Department of Agriculture, Food and the Marine
An Roinn Talmhaíochta, Bia agus Mara

Forestry Programme 2014 – 2020: IRELAND

Submitted in accordance with European Union Guidelines on State aid for agriculture and forestry and in rural areas 2014 to 2020

"To develop an internationally competitive and sustainable forest sector that provides a full range of economic, environmental and social benefits to society and which accords with the Forest Europe definition of sustainable forest management ." - The strategic goal stated in Forests, products and people, Ireland's forest policy review, July 2014

Forest Service, Department of Agriculture, Food and the Marine

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Contents

1 Executive summary

This document represents Ireland's proposals for 100% State aid funding for a new Forestry Programme for the period 2014 – 2020. The measures proposed within this document are consistent with the recently published "Forests, products and people Ireland's forest policy – a renewed vision". The document has also been completed in accordance with the following rules, guidelines and priorities:

i) European Union Guidelines on State aid for agriculture and forestry and in rural areas 2014 to 2020 addressing in particular the Common Assessment Principles;
ii) Regulation (EU) no 1305/2013 of the European Parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) no 1698/2005.

The document has also taken into account the Department of Public Expenditure and Reform's Public spending code.

The main driver of the layout of this document has been the European Commission's "Guidelines for Strategic Programming for the period 2014 – 2020", which addresses the requirements set out in (ii) above. As a first step in preparing this proposal, the following four needs have been identified in relation to Ireland's forest sector:

- Increase on a permanent basis, Ireland's forest cover to capture carbon, produce wood and help mitigation;
- Increase and sustain the production of forest-based biomass to meet renewable energy targets;
- Support forest holders to actively manage their plantations;
- Optimise the environmental and social benefits of new and existing forests.

To meet these needs the following measures are being proposed:

i) Afforestation and Creation of Woodland: Support for establishment and 15 premium payments for the creation of new forests. This measure includes afforestation, agro-forestry, forestry for fibre, and native woodland establishment (the latter focused 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).
ii) NeighbourWood Scheme: Provides support for the development of attractive 'close-to-home' woodland amenities for public access, use and enjoyment. This measure is aimed primarily at local authorities.
iii) Forest Roads: Support for the construction of forest roads is provided under this measure.
iv) Reconstitution Scheme: Support for forest holder to restore and retain forests following significant damage by natural causes.
v) Woodland Improvement (Thinning and Tending): This scheme provides support for forest management operations for broadleaf woodlands and actions within existing forests, which effect structural changes aimed at protecting and enhancing water quality and other environmental sensitivities.

vi) Native Woodland Conservation Scheme: Supports the protection and enhancement of existing native woodlands and where appropriate, the conversion of conifers forest to native woodlands. This measure is focused 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.

vii) Knowledge Transfer and Innovation: Supports the setting up of knowledge transfer groups, continuous professional development, and training.

viii) Producer Groups: Support is provided under this measure to help forest holders to work together to create a critical mass for forestry operations and mobilising timber;

ix) Innovative Forest Technology: Support for early adopters of new technology, e.g. variable tyre systems, inventory equipment.

x) Forest Genetic Reproductive Material: Annual payment towards the cost of managing and conserving registered seed stands and establishing seed orchards.

xi) Forest Management Plans: Support for forest holders to prepare management plans for their forest holdings.

Objectives for proposed new actions are as follows:

Scheme	2015	2016	2017	2018	2019	2020	TOTAL	Total €
Afforestation, ha	6,000	6,660	7,140	7,205	8,115	8,290	43,410	199,486,744
of which afforestation	*5,440*	*5,990*	*6,165*	*6,215*	*6,615*	*6,790*	37,215	*173,405,644*
of which NWS Establishment	*450*	*450*	*450*	*450*	*450*	*450*	2,700	*16,497,000*
of which Agro-forestry	*10*	*20*	*25*	*40*	*50*	*50*	195	*971,100*
of which energy and fibre	*100*	*200*	*500*	*500*	*1,000*	*1,000*	3,300	*8,613,000*
Forest Roads (m)	110,000	110,000	110,000	110,000	125,000	125,000	690,000	27,600,000
Special construction works (no. applications)	*100*	*100*	*100*	*100*	*100*	*100*	*600*	*€3,000,000*
Thinning and tending (ha)	1,500	1,500	1,500	1,500	1,500	1,500	9,000	€6,750,000
Reconstitution, ha	200	200	200	200	200	200	1,200	€4,668,000
Native Woodland Conservation Scheme ha	300	300	300	340	350	360	1,950	€7,258,000
of which Private NWS Cons.(high forest), ha	*80*	*80*	*80*	*90*	*90*	*100*	*520*	*€2,908,000*
of which Private NWS Cons. Native emergent woodlands ha	*50*	*50*	*50*	*70*	*70*	*70*	*360*	*1,675,000*
of which Public NWS cons, ha	*170*	*170*	*170*	*180*	*190*	*190*	*1,070*	*€2,675,000*
Neighbourwood Scheme, no. of projects	5-10	5-10	5-10	5-10	5-10	5-10	*30-60*	€1,050,000
Investment in Forestry Technology	30	30	30	30	30	30	180	€900,000
Forest Genetic Reproductive Material, ha	25	50	100	100	75	0	350	€420,000
Forest management plans, number of plans	1,000	1,000	1,000	1,000	1,000	1,000	6,000	€1,800,000
Current Spending	€1.5m	€1.5m	€1.5m	€1.5m	€1.5m	€1.5m		€9,000,000

Table 1: Programme targets and expenditure

The annual breakdown by Scheme is provided in Appendix 4.

This table can be summarised by measure as follows;

Scheme	€
Measure 1: afforestation and Creation of woodlands	€199,486,744
Measure 2:Investments improving the Resilience and Environmental value of Forestry: - NeighbourWood Scheme	€1,050,000
Measure 3: Investments in Infrastructure: Forest Road Scheme	€30,600,000
Measure 4: Prevention and Restoration of Damage to Forests: - Reconstitution Scheme	€4,668,000
Measure 5: Investments improving the Resilience and Environmental value of Forestry:- Woodland Improvement	€6,750,000
Measure 6: Investments improving the Resilience and environmental value of Forests:- Native Woodland Conservation Scheme	€7,258,000
Measure 7: Knowledge Transfer and Information Actions	€8,700,000
Measure 8: Setting up of Producer Groups	€300,000
Measure 9: Innovative Forest Technology	€900,000
Measure 10: Forest Environment and Climate Services: -Forest Genetic Reproductive Material	€420,000
Measure 11: Forest Management Plans	€1,800,000

Table 2: Expenditure by measure

Current expenditure shown in table 1 to transfer groups, training, continuous professional development (CPD), advisory and promotion services, forest sector development. The total cost of the programme is estimated at €262 million for the period 2015 – 2020. This excludes historic premium liabilities and refers to new investment. The figure also excludes the annual premium liability relating to commitments made under this programme which will continue to 2030. Table 2 summarises this expenditure by Measure.

It is important to note that Table 1 does not represent a multi-annual budget commitment. Expenditure on the programme will continue to be based on funds made available as part of the existing annual budgetary process. It therefore follows that funding for each of the measures outlined in this plan and the extent to which these can be implemented, is entirely dependent on the budget allocated for each individual year.

Flexibility will be applied throughout the Forestry Programme to allow for the transfer of funds between and within schemes. Additional opportunities will be explored on a year-to-year basis, including the possibility of short-term pre-approved projects being ready to proceed, should short-term funding availabilities arise. Similarly, opportunities for public-private funding will be capitalised on, with NWS Cons for example or for afforestation, roading or thinning (see section and other forestry actio. For example providing 'seed capital' to be matched from other sources, including private sector funding. Furthermore, NWS is strictly cost-based, creating the possibility that the above targets being exceeded.

A formal midterm review\evaluation will also take place to examine in a more structured way any potential that exists for changing schemes and improving their performance both from a value for money perspective and environmentally. This exercise will also look at the species mix being used within the programme and the possibilities that might exist for change in this regard.

Key aspects of the new Forestry Programme are as follows;

- The payment of 15 premiums instead of 20 under the Afforestation Scheme;

- Significant budget increase for native woodland conservation, and increased focus on its application in relation to 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;;
- A requirement within various water sensitive areas to include a Native Woodland Establishment plot alongside watercourses within conifer plantation design.
- The introduction of a single rate (i.e. no distinction between farmers and non-farmers);
- 5% increase in fixed grant rates;An increase in the premium rate of 20% to address the reduced number of premiums;The availability of a special construction grant for forest road construction;
- Additional 30m allowance for bellmouths where proposed road is 2m below entrance;
- Funding for roads to connect to the Coillte or other existing forest road networks.
- Increase is rate for roads to €40/m

The introduction of a single rate will encourage greater participation by non-farmers in the scheme. It is expected that both of these initiatives (higher premiums and single rate) will address the dual risk to the success of the afforestation programme posed by: (i) land availability issues; and (ii) the reduced number of premium payments that can be paid. New schemes introduced under the afforestation and creation of woodlands measure will also attract an annual premium payment. This will be 5 years for agro-forestry and 10 years for forestry for fibre (premium payments for Forestry for Fibre will be made through de Minimis).

The main justification for providing 100% state support for forestry under this programme is market failure. Despite the many benefits that forestry brings, most accrue towards the end of the forest cycle; typically 30-40 years from planting when the forest reaches the optimum financial rotation. This time lag between investment in afforestation and benefits arising creates a difficulty in securing investment. The attractiveness of forestry to farmers is further diminished as farmers in general wish to remain in the business of producing traditional agriculture products which delivers a revenue stream on a shorter rotation than that provided by forestry. Furthermore, once a farmer plants his land with trees the land must remain in forestry, this is a condition of the felling licence. Taking land out of agriculture on a permanent basis is also a factor in preventing farmers from planting their land with trees. Market failure is therefore in the conversion of land use from agriculture to forestry. It is in this context that non repayable grants and premiums are regarded by the Department as the most effective way to incentivise land owners to plant their land with trees in respect of both broadleaves and conifers. Without these incentives only a very small amount of land would be planted, this is borne out by the low level of planting that took place before the 1980's and before the introduction of the western package afforestation scheme (WPS). In the ten years prior to the introduction of the WPS in the 1980's the average annual rate of afforestation was 227 ha per annum. There were varying levels of State grants from circa 1931 onwards but none of which would cover anything approaching the costs of afforestation and maintenance up to year five.

While the programme is based on 100% state aid support, the Department of Agriculture, Food and the Marine will work closely with NewERA during the course of the programme to explore and where appropriate develop other sources of institutional, industry and private funding/investment for afforestation.

2 Strategic Context of the Forestry Programme 2014 – 2020

2.1 National Policy

2.1.1 DAFM's, Statement of Strategy 2011-2014;

The Department's Statement of Strategy includes the following goal: "*Promoting economic, social and environmentally sustainable farming, fishing and forestry*". Strategic actions under this goal include the following:

- Develop and implement measures, schemes and services that underpin a rural economy.
- Collaborate with other organisations to deliver policies on environmental sustainability and biodiversity.
- Enhance the development of a sustainable and diverse forestry sector.
- Implement measures to promote use of non-food crops for energy production.

The measures proposed in the new programme are consistent with these goals. Forest management is largely a rural activity and spending on the new Forestry Programme will filter down to rural communities. The creation of new forests will also fuel future economic activity in these areas. All forestry activities funded under the programme must be conducted in line with the principles of Sustainable Forest Management (SFM). In this regard, foresters and forest owners must adhere to the 'Code of Best Forest Practice – Ireland' and the suite of environmental guidelines (currently under review). The new Innovative Forest Technology Scheme will assist in the development of a sustainable forestry sector by providing support for technologies that promote the protection of our environment (e.g. variable tyre pressure systems for forest machinery). Forestry for fibre, agro-forestry, and the tending and thinning of broadleaf woodland all contribute towards meeting Ireland's renewable energy targets through increased use of forestry biomass to generate heat and power.

2.1.2 Forest products and people – Irelands forest policy – a renewed vision

The document entitled "Forest Products and People - Ireland's Forest Policy – A Renewed Vision" is a review of forest policy in Ireland. It sets out a number of action points, as follows:

- *To increase the forest area in accordance with sustainable forest management principles, in order to support a long term sustainable roundwood supply of 7 to 8 million cubic metres per annum.*
  The Afforestation Scheme described in this document is the principle response to this action.

- *To ensure the sustainable management of the forest resource in accordance with best practice thereby ensuring its capacity to provide the full range of timber and other benefits.*
- *To ensure that afforestation, management of existing forests and development of the forest sector are undertaken in a manner that enhances their contribution to the environment and the capacity to provide public goods and services.*
  Support for afforestation and forest roading are subject to the principles of SFM, as described in the Code of Best Forest Practice and the suite of environmental guidelines.

- *To maintain a healthy forest environment through sustainable forest management, early detection and control measures for pests and diseases.*
  Support for forest reconstitution will contribute towards this aim. For example, the Reconstitution of Woodland (*Chalara*) Scheme provides support to forest owners to clear affected ash plantations and to replant with an alternative species.

- *To ensure the availability of suitable programmes of education and training across the sector and research programmes targeted at identified needs.*
  Knowledge transfer and information actions as well as support for producer groups will address the need to support forest holders to manage their forests in an appropriate and sustainable way.

2.1.3 Food Harvest 2020

National policy is also framed by the Smart, Green Growth message of "Food Harvest 2020". Proposed measures aimed at addressing these objectives are as follows:

- *Smart* – Knowledge transfer and innovation features strongly in proposed measures such as Knowledge Transfer Groups, Targeted Training, and Advisory Services. Combining measures may also feature, in order to gain synergies between complementary activities.

- *Green* – Support for the creation of new forest and woodlands will contribute to resource efficiency and the shift to low carbon economy, by providing a sustainable and renewable raw material for industry and renewable energy[1]. Support for native woodland establishment and conservation will contribute to the expansion, protection and enhancement of Ireland's native woodland ecosystems and the delivery of various eco-system services, particularly in relation to wider habitat linkage and the protection of water. The Forest Genetic Reproductive Material measure will support the conservation of native forest genetic material and improve the resilience of Irish forest species to disease and the effects of climate change.

- *Growth* – The range of measures proposed provides for a number of supports aimed at encouraging growth and maintaining viability. Investment in new technology and the restructuring of the Afforestation Scheme are designed to attract more land holders into forestry, thereby increasing the number of applications and the size of forests planted, and are examples of the growth-oriented measures being proposed. Support for forest management plans will help to plan for the future development of forestry in Ireland and facilitate the mobilisation of timber resources to processers in accordance with best practice. Management plans can also be used in support of felling licence applications. The Forestry for Fibre measure will help to increase the supply of small diameter roundwood.

2.1.4 Irelands Prioritised Action Framework (PAF) For NATURA 2000

Priority measures for NATURA 2000 set out under Ireland's Prioritised Action Framework (version 2, 2014) include the following:

[1] Analysis relating to carbon throughout the document is based on research undertaken for the forestry policy review exercise entitled "Forest products and people – Irelands forest policy – a renewed vision".

- Development of measures, within appropriate schemes, to improve conservation condition and consolidate existing woodland habitats and increase connectivity.
- Implementation of measures to restore/retain and expand woodland habitats of high conservation value in order to reduce fragmentation and encourage connectivity.
- Development of practical mitigation and alternative forestry practices in the top Freshwater Pearl Mussel catchments.
- Implementation of specific forestry measures/plans for species.

Measures included in this new Forestry Programme will contribute to these aims. Afforestation and agro-forestry supports will help connect existing woodlands and other natural and semi-natural habitats within the landscape, thereby reversing habitat fragmentation and increasing connectivity. The establishment and conservation elements of the Native Woodland Scheme can be used on a strategic basis in this regard, particularly in relation to highly sensitive areas such NATURA sites and sensitive waterbodies, etc.. Both elements of the Native Woodland Scheme are incorporated into the proposed Catchment Forest Management Plans for the priority eight Freshwater Pearl Mussel Catchments, and into the related KerryLIFE project for the Caragh and Kerry Blackwater Catchments. These plans are being developed to ensure that all forestry activities within these areas are consistent with the aim of protecting the Freshwater Pearl Mussel and its habitat. With careful planning, the creation of new native woodland and conversion of conifer forest to native woodland on strategically located sites along watercourses will help intercept sediment and nutrient runoff from surrounding land, thereby delivering wider ecosystem services relating to the protection and enhancement of water quality. Conifer afforestation projects within water-sensitive areas will also include (site permitting) a strategically positioned plot(s) of Native Woodland Establishment (GPC 9 &10), as a water protection and enhancement measure.

Funding has recently been approved for the KerryLIFE+ project, entitled "Sustainable land use management for the conservation of the freshwater pearl mussel" (LIFE13 NAT/IE/000144). This project aims to demonstrate sustainable management techniques for forestry and farming in FPM Caragh and Kerry Blackwater catchments, aimed at restoring the FPM to favourable conservation condition. This project has significant potential to inform future policy decisions on best practice regarding forestry in FPM catchments. KerryLIFE is a partnership project involving National Parks & Wildlife Service, the Forest Service (DAFM), Nitrates, Biodiversity & Engineering Division (DAFM), Coillte, Teagasc and the South Kerry Development Partnership, and will focus heavily on securing ownership of the project amongst the local community within the project area. KerryLIFE will run from July 2014 to December 2019. Its overall budget is almost €6 million. Almost half of the €550k commitment by the Forest Service to this project is for native woodland creation under both elements of the Native Woodland Scheme.

2.1.5 Government policy on renewable energy

Bioenergy is anticipated to play a significant role in further displacing fossil fuels, especially in the larger heat users in the commercial and industrial sector, stimulating local economic activity and improving the country's net trading position. The National Energy Efficiency Action Plan and National Renewable Energy Action Plan scenario for renewable heat assumes that the historic rate of deployment of biomass use for heat continues to 2020. Further, additional biomass CHP installations are likely, driven by the feed-in tariff for

biomass CHP and the expected contribution from building regulations requiring some renewable heat.

Other drivers of forest-based biomass demand will include co-firing for electricity generation. In line with Government policy, Bord na Móna has gradually increased the proportion of co-firing with biomass at its Edenderry plant, achieving 22% co-firing in 2012. On the domestic front, the Carbon Tax, which was extended to solid fuels from the 1st May 2014, has a strong role in incentivising the use of renewable such as wood fuel.

Strategic Goal number 2 of Ireland's Strategy on Renewable Energy 2012 - 2020 calls for "A sustainable bio energy sector supporting renewable heat and power generation". Support for forestry is seen as a key contributor in meeting this goal. Forest roads, forestry for fibre, and the tending and thinning scheme will all help to increase the level of supply of forest-based biomass and to sustain it into the future. These schemes also support the national climate policy launched in April 2014, which calls for sustainable development, climate adaption and resilience.

A new Bioenergy Strategy (unpublished at the time of drafting) is also expected to support the aims and objectives set out in this plan for increasing the supply of forest based biomass.

2.2 EU Policy Framework

2.2.1 Europe 2020

"Europe 2020, A Strategy for Smart, Sustainable and Inclusive Growth" sets the strategic views of the European Union for the next programming period. It defines precise objectives and corresponding targets for the EU to be achieved by the year 2020. All Union policies (including CAP) are expected to contribute to the objectives and targets of Europe 2020.

The following table summarises how this programme will contribute to Europe 2020.

Europe 2020	Contribution of the new Forestry Programme
Smart Growth	Potential contribution of the new Forestry Programme to the SMART Growth Priority, specifically through: • Actions promoting the uptake of technology, building skills and collaborative working through advice and knowledge transfer activities, should promote the forestry sector to become more competitive and economically sustainable. This should support knowledge and innovation and contribute to future increases in employment and value added in the forestry sector.
Sustainable Growth	Potential contribution of the new programme to the SUSTAINABLE Growth Priority, specifically through: • Actions targeting the increase of biomass energy in the forestry sector, which will assist in the Europe-wide push to promote the use of renewable energy. • Additional afforestation will secure carbon sequestration for the longer term. • Actions specifically targeting the sustainability of the forest ecosystem, which includes action to increase habitat and other actions which will improve environmental quality.
Inclusive Growth	Limited contribution to the INCLUSIVE Growth Priority, specifically through: • Some consistency with actions which include social well-being as an objective (e.g. the creation of local woodland amenities under the NeighbourWood Scheme) and the role the forestry sector can play in this through promoting and increasing accessibility to the forest resource (e.g. forest road construction and subsequent use for forest access). • The programme may also provide wider employment opportunities, but the investment in this element is modest.

Table 3: Programmes contribution to Europe 2020

2.2.2 CPR, Rural Development Regulation and State Aid

The Common Strategic Framework sets the strategic vision of the EU for the use of five funds provided for under the EU's Cohesion Policy, the Rural Development Policy and the Maritime and Fisheries Policy (European Structural and Investment Funds known as ESI funds). The Common Provisions Regulation (CPR) represents the common strategic guidelines of the Union for all the ESI funds for the next programming period. In this way, the five funds will better contribute to reaching the Europe 2020 objectives for smart, sustainable and inclusive growth. The CPR aims to achieve this through the setting of 11 thematic objectives, some of which are linked to the six priority or focus areas set out in the Rural Development Regulations. These are as follows:

Focus Area 1: Fostering knowledge transfer and innovation in agriculture, forestry, and rural areas	
Focus Areas of Rural Development Regulation	**Thematic Objectives of the CPR**
(a) Fostering innovation, cooperation and the development of the knowledge base in rural areas	1. Strengthening research, technological development, innovation
(b) Strengthening the links between agriculture, food production and forestry and research and innovation, including for the purpose of improved environmental management and performance	1. Strengthening research, technological development, innovation
(c) Fostering lifelong learning and vocational training in the agricultural and forestry sectors	10. Education, skills and lifelong learning
Focus Area 2: Enhancing farm viability and competitiveness of all types of agriculture in all regions and promoting innovative farm technologies and the sustainable management of forest	
(a) Improving the economic performance of all farms and facilitating farm restructuring and modernisation, notably with a view to increase market participation and orientation as well as agricultural diversification	3. Enhancing the competitiveness of SMEs, the agricultural sector and fisheries and aquaculture
(b) Facilitating the entry of adequately skilled farmers into the agricultural sector and, in particular, generational renewal.	3. Enhancing the competitiveness of SMEs, the agricultural sector and fisheries and aquaculture
Focus Area 3: Promoting food chain organisation, including processing and marketing of agricultural products, animal welfare and risk management in agriculture	
(a) Improving competitiveness of primary producers by better integrating them into the agri-food chain through quality schemes, adding value to agricultural products, promotion in local markets and short supply circuits, producer groups and organisations and inter-branch organisations	3. Enhancing the competitiveness of SMEs, the agricultural sector and fisheries and aquaculture
(b) Supporting farm risk prevention and management	3. Enhancing the competitiveness of SMEs, the agricultural sector and fisheries and aquaculture
(a) Restoring, preserving and enhancing biodiversity, (including in Natura 2000 areas, in areas facing natural or other specific constraints), high nature value farming, and the state of European landscapes	5. Promoting climate change adaptation, risk prevention and management[2]
(b) Improving water management, including fertilisers and pesticides management	5. Promoting climate change adaptation, risk prevention and management
(c) Preventing soil erosion and improving soil management	5. Promoting climate change adaptation, risk prevention and management
Focus Area 5: Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors	
(a) Increasing efficiency in water use by agriculture	6. Protecting the environment and promoting resource efficiency
(b) Increasing efficiency in energy use in agriculture and food processing	4. Supporting the shift towards a low-carbon economy in all sectors
(c) Facilitating the supply and use of renewable sources of	4. Supporting the shift towards a low-carbon economy in all

energy, of by-products, wastes and residues and of other non-food raw material, for the purposes of the bio-economy	sectors
(d) Reducing green house gas and ammonia emissions from agriculture	4. Supporting the shift towards a low-carbon economy in all sectors
(e) Fostering carbon conservation and sequestration in agriculture and forestry	4. Supporting the shift towards a low-carbon economy in all sectors
Focus Area 6: Promoting social inclusion, poverty reduction and economic development in rural areas	
(a) Facilitating diversification, creation and development of small enterprises, as well as job creation	8. Promoting employment and supporting labour mobility
(b) Fostering local development in rural areas	9. Promoting social inclusion and combating poverty
(c) Enhancing the accessibility, use and quality of information and communication technologies (ICT) in rural areas	2. Enhancing access to and use and quality of information and communication technologies

Table 4: Focus areas and thematic objectives

The Forestry Programme set out in this document will be 100% State Aid funded and is therefore not part of the Rural Development Programme. However, the rules that govern the programme must be in line with the RD Regulation in order to be consistent with the internal market. Therefore, the specific measures set out within this document will be clearly linked to the focus areas described in Table 4 above. This will also demonstrate the contribution that these activities will have towards achieving CPR objectives and goals of Europe 2020.

2.2.3 EU Forest Strategy

The EU Forest Strategy identifies the key principles needed to strengthen SFM and to improve competitiveness and job creation, particularly in rural areas, while ensuring forest protection and the delivery of ecosystem services. The new Forestry Programme has been designed with these principles in mind:

- *Fostering the competitiveness and sustainability of the EU's Forest-based Industries, bio-energy and the wider green economy*

  The afforestation policy outlined in this document will not only support Ireland's efforts to reach the demanding greenhouse gas emission reduction targets but will also reduce dependence on fossil fuels and support the transition to a low carbon economy.

  Schemes under the Afforestation and Creation of Woodlands measure along with the Forest Roads measure, implemented in accordance within the principles of SFM, will encourage the development of a sustainable forest sector. Additional forests and forest roads will help Ireland achieved a total sustained timber production target of between 7- 8 million m^3. This level of cover will create the critical mass required to support an indigenous industry that can achieve a real rate of return on the investment in terms of processing capacity and employment. The Forestry for Fibre Scheme will deliver additional forestry biomass for energy, thereby helping to replace fossil fuels in the production of heat and power. Forest roads will facilitate thinning, thereby ensuring that this material is also available for renewable energy purposes. The Woodland Improvement Scheme is also aimed at accessing more timber for fuel, as well as promoting the proper management of broadleaf woodlands and leading to healthier and more productive broadleaf forests.

- *Forests in a changing climate*
  Ireland has only 10.7% forest cover as opposed to the EU average of 38%. This low level of forest cover limits the contribution that forests in Ireland can make to climate change issues such as flood alleviation and climate change mitigation. The measures

being introduced in this Forestry Programme can contribute towards climate change mitigation in the following ways:

— Increasing forest carbon absorption (sequestration) capacity, by planting trees on un-forested land (i.e. afforestation and creation of woodland, including native woodlands) and by increasing biomass accumulation through better forest management (Forest Roads, Woodland Improvement, Forestry for Fibre).
— Conservation of existing forests under the Native Woodland Conservation Scheme.
— Support for seed stands and seed orchards will help develop improved planting material for future forests.

Forest Management Plans (FMPs) based on the principles of SFM are being supported under this Forestry Programme. The Native Woodland Scheme in particular will also contribute to soil protection and improving water quality.

The above actions are also supportive of the EU's strategy on adaptation to climate change.

2.2.4 EU Biodiversity Strategy

The new forestry programme has taken into account the aims and objectives of the EU's Biodiversity Strategy. This can be demonstrated as follows;

- The Afforestation Scheme requires a minimum of 10% broadleaf component. Furthermore, sites over 10 ha must have 15% open space and retained habitat, smaller sites generally achieve this target also. The 30% broadleaf target has been set for the overall Afforestation and Creation of Woodland measure.
- Support for Forest Management Plans is being provided. These plans must adhere to the principles of SFM which in Ireland are underpinned by the National Forest Standard, Code of Best Forest Practice and the supporting suite of environmental guidelines (currently being reviewed).
- Approvals for afforestation within Hen Harrier SPAs will not issue, pending the formulation of the Threat Response Plan for the species, led by National Parks and Wildlife Service (NPWS), unless otherwise agreed by NPWS and the European Commission.
- The Forest Service is currently drafting Catchment Forest Management Plans for the Priority 8 Freshwater Pearl Mussel Catchments. Based on the Forest Service Appropriate Assessment Procedure and a forestry operations options matrix, all measures supported under this Forestry Programme for sites located within these catchments will incorporate the protection of FPM and its habitat.
- The Forest Service Native Woodland Scheme (NWS) is aimed at protecting and expanding Ireland's native woodland resource. Two separate elements under the scheme provide funding to landowners for: (i) the appropriate restoration management of existing native woodlands (including conversion of non-native forest to native woodland) (NWS Conservation); and (ii) the creation of new native woodland on 'greenfield' sites (Native Woodland Establishment GPC 9 &10). As well as promoting native woodland ecosystems, these elements can be used strategically to deliver additional eco-system services on a landscape level, such as increasing connectivity

between natural and semi-natural habitats and the protection and enhancement of water quality in relation to, e.g., the Water Framework Directive and Freshwater Pearl Mussel.

- The Native Woodland Scheme underpins the commitment by Government to account for natural capital values in national accounts by 2020 as stipulated in the EU Biodiversity Strategy by investing in native woodland assets which provides timber, non-timber and public goods values. These include biodiversity, recreation, carbon sequestration, protection of water quality, public health and quality hardwood. The investment made under the NWS can readily be applied to the 'costs' side of the balance sheet.
- The agro-forestry measure will also contribute towards the preservation and enhancement of biodiversity, by creating new broadleaf woodland habitats.

2.2.5 EU-2020 renewable energy and greenhouse gas emission targets

2.2.5.1 Renewable energy

Under the Renewable Energy Directive, Member States have taken on binding national targets for raising the share of renewable energy in their energy consumption by 2020. Ireland's target is 16%, while the target across the EU is 20%. The Forest Road Scheme is aimed at encouraging private forest holders to build roads and access first thinnings. This timber is an important source of material for domestic firewood as well as forest-based biomass for CHP and power-only generation. The scheme will therefore contribute towards Ireland's efforts in reaching this target. The Woodland Improvement Scheme aimed at the tending and thinning of broadleaf woodlands, will have a similar effect.

Commission proposals for post-2020 renewable energy targets are currently being discussed. The European Commission has proposed a 27% target for the market share of renewable energy sources. The European Parliament supports a figure of at least 30% renewable energy sources. Member States and stakeholders are divided over the appropriate level of ambition and over the need for binding targets for renewables. Regardless of the target figure agreed or whether the target is binding or not, energy prices are increasing and the move to renewable energy is very much in Ireland's interest (Ireland's fossil fuel imports are valued at €6.5billion per year, SEAI). Forests planted under the Afforestation Scheme set out in this Forestry Programme will contribute to meeting renewable energy targets post-2020.

2.2.5.2 Climate change mitigation

The ability of forests to store and sequester atmospheric carbon and to provide fuels and solid wood products are an important means of reducing greenhouse gas concentrations. Forests are included in the accounting framework for the second commitment period of the Kyoto Protocol (2013-20). Forestry and land use and land-use change (LULUCF) is not included in the EU Effort Sharing Decision (2013-2020), but stock changes must be reported under the EU LULUCF Decision. The Decision states that "… *The Decision should therefore, as a first step set out the accounting rules applicable to greenhouse gas emissions and removals from the LULUCF sector and therefore contribute to policy development towards the inclusion of the LULUCF sector in the Union's reduction commitment*."

In a recent statement in May 2014, the Environmental Protection Agency advises that even under the best case scenario, where all relevant policy measures are adopted and fully implemented, Ireland will not reach this target. This is likely to increase the level of emission

reductions required post-2020, when the inclusion of LULUCF can play a role in addressing the level of ambition.

This area is developed more fully in the Section 4.

2.2.6 EU Policies relating to land use

Europe 2020 Strategy has the following aim: "*By 2020, EU policies take into account their direct and indirect impact on land use in the EU and globally, and the rate of land take is on track with an aim to achieve no net land take by 2050*." The 7th Environment Action Programme for the EU calls for targets to be set to limit land take. To respond to these political mandates, the Commission is working to bring together the common elements from these processes to ensure that EU land management is based on sustainable principles. This is expected to result in a communication on "Land as a resource" in 2015. The aim is to:

- Raise awareness about the value of land as a resource for crucial ecosystem services (provisioning, regulating, cultural, etc.), about how the gap between land demand and the availability of the resource can increase, particularly in the context of global challenges, and about how to deal with synergies and trade-offs between land multiple functions;
- Provide pointers for further action at EU level. Through evaluating the effectiveness of current policy instruments at National, EU and global levels, it would define the sustainable level of ambition for a set of objectives and assess options for EU contribution to a more sustainable management of land as a resource.

The measures presented in this Forestry Programme document are consistent with these aims, as forestry is a multifunctional resource that delivers social, environmental and economic benefits. Furthermore, the establishment of forestry under the new Forestry Act will give the Minister powers to ensure that clearfelled forests are replanted, thereby helping to prevent more land being converted into artificial areas.

2.2.7 NATURA 2000 and Water Framework Directive

2.2.7.1 NATURA 2000

Ireland has a rich natural heritage as outlined in the Actions for Biodiversity 2011 – 2016 report. It is home to over 31,000 species, with only 10% of these being familiar species such as mammals, plants or birds. There are at least 7,000 species of algae and fungi which have not yet been fully described. The strategic plan for Ireland's biodiversity is *"That biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally."*

Almost 10% of the country is considered to be of prime importance for nature conservation. This comprises 423 SACs, 154 SPAs and 45 Ramsar sites. Of Ireland's SACs, 36 have woodland as the predominant habitat type, and half of these are located in the counties of Cork, Galway and Wicklow. Additionally, there are 75 Natural Heritage Areas (NHAs) and 630 proposed Natural Heritage Areas (pNHAs) in Ireland. Ireland has a significant number of internationally important habitats totalling 58 of those listed in Annex 1 of the Habitats Directive. Of these, 16 are deemed to be priority habitats at the national level, including limestone pavements, machair, turloughs and active peatlands,

There are five native woodland types found in Ireland that are recognised under the EU Habitats Directive as being natural habitat types of Community interest whose conservation required the designation of Special Areas of Conservation (SACs);

- Old oak woodland with holly and hard-fern
- Alluvial woodland (*)
- Bog woodland (*)
- Yew woodland (*)
- Hazel/ash woodland occurring on limestone pavement (*)

Four of these woodland types (as indicated by *) are listed as priority habitats under Annex I, as they are restricted in distribution across the EU and therefore are at most risk of disappearing. For this reason their conservation value is considered to be of great importance.

Forestry is not listed as one of the key threats to protected habitats or annex species in the National Parks and Wildlife Service Report "The Status of EU Protected Habitat and Species in Ireland", but is identified as a pressure on both. Forestry does, however, have the potential to adversely impact on protected species such as the Freshwater Pearl Mussel and the Hen Harrier, and on important habitats such as active raised bogs and blanket bogs, particularly with regard to direct pressures from inappropriate forest operations, as well as habitat alteration and fragmentation.

The Freshwater Pearl Mussel is protected under Annex II and Annex V of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive). There are two types of FPM mussel: *Margaritifera margaritifera,* which is the more common species and present in 139 of Ireland's rivers; and *M. durrovensis,* which is unique to Ireland and extremely rare, only being present in the River Nore. FPM is listed as critically endangered in the Republic of Ireland and it is recognised that forestry activity represents a potential source for sediment and nutrients that can enter the watercourse and damage FPM populations. As a consequence of this risk, eight catchments have been prioritised for their conservation in Ireland and action taken to develop detailed Catchment Forest Management Plans for each. These plans are currently been drafted by the Forest Service. Nationally, the Native Woodland Scheme will form an important part of the forest sector's strategy in protecting the Freshwater Pearl Mussel.

Hen Harriers are also a listed species and are on Annex 1 of the Birds Directive (79/409/EEC). The species is classed as vulnerable at a European scale (Forest Policy Review Group, 2013a). Historically, afforestation put pressure on the bird species as it removed significant areas of suitable habitat consisting of heather moors and extensive farmland. As a result, the species has had to adapt to nesting in young conifer plantations. However, canopy closure prevents ongoing use of forests for nesting and foraging, and fragments suitable open habitats at a landscape level. Also, evidence suggests that nests in second rotation forests have low breeding success. A Threat Response Plan is currently being prepared for the Hen Harrier led by the National Parks & Wildlife Service, and no planting within these SPAs is being approved at the time of drafting this programme.

Otters (*lutra lutra*) are protected under the Wildlife Act 1976, and are listed in Annex II and Annex IV of the EU Habitats Directive (92/43/EEC). The deliberate disturbance of otters and the destruction of their resting and breeding places is an offence. A total of 44 Special Areas of Conservation (SACs) have been designated for the species.

Kerry slug (*Geomalacus maculosus)* is listed in Annex IV of the EU Habitats Directive (92/43/EEC), meaning that it is strictly protected wherever it occurs. It is an offence to deliberately disturb the species or damage or destroy its breeding or resting place. It is also an offence under the Wildlife Act 1976 to deliberately destroy or damage the slug or its habitat. A total of 7 SACs have been designated for the Kerry slug.

As required under the Habitats Directive, in relation to SACs and SPAs, all applications for forestry approvals / licences and grant aid are subjected to screening, and where required, appropriate assessment, to ensure no possibility of a significant effect on a NATURA site, either alone or in combination with other plans or projects. Full details of the Forest Service Appropriate Assessment Procedure (AAP) are set out in the Forest Service AAP Information Note (consolidated version, March 2013).

It must also be recognised that the precise location of protected species is often not known. This is particularly relevant to certain species of flora (e.g. small white orchid), insects (e.g. marsh fritillary butterfly) and birds, making it difficult to assess the likely impact of forest operations on such species.

The Department will utilise relevant research findings to identify and develop appropriate mitigation measures aimed at avoiding adverse impacts on Natura habitats and species. The Strategic Research Agenda contained in the Forest Research Ireland FORI report (DAFM, 2014) presents a menu of research needs which can improve the delivery of ecosystem services. These include:

- Continued research into appropriate forest planning and management within key species habitats focussing on selected habitats and/or species protected by legislation or on a particular habitat types and/or species.
- Investigate and quantify the impact of forestry on raptors and devise mitigation measures if necessary.
- Explore the influence of forest age, structure and size with regard to predator (e.g. fox, corvids and mustelids) numbers, distribution and their impact on ground nesting birds breeding in clearfelled and pre-thicket areas within the forest or in adjacent habitats.

2.2.7.2 Water Framework Directive

The Water Framework Directive (WFD) is aimed at improving water quality throughout the EU. It applies to rivers, lakes, groundwater, and coastal waters. WFD implementation requires the development and implementation at national level of River Basin Management Plans (RBMP). They are valid for a six year period and the current plans run from 2009-2014. Eight RBMPs have been identified on the island of Ireland for the purpose of implementing the Directive. Three of these are shared with Northern Ireland (Shannon, Neagh Bann, and North Western), four RBDs are wholly within the state (Eastern, South Eastern, South Western and Western) and one is wholly within Northern Ireland (North Eastern).

The plans summarise the waterbodies that may not meet the environmental objectives of the WFD by 2015 and identify which pressures are contributing to the environmental objectives not being achieved. The plans describe the classification results and identify measures that

can be introduced in order to safeguard waters and meet the environmental objectives of the WFD.

Measures for Forestry (including specific forestry legislation) is set out in the document entitled *Programme of Measures & Standards for Forest & Water* (November 2008), compiled by the Western River Basin District Project on behalf of the WFD National Programmes of Measures – Forest & Water Working Group. The Forest Service has recently reported on its progress towards implementing these measures.

On the specific issue of aerial fertilisation, this activity has been subject to a licensing system since 2006, with the European Communities (Aerial Fertilisation) (Forestry) Regulations 2012 (S.I.125/2012) revoking and consolidating previous regulations. 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. 100 metres from drinking water abstraction points, 50 metres from an aquatic zone). Applications for aerial fertilisation are assessed by District Inspectors based on the iFORIS GIS database system and an assessment of the silvicultural requirements of the crop and the environmental sensitivities of the site. AA 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.

As set out in the UK Forestry Research document *Woodland for Water: Woodland measures for Meeting Water Framework Directive objectives* (2011), considerable scope exists for the use of woodlands and forests to proactively contribute to protecting and enhancing water quality. The Forest Service promotes the delivery of this eco-system service, primarily through the Native Woodland Scheme, thus contributing towards the aims of the Water Framework Directive.

3 Climate Change Mitigation and National Policy objectives

The role of forestry in reducing the effects of climate change both in terms of carbon sequestration and as a replacement for fossil fuels is one of the principle supporting arguments for state funding of the Forestry Programme. This section examines the role forestry plays both in climate mitigation and in addressing any potential shortfall in Ireland's carbon emission balance sheet.

3.1 Scientific background – the Intergovernmental Panel on Climate Change

The Fifth Assessment Report of the Intergovernmental Panel on Climate Change[3] (IPCC) has assessed changes in the earth's climate and atmosphere since meteorological observations have begun. Working Group I, which was tasked with summarising the Physical Basis of Climate Change, has concluded:

Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes. This evidence for human influence has grown since AR4. It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.

Mitigation of climate change was dealt with by Working Group III, which concluded, inter alia:

AFOLU (agriculture, forestry and land use) plays a central role for food security and sustainable development. The most cost-effective mitigation options in forestry are afforestation, sustainable forest management and reducing deforestation, with large differences in their relative importance across regions. In agriculture, the most cost-effective mitigation options are cropland management, grazing land management, and restoration of organic soils

3.2 International and EU processes and national reporting modalities

Forestry and land use is included in accounting for the second Kyoto Commitment period (2013-2020), which the EU has committed to ratifying. Accounting for all managed forests is a mandatory requirement. Significant research on forests and climate change has been carried out in Ireland over the past two decades, which has resulted in the development of CARBWARE - the national forest carbon reporting tool. This enables high level reporting of carbon stock change in Irish forests, in conjunction with the National Forest Inventory. CARWARE also enables the impact of afforestation rates on future climate change mitigation by forests and forest products to be estimated.

Negotiations towards a new international climate change agreement for the post 2020 period have been underway for some time. The goal is to agree a new global agreement on tackling

[3] Source documents available at http://www.ipcc.ch/

climate change by the end of 2015. Land use and forestry is referred to in the current Ad-hoc Durban Platform (ADP) negotiation texts. A number of developed and developing country Parties have indicated a potential role for the forest sector in a post 2020 regime, through measures such as afforestation and avoidance of deforestation (particularly in developing countries).

Land use, land-use change and forestry (LULUCF) is not part of the EU Effort Sharing Decision (406/2009/EC). However under Decision 529/2013/EU Member States must report carbon stock changes resulting from LULUCF, It is largely a transcription of UNFCCC Durban Decision 2/CMP.7. It covers the period up the end of 2020.

The Commission Communication - *A policy framework for climate and energy in the period from 2020 to 2030* - covers the post 2020 period. The role of forests in climate change mitigation is dealt with in Section 4.2: "To ensure that all sectors contribute in a cost-effective way to the mitigation efforts, agriculture, landuse, land-use change and forestry should be included in the GHG reduction target for 2030." The communication also deals with possible frameworks for the inclusion of LULUCF post 2020 in an effort sharing type arrangement, in a separate pillar, or a combination of both. Consultations and negotiations are ongoing on the form of inclusion of LULUCF.

3.3 Marginal abatement costs and expected and potential mitigation contribution from forests and forest products

Previous work undertaken by SEAI and McKinsey[4] has indicated the large scale mitigation potential of forests and forest products in Ireland, with an associated marginal abatement cost in the region of €30/ t CO2 (2009).

Appendix 5 of the forest policy review provides scenario analysis of the impact of afforestation rates on future wood supply and a planting rate of 15,000 ha/yr as being needed to avoid a significant supply slump. Similar analyses of the impact of afforestation rates on the forest sink[5] show a significant fall off in the strength of the forest sink post 2035, which can be attenuated by afforestation rates being maintained at around the 10,000 ha/yr level for the period up to 2035 (and beyond)

The future contribution of forests and forest products in Ireland in mitigating climate change has been estimated by Black[6]. The underlying assumptions are an afforestation rate of 8,000 ha/yr to 2030 (based on historic patterns) and a deforestation rate of 400 ha/yr (based on the recently completed second National Forest Inventory). In round numbers the annual mitigation potential from new forests (afforestation) established since 1990 averages 5.3 million tonnes of CO2 per annum over the 2021-2030 period. The vast majority of the lands where the mitigation arises were used for agriculture before being converted to forest.

[4] http://www.seai.ie/Publications/Renewables_Publications_/Low_Carbon_Opportunity_Study/Irelands_Low-Carbon_Opportunity.pdf

[5] Hendrick and Black. 2008. Climate change and Irish forestry. COFORD Connects Note. COFORD, Dublin.

[6] Black 2013**.** Greenhouse gas emission/removal projections for the Irish forestry sector 2012-2030, Paper submitted by DAFM to DG Clima, May 2013.

	ARD				FM			
	kHa	Gg CO_2 eq			kHa	Gg CO_2 eq		
Year	**Area**	**Total excl HWP**	**HWP**	**Total incl HWP**	**Area**	**Total excl HWP**	**HWP**	**Total incl HWP**
2012	294.03	-3,418.04	-266.03	-3,684.06	457.44	-1,764.49	-645.52	-2,410.00
2013	302.03	-3,712.29	-241.72	-3,954.01	457.04	-1,561.87	-745.91	-2,307.78
2014	310.03	-3,775.33	-396.39	-4,171.73	456.64	-1,224.39	-753.63	-1,978.02
2015	318.03	-3,442.33	-652.62	-4,094.95	456.24	-1,170.94	-802.94	-1,973.87
2016	326.03	-4,135.99	-596.15	-4,732.15	455.84	-1,034.94	-717.40	-1,752.34
2017	334.03	-3,914.43	-671.48	-4,585.91	455.44	-484.77	-782.13	-1,266.91
2018	342.03	-4,074.56	-583.02	-4,657.58	455.04	306.28	-942.16	-635.88
2019	350.03	-3,880.14	-707.30	-4,587.44	454.64	501.32	-949.20	-447.88
2020	358.03	-3,827.68	-1,358.51	-5,186.19	454.24	131.26	-1,010.32	-879.05
2021	366.03	-4,544.23	-825.68	-5,369.91	453.84	-469.56	-801.87	-1,271.43
2022	374.03	-4,636.20	-787.56	-5,423.77	453.44	509.77	-934.01	-424.23
2023	382.03	-4,576.53	-927.65	-5,504.18	453.04	826.71	-886.48	-59.77
2024	390.03	-4,482.88	-812.11	-5,294.99	452.64	1,074.19	-813.51	260.67
2025	398.03	-4,370.22	-1,110.23	-5,480.45	452.24	1,786.32	-835.89	950.43
2026	406.03	-4,863.80	-736.54	-5,600.34	451.84	1,993.51	-778.56	1,214.94
2027	414.03	-3,595.82	-1,477.85	-5,073.67	451.44	1,818.24	-769.94	1,048.29
2028	422.03	-3,957.66	-980.59	-4,938.25	451.04	2,236.07	-717.58	1,518.49
2029	430.03	-3,809.34	-1,469.42	-5,278.76	450.64	2,290.63	-580.08	1,710.55
2030	438.03	-2,902.22	-2,186.66	-5,088.87	450.24	3,320.44	-863.41	2,457.03
Average 2013-2020		**-3,845.35**	**-650.90**	**-4,496.24**		**-567.26**	**-837.96**	**-1,405.22**
Average 2021-2030		**-4,173.89**	**-1,131.43**	**-5,305.32**		**1,538.63**	**-798.13**	**740.50**

Table 5: Estimated emissions (+ve values) and removals (-ve values) for CO2 eq. from forests (i.e. total excl. HWP (harvested wood products)) and including harvested wood products (HWP) for afforestation, reforestation and deforestation (ARD) since 1990 and areas under forest management (pre-1990 forests, FM).

More recent work for the Interdepartmental Technical Committee on climate change indicates that an additional 4,000 ha of afforestation per annum would provide for a total sink of over 6 million tonnes of carbon dioxide over the 2021-2030 period, and increasing beyond 2030.

Furthermore, the continued use of peat and turf as energy sources erodes an important carbon sink. In many cases, individual farms are too small to consider investing in projects such as anaerobic digestion for renewable energy production and farmers that get involved in biomass production tend to do so on a small scale. Biomass production at farm level is therefore at risk of lacking the necessary scale to be competitive or big enough to assure customers that continuity of supply is safe. The forestry for fibre scheme along with the Department's Bio energy Scheme should help address this structural deficiency in the biomass supply chain. Also, there may be opportunities to encourage farmers who cut turf to switch to the forestry for fibre scheme as a means of addressing their fuel needs. This needs further consideration but is consistent with the National Peatland Strategy which seeks to reduce the dependency on peat as a source of fuel.

3.4 Climate change mitigation and agriculture and forests in the period up to 2050

The climate change mitigation impacts of afforestation are long term – and in the period up to 2050 as agriculture is predicted to gradually comprise the bulk of greenhouse gas emissions, the role of forests in balancing land based emissions is predicted to increase[7]. There is however a limit to the extent that sequestration can be provided by forests. In the longer term the mitigation benefits of forests will come from fossil fuel and materials substitution. Already one third of the forests harvested, or 1 million cubic metres of roundwood annually, is combusted for the generation of process heat, for home and premises heating and for electricity generation[8]. This is a direct saving in fossil fuel emissions and is accounted for in the forest sector, (it is excluded from the data in Table 5). The benefits of using wood products in construction and other uses are that it delays emissions from harvest, replaces energy intensive materials and acts as a long term carbon store outside of the forest. A continuing afforestation programme is needed to maintain these mitigation benefits and the role of forests in mitigating land-based emissions.

3.5 Policy coherence in relation to Food Harvest 2020, climate change and afforestation

3.5.1 Food Harvest 2020 and climate change mitigation

There is significant capacity to increase forest cover in Ireland from the current 10.7% to the 18% level referred to in *Forests, products and people*[9]– the DAFM forest policy review. The review identifies climate change mitigation, along with sustainable increases in wood production as some of the main drivers of afforestation.

Afforestation in the Irish context involves a change in land use from agriculture to forestry. There is clear policy link between moving land from agriculture into forestry, and associated climate mitigation impacts: livestock emissions are replaced by a forest sink, with attendant benefits from the use of the wood to replace fossil fuel and through the use of solid wood products as a carbon store and a substitute for materials with high embodied emissions. At the national level the effect is that new forests help to mitigate emissions from agriculture.

In 2012, the EPA estimated that achieving the Scenario A Food Harvest 2020 targets will increase projected agricultural greenhouse gas emissions from 18.8 Mt CO2eq in 2010 to 20.6 Mt CO2eq per annum by 2020, a relative increase of 1.8 Mt CO2eq, or 9.6% approximately. This increase is mainly the result of the higher number of ruminants projected under a Food Harvest 2020 Scenario A with associated increased methane emissions, as well as a concurrent projected increase in nitrogen fertiliser use, leading to increased N2O emissions. Compared to the baseline of 2007-2009 used in this assessment, an increase in greenhouse gas of 8.5% is predicted to occur. However, there are a range of mitigation

[7] Teagasc. 2014. Carbon Neutrality as a horizon point for Irish Agriculture: a qualitative appraisal of potential pathways to 2050.

[8] Woodflow 2012 COFORD Connects Note. COFORD, Dublin

[9] See http://www.agriculture.gov.ie/media /migration/forestry/forestpolicyreviewforestsproductsandpeople/00487%20Forestry%20Review%20-%20web%2022.7.14.pdf

measures available under the new Rural Development Programme such as soil and manure management, as well as national programmes in animal genetics, and other measures that are likely to reduce the impact of the Food Harvest 2020 targets as envisaged in Scenario A.

3.5.2 Ammonia and afforestation

Ammonia is an air pollutant largely emitted from agriculture. The gas is released mainly during naturally occurring processes, i.e. the breakdown of the urea excreted by farm livestock and other mammals or of the uric acid excreted by birds. Ammonia is very soluble in water and readily reacts with other substances in the atmosphere to form ammonium (NH4 +) compounds such as ammonium sulphate and ammonium nitrate. The concentration of N in foliage increases with increasing levels of N deposited from the atmosphere onto soils and vegetation. This may increase plant sensitivity to stress (for example from frost, drought and insect damage).

The agricultural sector accounts for 98% of ammonia emissions in Ireland. Ireland's national emission ceiling for NH3 under the NEC Directive is 116 kilotonnes (kt), to be achieved by 2010 and in each year after 2010. This is equivalent to an 8.8% permitted increase in emissions from the 106.6 kt 1990 baseline figure. According to the EPA in 2013, NH3 emissions from agricultural sources remain relatively unchanged between 1990 and 2011. Data for 2011 show Ireland to be 7.3 ktonnes below the 2010 limit. It states, however, given the strong performance of the agriculture sector in line with the ambitious targets of Food Harvest 2020, limiting NH3 emissions to below the 2010 ceiling in the future could become an issue. Continued research on low emission land spreading techniques and other manure management strategies is required.

3.5.3 General Coherence Relating to Agriculture and Forestry

Policy coherence between agriculture and forestry will also be enabled by continuing to facilitate land transfer from agriculture to forestry by way of grant and premium payments under the new programme, by the promotion of afforestation as a land use option by DAFM and Teagasc, and by DAFM seeking to mobilise other public and private sector investment in afforestation. Of the 79,103 farms represented by the Teagasc national Farm Survey, almost 9% or 6,966 farms nationally have forestry. The table below shows the distribution of farms with forests across the NFS farm systems. Cattle rearing and cattle other systems account for over 50% of the farms with forests.

Farm system	% of farms with forests by farm system
Dairy	16
Cattle rearing	30
Cattle other	26
Sheep	11
Tillage	13
Mixed livestock	4

Source: Teagasc NFS

Table 6 Percentage of farms with forests by farm system in 2012

This table helps demonstrate the success of land use change from agriculture to forestry under previous planting programmes.

In terms of supporting forestry there are other examples of policy coherence between the new forestry programme, direct payments and the RDP. These can be summarised as follows;

Direct payments

- Land planted under the new programme will continue to be eligible for payment of the Single Farm Payment;
- New forests planted under the programme can be included as ecological focus area;
- New forests planted under the programme are not reckonable in calculating any changes from the 95% permanent grassland rule;

Rural Development Programme

- The establishment of woodlands whose area is less than the minimum allowable under the afforestation and creation of woodlands measure is listed as a Tier 3 action under the new agri-environment scheme known as GLAS;
- The Department's Bioenergy Scheme provides grant aid for the planting of energy crops willow and miscanthus. These species are not eligible under the afforestation and creation of woodlands measure.

4 Swot and Identification of Needs

Consultation with stakeholders has been a key element in the process of designing the new Forestry programme particularly in relation to drafting the SWOT and identifying needs. The first phase of the public and stakeholder consultation began in December 2012 as part of the Department's work on developing the Rural Development Programme 2014-2020 with an invitation for submissions from interested stakeholders and the public. At the time the scope of the RDP had not been fully decided and forestry was part of the mix at that time. The focus of this exercise was on collecting stakeholder input on the Rural Development Priorities as set out in the draft Rural Development Regulation and on how these priorities might relate to the design of a new RDP for Ireland. Submissions were received from around 90 interested parties. The results of these submissions were carefully considered and combined with other work such as the preparation of Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis and a needs assessment.

A second phase of stakeholder consultation was held in mid July 2013 where a full day stakeholder workshop was held. Around 80 invited participants attended this workshop at which the preliminary findings of the SWOT analysis and needs assessment were presented. Detailed discussions took place in breakout groups at the level of each rural development priority in order to seek stakeholders' views on how they might be improved. On the basis of these discussions the draft SWOT analysis and needs assessment were further amended and developed to reflect the views of stakeholders.

Once it had been decided that a separate forestry programme was required work on a new document began. A call for submissions on a draft outline of the programme was issued in March 2014 followed by a stakeholder event, this time focusing on specific forestry measures. A total of 50 stakeholders attending this meeting and 25 written submissions were received. Further bi lateral meetings were held during the month of May. The outcome of this work was used to further develop the SWOT and needs analysis.

4.1.1 Priority One SWOT

Priority 1	Objectives
Fostering knowledge transfer and innovation in agriculture, forestry and rural areas with a focus on the following areas: **a) Fostering innovation and the knowledge base in rural areas;** **b) Strengthening the links between agriculture, food production and forestry and research and innovation; and** **c) Fostering lifelong learning and vocational training in the agricultural and forestry sectors.**	1. To increase the number of effective mechanisms/structures in place to assist in transferring knowledge to end users and other stakeholders through actions such as establishing knowledge transfer groups and providing advisory contact; 2. To increase the level of on-going training and education provided to forest holders and professional foresters through the development of an integrated training system; 3. To increase levels of proactive forest management and appropriate tending, thinning and harvesting interventions; and 4. To reduce the gap between the provision of research results and the application of said results in policy and practice.

Strengths

- Food Harvest 2020 provides a strategic policy framework for the provision of support for innovation and R & D
- Teagasc has a strength in combining research and extension to deliver solutions/advice at farm level
- Strategic research agendas for agriculture and food production prepared
- Training needs analysis for forestry completed in 2011
- Variety of bodies capable of providing appropriate education/advisory services forestry including Teagasc, ITGA, Society of Irish Foresters, Irish Farmers Association, Forest Owner Groups and professional foresters
- Discussion group programmes (renamed knowledge transfer groups) have been successful for dairy, beef and sheep (DPD, BTAP, STAP)
- Recent development of education programmes developed by Teagasc/Universities/ITs
- Participation in KTG can provide assistance to farmers to comply with environmental, plant health and cross compliance standards and may encourage initiation of a forest certification process
- The Forestry Development Unit of Teagasc (Agriculture and Food Development Authority), has an excellent track record in providing knowledge transfer activities to farm forest holders and managers
- Forest Research Ireland FORI, a Strategic Research Agenda for forestry has been prepared and published. It is available at *http://www.agriculture.gov.ie/media/migration/research/whatsnew/ForestResearchIreland20143Layout1091014.pdf*
- Support from DAFM (and other sources) through its COFORD Forest Research Programme for forestry focused research projects

Weaknesses

- Over-emphasis in some areas of research on academic outputs rather than on policy and practice needs, technology transfer, commercialisation and innovation
- Foresters may require up-skilling in areas as forestry moves from establishment to thinning
- Focus on initial (base level) education rather than lifelong learning
- Limited high speed (download and upload) broadband and ICT Technologies available in rural areas at an affordable cost
- There is a current lack of awareness among some forest holders of the need for time-critical management interventions such as tending and thinning of forest crops;
- Many forests have multiple species requiring varying management strategies;
- High cost of some specialised training;
- Lack of machines and machine time for operator training;
- The absence of a clearly defined career path for people interested in getting involved in forestry makes it difficult to recognise forestry as a lifelong career choice;
- How to encourage forest holders/farmers/foresters to avail of advisory services and/or professional development services.

Opportunities

- Potential to exploit innovative opportunities in the area of biomass
- Opportunity to better forest holders and forestry professionals in the delivery of environmental and public goods
- Potential in agro-forestry and the supporting advisory services
- Continuing support for forest research to address key issues for the sector with the potential to inform policy and develop new practices and technology
- Forecasted increase in timber coming on stream will increase demand for skilled operatives in the forestry industry;
- New education & training needs are also forecast within the timber processing sector,especially in the wood energy sub-sector;
- Increasing output from private farm forests means that demand from private forest holders and managers for information and training on forest management will increase.
- It is also anticipated that programme participation can provide a mechanism to raise awareness, monitor and maintain plant health.
- Potential to ensure best returns from forestry and good forestry management practices through advisory services
- Opportunity to delineate career path in forestry / possible apprenticeship model.
- Participation and co-operation of forest holders in group structures provide an efficient means of managing and harvesting small plantations through pooling of resources and knowledge

Threats

- Cutbacks in research, training and advisory service allocations due to budgetary constraints
- Young people emigrating from rural areas – loss of innovation potential
- Possible lack of knowledgeable foresters and skilled operatives
- Lack of funding and training facilities could result in less than efficient harvesting, with knock-on impacts on costs and overall industry competitiveness;
- With the expansion of the forest sector there is a risk that accident rates may increase because of lack of training and competence across the sector as a whole;
- Without the appropriate level of awareness, knowledge and skills among forest holders the required level of thinning may not take place or delayed thinning could threaten crop stability; this will result in forests not reaching their productive potential and potential loss of economic and environmental value and a deterioration in forest health as well as shortage of vital supply to the timber processing sector;
- Knowledge gap in relation to environmental obligations, health & safety, etc.
- Difficulty for forest holders in making contacts in the industry and in marketing and selling timber.
- A group structure can lead to sharing and savings in the development of forest infrastructure e.g. co-operative forest roads

4.1.2 Priority Two SWOT

Priority 2	Objectives
Enhancing competitiveness of all types of agriculture and enhancing farm viability, with a focus on the following areas: **a) Facilitating restructuring of farms (facing major structural problems), notably farms with a low degree of market participation, market oriented farms in particular sectors and farms in need of agricultural diversification; and** **b) Facilitating entering into the farming sector, and in particular generational renewal in the agricultural sector.**	1. Planting of agro-forestry systems across the country and clear outcomes. 2. Farmers not interested in conventional forestry due to long rotations beginning to see forest for fibre as a real opportunity for diversifying their income.

Strengths

- Significant grant aided investment in forestry under current programme
- Engagement in knowledge transfer groups leads to improved efficiency and profitability
- Farmers who have diversified have widened their income earning potential

Weakness

- No traditional of agro-forestry in Ireland amongst farming community.
- Ash was the most suitable species for this type of forestry but is not available due to Chalara

Opportunities

- Agro-forestry presents opportunities for farm output diversification; it represents a more sustainable landuse in some areas and would also deliver wider animal welfare, ecosystem, wildlife, landscape and biodiversity benefits.
- Agro-forestry and forest for fibre offer shorter rotations for farmers who might not necessarily have planted under conventional forestry due to long rotations.

Threats

- Success of agro-forestry may be undermined by pressures to intensify agricultural production.
- Agro-forestry systems are relatively new in Ireland and the level of farmer/landowner interest is as yet unknown.

4.1.3 Priority Three SWOT

Priority 3	Objectives
Promoting food and non-food chain organisation and risk management in agriculture, with a focus on the following areas: **a) Better integrating primary producers into the food chain through quality schemes, promotion in local markets and short supply circuits, producer groups and inter-branch organisations and promoting animal welfare; and** **b) Supporting farm risk management.**	1. Maintenance of existing and establishment of new producer groups. 2. Linking producer groups with knowledge transfer groups where possible;

Strengths

- Robust pest and disease monitoring systems

Weaknesses

- Distance from market can be a problem for small producers.
- Small scale growers have little bargaining power with processors and contractors. Small forest size can limit opportunities to maximise efficiency in production and marketing.
- Development of collaboration between growers is at an early stage
- Joint selling and marketing initiatives may require new skills
- Overall number of producer groups is small at 26

Opportunities

- Diversification of farm income could be part of a risk management strategy both for farmers and the rural economy
- Partnerships and collaborative mechanisms can be a risk management tool
- Producer groups and other collaborative mechanisms can improve the uptake of the findings of forest based research, the adoption of technology and the application of best practice at plantation level.

Threats

- Global market volatility and price variations – For example Ireland is a net exporter of sawnwood and panel boards in fact 89% of all panelboards are exported; so Ireland is very susceptible to fluctuations and trends in international markets.
- Threats associated with extreme weather, 7,000ha of forests damaged by windblow in 2014
- Consumers continually seeking value which places demands on producer from the retailer
- Pest and disease threats particularly Chalara and Phytophtora

4.1.4 Priority Four SWOT

Priority 4:	Objectives Priority 4
Restoring, preserving and enhancing ecosystems related to agriculture and forestry, with a focus on the following areas: **a) Restoring, preserving and enhancing biodiversity, including in Natura 2000 areas and high nature value farming, and the state of European landscapes;** **b) Improving water and land management and contributing to meeting the WFD objectives; and** **c) Improving soil, erosion, fertiliser and pesticide management.**	1. To increase the levels of forest cover within the programme region through the incorporation of practices that restore, preserve and enhance biodiversity in all areas including Natura 2000 sites; 2. To increase the number of forestry schemes which contribute positively to the environment by contributing towards the protection of soil and water quality as well as habitats of endangered species such as the Hen Harrier and Freshwater Pearl Mussel. 3. To increase the level of sustainable round-wood and timber production within the programme region through afforestation and managing existing forests. 4. To increase the number of new forest plantations grown from new and existing seed stands located in Ireland; and 5. To increase levels of biodiversity in forests through the provision of new and existing seed stands located in Ireland.

Strengths
• Ireland has maintained an afforestation grant aid scheme since the early 1980s
• Nearly half of forest holders have two or more grant applications
• Wide range of non-market public goods provided by forests (e.g. recreation, biodiversity, water quality, landscape enhancement, carbon sequestration etc.)
• Extensive network of hedgerows and other landscape features which are central to ecosystem enhancement - Approximately 450,000 hectares or 6.4% of the country is covered by hedgerows, individual trees and small woodland patches and scrub
• Peat soils cover 20.6% of Ireland's land area, with the greater part of this in the form of blanket bog in upland areas. This high level of peatland is a good carbon store in its undisturbed state. (In Ireland, near intact peatlands may actively sequester, on average, 57,402 tonnes of carbon per year.)
• Extensive network of Natura 2000 sites/areas already identified
• According to the Environmental Protection Agency (EPA) 80% out of around 1,500 water bodies have either high/good/moderate status, only 20% therefore are seen as either poor or bad.
• Ireland has a better than average water quality relative to other MS. According to Eurostat for 2008 Ireland's gross nutrient balance (kg per ha) is 50 compared to EU 27 which is 49.
• According to the EPA 2012 report (p.47) (based on EEA data) Ireland typically ranks within the top third of 30+ countries assessed in terms of water quality for 2007-2009 period. (Phosphate, ammonia, nitrate and biochemical oxygen demand)
• River basin management plans (under WFD) are in place and could be built on
• Forest management plans for Priority 8 Fresh water Pearl Mussel Catchments nearing completion. No new planting in Hen Harrier SPAs pending completion of the Threat Response Plan.

- Good track record in establishing open area and retained habitat zones within new forests.
- An estimated 18 million recreational users visit Ireland's forests each year[10] and these visits are facilitated in some areas by the existing forest road network
- Track record in running schemes designed to enhance biodiversity and amenity value of woodland
- The level of broadleaf planting as a percentage of overall afforestation has increased from 23% in 2003 to 31% in 2012, although initial indications are that broadleaf planting was less than 24% in 2013
- Ireland's geography, i.e. island northwest of the continent of Europe in the north Atlantic Ocean,, the relative newness of the forest estate and the enforcement of plant health regulations have enabled Ireland to remain relatively free of many of the major European forest diseases and pests
- Border inspection posts are in place where import inspections are carried out to ensure compliance with the EU Plant Health Directive
- The *Forest Protection Guidelines* (Forest Service, 2002) provide guidance to forest holders on how to identify and manage potential threats to forests
- The *Prescribed Burning Code of Practice* (DAFM, 2012) provides basic information on planning, preparing and implementing safe, effective controlled fires for land management purposes
- Forest Recreation in Ireland – A Guide for Forest Owners and Managers was published by the Forest Service in 2006
- Support amongst environmental NGO's for measures which support native woodland conservation
- Positive contribution to Ireland's climate change targets - Irish forests established since 1990 sequestered an estimated 17 million tonnes of carbon dioxide over the 5-year commitment period of the Kyoto Protocol (2008-2012)
- Contributes to the diversification of farm incomes
- The forestry and forest product sectors support an estimated 12,000 jobs in the Irish economy[11]; primarily in rural areas
- The value of the forestry and forest products sectors to the Irish economy is estimated be in the region of 2.9 billion per annum[12]
- Existing support measure for the development of forest road infrastructure has been in place since the 1980s and has become an established framework for funding the construction of forest roads.

Weaknesses

- Low level of forest cover; In Ireland this is just under 11% of land area compared to an EU27 average of 38%;
- There is a limit to the amount of land available for forestry;
- Most native woodlands are generally small and isolated, with poor connectivity and many are damaged by invasive non-native species and / or overgrazed;
- Most farm forests are small and this affects viability. From 1997 to 2002, forests greater than 20 hectares or more accounted for up to 40% of total planting annually, whereas in recent years this has fallen to 16% of total planting; The average size of forests planted in recent years has reduced to 6.5ha;
- The up-front cost of investing in forestry is significant;

[10] Fitzpatrick Associates, *Economic Value of Trails and Forest Recreation in the Republic of Ireland* (2005)
[11] Áine Ní Dhubháin, Craig Bullock, Richard Moloney and Vincent Upton: *An Economic Evaluation of the Market and Non-Market Functions of Forestry*
[12] Áine Ní Dhubháin, Craig Bullock, Richard Moloney and Vincent Upton: *An Economic Evaluation of the Market and Non-Market Functions of Forestry*

- Long-term investment – many years before a return on forest investments;
- Without financial support, little or no new forest planting would occur;
- There is a growing recognition that existing controls are insufficient to respond to the ecological, economic and cultural threats posed by invasive alien species;
- Some broadleaves sites planted post-1980 require fertilising but aerial fertilisation is not an option;
- Access to credit is difficult for all investments at this time;
- Recent analysis undertaken by the National Forest Inventory indicates that 60% of forests which are at a development stage where they could be thinned but have not been thinned;
- Ireland's native woodland resource is small, comprising c.100,000 hectares, or 1.2% of the national land area;
- Most native woodlands are isolated and widely dispersed, with poor connectivity;

Opportunities

- Restructure the forest species mix to improve its resilience to fire, pests, disease and climate change, and diversify the range of wood products;
- Protect water quality though riparian planting and contribute to achievement of water quality targets, river basin catchment management, flood risk reduction and soil stabilisation;
- A growing market for large and small roundwood to both the processing sector and the renewable energy sector;
- Forestry is now an attractive option for investors seeking relatively risk free long term investments (e.g. pension funds);
- Increase woodland cover and improve connectivity between existing woodlands;
- Increase carbon sequestration and climate change mitigation and adaptation;
- Increased cooperation with the Northern Ireland Executive and its Government Departments in formulating all-island strategies for control of pest and disease outbreaks
- Native woodlands can contribute to protecting water quality; river basin catchment management, soil stabilisation and protection; They can alleviate flooding through appropriate riparian planting and protect and enhance biodiversity

Threats

- Threats to endangered species and habitats, e.g. Freshwater Pearl Mussel (*Margaritifera margaritifera*), hen harrier (*Circus cyaneus*); active blanket bog and fens;
- Fires destroyed 1,500ha of forest in 2011;
- *Chalara fraxinea* and *Phytophtora ramorum* have emerged as serious threats to Irish forests;
- Rhododendron, a highly invasive species and a sporulating host of P, *ramorum*, is difficult and costly to control, threatens biodiversity and reduces the potential of forests to deliver ecosystem services, e.g. along rivers;
- Serious damage is being done to broadleaf trees, notably beech, sycamore and oak, by grey squirrels through bark stripping. Browsing and other tree damage caused by deer is also a significant problem;
- Without investment in thinning and tending, the productive and biodiversity potential of these forests will not be achieved;
- A delay in undertaking first thinning operations will affect the long-term economic viability of forests;
- Failure to thin reduces the volume of material to the processing sector, thereby affecting the economic viability of processing facilities.

4.1.5 Priority Five SWOT

Priority 5	Objectives
Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors, with a focus on the following areas **a) Increasing efficiency in water use by agriculture;** **b) Increasing efficiency in energy use in agriculture and food processing;** **c) Facilitating the supply and use of renewable sources of energy, of by products, wastes, residues and other non-food raw material for purposes of the bio-economy;** • **Reducing greenhouse gas and ammonia emissions from agriculture and improving air quality; and** • **Fostering carbon sequestration in agriculture and forestry.**	1. To increase the amount of renewable sources of energy grown by the forestry sector, farmers and non-farming landowners and increase the levels of management of forests required to maximise biomass production; 2. To increase the carbon sink potential of forestry through increasing the levels of forest cover grown from seed stands\orchards located in Ireland. 3. To increase access to forest biomass through building forest roads.

Strengths

- Temperate Irish climate and its rain fed agriculture and forestry. Between 2000 and 2010 Ireland's average rainfall was 1,936 mm per year;
- Irish forests established since 1990 will sequester 17 million tonnes of carbon dioxide over the 5-year commitment period of the Kyoto Protocol (2008-2012). In today's terms this equates to a value to the Irish Exchequer of €340 million;
- Research and advisory system in place for energy crop sector development;
- Small scale bio-energy schemes are already underway in Ireland;
- Private forestry is fast becoming a considerable wood and energy resource. Most of the private forest estate has been established over the past two decades, with many areas now entering into production;
- Ireland has maintained an afforestation scheme since the early 1980's and the land area under forest cover has increased to 10.7%.

Weaknesses

- Lack of market development for energy sector. High investment costs required for energy sector development and lack of finance for same
- Continued use of peat and turf as energy sources eroding an important carbon sink - according to

the SEAI 2% of energy consumption in 2011 was from all peat products. Peat for fuel is not used in many other Member States.
• Farmers that get involved in biomass production are small scale.
• Low levels of production of renewable energy from agriculture and forestry
• Ireland has a very low level of forest cover by percentage of land area in the EU at (just under 11%) compared to an EU average of 38%.
• Behavioural and cultural changes required at farm level to adopt to new practices

Opportunities

• Potential of SRF/energy crops/agro-forestry to further foster carbon sequestration in agriculture and forestry
• Reduced use of fossil fuels
• Support development of biomass supply groups (CoOps) and web based map of supply
• Opportunities to develop knowledge transfer groups to encourage the planting of biomass crops and carry out on schedule thinning
• The market for firewood in Ireland increased by 35% during the period 2006 – 2010. This growing market is proving a steady source of demand for forest thinning.

Threats

• International (and national) pressures to further reduce GHG emissions from the agriculture sector
• Irish agriculture will contribute little to reducing absolute carbon emissions in line with the Effort Sharing Decision (ESD) - the ESD has established binding emission reduction targets for MS in the period 2013 – 2020 for non ETS sectors including agriculture. This requires a 20% reduction in GHG emissions in Ireland by 2020 compared to its 2005 levels.
• Ireland would fail to meet its targets under Gothenburg Protocol which sets emission ceilings for four pollutants: sulphur, NOx, VOCs and ammonia
• Failure to meet targets set under the Renewable Energy Directive 2009/28/EC that the EU will reach a 20% share of energy from renewable sources by 2020 (Ireland's target is 16% but for 2011 is only at 6.5%
• Rising energy costs are a risk to farm viability - CSO shows that, as an agricultural input, energy costs (excluding VAT) have increased by more than 50% between 2005 and 2012 and there was an almost 9% increase between 2011 and 2012. (see also priority 3)
• Biomass production at farm level is at risk of lacking scale to be competitive or big enough to assure customers that continuity of supply is safe
• Forest fires (for example they destroyed 1,500ha in 2011)
• Failure to adequately incentivise forest owners could lead to risk of forest damage, threatened risk on investment and failure to deliver Forest Environmental Services

4.1.6 Priority six SWOT

Priority 6	Objectives
Promoting social inclusion, poverty reduction and economic development in rural areas, with a focus on the following areas: **a) Facilitating diversification, creation and development of new small enterprises and job creation;** **b) Fostering local development in rural areas; &** **c) Enhancing accessibility to, use and quality of information and communication technologies (ICT) in rural areas.**	1. To increase the levels of recreational forest use amongst local communities.

Strengths
• A community Led local development (CLLD) approach has been integrated into delivery of local development programmes in rural areas over a long period of time
• Communication, roads and water Infrastructure in rural areas is generally of a good quality which facilitates access to goods and services for the rural population
• Rural Ireland has a strong and recognisable rural identity and a high-quality and evocative landscape which has the capacity to act as a tourism resource for the economic development of rural areas. Forestry enhances this resource
• There are well-established networks in rural areas which facilitate the establishment of community-based services and strong and self-reliant rural communities which can be used to promote development in rural areas
• Forest Recreation in Ireland – A Guide for Forest Owners and Managers was published by the Forest Service in 2006;
• A Neighbourwood Scheme has been run successfully since 2001;
• A positive image is associated with providing support for community based amenity forests with public access;
• There is good demand for the scheme - applications for support under the scheme in 2012 exceeded the available budget; and
• With significant local support a NeighbourWood project can impact positively amongst an entire local community, and create a very positive view of forestry as a land use.

Weaknesses

- Accessibility/Availability of key services is a challenge. While the Irish settlement pattern means that the potential availability is high, the reduction in the spread of available services and the very limited nature of rural public transport means that significant parts of the rural community can remain isolated from such services; and this lack of access is often associated with the poorest members of society
- Lower education and life-long learning opportunities in rural areas with access to such services being more difficult
- A difficult environment for innovation and entrepreneurship with low levels of entrepreneurs and entrepreneurship in rural areas
- While broadband availability has improved the quality and cost of broadband services is still of a lower quality than is required
- Incomes in rural areas are relatively low with average farm incomes being significantly less than the average industrial wage and the median income being even lower
- Distance from markets and the need to transport goods to market adds cost to rural enterprises
- There is an inherent risk in supporting urban or peri-urban planting schemes as the trees can be removed at any stage without regulation, thereby putting funds at risk.

Opportunities

- Government proposals to align the work of Local Development and Local Government should streamline and improve delivery with increased cooperation between local government and local development facilitating more efficient and effective delivery of development interventions at local level
- The use of established social capital to facilitate more sustainable development, including enterprise development, in rural areas
- The use of community-based enterprise development to increase jobs in rural areas
- The development of eco-tourism and integrated activity-based tourism as an economic driver in rural areas eg. glamping in forest settings.
- The provision of forest amenities for public use has a significant public health benefits;
- Forests with high public usage provide significant educational value.
- The forest estate in Ireland is well distributed across the country and as such can provide recreational opportunities to an increasingly urbanised population;
- There may be financial benefits to be generated by opening up forests to the public, entrances fees for nature walks, picnic areas, fishing, camping, horse riding, biking and other outdoor pursuits;
- The demand for public access to private forests is expected to increase as forests mature.
- Improve public knowledge about the multifunctional benefits of sustainably managed forests and woodlands;
- Increased public use of forests may encourage the conversion of poorly performing forests to high-nature value forests for public use; and
- Recreational forestry could compliment public tree planting programmes undertaken by local authorities and non-governmental organisations.

Threats
• Continued high unemployment in rural areas and particularly long-term unemployment
• Continued reduction in service provision in rural areas leading to a pressure to leave those areas
• Declining population in rural areas giving rise to a negative cycle of service loss and population loss – rural population decreased from 39% of total population in 2006 to 38% in 2011 (CSO Census 2011 – part 1 , page 13)
• Aging of rural population with a consequent increase in poverty and exclusion and loss of enterprise development potential – dependency ratios are lowest in urban areas
• Rural population failing to participate in the life-long learning and up-skilling required by the modern economy
• Increasing fossil fuel costs limiting the mobility of the rural population
• Young people emigrating from rural areas (see also priority 1)
• Private forest holders are often reluctant to open up forests to public for fear of litigation;
• The high cost of developing forest areas for public amenity is prohibitive;
• Amenity forests incur considerable costs but rarely generate income.

4.2 Identification of Needs

Title or Reference of Need	Priority 1			Priority 2		Priority 3		Priority 4			Priority 5					Priority 6			Cross-Cutting		
	1A	1B	1C	2A	2B	3A	3B	4A	4B	4C	5A	5B	5C	5D	5E	6A	6B	6C	Environment	Climate	Innovation
Increase the Level of Forest Cover which is well below the EU average								X	X	X					X				X	X	
Increase supply of forestry biomass to bridge expected supply gap by 2020													X						X	X	
To support private forest holders in actively managing their forests	X	X	X																		X
Enhance the environmental and social benefits of new and existing forests								X	X	X						X	X		X	X	

Table 7: Identification of needs and RD priorities.

Table 4 describes in full the focus areas and priorities referred to in the table above.

5 Description of the strategy

5.1 Programme design considerations

There are two principle constraints that have the potential to limit the development of the forest sector in Ireland, these are as follows;

i) Failure of the marketplace to properly incentivise farmers and other land holders to invest in afforestation in the first instance or to manage their forest properly for maximum benefit;
ii) Availability of land for afforestation is limited due to competing land uses.

The measures proposed for the new programme have addressed these constraints by doing the following;

a) Restructuring premium payments to improve the incentives for land holders to afforest while at the same time reducing the cost and liability to the exchequer;
b) Introducing schemes which can yield a return in a shorter period of time and which can co exist alongside existing agricultural activities; and
c) Including schemes which are aimed at mobilising timber thereby increasing the supply of material to sawmills, boardmills and to the renewable energy sector.

5.1.1 Market Failure

Market failure is the rationale for State support for afforestation in Ireland. Despite the many benefits that forestry brings, most accrue towards the end of the forest cycle (typically 30-40 years from planting when the forest reaches the optimum financial rotation. This time lag between investment in afforestation and benefits arising creates a difficulty in securing investment. The need for State intervention is also supported by an examination of private planting from 1926 up to the introduction of the Western Package Scheme (WPS) in the 1980s. The average annual rate of afforestation was 219 ha while the figure was 227 ha per annum in the ten years prior to the introduction of the WPS. There were varying levels of State afforestation grants from 1931 onwards but none of which would cover anything approaching the costs of afforestation. Therefore without State aid afforestation would fail to reach 1,000 ha per annum.

Given that Ireland has such a low level of forest cover (11%) compared to the rest of Europe (37%), state support is required in order to encourage reluctant land owners to convert their land (forever) to an alternative land use. These farmers are used to getting an annual income, so the change to forestry, where no profit can be realised until 40 years after the investment, requires state aid. Market failure is therefore in the conversion of land use from agriculture to forestry. In terms of investment the state does not provide 100% of the total investment, farmers invest their land in forestry. The cost to the state (or other third parties) if it had to purchase lands at the levels afforested in 2013, based on an average market price of €23,218 /ha (IFA Agricultural Land Price Report 2013), could have cost in excess of €145 million (6252 ha planted in 2013). The existing model where land owners contribute their lands for afforestation reduce considerably the cost of funding an afforestation programme nationally with state aid at the levels proposed.

There is also market failure when it comes to building forest roads and first thinning - in order to extract the timber a forest road is required. There are significant construction costs in terms of building the road and for the thinning operation. The revenue generated from first thinning does not cover the cost of the operation (road building and thinning). Recent figures show that timber at first thinning stage will fetch €400/ha standing, however the road will cost in the region of €1,000/ha.

In relation to the mobilization of timber, a report produced in 2007 showed that the full potential of farm forestry was not being realised and that some 900,000 m^3 had reached or passed the first thinning stage but had not been felled. More recently, in 2012 the National Forest Inventory showed that 23% of the national estate had reached thinning stage but had not been thinned, this represents 164,000 ha. Despite the costs associated with first thinning, when it is carried out it will yield higher returns in the long run as, the NPV of a forest plantation is higher where thinning is carried out compared to those that have not been thinned. This is down to the fact that thinnings accelerate growth on the remaining trees and bring forward harvest.

In summary, the current afforestation model requires land owners to convert their agricultural lands to forestry. In return the state provides him with funds to cover the costs associated with planting, including a payment towards the income foregone. The state in return receives the benefits from carbon sequestration and increases the level of forest cover nationally. The creation of sustainable wood industries provides monies to forest owners indirectly from timber sales to facilitate and fund the reforestation of sites without grant aid in subsequent rotations.

5.1.2 Land Availability

The COFORD Council Land Availability Working Group produced a draft report which stated that availability of land for forestry may be more limited than previously thought. While 4.65 million ha are considered as having good production potential for forestry, the availability of land for forestry is constrained by land already in agricultural production or land with environmental constraints for afforestation. Nevertheless there remain significant areas of land where agriculture is physically or otherwise constrained and are suitable for afforestation.

5.1.3 State Aid Rules and the new Afforestation Scheme

Particular attention must be paid to the design of the new afforestation scheme where the level of investment represents 95% of the total 2014 forestry budget. The new CAP regulations and in particular Regulation (EU) No 1305/2013 of the European Parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) means that the structure of the afforestation scheme must be amended to reflect the new rules. The main changes required are as follows;

- Reduction in the number of annual premium payments down from 20 to 12;
- Introduction of a single rate which does away with the non farmer/farmer distinction.

The new RD regulation also provides for the introduction of new measures. These are as follows;

- Agro – forestry
- Forestry for fibre
- Forest genetic reproductive material scheme
- Forest Technology
- Knowledge Transfer Groups.

In relation to the number of premium payments that can be made the option of increasing the number of premiums is still available to the Department under the General de minimis regulation. In this regard, the Forest Service has decided to avail of this option and increase the number of premiums payable from 12 to 15 under de minimis.

5.2 Justification for the needs selected

5.2.1 Need Number 1: Increase the level of forest cover

The recently completed European Forest Sector Outlook Study II (EFSOS II), carried out jointly by the UN Economic Commission for Europe and the Food and Agriculture Organisation of the UN (UNECE/FAO 2011a), examined a range of policy options and challenges facing the forest sector up to 2030. This study included an examination of wood supply and the provision of other goods and services by the forest sector if current supply trends continued. This scenario predicts that consumption of forest products and wood energy will grow steadily and wood supply will expand to meet this demand. Forest area is expected to expand, increasing by 6%, or 12 million ha by 2030, an area slightly larger than Bulgaria. In 2030 demand for wood will be 20% higher than in 2010 with slower growth from the forest products industry and faster growth for energy. To meet this demand, all components of supply will have to expand, especially harvest residues. In all scenarios examined in the EFSOS II report Europe will remain a net exporter of wood and forest products. Projections also show a steady rise in prices of forest products and wood over the whole period, driven by expanding global demand and increasing scarcity in other regions. Within Ireland itself demand for roundwood is forecast to increase from 4.29m^3 in 2011 to 6.338m^3 by 2020.

Within this context of growing future demand for forest products, Ireland's forest cover of just 10.7% compared with the European average of 38% demonstrates a clear opportunity for expansion. In order to do so Ireland must increase its forest cover over the coming decades. One of the principle aims of the new forestry programme is to contribute towards the increase in forest cover to 18% by mid century. This level of cover will create the critical mass required to support an indigenous industry that can achieve a good rate of return on the investment in terms of processing capacity and employment. The estimated domestic timber production required to achieve this critical mass is a sustainable supply of between 7 and 8 million m^3 per annum. This would require approximately 1.2 million ha of forest with an even distribution of age classes. The challenge for Ireland is to ensure that measures introduced within this plan contribute towards this target in a manner which addresses in equal measure the social, environmental and economic benefits that forestry can deliver.

5.2.2 Need Number 2: Increase supply of forest-based biomass to bridge expected supply gap by 2020 and beyond

To meet the stated targets for renewable energy by 2020, the gross demand for wood biomass will increase 2-fold, from 1.589 m^3 in 2011 to 3.259 m^3 in 2020. Such a steep increase in

wood biomass demand will require a high level of investment in the sectoral supply chain, and will significantly increase the competition for wood fibre. This demand is likely to increase beyond 2020 as the cost of fossil fuels continues to rise and higher renewable energy targets are set by the EU in response to climate change and fuel security considerations. At a national level demand for forest-based biomass is set to grow as indicated previously.

5.2.3 Need Number 3: To support private forest holders in actively managing their forests

In order to address this need the programme focuses on both the forest holder and the professional forester. Enabling the forest holder to make the most appropriate decisions can be achieved through targeted training, advisory services and producer and knowledge transfer groups; while professional foresters are encouraged to adopt a lifelong learning approach through continuous professional development.

Figures show that approximately 8,000 forest owners have plantations of 12- 22 years old which are approaching or have already reached thinning stage. The majority of these forest owners have no ongoing forest management or planning regimes in place. With many of these plantations approaching first thinning, critical management decisions and in many cases, time critical harvesting interventions are required. In a recent survey of forest owners, it was also found that if owners have attended extension activities they were 2.5 times more likely to thin. Timely and appropriate management can increase forest resilience, forest productivity and enterprise profitability. There is a need to build significantly on the existing skills and knowledge base and develop a culture of forest management among forest owners.

5.2.4 Need 4: Enhance the environmental and social benefits of new and existing forests

There is a need to take advantage of the opportunities that exist for developing Ireland's national estate so that environmental and social benefits offered by existing or new forests can be optimised. This is particularly the case in relation to broadleaved forests established since the 1980s. The cost to forest owners for carrying out the type of operations envisaged to meet this need, whether it is managing existing woodlands or planting close-to-nature native woodland is prohibitive. In most situations the benefits (if any) of these activities are not apparent in the short to medium term. If these objectives are to be achieved as part of meeting this need, it is necessary for support to be provided to act as an incentive to forest holders to carry out these activities. In this context the response to meeting this need includes two schemes which enhance existing broadleaf forests and create new broadleaf plantations; both of which provide a range of environmental services, and the production of hardwood.

Maintenance and establishment of existing and new seed stands will also be supported to foster the increased use of selected and indigenous reproductive material in order to provide for well adapted and productive forests. A technology scheme is being introduced which is aimed at improving efficiency and reducing environmental impacts that forestry activities might have at site level. The scheme will also facilitate investment in new technology which has yet to be proven under Irish conditions.

5.3 A description of the choice and combination of measures

5.3.1 Need Number 1: Increase forest cover

Priority 4: Restoring, preserving and enhancing ecosystems related to agriculture and forestry		
Focus Area	Quantified Target	Measure
(a) Restoring, preserving and enhancing biodiversity, (including in Natura 2000 areas, in areas facing natural or other specific constraints), high nature value farming, and the state of European landscapes	Up to 8,290 ha per annum of new forests	Investment in forest area development and viability of forests
(b) Improving water management, including fertilisers and pesticides management		
(c) Preventing soil erosion and improving soil management		
Priority 5: Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors		
(e) Fostering carbon conservation and sequestration in agriculture and forestry	Up to 8,290 ha per annum of new forests	Investment in forest area development and viability of forests
Priority 6: Promoting social inclusion, poverty reduction and economic development in rural areas		
(a) Facilitating diversification, creation and development of small enterprises, as well as job creation	Up to 8,290 ha per annum of new forests	Investment in forest area development and viability of forests

In order to increase forest cover the Afforestation and Creation of Woodlands measure includes four different schemes each of which has a different emphasis. These are described briefly as follows;

i) The afforestation scheme is mostly aimed at wood production but which retains a 15% open area\retained habitat obligation for plantations over 10 ha. These forests must also contribute to the target of achieving 30% broadleaf planting on an annual and national basis (higher premiums will be offered to help achieve this aim). There is also a requirement that all conifer afforestation applications with stream/river/lake frontage (as per OS maps) within certain water-sensitive catchments must include a Native Woodland Establishment (GPC 9 &10) plot at least 20m wide (tree-to-tree) adjoining the aquatic buffer zone (where site suitability for broadleaves allows). This approach to the creation of new woodlands balances wood production and environmental/ecological potential of forests.

ii) The Native Woodland Establishment Scheme (comprising GPC 9 &10) is a biodiversity and eco-system delivery focused measure aimed at supporting the creation of new native woodland on 'greenfield' sites, to expand Ireland's native woodland resource and associated biodiversity. Its focus will be 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. Support under this measure is provided for the planting of native broadleaves to reflect the most appropriate native woodland type(s) of each site. Future close-to-nature forest management is a requirement under this measure. Wood

production realised through CCF silviculture is allowed, where compatible with the ecological objectives.

iii) Forestry for fibre provides an opportunity for land owners to plant trees for fuel or for supply to other end uses such as panel board manufacture. A different species palette is introduced here.

iv) Finally, agro-forestry is aimed at farmers who wish to plant forest but who also wish to use their land for grazing or silage. This is an opportunity for them to get involved in forestry on a small scale to grow quality wood while maintaining their existing agricultural income stream. In general terms these schemes aim to grow wood. The aim is to help ensure a sustainable source of roundwood for wood product manufacture and by doing so provide jobs in rural areas and help farmers diversify their income.

In keeping with the principles of sustainable forest management the suite of afforestation schemes presented here will deliver a range of forest services such as water quality protection, soil protection, habitat provision, as well as amenity and recreational services. The new Sustainable Use Directive, will also be an important feature of these schemes ensuring proper pesticide management. Furthermore, these forests will contribute to the mitigation of climate change in the following manner;

- Sequestration – by removing greenhouse gases from the atmosphere and by increasing soil carbon and other pools;
- Abatement – by converting agricultural land, mostly used for livestock rearing, from a source to a sink of greenhouse gases;
- Substitution – by replacing imported fossil fuels with indigenous wood fuels in the production of heat and power and by replacing more energy intensive materials.

The Reconstitution scheme is also included under this measure. This scheme deals with forest holders whose plantations have suffered damage of more than 20% of the relevant forest potential. This scheme offers reassurance that subject to certain conditions that the State will support re-establishment of a plantation to its original condition which will encourage landowners to participate in the programme; this scheme also underpins state and private investment in afforestation. This scheme also reduces the risk of disease spread. Where forest holders know that there is a scheme to re establish forests damaged by natural causes they are more inclined to notify the Forest Service of any concerns they might have regarding the health of their forests. Furthermore, this scheme can also provide aid for the removal and destruction of infected material thereby reducing the risk disease spread.

Result Indicator for Need No. 1:
• Increase Ireland's Forest Resource

5.3.2 *Need Number 2: Increase supply of forest-based biomass to bridge expected supply gap by 2020*

Priority 5: Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors		
Focus Area	Quantified Target	Combination of Measures
(c)Facilitating the supply and use of renewable sources of energy, of by-products, wastes and residues and of other non-food raw material, for the purposes of the bio-economy	Up to 1,000 ha per annum of new forests for fibre and 50 ha per annum of agro-forestry	Investment in forest area development and viability of forests
	Up to 130km\annum of new forest roads	Investments in Physical Assets

The programme uses a two pronged approach to addressing this need. Firstly, support for private forest holders to build roads is crucial to encouraging first thinning thereby increasing supply of forest-based biomass. Without financial support to build forest roads it is simply uneconomical to thin and without roads there is no access to the forest. Secondly on the production side, the introduction of an agro-forestry and forest for fibre measures will provide opportunities for private growers to plant trees for energy purposes. Farmers who otherwise might not be attracted to more traditional forms of forestry either because of the long rotations before harvesting or the permanent loss of agricultural land might be more amenable to taking part in these schemes.

Finally, proper management over the rotation is essential for the health and vigour of a forest plantation and enables owners to maximise financial return. Forest management plans set out *inter alia* a thinning schedule and location of forest roads. The forest road scheme will also give preference to group applications where funding is limited.

Result indicator for Need no. 2:

- Increase in the amount of energy available from forestry[13]
- Increase in newly accessible woodland (Ha) for biomass as a result of the Forest Roads Scheme

[13] This could be measured by noting the hectares or tonnes of new wood grown through the Forestry for Fibre Scheme.

5.3.3 Need Number 3: To support private forest holders in actively managing their forests

Priority 1: Fostering knowledge transfer and innovation in agriculture, forestry, and rural development		
Focus Area	Quantified Target	Combination of Measures
(a) Fostering innovation, cooperation and the development of the knowledge base in rural areas	Maintain existing 26 producer groups; 13 new producer groups established with the same number of KTG also established 1,000 forest management plans completed per annum	Knowledge transfer and Innovation actions
(b) Strengthening the links between agriculture, food production and forestry and linking these sectors to the findings of research and innovation with particular focus on improved environmental management.	600 individual visits, 3,500 phone consultations, 20 field days and other information events Contiued support for relevant research across the 6 Priority Areas	Advisory services, farm management and farm relief services
(c) Fostering lifelong learning and vocational training in the agricultural and forestry sectors	CPD certification struction in place	

Producer groups provide a useful platform for forest holders living within a geographic catchment to combine their expertise as well as their resources for mutual benefit. Learning from your contemporaries can engender a stronger ethos for accumulating knowledge which can lead to developing a certain level of expertise in an area. Economies of scale as well as knowledge can provide the right circumstances for growers to thin where they might not have done so if a producer group hadn't existed. The knowledge transfer groups on the other hand are seen as an extension of the producer group but can also be a standalone endeavour. The focus here is more on education and transfer of innovation to end users than say, meeting the logistical challenges faced by forest holders operating on their own. It is possible that knowledge transfer groups could follow on from producer groups in so far as the same members can attend both. Also there are possibilities for combining measures so that for example beneficiaries of the technology measure are obliged to give talks at the knowledge transfer groups; or maybe individuals who have planted agro-forestry or forestry for fibre give a talk on their experiences.

Advisory services in relation to new and existing schemes provide a key support mechanism for the programme where resources are aimed at promotion and encouraging farmers to plant. Advisory services providing one-to-one clinics promote informed decision making. This measure is particularly important in the context of the new programme as a number of schemes are being introduced for the first time. Also some of the key conditions for the main afforestation scheme such as the number of premiums and the introduction of a single rate are changing.

Targeted training can be aimed at both forest holders and forestry professionals and can include seminars, field events or more formal training courses aimed at specific needs such as harvesting on sensitive sites. Continuous professional development would require that professional foresters must take part in a set number of events per year in order to remain on the list of registered foresters.

Result indicator for Need No. 3:
• Increase timber production from private sector thinnings • Increase timber production from private sector clearfell

5.3.4 Need Number 4: Enhance the environmental and social benefits of new and existing forests

Priority 4: Restoring, preserving and enhancing ecosystems related to agriculture and forestry		
Focus Area	Quantified Target	Measure
(a) Restoring, preserving and enhancing biodiversity, (including in Natura 2000 areas, in areas facing natural or other specific constraints), high nature value farming, and the state of European landscapes	1,500 ha per annum of broadleave forests thinned and tended	Investment in forest area development and viability of forests
(b) Improving water management, including fertilisers and pesticides management	300ha of native woodlands conserved per annum rising to 360 ha by year 2020 30 technology projects supported	
	350 ha of seed stands and orchards supported per annum	Forest Environment/climate service /forest conservation
(c) Preventing soil erosion and improving soil management		
Priority 6: Promoting social inclusion, poverty reduction and economic development in rural areas		
(b) Fostering local development in rural areas	10 neighbourwood projects completed Per annum	Investment in forest area development and viability of forests

The state has invested significantly in the broadleaf planting programme over the years and it is important that the benefits of these forests are maximised for society. Over one quarter of the forest estate contains broadleaf tree species. During the 1930s and 1940s the planting of conifers to broadleaves were averaging 90% to 10%. Thereafter, up to the early 1990s, broadleaves comprised 4% of afforestation. The proportion of broadleaves planted significantly increased from 1993 up to the present, with broadleaves comprising 23% of afforestation.

Schemes included in the programme to meet this need address the social and environmental aspects of forests more directly than the other schemes mentioned above; they tend to be less focussed on wood production.

The Native Woodland Conservation Scheme supports the protection and restoration of existing native woodlands (including conversion from conifer high forest to native woodland). Its focus will be 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. Part of its function is to provide for the protection of endangered species such as the Freshwater Pearl Mussel. Relevant projects in this regard might include the conversion of conifer forests growing along riparian zones to native woodlands managed under close-to- nature silvicultural systems. Ground vegetation would be encouraged to grow acting as a filter reducing sedimentation from within the catchment. This would also have the effect of stabilising vulnerable river banks and protecting the soil from erosion. NWS Conservation will also provide funding for the appropriate restorative management of ancient woodlands, Annex II woodlands, old oak forests and emerging native woodlands under threat from "scrubbing out". Wood production realised through CCF silviculture is allowed under the NWS Cons., where compatible with the site's ecological objectives.

The Thinning and Tending scheme is aimed specifically at broadleaf forests where support is provided to improve the health and vitality of these forests by removing malformed, wolf or diseased trees, by thinning to encourage growth of potential crop trees and by managing natural regeneration. These activities will improve the visual amenity of the forest thereby enhancing the landscape. Forests which have been thinned can also play an important role in soil and water protection where healthier trees are better placed to perform these functions. Broadleaf forests can slow down surface water runoff in water catchments reducing sedimentation\eutrophication of nearby watercourses. These services are enhanced by ground vegetation that is encouraged to grow once the canopy is opened up leading to more light reaching the forest floor.

The two measures referred to in the previous paragraphs are focused more so on enhancing the environmental and ecosystem services that can be provided by native woodlands. The NeighbourWood Scheme is aimed at realising the recreational and wider social benefits woodlands and forests can provide. The NeighbourWood Scheme brings communities and woodlands together, by helping local authorities and others to create 'close-to-home' woodland amenities in partnership with communities, for local people to use and enjoy. These "neighbourwoods" become part of the local identity and 'sense of place', and the benefits they create are enjoyed by local people. These benefits can be numerous and far-reaching. Neighbourwoods provide accessible opportunities for recreation and regular exercise, and offer people contact with the natural world and the changing seasons. They promote health and well-being, and provide a place for family and friends to come together and relax. They provide a venue for a wide range of community and sporting events which contribute to social inclusion, and represent an ideal 'outdoor classroom' for local school children to learn about nature and the environment. Neighbourwoods also deliver a wide range of environmental benefits, providing vital habitats for wildlife, removing atmospheric carbon, promoting air quality and improving the visual landscape.

The Innovative Forestry Technology scheme will provide financial support to assist individuals in procuring new technologies which can have a positive impact on the economic as well as environmental aspects of their business once it relates directly to the forest plantation. For example damage to forest and minor county roads can be reduced through the use of variable tyre pressure systems for the haulage of logs, chip or forest-based biomass. Innovative forest technologies which have a cost associated with them and which have not yet established a proven track record under Irish conditions could also be supported under this scheme. Inventory measurement equipment is another example of technologies that could be supported.

The Forest Genetic Reproductive Material scheme will help increase self sufficiency in the production of seed that can be used for afforestation. The following table shows the extent to which imported seed is used in Ireland;

Species	Seed (kg)	Plants (000s)	Home collected (%)	Imported (%)
Sitka spruce	200.0	27,550	5	95
Norway spruce	92.0	3,950	5	95
Lodgepole pine (South coastal)	17.5	1,410	100	
Lodgepole pine (North coastal)	13.5	5,25	75	25
Scots pine	29.5	1,105	75	25
Douglas fir	17.6	770	0	100
Hybrid larch	5.5	350		100
European larch	5.5	250		100
Western red cedar	0.35	185		100
Common alder	84.5	2,740	100	
Pedunculate oak	29,250	2,450	20	80
Sessile oak	5,400	430	100	
Birch	36.5	2,450	100	
Beech	415	293	50	50
Sycamore	175	316	100	

Table 8: Seed imports

Clearly there is a need to be less reliant on imported sources of seed and plants particularly in relation to oak and Sitka spruce. It has been confirmed that the source of *Chalara fraxinea* (ash die back) was an infected batch of imported plant material.

There are seed stands registered in Ireland but seed is not being collected from all of them. For example there are 1,395ha of sessile oak registered but 100% of all seed and plants are imported in some years. Most oak is sourced in Holland where mast years appear to occur almost annually. In Ireland the Atlantic maritime climate militates against successful seed maturity and mast years occur infrequently (2-4 years for pedunculate oak and 3-6 years for sessile oak). The problem with achieving self sufficiency in seed production is therefore infrequency of seeding, wildlife predation, vegetation management and limited numbers of collectors, in a labour intensive harvesting process. To address these issues an incentive is proposed to establish new seed stands or to provide a contribution towards the management of existing seed stands where predation and or vegetation makes seed collection difficult. This in turn would reduce the risk of disease outbreak. A Forest Genetic Reproductive Material Scheme would be promoted to both public and private forest owners calling for new stands to be identified for the register and for measures to increase seed harvest from stands

already registered. Support for the establishment of seed orchards would also contribute towards this aim.

Result indicators for Need No. 4:
• Increase self sufficiency in seed production • Increase in the area covered by locally based seed stands and production areas • Increased use of improved sitka spruce • Increase the area of native woodlands • Increase in the number of new facilities created to encourage greater public use of forests; • Increase in the number and size of new and existing public amenity forests

5.4 Description of cross cutting measures

5.4.1 Environment

The new Forestry Programme for Ireland proposes a suite of schemes which will provide a range of ecosystem services aimed at protecting water quality, improving soil stability, retaining and enhancing diverse habitats, protecting endangered species, mitigating climate change, and enhancing the visual amenity of surrounding landscapes.

First of all, schemes being introduced to create new woodlands must contain at least 15% open space and retained habitat (collectively referred to as 'Areas for Biodiversity Enhancement' or ABEs) where the size of the new forest exceeds 10 ha. The function of ABEs is to conserve and encourage the development of diverse habitats, native flora and fauna, and biodiversity on site within the future forest. In sites less than 10 ha, the open space element of ABEs should be designed in conjunction with neighbouring land use and may be reduced. Furthermore, these schemes must also contribute to the national broadleaf target of 30%, thereby contributing to a greater range of habitat types and a more diverse species mix nationally. The new programme will ensure that this target is reached by: (i) the availability of higher grant and premiums for broadleaf planting under the afforestation schemes; (ii) the requirement to include 10% broadleaves (where site quality allows) within all new individual afforestation projects; and (iii) the availability of funding under the Native Woodland Establishment measure (GPC 9&10), focused specifically on creating new native woodlands comprising a site-appropriate mix of predominantly broadleaved native species. Furthermore, a requirement is being introduced whereby all conifer afforestation applications with stream/river/lake frontage (as per OS maps) within certain water-sensitive catchments must include a Native Woodlands Establishment plot at least 20m wide adjoining the aquatic buffer zone (where site suitability for broadleaves allows).

The target of the Forestry Programme is to create up to 8,410 ha of new forests each year over the programme period, which will lead to greater supplies of forest biomass and sawlog dimension material for renewable energy uses and for wood product manufacture.

Both elements of the Native Woodland Scheme can make a particular contribution towards the protection and enhancement of water quality. For example, within key Freshwater Pearl Mussel catchments, the conservation element of the scheme can be used to convert conifer forest into native woodland at key locations along watercourses. This approach creates a

semi-natural habitat that will buffer receiving waters against the runoff of sediment and nutrients from upslope (e.g. adjoining forestry). The future management of these areas using 'close-to-nature' silvicultural techniques associated with the Native Woodland Scheme will minimise future disturbance onsite and ensure a long-term protective role.

The construction of appropriately-sited forest roads also has an important and positive impact on the environment. Forest roads allow for first thinning to be undertaken, which leads to the opening up of the canopy. Light filtering through the forest canopy will stimulate ground vegetation to grow, leading to greater biodiversity and the enrichment of the forest floor in terms of animal, plant and insect life.

The Forest Road Scheme and the NeighbourWood Scheme allow for greater access along forest roads and to forests themselves for visitors and provide recreational outlets for surrounding communities. As well as contributing to the overall well-being of these communities, accessible and attractive outdoor recreational opportunities such as those provided by forests support the important aim of creating an inclusive society, in that all can share in the enjoyment of spending time in a forest setting.

5.4.2 Climate

The afforestation programme 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. The total carbon stock in forest biomass (excluding soil carbon) is estimated to be circa 210.3 Mt of CO_2 in 2012[14]. Forest soils represent a very significant carbon pool; current estimates are that the total carbon stock in forest soils is in the region of 1,188.1 million tonnes of CO_2.

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 (under Article 3.3) over the first commitment period of the Kyoto Protocol will be 3.23 Mt CO_2 per annum. While afforestation levels proposed under the new programme will have little effect on the levels of carbon sequestered in the short term, because forests grow relatively slowly as they establish themselves over the first five years or so, these forests will make a substantial contribution to climate change mitigation in the longer term. A planting programme of 10,000 ha will also support a sustainable harvest of 7-8million m^3 roundwood per annum into the future and consequently a sustainable and meaningful contribution to climate mitigation over the long term.

5.4.3 Innovation

Knowledge Transfer Groups (KTGs) are important contributor to bridging the gap between organisations and individuals who are focussed on research and process improvement on the one hand and forest holders on the other whose enterprise can benefit from these developments. The aim will be to improve market uptake of new forest technologies, processes and concepts. There are 26 producer groups already in existence and the potential exists to use these groups as a platform for growing a network of KTGs. There could also be a tie in with the forest technology intervention which is aimed at encouraging forest holders

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

and professional foresters to invest in new technology which might not necessarily be used in Ireland, perhaps because it is untested and/or too costly.

The following example might explain better how these interventions can combine to meet this cross cutting objective. A producer group have decided that they need to carry out an inventory of their combined resource before going to market for first and second thinnings. Instead of paying a company to do this work they decide to look at the options for carrying out this task themselves. Under the technology measure funding was provided to a professional forester to buy newly developed inventory equipment from outside of Ireland. As a condition of this funding the forester must give talks and demonstrations to others interested in using such equipment. A knowledge transfer group is established from the producer group to look specifically at timber measurement and options available for owners. This KTG would then liaise with advisory services to organise training and events on the subject as well as demonstrations of equipment available such as that supported under the forest technology scheme.

5.5 Summary table

Need	RD Focus area	State Aid Measures	Indicative allocation	Schemes	Scheme Targets (2015-2020)
Increase the level of forest cover	4 (a),(b),(c), 5(e) and 6(a)	2.1.1	€173m	Afforestation	37,215
			€16.5m	NWS (Est)	2,700
		2.1.2	€0.97m	Agro Forestry	195ha
		2.1.3	€4.7m	Reconstitution	approvals = demand
Increase supply of forestry biomass to bridge expected supply gap by 2020	5(c)	2.1.1	€8.6m	Forestry for Fibre	3,300ha
		2.1.6	€30.6m	Forest Roads	690km, 600 special works
To support private forest holders in actively managing their forests	1(a), (b), (c)	2.4	€0.6m	Knowledge Transfer Groups and targetted training activities	500 participants in KTG's, specific courses funded on request from 3rd level bodies.
		2.5	€4.2m	Advisory and promotion services	600 individual visits, 3500 phone consultations, 20 field days and other events
		2.7		Establishing Producer Groups	maintain existing groups and create 13 new groups
		2.8.6	€1.8m	Forest management plans	6,000 plans over the programme
		2.1.5	€0.9m	Investment in Forest Technology	180 projects funded
Enhance the environmental and social benefits of new and existing forests	4 (a),(b),(c), 5(e) and 6(b)	2.1.4	€6.75m	Woodland Improvement (Thinning and Tending of Broadleaves)	9,000ha thinned and tended
			€7.3m	NWS (Conservation)	1950 ha
			€1m	Neighbourwood scheme	30-60 projects
		2.3	€0.42m	Forest reprodcutive material	350ha supported

Table 9: Intervention Logic

6 Description of Measures

The measures set out in the following section were subject to a consultation process with stakeholders and the public. In relation to the first of these, a stakeholder's consultation event was held on the 15th April 2014. This was attended by almost 50 stakeholders representing a range of interests across the forestry sector. Prior to the workshop, stakeholders were issued with a programme outline document which briefly described the context for the programme as well as details of proposed measures. A total of 25 written submissions were received after the consultation event which was followed by four bi lateral meetings. A draft programme document was drafted and subjected to a Strategic Environmental Assessment. Both documents underwent a public consultation process ending on the 13th October 2014 where 33 written submissions were received. Bilateral meetings were held with industry representative's organisations and environmental groups. This document reflects the outcome of these consultations.

The following table summarises the aid intensity for each of the measures set out below;

Scheme	Aid intensity of eligible costs
Measure 1: afforestation and Creation of woodlands	
afforestation (point 512)	100%
NWS establishment (point 512)	100%
Agro-forestry (point 518)	80% for grant 100% for premium
Forestry energy and fibre (point 512)	100%
Measure 2:Investments improving the Resilience and Environmental value of Forestry: - NeighbourWood Scheme *(point 532)*	100%
Measure 3: Investments in Infrastructure: Forest Road Scheme (point 544)	100%
Measure 4: Prevention and Restoration of Damage to Forests: - Reconstitution Scheme (point 527)	100%
Measure 5: Investments improving the Resilience and Environmental value of Forestry:- Woodland Improvement *(point 532)*	100%
Measure 6: Investments improving the Resilience and environmental value of Forests:- Native Woodland Conservation Scheme *(point 532)*	100%
Measure 7: Knowledge Transfer and Information Actions (point 297)	100%
Measure 8: Setting up of Producer Groups (point 587)	100%
Measure 9: Innovative Forest Technology (point 541)	40%
Measure 10: Forest Environment and Climate Services: -Forest Genetic Reproductive Material	
Seed stands (point 563)	*100%*
Seed Orchards *(point 563)*	50% for establishment grant and 100% for maintenance
Measure 11: Forest Management Plans (point	100%

Table 10: Aid intensity for all measures

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
of which afforestation	*5,440*	*5,990*	*6,165*	*6,215*	*6,615*	*6,790*	37,215
of Which NWS (est)	*450*	*450*	*450*	*450*	*450*	*450*	2,700
of which Agro-forestry	*10*	*20*	*25*	*40*	*50*	*50*	195
Of which Forestry fibre	*100*	*200*	*500*	*500*	*1,000*	*1,000*	3,300

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	1st Grant €/ha	2nd 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 statutary 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 supporting 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	1st Grant €/ha	2nd 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 requirement[15] 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	1st Grant €/ha	2nd 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	*Alnus cordata*
Hybrid aspen	*Populus tremula x tremuloides (subject to plant availability)*
Eucalyptus	*E. glaucescens, gunnii, nitens, rodwayi and subcrenulata. (E nitens 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, Fritzi Pauley, Trichobel, V.471xV.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 2000[18] 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	1st Grant €/ha	2nd 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%
of which 10% broadleaves	*2650*	6.11%
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 suites, 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 incorprates 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 rhodendendron 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 afforestation[19]. 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:

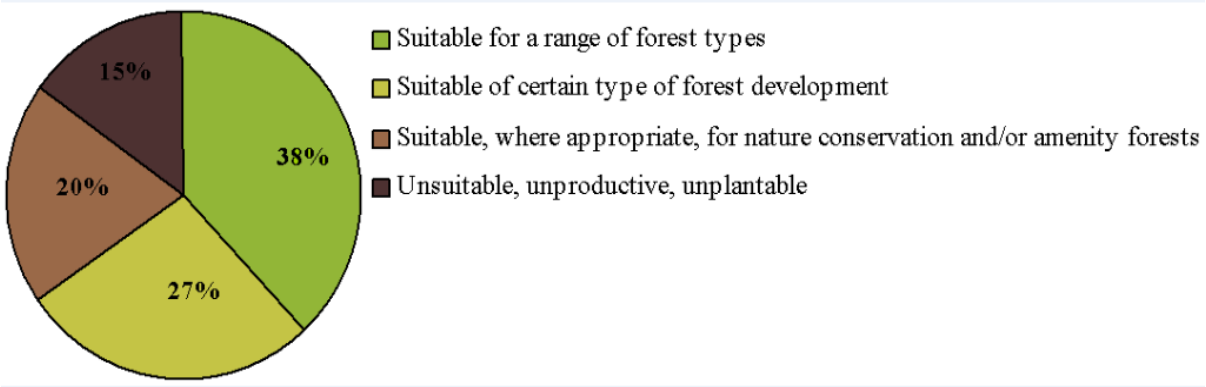
- NPWS spatial data (Special Areas of Conservation, Natural Heritage Areas, Special Protection Areas, Reserves, National Parks)
- Water bodies (streams, lakes, reservoirs)
- Urban Areas
- Fisheries sensitive areas (data compiled in consultation with the Inland Fisheries Ireland)
- Acid sensitive areas
- 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.	• 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.	• 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.	• 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 Procedure[20] 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 adaption, 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 mg $CaCO_3$ / l → the afforestation proposal not permitted(*)
- If 8–15 mg $CaCO_3$ / l → EPA consulted
- If > 15 mg $CaCO_3$ / 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 rhodendendron 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".

		Soil Type															
Species		**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

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.

		Characteristics								
Species		**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 $<10^{o}$C (Pears 1967).

  Other climatic variables also change rapidly with increasing elevation. With every increase of 100 m, average temperatures drop by 1^{o}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^{o}N on the summer solstice, a south-facing slope of 10^{o} 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 *Phytophtera 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 dept 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 types 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, i*n 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 CO_2, 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 CO_2 per annum. The total carbon stock in forest biomass (excluding soil carbon) is estimated to be circa 210 Mt of CO_2 in 2012[21]. 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 CO_2.

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 m^3 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,*

[21]National 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

applicants to complete the project within a set timescale and to sustain the project into the future, and how each application intends to maximise the potential for recreational use. The resulting neighbourwood amenity must be maintained and access provided for a period of at least 10 years from receipt of the first grant payment. The proposed scheme will provide financial support under three separate elements:

- Element 1 will support the silvicultural enhancement of *existing* amenity forests (or 'neighbourwoods') .
- Element 2 will support the establishment of *new* neighbourwoods.
- Element 3 will support the installation and upgrade of appropriate recreational facilities within existing or new amenity woodlands.

Certain applicants under Element 2 may be eligible for an annual premium under the proposed Measure 1: Afforestation and Woodland Creation.

6.2.2.1 Eligibility

The NeighbourWood Scheme is aimed primarily at local authorities and private landholders, working in partnership with local community groups. Other landholders may be considered on a case-by-case basis. In all cases, the landholder submits the application directly to the Forest Service. Agricultural land and non-agricultural land will be eligible for support.

Applications under the NeighbourWood Scheme will undergo project evaluation by the Forest Service (*via* desk and field inspections and use of the GIS-based iFORIS system), referral to statutory consultees, AA Screening and Appropriate Assessment (where required) under the Habitats Directive, to ensure compatibility with the environment. For further details, see under Measure 1: Afforestation and Woodland Creation. The afforestation of land (under Element 2 of the NeighbourWood Scheme) which, in the opinion of the Department, is likely to have a significant adverse effect on the environment will not be eligible for support.

In order for both public and private entities to be eligible for funding the following criteria apply (alongside other standard grant-aid criteria);

- There must be a clear potential for the development of an attractive amenity woodland that will be strategically located, easily accessible and well-used by local people. Relevant factors will include the suitability of location, the level of existing use, attractive features, local interest, linkage with wider walking routes and other amenities, etc.
- The project must adhere to good practice regarding amenity woodland design, establishment and management, as set out in *Forest Recreation in Ireland: A Guide for Forest Owners and Managers* (published by the Forest Service) and *Amenity Trees and Woodlands: A Guide to their Management in Ireland* (published by the Tree Council of Ireland, the Arboricultural Association – Irish Branch, and the Society of Irish Foresters).
- 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 at the application stage.

- The woodland must be open to the general public throughout the year (although private applicants can opt to close the site for one day in each calendar year, to avoid possible concerns regarding the establishment of access rights). Apart from fees for car parking and other basic services, access must be free-of-charge.
- Particular emphasis is to be placed on providing reasonable access-for-all, to enable people of different ages and abilities to use and enjoy the neighbourwood. Organisations such as Enable Ireland (www.enableireland.ie) and the UK's Fieldfare Trust (www.fieldfare.org.uk) provide relevant information and guidance.
- Projects funded under the NeighbourWood Scheme are strongly encouraged to adopt and display the seven principles of Leave No Trace, the national outdoor ethics code, on information boards, booklets, websites, etc. See www.leavenotraceireland.org for details.
- In the case of applications on privately owned land, the applicant must provide a declaration that the amenity will be maintained and access provided for a period of at least 10 years.
- A Forest Service Registered Forester is required to prepare the application and to oversee subsequent work. This individual will have experience of working with Forest Service grant schemes and will be aware of the relevant procedures, standards and environmental guidelines. S/he will also be familiar with woodland establishment and management operations, and will be able to identify suitable woodland contractors to undertake the work. Typically, the forester works alongside other professionals within the local council, such as landscape architects, horticulturists, planners, engineers and heritage officers.
- All applications under the NeighbourWood Scheme will be considered for approval by the Forest Service on a case-by-case basis, subject to available funds. The Forest Service will seek to achieve a regional spread of projects and a balanced uptake between different applicant types. The decision of the Forest Service on any matter relating to this scheme is final.

6.2.2.2 Financial support

Levels of financial support currently being considered are as follows:

Grant Premium Category	1st Grant	2nd Grant	Total Grant* (€/ha)*
Element 1: Neighbourwood Enhancement	3700	1300	5000
Element 2: Neighbourwood Establishment	3700	1300	5000 **
Element 3: Recreational facilities (first 10 ha)	2850	950	3800
Element 3: Recreational facilities (Each additional hectare, up to 40 ha)	1725	575	2300

**Cost-based scheme, up to 100%. ** Fencing allowance under Element 2 as per Afforestation Scheme*

The following operations will be eligible for support under NeighbourWood Scheme Elements 1 and 2:

- Preparation of the NeighbourWood Plan;
- Purchase of suitable forest transplant stock;
- Ground preparation;
- Fertiliser application (Element 2 only);
- Fencing and other protective measures;
- Clearance of invasive species such as laurel and rhododendron;
- Tree felling, where appropriate (Element 1 only);
- Planting on new site (Element 2)
- Understorey and coupe planting (Element 1);
- Maintenance (including vegetation management);
- Woodland edge management (Element 1 only);
- Maintenance of open spaces;
- Respacing (Element 1 only); and
- Other appropriate operations, where agreed in advance with the Forest Service (e.g. ecological survey, natural regeneration works).

Facilities supported under Element 3 can be either: (i) general in nature, including footpaths, signage, way markers, car-parking, seating, picnic tables, etc.; or (ii) more specialised in nature, including fitness or playground equipment, bird watching hides and mountain bike tracks.

Due to the focus of most NeighbourWood Scheme projects on native woodland planting or restoration, the NeighbourWood Scheme will be amended to state that such areas will be funded under the NWS Conservation for restoration, and that NWS Cons. requirements will apply. New planting within this measure will take place under the Afforestation and Creation of Woodlands Measure. Such projects can still apply for NeighbourWood Scheme Element 3 (Facilities) over the entire area. This mechanism does not compromise the target of achieving 10 NeighbourWood Scheme projects per year, but facilities the transfer of a portion of the NeighbourWood Scheme budget to NWS Conservation. A total of 50% of the NeighbourWood Scheme budget has been transferred to NWS Conservation, meaning that 10 NeighbourWood projects can be funded up to a maximum of €17,500 for non-native woodland work under Element 1 (NBR Enhancement) and Element 2 (NBR Establishment), and for Element 3 (Facilities).

6.2.3 Objectives

The objectives of the proposed NeighbourWood Scheme are:

- Provide increased recreational space and associated health benefits to the general public;
- Support the creation of new public amenity forests and forest ecosystems;
- Support investment in the provision of facilities to encourage greater public use of forests;
- Increase the educational function of forests;
- Support actions aimed at protecting and enhancing forests and forest ecosystems located close to population centres;

- Enhance protection of waterbodies and watercourses adjacent to the proposed woods; and
- Encourage increased public participation in outdoor activities.

It is proposed to support approximately 10 quality projects under the NeighbourWood Scheme each year of the Forestry Programme's lifetime.

6.2.4 Environmental services

'Neighbourwoods' deliver a different experience than other forests in terms of the delivery of recreational and amenity benefits. Neighbourwoods can be used by people of all ages and abilities on a regular, often daily basis, for strolling, family visits and picnics, walking-the-dog, 'power-walking', jogging, and a host of other outdoor activities. Also, local schools often use them as an outdoor classroom for young people to learn about nature and the environment.

Typical facilities include entrances, car parking, a variety of looped footpaths, information signage and waymarkers, nature trails, and seats and picnic tables. A neighbourwood can be a stand-alone amenity, or can be linked into other amenities and attractions in the area, such as parkland, historic buildings, visitor attractions and wider walking routes. Neighbourwoods vary greatly in location, size and ownership. They can be located within or near villages, towns or cities, or may be more rural in nature. They can range in size, from pocket woodlands within built-up areas to large forests in the countryside. They may be owned by a local council or some other public body, or might even be privately owned, where the owner is prepared to allow local people to access and enjoy the woodland.

On a wider scale, neighbourwoods can be used as a 'broad brush' tool for sustainable planning and development, particularly in urban and urban fringe areas. Woodlands can be used strategically to reinforce existing greenbelts, greenways and sustainable transport corridors, to provide buffers between residential and industrial areas, to protect urban watercourses, and to reclaim former landfill sites and industrial 'brownfield' sites. Woodland can also be created in the years leading up to development, providing a ready-made green landscape for the future. In all cases, what makes a woodland a 'neighbourwood' is how it is perceived by local people. Neighbourwoods are an invaluable community resource and part of the local fabric of life and 'sense of place'. They provide individuals, families and friends time-out and contact with the natural world, promote public health, well-being and a better quality of life, and create a resource for people young and old to learn about nature and the environment.

6.3 Measure 3: Investments in Infrastructure: Forest Road Scheme

The Teagasc Forestry Development Unit report (2007) clearly shows the importance of thinnings to forestry revenues. It shows that the NPV of timber revenues is higher for those forestry areas that have had thinnings carried out compared to those that have not. In addition to providing revenue, thinnings also enable the timber to grow better and more productively so that at final harvest the revenues received are greater. In 2012 the National Forest Inventory showed that 23% of the national estate had reached thinning stage but had not been thinned.

6.3.1 Regulatory Framework

	State Aid	RDR	Focus area	Code
Roads	Sub chapter 2.1.6	Article 17	2 (a) & 2(b)	4.3

6.3.2 Scheme Detail

Grant aided road density will generally be 20m/ha of the area served, not necessarily the area subject to the forest management operation. In the calculation of area served by any proposed harvesting road where 50% or greater of the area is due for harvesting in the next 3 years the entire area can be deemed eligible; otherwise only the area harvested within that timeframe is eligible. For co operative road building (joint applications) this can extend to 5 years. Broadleaves can be considered in the area calculation where they are suitable for tending and/or thinning and where the average height is at least 8 metres at the time of application. Where a proposed forest road connects to an existing forest road network in a public forest there will be no requirement attached to the harvesting of the public forest.

Roading density will be limited for grant aid, only the minimum amount of roadway required will be funded which may not necessarily be the current maximum of 20m per hectare. Grant aid of road density will not exceed 20m/ha in the forest served which includes existing road networks. There will be no discretion above 20m/ha.

The following operations will be eligible for support under this measure up to the grant rates agreed:

- Tree clearance (minimum 15m);
- Inceptor drains –Formation work – strip soil minimum width 7m, excavate and camber, grade and compact;
- Base course and surfacing (load bearing capacity of 44 tonnes Gross Vehicle Weight);
- Bell mouths and turntables;
- Internal T-junctions;
- Culverts; and
- Bridges

Investments under this measure are productive in nature and open to the public free of charge (see also section 6.3.2.3). These roads will serve the multifunctional aspects of the forest. A maximum of 100% of total costs of building forest roads will be funded subject to the maximum payment of up to €40/m excluding VAT to a maximum of 20m/ha. The Minister reserves the right to alter these rates from time to time and to withdraw the support altogether at short notice.

A road map must be submitted showing clearly which plots are within 3 years of first thinning. Plot inventory details and proposed road specifications must also accompany each road application.

Where existing tracks/roads within a plantation require upgrading or extending to 20m/ha at the time of the forest management operation, an application for grant aid towards the cost of upgrading or extending may be made. Upgrading does not include repairs to roads that have previously been used for harvesting and haulage purposes.

Where appropriate, all or part of the forest road may be external to the plantation. For grant aid purposes, there is no difference between access roads and internal roads.

The cost of bellmouths, lay-bys, drying areas and non grant aided special construction works etc. is covered out of the overall road grant allocation for the site (i.e. at harvesting stage 20m/ha x forest area). There is no additional payment for these features. Where a bellmouth is constructed, 30m (15m for each "wing") may be included as part of the road length for grant purposes. Where a lay-by is constructed the length of the lay-by may be included as part of the road length for grant purposes. The construction of a "Standard back in type loading bay" or a "Standard loading bay with internal turning area" may be grant aided where the area allows. Pull-in lay byes (longitudinal loading bays) along public roads may be considered on a case by case basis at an equivalent roading of 60m where the area allows. Apart from a loading bay, only the minimum amount of roadway required will be grant aided to ensure forwarding distances do not exceed a maximum of 500m. In cases where the proposed forest road bell mouth is at least 2m below the surface of the existing public road an additional 30m will allowed per forest entrance to contribute towards the cost of additional stone required. This means that bell mouths in this situation can include an additional 60 metres of equivalent road length for grant purposes

All road construction works shall be undertaken in compliance with the Forest Road Manual (COFORD) unless the Forest Service has approved otherwise.

An Environmental Impact Statement (EIS) must be submitted in respect of any forest road construction project which exceeds 2,000 metres in length. An EIS may also be required for road projects below the 2,000 metre threshold if the Department feels that the project is likely to have a significant environmental effect.

In order to be eligible for a road grant, 20% of the forest must be thinned within three years of receiving the 1st instalment grant. This will be a condition of receiving the 2nd grant. Forests must also be thinned on time.

6.3.2.1 Additional support to protect against erosion

A Special construction works (SCW) grant is being introduced at a maximum of 50 % of the cost subject to a maximum of €5,000 per application, whichever is the smaller. The objective of this provision is primarily aimed at facilitating the construction of forest roads in environmentally sensitive sites to limit any potential adverse impact from harvesting activities. All proposals to fund special construction works must adequately demonstrate in the application that the works are required to facilitate the harvesting and extraction of timber on routes that minimise the potential for silt run off and potential adverse environmental impact. Where it is shown that such works do not have a positive environmental benefit, aid will be refused and consent for construction work will be considered without grant aid.

SCW will be limited to the following criteria;

- Permanent bridges
- Large culverts greater than or equal to 1 metre in diameter and
- Where the forest areas served exceeds 5 ha

Multiple SCW works can be included on the one application form but cannot receive in total more than 50% of the cost of the SCW and no more than €5,000 in total, whichever is the smaller. SCW works must be specified, drawn up and supervised by a qualified civil engineer. Form 1 applications must specify that the application includes a SCW component if required and the total cost of that SCW must be given in the application. Only one grant allocation for SCW is payable per forest plantation irrespective of the number of road lengths constructed .For the purpose of eligibility, grant aided plantations includes all plots and parcels previously grant aided under the same contract number and adjoining contract numbers owned by the same applicant.

Funding for special construction works is subject to availability of funds in any financial year. All SCWs must represent value for money and satisfy one or more of the following criteria;

- Crossing required to protect watercourses e.g. fisheries considerations, Freshwater Pearl Mussel
- Protection of Natura 2000 sites
- Required to prevent siltation and erosion
- Environmental benefit to works proposed

All SCWs whether grant aided or not must satisfy the requirements of the Forest Service Environmental Guidelines.

The Department may decide to fund additional categories of special construction works in subsequent versions of the Forest Road Scheme over the duration of the programme subject to funding availability and may change scheme requirements and specification requirements.

6.3.2.2 Connecting to an existing road network

In cases where a proposed forest road will connect to an existing forest road network in a public, state owned or private forest, grant aid will be considered on a case by case basis. However the maximum length of road required connecting the private forest road to an existing forest road network must be along the best and the shortest practical route possible.

Grant aid for "connecting roads" through a neighbouring forest will be limited to a length not greater than that constructed on the private forest(s) accessing the existing road network on lands owned by public authorities or state owned companies. For example, if 300m of a proposed road within a private forest needs an additional 1000m of road to reach an existing road network on an adjoining property, grant aid will be limited to 600m in total (300m in the private forest and 300m in the adjoining forest). Where both adjoining forests and lands are owned privately the connecting road will be based on the area served and existing road network for the block served. Grant aid in any circumstance cannot exceed 20m per hectare based on the existing and proposed road network.

6.3.2.3 General Terms and Conditions

All private holders of forests are eligible to apply. Lands owned by public authorities and state owned companies will not be eligible to receive grant aid under this scheme unless construction is part of an agreed cooperative venture (see section above).

For plantations greater than or above 5 hectares, funding is conditional on presentation of a Forest Management Plan. This should include the expected volume of timber to be extracted

as part of the forest management operation.

All expenditure must represent value for money and claims submitted for grant aid must represent the actual costs incurred. Breakdown of costs must be provided in advance at the pre-approval and payment stages.

Where feasible, co-operative ventures involving joint or shared forest operations between adjoining forests is encouraged and where funds are limited preference will be given to these applications (including applications which incorporate special construction works). Evidence of this must be provided at application stage by a signed statement by those involved and witnessed and verified by a commissioner for oaths. This should cover both the construction and use of roads along with the forest thinning operations.

It is a basic requirement of this scheme that any infrastructure funded should be open to the public for recreational use without charge. However, such access may be restricted for a specified period where it is necessary to protect sensitive areas, or where vandalism or dumping is an issue, or to ensure the proper and safe use of the infrastructure. Where measures have been taken to protect any infrastructure from animal trespass, pedestrian access must be provided by a gate or stile or other means. Public access does not confer any permanent rights to individual members of the public and does not extend to access off the forest road

If it proves necessary to restrict access to any forest infrastructure works undertaken under this Scheme, the beneficiary must notify the Department in writing of the reason for the restriction and must specify the requested duration of the restriction. The Department may decide to refuse funding if public access is not provided.

6.3.2.4 Grant

The fixed grant rate is available for roads will be as follows;

Category	**Maximum Rate € / Linear metre (Excl VAT)**	**Maximum Density (metre/ ha)**
Harvesting Road	€40	20
Harvesting Upgrade or Extension as defined.	€40	20*
Special Construction Works	50% of costs up to a maximum of €5,000 per application	

* 13m applies where the applicant previously received a management road grant for 7m per ha or 10m applies where the applicant previously received a management road grant for 10 m per ha under a previous road scheme

Payments shall be made in respect of applicants who make a valid application, prepared by a Registered Forester and have carried out the work in accordance with the stipulations of their pre-approval and in compliance with:

a) All relevant national legislation for the time being in force;
b) The Department's specifications for Registered Foresters;

c) The terms and conditions as set out in the scheme documents and the application forms;
d) The requirements set down in the Forestry Schemes Manual, where applicable;
e) Forestry Schemes Mapping Standards;
f) The principles of Sustainable Forest Management;
g) The Forest Service Code of Best Forest Practice – Ireland;
h) The Forest Service Environmental Guidelines;
i) Conditions of Felling Licence where applicable and relevant.

Furthermore, the Forest Service, in assessing an application for forest road construction under S.I. No. 558 of 2010, will undertake project evaluation (*via* desk and field inspections and use of the GIS-based iFORIS system), referral to statutory consultees, AA Screening and Appropriate Assessment (where required) under the Habitats Directive, and EIA Screening, to ensure compatibility with the environment. For further details, see under Measure 1: Afforestation and Woodland Creation.

Payments will be scheduled as follows;

- Application for approval to undertake works under this Scheme will be made using the "Forest Roads Form 1".
- Payment of 1st Instalment of Road Grant will be made on receipt of Form 2.
- Payment of 2nd Instalment will be made on receipt of a single Form 3 and where 20% of the area has been thinned.

The first instalment will be 90% of the total payment while the remaining amount is paid as a second instalment.

6.3.3 Objectives

The objectives of the scheme are as follows;

- Stimulate the mobilisation of roundwood from forests and thereby contribute to employment and economic activity;
- Provide funding for the construction of forest roads and associated infrastructure such as bell-mouths, turn-tables, drains, culverts and bridges;
- Improve the economic value and competitiveness of the forest resource;
- Provide access for emergency vehicles;
- Provide access for equipment and transport vehicles to facilitate harvesting operations;
- To increase the forest road infrastructure by constructing in excess of 110km per year thereby servicing up to 34,500 hectares of forest area for future clearfelling and thinning operations over the course of the programme;
- Thin and clearfell in line with the "All Ireland Roundwood Production Forecast 2011-2028";
- Achieve net realisable volume production of 4.6million m^3 per annum by 2020 and 7-8 million m^3 by 2028;
- Increase the biodiversity value of forests;

6.3.4 Environmental considerations

Good forest roads are crucial for effective forest management. Forest maintenance, wood harvesting, game control, recreational activities, all require the accessibility provided by a suitable road network. The construction of forest roads represents one of the more visible forestry operations and can have a number of environmental impacts including those in relation to landscape, water, soil, habitat and social/community. The *Forest Road Manual* includes practices and guidelines to ensure that all phases in the construction of forest roads are carried out in a manner that is compatible with environmental values and sustainable forest management. Roads funded under the new programme must adhere to these rules which include the following;

Planning: Potential environmental risks and construction difficulties are identified at road planning stage to ensure adequate design standards consistent with minimising environmental impacts.

Design**:** New and upgraded roads designed to a standard capable of carrying anticipated timber haulage traffic for a crop rotation to meet environmental requirements and with safety.

Location: Roads located so as to minimise risks to environmental values and road construction to take account of environmental values during all stages of formation and completion.

Construction: Forest roads and access points to county roads constructed in planned engineering stages, to minimise disturbance to the site, and well in advance of timber harvesting and road haulage.

Drainage**:** Roads properly formed, consolidated, completed and drained to ensure that the impact of run-off on water quality is minimised.

Maintenance**:** Road surfaces and drainage works maintained to protect the road foundation, disperse water and minimise environmental impact.

In relation to the protection of water quality specifically, referral procedures similar to those for afforestation are also in place for forest road applications. The referral process is detailed in Chapter 11 'Environmental Protection and Controls – Consultation Process' and Appendix 21 'Areas Potentially Sensitive to Fisheries' of the *Forestry Schemes Manual*. Forestry and water quality guidelines set out strict operational rules for building roads so that water quality is protected. This includes the following rules for example;

- Roads should be located at least 50m from an aquatic zone, where possible.
- Road layout should aim to direct off-road traffic away from streams. If there is no other option but to cross an aquatic zone, construct an appropriate bridge or culvert.
- Where possible, roads should follow the natural contours of the terrain.
- All ancillary drainage associated with road construction should be designed to divert water away from buffer zones and should not be allowed to discharge directly into aquatic zones. Sediment traps will be necessary. Roadside drains should not directly intercept run-off from higher ground. Cut-off drains should be constructed to a flat gradient at least 5m back from the upper edge of the road formation, to avoid erosion.
- Carry out construction during dry weather, where practical, ideally from April to October.

6.3.4.1 Environmental services

Forest roads and first thinning operations will be intrinsically linked in the scheme as a certain percentage of thinning must be completed before the second instalment of the road grant can be paid. The economic and ecological benefits of thinning operations are well established; thinning reduces competition among trees, stimulates incremental growth and increases the amount of sunlight reaching the forest floor.

First thinning involves the removal of stems which have little or no financial value when all costs are taken into account and therefore it can be said that the main purpose of such an operation is to improve the ecological value of the forests. Without state support for forest roads most thinning operations wouldn't take place for financial reasons; this means that the environmental benefits outlined under the Woodland Improvement Scheme (Thinning and Tending) in the section to follow will not arise.

Environmental services associated directly with forest roads can be summarised as follows;

- Forest roads open up the canopy and allow light to filter into the forest;
- The edge effect created by new roads also promotes biodiversity;
- Roads provide access for amenity and recreational purposes for both tourists and local communities;
- Roads provide access for emergency vehicles in times of forest fires.

The contribution of forest roads to environmental service will be measured by

- comparing the total number of kilometres of roads built against the target and
- the increase in the number of visitors to forests after the programme is completed against the baseline figure of 18million people that visited forests in 2012.

6.4 Measure 4: Prevention and Restoration of Damage to Forests: - Reconstitution Scheme

6.4.1 Regulatory Framework

State Aid	RDR	Focus Area	Code
Sub Chapter 2.1.3	Article 24	4(a)	8.3 and 8.4

6.4.2 Scheme Details

The purpose of this scheme is to restore and retain forests and forest ecosystems following significant damage by natural causes. Support under Forest Reconstitution would be available to private forest holders only. The scheme would contribute to the costs of restoring forest potential as a result of damage, or potential damage, from disease outbreaks. The scheme would also support the removal and destruction of trees infected by contagious pathogens, or trees likely to be so infected. Support may also be considered towards the restoration of forests damaged by other natural causes, catastrophic events and/or climate change related events, such as frost, wind, deer, grey squirrel and vole, where more than 20% of the forest potential has been damaged.

Calculation of the 20% damage threshold will be by area where significant damage has occurred. Significant damage for the purposes of the scheme will mean death or irremediable

damage of 20% or more of the trees in the relevant plantation covered by the one contract number or forest block. It will also include the removal of host species for disease such as Rhododendron in the spread of *Phytophthora ramorum*. Reconstitution measures will include replanting where appropriate, removal of infected material or host species where required.

It is also envisaged that the scheme will be tailored to address specific threats and will form part of an integrated pest management control response. A reconstitution scheme currently exists for forests affected by *Chalara fraxinea* (Ash dieback disease) and it is envisaged that a similar scheme may be developed to deal with forests damaged by *Phytophthora ramourm*.

In the case of aid for prevention of damage to a forest from plant pests, the risk of the occurrence of the plant pest will be supported by scientific evidence and acknowledged by a scientific public organisation.

6.4.2.1 Eligibility , Grants and Premiums

Support shall be to all private forests. Grant assistance will be in respect of costs necessarily incurred in the reconstitution of a forest, subject to the maximum limit laid down as follows;

Grant Premium Category	1st Grant	2nd Grant	Total Grant*
Conifers	2,500	800	3300
Broadleaves	3800	1200	5000

**There is no fencing allowance, cost based scheme up to 100%*

This grant scheme will be cost-based and evidence of costs expended and receipts for items and/or services purchased must be retained and produced on request. The following operations will be eligible for support under this measure:

- In the case of disease, the removal and destruction of trees and associated material (if required) a third grant of up to €1,500/ ha may be available;
- Replacement plants;
- Planting;
- Ground Preparation (if applicable);
- Vegetation control (1 - 4years, if applicable);
- Shaping;
- Creation of firebreaks and reservoirs, where necessary; and
- Other operations approved in advance by the Department.

6.4.3 Objectives

These are as follows;

- To support the restoration of forest potential arising from damage by natural events and the introduction of protective infrastructure in forests; and
- The development and promotion of forestry through the incorporation of practices that restore, preserve and enhance biodiversity;

Specific objectives are dependent on occurrences of pest and disease outbreaks and other natural occurrences.

6.4.3.1 Environmental issues

These are similar to those set out under the afforestation and creation of woodland measure.

6.4.4 Programme Specific Output Indicators

These include the following;

- Number of applications funded;
- Number of hectares of forest damaged by disease;
- Number of hectares of damaged forests restored including those affected by Chalara

6.5 Measure 5: Investments improving the Resilience and Environmental value of Forestry:- Woodland Improvement

6.5.1 Regulatory Framework

State Aid	RDR	Focus area
Sub Chapter 2.1.4	Article 25	4(a)

6.5.2 Element 1:- Thinning and Tending- Broadleaves

6.5.2.1 Scheme Details

This scheme will provide financial support to forest holders towards the cost of woodland improvement works associated with tending and thinning of broadleaf forests planted since 1980 and enhancing the environmental qualities of existing predominantly broadleaf forests.

The aim of the Element 1: Thinning and Tending is to stimulate investment in the improvement, protection and development of broadleaf woodlands and forests for a range of functions, including: healthy tree growth, landscape improvement, biodiversity enhancement, soil protection and water protection. These aims will be achieved through improvement felling of malformed and over mature trees; felling of additional trees to release potential crop trees (PCT); pruning to improve stem quality; thinning or re-spacing to promote growth and management and re-spacing of natural regeneration. Tending and thinning also benefits biodiversity by increasing light and contributing to shrub and ground flora abundance.

Funding may also be provided for brashing to improve access for manual application of fertiliser where aerial fertilisation is not possible. Foliar analysis may be required to establish nutrient status and determine the type and rate of fertiliser.

The aim of the Element 2: Environmental Enhancement is to support actions within existing forests, which effect structural changes that will proactively protect and enhance water quality, archaeological sites, habitats and species, and sensitive landscapes.

6.5.2.2 Grant

A fixed grant of up to €750 per hectare will be available under the Scheme. An additional cost based grant will be available under the Scheme for brashing operations to improve access to forests for manual application of fertiliser, if required, to a maximum of €750 per hectare on a case by case basis.

Support will be available for the following operations:

- Improvement felling of malformed and over mature trees;
- Felling of additional trees to release potential crop trees (PCT);
- Thinning or re-spacing to promote growth;
- Management and re-spacing of natural regeneration;
- Clearing buffer areas around sites and monument which may have become overgrown and
- Improving access for manual fertilisation (cost based grant);

This measure is primarily aimed at private forest holders and other private law bodies, and their associations.

6.5.2.3 Objectives

The aim of the scheme is to stimulate investment in the improvement, protection and development of young broadleaf forests for a range of functions, including:

- Timber production;
- Encourage healthy tree growth;
- Landscape enhancement;

The aim will be to support the thinning and tending of 8,000 hectares of broadleaf and mixed forests each year under the programme.

6.5.2.4 Environmental services

The measure itself will open up the canopy through thinning enables more light to reach the forest floor, thereby allowing plants to re-colonise the forest area, increasing biodiversity. Results from the Irish National Forest Inventory show that plantation forests when managed in this way provide significant biodiversity benefits. In addition, thinning opens up forest areas for walking and other recreational uses and improve the visual amenity of forests. Thinning, by opening up tree crowns to light, also promotes higher levels of tree seed production which favours natural regeneration systems and close-to-nature silviculture. This has been shown in research funded by COFORD. Wind damage is a significant risk factor in Irish forestry. Early thinning has been shown to improve forest stability and its overall resilience in terms of wind damage and other risk factors. Thinning also improves the vitality of forests allowing them to sequester more carbon.

The total hectares of broadleaf woodlands thinned will be used to measure these benefits.

6.5.3 Element 2:- Environmental Enhancement of Forests

6.5.3.1 Scheme Details

The aim of the Element 2: Environmental Enhancement of Forests is to support various actions within existing forests, which effect structural changes that will proactively protect and enhance water quality, habitats and species archaeological sites, habitats and species, sensitive landscapes and other environmental features.

6.5.3.2 Grant

A fixed grant of up to €750 per hectare will be available under the Scheme subject to a maximum of €20,000 per application. Support will be available for the following operations:

- The installation of silt traps and appropriate blocking of existing forest drains, to protect water quality and aquatic ecosystems and species.
- The retro-fitting, reinstatement or enhancement of setbacks and other open areas within existing forests, for environmental reasons. This includes aquatic buffer zones, and archaeological exclusion zones and related access paths and setbacks introduced along prominent forest edges, to soften landscape impact.
- Enrichment planting of appropriate species to enhance the delivery of ecosystem services (e.g. the planting of groups of broadleaves and / or diverse conifers along highly visable forest edges for landscaping, or the planting of single or small groups of native riparian species within the aquatic buffer zone, for bank stabilisation and in-stream benefits).
- The application of silvicultural treatments (e.g. heavy thinning, ring-barking) to encourage greater ground vegetation cover along aquatic zones well in advance of final clearfell.
- Other operations may also be considered eligible by the Forest Service.

6.5.3.3 Objectives

The aim of the scheme is to enhance the environmental function of existing forests, including:

- Soil and water protection
- Protection of archaeological sites, vulnerable habitats and species, and sensitive landscapes;
- Improve biodiversity function

The aim will be to support the environmental enhancement of 1,000 hectares of forests each year under the programme.

6.5.3.4 Environmental services

This measure will produce various environmental services. For example: existing forests originally planted next to watercourses, with forest drains running directly into the aquatic zone, may be subjected to various measures under the scheme, such as:

- drain blocking, to prevent the ongoing discharge of siltation into the watercourse, with a subsequent positive impact on water quality and the aquatic ecosystem;
- selected felling, to introduce a buffer zone and to increase ground vegetation cover along the watercourse, to ensure increased water protection for the eventual clearfelling operation; and
- selected planting with single or small groups of suitable native riparian species within the newly-created aquatic buffer zones, for bank stability and in-stream benefits (dappled shade, cooling, leaf- and insect-drop).

Similarly, the measure can be used to introduce, reinstate (where overgrown) or increase (where originally too small) the exclusion zone around archaeological features within forests, thereby creating greater separation distance between these features and surrounding forestry operations. Related access tracks can also be created or reinstated.

Similarly, the measure can be used to diversify artificially-straight or angled forest edges which are prominent in, and negatively impact, the landscape, through the planting of groups of appropriate species (broadleaved and / or diverse conifers) along the forest edge.

6.6 Measure 6: Investments improving the Resilience and environmental value of Forests:- Native Woodland Conservation Scheme

6.6.1 Regulation Framework

State Aid	RDR	Focus Area	Code
Sub Chapter 2.1.4	Article 25	4(a) & 5(e)	8.6

Targets for this scheme are as follows;

	2015	2016	2017	2018	2019	2020	Total
Private Native Woodland Conservation, (High forest) ha	80	80	80	90	90	100	520
Private native Woodland Conservation (Native Emergent Woodland) ha	50	50	50	70	70	70	360
Public Native Woodland Conservation, ha	170	170	170	180	190	190	1,070

6.6.2 Native Woodland Conservation Scheme

The Native Woodland Conservation Scheme (NWS Cons.) supports the protection and enhancement of existing native woodland, primarily to protect and enhance native woodland ecosystems. The scheme is primarily focused on the application of appropriate restorative management of existing native woodlands, but can also include the conversion of non-native woodlands (including conifer forests) to native woodland, on important ecological sites (e.g. conifer forests within the Priority 8 Freshwater Pearl Mussel Catchments).

A strong priority will be placed 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 NWS Conservation is the protection and enhancement of Ireland's native woodland resource. Wood production remains an option and is encouraged, once ecologically compatible and undertaken through continuous cover forestry.

NWS Conservation operates alongside the Native Woodland Establishment Scheme (comprising GPC 9 & 10 - see Measure 1) 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 supporting 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 will continue to evolve over the coming years, based on partnership, experiences and priorities.

Eligible operations include the following:

- Preparation of a site-specific Native Woodland Plan by a NWS Participating Ecologist and NWS Participating Forester;
- Purchase of suitable native planting stock;

- Ground preparation, where appropriate (e.g. light scarification to facilitate natural regeneration);
- Forest protection (fencing, tree guards and other measures);
- Clearance of non-commercial woody growth (where ecologically appropriate) and invasive exotic species such as laurel and rhododendron;
- Costs associated with non-commercial tree felling, where appropriate (e.g. tree felling on highly sensitive parts of the site, where alternative, non-conventional techniques are required);
- Woodland rejuvenation (including understory and coupe planting, natural regeneration works and filling-in);
- Maintenance (including vegetation management);
- Woodland edge management;
- Maintenance of open spaces, rides and glades;
- Re-spacing;
- The restoration (subject to limits) of former coppice or coppice-with-standards woodland to active coppice management; and
- Other related operations, on application and as deemed appropriate by the Forest Service.

In relation to the second last bullet point above coppice is a traditional form of woodland management practiced in many European countries for centuries. It typically involves the planting of widely-spaced broadleaf trees and after several years of growth, the application of a cut above the stump ('stool') to produce regrowth in the form of several shoots or stems. These stems are then allowed to grow on for a number of years until they reach the 'target' diameter of the intended product (fencing material, tool handles, firewood, etc.), at which point, the stems are cut manually and harvested. The cycle recommences with new shoots emerging the following year.

In order to have a consistent flow of produce from a woodland, separate areas of the woodland will be at different stages of the coppice cycle. This creates a rolling mosaic of woodland habitats, providing rich structural biodiversity.

Different forms of coppice management exist, one of which, 'coppice-with-standards', involves coppice stools producing coppice products on a several year cycle, with a low density overstorey of trees allowed to grow on to reach open canopy, earmarked for potential harvesting and the production of quality hardwood sawlog.

Coppice management is a traditional form of woodland management in Ireland, dating back centuries, and is associated with high native woodland biodiversity and the production of material suitable for local consumption (e.g. firewood), craftwork and cottage industry end uses. Unfortunately, the vast majority of these woodlands have been neglected or exploited in the last century or two, and have lapsed as functioning coppice woodland to form high forest canopy. Coppice restoration is a form of management whereby former coppice woodlands (where viable) are brought back into active coppice management, through the staggered reintroduction of the coppice cut.

The website of Muintir na Coille, http://www.muintirnacoille.ie/, an organisation promoting awareness of the importance and use of coppice silviculture in Ireland, can provide further useful information if required.

6.6.2.1 Grant and premiums

Grant assistance could be available in respect of 100% of the total approved costs incurred, subject to the maximum limit as follows;

Owner type		1st grant	2nd grant	Total grant / ha
Private land owner	Existing 'High forest' woodland (incl. existing conifer canopy)	3800	1200	5000
	Emergent Native Woodland	1870	630	2500
Public land owner		1870	630	2500

**NWS Conservation is a cost based scheme up to 100%*

Under NWS Cons. between 18% and 20% of the woodland may comprise Areas for Biodiversity Enhancement (ABEs). Other ABE requirements are set out in the Forestry Schemes Manual.

Under Private NWS Conservation only, annual premiums are available for 7 years at a rate of €350/ha/yr. In the European Union Guidelines for State aid in the agricultural and forestry sectors and in rural areas 2014 to 2020, maintenance costs are specifically covered under Sub-Chapter 2.8 in the case of aid to the forestry sector with ecological, protective and recreational objectives. This means that premium payment under this measure will be paid under this sub chapter and under not sub chapter 2.1.4. Private forest owners only are eligible for premiums and support is subject to ongoing implementation of a Native Woodland Plan. The premium is aimed at maintaining and improving the environmental stability of forests where the protective and ecological role of these forests is of public interest and where the cost of maintenance and improvement measures exceeds the income from these forests.

Under the Private NWS Cons., funding is available for restorative management within existing 'high forest' native woodlands (including conifer to native woodland conversion) *and* emergent native woodlands. In relation to the emergent native woodland option, the following applies:

This element of NWS Cons aims to support the conservation of suitable areas of 'scrub', which constitutes emergent native woodland. This support would be subject to criteria regarding height and extent (e.g. average canopy height 4m or over, and 75% of site under canopy) and also in relation to the type of emergent native woodland, with a focus on such woodland on riparian sites and mineral sites. All sites must meet the minimum size requirement of 0.10ha (although in practice, applications for sites less that 1.0ha are unlikely, due to the cost involved in developing the application). Such sites would have enhanced biodiversity value, having derived from natural regeneration from onsite and local sources. These woodlands are under threat from 'scrubbing out', but would be allowed to develop to high forest if allowed under the NWS Cons. Such areas may have a wood production potential in the future, with appropriate management.

A cost-based grant of €2,500 / ha, payable in two instalment (as above), is available for such projects. The 7-year NWS Conservation premium of €350 / ha / year is also available. In relation to Pillar 1, not all farmers will clear their scrub areas as either they will max their

entitlements in any event or that the land will not be productive enough to justify the clearance costs. These areas will not be eligible for the basic payments scheme and consequently GLAS. This scheme can provide the mechanism to encourage farmers to manage these areas for environmental reasons and may encourage farmers to consider the possibility of encouraging native woodland development and possible timber benefits before clearing these under developed native woodland areas.

In assessing applications under NWS Conservation, the Forest Service will undertake project evaluation (*via* desk and field inspections and the use of the GIS-based iFORIS system), referral to statutory consultees and AA Screening and Appropriate Assessment (where required) under the Habitats Directive, to ensure suitability and compatibility with the environment. For further details, see under Measure 1: Afforestation and Woodland Creation.

NWS Cons. will be strictly cost-based. In cases, involving the conversion of conifer forest to native woodland, or projects involving non-native removal and the realisation of significant quantities of marketable timber, felling and extraction will not an eligible cost.

6.6.3 Objectives

The objectives of NWS Conservation are:

- To restore, conserve and enhance native woodland biodiversity, including in *Natura 2000* areas;
- Enhance the quality and diversity of landscapes;
- Aid the development and promotion of forestry through the incorporation of practices that restore, preserve and enhance biodiversity;
- Improve water and land management and contribute to meeting the Water Framework Directive objectives;
- Protect and sustain Ireland's native woodland resource and associated biodiversity on a long term basis;
- Conserve native genetic biodiversity;
- Improve water quality through native riparian woodland development;
- Increase Ireland's native woodland cover to contribute positively towards climate change mitigation;
- Promote the use of close to nature forestry and traditional woodland management systems and related woodcrafts;
- Contribute to long term carbon sequestration; and
- Encourage the use of wood and non-wood products, where compatible with native woodland biodiversity.

6.6.4 Environmental services

The key environmental services provided by NWS Conservation include:

Supporting services: Supporting services have biodiversity as their bedrock, and involve ecosystem functions like soil formation and nutrient cycling. Ancient woodlands, with their exceptional biodiversity, including remnant populations of specialist fauna and flora, contribute very significant supporting services.

Regulating services: Forests regulate water quality and the volume of water run-off. They also protect against soil erosion and stabilise riverbanks. Carbon sequestration is of increasing value given the need to mitigate emissions in climate change strategies.

Provisioning services; The provisioning services of native woodlands provide us with ecosystem goods: not only timber, wood products and wood fuel, but also wild foods such as berries, mushrooms and venison. These are valued and utilised in many other European states and have considerable potential in Ireland too. An additional provisioning service, much utilised in Ireland, is the forage and shelter forests accord to farm animals, realising a significant benefit in reduced agricultural input costs.

Cultural services; Woodlands make an important contribution to landscape quality. Their presence is valued for amenity use, providing physical and mental well-being, aesthetic and spiritual pleasure, and opportunities for the appreciation of birds and other wildlife. Ancient woodlands, in particular, also provide historical landscape value as they often contain archaeological features and evidence of past agriculture and settlement.

The total hectares supported under NWS Conservation will be used to measure the success of this scheme during the programme period. The target under NWS Conservation is to undertake appropriate restorative management within 1,950 hectares of woodland (including conversion from conifer forest to native woodland), with a particular focus on the targeted application of the scheme on key native woodland types and in areas where eco-system services in relation to biodiversity and water quality can be maximised, e.g. appropriate restoration management within a designated SAC woodland, or the conversion of conifer high forest to native woodland at strategic locations within one of the priority 8 FPM catchments.

6.7 Measure 7: Knowledge Transfer and Information Actions

There are four strands to measures under this heading as follows;

(a) Knowledge Transfer Groups (KTG)
(b) Continued Professional Development (CPD)
(c) Targeted Training
(d) Advisory Services

Membership of a producer group is not a condition for access to the services described above.

6.7.1 Regulation Framework

Strand No.	State Aid	RDR	Focus Areas	Code
(a), (b) and (c)	Sub chapter 2.4	Articles 14	1(a), (b) & (c)	1.1, 1.2
(d)	Sub chapter 2.5	Article 15	1(a), (b) & (c)	2.1

6.7.2 Forest Knowledge Transfer Groups (KTGs) Scheme Details

KTGs would involve the formation of Knowledge Transfer Groups, each managed by an accredited facilitator. Group facilitators approved by DAFM, who can either be Teagasc or private professionals, would be trained to a FETAC-accredited standard in order to operate a group. The group should however have access to a registered forester

when required.

The Programme will be open to established members of forest holder groups and to forest holders wishing to join or form groups for the first time. Applicants will be required to submit an application to their discussion group facilitator to participate in the Programme and to undertake to meet the requirements in relation to attendance, training, tasks and project completion.

A maximum of 20 members per discussion group is recommended, although facilitators may exercise discretion in this regard where no diminution of the effective functioning of the group is anticipated. Groups will function most effectively if they are properly structured with a chairman and secretary in place. It is essential that the dynamic within groups allows for open and honest discussion of selected topics.

The Programme will focus primarily on 5 areas: 1) silviculture, 2) financial, management, 3) forest health, 4) environmental awareness to include water quality and biodiversity and finally 5) timber harvesting/marketing.

Forest holders will complete their KTG programme involvement over a two year period. Participating Forest holder participants will be required to attend at least 4 discussion group meetings (or 3 meetings plus 1 approved national event) per year. A required profile of topics for discussion will be available to guide the Programme. It is recommended that each discussion group meet at least 3 times during a programme year. Sample tasks that may be considered:

- Compile a folder with documentation and maps relating to previous administration and management of the forest; and
- Undergo training on:
    - Inspection path insertion
    - Stack measurement
    - Assessment of mean tree volume
    - Assessment and marking of conifer and broadleaf crop trees
    - Native woodlands
    - Obligations under water framework, birds and habitat directives

Facilitators will be required to ensure that all members of KTG's participate fully in the Programme.

In the initial year, all participants will be required to complete a Going Forward Action Plan. This action plan can complement the Forest Management Plans required by the Forest Service by requiring owners to interpret, schedule and implement appropriate key actions required to optimise the forest resource from both financial and environmental perspectives. Participants will also be required to select and complete one other task from a list provided in year one of the programme. The Going Forward Action Plan will be reviewed and also a new task selected for the second year of the programme.

Other models for KTG's were presented during public consultation and it is likely that the above approach will need to be modified as part of the final design.

Support could also be considered for demonstration and pilot projects which increase or expand the knowledge base and can be transferred to other forest owners through KTGs. It must be noted that demonstration projects are covered by Sub-Chapter 2.4: Aid for knowledge transfer and information actions, while pilot projects are subject to Sub-Chapter 2.6: Aid for co-operation in the forestry sector.

Only costs will be reimbursed and no direct payment will be granted under this measure.

6.7.2.1 Objectives

The aim of this scheme will be to maximise the potential for knowledge and skill transfer to forest owners, thereby stimulating proactive management and appropriate tending, thinning and harvesting interventions.

The knowledge and information acquired through knowledge transfer groups should allow forest holders to enhance their competitiveness and resource efficiency and improve their environmental performance while at the same time contributing to the sustainability of the rural economy. This measure can achieve this through proper and timely management interventions undertaken within a formal knowledge transfer structure. This will ensure that these actions are in line with good practice incorporating the latest and most applicable innovations in relation to the management action concerned.

The existence of a gap between the provision of research results and the application of innovative approaches can also be addressed under the structure of knowledge transfer groups. The aim would be to bring innovators and researchers together with forest holders to look at the specific topics of interest and concern. Within these Knowledge Transfers Groups, researchers and innovators representing the scientific community would access practical issues whereas forest holders can benefit from the latest developments in the topic as presented to them. New approaches take too long to arrive on the ground and this approach could facilitate the adoption of new ideas within a shorter timeframe.

6.7.2.2 Number of beneficiaries, cost per beneficiary and total annual cost of the scheme

Support may cover up to 100% of the eligible costs. These are the costs of travel, accommodation and per diem expenses of the participants can be covered. The aim will be to fund 1,000 forest holders per year.

6.7.3 Continuous Professional Development scheme details

Support will be provided for the organisation of a formal continuous professional development structure. This will involve putting in place a process of certification whereby individuals can submit a record of forestry training, seminars or field visits attended during the year. These records will then be accessed by the CPD body who will evaluate the training undertaken and decide whether the training merits the award of CPD certification. The scheme is not restricted by number or membership of any organisation. The CPD certification will be voluntary. The advantage of this scheme for individuals operating in the field of forestry is that they will be able to present themselves as being CPD certified.

The funding will be provided to the CPD certifying body.

6.7.3.1 Objective

To establish a CPD certification structure for all registered foresters.

6.7.4 Targeted Training Scheme Outline

Training for private forest holders, professional foresters and forest machine operatives. For private forest holders the main focus would be on forest management while training for machine operators would include harvesting and forwarding. Health and safety, environmental legislation\guidelines, forestry scheme rules and conditions, silvicultural requirements, new FMP format, low impact silvicultural systems (e.g. continuous cover forestry), native woodlands training, as well as forest health could all feature as part of any potential training programme for forestry.

This support could also include provisions for training courses around forestry schemes, procedures, guidelines and environmental directives.

6.7.4.1 Objectives

The primary objectives of the measure include ensuring that there are sufficient numbers of adequately trained harvesting (including chainsaw) and forwarding operatives, thinning taking place on time, roundwood production targets are reached, new format of draft FMP proposed being submitted, minimal accidents in forest operations, reduced pilot cases from the EU re. breaches of habitats directive.

Programme specific output indicators includes the following;

- Number of trained harvesting and forwarding operatives
- Number of forest owners trained in management.

6.7.5 Advisory Services scheme outline

Support for advisory services will be targeted at individual forest holders and farmers. Advisory services will be delivered in the form of clinics, field days, information meetings, workshops, events such as "Talking Timber" and conferences. The advice will be aimed at economic and environmental issues concerning forestry but will also involve some element of promotion of the opportunities presented by the new forestry programme, health and safety and awareness of general forest related issues as they arise, e.g. most recently *Chalara fraxinea*.

Service providers will be obliged to respect the non-disclosure obligations referred to in Article 13(2) of Regulation (EU) No 1306/2013.

The cost per advice will be limited to €1,500.

6.7.5.1 Objectives

To ensure that the appropriate support is available to forest holders to enable the maximum financial return to be generated from the forest resource in a sustainable manner consistent with legislation and guidelines. Achievement of objectives would be measured as follows; total number of advisory hours provided, number of demonstrations given, events held, number of specialist areas covered and finally the number of forest holders receiving advice.

Advisors will need to have the appropriate qualifications and skills to undertake this role.

6.7.6 Combining Measures

There are possibilities for combining producer groups, KT&IA and Innovative Forestry Technology measures. For example members of the producer groups could be targeted for the KTG when topics of relevance to them are being discussed. Another possibility is where beneficiaries of support for investment in new technology must present a summary of their experiences to a KTG. These inter linkages can be explored and developed further when drafting the finer points of the scheme terms and conditions.

There are also possibilities for linking Knowledge Transfer Groups and targeted training to ensure knowledge is transferred to a wider audience where possible. This is particularly relevant when creating linkages between environmental awareness, environmental legislation and forest management techniques. The possibilities for combining measures in this way will need to be explored in more detail when it comes to designing the scheme at an operational level.

6.7.7 Environmental issues

This measure will provide opportunities for environmentally focus topics for discussion, training and advice. For example advisory service will include advice to forest holders on the relevant obligations under the Habitats Directive, the Birds Directive and the Water Framework Directive.

The impact of this measure on the environment will be measured by the number of courses, field days and clinics held where environmental knowledge transfer actions have been delivered. The number of knowledge transfer groups that have been formed which have focussed primarily on environmental issues will also be measured as well as the number of attendees.

6.8 Measure 8: Setting up of Producer Groups

6.8.1 Regulation Framework

State Aid	RDR	Focus areas	Code
Sub chapter 2.7	Article 27	3(a)	9.1

6.8.2 Scheme Outline

Financial support will be provided to towards the cost of establishing forest producer groups in a manner consistent with rules set out in the RDR.

Beneficiaries would need to submit a detailed business plan providing a description of the project, including objectives, timelines and projected expenditure. The Department will verify that the objectives of the business plan have been reached within a period of five years from the date of recognition of the producer group or organisation.

Aid will be paid as a flat rate in annual instalments for the first five years from the date on which the producer group or organisation was officially recognised by the competent authority on the basis of its business plan. The last instalment will be paid only after having verifying that the business plan has been correctly implemented.

In accordance with Sub-Chapter 2.7 of the EU Guidelines on State aid in the agriculture and forestry sectors and in rural areas 2014 - 2020, aid will be limited to a maximum of €500 000. If premises are purchased, the costs should be limited to rents at market price. The last instalment will be paid only after verification of correct business plan implementation.

Aid may not be granted for the start-up of new producer groups or producer organisations in a geographical area where, in the opinion of the Competent Authority, the objectives of the business plan submitted by the new producer group or producer organisation are already being fulfilled by an established producer group or producer organisation operating in that geographical area.

Agreements, decisions and concerted practices concluded in the framework of the producer group or organisation must comply with the relevant provisions of competition law, and in particular with Articles 101 and 102 of the Treaty. Aid will not be granted to

a) production organisations, entities or bodies, such as companies or co-operatives, the objective of which is the management of one or more forestry holdings and which are therefore in effect single producers;

or

b) other forestry associations which undertake tasks, such as mutual support and forest management services, in the members' holding without being involved in the joint adaptation of supply to the market.

Aid will be limited to producer groups and organisations which are SMEs.

6.8.3 Objectives

Broad objectives under this measure would include the following;

- Encourage private forest holders to management their forest jointly on a geographical basis;
- Create economies of scale to reduce management and marketing costs and improve the viability of private forests;
- Increased viability will encourage holders to actively manage their forests;
- Increase knowledge transfer between forest holders and registered foresters particularly to ensure that their operations protect and enhance the environment;
- Bring more privately owned timber resource to the market;
- Increase thinning rates will maximise the quality and value of the final harvest; and
- Help ensure a constant supply of quality timber to sawmills and processors;
- Promote the use of cooperative road construction between multiple forest owners.

A specific objective of the scheme would be to increase the number of new producer groups over the programme period. The objective set for this target is 13. Funding is limited to start ups only.

The number of individual participants will also be measured as an output indicator.

6.8.4 Environmental services

Producer groups can help reduce the impacts of road building and harvesting on soil and neighbouring water courses by co-ordinating these activities within a producer group structure. These will minimise the impacts on the environment by ensuring that activities are planned in a co-ordinated fashion, lessening the amount of traffic and disturbance that might occur if forest owners operated independently from one another.

6.9 Measure 9: Innovative Forest Technology

6.9.1 Regulation Framework

State Aid	RDR	Focus Area
Sub chapter 2.1.5	Article 26	5(e)

6.9.2 Scheme Outline

Grants of up to 40% of eligible expenditure could be made available under this measure. Projects eligible for support will be determined by competitive selection process under a Call for Proposals.

Applicants will be required to submit a detailed business plan providing a description of the project, including the objectives of the project, timelines and projected expenditure. A final report on the outcome of the project will also be required.

The type of technologies envisaged are not harvesting machines themselves but could relate to harvesting technology in general. What is envisaged is support for smaller scale technologies which are applicable to private forest holders, producer groups, forest contractors and haulage operators. For example consideration may be given to aid variable tyre pressure systems to enable access to forests on low quality roads where haulage operators have to access multiple forest properties. Forest inventory technologies could also be considered where such technologies are innovative and show potential to provide low cost options to private forest holders for assessing the value and productivity of their forest holdings.

In order to be eligible for support for this scheme, proposals should ensure (e.g. in the business plan from the applicant) that the investments will contribute to the improvement of the economic value of forests in one or more holdings. In the case of machinery for example, it has to be ensured that they will be used efficiently.

6.9.3 Objectives

Support for the introduction of new technologies for use in private forests has the potential to reduce management costs and improve accuracy in terms of forest management outputs. Objectives could be measured by the number of new technologies adopted by forest holders, producer groups and contracting companies. We will also measure the number of applications received.

6.9.4 Beneficiaries, Number of beneficiaries, cost per beneficiary and total annual cost of the scheme

Aid may be granted to private forest holders, municipalities and their associations and to SMEs for investments.

Approximately 30 projects per annum.

6.9.5 Environmental Services

It is difficult to describe exactly what environmental services will be delivered by this scheme until applications are received for specific projects. The consultation process did however give some insight into some of the possibilities one of which was funding for Variable Tyre Pressure systems. The following is an extract from one of the submissions received.

"Forestry in Ireland is generally found in poorer soils or in remote areas and so vehicle access to many forests are along poorer quality local roads. As we are dealing with a low value commodity, often hauled over long distances, there is a need to maximise payload wherever possible and consequently, potential for some road damage in particular areas. Such damage has both financial and social implications which the industry as a whole is striving to minimise.

Most days, about 400 trucks leave the forests, heavily laden. They often use minor roads, which are not always entirely suitable for the purpose resulting in negative impacts.

One technology that can be part of the solution to road damage is Variable Tyre Pressure systems (VTP) on Timber Haulage Vehicles. These systems have been in use worldwide for some years, but the Irish forest industry has had little exposure to them, with the first prototype coming into use in 2013. VTP increases the contact area between the tyre and the road, which reduces road damage.

Variable tyre pressure systems mainly benefit the road owners, but also have some benefits to vehicle owners, forest owners and timber consignors. Local communities also win. Road owners benefit as the system reduces stress to the road surface which lessens damage; ultimately reducing maintenance and repair costs. Sealed roads benefit greatly with less surface break up and gravel roads will see considerably less rutting. The vehicle owner benefits as the system reduces vibration in the vehicle, lessening maintenance/repair costs, less tyre damage and improves driver comfort. Reduced tyre pressure on drive axles improves vehicle traction, and can save 1% on fuel costs. On the other hand there is increased daily maintenance on trucks fitted with this system, which comprises significant pipework, valves etc.

For the forest owner / timber consignor, VTP systems could allow use of roads that Local Authorities might have considered needed upgrading prior to heavy vehicle use and prevent the necessity for Local Authorities seeking contributions for damages where this might have occurred with conventional vehicles. Use of VTP may also allow them use full loads where they may otherwise have been restricted to partial loads and costly double handling. This has the added social benefit of fewer truck movements on these otherwise double handle sites. A potential saving for forest owners is that in some properties it may be feasible to use a lower standard of internal forest roads, saving on road construction cost.

Local communities also benefit where sales are extracted using VTP equipped, "road friendly" trucks. There is less likelihood of damage to their local roads which they depend on for their livelihoods and in cases where double handling can be eliminated, there will be far fewer truck movements.

The uptake in the use of VTP in Ireland has been slow. The main reason being that the greatest benefits accrue to the road owner, while the haulage contractor incurs the investment cost in the equipment, with smaller benefits and an increased vehicle maintenance cost."

6.10 Measure 10: Forest Environment and Climate Services: -Forest Genetic Reproductive Material

6.10.1 Regulation Framework

State Aid	RDR	Focus Area	Code
Sub Chapter 2.3	Article 34	4(a)	15.2

6.10.2 Scheme Details

The scheme will provide funding towards the costs related to the following;

a) Management and conservation of broadleaf seed stands and
b) Establishment of new production areas such as seed orchards including (broadleaf and conifer);

In relation to a) above eligible costs will include provision for access paths, fencing, control of ground vegetation and thinning to open up crowns for greater levels of seed production. Funding is therefore not based on actual seed production (by weight) but on the basis of an existing seed stand which is already registered but not in production. Costs may also include income forgone. A payment of €75 per ha per annum paid on the basis of invoices received for up to 7 years and up to 5ha maximum eligible area. For expenditure that exceeds the annual payment such as fencing for example, annual payments can be combined to cover these costs but shall not exceed the total (per hectare) amount due over the 7 year period. The aim of this work will be to get the seed stands back into production. Areas may be removed from the scheme at the discretion of DAFM. Applications for the scheme will be considered on the basis of, *inter alia*, seed self sufficiency in particular species. The target group will be forest holders and nurseries.

The establishment of new seed orchards (clonal and seedling) will also be supported under this scheme for both conifer and broadleaves (proposals will be considered on application). The scheme will be cost based with funding provided up to 50% of the cost of establishment up to a maximum of €10,000/ha. An annual maintenance payment will be available for 7 years at a rate of €500/ha per annum. The maximum number of eligible hectares per application will be 5ha.

Forest management plans for seed stands and orchards which are over 5ha, must accompany aid applications in order to be considered for financial support. These plans must be in line with sustainable forest management as defined by the Ministerial Conference on the protection of Forests in Europe of 1993.

Additional funding under Afforestation and Creation of Woodlands will not be provided for the Forest Genetic and Reproductive Material Scheme.

6.10.3 Eligibility

Public and private forest-holders will be eligible for support.

In relation to seed stands only areas registered by DAFM as a seed production area (seed stands) will be eligible. Furthermore production records or other documentary evidence must be presented which demonstrates that seed production and collection has not taken place in

the previous 3 years. Areas for which a forest premium is being paid will not be eligible for support under the measure but will be eligible when premium payments have expired.

The maximum eligible area will be 5 hectares for both seed stands and orchards (the actual area can be larger but only up to 5ha will be eligible for funding).

6.10.4 Objectives

The primary objectives are to increase productivity and improve the quality of new planting stock; increase self sufficiency in tree seed production; provide for in-situ and ex-situ conservation of forest genetic resources; and provide breeding populations of designated broadleaf and conifer species (eg. alder, birch, oak, sycamore, Scots pine, Sitka spruce).

Programme specific output indicators include the following;

- Number of seed stands and seed orchards supported
- Production areas supported.

6.10.5 Environmental Services

Environmental benefits delivered by this measure can be summarised are as follows;

- Sourcing plants derived from locally produced seed will reduce the risk of disease occurrences caused by imported plants. The *Chalara fraxinia* outbreak was linked to imported plants;
- Plants produced from local seed sources are more suited to the local climate and are therefore more resilient to events associated with climate change;
- Seed stands and seed orchards can produce superior plants and forests, sequestering more carbon and producing more timber which in turn can be used to displace more fossil fuel;
- Establishing seed orchards can be used as a continuation of existing seed or clonal research and therefore bring to fruition research carried out on resilience, productivity and wood quality.;

6.11 Measure 11: Forest Management Plans

6.11.1 Regulation Framework

State Aid	RDR	Focus Area	Code
Sub Chapter 2.8.6	Article 35	4(a) & 5 (4)	16.8

Management plans are important in the development of the forest resources and the protection of the environment. The EU biodiversity strategy to 2020 states that Forest Management Plans or equivalent instruments will be defined by the Member States or regions and communicated in their Rural Development Programmes to bring about a measurable improvement in the conservation status of species and habitats that depend on or are affected by forestry and in the provision of related ecosystem services as compared to the EU 2010 Baseline.

6.11.2 Scheme Outline

The Management Plan provides details on the future management of the forest detailing information such as a stocking assessment, nutrient assessment, average height and yield class, planting year, and the projected years for first thinning(s) and clearfell for each plot. The plan will also set out relevant measures regarding the protection and enhancement of the wider environment, primarily based on any environmental conditions attached to approval, but also incorporating, where possible, readily-achievable measures which can deliver additional environmental benefits. Historical sites and monuments along with other environmental designations should also be recorded in the FMP. The plan must be prepared by a forester registered with the Department following a field assessment to record and update data relating to species, areas, plot boundaries and any associated changes, on a certified species map. They must adhere to the principles of sustainable forest management.

All grant aided forests must submit a Forest Management Plan for both broadleaf or conifer plantations at year 12 for areas of 5 hectares or greater. The midterm review or earlier if budgets allow, will look at supporting private non grant aided forest as well. This might happen when the online Forest Management Plan IFORIS module has been developed. There is a need to encourage all forest owners to develop these plans, particularly in support of felling licence applications where appropriate.

6.11.3 Objectives

The aim of this scheme is to encourage the submission of FMPs for all forests over 5 hectares when the forest reaches 12 years.

6.11.4 Environmental services

With the right management, forests can produce a range of services and products (wood and non-wood forest products) in a way that is sustainable. FMP's are an important tool in helping to achieve sustainable forest management.

6.12 Minimising adverse effects

Arising from the SEA process the following actions have been identified to mitigate any adverse environmental effects that may occur from the forestry programme.

6.12.1 Ecology and nature conservation

- An appropriate ecological assessment is required in sites where Annex I habitats or the habitat of Annex I birds or Annex II species occur or are likely to occur.
- Ensure Areas for Biodiversity Enhancement (ABEs) selected represent the best areas for biodiversity enhancement within a site.
- Consideration should be given to the timing of operations (e.g. selected felling) to ensure the least disturbance.
- Ensure adherence to all Forest Service Guidelines especially the *Forestry and Otter Guidelines* and the *Forestry and Kerry Slug Guidelines*.

- Continue engagement in the implementation of the Group Species Action Plans for Irish Birds. Require consideration of the distance to market for timber, fibre and biomass products to minimise GHG emissions related to transport
- The potential impact on neighbouring land should be considered before the planting of Eucalyptus species, in relation to the potential for natural regeneration.
- Ecological assessment is required as part of the evaluation of NeighbourWood Scheme applications, on sites where concerns about particular habitats or species need to be addressed.
- Where practical and feasible, locate public facilities in the least environmentally sensitive areas of the site.
- As part of signage, leaflets and other interpretive material, members of the public using the Neighbourwoods should be made aware of the sensitivity of certain habitats and species, and encouraged to act accordingly to protect these. The 'Leave No Trace' outdoor code provides a useful model in this regard.
- Where practical and feasible, access to forest land should select the least environmentally-sensitive route.
- Continue implementation of the Forest Service Appropriate Assessment Procedure and EIA Screening, and undertake other appropriate ecological assessment, as required, to assess the potential impact of the proposed forest road construction on ecologically sensitive sites, including sites where Annex I habitats, Annex I Birds or Annex II species may be present. Implement mitigation measures arising from these processes.
- Areas recognised for their geological importance should be taken into consideration during the layout, design and construction of forest roads. These include County Geological Sites.
- The felling and replanting of forests damaged by storms, fire, pests or diseases should take appropriate cognisance of underlying sensitivities regarding water quality, habitats and species, and landscape.
- Where the objective of forest management is to protect and enhance water quality or habitats and species, consideration should be given to the retention of dead and malformed trees to promote related biodiversity, where safe to do so. Adhere to requirements within the Forest Service *Forest Biodiversity Guidelines* regarding the retention of deadwood.
- Increased collaboration between the Forest Service and Third Level Institutions regarding the environmental element of forestry courses

6.12.2 Climate Change

- Require consideration of the distance to market for timber, fibre and biomass to minimise GHG emissions related to transport.

- Appropriate measures to better equip Ireland's forests to withstand the negative impacts of climate change will be adopted into forest policy and associated regulatory and non-regulatory rules, as required.

6.12.3 Lanscape

- Where practical and feasible, access to forest land should select the least visually-sensitive route, particularly in areas of high landscape sensitivity.

6.12.4 Cultural Heritage and Archaeology

- Applications should be subjected to an assessment framework, beginning with a screening process and followed by desk-based archaeological assessment where designated archaeological sites, monuments, or features or other areas of elevated archaeological potential are identified, supported by field inspections where appropriate. It should include checks of the Record of Monuments and Places (RMP) and other relevant sources of information.

- Any afforestation application which is equal to or exceeds the mandatory EIA threshold of 50 hectares or any application below that threshold where screening has indicated an EIS is needed should be referred to the appropriate environmental authorities, including the National Monuments Service, for comment and observation.

- Any road application which is equal to or exceeds the mandatory EIA threshold of 2km in length or any application below that threshold where screening has indicated an EIS is needed should be referred to the appropriate environmental authorities, including the National Monuments Service, for comment and observation.

- Programmes of further training for Forestry Inspectors and Registered Foresters on the archaeological requirements associated with the schemes operating under the programme, as well as on the recognition of and procedures for reporting previously unrecorded sites, monuments, or features identified during forestry development works should be instigated over the life time of the programme.

- Any updated spatial datasets produced by the National Monuments Service for use by planning and consent authorities should be incorporated for use in the screening process, as and when these are made available.

- Relevant points and requirements arising from any cross-sectoral standards or guidelines developed by the National Monument Service to assist archaeologists conducting Archaeological Assessments or Archaeological Monitoring should be taken into account in any future revisions of the Forestry and Archaeology Guidelines and related standards and procedures documentation.

- Reports, using information garnered in the inspection regime underpinning the programme, on the condition of Recorded Monuments and other archaeological sites, monuments, or features in forests should be periodically made available to the public.

- Archaeological exclusion zones within or adjoining forests should not be used for the storage and preparation of materials, timber stacking, vehicle maintenance, refuelling, or parking.

- Where applications for approval for forest road construction works are made, the impact of such developments on designated archaeological sites, monuments, or features, as well as mitigating potential impacts on other areas of determined elevated archaeological potential (both on site and in neighbouring wetlands), should be considered and relevant conditions or restrictions attached to any approval.

6.12.5 Water

- Consideration will be given throughout all aspects of forest road layout, design and construction on minimising the potential risk of impact on water quality and aquatic ecosystems and species. This includes sediment control and operational timing.
- Heightened vigilance in this regarding will apply in relation areas with high water sensitivity, including aquatic-based SACs and high status waterbodies.
- Alternative options such as lower density roading, temporary roading, long-distance extraction by forwarder, and the adoption of alternative silvicultural systems, may be considered on case-by-case basis, on sites with acute water sensitivity
- Ensure that steam and river crossings constructed for forestry purposes (both permanent and temporary do not impede fish movement, for example, by using clear-span techniques.

- All forest operations within areas of high water sensitivity (such as Freshwater Pearl Mussel catchments and high status waterbodies) must be planned and managed with a particular regard to the protection of water quality, aquatic ecosystems and species. This includes the layout and design of new forests, forest roading, forest harvesting and forest restructuring at the replanting stage

- Trees within archaeological exclusion zones should only be felled following the preparation by an archaeologist or other suitably qualified environmental professional, in conjunction with a forester or arborist, of a plan outlining the most appropriate means to fell and remove trees from on and around the monument
- All forest development should be considered within the context of the protection of water quality, including objectives associated with various statutory and non-statutory designations such as the objectives of WFD waterbodies, the conservation objectives of aquatic-based SACs, and the objectives underpinning the establishment by the Forest Service and others, of the Fisheries Sensitive Areas and the Acid Sensitive Areas.
- Where appropriate, opportunities for forest development to contribute towards the enhancement of water quality, aquatic ecosystems and species will be explored and realised

7 Common Assessment Principals

7.1 Undertakings in difficulty and unlawful aid

Firms in difficulty according to the definition set out in Community Guidelines on State aid for rescuing and restructuring firms in difficulty are excluded from the scope of the scheme set out in the Forestry Programme 2014 – 2020.

Ireland will suspend the payment of the notified aid if the beneficiary still has at its disposal an earlier unlawful aid that was declared incompatible by a Commission decision (either concerning an individual aid or an aid scheme), until that beneficiary has reimbursed or paid into blocked account the total amount of unlawful and incompatible aid and the corresponding recovery interest.

7.2 Contribution to a common objective

7.2.1 Contribution to national and regional strategies

Figure 1 below shows a scale between inconsistency/incoherence and consistency/coherence. It also shows that redundancy and efficiency are both necessary, but must be kept in balance. Excessive redundancy leads to duplication and excessive efficiency leads to gaps.

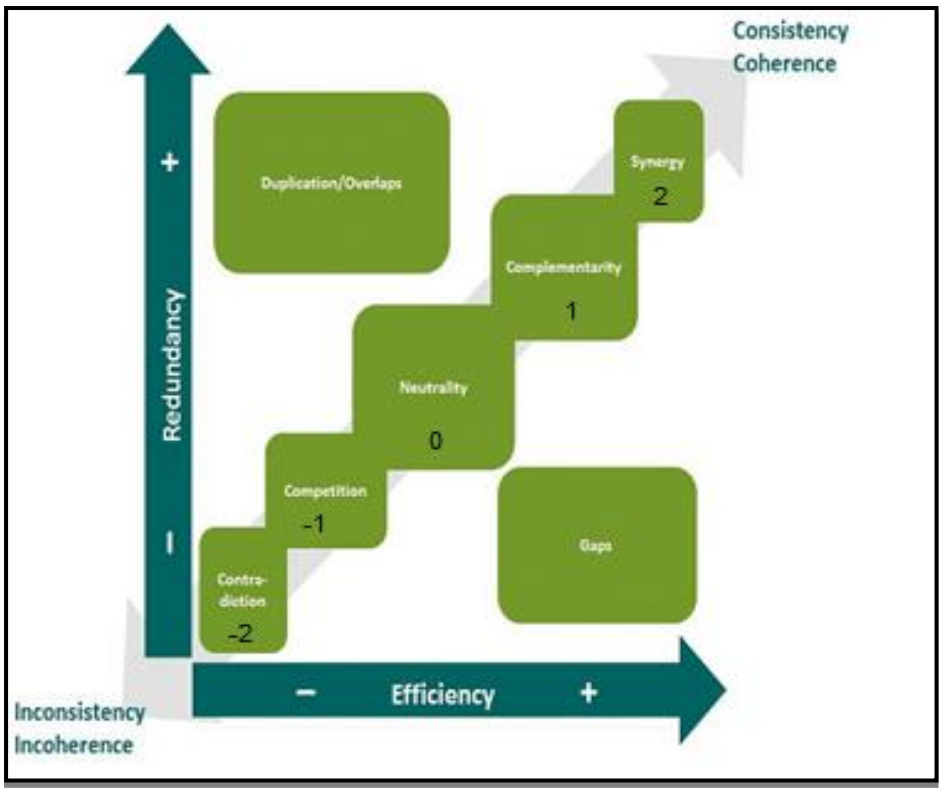


Figure 1: Diagram of possible interactions between policies and programmes

Strategy / Policy	Contribution of new Forestry Programme 2014-2020			
	Need 1 – Increase the Level of Forest Cover	**Need 2 – Increase supply of forestry biomass to bridge expected supply gap by 2020**	**Need 3 – To support private forest holders in actively managing their forests**	**Need 4 – Enhance the environmental and social benefits of new and existing forests**
National Reform Programme and Council Recommendations				
National Reform Programme for Ireland under the Europe 2020 Strategy (The Irish Government, 2011)	2	1	1	1
Council Recommendation of on the Irish National Reform Programme 2012 (Council of the European Union, July 2012)	n/a	n/a	n/a	n/a
Economic Adjustment Programme (EAP) (European Commission, 2010)	0	0	0	0
Overarching Strategies				
Programme for Government, (Department of An Taoiseach, March 2011)	1	1	1	1
Action Plan for Jobs, (Department of Jobs, Enterprise and Innovation, 2012)	2	1	1	0
Infrastructure & Capital Investment 2012-16: Medium Term Exchequer Framework, (Department of Public Expenditure, November 2011)	0	0	0	1
Strategy for Science, Technology and Innovation (DETE 2006-2013)	0	0	1	0
Strategy for Renewable Energy 2012-20, (Department of Communications, Energy and Natural Resources, May 2012)	1	2	1	0
National Renewable Energy Action Plan – IRELAND, 2010	1	2	1	0
National Energy Efficiency Action Plan 2, March 2013.	1	2	1	0
National Climate Change Strategy 2007-12 (update forthcoming), (Department of the Environment, Heritage and Local Government, 2012)	1	2	1	0
Delivering our Green Potential, (Department of Agriculture, Food and the Marine, 2012)	2	2	2	1
Sectoral Strategies				
Forests Products and People – Ireland's Forest Policy – A Renewed Vision (Public Consultation Document) – (DAFM June 2013)	2	2	2	2
Food Harvest 2020 – (DAFF 2010)	-1	-1	0	0

Table 24: New Forestry Programme contribution to national and regional strategies

7.2.2 Influence of CSF Programmes on New Forestry Programme 2014 -2020

The table below presents a summary assessment of the potential influence of other CSF programmes on the draft Forestry Programme 2014 -2020. The following CSF Programmes have been selected based on their geographical remit of operation overlapping with that of the new Programme. These being;

- **Republic of Ireland:**
  BMW Regional Operational Programme 2014-2020
  S&E Regional Operational Programme 2014-2020;
  Ireland ESF Programme 2014-2020;
  Ireland Rural Development Programme 2014-2020; and
  Ireland Seafood Development Programme 2014-2020.

- **Cross Border Programmes - INTERREG VA Programmes:**
  INTERREG V Programme 2014-2020;
  Peace IV Programme – 2014-2020; and
  Ireland Wales Cooperation Programme 2014-2020.

- **Transnational Programmes - INTERREG VB Programmes:**
  Northern Periphery Programme 2014-2020;
  North West Europe (NWE) Programme 2014-2020; and
  Atlantic Area Transnational Programme 2014-2020.

- **Interregional Programmes - INTERREG VC Programmes – INTERREG EUROPE:**
  INTERREG VC – Ireland 2014-2020.

Figure 2 below shows a scale between strong complementarity and strong duplication. The scale shows the magnitude of the influence of other CSF programmes on the Forestry Development Programme.

Key

Influence	Strong Complementarity	Complementarity	Neutral	Duplication	Strong Duplication
Rank	5	4	3	2	1

Figure 2: Diagram of possible interactions between policies and programmes

CSF Programme	Forestry Development Programme 2014-2020			
	Need 1: Increase in the level of forest cover	**Need 2: Increase supply of forestry biomass o bridge expected supply gap by 2020**	**Need 3: To support private forest holders in actively managing their forests**	**Need 4: Enhance the environmental and social benefits of new and existing forests.**
Republic of Ireland				
BMW Regional Operational Programme 2014-2020	4	4	3	4
S&E Regional Operational Programme 2014-2020	4	4	3	4
Ireland ESF Programme 2014-2020	3	3	3	4
Ireland Rural Development Programme 2014-2020	5	5	5	5
Ireland Seafood Development Programme 2014-2020	3	3	3	3
Cross Border				
INTERREG VA Programme 2014-2020 (Northern Ireland – Border Region of Ireland-Western Scotland)	4	4	3	4
Peace IV Programme – 2014-2020 (Northern Ireland - Border Region of Ireland)	3	3	3	3
Ireland Wales Cooperation Programme 2014-2020	4	4	3	4
Transnational Programmes - INTERREG VB Programmes				
Northern Periphery Programme 2014-2020	4	4	3	4
North West Europe (NWE) Programme 2014-2020	4	4	3	4
Interregional Programmes - INTERREG VC Programmes – INTERREG EUROPE				
INTERREG VC – Ireland 2014-2020	4	4	3	4

Table 25: Influence of other Policies and Programmes on the new Forestry Programme

The new programme is a continuation of previous programmes which have been in operation since the 1980s, aiming to build the national forest resource and its services. This type of aid operated successfully under previous rural development programmes and under state aid approval for the period 2007-2013. The Department of Agriculture Food and the Marine decided to fund forestry under state aid rules as opposed to rural development as it was felt that an already ambitious RDP would not have sufficient financial capacity for another large scheme such as forestry (€262m proposed over the period 2015-2020). With forestry included in the RDP it was felt that the other schemes would lack sufficient scale and individual supports would not be adequate to meet targets. Table 25 in combination with table 7 and 9 clearly demonstrates consistency with the priorities of the Rural Development Programme and Regulation. Therefore all measures set out under the Forestry Programme 2014 – 2020 are consistent with the "Rural Development Programme Ireland 2014 – 2020".

7.3 Incentive effect and Proportionate aid

The forestry programme does not envisage significant funds being paid to large companies. In relation to the largest of the measures afforestation and creation of woodlands, our NPV analysis shows that afforestation will not yield a return when land has to be purchase to plant. This effectively rules out this category of investor. Some aid is envisaged to the public forestry company Coillte Teoranta in the area of native woodland conservation (including the conversion of existing conifer forests to native woodland) and possibly some aid in relation to seed stands. Some aid is also envisaged at this stage for roads for private investment companies.

Notwithstanding the above the size of applicants will range from SME's to Large Companies. The number of applicants for each of the measures are estimated as follows;

Scheme	No. Of Applicants
Measure 1: afforestation and Creation of woodlands	6,000
Measure 2:Investments improving the Resilience and Environmental value of Forestry: - NeighbourWood Scheme	60
Measure 3: Investments in Infrastructure: Forest Road Scheme	2,000
Measure 4: Prevention and Restoration of Damage to Forests: - Reconstitution Scheme	900
Measure 5: Investments improving the Resilience and Environmental value of Forestry:- Woodland Improvement	1,500
Measure 6: Investments improving the Resilience and environmental value of Forests:- Native Woodland Conservation Scheme	1,000
Measure 7: Knowledge Transfer and Information Actions	6,500
Measure 8: Setting up of Producer Groups	20
Measure 9: Innovative Forest Technology	180
Measure 10: Forest Environment and Climate Services: -Forest Genetic Reproductive Material	300
Measure 11: Forest Management Plans	6,000

Table 26: Estimate of number of applications for the programme

All applicants will be required to declare the size of their undertaking in the application form aid for all measures. For Large companies points number 72 and 73 of the European Union Guidelines for State aid in the agriculture and forestry sector and in rural areas 2014 – 2020 will apply (see sections 7.3.1.2 and 7.4).

7.3.1 Incentive effect and need for aid

Support under the new forestry programme can only be regarded as compatible with the internal market, if it has an incentive effect. An incentive effect is present when the aid changes the behaviour of an undertaking in a way it engages in additional activity contributing to the development of the sector which it would not have engaged in without the aid or would only have engaged in such activity in a restricted or different manner. The aid must not subsidise the costs of an activity that an undertaking would have incurred in any event and must not compensate for the normal business risk of an economic activity.

Prior to State intervention in the 1980s planting levels stood at just over 200 ha per annum. With aid planting levels reached just over 6,500 annually over the period 2011-2013, this clearly demonstrates a very low (and acceptable) dead weight of 3%.

Aid shall only be given once an application has been made before the activity has started.

7.3.1.1 SME's

In relation to the incentive effect, SMEs must indicate on the application form for aid under the measures proposed that "*The work described herein, would not have been undertaken if it wasn't for the financial support provided under state aid rules. Without this aid there would be no change to current activities*."

7.3.1.2 Large Companies

Large Companies must provide documentary evidence of the incentive effect in order to be eligible for support under this scheme. The EU defines a large company as one with a headcount of more than 250 people; turnover greater than €50 million; or a balance sheet greater than €43m. If a company is part of a group, the employee, turnover, annual balance sheet and ownership limits apply to the group. It is up to the applicant to properly declare themselves as a large company. The Definition of micro, small and medium-sized enterprises is recorded in Annex I of Agriculture Block Exemption Regulation (ABER), Commission Regulation 702/2014. Failure to make an accurate declaration may result in the immediate cessation of aid along with the recovery of all aid which has been given along with interest at the appropriate rate.

Large company, must submit an internal company document showing that the company has analysed the viability of the project – with and without aid[22] – and showing the "incentive effect". The document must clearly state what would have happened without the support available under this scheme. That means that the documentation (internal report) produced by the company must establish that the aid will cause at least one of the following:

• A material increase in the size of the project, or
• A material increase in the scope of the project, or
• A material increase in the total amount spent on the project,

The Forest Service requires that the company document shows a credible analysis and demonstration of the incentive effect. The document should contain an analysis which answers the following questions:

- Would the project proceed without State aid assistance?

[22] Without aid is the known as the counterfactual

- Would the level of project expenditure be less without State aid support? If so, indicate by how much?

This information should indicate changes in the project size, scope and total spend.

This incentive effect document should be submitted at the application for aid stage. The application will only be deemed to have been accepted as valid once the company has been advised by the Forest Service that the incentive document meets the requirements set out above and is fully compliant with the European Union Guidelines for State aid in the agriculture and forestry sector and in rural areas 2014 – 2020. Aid will be limited to the minimum on the basis of the net extra cost of implementation compared to the counterfactual.

7.4 Proportionality of the aid

Aid granted under this scheme must be proportionate. Support is considered proportional only if the same result could not be achieved with less aid, in other words if the amount of aid is limited to the minimum necessary. The aid amount should not exceed the minimum necessary to render the project sufficiently profitable, for example should not lead to increase its IRR beyond the normal rates of return applied by the undertaking concerned in other investment projects of a similar kind or, when available, to increase its IRR beyond the cost of capital of the undertaking as a whole or beyond the rates of return commonly observed in the sector concerned. For example the IRR should be comparable with returns experienced by entities which are not large companies. Where the IRR exceeds this reference figure then the application may be refused.

Large Companies must provide documentary evidence that the aid is proportionate. This can be achieved by submitting an IRR and NPV analysis of the investment with aid and without aid with the Form 1. Only aplications which are deemed proportionate will be grant aided by the Forest Service.

7.5 Transparency

Ireland shall publish on its website at national level the following information on the State aid schemes: the full text of the notified aid scheme and its implementing provisions, the granting authority, the names of the individual beneficiaries, the form (in particular the aid instrument) and amount of aid granted to each beneficiary, the date of granting, the type of undertaking (SME/ large enterprise), the region (at NUTS level II) in which the beneficiary is located and the principal economic sector in which the beneficiary has its activities, at NACE group level. This requirement only applies to individual aid awards greater than €60,000 for beneficiaries active in primary agriculture production and €500,000 for others for the amount of aid granted at the time of financial approval discounted at the rate applicabale at the time (currently 5%).

The beneficiaries table for the previous calendar year will appear on the DAFM website and will be replaced annually with the updated table. This will be done before March of that year.

All applicants will be required to sign the following statement;

"I/We understand that in accordance with the European Union Guidelines for state aid in the agriculture and forestry sector and in rural areas 2014 – 2020, data of beneficiaries of funding under the Forestry Programme 2014 – 2020 will be published and may be processed by auditing and investigating bodies of the European Union. This information will be published on the Departments website and will include the full text of the notified aid scheme and its implementing provisions, the granting authority, the names of the individual beneficiaries, the form (in particular the aid instrument) and amount of aid granted to each beneficiary, the date of granting, the type of undertaking (SME/ large enterprise), the region (at NUTS level II) in which the beneficiary is located and the principal economic sector in which the beneficiary has its activities, at NACE group level, (Statistical classification of economic activities in the European Community). This will only apply to beneficiaries where the cumulative aid amount granted at financial approval is greater than €60,000 for beneficiaries active in primary agriculture production and €500,000 for others. Such information will be published after the granting decision has been taken and will be kept for at least 10 years and shall be available for the general public without restrictions. These records must be maintained for 10 years from the date of award of the aid and must be provided to the Commission upon request.

I/We also understand that all personnel data will be processed in accordance with the Data Protection Act 1988 and 2003. "

7.6 Cumulation of Aid

General de minimis will be used to provide funding for premiums 13-15 in the Afforestation and Creation of Woodlands Measure. This mechanism will also be used to fund all premiums for "Forestry for Fibre". Other forms of State aid are not currently envisage nor is concurrent aid for eligible costs from different schemes.

Aid provided under this programme will not exceed the aid ceilings laid down in the Guidelines. This will apply in all cases even where aid is granted concurrently under several schemes or cumulated with ad hoc aid (if this situation arises). The intention is not to use other State aid to fund eligible costs other than that already described in this programme. Furthermore cumulation of aid to fund eligible costs from other State aid is not envisaged other than where described within the programme. Points 99 – 107 of the Guidelines will be met under the programme.

8 Penalties

The Forest Service has responsibility for grant and premium schemes which are targeted at expanding and developing the forest estate. In order to qualify for approval and grant aid it is a requirement that applications are submitted in accordance with defined scheme rules and procedures. The Department operates a risk based inspection regime with the purpose of maintaining standards and ensuring that grants and premiums claimed are eligible for payment.

The penalty schedules outlined in this document will reduce the requirement to inspect every site and allow inspection rates to be reviewed based on the level of compliance within each penalty category listed below.

The implementation date for imposition of penalties outlined in this document will be in respect of all applications for approval, grant and premium claims made on or after 1st January 2015. The determination of whether a penalty will be applied to plantations established before the implementation date will take into consideration the terms and conditions of schemes at the time of approval, previous penalty schedules and any letter of approval issued.

8.1 Imposition of a Penalty

The Forest Service fully accepts the concept of partnership, co-operation, and consultation between the Forest Service, Registered Foresters, Forestry Companies and the scheme applicants to achieve good forestry practice. The Forest Service Inspectorate and administrative staff will be delegated discretionary powers to allow very minor remedial works in respect of a plantation to be remedied without a penalty being applied. Examples of minor remedial works include *inter alia*

- Insufficient stocking in less than 0.5 ha of the site
- Nutritional deficiencies present in less than 10% of the site or less than or equal to 0.5 ha
- Weed control required in less than 10% of the site or areas less than or equal to 0.5 ha
- Removal of individual planting bags and those neatly stacked and ready for collection
- Removal of less than 15 trees within a buffer zone where no damage has occurred or is likely to occur in the future

In the other more serious cases, where remedial works are required, where terms or conditions are breached or are not adhered to (in accordance with the table of penalties and explanations of the penalties below), a penalty will automatically be imposed. However, the principle of proportionality will be applied in all cases and will be based on a recommendation by the Forestry District Inspector and/or a decision by the Higher Executive Officer (HEO). The decision of the Minister will be final in all matters subject to the provisions of the appeals procedure as outlined below.

The Applicant will be regarded as the principle person or body in respect of which a grant and/or premium penalty will be imposed. The applicant is responsible for the ultimate success and management of his contract with the Department and failure by applicant, the forester or

third parties to perform work up to the required standard is a matter between the applicant and those parties to manage and resolve.

As a general rule, in any case where a penalty has been imposed, it will be necessary to have remedial action taken, where possible, in respect of that element of the plantation or road which was the subject of the penalty.

The principle of proportionality will apply. Where practical, any penalty imposed will be in direct proportion to the alleged breach of the conditions of the scheme. In the majority of cases the area affected by the breach will determine the level of the penalty amount imposed. The imposition of a penalty shall not relieve an Applicant of an obligation to comply with an instruction from the Minister to undertake remedial works in respect of a plantation. Penalties may be applied to the area of the plantation affected which can include entire plots, GPC categories or sections of roads. It should be noted that where problems on a plantation or part of a plantation cannot be remedied, or where the owner fails to remedy the problems, the Minister may deem it necessary to recoup 100% of all money paid in respect of that plantation or the affected portion and to make no further payments.

Compliance with any letter of approval based on a valid application submitted in compliance with the scheme rules, Forestry Schemes Manual, guidelines, specific conditions will not result in the imposition of any penalty. Registered Foresters and/or applicants who submit applications not in accordance with scheme requirements and who provide incorrect information may invalidate their approval and the scheduled penalty will apply, if applicable.

Where the Minister deems it necessary to impose a penalty, in order to avoid additional debts accruing, further payments under the contract may be suspended until the cause of the penalty has been remedied to the satisfaction of the Minister.

The applicant is ultimately responsible for the success of their plantation. Approvals issued by the Department on receipt of an application do not guarantee that a plantation will successfully establish. Applicants must seek independent professional advice before deciding to proceed with any project approved. Failure of a plantation to establish successfully may result in recoupment of grants and premiums paid.

8.2 Payment of Penalties

Monetary penalties shall include interest payable at the rate provided for under SI No. 13/2006. Interest shall be calculated for the period elapsing between a date specified in a notification to the applicant of the repayment obligation and either repayment or recovery by deduction. In cases where the applicant has not received the payment affected by the penalty, the amount will be deducted from that payment. Penalty amounts may also be deducted from future payments due to the Applicant under that contract. Where monetary penalties are not paid or recovered within the period requested, the Department may take whatever action is deemed necessary, including legal action, to ensure their recovery.

8.3 Sanctions

The Terms and Conditions of Registered Foresters outline the conditions applied by the Department of Agriculture, Food and Marine for the registration of individuals and companies as Registered Foresters and Companies. Recurring breaches of scheme rules by registered foresters in the preparation of applications for clients including the application of penalties against their clients may result in sanctions being imposed on the registered forester

including suspension or removal from the Register. Sanctions applied or any appeal lodged following breaches to scheme conditions will have regard to the terms and conditions of registered foresters.

8.4 Appeals Procedure

The Forest Service Appeals Committee is currently set up on an administrative basis and provides applicants with the opportunity to have decisions reviewed internally by a person who was not involved in the initial decision.

The principle of transparency will apply to the imposition of penalties. Where the Forest Service decides on the imposition of a penalty the applicant/registered forester, while giving detailed grounds for appeal, has the right to have that decision reviewed by the Forest Service Appeals Committee. Where a penalty is imposed on the Applicant, the Registered Forester can only appeal that penalty on behalf of the Applicant with the written permission of the Applicant. The appeal to have the decision reviewed internally must be made in writing within 21 days of the date of the decision and must include any relevant documentation in support of the appeal.

If an applicant does not agree with the decision making process they have a right to contact the Office of the Ombudsman, 18 Lower Leeson Street, Dublin 2. Tel: (01) 6395600.

In addition and in accordance with *EUROPEAN COMMUNITIES (FOREST CONSENT AND ASSESSMENT)*

REGULATIONS SI558 of 2010 any decision to grant approval, refusal or attach conditions may be subjected to judicial review by the High Court on application for the purposes of Article 10a of the EIA Directive.

A challenge to the substantive or procedural legality of decisions, acts or omissions subject to the public participation provisions of Council Directive 85/337/EC (*EIA Directive*) may be made by way of judicial review under Order 84 of the Rules of the Superior Courts

8.5 Forest Service Guidelines and Standards

The Forest Service undertakes to provide adequate dissemination of the information contained in the following documents

- Forestry Schemes Manual
- Code of Best Forest Practice
- Forestry Scheme Documents
- Forest Service Mapping Standards
- Environmental guidelines
- Industry Circulars

Compliance with the above documents is a condition of grant aid. Registered foresters should ensure that all applications are submitted in accordance with these documents to ensure that applications are eligible for approval and grant aid.

8.6 Force Majeure or Exceptional Circumstances

The following categories of *force majeure* or exceptional circumstances may, in particular, be recognised by the Department so that the partial or full reimbursement of aid received by the beneficiary may not be required:-

- Death of the beneficiary
- An extraordinary event or circumstance beyond the control of the parties, which prevents one or both parties from fulfilling their obligations under the scheme

Cases of *force majeure* or exceptional circumstances shall be notified in writing by the beneficiary or his/her registered forester to the Forest Service, Johnstown Castle, Co. Wexford within 10 working days from the date on which the beneficiary or Registered Forester is in a position to do so. If there is a dispute on when the beneficiary or Registered Forester is in a position to make this notification, the final decision rests with the Minister.

8.7 Schedule of Penalties

The following is the schedule of penalties including recoupment applicable to all schemes and will apply proportionally based on the degree of non-compliance. Penalties may be applied for non-compliance at each stage of the application process and will be based on the severity of breach and or frequency of its occurrence. A maximum penalty of €5000 will apply for each non-compliance or breach of scheme requirements in addition to recoupment of grants and premiums where required. Proportionality will apply where multiple offences have occurred and the total penalty amount will take in to consideration the cumulative nature of combined offences. These penalties are in addition to any penalties that may be imposed where an offence has been committed under any Act or Regulation.

Schedule of Penalties
(See notes at end of Schedule)
Afforestation/FEPS/NWS est+cons/Woodland Improvement/Reconstitution/Neighbourwood Scheme

Penalty Type [1]	**Applicable to Grant and/or Premium** [2]	**Penalty %** **(Penalty amount calculated will be the % calculated or €250 whichever is greater, but not exceeding €5000)**

Area Over Declared : If the difference is greater than 3% but not more than 20% of the area determined by the Department a penalty will apply as described [(3)]	Grant and Premium [(3)]	Penalty is calculated on 10% of the grant rate multiplied by the difference in hectares between the claimed and determined areas **added** to 10% of the premium rate multiplied by the difference in hectares between the claimed and determined areas. [(3)] Grant and premium recoupment will also apply if deemed appropriate by the Minister.
If the difference is greater than 20% of the area determined by the Department a penalty will apply as described [(3)]	Grant and Premium [(3)]	Penalty is calculated on 10% of the grant rate multiplied by the difference in hectares between the claimed and determined areas **added** to 10% of the premium rate multiplied by the difference in hectares between the claimed and determined areas. [(3)] In addition, no premium will be paid in respect of the next premium due for payment at the time that the penalty is imposed. Grant and premium recoupment will also apply if deemed appropriate by the Minister.
Greater than 50%	Grant and Premium	Applicant is excluded from the scheme in respect of the relevant contract and no grants or premiums paid. Recoupment of all grant and premiums if applicable.
Fence Lengths over-declared by 3% of eligible expenditure	Grant	Recoupment of the amount over-claimed multiplied by 2
Failure to exclude areas which are ineligible for aid, i.e. • Unplantable areas • Unplanted areas • ESB Lines • Gas mains • ABE areas greater than	Grant & all Premiums paid	Recoupment of the amount over-claimed for ineligible area plus 10% of that amount.

15% (20% FEPS)		
Mapping	Grant	2
Provenance Declarations not completed correctly and incorrect declaration of provenances of trees planted	Grant	5
Provision of a false statement, false information or false claim	Grant & all Premiums paid	100
Failure to comply with environmental guidelines and/or specific conditions (i.e. permanent and /or significant damage)	Grant & all Premiums paid	100
Failure to comply with environmental guidelines and/or specific conditions (whether resulting in damage or not) in relation to	Grant	5
-water/fisheries/aquatic		5
-NHAs/SACs/SPAs/pNHA/NHA		5
-sites and monuments		5
-distance from roads/dwellings		5
Failure to comply with standard procedures governing the following (whether resulting in damage or not) e.g.	Grant	5
-chemical application		5
-fertiliser application		5
-hazardous fencing		5
-mounding		5
-silt traps		5
Incorrect species selection	Grant & all Premiums paid	100 (or replacement)
Remedial Works required e.g. • Stocking less than 95% at 1st Instalment	Grant	As per below

or 90% at 2nd Instalment • Inadequate vegetation control • Nutritional issues evident • Inadequate drainage and/or silt traps • Inadequate firebreaks • Inadequate fencing to exclude domestic stock • Removal of trees from setback areas		
-at first inspection	1st or 2nd Grant	5
-at second inspection (i.e. after the remedial works have been reported as complete)	1st or 2nd Grant	10
-at third inspection (i.e. after the remedial works have again been reported as complete)	1st or 2nd Grant	20
-subsequent	All Grant & all Premiums paid	100
Forest Established not in accordance with the Forestry Schemes Manual (where deficiency cannot be remedied without replanting)	Grant & all Premiums paid	100
Failure to maintain fences beyond the second instalment stage	Annual Premium (deducted from next premium)	5
Failure to identify GPC1 areas correctly	Grant & all Premiums paid	Recoupment of the amount over-claimed plus 20% of that amount as a penalty.
Domestic Stock Damage	Annual Premium (deducted from next premium)	10
Failure to control invasive scrub/furze beyond the second instalment stage	Annual Premium (deducted from next premium)	10

Dumping associated with Forest Operations	Annual Premium (deducted from next premium)	10
Non-adherence to Form 1a, b and procedures		As stated on Form 1a,b and c
Unauthorised Developments described in EUROPEAN COMMUNITIES (FOREST CONSENT AND ASSESSMENT) REGULATIONS 2010	As per SI558	

(1) Multiple penalties may apply for multiple breaches of scheme requirements
(2) Unless otherwise specified, "grant" means the total amount of the 1st and 2nd instalments.
(3) Penalty is based on:

- The difference in hectares between the claimed area and the determined eligible area.
- The grant and premium rates paid.
- The GPC rate applicable to the over-declared area; or on the highest GPC rate if more than one GPC is involved.

Roads Scheme

Penalty Type	Grant (2)	Penalty % (Penalty amount calculated will be the % calculated or €250 whichever is greater but not exceeding €5000)
Harvest Area over-declared	Grant	Disallowance or recoupment of the amount over-claimed plus 10% of that amount as a penalty.
Length over declared by 3% or more of eligible expenditure	Grant	Disallowance or recoupment of the amount over-claimed plus 100% penalty.
Mapping	Grant	2
Provision of a false statement, false information or false claim	Grant	100
Failure to comply with environmental guidelines (i.e. permanent and /or significant damage)	Grant	100

Failure to comply environmental guidelines and/or specific conditions (whether resulting in damage or not) e.g.	Grant	25
-water/fisheries		25
-NHAs/SACs		25
-sites and monuments		25
-scenic areas		25
-distance from roads/dwellings		25
-Health and Safety		25
-Other		
Remedial Works required e.g. -Gradient -Inadequate pavement depth -Culverts and drainage -Turning areas and entrances not to specification -Carriageway and formation width -Other	Grant	As per below
-at first inspection	Grant	5
-at second inspection (i.e. after the remedial works have been reported as complete)	Grant	10
-at third inspection (i.e. after the remedial works have again been reported as complete)	Grant	20
-subsequent	Grant	100
Road not constructed in accordance with the Forest Road Manual (Deficiency cannot be remedied but deficiency does not affect the structural integrity or safety of the road. However road must be capable of supporting the transport of fully loaded timber trucks i.e. 44 tonnes GVW)	Grant	60
Road not constructed in accordance with the Forest Road Manual (Deficiency cannot be remedied and the structural integrity or construction renders it unsafe or unsuitable for use)	Grant	100
Dumping and/or use of construction materials not in compliance with the Waste Management Act 1996 and EC (Waste Directive) Regulations 2011	Grant	100

(1) Multiple penalties may apply for multiple breaches of scheme requirements
(2) Unless otherwise specified, "grant" means the total amount of the 1st and 2nd instalments.

8.8 Afforestation//NWS establishment and conservation /Woodland Improvement Scheme/Reconstitution/Neighbourwood Schemes

Details explaining the penalties applicable to the above schemes are described below.

8.8.1 Area Over-Declared

The plantation net area being claimed must be accurately measured in accordance with the Forest Service Mapping Standards. Recoupment of the appropriate portion of all grants and premiums paid to date under the scheme is calculated on the difference between the total payment made in respect of the over-declared area and the payment that should have been made on the area determined by the Forest Service to be the correct payable area.

Where problems on a plantation or part of a plantation cannot be remedied, or where the owner fails to remedy the problems, the Minister may deem it necessary to recoup 100% of all money paid in respect of that plantation or the affected portion and to make no further payments; in effect, writing off the plantation or relevant area.

8.8.2 Fence Lengths Over-Declared

Fence lengths declared eligible for grant aid by registered foresters must be accurately measured by field assessment along the length of the fence. A penalty will apply in cases where the fence length is over declared by 3% or more. The penalty will be the subtraction of the amount for the over-claimed length from the eligible amount payable plus 100% of that amount. For penalty purposes the over claimed amount will be based on the maximum grant rate per linear metre per fence type irrespective of the unit cost claimed subject to the maximum fencing allowance thresholds.

The length of a newly erected fence will be determined based on the linear metres measured along the line of the fence parallel to the ground. Linear measurements may be determined digitally by computer to determine initially if a breach may have occurred but the application of a penalty will be determined by the length measured in the field.

8.8.3 Failure to Exclude Areas which are Ineligible for Aid

Where it is found that there has been a failure to exclude areas ineligible for aid the scheduled penalty will apply. The Forest Service has identified the main areas ineligible for grant and premium in the Forestry Schemes Manual. The main areas ineligible *inter alia* are listed in the following chapters;

- Chapter 7 Unplanted Areas, Biodiversity and Setback distances
- Chapter 8 ESB Power lines
- Chapter 9 Silvicultural Standards
- Appendix 14 Land Types For Afforestation
- Appendix 15 Note on Shell Marl

- Appendix 18 Protocol for the determination of the acid sensitivity of surface water

The area ineligible for aid will be determined by the Department by mapping the ineligible area and plotting it on a map.

8.8.4 Mapping

The Forestry Schemes Mapping Standards outline the requirements for the preparation of maps submitted for grant and premium.
Mapping penalties will only apply where the registered forester has not recorded the following details correctly;

- Plot boundaries on the certified species map do not correspond to the boundaries located on the ground
- Species and biodiversity areas are not correctly recorded in the plot table when compared to the location on the ground
- FEPS options not correctly recorded
- Power lines and gas lines not correctly mapped as determined from ground inspection
- Fencing lengths claimed for grant aid not correctly recorded on fencing map

Mapping of species and plot boundaries which result in an area over claim will have the scheduled penalty applied for "area over claim" instead of the scheduled mapping penalty.

8.8.5 Provenance Declarations not completed correctly

For the purposes of the Forest Service grant schemes all planted material must be supported by a Suppliers Document in the form of a Provenance Declaration Form. Only the origins listed in table 8 of Forestry Schemes Manual are acceptable.

Provenance declaration forms not provided as required or not completed as required, or the use of provenances not approved will receive a penalty in proportion to the area of the plantation where those trees are planted.

8.8.6 Provision of a False Statement, False Information or False Claim

If an applicant and/or Registered Forester knowingly makes a false or misleading statement or withholds essential information for the purposes of obtaining payment and/or approval under this Scheme, his/her participation in the Scheme in respect of the misdeclared contract may be terminated and all or part of the aid paid shall be reimbursed.

Where an Applicant fails to abide by the terms and conditions of the Scheme or if there is any material change in the circumstances of the applicant or plantation which would be in conflict with the details of the Scheme, his/her participation in the Scheme in respect of the misdeclared contract may be terminated and all or part of the aid paid shall be reimbursed. In addition obtaining of aid under the Scheme by fraudulent means by the applicant or others acting alone or together may render such persons liable to prosecution.

8.8.7 Failure to comply with environmental guidelines (permanent and/or significant damage)

In any situation where failure to comply with environmental guidelines results in permanent or serious damage to the environment, particularly but not exclusively, in respect of archaeological sites and monuments, water or important habitats the scheduled penalty of no grant or premium payments will apply.

If environmental guidelines are breached and no permanent or serious damage has occurred, the scheduled penalty "Failure to comply with environmental guidelines and/or specific conditions" will apply. For the purposes of determining if a penalty will apply where buffer zones and setback distances have been breached, reference will be made to the setback distances listed in the Forestry Schemes Manual, guidelines, watercourses identified on the Department's iNET system, archaeological buffer zones identified as a condition of approval and any specific setback areas stated as a specific condition of approval.
Example: A road is constructed and passes through a recorded archaeological monument causing significant damage to the structure. The required buffer zone was not observed. In this case all grant aid for the plantation will be withheld.

8.8.8 Failure to comply with environmental guidelines and/or specific conditions

The environmental guidelines and Forestry Schemes Manual outline procedures and specific conditions with the aim of ensuring good practice. In cases where minor breaches can be remedied and/or where no significant damage occurred, the scheduled penalty will apply. Penalties will be confined to the following breaches;

- failure to maintain the required buffer zone from watercourses in respect of both ground preparation and planting
- failure to adhere to specific buffer zone boundaries specified for NHA's, SAC's , SPAs and archaeological sites and monuments
- failure to keep planting back the requisite distances from roads and dwelling houses
- Non- adherence to the approval letter and any specific environmental conditions.

8.8.9 Failure to comply with standard procedures

Chemical application
Chemicals shall be applied according to the manufacturer's instructions and in accordance with the Forest Service Forestry and Water Quality Guidelines.

Fertiliser application
Fertiliser application shall be in accordance with the Forest Service Forestry and Water Quality and Aerial Fertilisation Guidelines.

Disposal of Waste/Rubbish
The disposal on sites of, for example, plastic fertiliser bags, plastic plant bags and oil containers, must be in accordance with waste disposal legislation. Penalties will only apply where the waste and rubbish found is directly related to forest operations and does not include other forms of dumping e.g. unauthorised domestic dumping.

Hazardous Fencing
Fencing wire should be below head height or below neck height in respect of barbed wire. All tiebacks should be placed inside the planting site.

Mounding
Mounding should be in accordance with good forestry practice in terms of direction, spacing density and depth as set out in the Forestry Schemes Manual.

Silt Traps
Silt traps must be laid down as specified in the Forestry Schemes Manual and should not be left in a dangerous condition or placed in an inappropriate location.

Where the Forest Service has established that a failure to comply with any of the schemes' requirements has occurred then the scheduled penalties will apply.

8.8.10 Incorrect species selection

Sites must be matched with appropriate species to ensure that a crop of trees is produced. There should not be any deviation from the species as set out in the Forestry Schemes Manual, *Chapter 9- Silvicultural Standards*, unless approved in advance and in writing by the Forest Service. In any situation where an incorrect species has been selected the scheduled penalty of no grant or premium payments will apply to that area planted with such species. Any payments made in respect of that area will be recouped and/ or replacement required. Where, for any reason, a species change is made even with the written permission of the Forest Service, if the replacement species is in a lower GPC, recoupment of the overpayment for the area will be made, i.e. the difference between the payments already made at the higher GPC rate and the payment that would have been made at the lower GPC rate.

8.8.11 Failure to identify lands described as GPC1 correctly

The Forestry Schemes Manual, Appendix 14 outlines the requirements for the identification of lands eligible for GPC1. Land not classified correctly will receive the scheduled penalty.

8.8.12 Remedial Works Required

The Forestry Schemes Manual and scheme conditions specify the minimum standards that must be achieved before an application is made for payment of grants and premiums. Registered Foresters must not submit an application for payment where the plantation has not reached the required standard. A scheduled penalty will automatically apply if on a first inspection remedial works are specified. In cases where trivial remedial works of a minor nature are required no penalty will apply as stated previously. If the application is resubmitted without the required remedial works being carried out satisfactorily a second penalty will apply. Where a plantation or part of a plantation cannot be remediated, or where the owner fails to remedy the problems, the Minister may deem it necessary to recoup 100% of all money paid in respect of that plantation or the affected portion and to make no further payments. The main areas where penalties may be applied are listed below.

First Inspection:
The Forest Service will apply the scheduled penalty proportional to the area affected if it is determined that the application was submitted but was not up to the required standard as specified in the Forestry Schemes Manual.

Second Inspection:
If a registered forester resubmits an application without completing the required remedial works as specified a further penalty will apply.

Subsequent Inspection:
Applications re-submitted without the specified remedial works carried out after receiving a 1st and 2nd inspection will receive the scheduled penalty for the area affected. Failure to carry out specified remedial works may result in all grants and premiums paid being recouped.

Plant Stocking
Plantations submitted for 1st Instalment grants must have at least 90% of the trees planted at the recommended stocking rates and trees must be growing and evenly spread across the plot to be considered successfully established. Stocking densities less than 90% will receive the scheduled penalty in proportion to the area affected and will be assessed by plot sampling.
Plantations submitted for 2nd Instalment grants must have at least 90% of the original recommended stocking rates as described above and trees must be free growing and established and 1.3 metres in height.

Vegetation control
Trees submitted for grant aid must be free of competing vegetation. For sections of plantations where weed control is inadequate resulting in significant reduction in the rate of tree growth the scheduled penalty will apply based on the area affected. The *Forestry Schemes Manual, Chapter 9,* outlines requirements for weed control.

Drainage
All sites must be developed in accordance with the *Forestry Schemes Manual* as described in *Chapter 9 – Silvicultural Standards*. Sites proposed and developed must ensure that conifers have a minimum free draining rooting depth of 45-60cm throughout the year. Broadleaves will require a depth greater than conifers. Registered foresters must ensure that sites proposed for afforestation meets this requirement otherwise a scheduled penalty will apply to the area affected.

Acceptable drainage means that there is the minimum free draining rooting depth outlined above as evidenced by tree growth and water depth in any mound drains and existing drains on site. A drainage survey is required for flat sites or sites where there are doubts about the drainability of site and these are completed by a qualified Surveyor or Engineer.

Firebreaks and Maintenance
Registered Foresters must specify at pre-approval stage the requirement for fire breaks if applicable. If firebreaks are not installed correctly and maintained as specified in the *Forestry Schemes Manual, Forest Protection Guidelines*, *Code of Best Forest Practice* and *Code for Prescribed burning* the scheduled penalty will apply.

Nutritional Deficiencies evident
Plantations and plots must not be submitted for grant aid and premium where nutritional deficiencies are evident and where trees are not free growing and established. A scheduled penalty will apply where 10% of the plantation or areas greater than 0.5 ha, is suffering from chlorosis. In addition plantations which have just received an application of fertiliser must not be submitted for payment where no response from the crop is evident. Registered Foresters

must wait until the crop has satisfactorily responded, which may include adequate heather control, before submitting an application for grant aid.

The *Forestry Schemes Manual* specifies the standards which apply to all schemes where trees are being planted. Registered Foresters must ensure that applications submitted comply with these requirements. Applications submitted which do not comply with these requirements, thus resulting in remedial works, will receive the scheduled penalty specified.

8.8.13 Cross Checking Procedures and Premium and Grant Payment

As an accredited EU paying agency the Department of Agriculture, Food and Marine is obliged under EU Regulation to carry out checks and controls on all applications to ensure compliance with all scheme conditions and requirements.

An applicant may not claim forest grant or premium in respect of any area which is included in his/her claim under an area-linked EU scheme such REPS and area aid schemes administered by the Department of Agriculture, Food and Marine where the land was afforested before 2009. The *Forestry Schemes Manual, Chapter 13- Interaction of Afforestation Schemes with Agriculture* provides more details on scheme interactions.

In order to check that this is the case, the Forest Service is using computer mapping technology to

- Measure the area claimed, and
- Cross- check the parcels digitised against other area-based schemes

The process also includes retrospective checking of previous years' premiums. If the calculation of area using these procedures shows any discrepancies, it may be necessary to adjust the amount of the premium and to recoup any overpayment.

8.9 Roads Scheme

The penalties applicable to the Road schemes are described below.

8.9.1 Harvest Area Over-Declared

Mapping of the area eligible for harvesting to determine the eligible length of road for grant aid must be accurately recorded. Over declarations of the eligible harvesting area to determine road density per ha will result in the amount over claimed being disallowed or recouped and a scheduled penalty being applied equal to 10% of that amount over-claimed.

For determining the area ready for harvesting reference will be made in the first instance to the following table as listed in the Irish Thinning Protocol and based on existing crop performance. Thinning outside of these ages must be supported by inventory information. Broadleaves will be considered ready for thinning and tending when they have obtained a top height of at least 8 metres.

Table 4: Standard* First Thinning Ages for Common Conifer Crops (source: Forestry Commission Field Book 2)

	YC							
Species	**24**	**22**	**20**	**18**	**16**	**14**	**12**	**10**
Sitka spruce	18	19	20	21	22	23	25	27
Norway spruce		21	22	23	25	26	29	31
Douglas fir	16	17	18	19	20	22	24	27
Japanese/ Hybrid larch						15	16	18
European larch							18	20
Scots pine						22	24	27
Lodgepole pine						20	22	25

***Note some crops may have a higher YC than is covered in the above table. In many situations in Ireland thinning should take place before the age outlined above.**

8.9.2 Length over declared by 3% or more of eligible expenditure

Road lengths declared eligible for grant aid by registered foresters must be accurately measured by field assessment. Measurement of the road, including equivalent lengths will be calculated based on the length determined by measuring the length along the surface of the road. Equivalent lengths will be calculated on the basis outlined in the Forest Road Manual.

A penalty will apply in cases where the road length is over declared by 3% or more. The amount over claimed will be disallowed or recouped and a scheduled penalty will be applied equal to 100% of that amount over claimed. For penalty purposes the over claimed amount will be based on the maximum grant rate per linear metre irrespective of the unit cost claimed. Over claims less than 3% of the eligible length will be adjusted to the correct length without penalty.

For example, an application for 500 metre road is found to be 400 metres when measured on the ground. In this case the penalty applied will be based on recouping/withholding the over claimed amount plus an additional penalty of 100 metres, in summary 200 metres of road grant will be deducted from the claim.

8.9.3 Mapping

The Forestry Schemes Mapping Standards outline the requirements for the preparation of maps submitted for grant and premium.

Mapping penalties will apply where the registered forester has not recorded the following details correctly

- Road alignment and entrance

For penalty purposes the road alignment must be within +/- 20 metres

8.9.4 Provision of a false statement, false information or false claim

As previously described for other forestry schemes.

8.9.5 Failure to comply with environmental guidelines (i.e. serious and/or permanent damage)

As previously described for other forestry schemes.

8.9.6 Failure to comply with environmental guidelines and/or specific conditions

As previously described for other forestry schemes.

8.9.7 Remedial Works required

Forest roads and/or specified sections not constructed as per the specifications submitted and included in the approval letter or that are not in accordance with the Forest Road Manual will have the scheduled penalty applied.

First Inspection:
As previously described for other forestry schemes.

Second Inspection:
As previously described for other forestry schemes.

Subsequent Inspection:
As previously described for other forestry schemes.

Gradient
In general the maximum gradient permitted is 10% up to a maximum of 12.5% in certain circumstances specified in the application for approval. Any deviations from standard gradients must be approved in advance prior to construction; otherwise the scheduled penalty will apply.

Inadequate pavement depth
Typical pavement depths for forest roads are listed in the Forest Road Manual (2005), table 12. Any deviations from standard pavements depths must be approved in advance prior to construction, otherwise the scheduled penalty will apply.

Culverts and Drainage
Forest roads with inadequate culverts and drainage installed can lead to erosion and damage to forest and county roads. The Forest Roads Manual outlines guidelines for best practice on drainage and culvert design. The scheduled penalty will apply where inadequate drainage and culverts are installed and are not in accordance with the Forest Roads Manual.

Turning areas and entrances not to specification
The Forest Road Manual and subsequent technical standards will describe s the required turning areas and entrance design adjoining public roads and these are a condition of grant aid. Forest roads and/or specified sections not constructed as per the specifications submitted and not in accordance with the *Forest Road Manual* will have the scheduled penalty applied.

Carriageway and Formation Width
All carriageways must be at least 3.4 metres in width. Failure to construct carriageways and formations in accordance with the *Forest Road Manual* will have the scheduled penalty applied.

8.9.8 Road constructed not in accordance with the Forest Road Manual (60% penalty)

(Deficiency cannot be remedied but deficiency does not affect the structural integrity or safety of the road. However road must be capable of supporting the transport of fully loaded timber trucks i.e. 42 tonnes GVW)

If the road constructed cannot be remedied and the deficiency **does not** affect the structural integrity or safety of the road the scheduled penalty will apply to the section of road affected. However the road must be capable of carrying a fully loaded timber truck i.e. 42 – 44 tonnes GVW. If the section of road where the deficiency occurs is the part which connects to the public road the entire road will be rejected for grant aid. In a limited number of circumstances a road not built to the required standards may be capable of carrying fully laden trucks (42 tonnes GVW) for a number of harvest operations before eventually failing e.g. quality of pavement and materials, formation width not sufficient. In these circumstances the Department may decide to allow some grant some aid and the scheduled penalty will apply. Although consent may be given to build roads not in accordance with the standards as described in the Forest Road Manual, eligibility for grant aid must be in accordance with these standards.

8.9.9 Road constructed not in accordance with the Forest Road Manual (100% penalty)

(Deficiency cannot be remedied)

If the road constructed cannot be remedied and the deficiency does affect the structural integrity or safety of the road the scheduled penalty will apply to the section of road affected. If the section of road where the deficiency occurs is the part which connects to the public road the entire road will be rejected for grant aid.

8.9.10 Dumping and/or use of construction materials not in compliance with the Waste Management Act 1996 and EC (Waste Directive) Regulations 2011

All materials used in the construction of a road must comply with the Waste Management Act 1996 and European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011). Applications for grant aid for roads constructed with materials not in compliance with the Act/Regulations will not be grant aided and the scheduled penalty applies. Remedial works may also be required.

9 Mobilising Institutional and Commercial Investment in Forestry

9.1 Mobilising New Sources of finance for Forestry

Forests, Products and People. Ireland's Forest Policy – a Renewed Vision emphasised the importance of *supporting the development of the forest sector through a combination of funding and fiscal arrangements including joint EU funding, direct State funding and facilitating private investment."*

The new Forest Policy also noted that Forestry is capital-intensive investment with costs front-loaded and that compared with other industrial sectors it has a relatively long period before returns are realised. It also points to the growing interest worldwide in forestry as an investment due to a combination of (a) its low volatility, (b) relatively risk free status and (c) level of returns achievable. Forestry is a particularly attractive asset for certain types of investors, such as pension funds, interested in stable long term investments to match their long term liabilities.

A key feature of this Forestry Programme will be for DAFM to explore new financial and funding mechanisms to encourage a greater level of institutional investment in afforestation and in mobilising wood supply from the existing private forest estate. DAFM has engaged the services of New Era to assist in the task of developing a number of alternative sources of finance to promote afforestation activities generally and to mobilise commercial investment in Forestry in particular.

9.2 Mobilising Institutional and Commercial Investment in Forestry

While grants and premiums will continue to be an important form of support for the new programme, there is a need to develop other opportunities that exist for institutional investment. Funding provided to finance projects by way of investment (whether public or private), instead of grants, which can pay back the whole or part of the original resources invested over time, can result in the availability of revolving resources for successive cycles of investment. It can also leverage further private capital for investment, as well as improving project quality and financial discipline. Therefore, in line with the vision for Irish Forestry as set out in the policy review document, the Department has commenced working closely with NewERA to explore institutional and private investment opportunities for afforestation, including work on existing forests such as thinning, tending and roading. While this work is at an early stage, the intention is that during the course of the new programme other vehicle(s) for funding afforestation would be developed that would complement continued strong State funding in the industry.

Planning for the development of mechanism(s) to facilitate institutional funding is underway and will include market soundings to gauge investor appetite and identify feasible structures. This will be an important step in seeking to develop market based funding for forestry in Ireland. In addition to new afforestation, the inclusion of existing forests which are close to thinning stage in such a funding vehicle may increase liquidity in the market and provide a potential income source to forest owners who may wish to realise value from their assets before waiting until clearfell, thus increasing the attractiveness of the sector to potential landowners. This would also have the

potential to consolidate smaller holdings into larger units which may benefit from economies of scale.

The tax treatment of investment will be an important consideration and the relevant provisions of the Taxes Consolidation Act 1997 will be considered also. Due to its long term and index linked nature, forestry has many characteristics which may be attractive to investors such as pension funds. If implemented successfully, private sector institutional investment may play an important role in the planting and thinning programmes. The intention is to use private sector investment as a means to deepen and broaden the range of funding mechanisms to be used for forestry development. New Era's role in this area will be complementary to that which it will play in BioEnergy Ireland.

9.3 Establishment of BioEnergy Ireland

In June 2014 the Government decided to streamline and refocus the commercial operations of Bord na Móna and Coillte, via the establishment of a Joint Venture between the two companies. A key part of this Joint Venture is the establishment of a biomass business, to be called BioEnergy Ireland. This is a significant development in mobilising the necessary supply of biomass to meet growing demand for use in renewable energy generation, and is an important enabling measure in the Government's forthcoming BioEnergy Plan. The Department is working with NewERA and other Government Departments on the setting up of BioEnergy Ireland.

This initiative has the potential to generate new markets for forestry biomass which will in turn add to the attractiveness of forestry as an investment.

9.4 Key Elements of the Initiative

A specific objective of the Mobilising Institutional and Commercial Investment in Forestry is for the Department, in conjunction with NewERA, to develop and implement a plan to mobilise institutional and private investment opportunities for afforestation and other forest activities such as work on existing forests such as thinning, tending and roading. The implementation of this measure will take place over the course of this Programme.

The immediate task is for the Department and NewERA to come forward with a plan within twelve months with a specific programme of activities to

i) assess the capacity of the Forestry Fund sector to drive forward the Forestry Sector in Ireland;
ii) come forward with proposals to mobilise institutional/commercial investment in forestry;
iii) explore international models to advance alternative sources of funding in forestry such as the Woodland Carbon Code in the UK;
iv) benchmark the additional contribution which institutional investment in forestry can make to Government climate change policy;
v) develop proposals for new sources of and mechanisms for private sector investment in Forestry.

The plan will contain a specific implementation framework to be executed on a modular basis over the life of the programme.

Appendix 1
Legal and Regulatory Framework relevant to Irish Forestry

The following lists relevant Irish and EU legislation, together with the various international protocols which have a bearing on forest practice and operation in Ireland.

Primary legislation

- Forestry Act 1946
- Forestry Act 1988
- Local Government (Water Pollution) Acts 1977 to 2007Environmental Protection Agency Act 1992
- National Monuments Acts 1930 to 2004
- Wildlife Acts 1976 and 2000
- Roads Act 1993
- Occupiers Liability Act 1995
- Waste Management Act 1996
- Litter Pollution Act 1997
- Planning and Development Acts 2000 to 2011
- Environment (Miscellaneous Provisions) Act 2011

Secondary legislation

- Forestry 1946 (Part IV) Regulations 1949 (S.I. No. 67 of 1949)
- European Communities Environmental Objectives (Surface Water) Regulations 2009 (S.I. No. 272 of 2009),
- European Communities (Forest Consent and Assessment) Regulations 2010 (S.I. No 558 of 2010), as amended
- European Communities (Aerial Fertilisation) (Forestry) Regulations 2012 (S.I. No 125 of 2012)
- Safety, Health and Welfare at Work (Construction) Regulations 2006 (S.I. No. 504 of 2006)
- Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No. 299 of 2007)
- Planning and Development Regulations 2001 (S.I. No. 600 of 2001), as amended
- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011)
- European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 435 of 2004), as amended

EU legislation

- Council Directive 66/404/EEC on the marketing of forest reproductive material
- Council Directive 71/161/EEC on external quality standards for forest reproductive material marketed within the Community
- Council Directive 77/93/EEC on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community
- Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora
- Council Directive 1999/105/EC on the marketing of forest reproductive material
- Directive 2000/60/EC establishing a framework for Community action in the field of water policy
- Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment
- Directive 2003/4/EC on public access to environmental information
- Directive 2003/35/EC providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment
- Directive 2006/11/EC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community
- Directive 2009/147/EC on the conservation of wild birds
- Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment

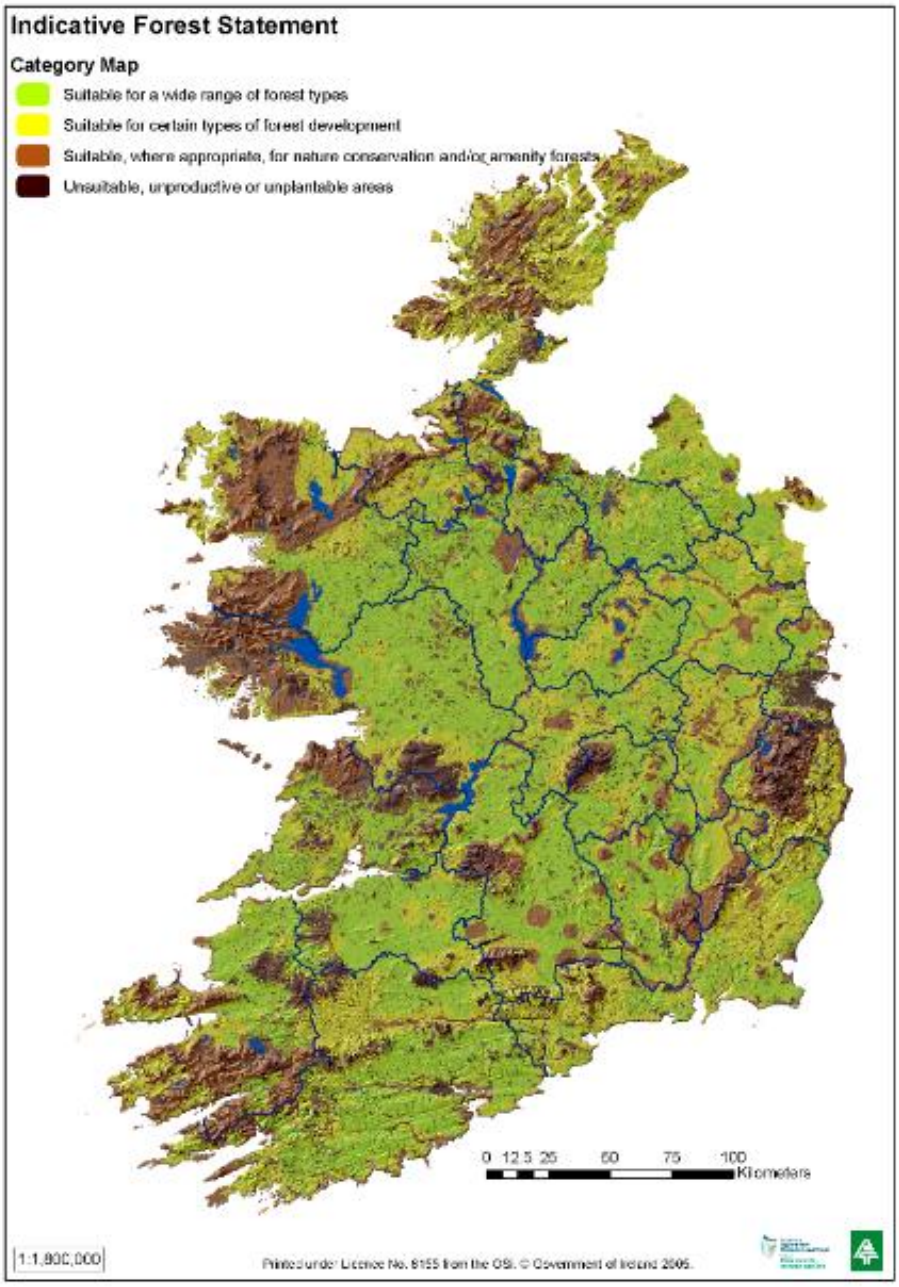
Basic Measure	***Transposing Legislation in Irish Law***	***Relevant to forests and forestry activities***	***Relevant Forest Service Work Area***
Environmental Impact Directive (85/337/EEC)	European Communities (Forest Consent and Assessment) Regulations 2010 (S.I. No.558/2010)	Yes	1. Consent for afforestation and forest road construction 4. NATURA 2000 sites and Screening for Appropriate Assessment 7. Afforestation on unenclosed / unimproved land 5. Forestry and Freshwater Pearl Mussel 8. Acid Sensitivity Protocol and Afforestation 9. Fisheries Sensitive Areas 12. iFORIS 13. Inspection regime 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences
Directive on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (2006/11/EC)	European Communities (Aerial Fertilisation) (Forestry) Regulations 2012 (S.I. No.125/2012)	Yes	3. Aerial Fertilisation 1. Consent for afforestation and forest road construction 12. iFORIS 13. Inspection regime 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences
	The European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 (S.I. No. 296/2009)	Yes	5. Forestry and Freshwater Pearl Mussel 4. NATURA 2000 sites and Screening for Appropriate Assessment 1. Consent for afforestation and forest road construction 12. iFORIS 13. Inspection regime 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences 10. The use of woodlands and forests to proactively promote WFD objectives

Basic Measure (continued)	***Transposing Legislation in Irish Law***	***Relevant to forests and forestry activities***	***Relevant Forest Service Work Area***
	Forestry Act, 1946	Yes	2. Forestry Act 1946 4. NATURA 2000 sites and Screening for Appropriate Assessment 9. Fisheries Sensitive Areas 12. iFORIS 13. Inspection regime 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences 15. Coillte GFL
Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC), as codified under 2009/147/EC	European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No.477/2011)	Yes	4. NATURA 2000 sites and Screening for Appropriate Assessment 5. Forestry and Freshwater Pearl Mussel 1. Consent for afforestation and forest road construction 12. iFORIS 13. Inspection regime 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences 10. The use of woodlands and forests to proactively promote WFD objectives 15. Coillte GFL
The Drinking Water Directive (80/778/EEC) as amended by Directive 98/83/EC	Drinking Water Regulations (S.I. No. 278/2007)	Yes	12. iFORIS

Basic Measure (continued)	***Transposing Legislation in Irish Law***	***Relevant to forests and forestry activities***	***Relevant Forest Service Work Area***
The Sewage Sludge Directive (86/278/EEC)	Waste management (Use of Sewage Sludge in Agriculture) Regulations (S.I. No. 183 of 1991, S.I. No.148 of 1998 and S.I. No.267/2001)	No (*)	(* The document entitled *Programme of Measures and Standards for Forest and Water* (November 2008) states that this Basic Measure applies "Where sewage sludge may be used as a fertiliser source for forestry (e.g. coppice willow.)" The application of sewage sludge to forests is not practised. The BioEnergy Scheme, which may potentially involve the application of municipal wastewater and sludge to willow coppice, is operated by the Biofuels Policy Unit of the Department of Agriculture, Food & the Marine.
EU Regulation 1107/2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC Directive 2009/128/EC establishing a framework for Community action to achieve the sustainable use of pesticides	European Communities (Plant Protection Products) Regulations 2012 S.I. 159/2012) European Communities (Sustainable Use of Pesticides) Regulations 2012 (S.I. 155/2012)	Yes	17. The use of pesticides in forestry 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences

Other Basic Measures	*Transposing Legislation in Irish Law*	*Relevant to forests and forestry activities*	*Relevant Forest Service Work Area*
Measures taken to protect drinking water sources	Groundwater and surface water bodies that are used, or may be used in the future, as a source of drinking water for 50 persons or more, or where the rate of abstraction is more than 10 m^3 per day	Yes	12. iFORIS
Controls on point source and diffuse source discharges with an impact on the status of water	European Communities (Aerial fertilisation) (Forestry) Regulations 2012 (S.I. No.125/2012)	Yes	3. Aerial Fertilisation 1. Consent for afforestation and forest road construction 12. iFORIS 13. Inspection regime 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences
Measures to deal with priority substances	33 priority substances and 8 other pollutants. Eliminate and phase out priority hazardous substances. Regulations are expected to be made in early 2008	Yes	17. The use of pesticides in forestry 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences

Appendix 2
IFS map identifying areas suitable for forestry



Appendix 3

ENVIRONMENTAL PROTECTION AND CONSULTATION CONTROLS PROCESS

	Environmental Consideration	Afforestation Scheme		Referral for Other Schemes Note: Public consultation only takes place for the Afforestation scheme	
		Referral Body	**Maximum Referral Period**	**Roads**	**Woodland Improvement Scheme**
1.	**Water Quality**				
1.1	Is the area designated potentially acid sensitive by the Forest Service?	Subject to protocol which specifies consultation with the EPA in specified cases.		N/A	N/A
1.2	Is the area > 5 ha and sensitive for fisheries?	Regional Fisheries Board	4 weeks	4 weeks	N/A
1.3	Is the area non-sensitive for fisheries and > 40 ha?	Regional Fisheries Board	4 weeks	N/A	N/A
1.4	Is the area >10 ha and within a catchment area of a Local Authority designated water scheme?	Local Authority	4 weeks	N/A	N/A
2.	**Designated Habitats**				
2.1	**Is the area within a pNHA, NHA, cSAC, SAC, pSPA, SPA or National Park?**	NPWS, An Taisce	2 months	2 months	N/A
2.2	Is the area within 3 km upstream of a pNHA, NHA, cSAC, SAC, pSPA, SPA or National Park?	NPWS	2 months	2 months	N/A
2.3	Does the area contain a current REPS plan habitat?	Dept. of Agriculture, Fisheries & Food	4 weeks	N/A	N/A
3.	**Archaeology**				
3.1	**Does the area contain an archaeological site or feature with intensive public usage?**	NPWS, An Taisce	2 months	2 months	N/A
3.2	Does the area contain or adjoin a listed archaeological site or monument?	NPWS	2 months	2 months	N/A
4.	**Landscape**				
4.1	**Is the area within a prime scenic area in the County Development Plan ?**	Local Authority, Fáilte Ireland, An Taisce	4 weeks	4 weeks (Local Authority)	N/A
4.2	Area there any other high Amenity Landscape considerations?	Local Authority	4 weeks	N/A	N/A
5.	**Size for Notification to Local Authority**				
5.1	Is the area greater than 25 ha?	Local Authority	4 weeks	N/A	N/A
6.	**Other Environmental Considerations**				
6.1	Specify	As necessary	4 weeks where necessary	4 weeks where necessary	N/A

Note: If present, all environmental considerations listed above may require the Forest Service to consult with prescribed bodies. Environmental considerations in **bold type** may require the Forest Service to undertake public consultation.

Appendix 4: Estimated budget by year

Scheme	2015	2016	2017	2018	2019	2020	Total
Measure 1: afforestation and Creation of woodlands	€21,606,878	€26,643,471	€31,191,419	€34,668,749	€40,649,316	€44,726,912	**€199,486,744**
Measure 2:Investments improving the Resilience and Environmental value of Forestry: - NeighbourWood Scheme	€175,000	€175,000	€175,000	€175,000	€175,000	€175,000	**€1,050,000**
Measure 3: Investments in Infrastructure: Forest Road Scheme	€4,900,000	€4,900,000	€4,900,000	€4,900,000	€5,500,000	€5,500,000	**€30,600,000**
Measure 4: Prevention and Restoration of Damage to Forests: - Reconstitution Scheme	€778,000	€778,000	€778,000	€778,000	€778,000	€778,000	**€4,668,000**
Measure 5: Investments improving the Resilience and Environmental value of Forestry:- Woodland Improvement	€1,125,000	€1,125,000	€1,125,000	€1,125,000	€1,125,000	€1,125,000	**€6,750,000**
Measure 6: Investments improving the Resilience and environmental value of Forests:- Native Woodland Conservation Scheme	€995,500	€995,500	€1,045,500	€1,131,000	€1,156,000	€1,934,500	**€7,258,000**
Measure 7: Knowledge Transfer and Information Actions	€1,450,000	€1,450,000	€1,450,000	€1,450,000	€1,450,000	€1,450,000	**€8,700,000**
Measure 8: Setting up of Producer Groups	€50,000	€50,000	€50,000	€50,000	€50,000	€50,000	**€300,000**
Measure 9: Innovative Forest Technology	€150,000	€150,000	€150,000	€150,000	€150,000	€150,000	**€900,000**
Measure 10: Forest Environment and Climate Services: -Forest Genetic Reproductive Material	€20,000	€60,000	€135,000	€135,000	€70,000	€0	**€420,000**
Measure 11: Forest Management Plans	€300,000	€300,000	€300,000	€300,000	€300,000	€300,000	**€1,800,000**