fertilisers should be prepared and securely stored under shelter on a dry, elevated site at least 50 m from the nearest aquatic zone;
- Granular fertiliser formulations should be used, with the exception of muriate of potash which is not available in granular form.

Aerial fertilisation has been subject to a licensing system since 2006, with the European Communities (Aerial Fertilisation) (Forestry) Regulations 2012 (S.I.125/2012) revoking and consolidation previous regulations. S.I.125/2012 gives effect to Directive 2006/11/EC on pollution caused by certain dangerous substances discharged into the aquatic environment, which itself replaced previous Council Directive 76/464/EEC (the Dangerous Substances Directive).

Under S.I.25/2012, the aerial fertilisation of forests in Ireland requires a licence from the Forest Service. These regulations set out the statutory licensing system involved, and detail various operational and technical stipulations that apply. These include application limits for P, N and K, restrictions on timing (unless exceptional circumstances apply, aerial fertilisation can only take place between 1 April and 31 August) and required exclusion zone widths (e.g. 100m from drinking water abstraction points, 50m from an aquatic zone). The Regulations also prescribe the information to be submitted with any application, and detail the consultation process the Forest Service applies.

Applications for aerial fertilisation are assessed by District Inspectors based on iFORIS and an assessment of the silvicultural requirements of the crop and the environmental sensitivities of the site. Screening is applied in relation to SACs and SPAs, following the Forest Service Appropriate Assessment Procedure. If issued, licences may exclude sensitive areas of the site or sections of the crop deemed not to require fertiliser application. The Forest Service published Aerial Fertiliser Requirements as a working document in January 2014 (see Forest

Service Circular 01 / 2014, entitled "Aerial Fertilisation Requirements"), replacing previous Forest Service guidelines on the practice.

6.1.8.12 Hedgerows, Scrub and Landmark Trees

Hedgerows must be considered carefully when considering forestry activities and the impacts these activities may have on these important landscape features. Hedgerows, ditches and open drains are designated as Landscape Features under the Good Agricultural and Environmental Condition (GAEC) of Cross Compliance with effect from 2009. Hedgerows are an important visual feature in the landscape and form part of the historical and archaeological heritage of the country. They also serve a number of very important functions at farm level such as:

- Stock proof boundaries particularly important for animal disease control;
- Shelter and shade for farm animals and shelter for crops from possible wind damage;
- Physical barrier to restrict soil and water movement thus reducing soil erosion and protecting water quality.
- Providing habitats for wild life in circumstances where the proportion of natural woodland in the country is low;
- Nature corridors to allow the free movement of wildlife.

These landscape features are now protected under the requirements of Good Agricultural and Environmental Conditions (GAEC). This means that in general they cannot be removed. Hedgerows must also be maintained and not allowed to become invasive thereby reducing the utilisable area of the field and consequently impacting on the area eligible for the single payment. Where, in exceptional circumstances, a hedgerow must be removed, a replacement hedge of similar length must be planted at a suitable location on the holding in advance of the removal of the existing hedgerow.

Landowners considering planting trees are encouraged to retain scrub. These areas are considered as Areas for Biodiversity enhancement (ABE's) for the purpose of grants and premiums. These areas are discussed in more detail in Section 9.1.11. In relation to landmark trees, the Tree Register of Ireland (TROI) is a database of Irish trees containing over 10,000 entries.

6.1.9 *Species Selection*

Due to its location in the path of the Gulf Stream, Ireland experiences a mild and moist oceanic climate that is unique for countries at similar latitudes. Extremes of temperature and precipitation are rarely experienced and favourable climatic conditions occur throughout the growing season. This equable climate allows a wide range of native and exotic species to be grown, as can be seen from the great diversity of both herbaceous and woody species that grow successfully side-by-side in Ireland's gardens and arboreta. The ability to grow many species of trees presents foresters with opportunities to use different species, not only to maximise site productivity for the production of specific wood products, but also to enhance the amenity, landscape and biodiversity values of the forests.

Under the Afforestation and Creation of Woodlands measure the selection of species, varieties, ecotypes and provenances of trees shall take account of the need for resilience to climate change and to natural disasters and the pedologic and hydrologic condition of the area concerned. Species selection to ensure that the most suitable species are planted is

guided by ‘*A Guide to Forest Tree Species Selection and Silviculture in Ireland*’ (Horgan, Keane, McCarthy, Lally and Thompson), COFORD 2004. The following Tables are taken from this work and are included in the Department’s forestry scheme manuals.

Due to its nature, planting under the NWS Est. is restricted to tree species native to the island of Ireland and acceptable under the scheme (as listed in scheme literature). Furthermore, following a prescribed scenario framework, planting on individual sites must reflect the most suitable native woodland type identified for that site, based on soil, elevation, surrounding vegetation etc. Full details are contained in the current NWS Est. Manual, as updated by Forest Service Circular 04 / 2013 "Native Woodland Establishment Scheme – Acid Sensitivity Protocol for Afforestation and *Chalara fraxinea* ash dieback disease".

Species		Soil Type																
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Alder	Common																	
	Grey*																	
	Italian*																	
Beech	European																	
	Southern																	
Birch	Downey*																	
	Silver*																	
Cherry	Wild																	
Chestnut	Spanish																	
Hornbeam	Common*																	
Lime	Common																	
Maple	Norway																	
Oak	Pedunculate																	
	Red																	
	Sessile																	
Rowan*																		
Sycamore																		
Cedar	Western red																	
Cypress	Lawson																	
	Monterey																	
Fir	Douglas																	
	Grand																	
Hemlock	Western																	
Pine	Austrian																	
	Corsican																	
	Lodgepole (NC)																	
	Lodgepole (SC)																	
	Monterey																	
	Scots																	
Redwood	Coast																	
Spruce	Norway																	
	Sitka																	
Mixture	SS/DF																	
	SS/HL																	
	SS/LP (NC)																	
	SS/LP (SC)																	

* This table does not indicate trees species which will grant aided under the Afforestation and Creation of Woodland measure. For example no planting is grant aidable on unmodified raised bogs.

Table 19. Species choice by soil type

Colour Key



A	Alkaline brown earths and free draining, deep grey brown podzolics	J	Gleys/peaty gleys (mottled profile) and gleyed grey brown podzolics (fertility class A or B)
B	Acid brown earths and brown podzolics	K	Gleys/peaty gleys (blue/grey or yellow profile) (fertility class B)
C	Rendzinas/shallow brown earths/shallow grey brown podzolics	L	Gleys/peaty gleys (fertility class C)
D	Podzols/peaty podzols +/- weakly developed iron pan	M	Flushed and/or reclaimed blanket peat
E	Indurated ironpan podzols (organic layer or furze present)	N	Unflushed blanket peats and intact raised bogs
F	Indurated ironpan podzols (scrawed, with heather)	O	Cutaway blanket bogs (milled peat)
G	Peaty podzolised gleys (fertility class C) - organic layer present	P	Cutaway raised bogs (milled peat) post 1980 and fen peats
H	Peaty podzolised gleys (fertility class C) - scrawed	Q	Cutaway raised bogs (hand or machine, sod) pre 1980
I	Lithosols		

Table 20: Soil Types

The following table is intended to aid in maximising site potential by indicating the most suitable trees to be planted in a range of site types.

Species		Characteristics								
		A	B	C	D	E	F	G	H	I
Alders:	Common alder	1	1	3	4	5	4	5	1	1
	Grey alder	1	2	3	4	4	4	4	2	1
	Italian alder	3	4	4	3	3	4	5	2	1
Ash:		2	5	4	3	4	5	5	3	
Beech:	European beech	2	4	3	4	3	4	1	1	1
	Southern beech	3	4	4	4	3	3	4	3	
Birch:	Downy birch	3	1	3	4	4	3	3	4	1
	Silver birch	3	2	4	4	2	4	5	4	1
Cherry:	Wild cherry	2	4	5	4	3	5	5	5	
Chestnut:	Spanish chestnut	2	5	5	5	3	4	4	1	1
Hornbeam:		2	1	4	4	2 --- 4	3	1	1	1
Lime:		2	3	4	4	3	4	3	2	1
Maple:	Norway maple	2	2	4	2	3	4	4	2	
Oaks:	Pedunculate oak	2	4	5	3	4	5	5	1	
	Red oak	2	3	4	3	3	3	4	1	1
	Sessile oak	2	5	5	3	3	4	4	1	
Rowan:		1	1	3	2	3	4	5	2	1
Sycamore:		2	2	2	2	3	5	4	1	
Cedar:	Western red cedar	3	2	4	3	4	4	2	3	1
Cypress:	Lawson cypress	3	2	3	3	4	3	1	4	
	Monterey cypress	4	3	1	1	3	3	4	3	
Firs:	Douglas fir	3	3	5	5	2	3	4	2	1
	Grand fir	2	2	5	4	4	5	2	2	1
Hemlock:	Western hemlock	3	4	4	3	3	3	1	3	
Larch:	European larch	3	4	4	5	3	4	5	2	1
	Hybrid larch	2	3	3	2	4	3	5	2	1
	Japanese larch	2	3	3	2	4	3	5	2	1
Pines:	Austrian pine	3	2	3	2	2	3	3	3	

Corsican pine	3	2	3	5	2	4	5	2	1
Lodgepole pine	3	1	2	1	1 --- 4	1 --- 3	5	1	1
Macedonian pine	4	1	1	3	3	3	4	1	1
Monterey pine	4	2	4	1	2	3	5	1	1
Scots pine	2	1	4	3	2	3	5	1	1
Redwood: Coast Redwood	2	5	5	2	3	5	3	3	
Spruces: Norway spruce	4	3	5	5	4	4	3	4	
Serbian spruce	3	2	2	3	2 --- 4	2 --- 4	3	3	
Sitka spruce	1	4	2	2	2 --- 4	3 ---- 5	5	3	

Table 21: Species Silvicultural Characteristics

Characteristics rated on a scale of 1 to 5						
A	Establishment	1	Easy	→	5	Very difficult
B	Spring frost	1	Tolerant	→	5	Very intolerant
C	Exposure	1	Tolerant	→	5	Very intolerant
D	Salt spray	1	Tolerant	→	5	Very intolerant
E	Soil moisture	1	Low	→	5	Very high
F	Soil nutrient	1	Low	→	5	Very high
G	Shade/Light	1	Shade bearer	→	5	Light demander
H	Rooting depth	1	Deep	→	5	Very shallow
I	Soil improver	1	Yes	→	5	

Table 22: Site Characteristics

Broadleaves suit mineral slightly acid to moderate alkaline soils with a pH of 4.5 to 8. In general, broadleaves should not be planted over 185 metres elevation in the east and 120 metres in the west of Ireland. Other parameters influencing species suitability on particular sites can be summarised as follows;

- **Topography/elevation:** Although Ireland is not really considered mountainous; its tree line is situated at quite a low elevation compared to other countries. The absence of tree cover at higher elevations is related to exposure levels and temperature, as tree growth generally becomes scrubby at elevations at which the average temperature of the four warmest months is <10°C (Pears 1967).

Other climatic variables also change rapidly with increasing elevation. With every increase of 100 m, average temperatures drop by 1°C and windspeed increases by 30 percent. For plantations established under the afforestation and creation of woodlands measure, current guidelines suggest that land over 300 m (in the west) and 400 m (in the east) is 'unplantable'.

Aspect: Although perhaps not as immediately obvious as exposure, aspect can have an important effect on growth of various species. South-facing slopes are warmer than others, but south to southwest aspects are also generally exposed to the prevailing winds in this country. Crops growing near the foot of south-eastern slopes, or those exposed to early morning sunshine, are often at risk through damage to recently-flushed growth by early morning sunshine after clear, frosty nights. North or north-eastern slopes, although sheltered from most prevailing winds, are often cold and may be less productive. For example, at 55°N on the summer solstice, a south-facing slope of 10° would receive 50% of possible solar

energy, while a north facing slope would only receive 20% (Reifsnyder and Lull 1965). Species from warmer climates, such as European beech, Spanish chestnut and coast redwood, do best in these warmer microclimates.

6.1.9.1 Sitka Spruce

Ireland has very few native tree species compared to Britain and other European countries, and only two species, Oak and Ash, are considered suitable for timber production. Sitka spruce was first introduced to Ireland in the 1830s. It has been grown as a productive forest crop for over 80 years and is now the mainstay of Ireland's wood processing sector. The species grows well in Ireland because it is suited to our soils and climatic conditions. It flowers, produces seed and is able to regenerate naturally on many sites. The species has thus adapted well to the Irish environment and many native animals, insects and birds now inhabit Sitka spruce woodlands ([Biodiversity in Irish Plantation Forests, EPA/COFORD 2007](#)). The better growing and adapted individuals have been selected to form a breeding population as part of a tree improvement programme. Furthermore, Sitka Spruce has not been impacted by disease to the same degree as some other species such as *Phytophthora ramorum* in Japanese Larch and *Chalara Fraxinea* in Ireland's native Ash species. This further demonstrates its resilience as a tree species suitable to growing in Ireland. As one of our fastest growing tree species, Sitka spruce also has an important role to play in Carbon Sequestration. Over a rotation Sitka spruce can fix over 200 tonnes of Carbon per hectare.

The main form of cultivation in Ireland in recent years when planting trees on agricultural land is mounding with drains placed at 8 to 16 metres apart. In a significant majority of sites the purpose of the shallow drain is to provide additional soil to create a mound in which to plant a tree and not necessarily to drain the site. In fact a significant proportion of drains created on typical afforestation sites are completely dry in the summer. These shallow drains, usually about 45 cm in depth, provide additional soil to create approximately 2500 mounds of soil which has the added benefit of increasing soil depth and raising the position of the new planted tree higher than the surrounding vegetation. This has two main advantages in that it provides cultivated soil to increase the chances of successful establishment and in most cases reduces the necessity to carry out chemical herbicide weed control in the first growing season. Ireland has considerable experience in the establishment of Sitka Spruce on former agricultural lands which demonstrates that it grows successfully on a range of sites. Agricultural land where the vegetation type is predominately a monoculture of grass species receives annual inputs of fertiliser and herbicides. The conversion of these sites to forest land with Sitka spruce in association with good planting design, reduces significantly the requirements for fertiliser and herbicide application over a typical 40 year rotation. Environmental guidelines and the retention of hedgerows allows colonisation of the former agricultural grassland with native understory species. This is further accelerated when road construction takes place and thinnings open the canopy creating increased light on the forest floor and roadside verges. The establishment of the first rotation of trees on lands formerly in agriculture creates many opportunities for creating and enhancing biodiversity in subsequent rotations. Drainage of sites if required is kept at a minimum and must be in accordance with the Forestry and Water Quality Guidelines. Drainage by deep ploughing on peat lands where drains were placed 4 metres apart no longer takes place for environmental silvicultural reasons.

In the past much of the threats to biodiversity from plantation forests, including Sitka Spruce, was due to the planting of forests on sites that were unsuitable for commercial forestry. These include afforestation on unenclosed/unimproved land (40% in the early 1990s to 1%

now) which required fertiliser inputs and extensive drainage systems, as well as planting in areas where substrate soils are unable to buffer the acidity arising from atmospheric pollutants intercepted by the forest canopy, causing acidification to watercourses. In addition, these sites often had little in the way of mitigation measures such as aquatic buffer zones and retained on site habitats, as is currently required. Since then, our knowledge and understanding of the interactions between forests and the wider environment has increased substantially, resulting in changes to where and how forests are planted and managed, and this is reflected in the Programme.

Current rules put in place by the Forest Service for all afforestation approval applications require a number of measures to ensure that forests are planted in the right places and to increase species and structural diversity within new forests, which have a lasting beneficial effect throughout the forest rotation. These include:

- (i) Plantation rules, which stipulate that Sitka spruce forests must also contain a minimum percentage of broadleaf and diverse conifers species such as Norway spruce, Douglas fir, Scots pine and Oak in intimately mixed plots, and /or Birch, Alder, Rowan and other native broadleaf species planted in groups, to increase crop diversity and to enhance the ecosystem services and visual appearance of conifer woodlands in the landscape;
- (ii) Environmental guidelines, which stipulate the inclusion of 15% Areas for Biodiversity Enhancement in new forest areas, including aquatic buffer zones, archaeological exclusion zones, retained habitats such as hedgerows and scrub, and mandatory setback distances along public roads and adjoining dwellings;
- (iii) The proposed requirement in the Programme to include a Native Woodland Establishment plots within the plantation design, alongside watercourses, and
- (iv) The afforestation approval assessment process, which includes site inspections, environmental assessment in accordance with the Habitats and EIA Directives, referral to statutory consultees, and the Acid Sensitivity Protocol, all of which may, following assessment, require changes to proposed afforestation projects regarding species selection and setbacks (or indeed, may lead to refusal), where particular silvicultural or environmental sensitivities are identified.

Sitka spruce now occupies 52% of the forest area, with ‘other conifers’ occupying another 22%. Of the broadleaved species, 55% are categorised as ‘other broadleaf species’ (both long-living and short-living), of which over half are willow. The next largest broadleaf species group is birch at 22.7%, followed by ash at 12% and oak at 10%.

6.1.10 Environmental Services

6.1.10.1 Landscape

New forests planted under Measure 1: Afforestation and Woodland Creation must be established and maintained in a way that enhances the landscape. Therefore it will be essential for forest holders to consider, at the planning stages, the effect the proposed forest will have on the surrounding area. This should take into account the position of the site within the landscape and local landscape sensitivities set out in, for example, the County Development Plan, and considerations such as species selection, the layout of internal and external edges, and integration with landscape features, such as hedgerows. In particular, the species composition of a forest can greatly influence the character of a landscape. Slight differences between crown shape and colour are obvious to foresters and the trained eye, but

often not to the general public, for whom the contrast of deciduous species may be necessary to give an impression of diversity. Introducing contrasting species alone will not improve landscape diversity unless the principles of good design are applied.

According to Hogan et al., in *A Guide to Forest Tree Species Selection and Silviculture in Ireland*, in establishing a forest there are a number of basic design principles that relate to the choice of species:

- i) One species should appear to dominate the landscape composition by about two thirds;
- ii) Margins between species should be irregular;
- iii) Species related to ground vegetation should follow its shape at an approximate scale and in harmony with the landform;
- iv) Mixing adjoining species at the boundary is no substitute for a well-designed shape, but can enhance its appearance.

Regarding neighbouring dwellings, appropriate setbacks and edge treatments within the forest plan are essential to avoid undue visual intrusion and conflict, and to capitalise on the opportunities for enhancing views from local houses. A standard setback of 60m (or 30m with permission from the resident) applies.

With the careful design of individual applications, the Afforestation and Creation of Woodlands measure can contribute significantly to the visual amenity of an area, in line with any particular landscape sensitivities that might apply. In order to ensure that these benefits are delivered, applicants must comply with the Department's Guidelines on Forestry and the Landscape (Anon. 2000b). This document provides useful information on the key criteria that are used to assess the impact of new plantations on the landscape.

At a national level, the *Draft National Landscape Strategy for Ireland 2014 – 2024*, published by the Department of Arts, Heritage and the Gaeltacht, 27th June 2014, will inform and assist in the resolution of challenges arising from competing priorities in the Irish landscape. As set out, the objectives of the draft Strategy are to:

- Implement the European Landscape Convention by integrating landscape into our approach to sustainable development;
- Establish and embed a process of gathering, sharing and interpreting scientific, technical and cultural information in order to carry out evidence-based identification and description of the character, resources and processes of the landscape;
- Provide a policy framework, which will put in place measures at national, sectoral - including agriculture, tourism, energy and marine - and local level, together with civil society, to manage, protect and properly plan through high quality design for the sustainable stewardship of our landscape;
- Ensure that we take advantage of opportunities to implement policies relating to landscape use that are complementary and mutually reinforcing and that conflicting policy objectives are avoided in as far as possible.

A National Landscape Strategy will be implemented and co-ordinated by the Department of Arts, Heritage and the Gaeltacht in partnership with all key stakeholders, including the forestry sector.

The contribution of Measure 1: Afforestation and Woodland Creation to delivering on enhancing the landscape will be measured against:

- total planting achieved versus planting targets set; and
- total broadleaf planting measured against the 30% broadleaf target.

6.1.11 Biodiversity and Nature Conservation

Biodiversity is concerned with the total variability of all living organisms and the habitats in which they live. It encompasses diversity at the ecosystem, species and gene level. The establishment of new forests in the countryside has the potential to provide habitats for flora and fauna that might not otherwise exist. The retention of existing hedgerow trees, pockets of native scrub, and old individual trees, can help in providing age diversity, although this is more easily established in existing forests. The retention of over-mature trees and deadwood on the site can also promote biodiversity, especially for insects and birds. Variability can be enhanced by taking into account at the planning stage any local biodiversity factors, such as hedgerows, areas of scrub, pockets of native broadleaves, old individual trees, aquatic zones, wetlands, woodland glades, unimproved grassland and wildflower meadows, and plant and animal species.

Biodiversity under Measure 1: Afforestation and Woodland Creation will be enhanced by planting a range of species, and incorporating diverse habitats within the forest by maintaining open spaces and retaining specific habitat types, such as hedgerows, wetlands and diverse grasslands. Specifically, under the NWS Est., Measure 1 will also encourage the planting of native woodland specifically for woodland biodiversity and other ecosystem services, such as the promotion of habitat connectivity between existing natural and semi-natural habitats (including those protected as designated sites) within the landscape, local or native seed sources should be used when and where possible (support for seed stands and orchards should promote this aim).

Furthermore, in relation to the Afforestation Scheme, NWS Est. and the Forestry for Fibre Scheme, biodiversity will be achieved through the creation of Areas for Biodiversity Enhancement (ABEs), whose aim is to retain open spaces within new forests and to retain existing habits within them. ABEs would comprise approximately 15% of individual grant aided afforestation projects which are greater than 10 hectares. In sites less than 10 hectares in area, the open space element of ABEs should be designed in conjunction with neighbouring land use and may be reduced.

The following table outlines areas left unplanted in forest plantations and indicates which are eligible as ABEs in individual projects and their eligibility for grants and premiums.

Areas	ABE	Grant	Premium
Open space for landscape and biodiversity	Yes	*	**
Hedgerows	Yes	*	**
Scrub	Yes	*	**
Buffer zones along aquatic zones	Yes	*	**
Archaeological sites and their exclusion zones	Yes	*	**
Created lakes/reservoirs	Yes	*	**
Former REPS habitats	Yes	*	**
Public road setback areas	Yes	*	**
Railway setback strip	Yes	*	**
Ridelines and drains	Yes	*	**
Internal roads and turning bay setback areas	Yes	*	**
Unplantable areas	***	No	No
Shallow, rocky soils	***	*	**
Rock and scree	***	No	No
Aquatic zones (area occupied by lake/ river)	***	No	No
Forest. (Conifer High Forest and Broadleaf High Forest - this includes newly planted areas with conventional stocking densities.)	No	No	No
Dwelling house/associated building setback area	Yes	*	**
Rights of way held by third party	No	No	No
Areas with turbary or grazing rights held by a third party	No	No	No
Major water mains	***	No	No
Power line corridors	***	No	No
Gas line	***	No	No
Public road	No	No	No

* An ABE of plot size is eligible for grant aid if it has been subject to work and legitimate costs in the afforestation of the project.

** An ABE is subject to premium if it adheres to the definition of utilised agricultural area (Commission Regulation (EC) No.1750/1999) prior to the commencement of the associated afforestation.

*** These areas can be included as ABEs if in the view of the Forest Service it has sufficient biodiversity value but is not subject to grant aid or premium.

Table 23: Eligible areas for ABE

The Forest Service Guidelines on forest biodiversity will guide applicants and foresters in maximising the potential for biodiversity in new planting. The contribution of Measure 1: Afforestation and Woodland Creation to biodiversity will be measured by:

- The total number of hectares planted under NWS Est. versus the planting targets set;
- The total number of hectares planted under the Agro-Forestry Scheme versus the planting targets set.
- Retention of biodiversity areas in lands converted to afforestation

During the lifetime of the programme applicants will be asked to identify biodiversity areas on site at Form 1 stage of the afforestation measure. This will be supported by ecological training for foresters.

6.1.11.1 Water Quality

Considerable scope exists for the use of woodlands and forests to proactively contribute to protecting and enhancing water quality. The benefits are potentially greatest where appropriately designed and managed woodlands are strategically located along watercourses, as these woodlands can buffer against sedimentation and run-off from surrounding landuses, can regulate water temperatures and flow, and can act as a source of suitable instream food. The contribution to tackling diffuse pollution includes both a barrier and interception function, whereby the presence of trees and forest ground vegetation reduces the risk of direct

contamination by agricultural and forest activities on the adjacent land, and helps to trap and retain nutrients and sediment in polluted run-off.

The Forest Service promotes the delivery of this ecosystem service, primarily through the Native Woodland Establishment Scheme. The Native Woodland Scheme (NWS), developed in partnership with the National Parks & Wildlife Service, the Heritage Council, Woodlands of Ireland and others, is aimed at protecting and enhancing Ireland's native woodland resource. The scheme itself is based on key ecological principles, including the use of Irish native stock only, minimal site disturbance during associated operations during establishment, the development of native woodland representative of the soil type, natural drainage, elevation, etc. of the site, and the commitment to long-term 'close-to-nature' silviculture'. The Native Woodland Scheme includes two separate elements: NWS Establishment (under Measure 1: Afforestation and Woodland Creation) and NWS Conservation (see later).

The NWS has considerable application in promoting water quality. Specifically, new native woodland, established under the scheme on sites adjoining watercourses and elsewhere within catchments, creates natural habitats that act as permanent and stable buffers *vis-à-vis* water quality. These native woodlands intercept potential sediment and nutrient flows and pulses arising from 'upslope' landuses (including agriculture and forestry), contribute to erosion prevention on slopes, and help reinstate natural hydrological patterns. Furthermore, immediate 'bankside' benefits arising from native woodland development (including native riparian woodland) on sites adjoining watercourses include: the filtering-out of sediment and nutrients from overland flow; bank stability; the restoration of natural dynamics between the terrestrial / riparian / aquatic systems; the provision of dappled shade; the regulation of water temperatures; and the provision of appropriate inputs that enhance instream diversity.

The strong ecological approach to species selection, establishment and management underpinning the NWS, the benign impact of native trees on soil development and nutrient recycling, and the range of potential and very positive ecosystem services that would be delivered by the scheme's uptake makes it a suitable option for water-sensitive areas such as FPM catchments, acid sensitive areas, and fisheries sensitive areas, and high status waterbodies.

Other water-related benefits are delivered by other schemes under Measure 1, including the Afforestation Scheme, through the development of 10 – 20 m aquatic buffer zones (ABZs) alongside any watercourses adjoining or intersecting afforestation sites. As per the Forestry and Water Quality Guidelines, this area must remain unplanted, apart from small groups of appropriate riparian trees hand-planted. Furthermore, no machine trafficking, or herbicide and fertiliser application can take place within the ABZ. Individual ABZs must be allowed to develop into a natural habitat, which typically comprises a mosaic of natural ground vegetation and woodland scrub, and form a permanent protective feature along the watercourses.

The contribution of the Afforestation and Creation of Woodlands measure towards water quality will be measured over the programme period by the number of hectares of new native woodlands actually established against the target set.

6.1.11.2 Climate change mitigation

Increased levels of greenhouse gases, such as CO₂, increase the amount of energy trapped in the atmosphere which leads to global impacts such as increased temperatures, melting of snow and ice and rising global average sea-level. Increases in approved forest sinks count towards compliance with emission reduction targets under the second commitment period of the Kyoto Protocol,

The Afforestation and Creation of Woodlands measure plays an important role in mitigating climate change, as a land based sink for carbon dioxide, and as a source of renewable raw materials for fuel and wood products. Given the levels of afforestation that have occurred since 1990, it is estimated that between 2008 and 2012 the average rate of sequestration in qualifying forests over the first commitment period of the Kyoto Protocol was 3.23Mt CO₂ per annum. The total carbon stock in forest biomass (excluding soil carbon) is estimated to be circa 210 Mt of CO₂ in 2012²¹. Forest soils represent a very significant carbon pool; current estimates are that the total carbon stock in forest soils is in the region of 1,188 million tonnes of CO₂.

Afforestation under the new programme will have little effect on levels of sequestration during the second commitment period 2013-2020, because forests grow relatively slowly as they establish themselves over the first five years or so. However, in the post 2020 period, these forests will make a substantial contribution to climate change mitigation. Sitka spruce, which is the predominant species planted in Ireland, will sequester 200 tonnes of carbon per hectare over its rotation.

The afforestation scheme will also make a significant contribution towards climate mitigation through displacement of fossil fuels. In 2012, 225,000 m³ of firewood was used in Irish households showing that it is providing a steady and a growing market for first thinnings.

Given the age profile of forests planted under the new scheme it is difficult to measure the impacts on climate change mitigation during the programme period. The contribution that forests planted under this programme will make towards climate mitigation will materialise later on in their rotation as mentioned earlier.

6.1.11.3 Amenity and recreation

The use of woodlands and forests for outdoor amenity and recreation and as an environmental education resource is an important aspect of sustainable forest management. Factors such as the growing demand for opportunities for outdoor recreation and the increased focus on the associated health benefits to society and opportunities for local enterprises within rural communities, will continue to highlight the importance of this utilisation of Ireland's forests. The EU Forest Strategy acknowledges the multifunctional role of forests including for human health, recreation and tourism.

While walking is the most popular activity, forest recreation embraces other specialised activities including orienteering, mountain biking, horse riding, fishing and more recently, 'glamping'. Irish forests are well served with roads, tracks, rides, and increasingly with purpose built trail and cycle tracks in selected locations. Forest Service guidelines in this area, entitled *Forest Recreation in Ireland – A Guide for Forest Owners and Managers*,

²¹National Forest Inventory 2013. The Second National Forest Inventory. Republic of Ireland. Main Findings. Forest Service, Department of Agriculture, Food and the Marine, Wexford.

provide direction on assessing and realising the recreational potential of individual forests, dealing with issues such as consultation with recreational users, access for all, recreational facilities, safety, environmental education, and integration with local trails and tourist enterprises and heritage attractions. The Dobris Assessment states that tourism is likely to become the largest single economic activity in the EU and currently accounts for 5.5% of the EU's GNP. Land use for tourism has been correspondingly growing, with the more specialized forms of tourist activities, noted above, gaining in popularity.

Approximately 18 million people visited Irish forests in 2012, representing 4.5 visits per person. In the future, it seems likely that demand will increase for a higher quality of forest recreation experience (e.g. more organised and specialised recreation activities and a higher expectation in relation to visitor facilities). The Irish figure of visits per capita is less than the European average of 6.5, and it is likely that the expansion of public use of forests for recreation will continue for the next number of years.

It is difficult to measure the benefits of new afforestation in terms of amenity and recreation, as these benefits will accrue in the most part later on in their rotation. Perhaps the best way to measure this benefit is to compare the total number of visits to Irish forests in 2012 (18 million) against the figure after the Forestry Programme has been completed in 2020.

6.2 Measure 2: Investments improving the Resilience and Environmental value of Forestry: - NeighbourWood Scheme

6.2.1 Regulatory Framework

State Aid	RDR	Focus Area	Code
Sub chapter 2.1.4	Article 22& 25	4(a) & 5(e)	8.5

6.2.2 NeighbourWood Scheme Details

The proposed NeighbourWood Scheme will provide support for the development of new and existing “close-to-home” woodland or “neighbourwoods” for public access, education, recreation and enjoyment on land in or near villages, towns and cities. The NeighbourWood Scheme is aimed primarily at local authorities and private landholders, working in partnership with local communities. Other landholders may be considered on a case-by-case basis.

The NeighbourWood Scheme is subject to specific standards and criteria, and requires a detailed management plan as part of the application itself. There must be clear potential for the development of attractive amenity woodlands that will be strategically located, easily accessible and well-used by local people. The project must be developed in partnership with the local community and (where relevant) with specific recreational user groups. This partnership must be clearly demonstrated. Support will be available to cover the cost of investments that are made for non-profit purposes only. The woodland must be open to the general public throughout the year and access must be free-of-charge, and strong emphasis is placed on providing reasonable access for all potential users.

Applications will be assessed by reference to, *inter alia*, value for money, proximity to population centres, level of support/commitment from local communities, capacity of