

Ecological Baseline Survey
prepared for
Granamore Commonage
as part of the Commonage Management Plan for SUAS



Final Report

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1. Introduction

This commonage extends from an elevation of 250m adjoining the Douglas River at the base of the commonage rising to the ridge to the south known as White Moss Mountain, which has two summits (Flagstaff/Cawrawn at 563m and an unnamed plateau at 590m, which forms part of the slope of Black Banks/Table Mountain) as shown on **Figure 1** below. The lower slopes of the commonage where the mass rock is located are known locally Cordoo, while a small hill of blanket bog within the commonage is known as Round Hill (499m). These lands were formally part of Lord Waterford's Estate in County Wicklow.

An old track known as Lord Waterford's Bridle Path circles the Round Hill to the east while the Lord's Road provides access around the west of the hill from the ford on the Douglas River to the old turf cutting banks. Lands within the commonage are now under the ownership of the state and are included within the boundaries of the Wicklow Mountains National Park.

The lands within the commonage are of international importance for the habitats and species they contain and hence are included within the boundaries of the Wicklow Mountains SAC and Wicklow Mountains SPA.



Plate 1. The Lord's Road provides access to the commonage from Corragh.

The Douglas River (and an additional three headwater streams, which feed this river) rise within the commonage. These watercourses are all tributaries of the Kings River, which feeds the Poulaphouca Reservoir and as such form part of the main drinking water supply for Dublin City.



Figure 1. Granamore Commonage.

The area is predominantly underlain by Caledonian granite and granodiorites, although a band of Ordovician slate, schist & minor greywacke occurs on the north west facing slopes of White Moss Mountain. The soils of the lower slopes of the commonage at Cordoo are described as the Carrigvahanagh association and consist of peat over lithoskeletal acid igneous rock, while the remainder of the commonage is covered in blanket peats of varying depths.

The commonage was previously owned by the Duke of Devonshire (Lord Waterford) and is now owned by National Parks and Wildlife Service. Eleven local farmers have a right to graze on the commonage. They are: Denis Halpin, Stephanie Harney, Myles Maguire, Mick Doyle, Mick Maguire, John Halpin, Bridget Halpin, Betty Nolan, Martina Traynor, Billy Kavanagh and Mary Stephenson.

This commonage was assessed as part of the joint NPWS/Department of Agriculture commonage framework plans, which were drawn up in the early 2000s. This assessment identified that the commonage was generally undamaged but that a destocking rate of 4.3% was required to allow recovery in some affected areas. The habitats were roughly classified in the commonage framework plan as blanket bog, wet heath, dry heath, grassland or a mosaic of each. Gully erosion and plateau erosion was noted.

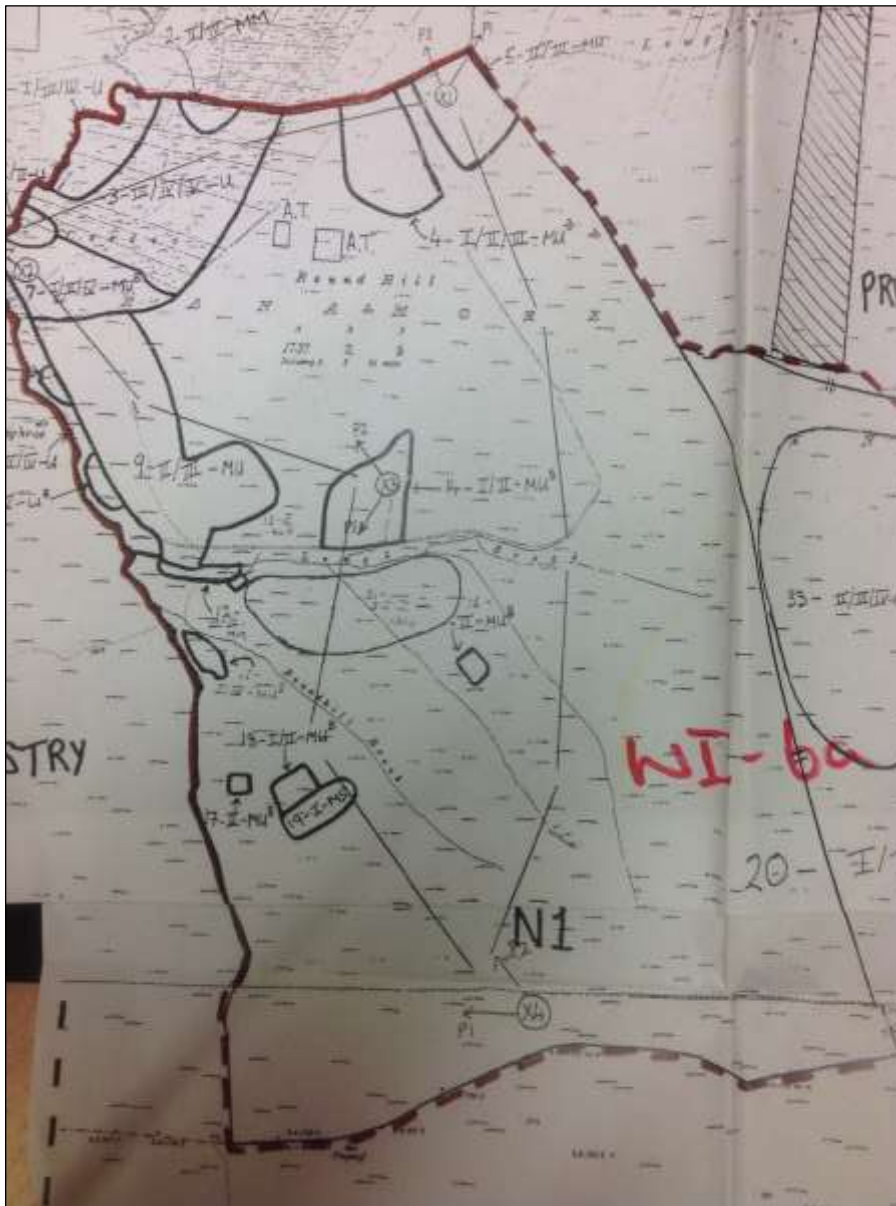


Figure 2. Commonage Framework Plan Map (2001).

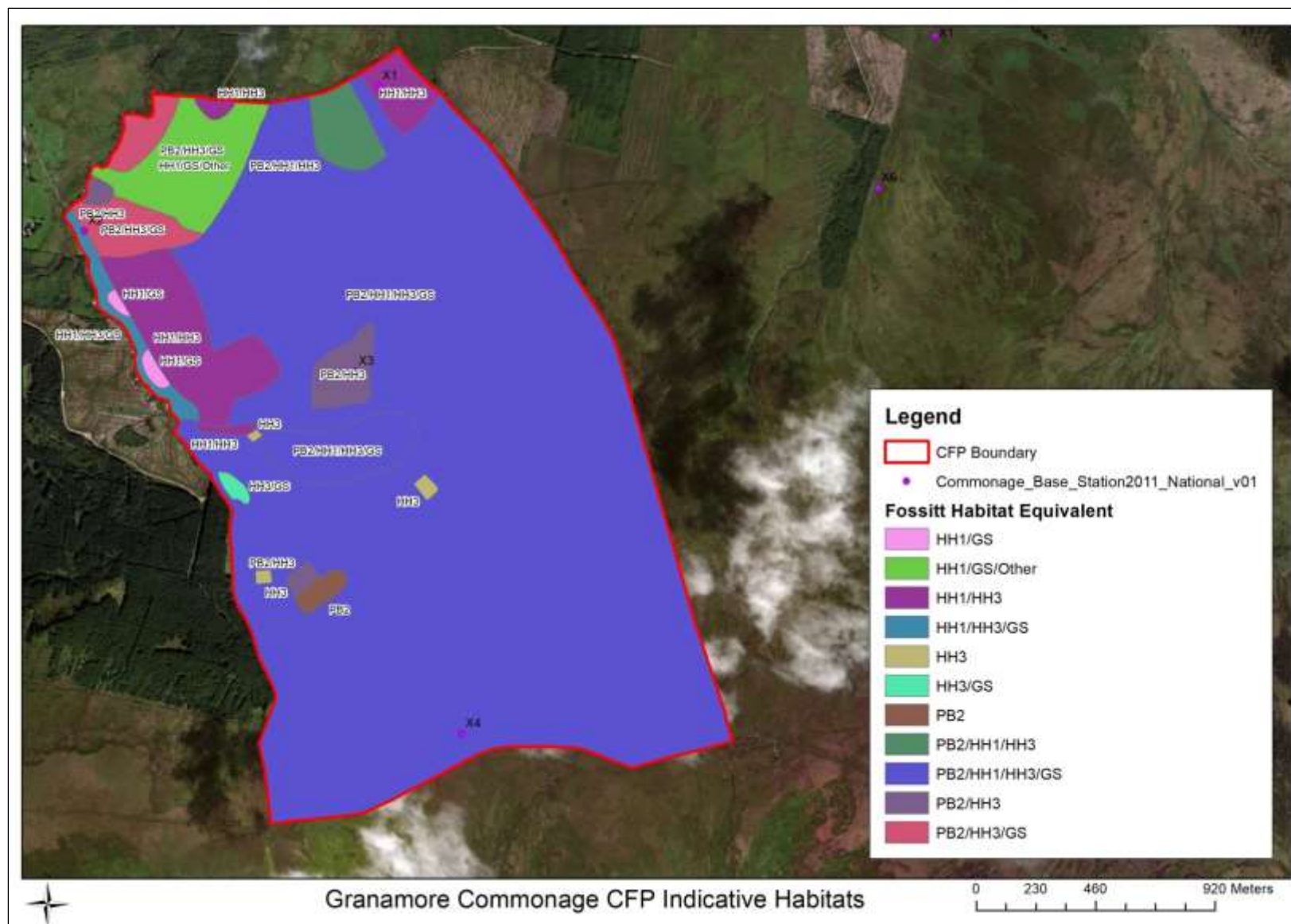


Figure 3. Commonage Framework Plan Habitat Map showing monitoring locations (X1, X2, X3 and X4).

2. Receiving Environment - 2018

2.1 Habitats Present

Under Fossitt's (2000) habitat classification scheme the dominant habitat within the Granamore commonage is that of **Upland Blanket Bog PB2** (which corresponds to the Annex I habitat 7130 Blanket Bog (or the priority habitat *7130 Active Blanket Bog if it is actively regenerating)). This habitat dominates the Round Hill and slopes and ridge of White Moss Mountain.



Plate 2. Looking north west over the Round Hill from Knockadrew showing the areas of intact blanket bog and the two areas of cutover bog on the northern and southern slopes.

The blanket bog develops on the deeper peats within the commonage (which in some places are up to 2m or deeper) and is dominated by deergrass (*Trichophorum cespitosum*), cottongrasses (*Eriophorum vaginatum* and *Eriophorum angustifolium*), sparse purple moor-grass (*Molinia caerulea*), tormentil (*Potentilla erecta*), bog asphodel (*Narthecium ossifragum*), ling heather (*Calluna vulgaris*), bilberry (*Vaccinium myrtillus*) and cross-leaved heath (*Erica tetralix*). A high proportion of *Sphagnum* mosses occur in undamaged areas forming good hummocks where the bog lichens *Cladonia portentosa* and *Cladonia uncialis* were recorded. In one part of the commonage there is an excellent population of bog cranberry (*Vaccinium oxycoccus*) present indicating no recent disturbance or damage in this area.

The blanket bog habitat has been subject to various damaging activities in the past including turf cutting on the Round Hill on the northern side above Cúl and on the southern side at Lugnafreechawn where the peats are deepest as shown on **Plate 2** above. As these areas were subject to turf cutting they have been mapped as **Cutover Blanket Bog (PB5)**.

These areas for turf cutting were easily accessible from the two bog tracks that circle the Round Hill. These tracks were not mapped on the first edition of the 6" Ordnance Survey Mapping, which dates from 1839 but are evident on the later 2nd Edition from the early 1900s. It is likely that their construction was a famine relief measure on the estate and the turf cutting began after that time. Active turbarry on the site was noted in 2004 during the Commonage Framework Plan Survey but has

now ceased. Turf cutting has also occurred on the ridge of White Moss Mountain resulting in the exposure of the underlying bedrock in places. The peat habitat within these cutover areas is now more akin to **Wet Heath HH3** if still on wet peats while **Dry Heath HH1** is found on the drier adjacent turf banks.



Plate 3. Intact blanket bog on the Round Hill.



Plate 4. Quad tracks on the Round Hill.

The blanket bog on the ridge of White Moss Mountain in particular has been severely damaged by uncontrolled burning, coupled with natural erosion on account of elevation and potentially high grazing impacts (from deer but possibly also historically sheep). This has resulted in large areas of bare peat with sparse ling heather, isolated small patches of *Sphagnum* moss, Bog Asphodel and Deer grass. The peat in many locations has begun to crack and erode and in some locations a dense algal

mat is present (due to deposition of atmospheric nitrogen from intensive agriculture). A number of landslide events have been noted in the commonage and are mapped by the Geological Survey of Ireland as shown on **Figure 4**. This area is at high risk of continued landslide events as shown on **Figure 5**.



Plate 5. Damaged blanket bog on the western side of the ridge which is beginning to crack (cracks indicated by the red arrows) and the Geological Survey of Ireland has recorded a number of landslide events here. Note the algal mats and bare peats. The encroachment of self seeded Sitka spruce on the ridge at Cavanagh Gap also needs to be addressed.



Plate 6. Damaged blanket bog on the western side of the ridge which is beginning to crack and potentially slide. Note the algal mats.



Plate 7. Looking north from the ridge – the Lord's Road can be clearly seen skirting the Round Hill. The western slopes of Round Hill contain areas of wet heath and some drier areas. The scar of an old drain is indicated by the red arrow and the Geological Survey of Ireland has recorded a historical landslide event here. These areas are now dominated by wet grassland (GS4) composed of rushes.



Plate 8. Eroding blanket bog on the western end of the ridge on White Moss Mountain.

Dry Heath HH1 (which corresponds to the Annex I habitat 4030 Dry Heath) is found on the drier slopes of the commonage (including those on the north facing slopes of White Moss Mountain near the Douglas River), on old turf banks adjoining peat cuttings and at the base of some areas of cutover bog and often forms a mosaic with **Wet Heath HH3** and **Dry Acid Grassland GS3**. This habitat is dominated by ling heather (*Calluna vulgaris*) with occasional bell heather (*Erica cinerea*) and less frequently bilberry (*Vaccinium myrtillus*).



Plate 9. Eroding blanket bog on the western end of the ridge of White Moss Mountain. Areas of Wet Heath and the Blanket Bog on Round Hill can be seen in the distance.



Plate 10. The tributary streams of Douglas River, which formerly rose on the northern slopes of White Moss Mountain, now begin as erosion gullies on the ridge.

The western and northern ridge of White Moss Mountain and the eastern slopes of the commonage on Konockadrew Dry Hill and towards the adjoining Knocknadrose Commonage have been subject to several uncontrolled burns in the recent past as evidenced by the condition of the vegetation and the National Parks and Wildlife Service history of site management files as shown on **Figure 6**. These occurred in 2001, and again in March 2003, and there has been no appreciable recovery of the moss and lichen communities in this habitat to favourable condition on these slopes as a result of the intensity of these burns coupled with the lack of recovery time between burning events.

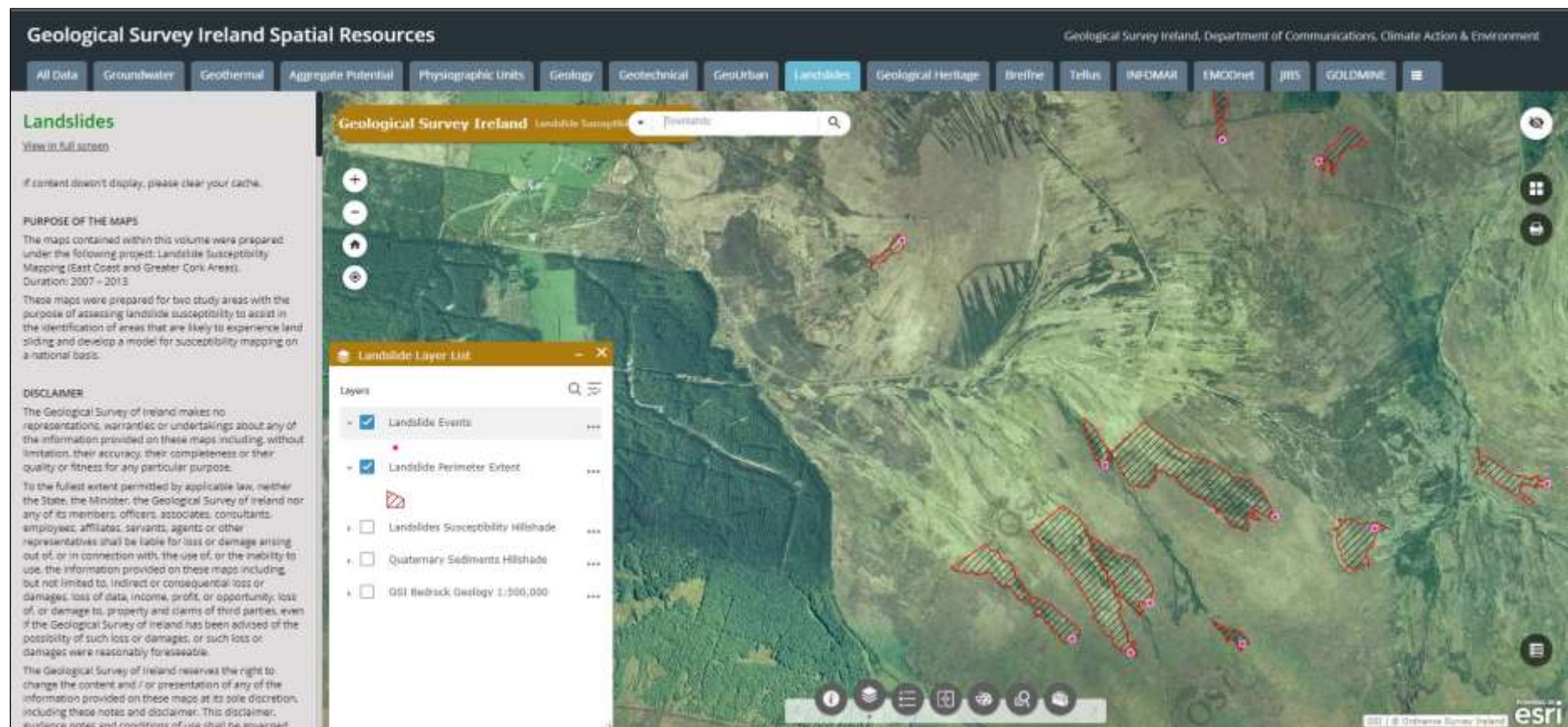


Figure 4. Landslide events recorded by the Geological Survey of Ireland on Granamore.

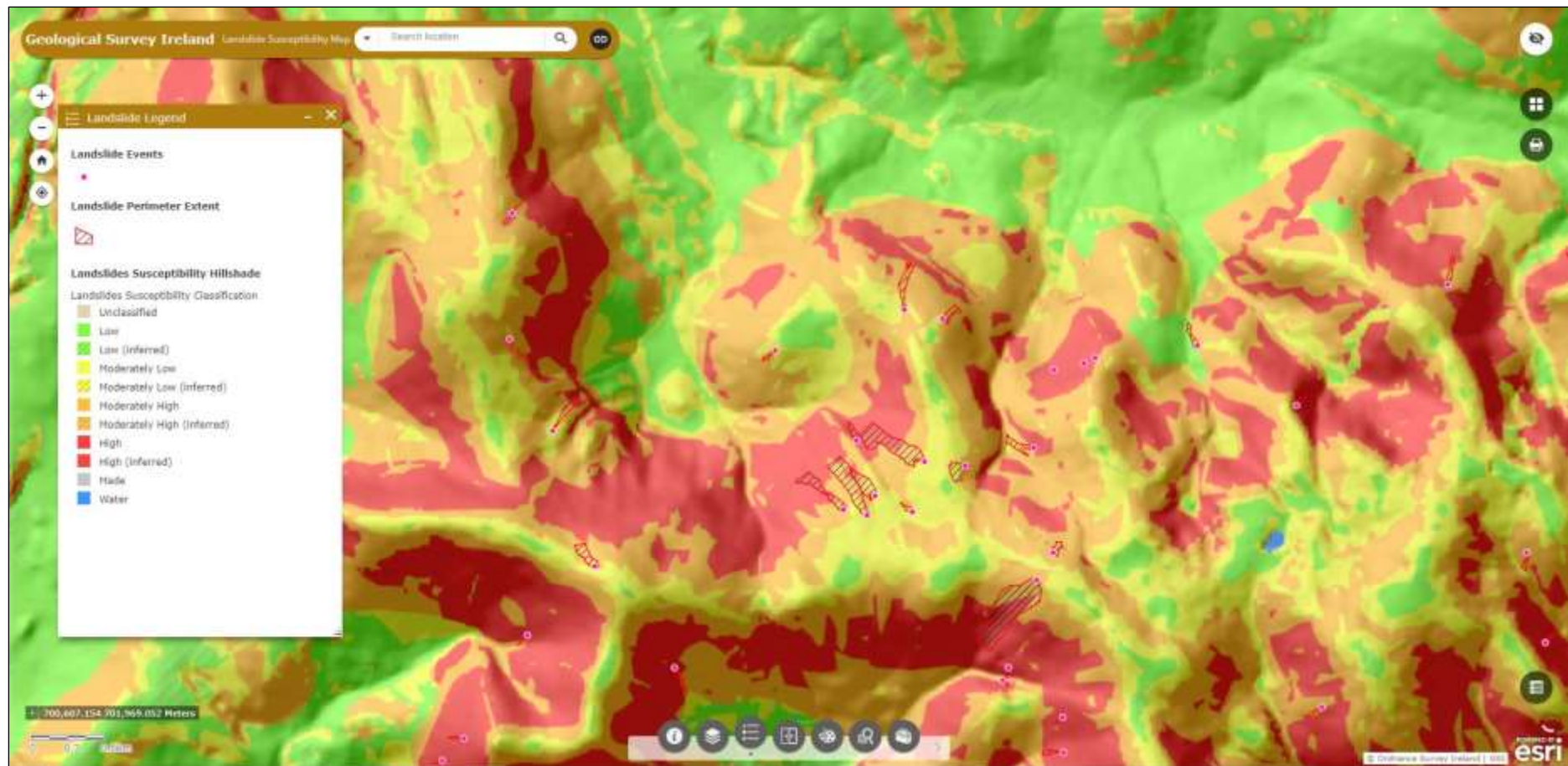


Figure 5. Landslide susceptibility mapping prepared by the Geological Survey of Ireland.

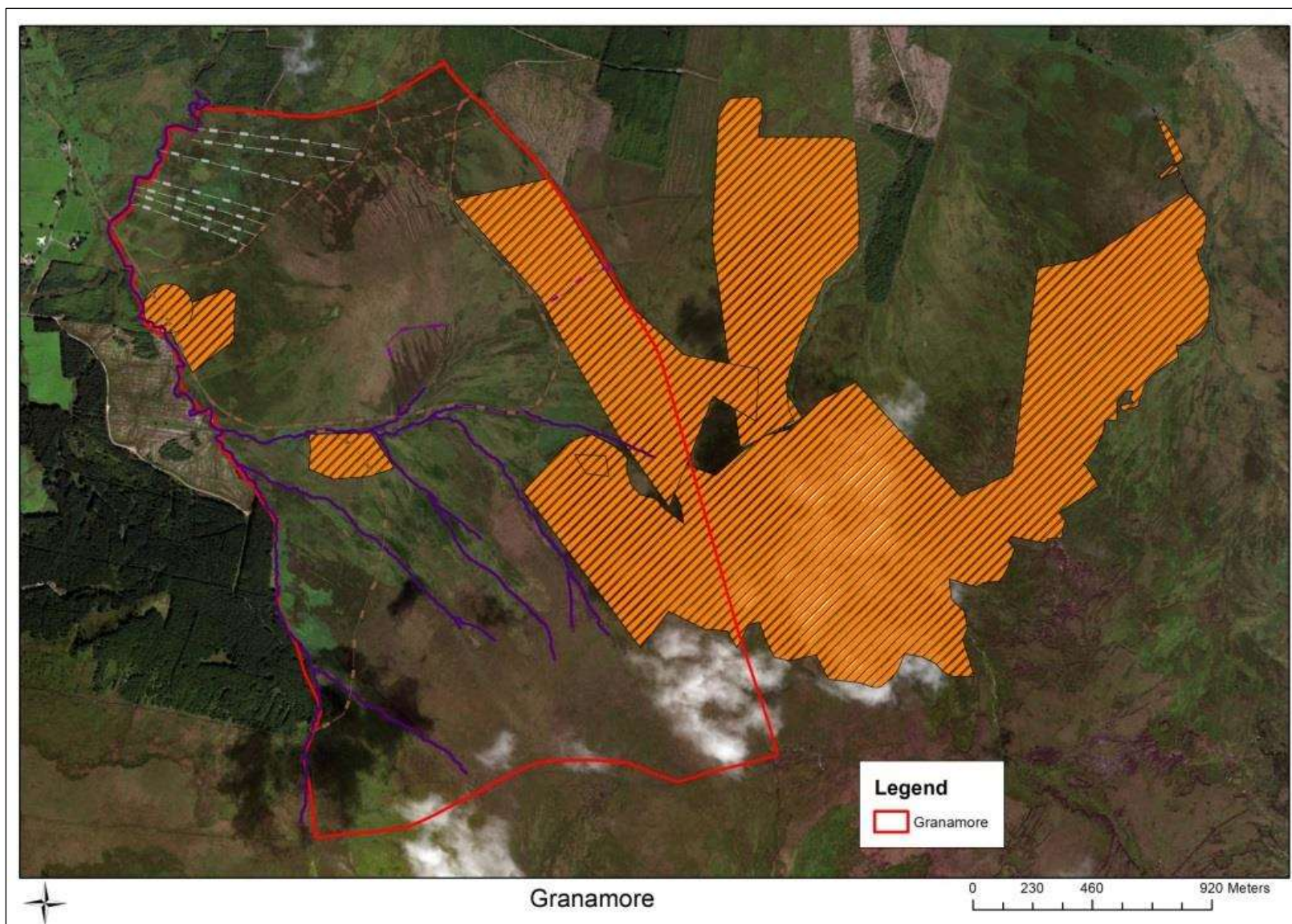


Figure 6. Burn history and extent on Granamore as recorded by National Parks and Wildlife.



Plate 11. Deep peats with erosion gullies on the ridge of White Moss Mountain.



Plate 12. Looking south east across White Moss Mountain near the eastern end of the ridge. Although the bog appears intact in this photo there are large areas of the ridge where the vegetation is limited to Deergrass and Bog Asphodel with areas of bare peat between – possibly as a result of historic overgrazing from sheep and deer and from uncontrolled burning.

Surprisingly droppings of Red Grouse were recorded on the White Moss Mountain.

The north-west facing slopes of White Moss Mountain contain a mosaic of **Dry Heath HH1**, **Wet Heath HH3** and **Acid Grassland (GS3)** and are bisected by the tributary streams of the Douglas

River, which are described as **Upland Eroding Watercourses FW1**. Small areas of the slopes are damper/wetter and here heath rush (*Juncus squarrosus*), green ribbed sedge (*Carex binervis*), jointed rush (*Juncus articulatus*), sharp flowered rush (*Juncus acutiflorus*), lousewort (*Pedicularis sylvatica*) and mosses such as *Polytrichum commune* are common. Other species such as tormentil (*Potentilla erecta*), marsh violet (*Viola palustris*) and marsh pennywort (*Hydrocotyle vulgaris*) were less frequently recorded. The mosaic of acid grassland and wet/dry heath has been developed and is maintained in this location by grazing although the underlying geology of the schist, slate and greywacke is also likely to be an influencing feature.



Plate 13. Fire damaged blanket bog on the ridge.



Plate 14. Areas of old cutover, which have been damaged by fires, at the eastern end of the ridge of White Moss Mountain.



Plate 15. The burn on Knockadrew Dry Hill can be clearly seen extending down to Lord Waterford's Bridle Path, which acted as a firebreak preventing damage to Round Hill.



Plate 16. North-west facing slopes of White Moss Mountain. The deeper blanket peats can be seen on the upper parts of the slopes.

The four watercourses, which rise on the slopes of White Moss Mountain, are described as **Eroding Upland Rivers FW1** and have little in the way of any instream vegetation.

The Annex I habitats present within the commonage include:

- 4010 Northern Atlantic Wet Heaths with *Erica tetralix*
- 4030 Dry heath
- 7130 Blanket bog

- 7130* Active Blanket Bog



Plate 17. Red grouse droppings on White Moss Mountain.

2.2 Rare Plants

Only two montane specialist plant species were recorded during the present survey of the commonage (these were Bilberry (*Vaccinium myrtillus*) and crowberry (*Empetrum nigrum*)), while bog cranberry (*Vaccinium oxycoccus*) was recorded in the lower portion of the commonage at Cordoo.



Plate 18. Crowberry on the lower slopes of the Knockadrew Ridge.



Plate 19. Crowberry and Bog Cranberry (indicated by the red arrows) at Cordoo.

There was an absence of club-mosses in the areas of wet heath on Knockadrew Dry Hill. These species would be expected and it is proposed that these have been lost as a result of burning. Crowberry was only found on the lower slopes of Knockadrew Hill between the forestry and Lord Waterford's Bridle path in the area of wet heath that was unburnt and in the small area of undamaged blanket bog at Cordoo.

2.3 Rare Fauna

The commonage is within the known range of Merlin (*Falco columbarius*), which locally and hunt within it. Merlin have been recorded nesting on the edge of the commonage at Lyragh¹. Peregrine falcon are also known to nest in the locality. There have also been occasional reports of hen harrier (*Circus cyaneus*) from the area.

The Irish hare (*Lepus timidus* subsp. *hibernicus*) would be expected and large herds of deer (red/Sika hybrids) graze the commonage. Other faunal records reported/recorded during this survey include Common Frog (*Rana temporaria*), Common Lizard (*Zootoca vivipara*), Fox (*Vulpes vulpes*), Snipe (*Gallinago gallinago*), Red Grouse (*Lagopus lagopus*), Meadow Pipit (*Anthus pratensis*) and Raven (*Corvus corax*).

The droppings of Red Grouse were recorded on White Moss Mountain. Indicative estimates of the population of Red Grouse within the Wicklow Mountains SPA is extracted below in **Table 1** from the 2011 survey².

Downstream of the commonage the Kings River supports Otter (*Lutra lutra*) and Brown trout (*Salmo trutta*), and Kingfisher (*Alcedo atthis*) would also be expected.

¹ McElheron, A (2005). Merlins of the Wicklow Mountains. Currach Press, Co. Dublin.

² Cummins, S., Bleasdale, A., Douglas, C., Newton, S., O'Halloran, J. & Wilson, H.J. (2010) The status of Red Grouse in Ireland and the effects of land use, habitat and habitat quality on their distribution. Irish Wildlife Manuals, No. 50. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

Table 1. Figures given below are crude estimates of the populations of Red Grouse in some protected areas of blanket bog throughout the country. These figures were derived using calculated suitability factors for each region (which are not site specific), the mean density of birds (adjusted using the correction factor*) and the total area of each SAC / SPA. (The Wicklow figures were thought to be an underestimate).

Area	Designation	Region	Suitability Factor	Each Region Mean Males \pm CL's	Total Males \pm CL's	Population Estimate (correction factor*) \pm CL's
Wicklow Mts.	SAC	E & S	0.27	1.22 0.96-1.49	45.5 36-55.7	96.4 76.4-113.3

2.4 Fisheries and Water Quality

The commonage is located within the Eastern River Basin District within the Liffey and Dublin Bay catchment (09) and the King's [Liffey] Sub-catchment (010).

Four headwater streams, which are all tributaries of the Douglas River (IE_EA_09D020200), rise within the commonage on the slopes of White Moss Mountain. These are unnamed in the EPA datasets with the exception of the stream, which forms the western boundary of the commonage, which is mapped as Douglas River. From west to east the remaining three streams are known locally/mapped on the 6" series as Roundhill Brook, unnamed and Leogh Brook/Tromawn.

The Douglas River is a tributary of the Kings River, joining it just upstream of Lockstown Bridge. The Kings River then enters the Poulaphouca Reservoir.

Water sampling at the Granamore Bridge, upstream of the confluence with the Kings River and downstream of the commonage indicates that the Kings River at this location is currently assigned a Q value of 4. The Douglas River (and its tributaries within the commonage) was deemed to be 'High Status' watercourses in 2007 - 2009. They declined in water quality since then and were assessed as 'Good Status' in 2010 - 2012 and 2010 - 2015. Under the Water Framework Directive the watercourses within the commonage were deemed 'at risk' of not achieving 'good' status by 2015. The Kings River and its tributaries are a salmonid system with stocks of Brown Trout (*Salmo trutta*).

2.5 Recreation/Amenity

The commonage provides access to the Wicklow uplands via the two paths and part of the hill is also used for pony trekking.

A mass rock within the commonage is also a local feature of historic/cultural importance.

The lands were traditionally shot for grouse as part of the Devonshire Estate and old shooting butts are present on the south-western side of the Round Hill.

3. 2018 Ecological Assessment

3.1 Field Survey

Following the background review and desktop research the site was visited in October and November 2018 when the extent of habitats present within the commonage and their affinities to either Fossitt (Level 3) or Annex I habitats or commonly named habitat types were mapped as shown on **Figures 7, 8 and 9** below and as described above.

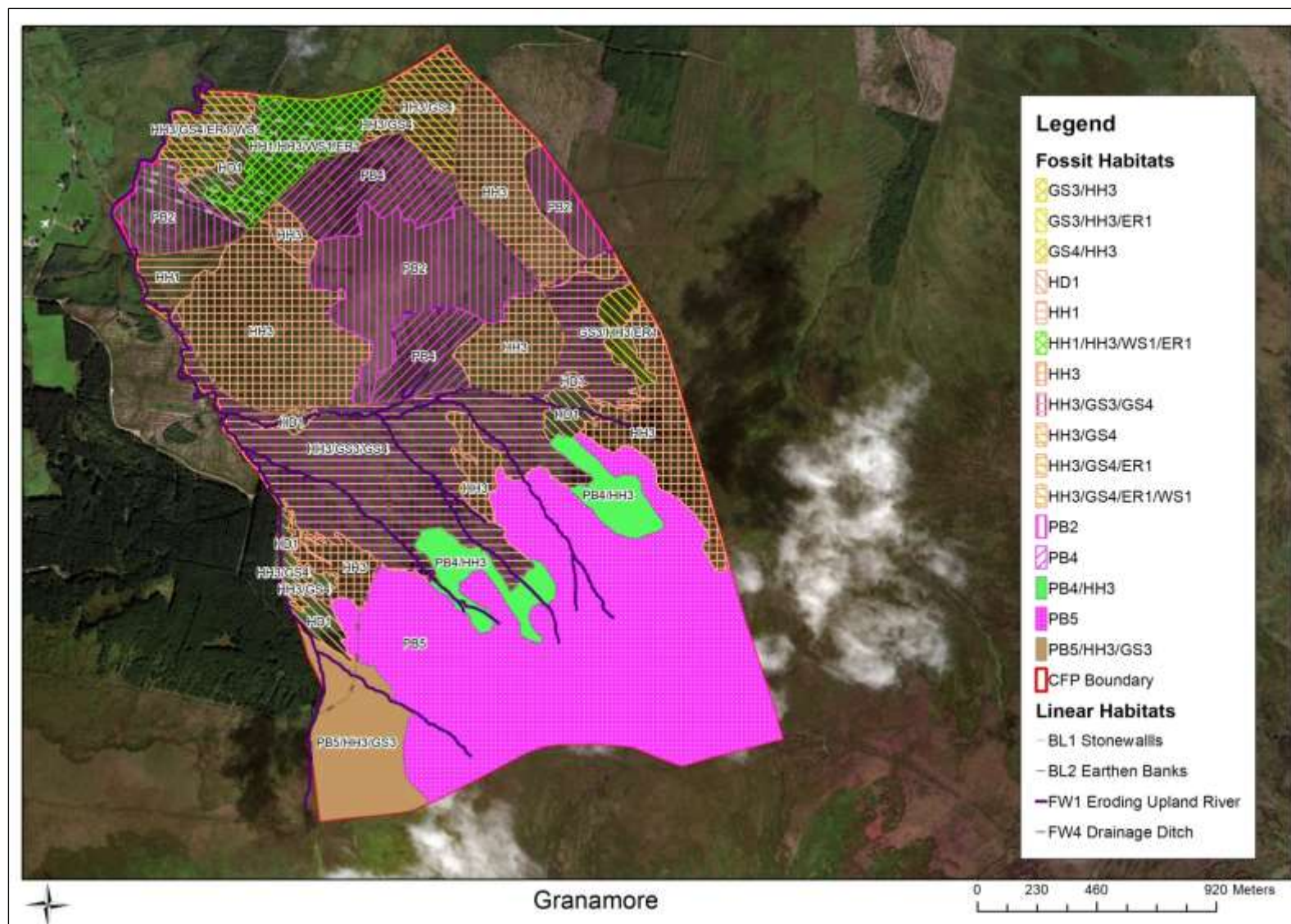


Figure 7. Habitats mapped to Level Three (Fossitt, 2000) within the Granamore commonage.

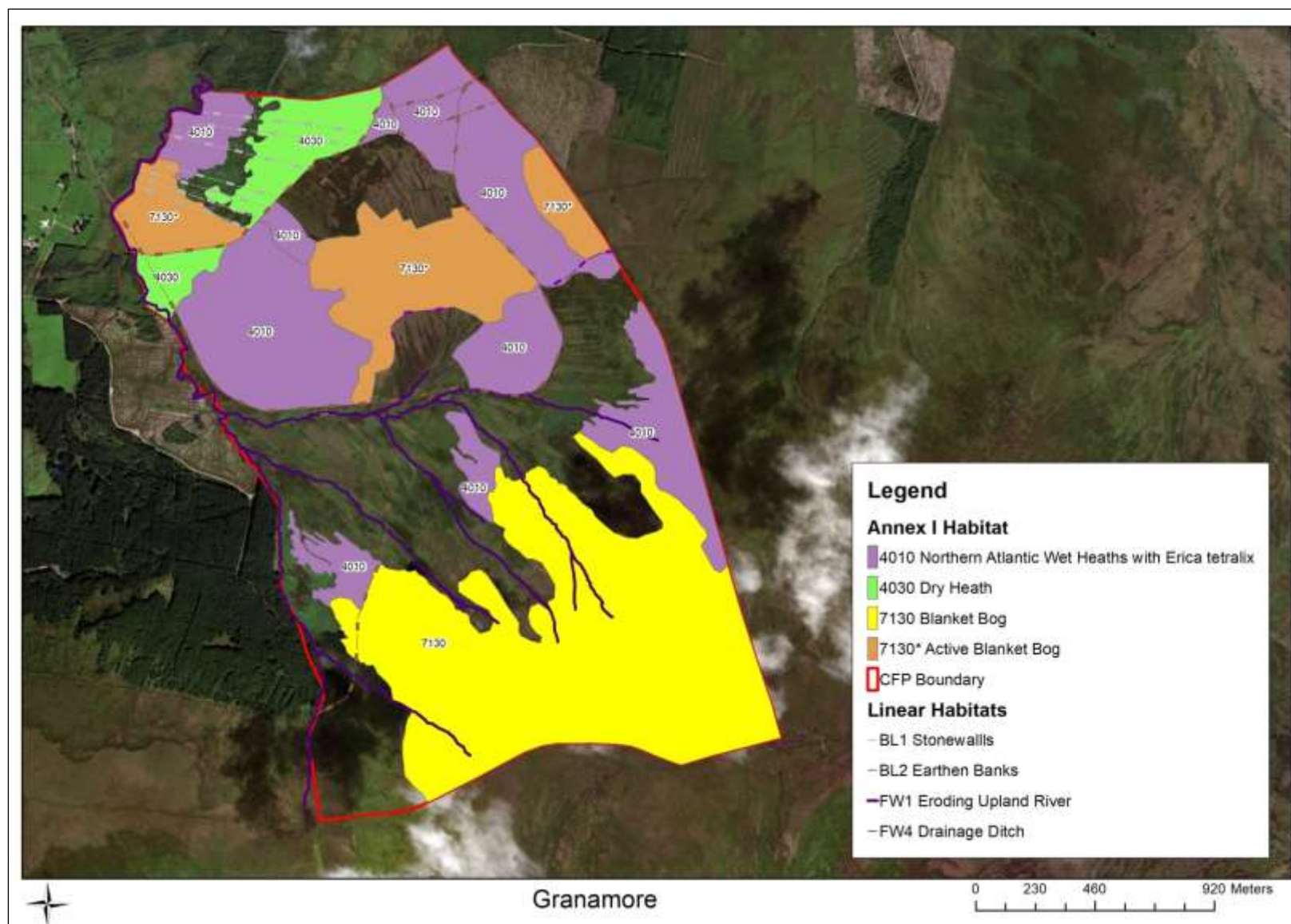


Figure 8. Habitats mapped according to their correspondence with Annex I habitats within the Granamore commonage.

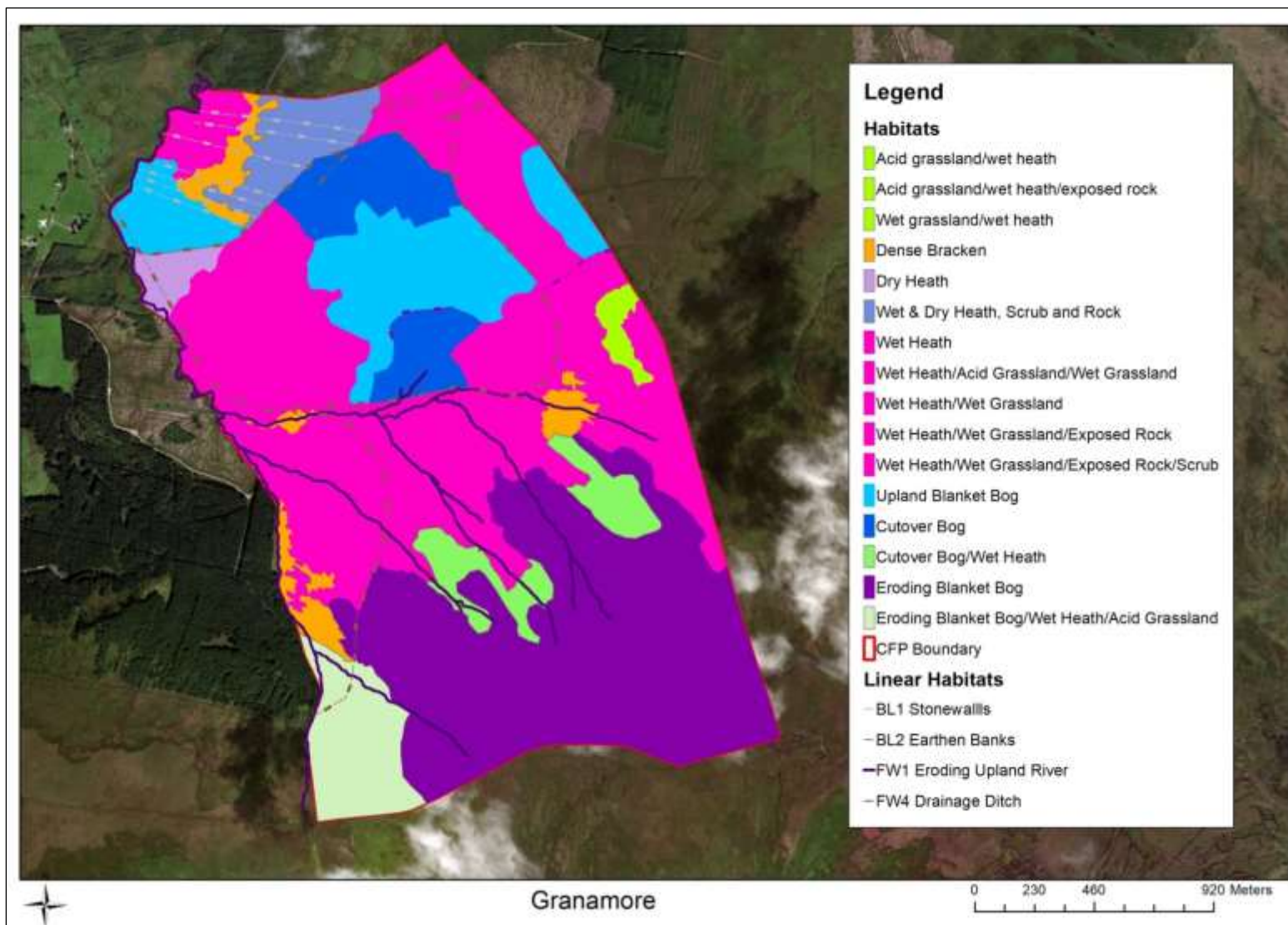


Figure 9. Habitats mapped using general vegetation descriptions.

3.2 Habitat Condition Assessments

A standardised protocol for assessing the habitat condition of those habitats listed under Annex I of the EU Habitats Directive was developed. Member states across the European Union must conduct monitoring of the habitats in their jurisdiction and report on the national condition of each habitat under Article 17 of the EU Habitats Directive on a six year basis.

The conservation status of a habitat is defined in Article 1 of the EU Habitats Directive as the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species.

The conservation status of a natural habitat will be taken as favourable when:

- its natural range and the areas it covers within that range are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The Overall Conservation Status Assessment for each habitat is listed as either:

- Favourable
- Unfavourable inadequate (change in management or policy is required to return the habitat to favourable status but there is no danger of extinction in the foreseeable future)
- Unfavourable bad (serious danger of becoming extinct, at least regionally)

There is also an 'Unknown' class which can be used where there is insufficient information available to allow an assessment.

Achieving Favourable Conservation Status (FCS) is the overall objective to be reached for all Annex I habitat types and Annex II species of European Community interest listed in the EU Habitats Directive 92/43/EEC. **It is defined in positive terms such that a habitat type must be prospering and have good prospects of continuing to do so.**

There have been two rounds of monitoring of habitats in Ireland which date from the period 2001 – 2007 and 2007 – 2013. The habitats of relevance to the Wicklow Uplands were assessed at a national level in 2007 and 2013 as shown in **Table 2** below. There have been very few detailed assessments of the habitats in the Wicklow Mountains to date. In general the upland habitats of Ireland, when assessed at a national level are in very poor condition. The next round of monitoring results is due in 2019.

Table 2. Condition of upland habitats in Ireland (those habitats of relevance to the Wicklow uplands are shown).

Habitat	Area		Structure & Functions		Future Prospects		Overall Status	
	2007	2013	2007	2013	2007	2013	2007	2013
4010 Wet heaths	Unknown	Unfavourable – Inadequate	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad
4030 Dry heaths	Favourable	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Bad	Unfavourable – Inadequate	Unfavourable – Bad	Unfavourable – Inadequate	Unfavourable – Bad
4060 Alpine and Boreal heaths	Unfavourable – Inadequate	Favourable	Unfavourable – Inadequate	Unfavourable – Bad	Unfavourable – Inadequate	Unfavourable – Bad	Unfavourable – Inadequate	Unfavourable – Bad
6230 Nardus grasslands*	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad
7130 Blanket bogs (* if active bog),	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Inadequate	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad	Unfavourable – Bad
8110 Siliceous screes	Unfavourable – Inadequate	Favourable	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Inadequate
8210 Calcareous rocky slopes	Unfavourable – Inadequate	Favourable	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Inadequate
8220 Siliceous rocky slopes	Unfavourable – Inadequate	Favourable	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Inadequate	Unfavourable – Inadequate

The main pressures, damaging activities and threats to the upland habitats which have been identified in the national assessments are presented below:

Wet Heath - There are ongoing losses in habitat Area due to afforestation and agricultural improvement. The quality of the habitat has been impacted by overgrazing and trampling, burning, invasive non-native species, drainage and erosion. Stock reductions implemented through commonage framework plans have led to an increase in height and cover of dwarf shrubs and reduction in extent of bare peat at many sites. Nevertheless, the Overall Status of this habitat is assessed as Bad due to the continued impact of the pressures listed above. The overall trend is considered to be stable due to the improvements resulting from stock reductions that balance out losses in Area.

Dry Heath - There have been ongoing losses in Area due to afforestation and agricultural improvement. Although the quality of the habitat has been impacted by overgrazing, burning, invasive non-native species and drainage, destocking brought about from the commonage framework plans has led to recovery in many upland areas. The Overall Status is assessed as Bad due to the impacts of the pressures listed. The overall trend is considered to be stable, the losses in Area balanced by the improvements in quality. The 2007 assessment was not underpinned by extensive survey and expert judgement was used to give an Overall Status of Inadequate. In light of current data it is likely that the 2007 assessment should have also been Bad.

Alpine & Sub-alpine Heath - Sheep grazing is widespread in uplands where alpine and subalpine heath occurs and, where levels of grazing are high, is problematic within this habitat. Hill walking is often concentrated on the ridges and summits where this habitat is found and can cause trampling and erosion of the habitat. Abandonment, scrub encroachment and decline in traditional farming methods are widely viewed to have negative effects on the conservation status of habitats in the Burren. For these reasons the Overall Status of this habitat is considered to be Bad. Conservation measures undertaken in the uplands and the Burren to address grazing problems have resulted in an improving trend. The 2007 assessment was not underpinned by extensive survey and expert judgement was used to give an Overall Status of Inadequate. In light of current data it is likely that the 2007 assessment should have also been Bad.

Species-rich Nardus Grassland - The Overall Status is assessed as Bad due to ongoing losses caused by forestry planting and agricultural improvement (fertilisation and re-seeding of the habitat) and also succession to heath and scrub. Due to ongoing losses to this habitat there is a declining trend for the habitat since the 2007 assessment.

Blanket Bog - The main threats to blanket bog include overgrazing and trampling, drainage, afforestation, mechanical peat-extraction, burning and windfarm and other infrastructural development. Reductions in sheep numbers on upland commonages over the last decade has had a major positive impact on overgrazed areas, however recovery is a slow process and restoration measures are required to prevent further erosion of blanket bog. The Overall Status of this habitat is assessed as Bad with an ongoing decline of extent and quality.

Siliceous Scree - This habitat that may be threatened by ecologically unsuitable grazing levels, recreational activities such as rock-climbing and invasive non-native species. The Overall Status is assessed as Inadequate, but with an improving trend. This trend is brought about by the implementation of the Commonage Framework Plans which address ecologically unsuitable grazing levels.

Calcareous Rocky Slopes - This habitat is threatened by ecologically unsuitable grazing levels, recreational activities such as rock climbing, quarrying and invasive non-native species. The Overall Status of this habitat is assessed as Inadequate with no major changes since 2007.

Siliceous Rocky Slopes - This habitat is threatened by ecologically unsuitable grazing levels, recreational activities such as rockclimbing, and invasive non-native species. For these reasons the Overall Status of this habitat is assessed as Inadequate with no major changes since 2007.

For a habitat to be deemed in Favourable Conservation Status an assessment is made on the following criteria:

- **Area** – there should be no decrease in the area of the habitat. For example areas of heathland habitat may have been lost to grassland as a result of overgrazing/animals congregating in one area or by the invasion of a species such as bracken.
- **Structure and Functions** - Structure and functions relates to the physical components of a habitat (“structure”) and the ecological processes that drive it (“functions”). For blanket bogs and associated habitats, these include a range of aspects such as soil chemistry, vegetation composition, hydrological regime, community diversity, habitat quality, species occurrence, indicators of local distinctiveness, disturbed ground, evidence of burning and negative species occurrence.
- **Future Prospects** - The impacts of pressures and threats on the habitat coupled with the general condition of the habitat are used to determine the Future Prospects (i.e. the long term viability of the habitat).
- **Overall Status** - For a “favourable” Overall Assessment for the habitat all parameters must be assessed as “favourable” (with one “unknown” acceptable); if any one of the parameters is assessed as “unfavourable - bad”, the Overall Assessment is also “bad”; any other combination would result in an “unfavourable - inadequate” Overall Assessment.

Under the SUAS project the habitats that correspond to the Annex I habitats have been assessed using the methodology outlined in Perrin *et al* (2014).

A number of monitoring stops were completed in each of the Annex I habitats present within the commonage (7130 Blanket Bog, 4010 Northern Atlantic Wet Heaths with *Erica tetralix* and 4030 Dry Heath). The number of monitoring stops completed depended on the size of the habitat. These are detailed below.

For those habitats which are not Annex I habitats such as acid grassland or fens and flushes the habitat condition is based on best expert judgement or in some cases from the perspective of the hill farmer.

The results of these habitat condition assessments for the various parts of the commonage are presented on **Figure 10** below.

3.2.1 7130 Blanket Bog

A total of 8 monitoring stops were recorded within the **7130 Blanket Bog** habitat within the commonage. The results of the eight monitoring stops are presented below in **Table 3.2.1**. The areas of cutover bog were not assessed as part of this assessment.

Table 3.2.1: Monitoring criteria and failure rates for 7130 Blanket Bog ($n = 8$).

Criteria	Scale of Assessment	No. of Assessments	No of Failures	Failure Rate (%)
Vegetation composition				
1. Number of positive indicator species present ≥ 7 (Appendix VI)	20m radius	8	6	75
2. Cover of bryophyte or lichen species, excluding <i>Sphagnum fallax</i> $\geq 10\%$	Relevé	8	6	75
3. Cover of each of the following species: <i>Calluna vulgaris</i> , <i>Eleocharis multicaulis</i> , <i>Eriophorum vaginatum</i> , <i>Molinia caerulea</i> , <i>Schoenus nigricans</i> , <i>Trichophorum germanicum</i> individually $< 75\%$	Relevé	8	4	50
4. Cover of the following negative indicator species: <i>Agrostis capillaris</i> , <i>Holcus lanatus</i> , <i>Phragmites australis</i> , <i>Pteridium aquilinum</i> , <i>Ranunculus repens</i> collectively $< 1\%$	Relevé	8	0	0
5. Cover of non-native species $< 1\%$	Relevé	8	0	0
6. Cover of non-native species $< 1\%$	Local vicinity	8	1	13%
7. Cover of scattered native trees and scrub $< 10\%$	Local vicinity	8	1	13%
Vegetation structure				
8. Crushed, broken and/or pulled up <i>Sphagnum</i> species $< 10\%$ of <i>Sphagnum</i> cover	Local vicinity	8	0	0
9. Last complete growing season's shoots of ericoids, <i>Empetrum nigrum</i> and <i>Myrica gale</i> showing signs of browsing collectively $< 33\%$ (Assess a minimum of 10 shoots distributed across the plot)	Relevé	8	0	0
10. No signs of burning into the moss, liverwort or lichen layer or exposure of peat surface due to burning	Relevé	8	4	50
11. No signs of burning inside boundaries of sensitive areas ³	Local vicinity	8	5	63
Physical structure				
12. Cover of disturbed bare ground $< 10\%$	Relevé	8	4	50
13. Cover of disturbed bare ground $< 10\%$	Local vicinity	8	4	50
14. Area showing signs of drainage resulting from heavy trampling or tracking or ditches or peat cutting $< 10\%$	Local vicinity	8	2	25
15. Cover of erosion gullies and eroded areas within the greater bog mosaic ⁴ $< 5\%$	Local vicinity	8	4	50

Area

A review of the aerial photography from the 1990s and other data sources for the commonage indicate that there has been no significant change in the overall area of blanket bog in the commonage since designation and the active turbary noted in the Commonage Framework Plan has now ceased. However the landslide data gathered by the Geological Survey of Ireland would indicate that there have been slips and landslides on the area of the ridge, which would have resulted in localised losses of blanket bog habitat. The field surveys confirmed that erosion is ongoing in these areas as evidenced by the cracks and erosion of the peat surface on the ridge. For this reason the overall area

³ Sensitive areas

- (a) Slopes greater than 1 in 3 (18°), and all the sides of gullies.
- (b) Ground with abundant and/or an almost continuous carpet of *Sphagnum*, other mosses, liverworts and/or lichens.
- (c) Patterned areas i.e. with pools, wet hollows, hags and erosion gullies.
- (d) Areas within 5-10 m of watercourses.
- (e) Areas above 400 m in altitude.
- (f) Areas within 50 m of functioning drains.

⁴ The greater bog mosaic incorporates the Annex I Blanket bog itself and associated vegetation types and non-vegetation cover types that appear to have been derived from former blanket bog, including, but not limited to, HW2, bare peat, loose rock, gravel and running water.

of **7130 Blanket Bog** within the commonage was therefore assessed as **Unfavourable – Inadequate** as areas of habitat are being eroded.

Structure and Functions

In the assessment of structure and functions, 6 monitoring stops failed one criterion or more. Following a review of the ecological condition of those stops, expert judgement determined that no changes should be made, resulting in an overall failure rate of 75%. The structure and functions of **7130 Blanket Bog** were therefore assessed as **Unfavourable – Bad**.

The vegetation composition of **7130 Blanket Bog** was often poor and 75% of the monitoring stops failed – the majority of them on account of lack of positive indicator species, lack of bryophytes or lichens, or dominance of one species such as deergrass. This is on account of the intensity, frequency, severity of the burns experienced by the habitat on the ridge. Grazing pressure from deer (and possibly sheep) may also be having a negative impact. The hydrological impacts of the old turf cutting areas are also contributing to this.

The vegetation structure of **7130 Blanket Bog** was failed in many stops on account of burning impacts as did the physical structure of the bog with significant areas of bare eroding peat, eroding gullies and physical cracks in the bog structure. The bog on the Round Hill is also compromised hydrologically by historic peat cutting activity. Quad bike activity across the bog was also evident.

In some parts of the commonage Sitka spruce is regenerating prolifically on the ridge near Cavanagh Gap but also on the Round Hill.

A series of intense and frequent uncontrolled burns, coupled with grazing pressure from deer, along with natural erosion and exposure, appears to be the most significant impact on the structure and functions of **7130 Blanket Bog** in the commonage. The effects of these impacts are apparent in the vegetation composition, vegetation structure and physical structure of this habitat.

Whilst the CFP recommended reductions in stock this was only required where a reduction of greater than 10% was recommended. In general however there have been reductions in stock as a result of reduced farming activity on the commonage. Although this has undoubtedly reduced grazing pressure by sheep, the current condition of the habitat in the commonage is overall in very poor condition. Only a small area of blanket bog habitat on the Round Hill was in relatively good condition but this had experienced a number of recent threats including seeding Sitka spruce and quad access as well as the historic legacy of the adjacent turf banks and areas of cutover bog and recent landslips.

Future Prospects

The future prospects for the habitat are assessed as **Unfavourable – Bad** in the absence of active management to begin habitat restoration on the ridge.

Conservation Status Assessment

Overall the conservation status assessment for blanket bog habitat within the commonage is assessed as **Unfavourable – Bad**.

3.2.2 4030 Dry heath

A total of 4 monitoring stops were recorded within the **4030 Dry heath** habitat within the commonage. The results of the monitoring stops are presented below in **Table 3.2.2**. Dry heath is typically found in a mosaic with wet heath on the commonage. Large areas of what would have been dry heath and wet heath habitat within the commonage on the north-west facing slopes of White Moss Mountain now consist of dry acid grassland/wet grassland as a result of grazing. Some areas of dry heath occur on the edge of old turf banks and cutover areas - these areas were not generally assessed as part of this assessment.

Table 3.2.2: Monitoring criteria and failure rates for 4030 Dry heath ($n = 4$).

Criteria	Scale of assessment	No. of Assessments	No. of Failures	Failure Rate (%)
Vegetation composition				
1. Number of bryophyte or non-crustose lichen species present, excluding <i>Campylopus</i> spp. and <i>Polytrichum</i> spp. ≥ 3	Relevé	4	3	75
2. Number of positive indicator species present ≥ 2 (Appendix VI)	Relevé	4	1	25
3. Siliceous heaths: cover of positive indicator species $\geq 50\%$ (Appendix VI)	Relevé	4	0	0
4. Proportion of dwarf shrub cover composed of <i>Myrica gale</i> , <i>Salix repens</i> , <i>Ulex gallii</i> collectively $< 50\%$	Relevé	4	1	25
5. Cover of the following weedy negative indicator species: <i>Cirsium arvense</i> , <i>C. vulgare</i> , <i>Ranunculus repens</i> , large <i>Rumex</i> species (except <i>R. acetosa</i>), <i>Senecio jacobaea</i> , <i>Urtica dioica</i> collectively $< 1\%$	Relevé	4	0	0
6. Cover of non-native species $< 1\%$	Relevé	4	0	0
7. Cover of non-native species $< 1\%$	Local vicinity	4	0	0
8. Cover of scattered native trees and scrub $< 20\%$	Local vicinity	4	0	0
9. Cover of <i>Pteridium aquilinum</i> $< 10\%$	Local vicinity	4	2	50
10. Cover of <i>Juncus effusus</i> $< 10\%$	Local vicinity	4	0	0
Vegetation structure				
11. Senescent proportion of <i>Calluna vulgaris</i> cover $< 50\%$	Relevé	4	0	0
12. Last complete growing season's shoots of ericoids and <i>Empetrum nigrum</i> showing signs of browsing collectively $< 33\%$ (Assess a minimum of 10 shoots distributed across the plot)	Relevé	4	0	0
13. No signs of burning inside boundaries of sensitive areas ⁵	Local vicinity	4	1	25
14. Outside boundaries of sensitive areas, all growth phases of <i>Calluna vulgaris</i> should occur throughout, with $\geq 10\%$ of cover in mature phase ⁶	Local vicinity	4	0	0

⁵ Sensitive areas

(a) Areas where soils are thin and less than 5 cm deep.

(b) Hill slopes greater than 1 in 2 (26°), and all the sides of gullies.

(c) Ground with abundant, and/or an almost continuous carpet of *Sphagnum*, liverworts and/or lichens.

(d) Areas of H21 and H22 heath as defined by the NVC (Rodwell 1991a). These are heaths primarily composed of mixtures of *Calluna vulgaris* and *Vaccinium myrtillus* over a moist carpet of bryophytes that often has a high *Sphagnum* content. Within the provisional classification, these communities are comparable to DH4 and damper elements of DH6 respectively.

(e) Areas with noticeably uneven structure, at a spatial scale of around 1 m² or less. The unevenness (e.g. more commonly found in very old heather stands) will relate to distinct, often large, spreading dwarf-shrub bushes. The dwarf-shrub canopy will not be completely continuous, and some of its upper surface may be twice as high as other parts. Layering is likely to be present and may be common.

(f) Pools, wet hollows, hags and erosion gullies, and within 5 – 10 m of the edge of watercourses.

⁶ *Calluna vulgaris* growth phases

1. Pioneer < 10 cm

2. Building 10 – 30 cm

3. Mature > 30 cm

Criteria	Scale of assessment	No. of Assessments	No of Failures	Failure Rate (%)
Physical structure				
15. Cover of disturbed bare ground < 10%	Relevé	4	0	0
16. Cover of disturbed bare ground < 10%	Local vicinity	4	0	0

Area

A review of the aerial photography from the 1990s and other data sources for the commonage indicate that there has been no significant change in the overall area of dry heath in the commonage. There is a lack of detailed information on what the previous extent of acid grassland habitat in the commonage was (this forms a mosaic with dry heath in places) but based on the locations of where sheep are known to favour the hill (in the sheltered slopes below White Moss Mountain) they would appear to be focusing their grazing efforts here thus resulting in a localised increase in grassland vs heath habitat. For this reason the overall area of **4030 Dry heath** within the commonage was therefore assessed as **Unfavourable – Inadequate**.

Structure and Functions

In the assessment of structure and functions, 3 monitoring stops failed one criterion or more. Following a review of the ecological condition of those stops, expert judgement determined that no changes should be made, resulting in an overall failure rate of 75%. The structure and functions of **4030 Dry heath** were therefore assessed as **Unfavourable – Inadequate**.

The vegetation composition of **4030 Dry heath** was often poor and 75% of the monitoring stops failed – the majority of them on account of lack of bryophytes or lichens, and in one stop the dry heath was almost completely dominated by western gorse (lacking diversity of the other positive indicator species such as bilberry and bell heather). This would appear to be as a result of previous burning.

The vegetation structure of **4030 Dry heath** was generally good with one area showing signs of damage from burning.

In some parts of the commonage such as at Cordoo bracken (*Pteridium aquilinum*) and/or autumn gorse (*Ulex gallii*) is starting to dominate.

A lack of appropriate management (uncontrolled burning resulting in damage and in some areas a lack of appropriate grazing) appears to be the most significant impact on the structure and functions of **4030 Dry heath** in the commonage. The effects of this impact are apparent in the vegetation composition, vegetation structure and physical structure of this habitat.

Whilst the CFP stock reductions undoubtedly reduced grazing pressure, the current condition of the commonage would indicate a lack of active management and appropriate grazing in the intervening period, which coupled with uncontrolled burning has resulted in an overall poor condition of this habitat in many areas.

Future Prospects

The future prospects for the habitat are assessed as **Unfavourable – Inadequate** in the absence of active management by the commonage group.

Conservation Status Assessment

Overall the conservation status assessment for dry heath habitat within the commonage is assessed as **Unfavourable – Inadequate**.

3.2.3 4010 Northern Atlantic Wet Heaths with *Erica tetralix*

A total of 8 monitoring stops were recorded within the **4010 Northern Atlantic Wet Heaths with *Erica tetralix*** habitat within the commonage. The results of the eight monitoring stops are presented below in Table 3.2.3.

Table 3.2.3. Monitoring criteria and failure rates for 4010 Northern Atlantic Wet Heaths with *Erica tetralix* (n = 8).

Criteria	Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition				
1. <i>Erica tetralix</i> present	20m radius	8	6	75
2. Cover of positive indicator species $\geq 50\%$	Relevé	8	4	50
3. Total cover of <i>Cladonia</i> species, <i>Sphagnum</i> species, <i>Racomitrium lanuginosum</i> and pleurocarpous mosses $\geq 10\%$	Relevé	8	6	75
4. Cover of ericoid species and <i>Empetrum nigrum</i> $\geq 15\%$	Relevé	8	4	50
5. Cover of dwarf shrub species $< 75\%$	Relevé	8	0	0
6. Cover of the following negative indicator species: <i>Agrostis capillaris</i> , <i>Holcus lanatus</i> , <i>Phragmites australis</i> , <i>Ranunculus repens</i> collectively $< 1\%$	Relevé	8	0	0
7. Cover of non-native species $< 1\%$	Relevé	8	0	0
8. Cover of non-native species $< 1\%$	Local vicinity	8	1	13
9. Cover of scattered native trees and scrub $< 20\%$	Local vicinity	8	0	0
10. Cover of <i>Pteridium aquilinum</i> $< 10\%$	Local vicinity	8	1	13
11. Cover of <i>Juncus effusus</i> $< 10\%$	Local vicinity	8	1	13
Vegetation structure				
12. Crushed, broken and/or pulled up <i>Sphagnum</i> species $< 10\%$ of <i>Sphagnum</i> cover	Relevé	8	0	0
13. Last complete growing season's shoots of ericoids, <i>Empetrum nigrum</i> and <i>Myrica gale</i> showing signs of browsing collectively $< 33\%$	Relevé	8	0	0
14. No signs of burning into the moss, liverwort or lichen layer, or exposure of peat surface due to burning	Local vicinity	8	4	50
15. No signs of burning inside boundaries of sensitive areas ⁷	Local vicinity	8	4	50
Physical structure				
16 Cover of disturbed bare ground $< 10\%$	Relevé	8	4	50
17 Cover of disturbed bare ground $< 10\%$	Local vicinity	8	4	50
18 Area showing signs of drainage resulting from heavy trampling or tracking or ditches $< 10\%$	Local vicinity	8	1	13

Area

A review of the aerial photography from the 1990s and other data sources for the commonage including the commonage framework plan data indicate that there has been a reduction in the area of wet heath. It is thought that this is as a result of livestock congregating, grazing and associated trampling which has resulted in an increase of acid grassland/wet grassland habitats which now form a mosaic with the wet heath. For this reason the overall area of **4010 Northern Atlantic Wet Heaths with *Erica tetralix*** within the commonage was therefore assessed as **Unfavourable – Inadequate**.

⁷ Sensitive areas

- (a) Vegetation severely wind-clipped, mostly forming a mat less than 10 cm thick.
- (b) Areas where soils are thin and less than 5 cm deep.
- (c) Slopes greater than 1 in 3 (18°) and all the sides of gullies.
- (d) Ground with abundant, and/or an almost continuous carpet of *Sphagnum*, liverworts and/or lichens.
- (e) Pools, wet hollows, hags and erosion gullies, and within 5 – 10 m of the edge of watercourses.
- (f) Areas above 400 m in altitude.
- (g) Areas within 50 m of functioning drains.

Structure and Functions

In the assessment of structure and functions, 6 monitoring stops failed one criterion or more. The structure and functions of **4010 Northern Atlantic Wet Heaths with *Erica tetralix*** were therefore generally assessed as **Unfavourable – Bad**.

The vegetation composition of **4010 Northern Atlantic Wet Heaths with *Erica tetralix*** was generally bad with many monitoring stops failing. This was typically on account of the loss of key indicator species, lack of cross leaved heath, loss of moss and lichen cover, and loss of ericoid species as a result of burning. One stop failed on account of the presence of self-seeded Sitka spruce whilst bracken is also encroaching in areas.

The vegetation structure of **4010 Northern Atlantic Wet Heaths with *Erica tetralix*** was generally bad as a result of intensive and frequent uncontrolled burns.

The effects of this impact are apparent in the vegetation composition, vegetation structure and physical structure of this habitat. Whilst the CFP stock reductions have undoubtedly reduced grazing pressure on this habitat large areas of **4010 Northern Atlantic Wet Heaths with *Erica tetralix*** within the commonage are damaged from burning. This will require active management/ intervention through shepherding to ensure that the vegetation composition of **4010 Northern Atlantic Wet Heaths with *Erica tetralix*** in previously burnt areas recovers.

Future prospects

The future prospects for the habitat are assessed as **Unfavourable – Inadequate** in the absence of active management of the commonage. There should be no more uncontrolled burns in the commonage and areas which have been damaged will require destocking and active shepherding to move the sheep out of these areas. These measures should help to improve this scenario.

Overall the conservation status assessment for **4010 Northern Atlantic Wet Heaths with *Erica tetralix*** habitat within the commonage is currently assessed as **Unfavourable – Bad**.

The results of these assessments are presented on Figure 10 below.

Active measures by the members of the commonage framework groups as set out in the management recommendations will assist in beginning to improve the conservation status of the habitats. However it should be recognised that it may take in some instances over twenty years for habitats to begin to recover depending on the severity of the former negative impacts such as a severe uncontrolled burn. More than one parameter may need to be addressed to see a move towards habitat recovery (e.g. restoration of hydrological condition, appropriate grazing levels (sheep/deer/sheep in combination with deer, reintroduction of seed material where a species has been lost/has declined to such an extent that seed production is low, etc.) and in some instances factors outside the site (and beyond the control of the commonage group) may be having a negative effect (such as the deposition of atmospheric nitrogen, drainage measures associated with adjacent forestry, etc.).

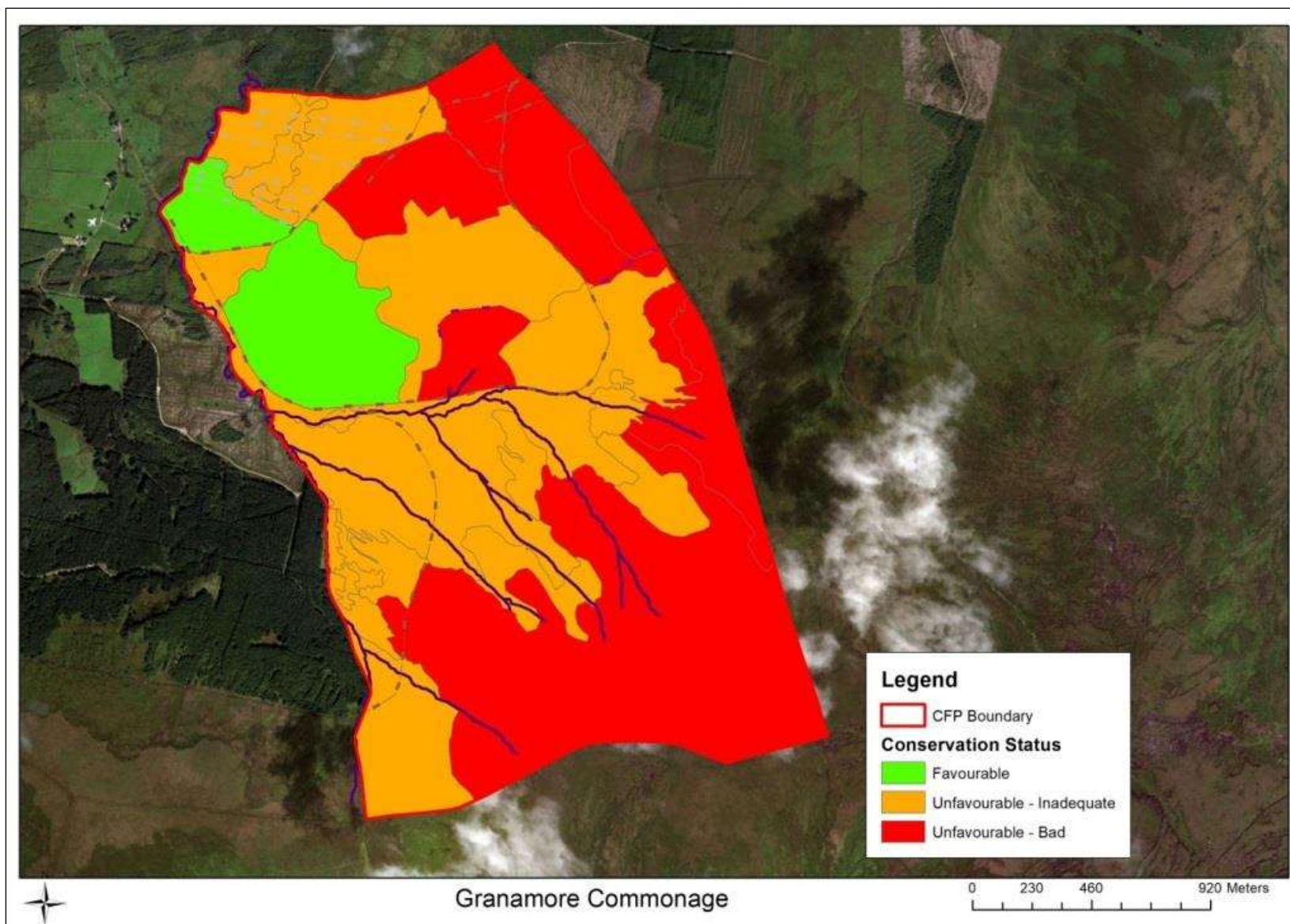


Figure 10. Habitat Condition Assessment for the habitats within Granamore Commonage..

4. Management Recommendations for Granamore

4.1 General Management Measures

A Commonage Management group has been established for the commonage and a management plan will be developed by the members, which will utilise and be informed by the information provided in this report and assessment.

The management prescriptions in the plan need to address the impacts highlighted in this report if progress is to be made towards attaining **Favourable status** for the Annex I habitats present on the site – principally Blanket Bog, Dry Heath and Wet Heath in the long term.

The major impacts arise from uncontrolled burning, over grazing (possibly historically from sheep but also from deer), historic turf cutting and associated drainage, lack of active shepherding (which would encourage sheep out of favoured areas) changes in timing of grazing on the hill (less sheep grazing in winter & early summer, which is now based around when grass growth is present so sheep favour these areas), recreational access from horse riding resulting in localised peat erosion near the track, and natural exposure and erosion.

The levels of livestock grazing (by sheep) were initially assessed through the Commonage Management Plan drawn up in the early 2000s. This found the commonage to generally be in an undamaged condition but recommended a destocking rate of 4.3%, however only areas with a destocking rate of >10% were actually destocked. Reductions in sheep numbers on the hill have arisen because of a lack of active farming and whilst this may have resulted in some improvement to Annex I habitats, the majority of the habitat areas on the hill are not currently attaining **Favourable status**.

The ridge between Cawrawn and White Moss Mountain, the north-west facing slopes of White Moss Mountain and the ridge running north to Knockadrew and Grannarock and to the east of Lord Waterford's Bridle Path are in very poor ecological condition and these areas should be the focus of specific measures to be financially supported by the project.

These areas of eroding blanket bog and areas of burnt wet heath should have sheep and other grazing animals (such as trespassing cattle) removed from them by shepherding and encourage these animals to graze elsewhere. This will reduce grazing pressure from domestic animals and allow the habitat to begin to recover. The impacts of grazing deer in this area are harder to resolve. In order to determine the grazing impact of deer in these areas it is recommended that a number of exclosures are erected, which would allow changes in vegetation to be monitored. These will require the erection of flight diverters on the fences to reduce collision risk for grouse on the site. Counts of deer and a mark-up of their indicative locations on the hill should also be made during the shepherding sessions to develop an understanding of deer populations in the area.

The most damaged areas on the ridge will require active habitat restoration measures. These should be designed to aid and speed up the recovery of the damaged habitat, which would then also reduce the levels of peat erosion and the risk of further landslides.

Active shepherding of sheep and some small areas of habitat management in the Cordoo and Round Hill sections of the site will be required to encourage sheep to graze in and utilise these areas allowing the other areas to recover. Consideration could also be given to fencing within the site to ensure that sheep are concentrated in these areas.

Self-seeding of Sitka spruce and encroachment of bracken across the commonage also needs to be managed.

The watercourses rising on the site and the Douglas River are all mapped as being watercourses at risk of not achieving 'Good Status' under the Water Framework Directive. The main pressures identified on these watercourses have been identified as agricultural and forestry and the conifer plantations to the west of the Douglas River are currently being clearfelled. To buffer the impacts of combined grazing pressures, clearfelling and increased flow and erosion arising from the condition of the habitats on the commonage retrofitting of native woodland on these streams to act as protection forests for water quality would be a welcome measure.

The creation and restoration of upland gully woodlands consisting of native broadleaf species located along fast flowing upland streams and surrounding steep sided valleys provide a number of benefits – these include:

- Creating shelter and shade for livestock
- Reducing soil erosion
- Improving water quality
- Mitigating downstream flood risk
- Supporting woodland and upland birds
- Increasing habitat and species diversity
- Storing carbon
- Increasing resilience of the landscape in the face of climate change
- Enhancing the landscape
- Enhancing visitor experience and well-being
- Providing an evidence base for the future

The various parts of the commonage requiring specific management are mapped on **Figure 11** and summarised in **Table 4**. Further information and best practice guidance on each of the management measures recommended are outlined below. Detailed information on the principles of the management measures that can be utilised as recommended in the Natural England Upland Management Handbook and other best practice guidance from Scotland, are presented in detail in **Appendix 2**. This guidance has been modified for the Irish situation.

4.2 Measures for the Annex I Habitat 7130 Blanket Bog

4.2.1 Measures for Damaged Blanket Bog/Wet Heath

There are two distinct areas of blanket bog within the commonage both of which require different remedial/habitat restoration measures.

The simpler options relate to those for the Round Hill where it is recommended that the old areas of cutover on the southern side of the hill would benefit from the insertion of dams to block the drain on its northern edge. The purpose of this is to restore the hydrology in this area.

The areas of bare peat and eroding and cracked areas of blanket bog on the ridge and slopes of White Moss Mountain will require a number of measures including the exclusion of grazing animals, stabilisation of the peat, blocking of gullies and eroding areas and the introduction of seed sources.

Information on the restoration of hydrology in the blanket bog and wet heath, from the Natural England Upland Management Handbook and from the Moors for the Future project are presented in **Appendix 2**.

4.2.2 Eroding Bog on the Ridge

The areas of bare and eroding peat on the ridge and slopes of White Moss Mountain are at real risk of further erosion and landslide. These areas will require destocking, restoration of hydrological function, stabilisation of the peat and revegetation.

Upland blanket bog in good habitat condition should have a diversity of species present (more than seven indicator species), contain both dry- and wet-loving species, be Sphagnum-rich and not heather/grass dominated with an abundance of hummock-forming Sphagnum moss and Woolly hair moss. Areas of bare peat should be rare and the water table should be high such that peat tears and hollows are filled with Sphagnum mosses.



Plate 20. More like this..... (the water table is still compromised on this part of the ridge but at least Sphagnum is present)



Plate 21. Than this..... (bare eroding peat with no Sphagnum cover and algae)

Removal of Sheep from the Ridge

The Moors for the Future project in the UK has identified that in some instances removing sheep completely from restoration areas was also a key component for success.

‘In April 2003 a 31km fence was erected around a 25.5km² area of Bleaklow to prevent fresh young growth being eaten. This was funded via an ESA stock exclusion payment where the farming tenant was paid to keep sheep off the site. The fence is not a permanent structure and will be removed when it is deemed the moors are in favourable condition’.

The removal of sheep from the ridge and damaged areas of the site is required. This may be achievable through active shepherding and encouraging sheep to use the lower areas of the commonage at Cordoo and Round Hill. Trespassing sheep from Knocknadrose also need to be moved out of the commonage.

Consideration could be given to erecting a sheep fence on the western and southern side of the Lord’s Road as it skirts the Round Hill in order to remove sheep from the watercourses on the site and allow the slopes to recover if active shepherding is unsuccessful.

Assessment of Deer Grazing Impacts

In order to determine the grazing impact of deer on the ridge and implications for the recovery of the habitat it is recommended that a minimum of two deer exclosures are erected on the ridge – one in the area of the ridge which has been burnt (eastern end) and one near Cavanagh’s Gap (western end) where the bog vegetation is more intact but the peat is cracking and at risk of sliding and further erosion.

Stabilisation of Bare Peat

The Moors for the Future project in the UK has identified that the most important factor in revegetating damaged areas of blanket bog is the initial stabilisation of the areas of bare and eroding peat⁸. These could include the utilisation of measures such as gully blocking using plastic dams, stone dams or the use of heather bales. This needs to be followed up by revegetation of areas of bare peat on the bog surface.

Heather bales are best suited to low-energy gully systems and are also good for slowing the flow of water, trapping sediment and creating shallow habitat pools. Other SUAS project site such as Powerscourt Paddock and Glasnamullen, which can be accessed by machines, could be used as donor sites for heather bales and heather brash. Best practice guidance on cutting, baling and collecting heather brash is available from the Moors for the Future project guidance documents⁹.

The brash from felled spruce on the ridge near Cavanagh’s Gap could also be utilised within the shallow tear pools in the place of / alongside heather brash (the heather also provides a potential seed source for regeneration which the spruce branches would not).

On White Moss Mountain the surface of the bog needs to be revegetated to prevent further loss of peat and reduce erosion. The aim here is to restore the montane blanket bog to a sward dominated by *Sphagnum* mosses, ling heather, crowberry, bog cottons and as the name of the hill suggest ultimately woolly hair moss (*Racomitrium lanuginosum*).

Other commonages within SUAS (such as Glasnamullen and Powerscourt Paddock) could provide seed and heather brash/bales for the restoration of habitat at Granmore as machinery can access and flail or cut heather in these areas without causing significant damage to the underlying peat. These areas could act as donor sites.

National Parks and Wildlife Service could consider partnering with the project to assist with some of the logistics for the habitat restoration such as the helicopter flights, with the collection of material and spreading of same delivered by the commonage groups.

⁸ <http://www.moorsforthefuture.org.uk/repairing-bare-peat>

⁹ Moors for the Future. Heather Cutting – Factsheet. Available online from <http://www.moorsforthefuture.org.uk/factsheets>.

Increasing diversity

Some moorland plants will come into the sward through material present on site (such as heather, mosses and lichens from the heather brash, cotton-grasses and wavy hair grass by seed and vegetative expansion). These are facilitated by the addition of lime and fertiliser, which increases flowering and vegetative expansion. However, many other moorland species (e.g. bilberry, crowberry, cross-leaved heath) are much slower colonisers. These species, which are significant structural species, growing at different depths in the peat, need further interventions in order to colonise. These can be added as plug plants, grown by micro-propagation from material collected locally.

It is for this reason that burning of some areas in the Cordoo part of the commonage (as suggested by the group) are not recommended as they potentially provide a long term seed source for the habitat restoration and these seeds could be naturally spread by birds.

Sphagnum Moss Reintroduction

The most important group of species to re-introduce on the ridge once the erosion is reduced in small gulls/tears are sphagnum mosses, both biologically and structurally. In order to get sphagnum to establish, there must be adequate surface water for most of the year.

Sphagnum could be reintroduced to damaged areas on White Moss Mountain by the use of cultivated propagules (such as 'Beedamoss'¹⁰), Sphagnum plugs or by gathering Sphagnum from blanket bog on other parts of the mountain/commonage which are undamaged.

Drain Blocking

Drain blocking is recommended at a number of locations within the commonage – on the Round Hill and on drains extending through the slope on the ridge extending from Grannarock along the north eastern edge of the commonage. Drain blocking can be done using a number of techniques some of which are mentioned above, such as plastic dams, but peat dams could also be considered. The use of peat dams has been used with great success elsewhere within the Wicklow Mountains National Park.

Further detailed information on these measures is presented in **Appendix 2**.

4.3 Measures for the Annex I Habitat 4060 Dry Heath

Heath and Gorse Management

The Commonage Framework Group are keen to see some burning in small areas (<1ha) on the commonage where tall leggy heather has become established. Management of these areas could be introduced to encourage sheep to utilise the lower parts of the commonage and aid in reduce grazing pressure elsewhere on the more damaged areas.

Note that burning is only a recommended management measure for dry heath habitat and is not appropriate for wet heath or blanket bog.

Measures for the areas of leggy tall heather/gorse

Measures are required in several areas. In some areas sheep are congregating resulting in the loss of dry heath/wet heath habitat in favour of acid grassland. Other areas are completely undergrazed and are now avoided by sheep. It is recognised that this has resulted in areas that are simply inaccessible for sheep and these areas can only be recovered through heather management – generally this is by either cutting/flailing or controlled burning. There are also concerns about sheep potentially getting trapped in some small gullies/old drains, which are concealed in dense heather in compartments 22 and 23.

It is recommended that there is some trial areas of flailing/brush cutting conducted in those areas where the worst of the tall inaccessible heather is. These areas will then regenerate and encourage the

¹⁰ <http://www.beadamoss.co.uk/page19.html>

movement of sheep to these areas for grazing. They should be located at some distance from where sheep are currently congregating to encourage this. The flailing needs to be combined with active shepherding and other measures such as the use of sheep licks to draw animals into certain areas and move them away from those currently favoured.

Overall dry heath as a pure stand forms only a small portion of the commonage (5.2 ha) in compartment 11 and appears to have developed here following a series of burns in 1999 and 2011. In other areas it forms part of a mosaic with wet heath/acid grassland/gorse scrub and exposed rock in Cordoo (c.14.56 ha).

4.4 Measures for the Annex I Habitat 4010 Northern Atlantic Wet Heaths with *Erica tetralix*

Overall **4010 Northern Atlantic Wet Heaths with *Erica tetralix*** accounts for c.50% of the commonage c.236 ha. In some areas it exists as a pure stand of the habitat (c.93 ha) whereas in other areas it forms part of a mosaic with dry heath HH1/wet grassland GS4/dry acid grassland GS3 (c. 16.7 ha). There should be no further burning of wet heath habitat within the commonage.

The main challenge for managing the **4010 Northern Atlantic Wet Heaths with *Erica tetralix*** habitat is in restoring those areas damaged by uncontrolled burning them and ensuring that they do not become further degraded by sheep congregating in them. This will require active shepherding - moving sheep to other areas of the hill as they become more accessible to sheep and hunting out trespassing sheep from Knocknadrose.

4.5 Sitka Spruce Removal

Other measures required include the removal of the self-seeded Sitka spruce on the commonage especially in the vicinity of Cavanagh Gap although spruce was also noted in compartment 22 and 23 near the conifer plantation north of Grannarock and sparsely on the Round Hill. The Sitka spruce can be removed simply by felling with a saw. The cut must be made below the lowest green branch to ensure that no regrowth occurs. If this fails any regrowth of spruce could be dealt with by cutting as described above or the application of glyphosate or similar to the cut stump using a sponge applicator taking care to avoid surrounding vegetation. Brash from felled spruce could be used as part of the erosion control measures for nearby gullies.

4.6 Measures for Bracken Control

Areas of dense bracken form approximately 1.5 ha within the commonage. Consideration should be given to some control of bracken within the commonage, notably in the northern section of the commonage at Cordoo, along the Douglas River Headwater Stream and on the slopes below Knockadrew. Information and recommendations for bracken control from the Natural England Upland Management Handbook is provided in **Appendix 2** to inform same.

4.7 Upland Gully Woodland

Consideration could be given to the establishment of upland gully woodland along the watertcourses in the site (and in the bracken slopes adjoining the Douglas River Headwater Stream as recommended above) and the protection of any existing trees along these watercourses. Such woodland would further act as protection measure for water quality within these streams and the Douglas and King Rivers below as well as adding to the biodiversity of the uplands. Suitable species would include mountain ash (*Sorbus aucuparia*), willows (*Salix cinerea*), holly (*Ilex aquifolium*), birch (*Betula pubescens*) and ultimately oak (*Quercus petraea*), Scot's pine (*Pinus sylvestris*) and aspen (*Populus tremula*). Any trees would require protection from grazing animals including sheep and deer.

4.8 Track Repairs

Some minor remediation works to drainage on the Lord's Road and Lord Waterford's Bridle Path that circle through the commonage could be considered to allow water to flow off. The rebuilding of old granite shores is also required in c. two locations. Consultation with NPWS will be required regarding same.

4.9 Cattle Trespass

Cattle trespass on the hill are a potential issue that may require management and will need ongoing monitoring.

4.10 Deer

Consideration should be given to deer management in the area in collaboration with other landowners/parties (Coillte/NPWS), the erection of exclosures on the ridge will give an indication of how significant grazing pressures are from same. Recording of deer numbers and locations on the hill will be required during active shepherding. This will assist in developing a deer management plan for the area.

4.11 Monitoring

Continued monitoring is required to determine what affect active shepherding of stock on the hill coupled with some limited burning would have bearing in mind that there may be a considerable delay between changes in livestock levels and a response in the vegetation.

4.12 Appropriate Assessment

Once the plan is agreed with the commonage group it will need to be agreed with National Parks and Wildlife and undergo appropriate assessment before being implemented.

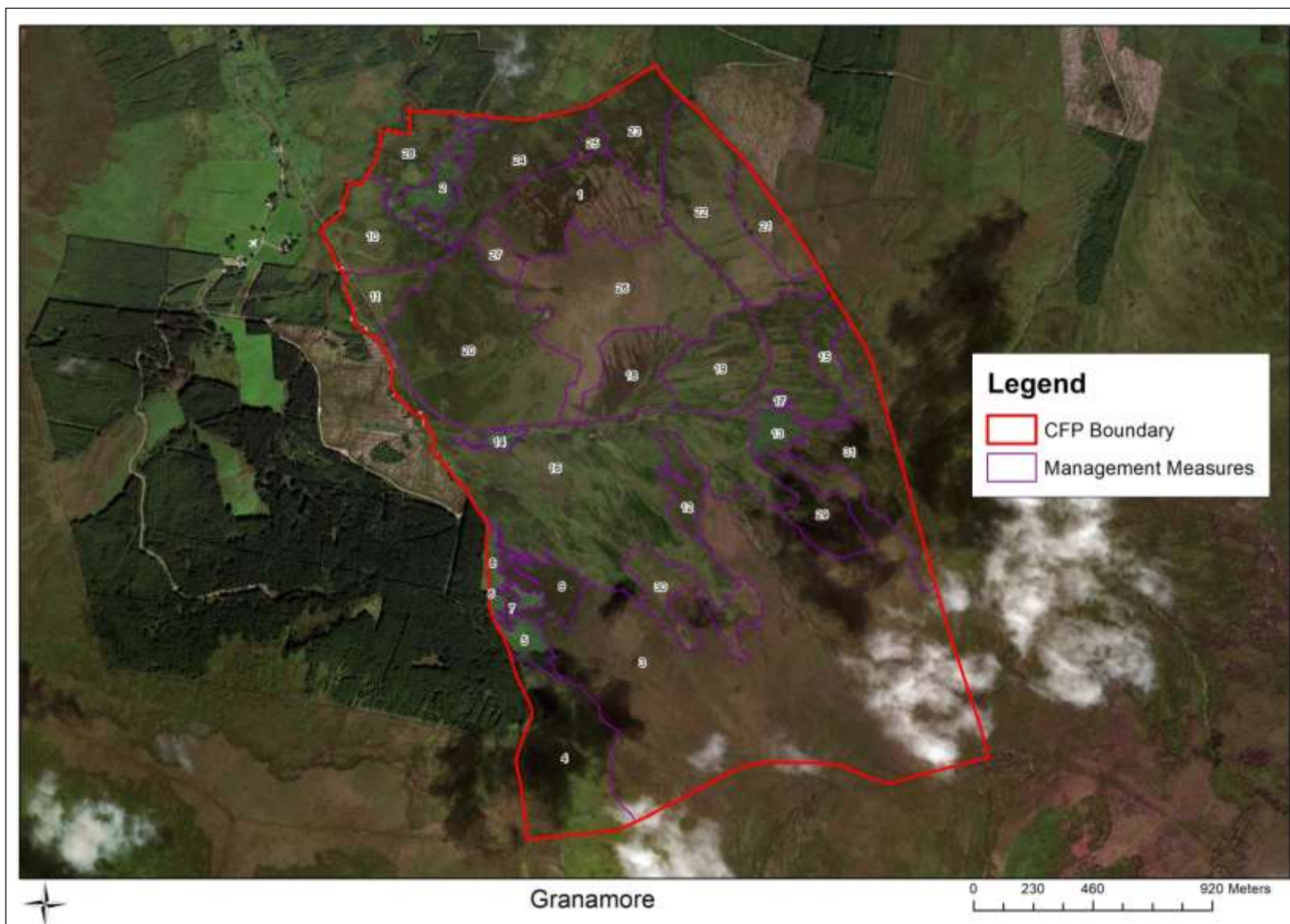


Figure 11. Management measures for Granamore.

Table 4. Habitats present on Granamore and Management Recommendations.

Id	Annex I Code	Annex I Description	Fossitt Code	Habitat	Area (m)	Area (Ha)	Conservation Status	Management Measure
1			PB4	Cutover Bog	175048	17.50	Unfavourable - Bad	Avoid grazing this area so it can naturally revegetate.
2			HD1	Dense Bracken	54425	5.44	Unfavourable - Inadequate	Control bracken.
3	7130 (I'm not 100% sure on how to classify this as it is so damaged)	Blanket Bog	PB5 FW1	Eroding Blanket Bog Eroding Upland Watercourse	1245790	124.58	Unfavourable - Bad	<p>This area was extremely badly burnt in 2001 and again in March 2003 which has resulted in the loss of vegetation on the ridge and drying out of the peat which is cracking in several locations.</p> <p>Erosion of this area is very severe in places as a result of a number of likely factors including uncontrolled burning, high deer numbers, natural erosion and exposure.</p> <p>Atmospheric ammonia/nitrogen enriching the peats in this area and contributing to a potential impact on water quality.</p> <p>A number of watercourses now rise on the ridge and have eroded out deep gullies in the peat – they previously rose from springs on the lower slopes (not the ridge).</p> <p>Restoration of the ridge vegetation is required.</p> <p>Destocking and exclusion of grazing is recommended.</p> <p>Erection of deer exclosures to assess deer browsing pressures. Provide grouse flight diverters on fencing if erected to reduce collision risk.</p> <p>Consider establishing protective woodland along the watercourse.</p>

Id	Annex I Code	Annex I Description	Fossitt Code	Habitat	Area (m)	Area (Ha)	Conservation Status	Management Measure
4			PB5/HH3/GS3 FW1	Eroding Blanket Bog/Wet Heath/Dry Acid Grassland Eroding Upland Watercourse	208217	20.82	Unfavourable - Inadequate	Control and remove regenerating spruce. Destocking and exclusion of grazing is recommended. Erection of deer exclosures to assess deer browsing pressures. Protect watercourse through establishment of gully woodland.
5			HD1 FW1	Dense Bracken Eroding Upland Watercourse	31815	3.18	Unfavourable - Inadequate	Destocking and exclusion of grazing is recommended. Erection of deer exclosures to assess deer browsing pressures. Provide grouse flight diverters on fencing if erected to reduce collision risk. Control bracken. Protect watercourse through establishment of gully woodland.
6			HH3/GS4 FW1	Wet Heath/Wet Grassland Eroding Upland Watercourse	101	0.01	Unfavourable - Inadequate	Control bracken to prevent invading heath. Protect watercourse through establishment of gully woodland.
7			HH3/GS4 FW1	Wet Heath/Wet Grassland Eroding Upland Watercourse	8583	0.86	Unfavourable - Inadequate	Destocking and exclusion of grazing is recommended. Protect watercourse through establishment of gully woodland.
8			HD1	Dense Bracken	19933	1.99	Unfavourable - Inadequate	Control bracken. Destocking and exclusion of grazing is recommended. Protect watercourse through establishment of gully woodland.
9	4010	Northern Atlantic Wet Heaths with <i>Erica tetralix</i>	HH3	Wet Heath	56010	5.60	Unfavourable - Inadequate	There is some cracking in the peat here and the upper slopes are at risk of slippage. No burning or vegetation control should be proposed for this area as a result. Trespass from cattle was noted here. Destocking and exclusion of grazing is recommended.
10	7130*	Active Blanket Bog	PB2	Upland Blanket Bog	104934	10.49	Favourable	Monitor grazing pressure and sheep movements to ensure no decline.

Id	Annex I Code	Annex I Description	Fossitt Code	Habitat	Area (m)	Area (Ha)	Conservation Status	Management Measure
11	4030	Dry Heath	HH1	Dry Heath	52330	5.23	Favourable	This area was burnt in December 1999 and again in March 2011, which would explain why it is now dominated by dry heath as opposed to wet heath. Consultation will be required with NPWS regarding any burning proposals here. My recommendation would be that no action is required in this area. Monitor grazing pressure and sheep movements to ensure no decline.
12	4010	Northern Atlantic Wet Heaths with <i>Erica tetralix</i>	HH3 FW1	Wet Heath Eroding Upland Watercourse	43772	4.38	Unfavourable - Inadequate	Monitor grazing pressure and sheep movements to ensure no further decline of wet heath. Destocking and exclusion of grazing is recommended. Consider establishing protective woodland along the watercourse.
13			HD1 FW1	Dense Bracken Eroding Upland Watercourse	30221	3.02	Unfavourable - Inadequate	This area was burnt in March 2003 which would have allowed the bracken to take hold. Control bracken. Destocking and exclusion of grazing is recommended. Consider establishing protective woodland along the watercourse.
14			HD1	Dense Bracken	10346	1.03	Unfavourable - Inadequate	The adjoining area (16) was burnt in March 2011 and this area may also have been burnt. This would have allowed the bracken to take hold in the general area. Control bracken. Destocking and exclusion of grazing is recommended.
15			GS3/HH3/ER1	Dry Grassland/Wet Heath/Exposed Rock	38503	3.85	Unfavourable - Bad	This area was badly burnt in 2001 and has still not yet recovered. No further burning in this area. Shepherd livestock out of here to allow it to recover. Destocking and exclusion of grazing is recommended.

Id	Annex I Code	Annex I Description	Fossitt Code	Habitat	Area (m)	Area (Ha)	Conservation Status	Management Measure
16			HH3/GS3/GS4 FW1	Wet Heath/Dry Acid Grassland/Wet Grassland Eroding Upland Watercourse	682910	68.29	Unfavourable - Inadequate	This area was partially badly burnt in the eastern part of the slope in 2001 and has still not yet recovered. The upper slopes of the eastern part of this area (near area 29) were again burnt in March 2003. Part of the area was also burnt again in March 2011. This would have allowed the bracken to take hold in the general area. No further burning in this area. Grazing would appear to be altering wet heath to wet grassland/dry acid grassland. Shepherd livestock out of here to reduce pressure. Remove seeding Sitka spruce. Destocking and exclusion of grazing is recommended. Consider establishing protective woodland along the watercourse.
17			HD1	Dense Bracken	3450	0.35	Unfavourable - Inadequate	Control bracken.
18			PB4	Cutover Bog	99705	9.97	Unfavourable - Bad	Block drain along northern boundary of old cutover at regular intervals. Fence if required to ensure that animals do not get stuck in drain. Provide grouse flight diverters on fencing if erected to reduce collision risk.
19	4010	Northern Atlantic Wet Heaths with <i>Erica tetralix</i>	HH3	Wet Heath	113523	11.35	Unfavourable - Inadequate	Hydrologically at risk from old adjoining cutover - monitor grazing pressure and shepherd accordingly.

Id	Annex I Code	Annex I Description	Fossitt Code	Habitat	Area (m)	Area (Ha)	Conservation Status	Management Measure
20	4010	Northern Atlantic Wet Heaths with <i>Erica tetralix</i>	HH3	Wet Heath	338684	33.87	Favourable	This area was previously burnt in March 2011 which may account for the regeneration of gorse in one area. Consultation will be required with NPWS regarding any burning/flailing proposals here. In general the burn must not have been too intense in this area as it was in good condition. This area has been subject to a landslide in the past.
21			PB2	Upland Blanket Bog	62430	6.24	Unfavourable - Bad	This area was badly burnt in 2001 and has still not yet recovered. The lower (northern) slopes of this area appeared to have escaped the burn. Shepherd livestock out of here to reduce pressure and allow vegetation to continue to recover.
22	4010	Northern Atlantic Wet Heaths with <i>Erica tetralix</i>	HH3	Wet Heath	193403	19.34	Unfavourable - Bad	This area was badly burnt in 2001 and has still not yet recovered. The lower (northern) slopes of this area appeared to have escaped the burn. A more recent burn was also noted (this is undocumented by NPWS) which extends down to the track. Shepherd livestock out of here to reduce pressure and allow vegetation to continue to recover. Block linear drains on these slopes at appropriate intervals to restore hydrology. Remove seeding spruce.
23	4010	Northern Atlantic Wet Heaths with <i>Erica tetralix</i>	HH3/GS4	Wet Heath/Wet Grassland	95841	9.58	Unfavourable - Bad	Bad erosion in the vicinity of the track. Some minor works by hand may be allowed by NPWS to divert the water away from these areas and prevent further peat erosion. Reseeding of bare peats with heather seed/brash recommended. Remove seeding spruce.

Id	Annex I Code	Annex I Description	Fossitt Code	Habitat	Area (m)	Area (Ha)	Conservation Status	Management Measure
24	4030		HH1/HH3/WS1/ER1	Dry Heath/Wet Heath/Scrub/Exposed Rock	145580	14.56	Unfavourable - Inadequate	Scrub clearance of gorse in this area will need to be discussed with NPWS.
25	4010	Northern Atlantic Wet Heaths with <i>Erica tetralix</i>	HH3/GS4	Wet Heath/Wet Grassland	12858	1.29	Unfavourable - Inadequate	Erosion in the vicinity of the track. Some minor works by hand may be allowed by NPWS to divert the water away from these areas and prevent further peat erosion.
26	7130*	Active Blanket Bog	PB2	Upland Blanket Bog	306297	30.63	Unfavourable - Inadequate	The bog surface has been damaged here by a quad. No further quad/scrambler access to the entire commonage should be allowed – on other commonages this has been controlled through locked gates. In general the bog is in good condition but the hydrological impacts of the cutover areas need to be considered.
27	4010	Northern Atlantic Wet Heaths with <i>Erica tetralix</i>	HH3	Wet Heath	25612	2.56	Unfavourable - Inadequate	Monitor condition and sheep grazing impacts.
28	4010	Northern Atlantic Wet Heaths with <i>Erica tetralix</i>	HH3/GS4/ER1/WS1	Wet Heath/Wet Grassland/Exposed Rock/Scrub	70876	7.09	Unfavourable - Inadequate	Some control of gorse in these lower areas was suggested by the group. Consultation will be required with NPWS regarding any clearing of scrub/burning proposals here.
29			PB4/HH3	Cutover Bog/Wet Heath	69252	6.93	Unfavourable - Inadequate	This area was badly burnt in 2001. This area was further damaged by an uncontrolled fire in March 2003 and has not yet recovered. The area was also the site of former peat cutting (now ceased) and this poses a risk to the stability of the areas of deeper peats on the slopes. Destocking and exclusion of grazing is recommended.

Id	Annex I Code	Annex I Description	Fossitt Code	Habitat	Area (m)	Area (Ha)	Conservation Status	Management Measure
30			PB4/HH3 FW1	Cutover Bog/Wet Heath Eroding upland watercourse	88011	8.80	Unfavourable - Inadequate	The area was also the site of former peat cutting (now ceased) and this poses a risk to the stability of the areas of deeper peats on the slopes. Destocking and exclusion of grazing is recommended. Consider establishing protective woodland along the watercourse.
31	4010	Northern Atlantic Wet Heaths with <i>Erica tetralix</i>	HH3	Wet Heath	162076	16.21	Unfavourable - Bad	This area was extremely badly burnt in 2001 and again in March 2003 and has still not yet recovered. The area was also the site of former peat cutting (now ceased) which has removed a significant depth of peat exposing the rocks below. There is potential significant erosion/landslide risk in this area as a result. Destocking and exclusion of grazing is recommended.

5. Appendix 1. Historic Imagery of the Granamore Commonage

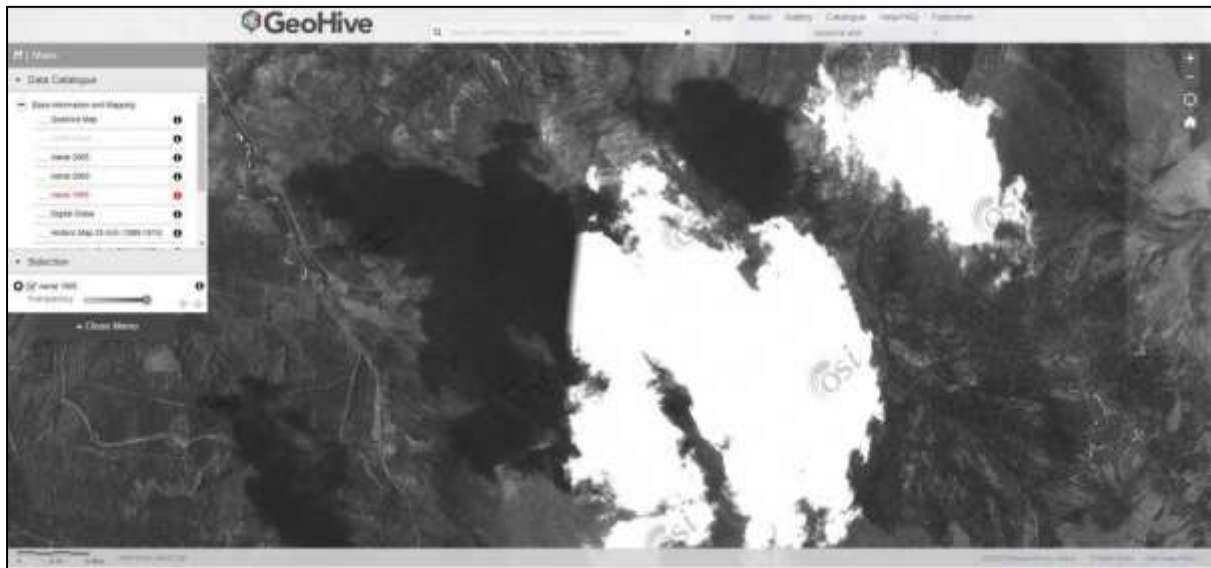


Plate 1. OSI Aerial photography 1995.



Plate 2. OSI Aerial photography 2000. (Areas of bracken clearly visible in bright green).



Plate 3. OSI Aerial photography 2005.



Plate 4. October 2009 (Source: Google Earth Image).



Plate 5. March 2010 (Source: Google Earth Image).

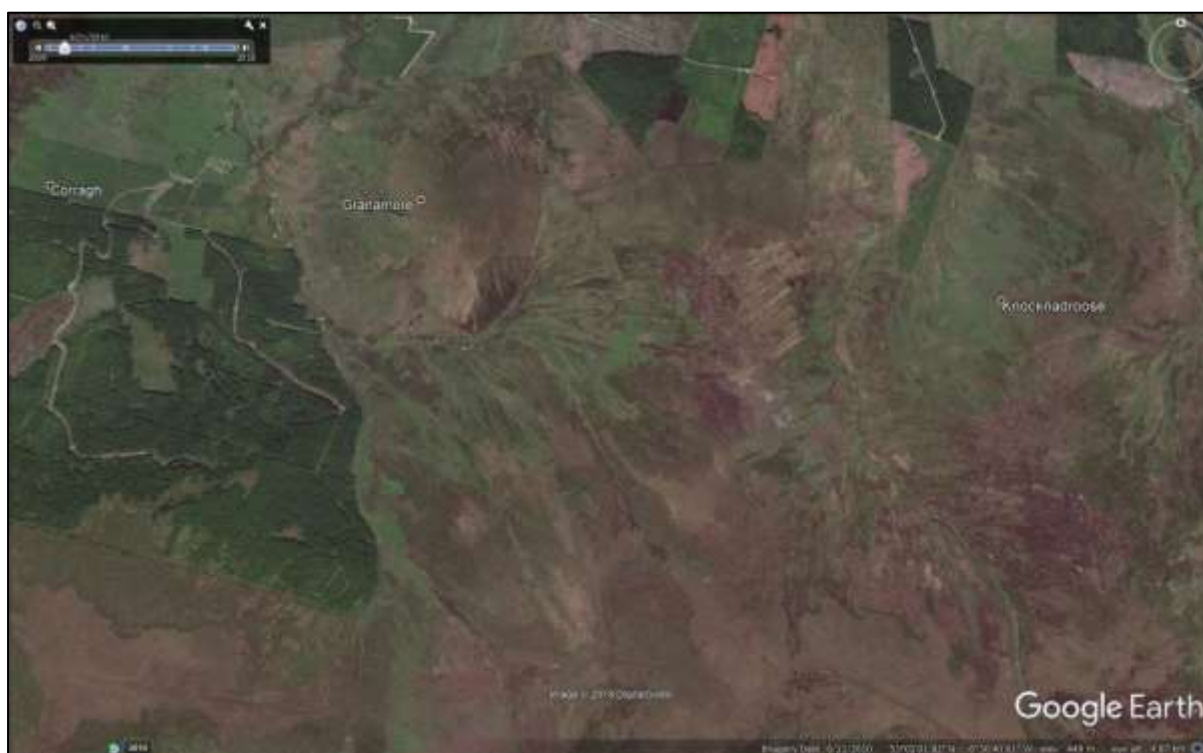


Plate 6. June 2010 (Source: Google Earth Image).



Plate 7. September 2010 (Source: Google Earth Image).



Plate 8. February 2013 (Source: Google Earth Image).



Plate 9. June 2013 (Source: Google Earth Image).



Plate 10. December 2013 (Source: Google Earth Image).



Plate 11. June 2015 (Source: Google Earth Image).

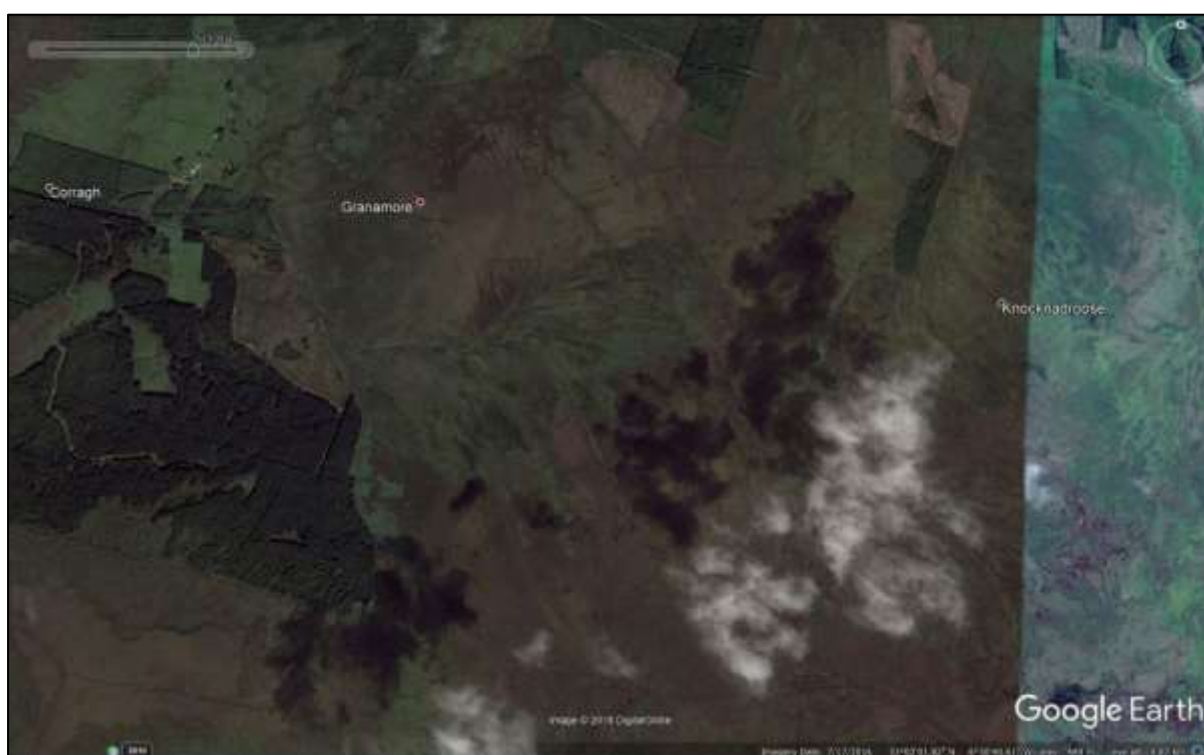


Plate 12. July 2016 (Source: Google Earth Image).



Plate 13. January 2017 (Source: Google Earth Image).



Plate 14. March 2017 (Source: Google Earth Image).



Plate 15. June 2018 (Source: Google Earth Image). Burn clearly visible.

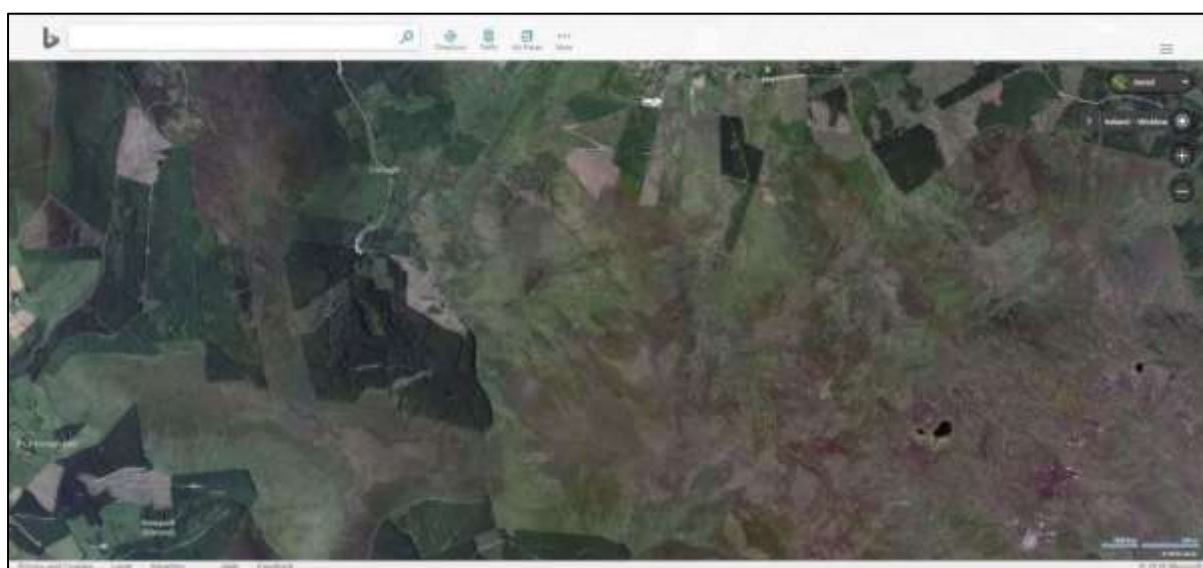


Plate 16. Undated (Source: Bing Maps).