

**Ballybeg Commonage**

**2021 Ecological Survey**



**Final Report**

**2<sup>nd</sup> October 2021**

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## Ballybeg Commonage

### 2021 Ecological Survey

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## Ballybeg Commonage

### 2021 Ecological Survey

#### 1. Introduction

A baseline habitat condition and ecological survey and habitat management plan was prepared for the Ballybeg Commonage in 2018<sup>1</sup> and the measures within same underwent screening for Appropriate Assessment<sup>2</sup>.

The implementation of the management prescriptions in the plan began in 2019. The management prescriptions in the SUAS plan for this commonage set out to address the impacts highlighted in that report so progress is made towards attaining **Favourable status** for the Annex I habitats present on the site – principally 4010 Northern Atlantic Wet Heaths with *Erica tetralix* and 4030 Dry Heath.

The major impacts to the habitats in this commonage arise predominantly from under grazing, timing of grazing, lack of active shepherding which has resulted in more areas becoming acid grassland as sheep congregate in certain areas, and bracken and gorse encroachment and a legacy of uncontrolled burning.

The extent of habitats present within the Ballybeg Commonage and their affinities to either Fossitt (Level 3) or Annex I habitats were mapped as presented on **Figures 1 and 2** (See **Appendix 1**) and their conservation status was assessed and mapped as shown on **Figure 3** (See **Appendix 1**). A series of management prescriptions were drawn up for the Ballybeg Commonage as detailed in **Table 1** and mapped on **Figure 4** (See **Appendix 1**).

#### 2. SUAS Vegetation Management Measures

The proposed management measures for the Ballybeg Commonage as initially proposed in 2019 under SUAS were as follows:

##### Year 1 (2019)

1. Cut a number of small sections in the wetter parts on the west side of area 1. Cut sections of up to 0.5ha in size. It is recommended to cut these in the autumn as the ground will be drier at that time of the year.
2. Control burn a section on the south of area 1, avoiding the areas burned in the last fire which can be clearly seen on the management map, to encourage sheep to spread out more over these areas. Fire control lines, at least 3m wide shall be cut around each section, either by tractor mounted machine or by hand, to ensure these controlled burning areas are contained. Controlled burning may be carried out either in the spring or the autumn (or both) so long as it is within the legal burning season. The total area between cutting and burning should not exceed 3ha in 2019.
3. Cut gorse in areas 23 & 38 to open up where it is starting to dominate. Cut up to 2ha in 2019 and encourage grazing by stock afterwards.
4. Cut/roll bracken in areas 24, 27 & 34, where a machine will travel. This is to be done at least twice; once in early June and again in late August. This will act as a trial to test the practicality of this method of controlling bracken.

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<sup>1</sup> Wilson, F. (2019). Ecological Baseline Survey prepared for Ballybeg Commonage as part of the Commonage Management Plan for SUAS. 27<sup>th</sup> January 2019. Unpublished report for SUAS EIP.

<sup>2</sup> Wilson, F. (2019). Report for Screening for Appropriate Assessment for a Commonage Management Plan at Ballybeg, Tinahely, Co. Wicklow in accordance with the requirements of Article 6(3) of the EU Habitats Directive. 12<sup>th</sup> February 2019. Unpublished report for SUAS EIP.

5. Increase grazing in spring in areas 22, 19, 8 and 9 to see if trampling will assist in reducing the vigour of bracken, making sure that lazy beds are not damaged. Spray could be considered in area 22 away from the flushes.
6. Spray Bracken in areas 36 & 28 with Asulox using a tractor mounted sprayer if the machine can travel here or spray using hand held equipment.

#### **Year 2 (2020)**

1. Cut or burn a further number of sections in areas 1, up to 2ha in total. Follow the guidelines for year 1 in relation to the size and distribution of controlled burning/cutting areas.
2. Control further small areas of gorse in areas 23 & 38 by either cutting or burning, up to 2ha in total.
3. Increase grazing levels in area 7 to control bracken during 2020. If required follow up with cutting or strimming up to 3ha with either a machine or using hand held equipment if desired and feasible.
4. Spray Bracken in areas 36 & 28 with Asulox using a tractor mounted sprayer if the machine can travel here or spray using hand held equipment.
5. Cut/roll bracken in areas 24, 27 & 34, where a machine will travel. This is to be done at least twice; once in early June and again in late August.
6. Increase grazing in spring in areas 22, 19, 8 and 9 to see if trampling will assist in reducing the vigour of bracken making sure that lazy beds are not damaged. Spray could be considered in area 22 away from the flushes.

#### **Year 3 (2021)**

1. Cut or burn a further number of sections in areas 1, up to 2ha in total. Follow the guidelines for year 1 in relation to the size and distribution of controlled burning/cutting areas.
2. Increase grazing levels in area 7 to control bracken during 2021. If required follow up with cutting or strimming up to 3ha with either a machine or using hand held equipment if desired and feasible.
3. Spray Bracken in areas 36 & 28 with Asulox using a tractor mounted sprayer if the machine can travel here or spray using hand held equipment.
4. Cut/roll bracken in areas 24, 27 & 34, where a machine will travel. This is to be done at least twice; once in early June and again in late August.
5. Increase grazing in spring in areas 22, 19, 8 and 9 to see if trampling will assist in reducing the vigour of bracken making sure that lazy beds are not damaged. Spray could be considered in area 22 away from the flushes.

#### **Year 4 (2022)**

1. Cut or burn a further number of sections in areas 1, up to 2ha in total. Follow the guidelines for year 1 in relation to the size and distribution of controlled burning/cutting areas.
2. Increase grazing levels in area 7 to control bracken during 2022. If required follow up with cutting or strimming up to 3ha with either a machine or using hand held equipment if desired and feasible.
3. Spray Bracken in areas 36 & 28 with Asulox using a tractor mounted sprayer if the machine can travel here or spray using hand held equipment.
4. Cut/roll bracken in areas 24, 27 & 34, where a machine will travel. This is to be done at least twice; once in early June and again in late August.
5. Increase grazing in spring in areas 22, 19, 8 and 9 to see if trampling will assist in reducing the vigour of bracken making sure that lazy beds are not damaged. Spray could be considered in area 22 away from the flushes.

#### **Shepherding:**

Average time per shepherding: 6 Hours

No of times sheep are to be shepherded: 2-3 Times per week from 1<sup>st</sup> May to 30<sup>th</sup> November.



Identified objective of the shepherding;

- Sheep are to be kept from straying off the commonage onto surrounding areas.
- Move off sheep from other commonages.
- Monitor sheep health for signs of tick diseases.
- Count numbers of deer grazing the commonage and areas they are grazing.

**Other works to be carried out for entire commonage:**

Repair the sheep fence in area 7, joining the forestry in year 1 to stop sheep getting out into the forestry.

Use feed buckets to encourage more sheep grazing the commonage in the Jan/Feb and the April/May period.

Use the feed buckets to move grazing pressure away from the grassy areas in Jan/Feb and April/May periods.

**Details of sheep stocking rates proposed**

Accurate sheep numbers will be obtained in year 1 and over the remaining 3 years, they will be increased gradually up to GLAS stocking rates.

**Ecological Assessment**

The commonage was surveyed in September 2021 by Faith Wilson to examine and review the implementation of the proposed measures conducted in 2020 and make any recommendations regarding same. The observations and recommendations from this visit are set out below. The remediation measures set out in **Appendix 2** were also examined.

### 3. 2021 Walkover Survey

The following observations, comments on same and recommendations on the works completed in 2021 are presented.

#### 3.1 Controlled Burning - Firebreaks

A number of firebreaks for controlled burning were created on the 26<sup>th</sup> February 2019 on the hillside using a flail mulcher behind a tractor. These can be seen in the Bing Maps imagery of the commonage as presented on **Figure 1** below.



**Figure 1. New firebreaks cut on Ballybeg in 2019 (Bing Maps). The area which was burnt in 2019 is indicated by the blue arrow.**

The prepared control burning areas were located up towards the top of the commonage near the forestry to encourage the sheep up out of the sheltered valley slopes. The areas prepared varied in size from 0.2ha to 0.8ha.

One area was burnt on 28<sup>th</sup> February 2019. The burning here appeared to be very intense and uniform compared with what was done on Glasnamullen which allowed some areas to have remained unburnt. The burn here may have been too intense as there are large areas of bare peat (this may be what was beneath the leggy heather if no bryophyte (moss) layer was present and had been shaded out by the tall heather). A very large congregation of sheep was recorded here in November 2019. When surveyed in November 2019 there was some regeneration of bilberry with some deergrass, tormentil, sedges (*Carex flacca* and *Carex binervis*) and some parts of moss remain intact. The burnt area was re-examined in November 2020 and there are still areas of exposed peat which have not regenerated, which would indicate that the burn was too intense. In 2021 it was noted that large areas of glaucous sedge was present and there were still areas of bare peat.





**Plate 1. Glaucous sedge regrowth on bare peat.**



**Plate 2. Areas of bare peat remain amidst regrowth of ling heather in flailed areas.**

### 3.2 Flailed Areas

New areas of habitat were mulched using a tractor mounted mulcher on 18<sup>th</sup> February 2020 as can be seen on **Figure 2** below. There was no weather available in 2020 to do any controlled burning. These areas have avoided those areas of heath, which had been historically recently burnt (as can be seen on the aerial photos in 2005, 2008 and 2012). These areas are being allowed to recover the bryophyte and lichen communities which they are currently lacking. As recommended in 2020 these areas were reduced in size from those prepared in 2019.



**Figure 2. New areas cut in 2020 (Google Maps).**

Some areas within the flailed track areas are dominated by ling whilst others are dominated by purple moor grass whereas bilberry continued to remain relatively scarce.





**Plate 3.** *Molinia* is dominating much of the recently flailed areas.



**Plate 4.** *Molinia* is being browsed and the sward is opening up with the cattle access.

### 3.3 Bracken Control

It is interesting to see the results of the bracken control being implemented on this hill as this is one of the main challenges in many upland sites. Three techniques have been used to date at Ballybeg – spraying with Asulox, bracken bruising and the application of glyphosate with a weed wiper.

2021 seems to have been a very vigorous year for bracken growth as areas that looked like they had achieved a good degree of bracken control in 2020 now showed vigorous regrowth.

Bracken control was first done using a bracken bruiser on the 5<sup>th</sup> July 2019. The bracken bruiser was pulled by a quad and was used to cut/roll bracken in areas 24, 27 & 34. In areas 21, 36 & 28 bracken was treated with Asulox on the 20<sup>th</sup> September 2019 using a small 40 hp tractor and mounted sprayer. A rate of 11 litres of asulox per ha was applied and an area of 3 ha was treated. In 2020 spraying with Asulox was done on the 3<sup>rd</sup> September 2020 using a tractor mounted sprayer with a hand lance. Bracken bruising was done on the 31<sup>st</sup> July 2020 using a tractor & crumbler bar (on back of a harrow). Bracken bruising using quad & bruiser was done on the 1<sup>st</sup> August 2020.

In August 2021 bracken bruising was carried out, spraying with asulox was also carried out in August and the trial of glyphosate applied with a weed wiper was conducted in Area 34 on the 16<sup>th</sup> July as shown on **Figure 3** below.

The use of Asulox in 2019 had previously appeared to have had a more significant and immediate impact based on what was seen in 2020 but very significant regrowth of bracken was noted in 2021. The ecological impacts of using sprays which are currently banned (but for which a derogation applies) remain questionable. The use of glyphosate resulted in a large area of grass kill below the bracken.

It is therefore recommended that another session of bracken bruising in early summer followed by a second session of bracken bruising at the end of the summer in 2022 will help to inform the long term outcome of using this non-chemical technique.

Areas should also be trialled for cutting – this could apply to some of the upper slopes where a machine cannot travel and where native non-invasive ferns are present, which should not be sprayed. The relative costs of each method should also be assessed alongside their effectiveness.





**Plate 5. Looking back over Areas 8, 16 and 19 – a lot of bracken regrowth in comparison to 2020.**



**Plate 6. Bracken control in Area 27 in 2020.**





**Plate 7. Bruised v's unbruised areas in Area 27 in 2021. Note weed wiped area above in the back ground.**

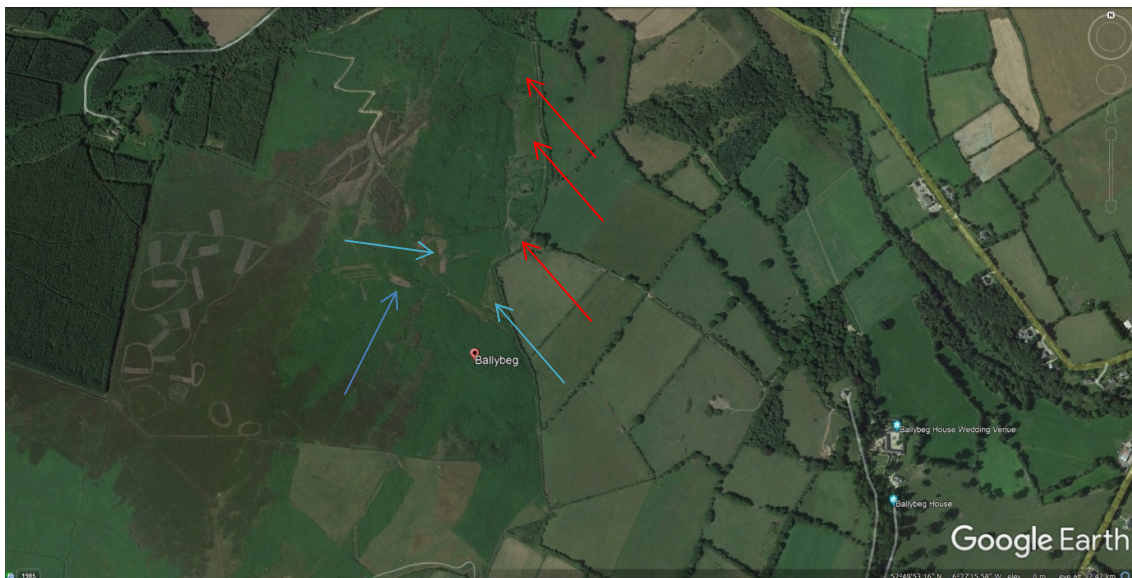


**Plate 8. Trial use of a weed wiper and roundup in 2021 resulted in a high kill rate of the grass below.**





**Plate 9. Bracken control using a bruiser on the upper valley slopes above the badger sett in Area 27 in 2021.**



**Figure 3. Bracken control on Ballybeg in 2021. The area treated with the weed wiper and glyphosate is shown by the blue arrows.**

### 3.4 Track Development

A new access track was made on the commonage in May 2020 as can be seen on **Figure 4** below. This development was not an agreed measure under the SUAS commonage management plan. An ecological inspection conducted in May 2020 identified that the following ecological mitigation measures were required:

- Damaged areas of habitat across the commonage must be reinstated,
- Siltation risk to the Ballycumber Stream with subsequent impacts on water quality and fisheries habitat must be remediated,
- Erosion and landslide risk to the hillside slopes must be remediated;
- Alternative nesting habitat within the commonage must be provided;
- Erosion, landslide and siltation remediation works must be completed through detailed design, implementation of mitigation and amelioration measures (typical measures required would include; silt fencing, removal of all excavated material from the general slopes of the river, blocking of recently opened drains and reinstatement of the hydrological function of the floodplain/wetland areas of the river, reestablishment of vegetation on disturbed ground once reinstated to reduce silt and runoff risk, planting of trees and other vegetation to reinstate the riparian woodland habitat, re-instatement of the excavated track to reduce erosion, gullying and scouring risk, etc.).

A programme of remediation works (as set out in **Appendix 2**) was then agreed with members of the SUAS steering group who also inspected the impacts of the new track. These works are not yet fully complete. In 2020 water bars were installed, the drains blocked in the floodplain and grass seeding took place. The willow wattle fencing and tree planting were completed in 2021. The erosion on the track was luckily not as serious as had been feared. It is recommended that additional trees are planted on the upslope side of the track and in the triangles formed between each return to further stabilise the slopes here.



**Figure 4.** Additional tree planting measures are recommended at the locations indicated along the track created in 2020 (Google maps) to further stabilise the slopes here.





**Plate 10. Soil profile along track edge showing the very thin layer of peaty topsoil which supports vegetation and hence grazing on this hill.**



**Plate 11. Tree planting.**





**Plate 12. Willow revetment works.**



**Plate 13. Drain blocking within the floodplain.**



### 3.5 Gorse Control

Gorse mulching was carried out in 2021. An interesting pattern of cutting pockets of mature gorse (as opposed to entire areas) was trialled as shown on **Figure 5** below. This provided shelter for fauna and sheep and also retained mature gorse along field boundaries (stone faced earthen banks).



**Figure 5.** Gorse cutting on Ballybeg 2021.



**Plate 14.** A tyre was used to hold the sheep lick in place in this location.





**Plate 15. Some regeneration of bilberry below flailed western gorse. Note intact moss layer, which would have been lost if the gorse here had been burnt.**



**Plate 16. Taller mature gorse retained near field boundaries - these areas provide shelter on the hill.**





**Plate 17. Areas of retained gorse alongside and surrounding mulched areas. Good acid grassland recovery beneath.**

### **3.6 Grazing impacts of cattle on the hill**

A small herd of belted Galloway have been introduced to the hill and the grazing impacts of these species on the areas of wet heath and dry heath in Area 1.



**Plate 18. Belted Galloway.**



**Plate 19. No further cutting of vegetation on these slopes is recommended – the previous cutting is encouraging the growth of *Molinia* and the cattle are opening up the ground nicely. Their grazing impact on taller vegetation will be examined in 2022.**

The browsing impacts of the cattle on the vegetation was examined and it was clear that they were grazing on the *Molinia* grass as well as the heather and also opening up the sward.

### **3.7 Spring Remediation**

The remediation assessment recommended the following measures to be implemented at the damaged and straightened spring site.

- The banks of the spring are to be re-graded to create a gentle slope. The current steep slopes will be easily undercut during strong flow and may collapse.
- The re-graded slopes are to be planted with the grass seed mix in appendix 1.
- Shrubs like hawthorn are to be allowed to re-grow

It was agreed that the area would be fenced to include some remnant gorse and trees planted here in addition to the above measures.



### 3.8 Management for 2022

A review of the works which were proposed for 2020/2021 in the plan, coupled with the outcomes from the 2021 walkover was conducted. Items highlighted in red have not been completed. This has informed the proposed works for 2022.

#### 2019

1. Cut a number of small sections in the wetter parts on the west side of area 1. Cut sections of up to 0.5ha in size. It is recommended to cut these in the autumn as the ground will be drier at that time of the year.
2. Control burn a section on the south of area 1, avoiding the areas burned in the last fire which can be clearly seen on the management map, to encourage sheep to spread out more over these areas. Fire control lines, at least 3m wide shall be cut around each section, either by tractor mounted machine or by hand, to ensure these controlled burning areas are contained. Controlled burning may be carried out either in the spring or the autumn (or both) so long as it is within the legal burning season. The total area between cutting and burning should not exceed 3ha in 2019.
3. Cut gorse in areas 23 & 38 to open up where it is starting to dominate. Cut up to 2ha in 2019 and encourage grazing by stock afterwards.
4. Spray Bracken in areas 8 & 13 with Asulox using a tractor mounted sprayer.
5. Cut/roll bracken in areas 24, 27 & 34, where a machine will travel. This is to be done at least twice; once in early June and again in late August. This will act as a trial to test the practicality of this method of controlling bracken.

#### 2020

1. Cut or burn a further number of sections in areas 1, up to 2ha in total. Follow the guidelines for year 1 in relation to the size and distribution of controlled burning/cutting areas.
2. Control further small areas of gorse in areas 23 & 38 by either cutting or burning, up to 2ha in total.
3. Spray a number of small sections in area 7 using hand held equipment, up to 3ha for bracken during 2020. Follow up with increased grazing levels afterwards.
4. Cut/roll bracken in areas 24, 27 & 34, where a machine will travel. This is to be done at least twice; once in early June and again in late August.

#### 2021

1. Do a demonstration of controlled burning on the sections with firebreaks prepared in south of area 1.
2. Cut gorse in areas 23 & 38 with a suitable tractor & mulcher.
3. Spray a number of small sections in areas 7, 17, 22, 25, 30, 36 & 40 using hand held equipment, up to 3ha for bracken during 2021. Follow up with increased grazing levels afterwards.
4. Cut/roll bracken in any areas where a machine will travel. This is to be done at least twice; once in early June and again in late August
5. Continue cattle & horse grazing to deliver a more diverse sward and help with controlling strong vegetation. Limit the grazing activity in the late summer period to GLAS max figures as parts of the hill are overgrazed.
6. Plant at least 150 native trees along the river, open drain and other suitable areas on the commonage.

## 2022

1. Cut or burn a further number of sections in areas 1, up to 2ha in total. Follow the guidelines for year 1 in relation to the size and distribution of controlled burning/cutting areas.
2. Increase grazing levels in area 7 to control bracken during 2022. If required follow up with cutting or strimming up to 3ha with either a machine or using hand held equipment if desired and feasible.
3. Spray Bracken in areas 36 & 28 with Asulox using a tractor mounted sprayer if the machine can travel here or spray using hand held equipment.
4. Cut/roll bracken in areas 24, 27 & 34, where a machine will travel. This is to be done at least twice; once in early June and again in late August.
5. Increase grazing in spring in areas 22, 19, 8 and 9 to see if trampling will assist in reducing the vigour of bracken making sure that lazy beds are not damaged. Spray could be considered in area 22 away from the flushes.

#### **4. Appendix 1. Maps & Management Recommendations**

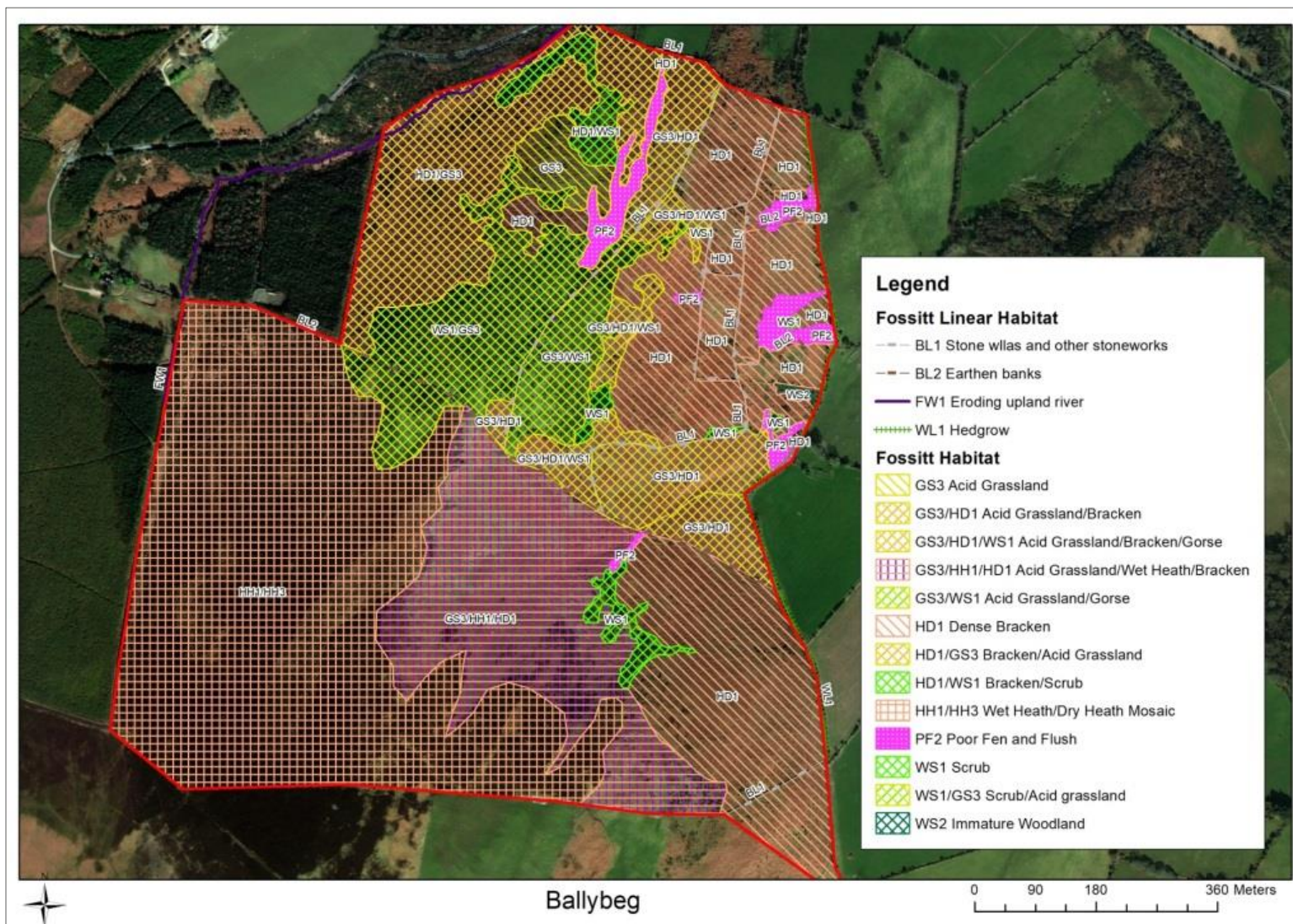


Figure 1. Habitats mapped to Level Three (Fossitt, 2000) within Ballybeg.





Figure 2. Habitats mapped according to their correspondence with Annex I habitats within Ballybeg.

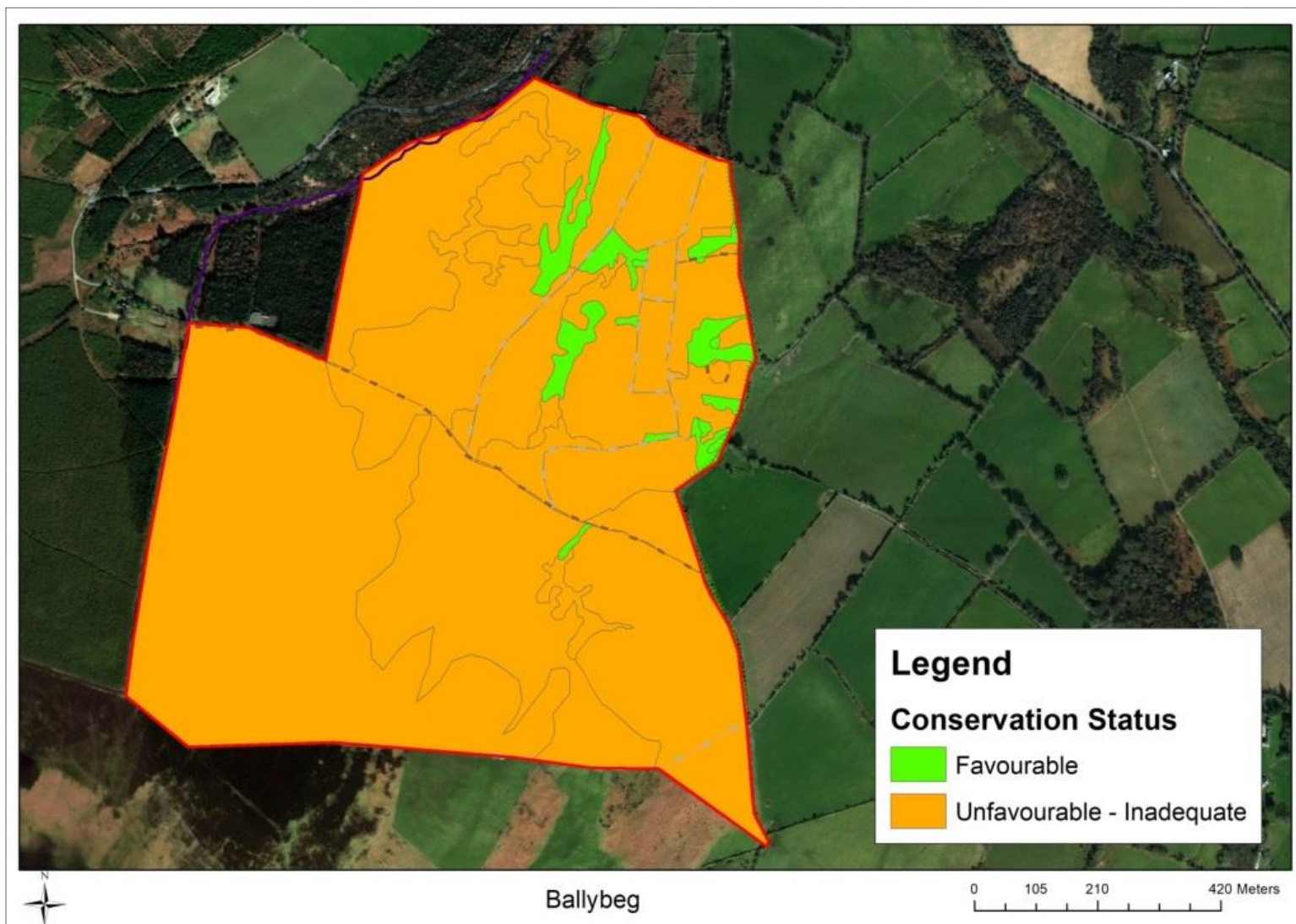


Figure 3. Habitat Condition Assessment for Ballybeg.



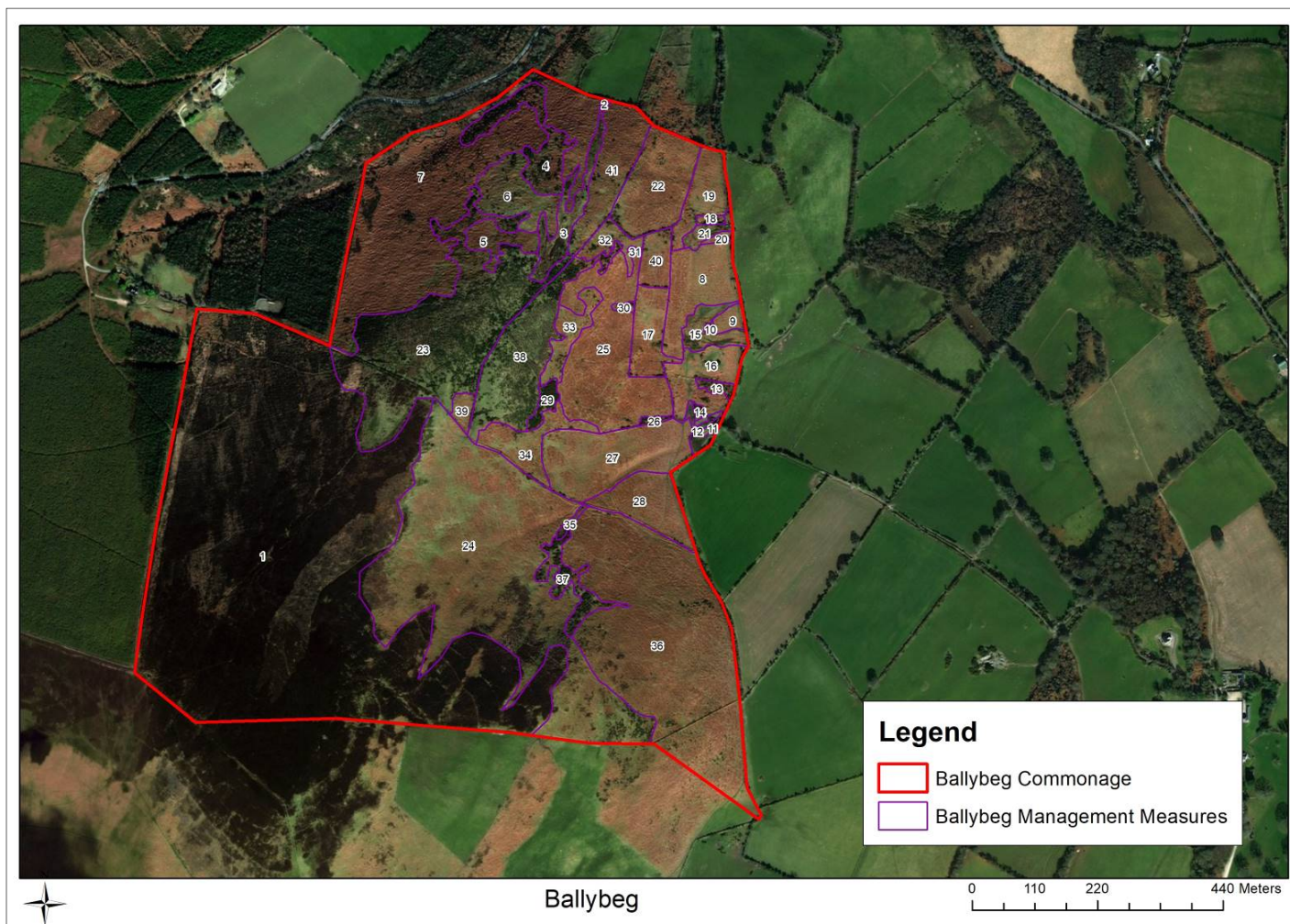


Figure 4. Management measures for Ballybeg.

**Table 1. Habitats present on Ballybeg Commonage and Management Recommendations.**

<b>Id</b>	<b>Annex I Code</b>	<b>Annex I Description</b>	<b>Fossitt Code</b>	<b>Habitat</b>	<b>Area (m)</b>	<b>Area (Ha)</b>	<b>Conservation Status</b>	<b>Management Measures</b>
1	4030/4010	Dry Heath/Northern Atlantic Wet Heaths with <i>Erica tetralix</i>	HH1/HH3	Dry Heath/ Wet Heath	305365	30.54	Unfavourable - Inadequate	<p>Ensure no further uncontrolled burning</p> <p>Monitor grazing and sheep movements to return to good condition.</p> <p>Graze with sheep/cattle/horses to open up</p>
2			HD1	Dense bracken	218	0.02	Unfavourable - Inadequate	<p>Control bracken</p> <p>Graze with sheep/cattle/horses to open up</p>
3			PF2	Poor fen and flush	9049	0.90	Favourable	<p>Control bracken surrounding the flush</p> <p>Monitor condition and move livestock if becoming poached</p>
4			HD1/WS1	Dense bracken/scrub	11967	1.20	Unfavourable - Inadequate	<p>Control bracken</p> <p>Graze with sheep/cattle/horses to open up</p> <p>Flail 50% of gorse if possible (retaining areas near the river as breeding habitat for birds)</p>
5			HD1	Dense bracken	5385	0.54	Unfavourable - Inadequate	Control bracken
6			GS3	Acid grassland	11868	1.19	Unfavourable - Inadequate	<p>Bracken beginning to encroach</p> <p>Graze with sheep/cattle/horses to open up</p>
7			HD1/GS3	Dense bracken/acid grassland	81015	8.10	Unfavourable - Inadequate	<p>Control bracken</p> <p>Graze with sheep/cattle/horses to open up</p>



<b>Id</b>	<b>Annex I Code</b>	<b>Annex I Description</b>	<b>Fossitt Code</b>	<b>Habitat</b>	<b>Area (m)</b>	<b>Area (Ha)</b>	<b>Conservation Status</b>	<b>Management Measures</b>
8			HD1	Dense bracken	15402	1.54	Unfavourable - Inadequate	Archaeological/cultural heritage interest  Recommend the use of sprays in this area to prevent damage to lazy beds or light stocking
9			HD1	Dense bracken	2099	0.21	Unfavourable - Inadequate	Bracken beginning to encroach  Graze with sheep/cattle/horses to open up  Ensure no significant poaching to adjoining flushed area
10			WS1	Scrub	271	0.03	Favourable	No measures required
11			HD1	Dense bracken	608	0.06	Favourable	Monitor bracken but adds diversity and cover in this area for breeding birds
12			PF2	Poor fen and flush	2325	0.23	Favourable	Monitor condition and move livestock if becoming poached
13			WS2	Immature woodland	1349	0.13	Favourable	Fence to allow natural regeneration and woodland development to continue
14			WS1	Scrub	448	0.04	Favourable	Provides cover for breeding birds - retain
15			PF2	Poor fen and flush	5407	0.54	Favourable	Monitor condition and move livestock if becoming poached
16			HD1	Dense bracken	11641	1.16	Unfavourable - Inadequate	Archaeological/cultural heritage interest  Recommend the use of sprays in this area to prevent damage to ring fort or light stocking
17			HD1	Dense bracken	9311	0.93	Unfavourable - Inadequate	Control bracken  Recommend trialling the use of horses or cattle in this enclosed field to see the effects of trampling on spring growth

<b>Id</b>	<b>Annex I Code</b>	<b>Annex I Description</b>	<b>Fossitt Code</b>	<b>Habitat</b>	<b>Area (m)</b>	<b>Area (Ha)</b>	<b>Conservation Status</b>	<b>Management Measures</b>
18			HD1	Dense bracken	773	0.08	Unfavourable - Inadequate	Archaeological/cultural heritage interest  Recommend the use of sprays in this area to prevent damage to lazy beds or light stocking
19			HD1	Dense bracken	8995	0.90	Unfavourable - Inadequate	Archaeological/cultural heritage interest  Recommend the use of sprays in this area to prevent damage to lazy beds or light stocking
20			HD1	Dense bracken	699	0.07	Unfavourable - Inadequate	Archaeological/cultural heritage interest  Recommend the use of sprays in this area to prevent damage to lazy beds or light stocking
21			PF2	Poor fen and flush	2363	0.24	Favourable	Monitor condition and move livestock if becoming poached
22			HD1	Dense bracken	19060	1.91	Unfavourable - Inadequate	Archaeological/cultural heritage interest  Recommend the use of sprays in this area to prevent damage to lazy beds or light stocking
23			WS1/GS3	Scrub/acid grassland	67312	6.73	Unfavourable - Inadequate	Gorse beginning to dominate – open up with appropriate levels of grazing
24			GS3/HD1	Acid grassland/bracken mosaic	124040	12.40	Unfavourable - Inadequate	Bracken beginning to encroach  Monitor grazing and sheep movements. Move sheep out of this area where they tend to congregate as this is favouring grassland over heath and the heath is being browsed out.  Control bracken through grazing rather than sprays as bluebells beneath this layer which could be impacted.



<b>Id</b>	<b>Annex I Code</b>	<b>Annex I Description</b>	<b>Fossitt Code</b>	<b>Habitat</b>	<b>Area (m)</b>	<b>Area (Ha)</b>	<b>Conservation Status</b>	<b>Management Measures</b>
25			HD1	Dense bracken	35319	3.53	Unfavourable - Inadequate	Control bracken  Recommend trialling the use of horses or cattle in this enclosed field to see the effects of trampling on spring growth
26			WS1	Scrub	624	0.06	Favourable	Provides cover for breeding birds - retain
27			GS3/HD1	Acid grassland/bracken mosaic	25248	2.52	Unfavourable - Inadequate	Bracken beginning to encroach  Graze with sheep/cattle/horses to open up
28			GS3/HD1	Acid grassland/bracken mosaic	12603	1.26	Unfavourable - Inadequate	Bracken beginning to encroach  Graze with sheep/cattle/horses to open up
29			WS1	Scrub	2330	0.23	Unfavourable - Inadequate	Dense gorse in this area.  Has a biodiversity value for nesting birds.  Recommend that other areas of scattered gorse are controlled and to see if grazing prevents gorse from returning before effort is put into clearing this
30			PF2	Poor fen and flush	505	0.05	Favourable	Monitor condition and move livestock if becoming poached
31			WS1	Scrub	277	0.03	Favourable	Provides cover for breeding birds - retain
32			GS3/HD1/WS1	Acid grassland/bracken/scrub mosaic	4281	0.43	Unfavourable - Inadequate	Bracken (and minor gorse) beginning to encroach  Graze with sheep/cattle/horses to open up
33			GS3/HD1/WS1	Acid grassland/bracken/scrub mosaic	6309	0.63	Favourable	Bracken (and minor gorse) beginning to encroach  Graze with sheep/cattle/horses to open up

<b>Id</b>	<b>Annex I Code</b>	<b>Annex I Description</b>	<b>Fossitt Code</b>	<b>Habitat</b>	<b>Area (m)</b>	<b>Area (Ha)</b>	<b>Conservation Status</b>	<b>Management Measures</b>
34			GS3/HD1/WS1	Acid grassland/bracken/scrub mosaic	9770	0.98	Unfavourable - Inadequate	Bracken beginning to encroach  Graze with sheep/cattle/horses to open up
35			PF2	Poor fen and flush	792	0.08	Favourable	Monitor condition and move livestock if becoming poached
36			HD1	Dense bracken	95785	9.58	Unfavourable - Inadequate	Control bracken.  Monitor grazing and sheep movements.
37			WS1	Scrub	6868	0.69	Unfavourable - Inadequate	Some localised control of gorse may be required to ensure that it does not spread further on the hill – grazing should keep it in check. Adds some value for breeding birds in this part of the hill.
38			GS3/WS1	Acid grassland/scrub mosaic	26256	2.63	Unfavourable - Inadequate	Some localised control of gorse  Graze with sheep/cattle/horses to open up
39			GS3/HD1	Acid grassland/bracken mosaic	2074	0.21	Unfavourable - Inadequate	Bracken beginning to encroach  Graze with sheep/cattle/horses to open up
40			HD1	Dense bracken	5182	0.52	Unfavourable - Inadequate	Control bracken  Recommend trialling the use of horses or cattle in this enclosed field to see the effects of trampling on spring growth of bracken
41			GS3/HD1	Acid grassland/bracken mosaic	15345	1.53	Unfavourable - Inadequate	Bracken beginning to encroach  Graze with sheep/cattle/horses to open up



## 6. Appendix 2. Remediation Assessment

### Remediation Programme for Ballybeg Commonage

There are 4 areas of work which require remediation since the track and fence were installed in May 2020. These are:

1. The banks of the stream
2. The wet area beside the stream
3. The banks of the spring
4. The Track

All these measures are to protect the water quality in the stream and spring. This is critical because there are known Freshwater Pearl Mussel sites downstream near Annacurra. These animals are protected under the Wildlife Acts 1976-2018 and are killed when silt covers them. Further offences could occur under the Fisheries Acts and under Local Authority legislation.

### The Stream (Marked A on the map in appendix 3)

IMPORTANT: NO WORK SHOULD TAKE PLACE IN-STREAM

- All dumped spoil is to be brought back 2m from the edge of the stream
- It should be graded into a gentle slope
- The two drains in the spoil must be closed up, (using straw bales in the short term and filled in with soil in the longer term)
- The bare soil is to be seeded with a grass-seed mix to stabilise the soil and natural vegetation, including bramble and willow, is to be permitted to re-grow. The seed mix is detailed in appendix 1.
- At the bend in the stream where the track comes very close, the bank must be stabilised using willow wattle (spiling). This is available from wicklowwillow.ie (087 9587503/087 9773622) and costs €100/m. This fence will grow and will help to stabilise the bank. The best time for this work is October (further details in appendix 2).

### Wet area beside the stream (Marked B on the map in appendix 3)

- There is to be no further compaction of the soil there from vehicles and it is not to be used as a parking place
- This area should be seeded with grass seed mix in appendix 1 and then natural vegetation should be permitted to return

### The Spring (Marked C on the map in appendix 3)

- The banks of the spring are to be re-graded to create a gentle slope. The current steep slopes will be easily undercut during strong flow and may collapse.
- The re-graded slopes are to be planted with the grass seed mix in appendix 1.
- Shrubs like hawthorn are to be allowed to re-grow
- No further vegetation clearance work on the banks of this drain are to ever take place between 1 March -31 August any year
- *"It shall be an offence for a person to cut, grub, burn or otherwise destroy any vegetation growing in in hedge or ditch during the period mentioned in paragraph (a) of this subsection."* Wildlife Act Section 40(1)(b)

### The Track (Marked D on the map in appendix 3)

- Water bars are to be created on straight sections of the track and at other suitable locations to prevent water running straight down the track. Additional information on the construction of the water bars can be made available.
- Gaps in the bank should be created at the down slope side of the water bars, to channel water off the track and out into vegetation
- The banks of the track are to be seeded with the grass seed mix in appendix 1

**Timescale**

- Straw bales to block up drains in the spoil should be put in immediately. The drains are to be blocked up by the 20<sup>th</sup> July 2020.
- Water bars and grading work to be completed by 20<sup>th</sup> July 2020.
- The grass seed mix to be spread as early as conditions allow, but by mid-August at the latest.
- The willow wattle fencing can be installed in October to give it the best chance of growth and should be completed by the end of October at the latest.

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## Appendix 1 Grass seed mix to stabilise loose soil

Species	Common Name	Recommended sowing rate	Sowing rate (went with 50% sowing rate for bent and 25% for other three)
<i>Agrostis capillaris</i>	Common bentgrass	1kg/acre (2.5kg/ha)	0.5kg
<i>Festuca rubra rubra</i>	Red fescue	30kg/acre (75kg/ha)	7.5 kg
<i>Anthoxanthum odoratum</i>	Sweet vernal	8kg/acre (20kg/ha)	2kg
<i>Dactylis glomerata</i>	Cocksfoot	8kg/acre (20kg/ha)	2kg
			12kg/ac

The above seeds are available from Cotswolds seeds in the UK ([cotswoldseeds.com](http://cotswoldseeds.com)). While they won't be native seed, it's fine given the objective here i.e. fast stabilisation of the banks and it's not likely that native seed can be sourced.

In terms of the species listed, sweet vernal is the most expensive, but the logic for its inclusion is that it was obvious from our visit that it grows particularly well in this area. Cocksfoot is a deep rooter, so that might be very helpful to provide stability in the lower levels, while both the bent grass and creeping red fescue are both creeping species that will help to hold the soil together on the surface.

It is recommended that 24kg of seed (sufficient to cover 2 acres at standard seeding rates), should be purchased to allow for higher seeding rates than used for conventional reseeding, where the seedbed is prepared.

## Appendix 2

### Willow spiling

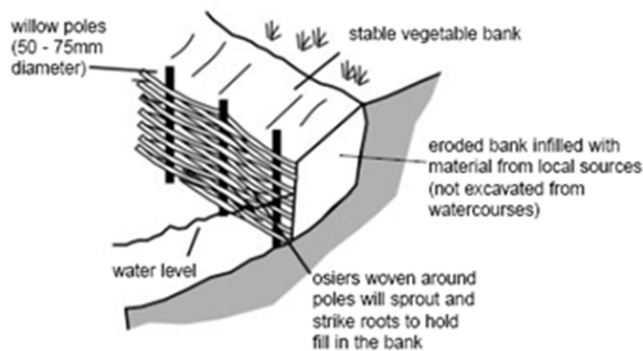
Willow spiling is a traditional soft engineering technique used to stabilise eroding banks. It consists of weaving live willow rods between live willow stakes set into the affected bank at regular intervals. The space behind the willow wall to the existing bank is then filled with soil to provide an area for the willow roots to grow. (Figure 5 & 6)

Osier willow is considered to be the most appropriate species to provide poles, due to its pliable nature and the fact that it is an indigenous species (RRC, 2002). Alternatively, commercially available alternatives could be used, but these will require more vertical support posts (RRC, 2002). Willow spiling is normally carried out between November and April during the harvesting of the willow (dependent upon the season) and should be installed within three weeks of harvest.

Spiling is generally considered to be effective in most fluvial environments, with the exception of high-energy gravel bed channels which may be too mobile. The technique can be applied on steep and vertical banks, but cannot be used as a retaining structure (Environment Agency, 1999).

Willow spiling has been successfully applied on the River Skerne in Darlington, County Durham, where it was used in conjunction with rock reinforcement below the waterline, wooden toe boarding at the low water level, and synthetic geotextiles (RRC, 2002).

The RRC (2002) note that this technique does not have the flexibility to accommodate natural bank settlement, and the use of geotextiles or mattresses may be preferable if there is not a plentiful local supply of osier willow. However, this technique can be used in relatively narrow spaces, which may be an advantage in some situations. It should be noted that willow spiling does require regular maintenance and is not suitable for small river channels where vegetation growth could potentially obstruct flow.



*Schematic diagram of a bank protected using willow spiling (Source: WWF, 2000, p. 32).*



*Example of willow spiling used in a river channel (Source: H. Dangerfield, Royal Haskoning.*

From <http://evidence.environment-agency.gov.uk/FCERM/en/SC060065/MeasuresList/M5/M5T6.aspx?pagenum=2>



### Appendix 3 Map of Ballybeg Commonage

