Environmental Impact Report

Doughill Forest Property

Doughill 5-year management plan (2017-2021)

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Executive summary of key mitigations

The measures needed for the sustainable management of the forest stands in Doughill, following the windfarm development, are detailed in this operational environmental impact report. The following is a summary of the key mitigation measures that will be applied during the period 2017 to 2021.

Key mitigation measures

- The traditional practice of tendering out individual sales to a suite of harvesting contractors will be replaced with a tender for one dedicated contractor to manage all the sales.
- A suite of standard mitigations that reflect good forest management practices apply and are a condition of the awarded tender for both harvesting and restocking operations.
- The implementation of the additional site specific environmental mitigations specified in this report will be conditional on the award of all tenders.
- The mitigation measures associated with the windfarm development will be retained and linked in with the forest management mitigations.
- All watercourses (EPA streams, relevant watercourses and field drains), associated crossing points and silt trap locations are identified on each operational map on a site-specific basis.
- Water flows and silt will be controlled high up in the catchment by the installation of new silt traps strategically located on field drains.
- The majority of harvested sites will be windrowed, which does not involve any ground disturbance. This is a significant water flow and silt control measure. Mounding if used will be confined to a limited number of mostly flat sites.
- All sites will be monitored on a daily basis by the contractor, on a weekly basis by Coillte personnel and these will be validated fortnightly by independent water sampling from the key water exit points from the property.
- Restock plans will result in creating new buffer zones and standard setbacks.
- Each site has a detailed site specific plan with all site specific mitigations clearly shown on each operational map.
- All sites were subject to an environmental screening process.
- All sites with listed archaeological monuments will be subject to a detailed site assessment that will inform the appropriate mitigations to adopt on site.
- With the exception of 2 sales, no thinning will be scheduled in the property before 2021 to help minimise the windthrow risk.
- No new roads will be made during the planning period.

1. Scope

This document outlines the impact and associated mitigation measures for all planned high impact operations in the Doughill property for the period 2017 to 2021. These mitigation measures are necessary to ensure that protection is afforded to soils and water, people and material assets, biodiversity, landscape, archaeology and cultural heritage and mitigate against the threat of windthrow. High impact operations relate to all operations that involve any degree of ground disturbance and relate to roading, harvesting and restocking activities. This assessment will place specific emphasis on the protection of soils and water & public consultation. All relevant mitigation measures specified in this report will be implemented on a site-by-site basis with all relevant mitigations detailed on the operational map supplied to the contractor. These operational maps are provided in Appendix A.

1.1 Guiding principles

The guiding principles for this environmental assessment is compliance with the Principles of Sustainable Forestry Management (SFM) which involves managing our business in full compliance with all applicable laws, directives, Forest Service guidelines and regulations, as well as voluntary external accredited schemes to which we subscribe such as the Forest Stewardship Council®[1] (FSC®) and the Programme for the Endorsement of Forest Certification (PEFC™). The purpose of these guiding principles is to prevent negative environmental impacts through a system of advance planning, operational controls that include clear communication, written instructions and appropriate training. The following list of documents are some of the key documents used:

- Forest Service: Forest operations and Water Protection Guidelines 2000;
- Forest Service: Forest Harvesting and the Environment Guidelines 2000;
- Forest Service: Forestry and the Landscape Guidelines 2000;
- Coillte Forest: Operations and Water Protection Guidelines 2013;
- The COFORD Forest Roads Manual 2004.
- IFI Guidelines 2009 – Shannon Regional Fisheries board, Protection & Conservation of fisheries habitat.

[1]FSC licence code FSC- C005714

2. The management context

The guiding principles for this environmental assessment is compliance with the principles of Sustainable Forestry Management (SFM) which involves managing our business in full compliance with all applicable laws and directives. The management context for the 5-year management plan for the Doughill property will be discussed in detail in the following key areas:

(a) Water on site

(b) Soil types

(c) Age profile

(d) Stability

(e) Opportunities & Constraints

Figure 1: Schematic overview of the management context.

2.1 Water on site

The management of water quality on site is a priority for this property. All forestry activities have the potential to interact both positively and negatively on water quality, however with careful planning any potential negative impacts can be mitigated against through good forest practice and targeted mitigation measures. To help understand how water is managed in Doughill, it is important to distinguish between the different types of water courses using the standard definitions below.

Catchment: An area of land defined by topography and hydrological flow patterns, which drain into a river.

A EPA stream/aquatic zone: A natural feature defined as a permanent or seasonal river, stream or lake shown on an Ordnance Survey 6" map.

An aquatic zone: A permanent or seasonal river, stream or lake shown on an Ordnance Survey 6 inch map.

A relevant watercourse: is defined as any channel not shown on a 6 inch OS map, that is directly connected to an aquatic zone.

A Drain: A man-made channel that generally does not require a buffer zone.

Doughill, for the purpose of this report, is considered to be water sensitive and is managed as such. The site is in two catchments (Upper Shannon and Lough Ree) and these are sub-divided into smaller sub catchments. In total there are eight EPA streams draining the site and these flow into the Scramoge River and the Feorish Rivers, which are both tributaries of the River Shannon. The Scramoge & Feorish Rivers are important trout and coarse fisheries.

The management of water quality is primarily aimed at mitigating against sedimentation, nutrient enrichment and fuel spillages, which are defined below.

a) **Sedimentation**, where particles of silt are washed into the stream or river (watercourse) and clog the finer gravel bed thus depriving hatching trout and salmon and other river fauna of free movement, resulting in oxygen deprivation and mortality.

b) **Nutrient enrichment** (otherwise known as eutrophication), where nutrients - mainly phosphorous in the case of forestry - are washed into the watercourse and enrich water quality thus encouraging algal and weed growth. This can lead to a reduced oxygen supply to salmonids and other aquatic organisms, causing mortality of stream fauna. Eutrophication is predominantly an issue of concern on peat soils, particularly where the depth of peat is in excess of 30 cm.

c) **Fuel** s**pillages** of diesel or oil are also a potential source of contamination and this must be considered in planning the detailed site operation and have contingency measures in place in the event of a spill.

2.2 Soil types

As shown in Figure 2 the predominant soil type is a mineral gley soil, ranging from a shallow gley (in green) to a deep mineral gley (in brown). These soils are very fertile and have a high clay and moisture content making them highly productive from a forestry perspective. Gley soils are prone to siltation (where the clay particles are easily suspended in water). Silt from gley soils poses a threat to watercourses because of its potential to come out of suspension and settle on stream beds and damage fish spawning areas. However, while silt from gley soils goes into suspension easily in water (and silts up the water) it also comes out of suspension easily and as a result, with effective planning using buffer zones and silt traps, this form of siltation can be easily controlled at source and prevented from reaching the spawning beds. In Doughill, numerous measures are taken to ensure all silt mobilisation events are retained at source.

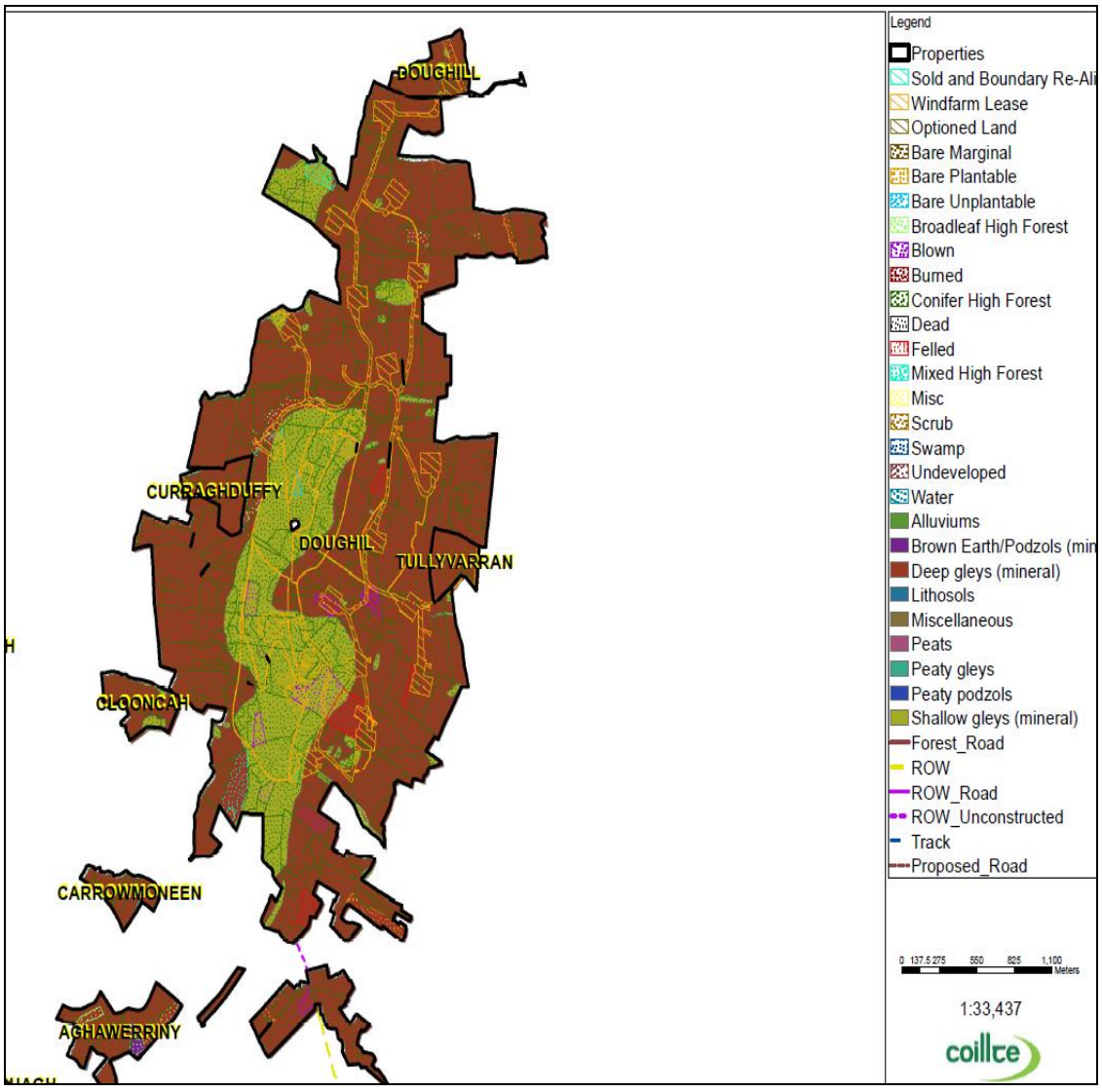


Figure 2: The location of the deep and shallow gley soils in Doughill.

2.3 Age profile

Doughill forest property contains 784 ha of productive forest stands. As shown in Figure 3, Doughill is a mature forest plantation with 68% (538 ha) of the property over 20 years of age and 32% (246 ha) under 20 years of age.

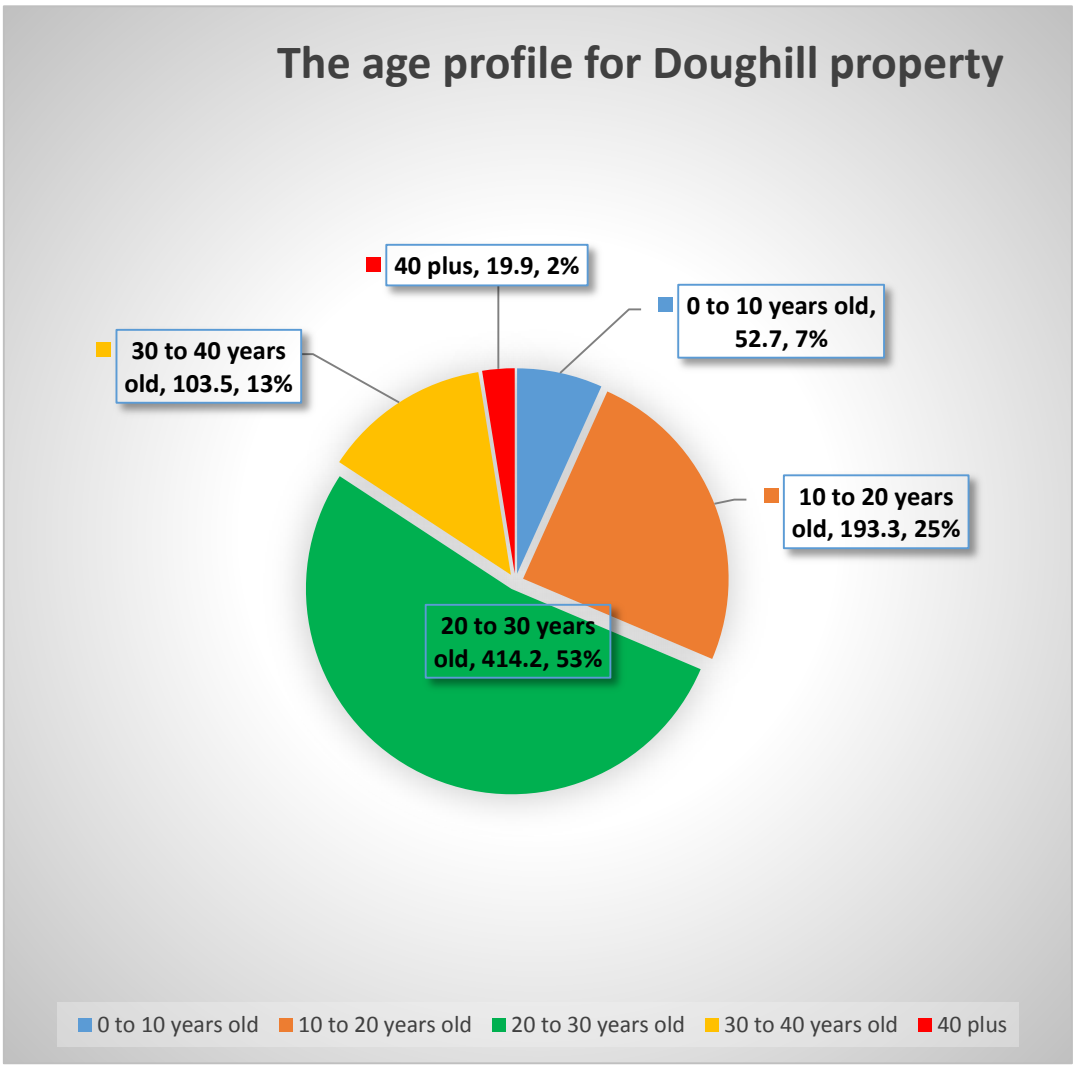


Figure 3: The age profile for Doughill property (September 2016).

2.4 Stability

Crop stability refers the ability of forest crops to remain standing during its rotation. Windblow occurs when the force of the wind is greater than the ability of the tree to resist the winds force, resulting in the tree(s) blowing over. Generally, windblown crops are to be avoided from both a health and safety and economic perspective. In terms of safety, windblown crops present considerable challenges when harvesting the crop with most of the lethal forest accidents occurring in windblown stands. Economically, there is a loss in terms of timber quality resulting from breakages and also the added cost to harvest and manage and these areas safety. Consequently, avoiding windblow is standard forest management practice. In Coillte, stability ratings are used to describe the stability capacity of stands. These stability ratings are typically S18, S21 and S24, which corresponds to the crop remaining stable until it reaches a height of 18m, 21m and 24m respectively. Once these crops grow beyond these heights the incidence of windblow is expected to increase. Historically, Doughill property was managed with a stability rating of 21m and this will remain unchanged.

In Ireland, windfirm crops generally are located in sheltered parts of the country, in low lying areas on soils that facilitate deep rooting depths. Historically, windthrow has occurred in Doughill. While Doughill is located in a relatively sheltered part of Ireland, it is also situated on an exposed mountain with gley soils that have shallow rooting depths. In addition, the construction of the windfarm has created new openings in a semi-mature crop to allow for the windfarm footprint and widened roads. The combined effect is an expected reduction in wind firmness of the current crop. Consequently, a stability rating of S21m applies to the whole property. This effectively means that stands are expected to grow to 21m in height with no windthrow expected but if allowed to grow beyond 21m the chances of windthrow are expected to increase significantly. As Doughill is a very productive forest with fast growth rates, this stability concern was built into the rotation lengths for all stands to ensure crops are not grown into the risk period when they grow beyond 21m. This will ensure that windblow events are minimised.

While the construction of the windfarm is expected to reduce the wind firmness of the current crop, it may actually increase the wind firmness of the successor crop. This is a result of the way tree roots grow and mature in plantation forests. Tree root growth occurs in the early years of the trees growth and they will grow into all the available space to them. Typically, tree roots on plantation edges have more room to grow and their roots are well developed and produce trees capable of resisting strong wind forces. Conversely, tree roots within plantations have less room to grow and their roots are not as well developed as those on the edges, resulting in trees that are not as effective at resisting strong wind forces. The windfarm construction has imposed new roads and openings within mostly semi-mature plantations where no further root development will occur. As a result, trees that were within the plantation with tree roots suitable for within a planation are now on an exposed edge, making them susceptible to windthrow. However, once the current rotation is felled and restocked the replanted trees will develop tree

roots produce trees capable of resisting strong wind forces all along the new roads and openings created by the windfarm development, resulting in an expected improvement in the overall stability for the successor crop.

Windblow in Doughill in crops under 20m in height (December 2016)

2.5 Opportunities & Constraints

As expected there is a diverse range of opportunities and constraints associated with the management of Doughill forest property. Table 1 lists some of the main opportunities and constraints associated with the 5 year management plan.

Table 1: The opportunities and constraints associated with the 5 year management plan.

People & Material Assets	
Opportunities	***Constraints***
• Open forest policy allowing full access to the Coillte lands.	• Access needed all year round to avail of recreation opportunities.
• Purpose built new recreation trail in place	• Maintenance of recreation facilities required annually.
• Well-developed road network throughout the site.	• Temporary closure of routes or diversions maybe required from time to time for safety purposes during operations.
• Conduct a local consultation meeting to discuss plan and invite feedback.	• Consultation to be informed of the management challenges present on site.
Water & Soils	
• Detailed water controls in place as part of the windfarm construction will remain in place post construction.	• Saturated gley soils are not efficient at absorbing additional rainfall and run-off during downpours will occur. To mitigate for this additional operational controls are required.
• Water sampling points in place and regular water sampling will continue for the next 5 years.	• Water sampling costly to carry out.
• All of site is a mineral gley which produces a type of sediment that can be controlled effectively using good practice.	• Gley soils are generally not effectively drained using conventional drainage ditches.
• Water drainage plan in place to deal with peak water flow events.	• Gley soils are prone to rutting especially in wet weather
• All of the site is suitable for windrowing which is very effective at containing siltation during restocking operations.	• The creation of new buffer zones will require limited machine movements in these buffers to ensure all mature trees are harvested and brash removed.

Archaeology & Cultural Heritage	
• Known archaeological monuments well documented and protected on site	• Exclusion zones required around all monuments.
• Townland boundaries well defined on the ground running along either streams or large ditches	• Townland boundaries should not be crossed with heavy machinery where practical.
• New recreation trails ensure all local heritage sites are accessible and preserved.	• Application of standard setbacks will result in the loss of existing productive forest ground.
Biodiversity	
• A mature plantation can be redesigned at restock stage to include greater buffer zones planted with broadleaves along the main watercourses.	• The creation of new buffer zones results in the loss of productive ground for commercial forestry.
• Targeted planting of broadleaves when restocking.	• Planted broadleaves will need additional protection from grazing threats from both deer and goats.
• Existing biodiversity areas are known and protected and can be enhanced at replanting stage.	• The biodiversity on site is limited and of moderate ecological value.
Landscape	
• Due to the improved road network a mature plantation can be redesigned at restocking stage to create more effective buffer zones, irregular coupe shapes and improved species diversity.	• Coupe redesign must comply with Health & Safety concerns and ensure access and egress over the windfarm underground cable is via a designated properly constructed crossing point.
• Nestle the windfarm development within a forest property to minimise the visual impact on the landscape.	• Impact on increasing the threat of wind throw resulting from opening up the canopy mid-rotation
• Implementation of the agreed biodiversity plan can begin.	• Landscape rated as having a medium landscape rating by Coillte.
• Only approximately 50% of the property is visible from the R371(Strokestown to Lanesborough) road.	• Approximately 50% of the property can be viewed at any one time from one of 2 county roads.

3. The Operational schedule

The operational schedule for 2017 – 2021 detailed below relates to all high impact operations that involves any degree of ground disturbance. The operational schedules detailed below refer to three different schedules, namely the harvesting schedule, the restocking schedule and the roading schedule.

3.1 The harvest schedule

The harvest schedule for both clearfelling and thinning is detailed below in Table 2 and Figure 4 for the planning period 2017 to 2021. This table and map shows the harvest block number, the harvest type as either a clearfell or a thinning, the year of the planned activity and the associated areas.

Table 2: The harvest schedule for the period 2017 – 2021.

Number	Harvest Block	CF or Thin	Harvest Year	Area (ha)
1	RN09_2_01	Thin	2017	9.9
2	RN09_3_01	CF	2017	0.8
3	RN09_3_02	CF	2017	7.0
4	RN09_3_03	CF	2017	5.9
5	RN09_3_05	CF	2017	11.0
6	RN09_3_06	CF	2017	12.3
7	RN09_3_07	CF	2017	12.3
8	RN09_3_08	CF	2017	17.9
9	RN09_3_09	CF	2017	20.7
10	RN09_4_01	CF	2017	8.5
11	RN09_5_01	CF	2018	4.3
12	RN09_5_03	CF	2018	13.7
13	RN09_5_05	CF	2018	19.2
14	RN09_5_06	CF	2018	21.0
15	RN09_H00092	Thin	2018	21.8
16	RN09_4_01	CF	2019	8.5
17	RN09_HB0011	CF	2019	14.7
18	RN09_HB0029	CF	2019	12.0
19	RN09_HB0044	CF	2019	6.5
20	RN09_HB0049	CF	2019	9.4
21	RN09_HB0059	CF	2019	4.1
22	RN09_HB0060	CF	2019	4.8
23	RN09_HB0062	CF	2019	11.1
24	RN09_HB0063	CF	2019	6.5
25	RN09_HB0065	CF	2019	3.4
26	RN09_HB0075	CF	2019	4.1
27	RN09_HB0084	CF	2019	4.0
28	RN09_HB0017	CF	2020	18.1
29	RN09_HB0028	CF	2020	4.7
30	RN09_HB0066	CF	2020	2.1
31	RN09_HB0071	CF	2020	8.6
32	RN09_HB0024	CF	2021	5.5
33	RN09_HB0027	CF	2021	4.5
34	RN09_HB0038	CF	2021	9.9
35	RN09_HB0039	CF	2021	9.9

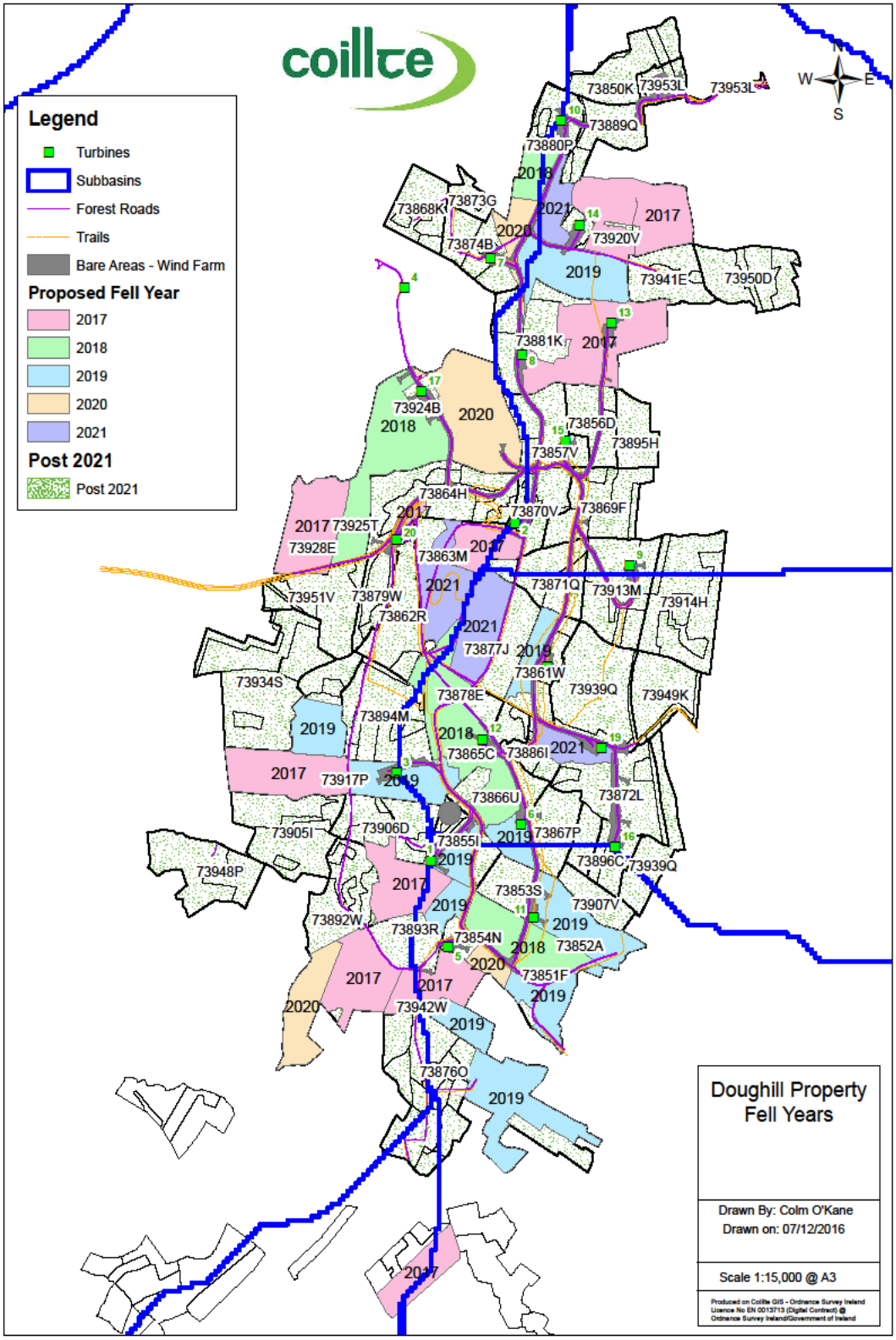


Figure 4: Overview of the harvest schedule for 2017-2021.

3.2 The restocking schedule

The restocking schedule for all sites harvested during the period 2017 to 2021 is detailed below in Table 3. This table shows that all harvested sites will be replanted within one calendar year of harvesting. As this forest property is a commercial forest, the replanting schedule will be with primarily Sitka spruce and the dominant cultivation method will be windrowing. All sites will be operated to the standard operational standards and subject to the site specific mitigations.

The restocking schedule outlined in Table 3 does not include the replanting obligations associated with the "reinstatement area" resulting from the windfarm development. This reinstated area refers to approximately 23ha of Coillte Forest stands that were felled as part of the windfarm development to facilitate erection of the turbines on the condition that they would be replanted immediately post construction. As a result, all of this area will be replanted in 2017 post construction in accordance with the felling licence conditions and planning regulations. As this replanting is associated with the windfarm it is not included in the restocking schedule as outlined in table 3.

The restocking schedule outlined in Table 3 does not include values for open space. Typically open space values range from 5 – 15 % and this will also apply to schedule in Table 3.

Table 3: The restocking schedule for sites harvested during the period 2017–2021.

Harvest Block	Harvest Year	Restock Year	Species 1	%	Area	Species 2	%	Area	Species 3	%	Area	Area (ha)
RN09_2_01	2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RN09_3_01	2017	2018	BI	100	0.8							0.8
RN09_3_02	2017	2018	SS	95	6.7	Oak	5	0.4				7.0
RN09_3_03	2017	2018	SS	90	5.3	Oak	10	0.6				5.9
RN09_3_05	2017	2018	SS	95	10.5	Oak	5	0.6				11.0
RN09_3_06	2017	2018	SS	95	11.7	Oak	5	0.6				12.3
RN09_3_07	2017	2018	SS	95	11.7	Oak	5	0.6				12.3
RN09_3_08	2017	2018	SS	95	17.0	Oak	5	0.9				17.9
RN09_3_09	2017	2018	SS	95	19.7	Oak	5	1.0				20.7
RN09_HB0002	2017	2018	SS	90	8.7	Oak	10	1.0				9.7
Total area 2017					**92.0**			**5.6**				**97.6**
RN09_5_01	2018	2019	SS	95	4.1	Oak	5	0.2				4.3
RN09_5_03	2018	2019	SS	95	13.0	Oak	5	0.7				13.7
RN09_5_05	2018	2019	SS	90	17.3	ROW	5	1.0	SAL	5	1.0	19.2
RN09_5_06	2018	2019	SS	95	20.0	Oak	5	1.1				21.0
RN09_H00092	2018	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA
Total area 2018					**54.3**			**2.9**			**1.0**	**58.2**
RN09_4_01	2019	2020	SS	100	8.5							8.5
RN09_HB0011	2019	2020	SS	95	14.0	Oak	5	0.7				14.7
RN09_HB0029	2019	2020	SS	95	11.4	Oak	5	0.6				12.0
RN09_HB0044	2019	2020	SS	90	5.9	Oak	10	0.7				6.5
RN09_HB0049	2019	2020	SS	90	8.5	Oak	10	0.9				9.4
RN09_HB0059	2019	2020	SS	95	3.9	Oak	5	0.2				4.1
RN09_HB0060	2019	2020	SS	65	3.1	Bi	20	1.0	Oak	15	0.7	4.8
RN09_HB0062	2019	2020	SS	95	10.5	Oak	5	0.6				11.1
RN09_HB0063	2019	2020	SS	95	6.2	Oak	5	0.3				6.5
RN09_HB0065	2019	2020	SS	95	3.2	Oak	5	0.2				3.4
RN09_HB0075	2019	2020	SS	100	4.1							4.1
RN09_HB0084	2019	2020	SS	95	3.8	Oak	5	0.2				4.0
Total area 2019					**83.0**			**5.3**			**0.7**	**89.1**
RN09_HB0017	2020	2021	SS	95	17.2	Oak	5	0.9				18.1
RN09_HB0028	2020	2021	SS	95	4.5	Oak	5	0.2				4.7
RN09_HB0066	2020	2021	SS	95	2.0	Oak	5	0.1				2.1
RN09_HB0071	2020	2021	SS	95	8.2	Oak	5	0.4				8.6
Total area 2020					**31.8**			**1.7**				**33.5**
RN09_HB0024	2021	2022	OAK	70	3.9	ROW	20	1.1	HAW	10	0.6	5.5
RN09_HB0027	2021	2022	SS	95	4.3	Oak	5	0.2				4.5
RN09_HB0038	2021	2022	SS	75	7.4	Oak	20	2.0	BI	5	0.5	9.9
RN09_HB0039	2021	2022	SS	95	9.4	Oak	5	0.5				9.9
Total area 2021					**25.0**			**3.8**			**1.0**	**29.8**

** Open space assumed to be between 5-15% and does not include the windfarm footprint.*

3.3 Broadleaf planting

The management plan from 2017-2021 will see an increase in the level of broadleaf planting in the property using native trees and shrubs as recommended in the "Native Woodland Scheme" as administered by the Forest Service. Pedunculate oak will be the favoured broadleaf choice where suitable conditions exist. The planting of broadleaves will occur throughout the site with particular attention paid to the recreation areas and areas where suitable ground conditions exist (see Figure 5). Consequently, broadleaves will be planted into:

- All suitable areas in close proximity to the recreation areas;
- Aquatic zones where operations are occurring;
- New standard setbacks on relevant watercourses and field drains;
- Areas adjacent to windmills where reinstatement works are completed;
- Areas immediately adjacent to the new recreation route;
- Areas adjacent to the stilling and storage ponds;
- Other areas, where deemed appropriate.

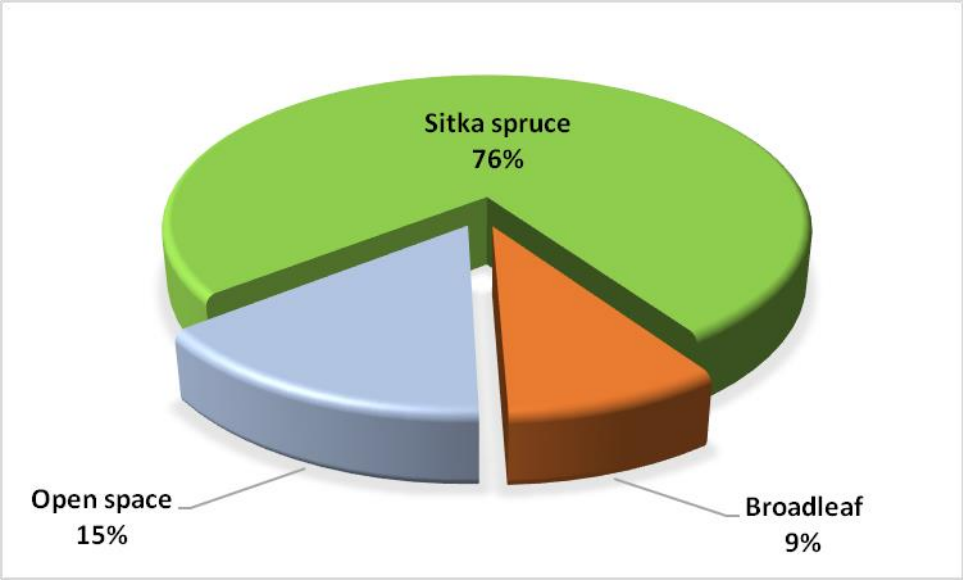


Figure 5: Breakdown of the expected species planted and open space resulting from the restocking schedule.

3.4 Landscape design

The planning of the felling coupes was carried out in accordance with the Coillte landscape design plan for Doughill. All forest properties in the Coillte estate have a detailed landscape plan that prescribes how best to manage a landscape from a visual perspective. These principles were included in the five year management plan and a summary of the main design elements adopted are detailed below in Table 4.

Table 4: The main landscape design elements adopted in 5 year management plan for Doughill.

Planning stage opportunities	☒ Keep block size reduced under 25ha ☒ Adjusted block shape to improve visual impact ☒ Block adjusted to follow natural contours and breaks ☒ Introduce more open space and structural diversity in large even aged blocks.	☒ Red/BLUE ERA mitigations to enhance landscape design ☒ Structural diversity in the property considered when scheduling the block ☒ Thinning not scheduled to improve visual impact
Harvest stage opportunities	☒ Existing open spaces retained ☒ Biodiversity plan adhered to ☒ Protect the existing biodiversity	☒ Retain Scrub/broadleaves ☒ Harvest mitigations specified to avoid rutting ☒ Tree clearance around arch monuments
Restocking stage opportunities	☒ Broadleaf replanting plan in place ☒ New buffer zones to be created ☒ Site hot planted to speed green up	☒ New standard setbacks applied ☒ Restock planting design to improve visual appearance
Roading opportunities	☒ Road designed to follow contours ☒ No new entrances created	☒ Road density increased to reduce coupe size ☒ Only existing roads to be used

3.5 The roading schedule

All sales in the planning period 2017-2021 are fully roaded. As part of the windfarm development, the existing road network was upgraded and extended to facilitate the windfarm development. This development also included the construction of designated crossing points to allow for safe extraction from the forest over the underground electric cables. These crossing points also included spur road extensions, to ensure there is adequate space available during harvesting to stack timber. As a result of these developments, no further road building will occur during the planning period and any road activity during this time will be limited to regular road maintenance.

4. Overview of the environmental assessment

The purpose of this environmental assessment is minimise the environmental impact for all planned high impact operations for the next 5 years by specifying site specific mitigations. As shown in Figure 6, the environmental assessment consists of 4 main elements, namely:

(a) Coillte Environmental Risk Assessment (ERA) screening;

(b) Windfarm mitigations;

(c) Standard operational mitigations;

(d) Site specific mitigations.

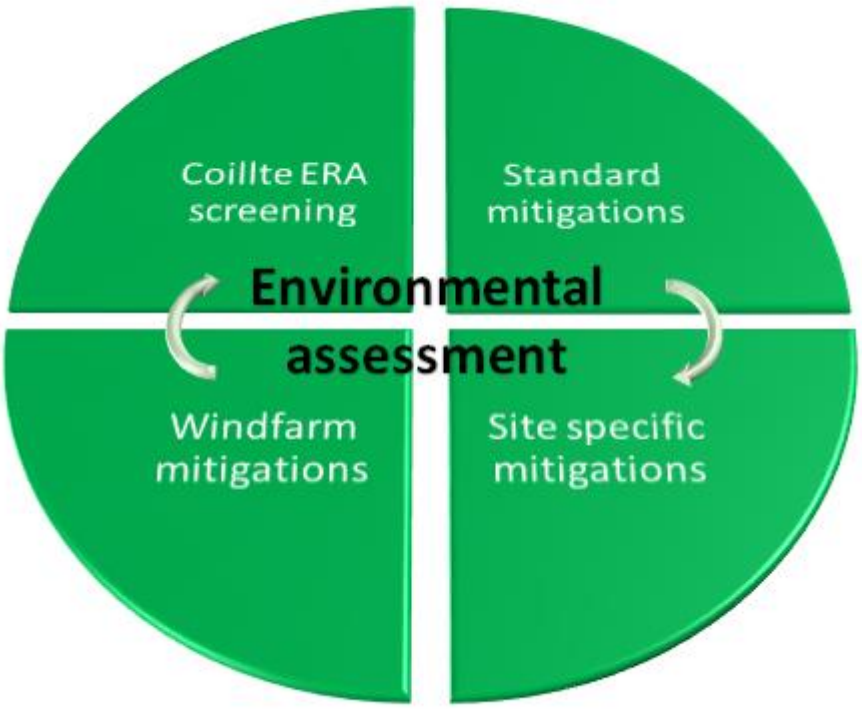


Figure 6: Schematic overview of the four elements used in the environmental assessment.

4.1 Coillte ERA screening

The Coillte Environmental Risk Assessment (ERA) is a procedure that assesses the potential environmental impacts associated with forest operational activities carried out by Coillte. Potentially impacting activities include, tree-harvesting, ground preparation, drainage, construction of roads, bridges, and fertiliser application. The results of this assessment are colour coded to assist in understanding the sensitivities involved and as shown in Table 5, these colour codes are:

- Blue (sensitive with statutory features);
- Red (sensitive with no statutory features);
- Amber (potentially sensitive subject to desk review);
- Green (not sensitive).

Table 5: The ERA ratings applied during the screening process.

ERA Rating	Explanation	Examples
BLUE	**Sensitive site (with statutory features)** *Site has a feature which is protected under national and/or EU legislation*	• SAC with possible Annex I habitat • Monuments
RED	**Sensitive site (with no statutory features)** *Site has a feature which is protected under Coillte policies or Sustainable Forest management (SFM) Standards*	• Biodiversity area or old woodland site with many biodiversity features present
AMBER	**Potentially Sensitive Site** *Desk Review required to decide whether site is sensitive or not and a BLUE, RED, or GREEN rating is applied as appropriate.*	• Coupes >20ha • Within SAC, pNHA, biodiversity area, old woodland site
GREEN	**Standard mitigations apply** *Environmental features may be present but the site is not particularly sensitive; features are protected by applying best practice*	• About 80% of Coillte sites

The environmental risk assessment is carried out on individual sites using five main categories, namely;

1. People & Material Assets;
2. Water & Soils;
3. Archaeology & Cultural Heritage;
4. Biodiversity;
5. Landscape.

The ERA involves a hierarchical approach which involves three key steps:

Step 1: Auto risk filtering;

Step 2: Desk review;

Step 3: Field assessment.

Step 1: Auto risk filtering

This is an automated GIS query which determines whether the site is potentially environmentally sensitive or not. This step uses the vast array of GIS datasets and queries available to prescribe a rating. Sites that given a GREEN rating retain this as their final rating. Sites that are given an AMBER rating are subject to a desk review (step 2) so that they can be assigned either a GREEN, RED or BLUE rating. Sites that are given a BLUE or RED rating are subject to a field assessment (step 4).

Step 2: Desk review

This step only reviews the sites rated as AMBER, with the view to assigning them a rating as either BLUE, RED or GREEN. This stage involves refining the information available from step one, by incorporating local knowledge into the decision making process.

Step 3: Field assessment

Sites rated as BLUE or RED from steps 1 & 2 require a field assessment to identify significant features present on site and to determine at an early-stage elements of the site plan that need to be implemented in order to ensure that environmental risks are prevented or minimised. The site specific management measures are then

incorporated into the operational site file to ensure that the specified mitigations are implemented on the ground. For BLUE sites, a detailed report is completed by the Coillte Environmental Officer (or appropriate qualified person) to specify the site specific management measures required. For RED sites the site-specific mitigations are completed by the Coillte Resource manager.

The ERA information provides useful information to manage individual sites including site assessments, information on the location of sensitive features and associated management measures. This information is also used to assist in the felling licence process, where site reports for BLUE sites are submitted to the Forest Service as part of the felling licence application process. The information is also provided to the contractors at both the contractor procurement stage and at the operations stage – this is important since these contractors conduct the site operations. Providing the information at the procurement stage allows the contractor to submit an informed tender, while provision of the information at the operations stage ensures that the required management actions are effectively communicated to contractors.

As a precautionary measure, a decision was made to carry out field assessments (step 3) on <u>all sites</u> in the 5-year plan regardless of their ERA rating. This is to ensure that site-specific mitigations could be prescribed to inform the tendering process.

4.2 The ERA screening results for the 5 year plan

The operational sites for 2017-2021 were all subjected to this ERA screening process and the results of these are available in Table 6. The results show that the majority of the area is not sensitive (GREEN) with only the listed monuments screening as sensitive (BLUE). These archaeological monuments will be/were surveyed by an archaeologist and the required mitigations are included in the operational plan.

Table 6: ERA screening results for harvest blocks 2017 to 2021 for Doughill.

Year	Harvest Block	Activity Type	People & Material Assets	Biodiversity	Water & Soils	Landscape	Archeology
2017	Rn09_2_01	Thinning	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_3_01	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_3_02	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_3_03	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_3_05	Clearfell	GREEN	GREEN	GREEN	GREEN	BLUE
	RN09_3_06	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_3_07	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_3_08	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_3_09	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_4_01	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0002	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0082	Thinning	GREEN	GREEN	GREEN	GREEN	GREEN
2018	RN09_5_01	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_5_03	Clearfell	GREEN	GREEN	BLUE	GREEN	GREEN
	RN09_5_05	Clearfell	GREEN	GREEN	RED	GREEN	GREEN
	RN09_5_06	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0092	Thinning	GREEN	GREEN	GREEN	GREEN	BLUE
2019	RN09_HB0011	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0029	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0044	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0049	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0059	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0060	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0062	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0063	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0065	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0075	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0084	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
2020	RN09_HB0017	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0028	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0066	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0071	Clearfell	GREEN	GREEN	GREEN	GREEN	BLUE
2021	RN09_HB0024	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0027	Clearfell	GREEN	GREEN	GREEN	GREEN	GREEN
	RN09_HB0038	Clearfell	GREEN	GREEN	GREEN	GREEN	BLUE
	RN09_HB0039	Clearfell	GREEN	GREEN	GREEN	GREEN	BLUE

The ERA results for the five year operational schedule for the 5 year operational schedule indicate that the overall sensitivity is quite low and that standard mitigation measures would be satisfactory in the management of the majority of this area. However, it was decided that all sites in this plan be treated as sensitive so that both standard and site-specific mitigations could be specified. Consequently, a detailed site assessment was conducted on all sites to identify the most appropriate site-specific measures to adopt. This site assessment involved the following criteria, which in turn were used to create the site-specific mitigations:

- Identify all watercourses and distinguish between streams, relevant watercourses and field drains;
- Specify crossing point locations over all watercourses to ensure these are kept to a minimum ;
- Identify the optimal location of new silt trap locations;
- Identify the preferred extraction direction;
- Specify the crossing points over the underground cable;
- Identify the stacking area on roadside;
- Locate the service areas at least 50m away from all watercourses;
- Identify the location of all listed monuments;
- Specify the location and width of all new buffer zones to be created at restock stage,
- Prescribe new broadleaf planting in suitable locations;
- Identify where new setbacks are to created;
- Identify potential hotspots where additional brash management is required;
- Locate any blown material;
- Specify the preferred haulage route.

4.3 Windfarm mitigations

The development of the windfarm has resulted in the construction of long term mitigation installations that will be beneficial to the management of the forest property. These windfarm mitigations include:

a) Windfarm Drainage Management Plan;

b) Windfarm water monitoring;

c) Windfarm Environmental incident & Emergency response plan;

d) Windfarm Recreational improvements.

a) Windfarm Drainage Management Plan

The wind farm footprint was designed so that only one stream crossing was required. Natural routes of watercourses were maintained, with no diversion of existing watercourses occurring. A detailed drainage management plan was put in place as part of the windfarm development. The key elements of this plan included design and control elements to control flow velocities and peak flow volumes as follows:

- There is no direct discharge to natural watercourses.
- Silt traps and check dams installed at regular intervals along drains in order to reduce flow velocities and therefore minimise erosion within the system during storm rainfall events.
- Stilling ponds, emplaced either singly or a pair in series, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses. Stilling ponds designed to retain the volume associated with a 1 in 100 year return period rainfall event, with overspill for higher events, with retention times of 24 hours at the borrow pit.
- Buffered Outfalls constructed at the end of each settlement pond to convert channel flows in the drain into diffuse sheet flow to be discharged across the vegetation filter.
- A buffer zone of 50m will be in place for streams including three main streams as identified by Inland Fisheries Ireland.

Analysis has indicated that additional runoff from the site will be insignificant. However, as a precautionary measure, additional design and control measures were also employed to control peak flow volumes and suspended sediment releases. These additional measures are as follows:

- Mound drain collectors installed up-gradient of works areas to collect surface runoff, in order to maintain the existing flow regime and to divert unaffected runoff from the development footprint. It will then be directed to areas where it can be re-distributed over the ground as sheet flow.

- Drains used to intercept and collect runoff from works areas of the site, and channel it to stilling ponds for sediment settling.

- Check dams installed at regular intervals along interceptor drains and drains in order to reduce flow velocities and therefore minimise erosion within the system during storm rainfall events. The check dams can result in settlement of suspended sediment, although this is not their primary function.

- Stilling ponds, emplaced as pairs in series, buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses. Stilling ponds have been designed to retain the volume associated with a 1 in 100 year return period rainfall event, with overspill for higher events, with retention times of 12 hours at turbine locations and 24 hours at the borrow pit.

- Stilling ponds are designed to reduce the flow velocity of discharge water. Inspection and maintenance of these structures during construction phase is critical to their functioning to stated purpose. The stilling ponds are designed to store water until a storm has receded and these ponds are designed for a 1 in 100 year return period rainfall event with retention times of 24 hours. The stilling ponds will still remain post construction to provide storm water attenuation.

- Buffered outfalls will contain timber/stone/clay baffles to impede any sedimentation, as well as planted willow species to absorb drainage water and nutrients.

When the wind farm works are complete, the settlement ponds will be cleaned out and maintained. Once these final works are complete the settlement ponds will be left to re-vegetate. Leaving the settlement ponds in-situ will prevent any potential disturbance during reinstatement, and will also maintain attenuation storage for future flood mitigation. The settlement ponds will re-vegetate naturally with grasses and mosses and these will also assist in improving water quality by filtering runoff discharges. The areas around the settlement ponds and buffered outfalls will be planted with willow trees and wetland species (i.e. reeds) and will remain in-situ.

b) Windfarm water monitoring

Water monitoring was an integral part of the windfarm development, where water quality was monitored on all on-site drainage channels. The following periodic inspection regime took place during construction:

- Daily general inspections by site engineer;
- Weekly (existing & new drains) inspections by site engineer;
- Quarterly site inspections by independent hydrologist.

All inspections included all elements of the drainage systems on-site. daily and weekly inspections were required to ensure that drainage systems were operating correctly and these were used to identify any maintenance that was required. Any changes, such as discolouration, odour, oily sheen or litter were noted and corrective action implemented. High risk locations such as stilling ponds, the designated refuelling area and associated hoses were inspected on a daily basis. Daily inspections checks were also completed on plant and equipment. Quarterly site inspections were also carried out by an independent hydrologist in the first two years of the project.

Post construction, the water monitoring will be carried out by Coillte and for more details on this please refer to section 5.

c) Windfarm Environmental incident & Emergency Response Plan

The Windfarm Environmental incident & emergency response plan was prepared and implemented by the main contractor for the construction of the Wind Farm. This is to ensure that in the event of an emergency, quick action will limit any impacts on humans and the local environment. Examples of environmental incidents include leaking plant, containment failure, fire, peat slide, flooding, fuel spills, chemical spills, sedimentation, silt entering a water course or drain etc. This plan is not detailed here, however the main elements of this included the following:

- What constitutes an Environmental Incident?
- Who should be contacted in an emergency;
- Procedures to be followed in an emergency
- Staff responsibilities in an emergency.
- Summarises local environmental sensitivities.
- Identify key mapping reference points for the site.
- Identify key staff and 24 hour contact details.
- Identify key external bodies and emergency response numbers who should be contacted in the event of an emergency;
- Provide details an Inventory of Chemical Products and Waste Inventory on Site.
- Provide details an Inventory of Pollution Prevention Equipment.
- Provide details of staff trained in the use of spill kits and booms etc.
- Provide details of reporting requirements.
- Provide detailed procedures to be followed in the event of an emergency and details staff responsible for re-positioning and moving of plant.
- Provide a summary sheet for operatives outlining key actions in the event of an emergency. This will be available to all operatives on site.

d) Windfarm Recreational Improvements

The windfarm has set up a community fund known as the "Sliabh Bawn Community Benefit Scheme" which commits an annual index linked payment of €87,000 per annum for the next 25 years. This is a substantial fund that is geared towards local community projects. Recreational improvements in Doughill are funded by this Fund. All pre-existing uses on Sliabh Bawn have mainly emerged though forestry and 'desire lines'[1] used by the local community/community groups over many years. Before the windfarm development there was no formalised infrastructure on site such as purpose-built trails, signage, information or way marking. This property is already actively used by locals for walking, by local mountain bike and horse/pony clubs and by other local sports clubs for training purposes. More recently, the community has organised a monastery walk twice per year to commemorate famine victims.

The "Sliabh Bawn Recreation Plan" was proposed following 3 consultation meetings held with community groups in the local area from August 2010 to July 2011. A commitment was given by Coillte to the community in August 2010 to include a recreation amenity as part of the wind farm development. A skeleton recreation plan was developed in September 2010 using Coillte Outdoors and external consultants. This plan was then included as part of the Environmental Impact Statement for Sliabh Bawn Wind Farm, as submitted in September 2010. Roscommon Co.Co. requested further information in relation to the recreation plan in November 2010. In response, Coillte Outdoors and an external consultant developed a master plan that was subsequently submitted in August 2011. The condition set by Roscommon Co. Co. was that the recreation works be made available for public use within 12 months of commissioning of the wind farm. In 2015, further consultation meetings were held with some community groups and a public information day was held in June 2015. Following the June 2015 consultation, a revised recreation master plan was developed by the Sliabh Bawn project team and external consultants. The revised plan was agreed by the planning Department in Roscommon Co. Co. in March 2016. The revised master plan was deemed to be in compliance with planning regulation.

[1] Desire lines are those routes which emerge over time from access by the public as the preferred route for their own needs. Much of Coillte's informal trail systems are based on desire lines emerging over many years as local use opens them up.

As a result of detailed consultations a detailed approved "Master Recreation Plan" was devised. The overview of this plan is detailed in Figure 7 below. The plan contains 3 key elements namely:

a. Landscape contemplation points;

b. Fitness trails;

c. Heritage trail.

a. Landscape contemplation points

A series of 'rooms features in the forest' housing existing features on the mountain – Monument room at the Jubilee Cross, Church room at the church ruin, Mass Stone room, a Forestry room, a Wind Farm room and the Summit room. All rooms will contain information signage about each feature, timber benches and picnic sets.

b. Fitness trails

The plan includes trails that will provide for walking, running, fitness and horse-riding. Specifically this includes a fitness/trim trail and also an equestrian trail.

c. Heritage trail

A heritage trail linking the Church ruin, the Mass stone to the Monastery trail. The existing Monastery trail will be upgraded and the construction of a new section of trail in a switch back fashion linking the Monastery trail to the Jubilee Cross.

a) 2 No Looped walking trails (6,500 metres & 7,100 metres)

b) Heritage Trail, 2,350 metres

c) Multi – use trails 4,900 metres

d) Monastery Track - improving and linking parts of the Monastery Track (2,250 metres length)

e) Equestrian Trail (total length 4,200 metres with 1,415 metres designated with bark mulch finish)

f) Trim Trail with outdoor exercise equipment 2,100 metres

g) Raised Viewing Platform with interpretative signage

h) Picnic Area with 4 No. picnic sets (seating for 24 people in total)

i) Car Parking for 12 spaces.

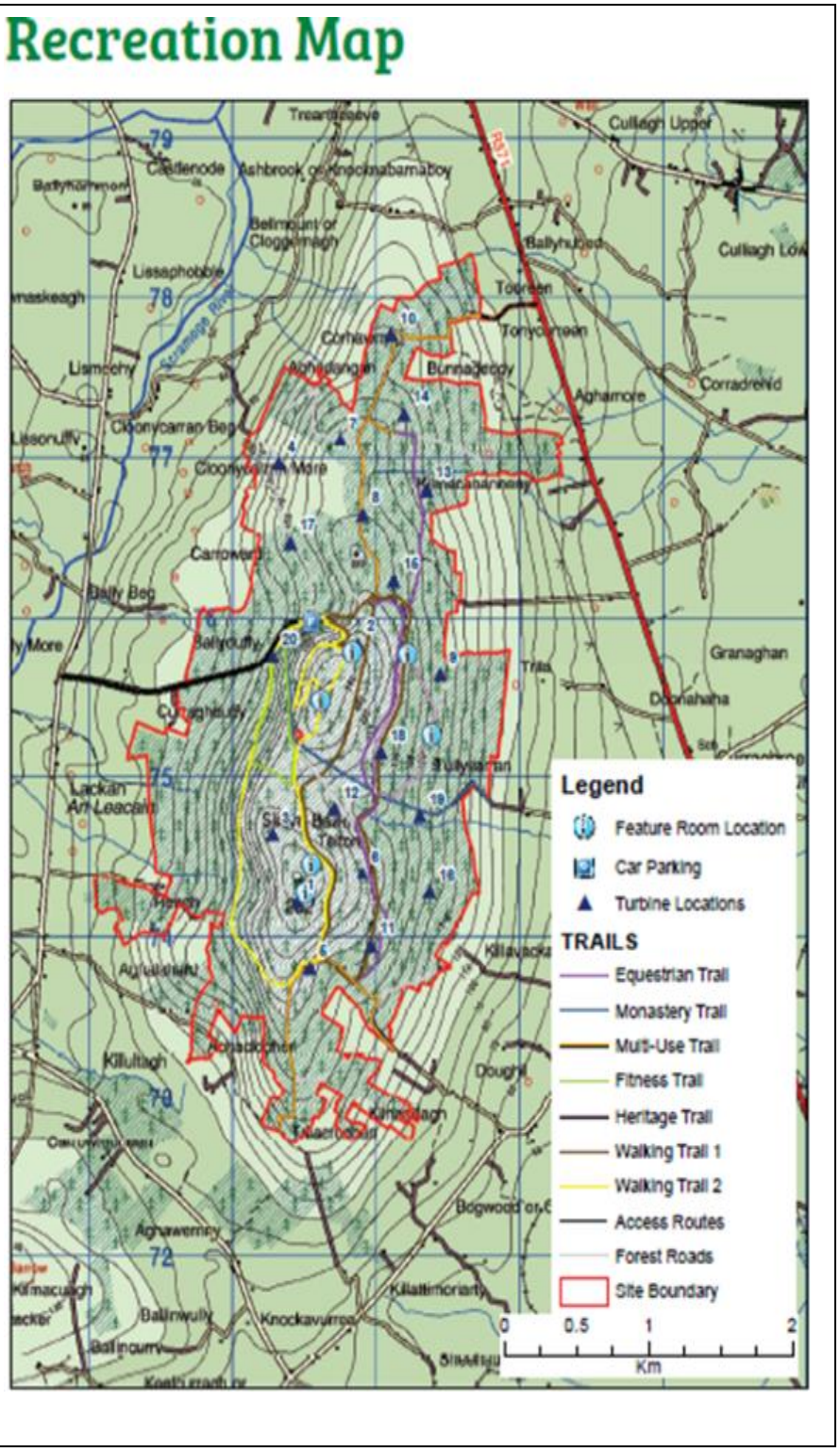


Figure 7: Overview map of the recreation plan.

4.4 Standard operational mitigations

Coillte employ standard operational mitigations on all Coillte sites for harvesting and restocking operations and these mitigations will also be applied in Doughill. These standard operational mitigations ensure good forest management practices are employed as standard. All contractors working on Coillte sites are contractually obliged to abide by these standard requirements. A full list of these standard operational mitigations are detailed in Appendix B. Similar to the ERA screening, these standard mitigations relate to the 5 main environmental assessment categories which are:

1. People & Material Assets;
2. Water & Soils;
3. Archaeology & Cultural Heritage;
4. Biodiversity;
5. Landscape.

Figure 8: Schematic overview of the five categories used in the Coillte standard operational mitigations.

4.5 Site specific mitigations

Site specific operational plans

A site survey was conducted on all sites planned for operations in the planning period and the data were used to specify additional mitigations not covered by the standard mitigations. The site specific mitigations are displayed on the two main operational maps used by the contractors when carrying out the operations (see Appendix A for examples or if required all maps are available from the corresponding author). The purpose of these maps is to summarise all the site specific mitigations required for each individual site in a manner that is clearly understood by the contractor. The two main operational maps are:

a) The Sales Proposal map;

b) The Restocking map.

a) The Sales Proposal map

The Sales Proposal map identifies all the main operational elements that must be managed on the site by the harvesting contractor. The map includes the standard and site specific mitigations relevant to the site and the information is displayed graphically on each map. All mitigations required to manage the site for harvesting are detailed on the sales proposal map.

b) The Restocking map

The Restocking map identifies all the main operational elements that must be managed on the site by the restocking contractor. The map includes the standard and site specific mitigations relevant to the site and the information is displayed graphically on each map. All mitigations required to manage the site for restocking are detailed on the restocking map.

5. Site monitoring

Site monitoring is a key component to the management of all activities on this site. All high impact operations (harvesting, restocking and roading) operations will be subject to site monitoring. All road operations within the planning period will be limited to road maintenance and as a result the standard monitoring process used by Coillte will be applied here. In the case of the remaining high impact operations associated with harvesting and restocking a more detailed site specific approach to monitoring will be employed. For both harvesting and restocking a more detailed hierarchal approach to monitoring will be used and this includes the following:

1. Daily site monitoring.
2. Weekly site monitoring;
3. Fortnightly water sampling.

5.1 Daily site monitoring

Daily site monitoring will be carried out by the contractor as part of the tendered contract. The contractor will complete the daily site monitoring form (Appendix C) and this will be made available to Coillte personnel on a weekly basis. This site monitoring asks four key questions to prompt the contractor that it is safe to continue operations or when remedial action is needed. The four key questions on the monitoring form are as follows:

1. Is there discolouration of water in aquatic zones or relevant watercourses due to this operation?

2. Is there debris in or damage to aquatic zones, buffer zones or relevant watercourses due to current operations?

3. Are existing protection measures inadequate to prevent rutting which could result in sedimentation?

4. Does the current weather forecast indicate that additional mitigation measures are necessary to prevent sedimentation?

5.2 Weekly site monitoring

Weekly site monitoring will be carried out by Coillte personnel based on the "harvest site monitoring form" detailed in Appendix C. This is the standard monitoring carried out by Coillte personnel on all harvesting sites. This monitoring typically looks at 3 key areas:

a) Safety and environmental;

b) Quality & production;

c) Site management.

Typically, this site monitoring is recorded on a handheld field devise (called a Juno) and stored on the Coillte system (where the handheld is not used, paper forms are used and scanned onto the Coillte system). All breaches are reported immediately to the harvest manager for rectification. This system ensures that there is a monitoring history available on site during operations and that remedial action can be taken quickly should any breaches occur.

5.3 Monthly water sampling

The purpose of monthly water sampling is to provide a regular independent measure of the effectiveness of water protection measures. All water samples must be within pre-defined acceptable standards and where these are not met immediate mitigation action must be taken.

As part of the windfarm construction, 8 sample locations were identified as the key water exit points from Doughill (Figure 9). Since September 2014, these locations were used as the water sampling points where samples were taken to periodically test water quality. As part of the windfarm development, all results from these samples were shared with Inland Fisheries Ireland (IFI). This historic sampling data will prove useful in providing a water quality baseline for all future forestry activity.

In the 5 year plan (2017-2021) water sampling will be continued using the same sample locations used by the windfarm. Sampling will occur on a sub-catchment basis, before, during and after all high impact operations, with all results shared with Inland Fisheries Ireland (IFI). These water samples will be sent for analysis to an independent laboratory where results will be collated to ascertain if water quality is within pre-defined acceptable standards. The water quality results will be used as an overall guide to independently assess how effective the site specific mitigation measures are performing. However, due to a 2-week turn-around time between sampling and obtaining the results, this approach will not be used to determine the day-to-day effectiveness of the site specific mitigations. These will be determined using the weekly independent monitoring and the daily visual monitoring, which allow for immediate actions to be taken on a daily to weekly basis.

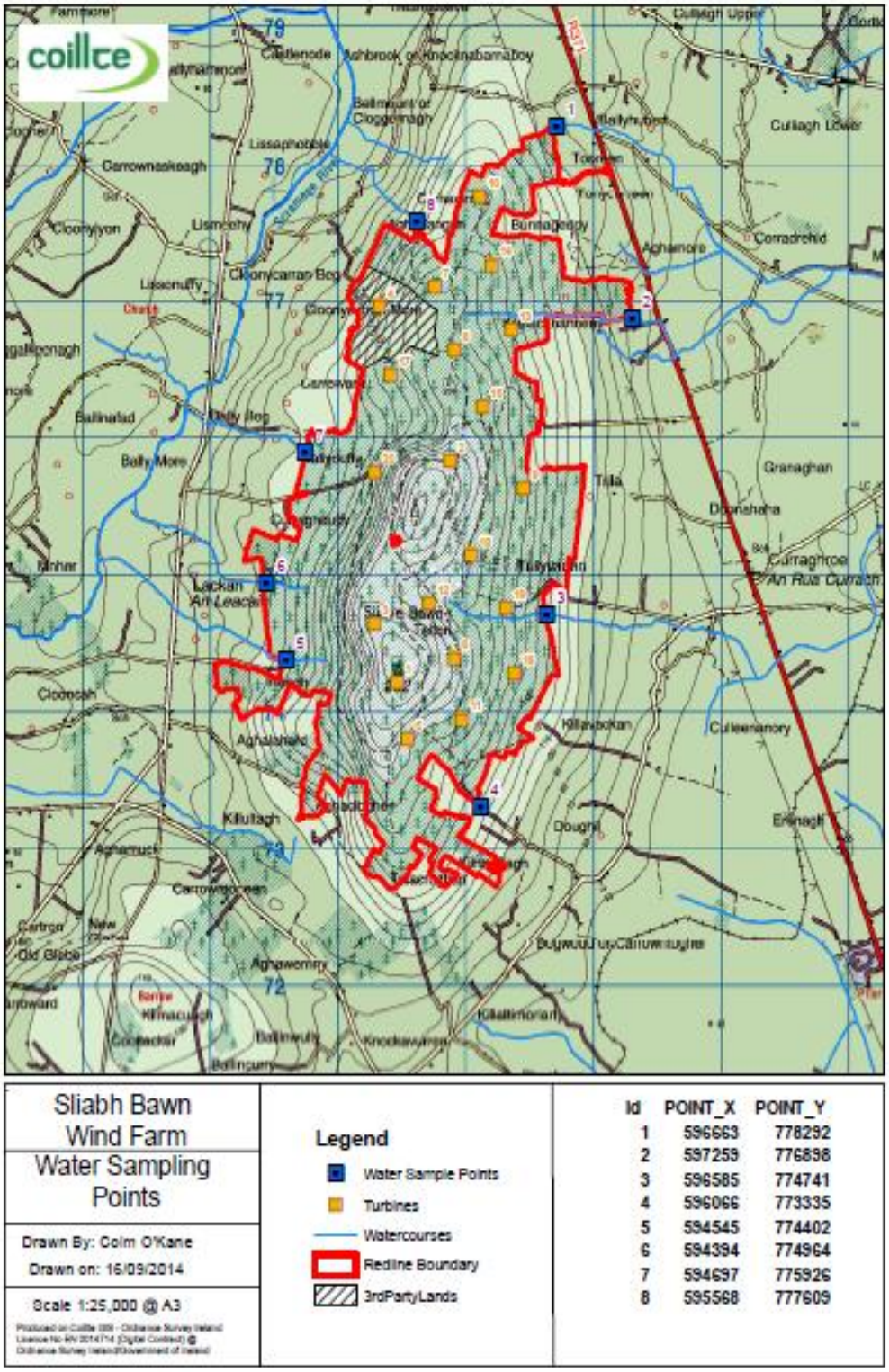


Figure 9: Water Sampling locations at Doughill Forest

6. Emergency planning

Emergency planning in Doughill relates to two main areas, namely;

a) Pollution control procedure - spills;

b) Emergency Plan.

6.1 Pollution control procedure - spills

In the event of a pollution spill the first priority is to make the area safe and the following is recommended.

- If a spill is detected or occurs, the source of the spill should be stopped immediately by the operator, if safe to do so.
- Adjacent operators should evacuate the area.
- For flammable or volatile chemicals, all persons should be warned and removed, sources of ignition must be removed.
- If the chemical material is unknown, the Material Safety Data Sheet (MSDS) should be consulted.
- Spill kits should be used as quickly as possible

Once the area is made safe the spill must be cleaned up. All appropriate PPE must be worn before undertaking a spill clean-up. If the spill is large, if there has been a release to watercourse, or if the hazards associated with the chemical/substance are unknown, contact with the Coillte Environmental Officer and Safety Officer must be made immediately. Protect water courses as soon as possible. Absorbents may be placed around drains, as needed. Loose spill control materials should be distributed over the entire spill area, working from the outside, circling to the inside. This reduces the chance of splash or spread of the spilled chemical. When spilled materials have been absorbed, use gloves to place materials in an appropriate container. Polyethylene bags may be used for spill materials. The following must be considered if the spill is a chemical:

- Chemical spill waste must be considered hazardous waste and dealt with appropriately;
- Labelling and disposal must be appropriate to the material type;
- Identify the material by chemical name and spill debris, and affix onto the bag/container;
- Contact the Environmental Officer and or safety Officer for advice on storage and packaging for disposal.

All spills must be reported

- Report all spills to the Environmental Officer and if appropriate, the Safety Officer.
- Any additional measures to mitigate impacts should be identified and undertaken.
- The Incident Report Form (FORM-03) must be filled out and forwarded, by soft copy, to the Environmental Officer.
- The Environmental Officer is responsible for ensuring corrective actions are agreed to prevent reoccurrence, and ensuring they are undertaken.
- Any reporting to regulatory agencies such as the Fisheries Board or County Council should be agreed and undertaken by the BAU in co-ordination with Stewardship and Public Goods specialists.
- See Figure 10 below for the Spill Response & Reporting Workflow.

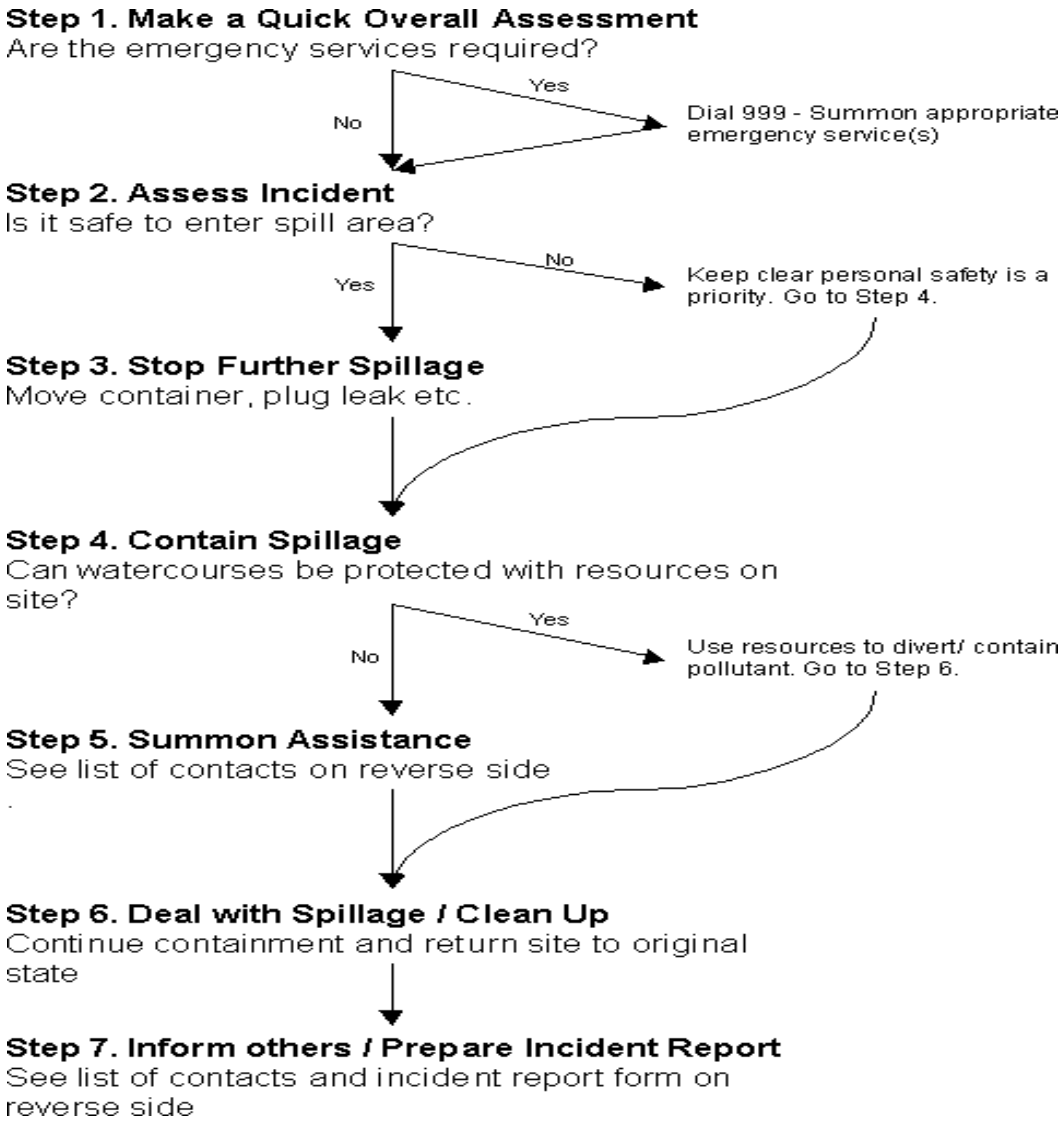


Figure 10: The Spill Response & Reporting Workflow

6.2 The Emergency Plan

The emergency plan and pollution control procedure is the same as that used by Coillte nationally. All emergencies are initially classified as Major or Minor. A major incident requires immediate Coillte involvement, whereas a minor incident can be handled locally.

Major Incident – need to involve other Coillte staff immediately

- Damage to Annex 1 Habitat – i.e. un-authorised incursion into an SAC, NHA, pNHA.
- Uncontrolled silt runoff into water course.
- Chemical spill pollution.
- Fuel spill.
- Destruction of archaeological feature.
- Damage to significant biodiversity feature.
- Large scale felling error – breach of Felling Licence.

Minor Incident – can be handled locally

- Contained pollution on a non-sensitive site.

Emergency Contact Details

Emergency Contact Details			
PERSON	**Name**	**MOBILE**	**OTHER**
Harvest Manager	Patrick Buttner		
Engineering Manager	Conor English	(M) 087 11552(	
Operations Manager	John Tarmey	(M) 086 244467	(O) 071-9670279
Resource Manager	Dermot Tiernan	(M) 086 605710	(O) 094-9029400
Operations Forest Technician			
Coillte Environmental Officer	Barry Rintoul		
Harvesting Forest Technician	Larry Kilcolm	086 8118005	
Engineering Technician			
Fire Brigade (Local)	Campwest	0949047895	
Coillte engineer for windfarm	Ger Hynes	0879093315	
Local Gardaí	Boyle	(O) 071-966462	
Local Doctor	Westdoc	1850365000	
Nearest Hospital	Roscommon		0906626200
ESB	Lo Call number		1850 372 999

Emergency No on Mobile 112 and 999

Safety Team Telephone Numbers

James Casserly	086 2786448	Charles Kennedy	086 2550736
John McGovern	086 2210494	Paddy O'Kelly	086 2707698

The Emergency plan procedure

1. Contact the local Coillte Manager and Environmental Officer immediately if there is any possibility of significant environmental impact. In the case where an incident involves risk to people's health or resulted in personal injury the Health & Safety Manager and Safety Officer must be notified.
2. The Coillte manager must log the incident on the FIS Issue Register and fill out an Environmental Incident Report Form and send this to the Local Environmental Officer to validate the root cause and indicate if any further actions are required. Where there is personal injury, the site manager should also complete an Accident Report, as per Coillte accident reporting procedures, and contact the Safety Officer immediately. Issues should be logged under the category EPR (see Section 5.4).
3. Remedial actions are taken immediately.
4. When a corrective action has been initiated by the Environmental Officer and it is found that a long term solution is required to stop the problem from re-occurring, Preventative Action Plans are developed, implemented and monitored to reduce the likelihood of reoccurrence of such nonconformities and to take advantage of the improvement opportunities.
5. After implementing corrective/preventive actions(s) plans, the Quality Assessors and Environmental Officers or Safety Officers shall monitor results to ensure that the action(s) taken have been effective in overcoming the original problem.
6. Any actions identified are issued as corrective actions in the FIS Issue Register.
7. All relevant staff are trained in the incident reporting procedure and workflow as required. Contractors are also made aware of requirements during Environmental Training.
8. On completion of the Incident Report, details must be uploaded to the FIS Issue Register on to classify and track action completion.
9. On a periodic basis, audits undertaken on sites will assess the ability of management to address incidents that occur in line with this procedure.
10. On an annual basis, the overall effectiveness of the incident reporting procedure will be reviewed by the Risk Systems Manager based on incident reports, incident types, monitoring results and any resulting impacts.
11. Fires should be dealt with in line with the local BAU Fire Plans.

6.3 Flooding risks

A flooding risk was identified in one sub-catchment in 2016. In response to this, flood relieving measures were installed in the forest and these included the installation of containment ponds to help slow water flows. These flood relieving measures were constructed in accordance with an independent hydrologist specification and they should be capable of dealing with future flood event episodes. All other sub-catchments in the property have no history of flooding.

Stilling pond 1

Large pond to collect large peak flows

Stilling pond 2

Slows water with overflow capacity

Stilling pond 3

Large pond to slow water to contain silt

Water exit

Slowed silt free water flows into forest

7. Consultation

As part of our commitment to the stewardship of our forests, Coillte welcomes comments and suggestions from people about how we manage our forests in the most responsible way for the benefit of society and future generations. As a result, Coillte are committed to ensuring that people are aware of our plans and policies and that we present all of our information in a clear and understandable way. To assist this we provide convenient ways for people to raise matters of interest and concern and pass on their views to us.

7.1 Consultation for Doughill property

The consultation process for the management of the forests in Doughill property included two main elements:

a) Coillte consultation process;

b) Windfarm consultation process.

a) Coillte consultation process

The Coillte consultation process revolves around the strategic plan which is developed for each Business Area Unit (BAU). Coillte has a total of 8 BAUs and Doughill windfarm lies within BAU2. In 2015, all strategic plans were reviewed nationally and to facilitate this Coillte held an extensive public consultation process. Stakeholders were invited on two occasions to submit their consultation concerns over a six week public consultation period. The first was held in July/August 2015 and the second held in October/November 2015. The consultation feedback from these were incorporated into the strategic plan where possible. All changes made as a result of these consultations were made public and are published on the web (see section 4.4 in the link below for the BAU2 strategic plan). To further facilitate this consultation process Coillte also updated it's website to describe the details of the BAU strategic plan review and the associated timelines for submissions. This was accompanied with a new web-based map application that allowed stakeholders to view its proposed felling plans for individual properties to assist them in their submissions. In addition, an extensive media campaign took place with adverts placed in national and regional newspapers publicising the consultation process. During this period, Coillte staff were also available for one-to-one meetings to discuss its plans. All stakeholders registered with Coillte were also issued with a mailshot about this consultation process. A summary of these submissions can be viewed on the link below. Coillte are currently in the process of a "mini-consultation" process allowing stakeholders a further opportunity to make submissions. This submission period runs from 17th October to 25th November, 2016. The details of this consultation opportunity is detailed in the link below.

Link to BAU2 strategic plan:
http://www.coillte.ie/coillteforest/plans/business_area_unit_bau_strategic_plans_2016_2020/

Link to summary of submissions made nationally:
http://www.coillte.ie/fileadmin/user_upload/FINAL_BAU_Strategic_Plan_Consultation_Summary.pdf

Link to the "mini-consultation" process:
http://www.coillte.ie/aboutcoillte/about_coillte/coillte_consultation/coillte_current_consultations/

There were no specific issues from stakeholders in relation to the Doughill property during the BAU strategic plan consultation process held in 2015. However, as harvest activity post construction will resume, Coillte will initiate a "local-consultation" process to publically discuss the operational schedule for the period 2017-2021. This decision is based on the expected increased level of operations that will initially occur to 2021. This increase has resulted from a moratorium that was placed on all harvest activities during the construction phase of the wind farm. This has resulted in the delay of felling operations over a number of years, in a property with a mature age profile where windthrow becomes a significant threat once the crops grow beyond 21 m. Consequently, the immediate felling schedules post construction outlined in this document will require an element of catch up to ensure the windthrow threat is minimised. In light of these considerations, "local-consultation" process will occur in January/February 2017. This process will follow the following process:

- This report will be posted on the Coillte web site.
- Adverts will be placed in the local paper (the Roscommon Herald) to direct people to view this report on the web site and provide feedback, and also to invite people to attend an information day in Strokestown regarding the upcoming felling plans at Doughill Forest.

b) Windfarm consultation process

What follows is a summary of the detailed consultation process that was undertaken as part of windfarm development which is as follows:

- Early stage statutory consultation: Consultation with statutory and non-statutory stakeholders including letters sent to public bodies, NGOs, etc.

- Early stage public consultation: Letter drop to approximately 400 houses describing the progress and details of the proposed development.

- Scoping stage: First Phase Pre-Planning Public Consultation was held in Strokestown. Notification of this event was given in the local press and parish notes. In addition to the formal public meetings, Coillte had a number of interviews with local newspapers and local radio. Press release sent to local Newspapers & Parish notes, Shannonside radio. A consultation report was prepared following initial consultation event. Consultation with local interest groups and public representatives continued. Consultation plan was refined as constraints become more evident.

- Detailed Assessment and pre-planning stage: A programme of consultation meetings is undertake with relevant stakeholders. Second Pre-planning Public Consultation held in Strokestown. All items addressed in the feedback were addressed in the body of the EIS. Project design is revised to address concerns and constraints. Changes to design are communicated to all relevant stakeholders.

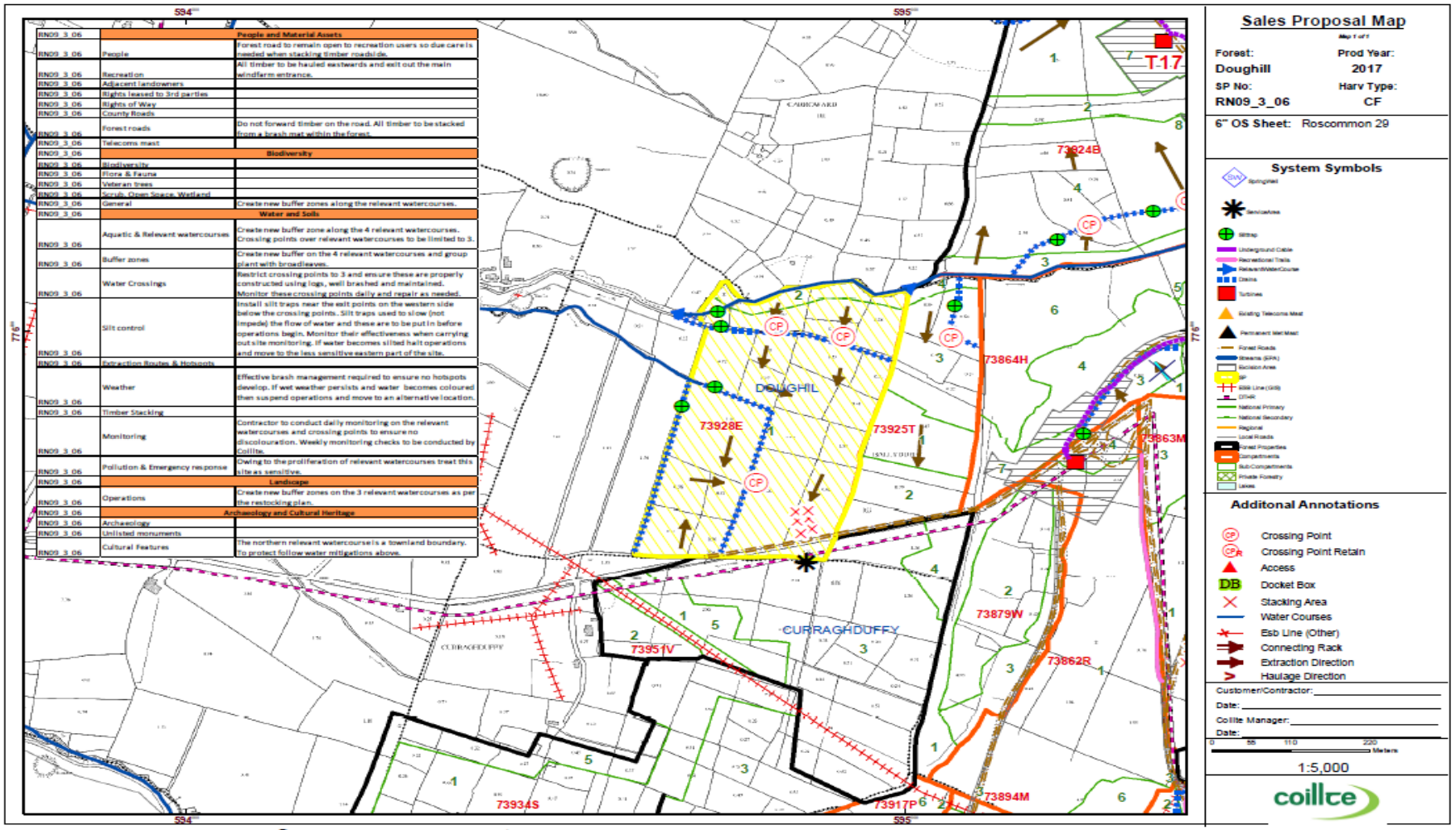
- Planning stage: Planning application was advertised via site notice, newspaper notice and all statutory planning requirements. Subsequent to this engagement a planning application for a wind farm consisting of 20 No. (19 on Coillte owned land) wind turbines along with associated infrastructure was submitted to Roscommon County Council (RCC) in September 2010. Permission was granted by Roscommon County Council in September 2011 for the development. Permission was appealed to An Bord Pleanála (ABP) by a number of third parties. The appeal of RCC's decision was lodged with ABP at the end of October 2011 and a decision to grant permission for the development along with new planning conditions was released by ABP in March 2012.

- Pre-construction and construction phase: Further engagement with the host community and relevant stakeholders takes place during the pre-construction phase. Press release was made in January 2015 regarding the current project status, information around community benefit, engagement with the community prior to construction. A letter from the Sliabh Bawn WF project team was disseminated to all the residents in the immediate area around Sliabh Bawn informing them of upcoming enabling works, commencement of WF Construction in April, the recreational plan, the

community benefit fund and provided the community with contact details for any queries they had, including postal address, lo-call telephone number, email address and website. Newsletter #1 -containing information on the project, contact details including website was developed and distributed to the relevant area around Sliabh Bawn. Construction commencement notification letter was delivered to immediate and relevant area in April 2015. Door to door engagement took place in the immediate area around Sliabh Bawn February – June 2015. Prior to construction the parts of the forest are closed to the public where construction is taking place - consultation with all groups that use the mountain and a notification letter delivered to immediate and relevant area. Forest closure / temporary recreation route provided for the public (approx. 4 km open to the public for recreation). Project Newsletter #2 was developed and distributed to the relevant area around Sliabh Bawn. Community Benefits Fund information evening held in Strokestown in September 2015. Door to door engagement with residents including schools regarding the concrete delivery route – timelines, traffic management April – June 2016. Door to door engagement informing residents of turbine component deliveries to site & erection in July 2016. Newsletter #3 was developed and distributed to the relevant area around Sliabh Bawn. Community Benefit fund - capacity building workshop held in Strokestown in September 2016 for groups that required assistance with applications or projects.

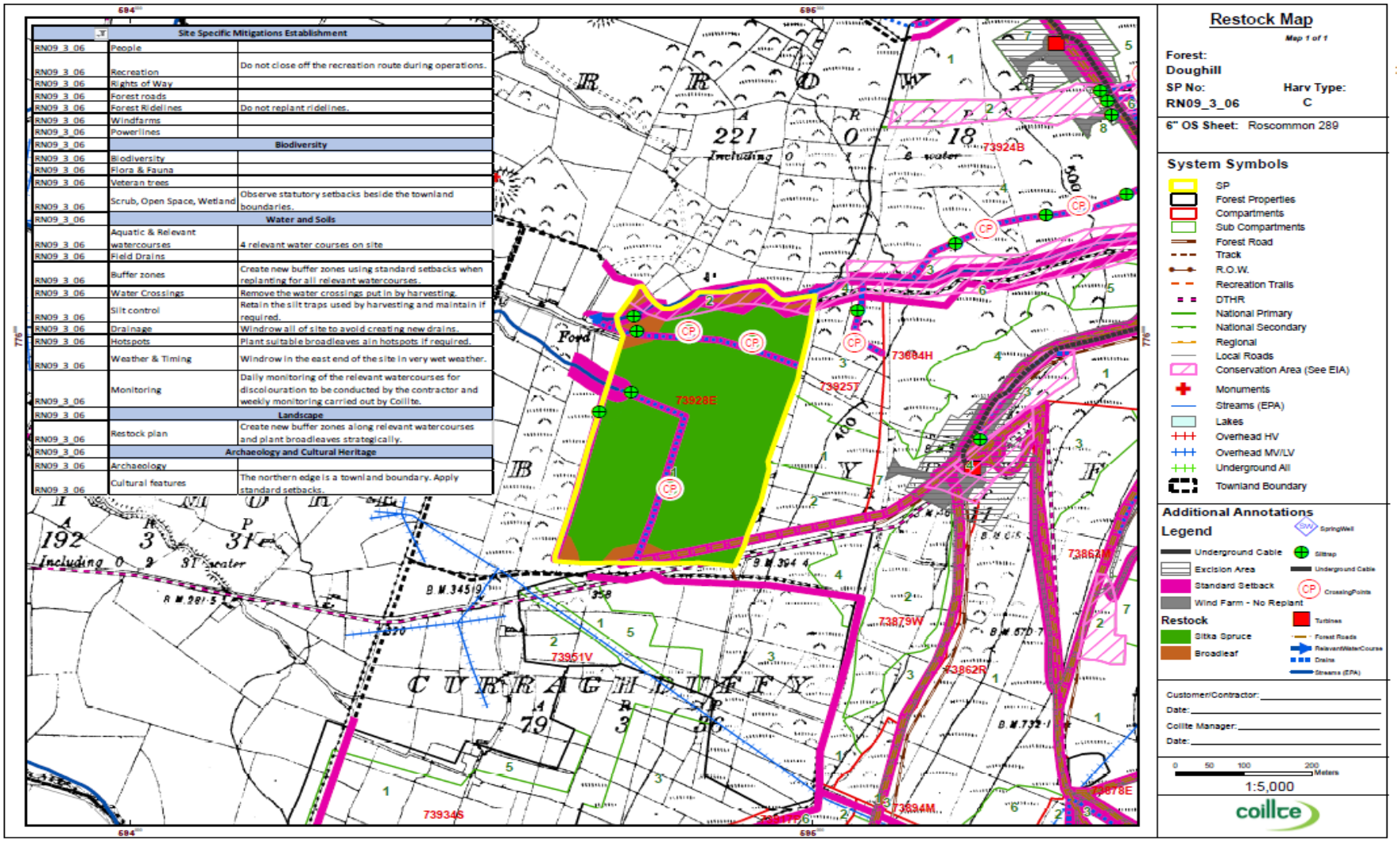
- Operational stage: Ongoing consultation as necessary will take place during the operational phase. Any issues arising will be logged and dealt with asap and closed out accordingly.

Appendix A: Examples of the site specific operational maps



Original A3

Date: 02/12/2016



Restock Map

Map 1 of 1

Forest: Doughill

SP No: RN09_3_06 **Harv Type:** C

6" OS Sheet: Roscommon 289

System Symbols

- SP
- Forest Properties
- Compartments
- Sub Compartments
- Forest Road
- Track
- R.O.W.
- Recreation Trails
- DTHR
- National Primary
- National Secondary
- Regional
- Local Roads
- Conservation Area (See EIA)
- Monuments
- Streams (EPA)
- Lakes
- Overhead HV
- Overhead MV/LV
- Underground All
- Townland Boundary

Additional Annotations

Legend

- Underground Cable
- Excision Area
- Standard Setback
- Wind Farm - No Replant
- SpringWell
- Siltrap
- Underground Cable
- CrossingPoints

Restock

- Sitka Spruce
- Broadleaf
- Turbines
- Forest Roads
- RelevantWaterCourse
- Drains
- Streams (EPA)

Customer/Contractor: _____

Date: _____

Coillte Manager: _____

Date: _____

0 50 100 200 Meters

1:5,000

coillte

Original A3

Date: 07/12/2016

Appendix B – Standard mitigations

Standard Mitigations for Harvesting		
Category	**No**	**Mitigation**
People and Material Assets		
People	2	Erect advance notice signage prior to operations
People	3	Erect general safety signage and prohibitive notices
People	4	Keep public roadways and ROW's clear of debris
Recreation	5	Limit impacts of operations on recreation areas, trails, waymarked ways and car parks
Forest roads	13	Minimise damage to forest tracks and forest roads
Forest roads	14	Minimise forwarding operations on road surface unless justified.
Biodiversity		
Biodiversity	17	Limit machine access to avoid impacts on ground vegetation and soils
Biodiversity	18	Retain all standing and fallen dead stems and branches measuring >15cm diameter, where safe to do so
Flora & Fauna	20	Avoid all damage or disturbance to known locations that are important for species or RTE species. This includes breeding sites (e.g. badger setts, known bird nesting sites)
Flora & Fauna	21	If a new important location for a species is encountered during operations, protect and report to Coillte Site Manager
Veteran trees	23	Retain all veteran trees on site
Veteran trees	24	Avoid damage to crown of veteran trees
Scrub, Open Space, Wetland	26	No machine access through scrub, open space or wetlands
Scrub, Open Space, Wetland	27	No timber stacked in scrub, open space or wetlands
Scrub, Open Space, Wetland	28	If unrecorded scrub, open space or wetland are present, avoid damaging them on the ground
General	29	Do not break branches of retained trees with machinery
Water and Soils		
Aquatic & Relevant watercourses	30	Do not allow brash, logs or debris to enter the aquatic zones and relevant watercourses
Aquatic & Relevant watercourses	31	Remove any material that enters aquatic zones and relevant watercourses
Aquatic & Relevant watercourses	32	Service area is >50m away from aquatic zones & relevant watercourses
Aquatic & Relevant watercourses	33	Do not install silt traps on or within the buffer of an aquatic zone
Aquatic & Relevant watercourses	34	Keep brash mats as far back as is practical from aquatic zones
Buffer zones	35	Standard buffer zone along all aquatic zones is 10m
Buffer zones	36	No machinery operations to take place in the buffer zone unless unavoidable and justified in plan
Buffer zones	39	Remove all loose brash from buffer zone
Buffer zones	40	No urea application within buffer zone
Water Crossings	41	Minimise crossing watercourses. Where watercourses have to be crossed, bridge by placing logs at right angle to flow of water and cover with brash or insert plastic pipe and cover with brash.
Silt control	42	Install silt traps close to potential sources of silt runoff.
Silt control	43	Monitor silt traps and install additional traps if necessary
Silt control	44	Place material taken from silt traps as far away as possible from waterflow
Silt control	45	Ensure that all silt traps are fully functional before removing machinery from site

Water and Soils (continued)		
Extraction Routes & Hotspots	46	Ensure that sufficient brash is available to maintain brash mats
Extraction Routes & Hotspots	47	Concentrate available brash on primary extraction routes
Extraction Routes & Hotspots	48	Use alternative main extraction routes where possible to those used in previous thinnings
Extraction Routes & Hotspots	49	Plan extraction racks to avoid hotspots and silt runoff
Weather	51	Suspend Operations during periods of heavy rainfall or move Operations to a less sensitive part of site
Timber Stacking	52	Do not stack timber in buffer zones or in hotspots
Monitoring	53	Daily visual water monitoring is required on all sites rated BLUE or RED for Water/Soils, and on GREEN sites where deemed necessary by Coillte Site Manager.
Pollution & Emergency response	54	Pollution control kit on all sites
Pollution & Emergency response	55	Implement pollution control procedures in the event of siltation of water, oil or chemical spill and report to manager
Landscape		
Operations	56	Adhere to felling and restocking plan
Archaeology and Cultural Heritage		
Unlisted monuments	60	Report all unlisted archaeological sites discovered during operations to Coillte manager
Unlisted monuments	61	Suspend all work in the vicinity of the discovery; create minimum 20 metre exclusion zone and do not disturb monument.
Cultural Features	63	Do not damage cultural features
Cultural Features	64	Fell trees away from cultural features
Cultural Features	65	Do not stack timber on cultural features
Cultural Features	66	Where linear features (including townland boundaries) have to be crossed, minimise the number of crossing points and use existing crossing points where available
Cultural Features	67	Buffer crossing points with brash, and remove brash before forwarder leaves the site
Cultural Features	68	Report new cultural features to Coillte site manager

Standard Mitigations Establishment		
Category		**Mitigation**
People and Material Assets		
People	2	Erect general safety signage and prohibitive notices
People	3	Erect pesticide application warning signs
Recreation	4	Limit impacts of operations on recreation areas, trails, way-marked ways and car parks
Recreation	5	Do not damage boundary fences
Rights of Way	8	Protect ROW during operation; leave in pre-operations condition
Forest roads	14	Minimise damage to forest tracks and forest roads
Forest roads	15	Do not plant within 7.5m of the centre of the forest road
Forest Ridelines	16	Leave 6m unplanted corridor along compartment boundary
Windfarms	21	Do not plant within 10m of the centre of windfarm roads
Powerlines	32	Underground Powerlines: 10m corridor unplanted
Biodiversity		
Biodiversity	33	Limit machine access to avoid impacts on ground vegetation and soils
Biodiversity	34	Retain all standing and fallen dead stems and branches measuring >15cm diameter, where safe to do so
Flora & Fauna	36	Avoid all damage or disturbance to known locations that are important for species or RTE species. This includes breeding sites (e.g. badger setts, known bird nesting sites)
Flora & Fauna	38	Do not cultivate within 20m of a badger sett entrance
Veteran trees	39	Retain all veteran trees on site
Scrub, Open Space, Wetland	41	No machine access through scrub, open space or wetlands
Scrub, Open Space, Wetland	42	If unrecorded scrub, open space or wetland are present, avoid damaging them on the ground
Water and Soils		
Aquatic & Relevant watercourses	44	Do not plant within 10m of the edge of aquatic zone
Aquatic & Relevant watercourses	45	Do not plant within 5m of the edge of relevant watercourse
Aquatic & Relevant watercourses	46	Do not allow debris to enter the aquatic zones and relevant watercourses
Aquatic & Relevant watercourses	47	Remove any material that enters aquatic zones and relevant watercourses
Aquatic & Relevant watercourses	48	Storage areas for fuel, lubricants, oil and chemicals are >50m away from aquatic zones; if service area has to be moved, mark on S&E map, notify site manager
Aquatic & Relevant watercourses	49	Do not install silt traps on or within the buffer of an aquatic zone
Field Drains	50	No setback distance is required
Buffer zones	51	No machinery operations to take place in the buffer zone unless unavoidable, and justified and specified in the ERA
Buffer zones	52	Do not remove any brash mats that are embedded in soil
Buffer zones	53	Do not cultivate within the buffer zone
Buffer zones	54	Where planting within buffer zone is specified in the ERA, pit plant only
Buffer zones	55	No application of pesticides, herbicides or fertiliser within the buffer zone
Water Crossings	56	Where aquatic zones or watercourses have to be crossed a temporary bridge must be constructed by placing logs at right angle to flow of water or insert plastic pipe
Silt control	57	Install silt traps close to potential sources of silt runoff
Silt control	58	Monitor silt traps and install additional traps if necessary

Water and Soils (continued)		
Silt control	59	Place material taken from silt traps as far away as possible from water flow
Silt control	60	Ensure that all silt traps are fully functional before removing machinery from site
Drainage	61	Do not disturb existing drains within the buffer zone
Drainage	62	Ensure all site drainage channels taper out before entering the buffer zone
Drainage	63	Align drains as close as possible to the contour line to slow water movement
Drainage	64	Use rock armour if available to control water in new drains
Drainage	65	Install drop downs in new drains to control water flow
Drainage	66	Stagger drainage to slow water movement
Hotspots	67	No cultivation in hotspots
Weather & Timing	68	Suspend Operations during periods of heavy rainfall or move Operations to a less sensitive part of site
Monitoring	70	Daily visual water monitoring is required on all sites rated BLUE or RED for Water/Soils, and on GREEN sites where specified in the ERA
Landscape		
Restock plan	71	Adhere to site restock plan
Archaeology and Cultural Heritage		
Archaeology, cultural features	73	Do not enter the exclusion zone around monuments and structures
Archaeology, cultural features	75	Do not plant within 20m of the edge of monument or protected structure
Archaeology, cultural features	76	Leave 4m unplanted corridor for access to archaeological monuments

Appendix C: Site monitoring forms

DAILY SITE MONITORING FORM

RN 09 Doughill Harvesting Site

Contractor : _____

Monitoring carried out during week ending: _____ Week Nr: _____

Person (s) responsible for daily monitoring: _____

Day	Weather Condition & Rainfall (24 hrs	Works Location:	Resources & Labour in Gang
Mon			
Tues			
Wed			
Thurs			
Fri			
Sat			
Sun			

Impacts on Aquatic Zones or Relevant Watercourses in or adjacent to this site	Mon Y/N	Tue Y/N	Wed Y/N	Thu Y/N	Fri Y/N	Sat Y/N	Sun Y/N
1. Is there discolouration of water in aquatic zones or relevant watercourses due to this operation?							
2. Is there debris in or damage to aquatic zones, buffer zones or relevant watercourses due to current operations?							
3. Are existing protection measures inadequate to prevent rutting which could result in sedimentation?							
4. Does the current weather forecast indicate that additional mitigation measures are necessary to prevent sedimentation?							
Initials of Contractor's/Customer's Operation/Site Manager							
Compliance check, Coillte Manager/Area Foreman							

Day	Remedial Actions if "Y" to any one of the four points above
Mon	
Tue	
Wed	
Thu	
Fri	
Sat	
Sun	

Signed: Site Mgr./ _____ Date _____

Contractor ./ _____ Date _____

HARVEST SITE MONITORING FORM

HSMF version 11

Forest Number:		SP Number:		Property Name:		Contractor Name:		Date:	__/__/__

✓Satisfactory X Unsatisfactory

	Condition Description	✓or X	Action Specified
Safety/ Environmental (A)	PPE (Helmet, high vis. jacket etc)		
	Code of Practice – public roads		
	Utility lines - due care		
	Warning signs erected - Standing Sites (Not Stolen)		
	Warning signs maintained (Not stolen)		
	Roadside stacks properly constructed by harvesting contractor		
	Unsafe work practices		
	HIRA Checked by HM/Verified by operator		
	Other conditions – Safety		
	No Stump treatment		
	Poor Stump treatment		
	Damage control - forest roads		
	Roads/drains brash free		
	Fences/walls etc. protected		
	Fisheries/water courses protected		
	Storage of urea and fuel tanks		
	Archaeological/Cultural sites protected		
	Amenity and recreational sites protected		
	Control of litter		
	Pollution Control Kit Checked by HM/Verified by operator		
	Adhere to Emergency Pollution Control Plan		
	Other conditions – Environmental		
Quality / Productivity (B)	Stump height		
	Achievement of agreed production targets		
	Section undersize trees to waste		
	Designated machines and operators		
	Felling/extraction of all harvestable products		
	Maximisation of product segregation		
	Other condt - Quality/Productivity/Reliability		
Site Management (C)	Harvest Plan file signed and available on site Checked by HM/Verified by operator		
	Adherence to SP Boundaries		
	Calibration checks		
	Daily Data Transfer		
	Log Quality		
	Ground/Stem damage control		
	Security arrangements/barriers		
	Thinning Quality/Monitoring		
	Adherence to agreed felling pattern		
	Access/Exits adhered to for machine transfer/servicing		
	Other conditions - Self Management		

Remarks:

_____

_____

_____

Sgd._____ SITE FOREMAN:_____

(Harv. Team Member) (For Customer/Contractor)

Blue copy for Customer/Contractor Green Copy for Operator White copy to be filed with relevant SP