KILBEGGAN TO MULLINGAR GREENWAY PROJECT

Split Hills & Long Hill Esker SAC Grassland Constraints Survey

IE000653-RPS-RP-XX-R-Z-0019
A1 C01
June 2025

Document status

Status	Revision	Purpose of document	Authored by	Reviewed by	Approved by	Review date
Final Draft	S3 P02	For internal review	DMcC	SMcA	GMcE	06.06.2025
Draft	S3 P01	Client Draft	DMcC	SMcA	GMcE	15.05.2025
Draft	S5 P01	2nd Survey	DMcC	SMcA	GMcE	06.06.2025
Final	A1 C01	Final	DMcC	SMcA	GMcE	06.06.2025

Approval for issue

SMcA	6 June 2025

Prepared by:

RPS

Prepared for:

Westmeath County Council

Dublin | Cork | Galway | Sligo | Kilkenny
rpsgroup.com

RPS Group Limited, registered in Ireland No. 91911
RPS Consulting Engineers Limited, registered in Ireland No. 161581
RPS Engineering Services Limited, registered in Ireland No. 99795
The Registered office of each of the above companies is West Pier Business Campus, Dun Laoghaire, Co. Dublin, A96 N6T7

Contents

Figures

Appendices

1 INTRODUCTION

1.1 Survey Introduction

RPS was commissioned by Westmeath County Council (WCC) to undertake an ecological survey for the Annex I grassland, 'semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometea*) (*important orchid sites) (6210)' within and adjacent to Split Hills and Long Hill Esker SAC (Special Area of Conservation)[1]. This Annex I grassland is referred to hereafter as Orchid-rich Calcareous Grassland [6210].

The survey is in consideration of the proposed Kilbeggan to Mullingar Greenway. In Phase 2 of the project, Options Selection, two Route Corridor Options (RCO) were identified within which the route of the greenway could be developed. Both RCO1 and RCO2 include corridors running north to south through the Split Hills and Long Hill Esker SAC. The Options Selection process also included the appraisal of a link between RCO1 and RCO2 that utilises the existing local road from the R389 regional road east over the esker toward the River Brosna. The location of the RCO1 and RCO2 is illustrated in Figure 1.1.

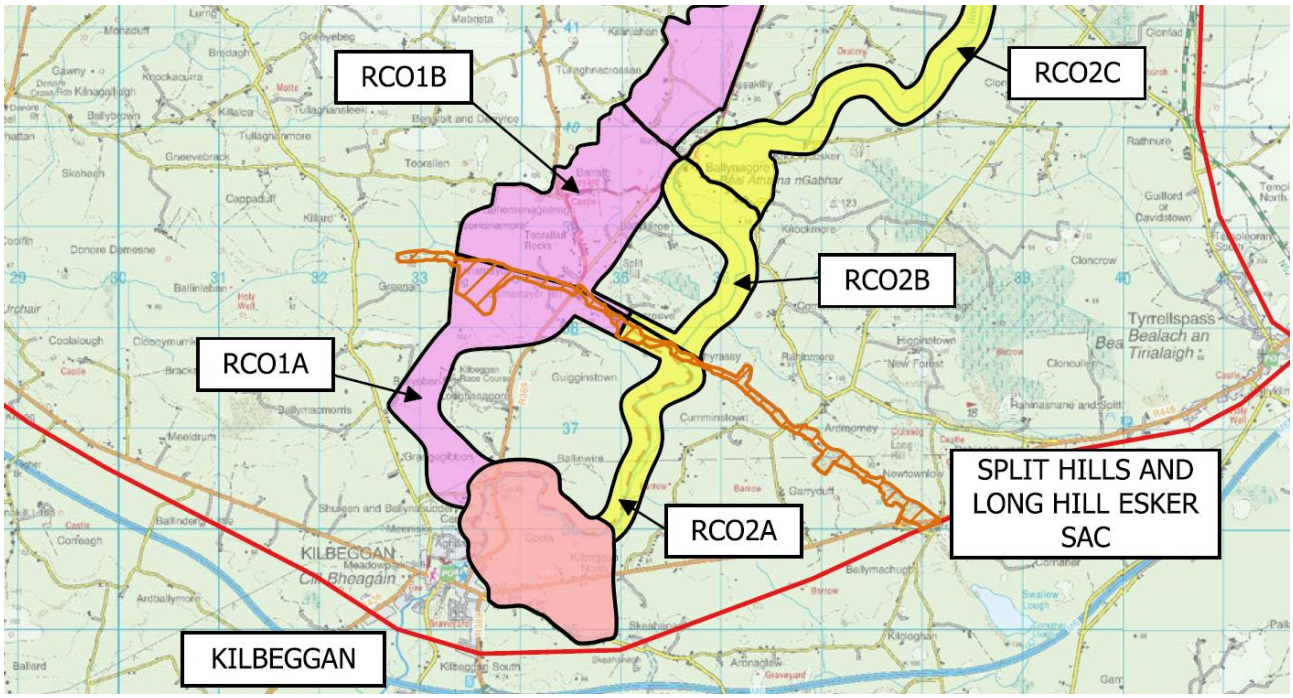


Figure 1.1 Route Corridor Options and the Split Hills and Long Hill Esker SAC

During Phase 2, it was considered necessary to carry out targeted ecological surveys at the interface between RCO2 and the esker to determine whether there is the potential for significant effects on the Qualifying Interest (QI) of the SAC from the construction of a greenway within RCO2.

The targeted ecological survey study area is illustrated in Figure 1.2 below. The purpose of the wide survey of lands extending back to the R389 was in consideration of any Orchid-rich Calcareous Grassland [6210] presenting as a constraint to any greenway infrastructure along this corridor.

The study site was surveyed over two consecutive days on the 22nd and 23rd April 2025.

A follow-up botanical survey centred on the proposed (preferred) point of access through the SAC along the River Brosna was undertaken on 30th May 2025.

[1] The asterisk '*' indicates a priority habitat, i.e. habitats which are in danger of disappearing within the European Union.

Figure 1.2 Survey Location Map

1.2 Split Hills and Long Hill Esker SAC

Orchid-rich Calcareous Grassland [6210] is a priority habitat under the Habitats Directive and is the sole QI of Split Hills and Long Hill Esker SAC. These priority habitats are in danger of disappearing within the European Union (EU) and for which the EU has a particular conservation responsibility due to the proportion of their natural range within the EU.

Split Hills and Long Hill Esker is a prominent glacial feature, 5 km long. The section of interest in this survey is that between the R389 at *Gannon Eco Ltd.* and the grassland enclosure adjoining the River Brosna indicated in Figure 1.2. The Split Hills and Long Hill Esker SAC Site Synopsis[2] and Conservation Objectives[3], as published by NPWS, are presented in Appendix A and Appendix B, respectively.

[2] Available: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY001831.pdf

[3] Available: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001831.pdf

2 METHODOLOGY

2.1 Statement of Authority

The report author and grassland surveyor, David McCormick, is a Senior Ecologist with RPS. He holds a BSc (Hons) in Physical Geography and English and an MSc in Ecological Management and Conservation Biology.

He has over thirteen years' experience of ecological field survey including Irish Vegetation Classification (IVC) and National Vegetation Classification (NVC) survey as well as mammal, amphibian, and invertebrate survey. He is also protected species license holder. David is an associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

2.2 Desk Study

2.2.1 National Biodiversity Data Centre

The National Biodiversity Data Centre's (NBDC) interactive Biodiversity Maps portal was used to identify species records within the Split Hills and Long Hill Esker SAC. Of principal interest were species of orchid recorded within the SAC. There were records for the following species:

- early purple orchid *(Orchis mascula)*
- bee orchid *(Ophrys apifera)*
- common spotted orchid *(Dactylorhiza fuchsii)*
- Common Twayblade *(Listera ovata)*
- early purple Orchid *(Orchis mascula)*
- fragrant Orchid *(Gymnadenia conopsea)*
- pyramidal Orchid *(Anacamptis pyramidalis)*

2.2.2 Irish Semi-natural Grassland Survey 2007-2012

The Irish Semi-Natural Grassland Survey (ISNGS) resulted in the botanical survey and mapping of 1,192 grassland sites covering 23,188.1 ha across the Republic of Ireland, including Co. Westmeath. This data was reviewed to determine if any of those grassland sites fell within this study area. Sites within or adjacent to the study area or wider SAC are illustrated in Figure 2.1.

Only one area or polygon (belonging to Site ID no. 2000) falls within the study area, as shown in Figure 2.1. This habitat was revisited and is discussed in the results section of this report.

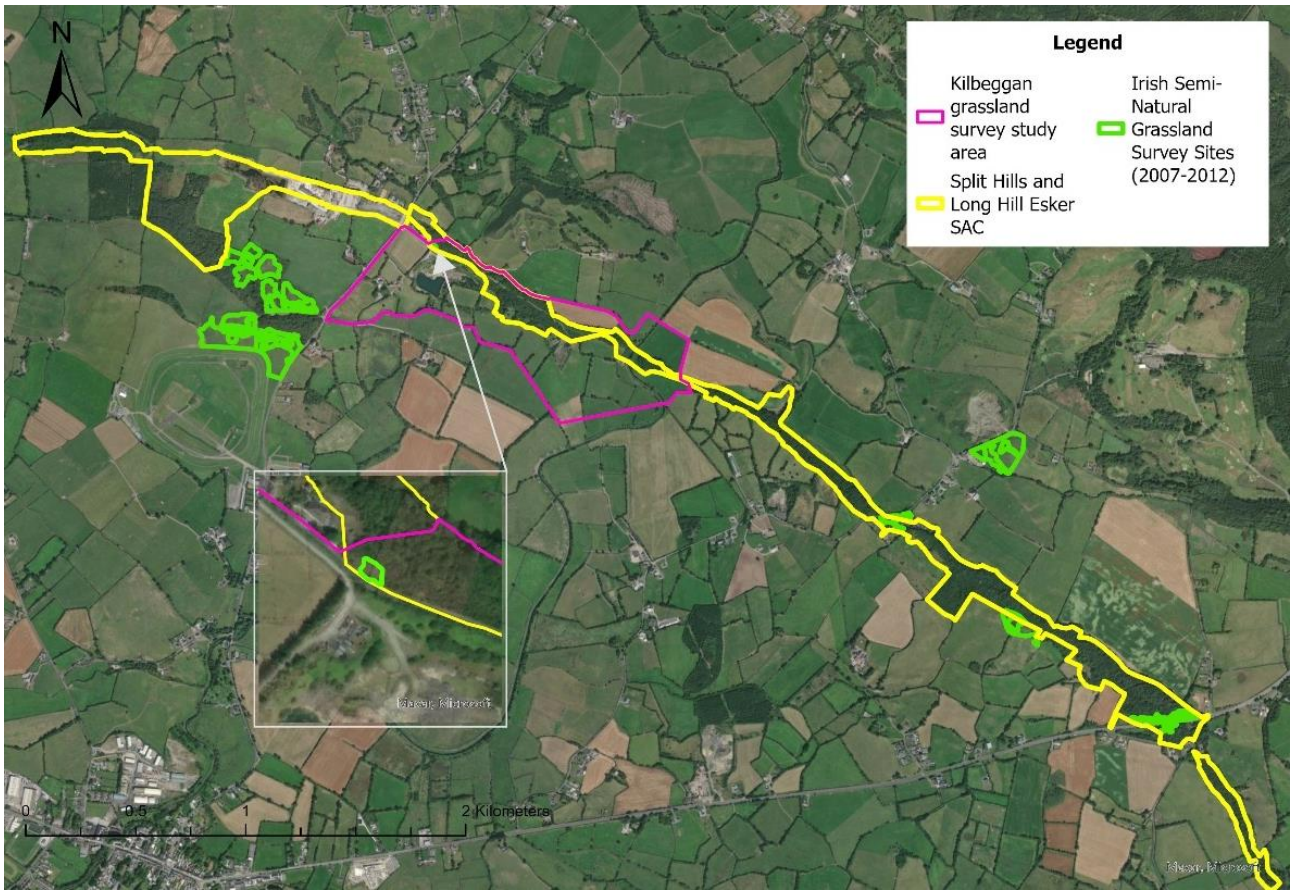


Figure 2.1 Irish Semi-Natural Grassland Survey (2007-2012) survey sites within and in proximity to the study area or wider SAC

2.3 Survey

2.3.1 Initial walkover survey - 22nd and 23rd April 2025

All the grasslands within the study area were walked in search of grassland communities resembling high nature value – Annex I grassland types and principally, Orchid-rich Calcareous Grassland [6210]. Other ecological constraints were also noted.

2.3.1.1 Assessment Criteria

The assessment criteria used to inform this constraints survey follow Martin *et. al.* (2018). Observations include the following:

- The presence/absence of the High quality and Positive indicator species.
- Percentage cover of negative indicator species.
- Vegetation structure including forb and graminoid cover.

The survey species list is provided in Appendix C.

2.3.2 Follow-up botanical survey at the River Brosna through point 30th May 2025

During the initial walkover survey the grassland at the proposed point of access through the SAC was found to bear no resemblance to Orchid-rich Calcareous Grassland [6210] or indeed any other high nature value grassland community. The open grassland immediately east of the river had the appearance of improved grassland and had been seemingly recently cultivated/re-seeded.

However, as a precaution, the habitat was re-surveyed when the growing season was more advanced in late May. A more detailed botanical survey was undertaken comprising four 2 x 2 m quadrats representative of the principal communities present either side of the River Brosna.

The results of that survey are summarised in Section 3 below. The quadrat locations, photographic plates, species and cover are presented in Appendix D of this report.

3 RESULTS

The survey findings are discussed below and illustrated in Figure 3.1.

3.1 SAC grassland at the River Brosna

3.1.1 Initial walkover survey - 22nd and 23rd April 2025

The grassland immediately east of the River Brosna had the appearance of improved grassland that had been, relatively recently, cultivated or reseeded. There were no residual positive indicator species or assemblages of such that could be attributed to Orchid-rich Calcareous Grassland [6210] either within the SAC or the wider, non-designated field enclosure.

Immediately west of the river the habitat narrows and is characterized by considerable bare ground arising from passing machinery and livestock being corralled through this narrow channel.

These areas are pictured in plates 1a – 1c shown in Section 4.

3.1.2 Follow-up botanical survey at the River Brosna through point - 30th May 2025

A botanical survey of the SAC grassland immediately east of the river confirmed the absence of Orchid-rich Calcareous Grassland [6210] or other high nature value grassland. The grassland here is improved agricultural grassland (GA1) in accordance with Fossitt (2000). It appears to have been cultivated/reseeded in the recent past. It best resembles Irish Vegetation Classification (IVC) community Perennial Rye-grass – White Clover grassland (GL3B) (NBDC, 2025).

Immediately west of the river the habitat here is more broadly disturbed ground as opposed to grassland. What grassland does exist is confined to the edge of the woodland and riverbank as pictured in Appendix D. It is improved agricultural grassland (GA1) and bare ground (ED2) in accordance with Fossitt (2000). It is modified by the pressures of bovines and other livestock passing through this narrow channel as well as farm machinery.

The quadrat locations, photographic plates, species and cover are presented in Appendix D of this report.

3.2 Wider Study Area – 22nd and 23rd April 2025

3.2.1 Probable qualifying [6210] Annex I grassland

Probable qualifying Orchid-rich Calcareous Grassland [6210] was recorded at two locations.

- The area nearer the R389 was surveyed in the ISNGS (2007 – 2012) and was identified then as qualifying [6210] Annex I grassland. Note also the black arrow (on Figure 3.1) indicating unmapped probable qualifying [6210] Annex I grassland along the existing track further east of here.
- The second area is a narrow band of [6210] Annex I grassland c. 30 m west of the River Brosna within the SAC. This grassland transitions abruptly into improved grassland.

Both mapped grasslands are illustrated in Figure 3.1 and pictured in plates 2a and 2b in Section 4.

Should any works be proposed in the vicinity of these grasslands or the unmapped track edge grassland, further assessment is required.

3.2.2 Potential qualifying [6210] Annex I grassland

Some grassland resembling [6210] Annex I grassland within and adjoining the SAC occurs in the centre of the study area.

They are mapped in Figure 3.1 as degraded' SAC or Non-SAC. These grasslands are marred by high abundances of negative indicator species and as such may fail qualifying assessment.

Should any works be proposed in the vicinity of these grasslands, further assessment is required.

3.2.3 Abandoned quarries

Grassland resembling [6210] Annex I grassland is patchily present within each of the two abandoned quarries. Early purple orchid *(Orchis mascula)* and basal rosettes of bee orchid *(Ophrys apifera)* and common fragrant orchid *(Gymnadenia conopsea)* were recorded during the survey.

Further assessment is required if works are proposed in these features.

Other constraints in these features are potential presence of smooth newt *(Lissotriton vulgaris)* as suitable breeding ponds are present.

Also, there is the potential presence of marsh fritillary butterfly *(Euphydryas aurinia)* as high abundances of devils bit scabious *(Succisa pratensis)*, the larval food plant of this species, is present on the floor of the smaller of the two quarries.

Common lizard *(Zootoca vivipara)* was recorded during survey in the larger quarry.

Targeted survey for these protected species is a likely requirement if these abandoned quarries are impacted by the proposed scheme.

3.2.4 Other potential high nature value / Annex I grassland

The non-SAC grassland enclosures along the R389 have the appearance of high nature value grassland and resemble (in places) Annex I grassland types – Orchid-rich Calcareous Grassland [6210] and [6510] Lowland Hay Meadows. Those resembling lowland hay meadows may be sown species rich grassland swards.

Further assessment is required if works are proposed in these enclosures.

3.2.5 Badger setts

Several badger setts were found within the study area including a main breeding sett. These are indicated on a separate (issued) constraints map and should **not** be released into the public domain.

Badger *(Meles meles)* are a protected species as are their setts. There is a high density of setts in the locality and the larger, higher order setts and may represent a significant constraint should any works need to occur in their place.

Further assessment/ survey is required to ascertain the status of any affected sett(s), i.e. outlier, subsidiary, annex or main sett.

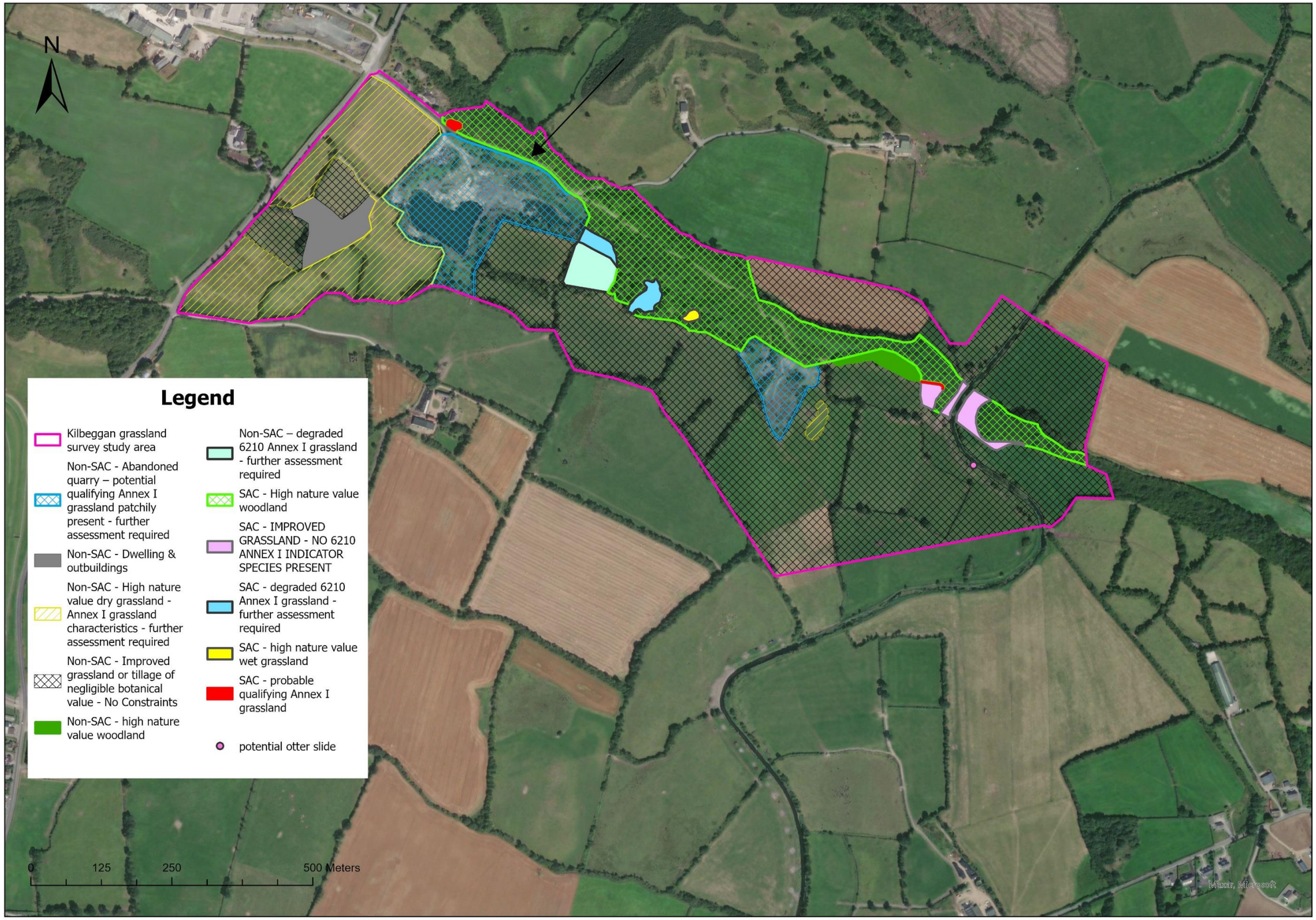


Figure 3.1 Grassland (and mammal) Constraints Map

4 PLATES

Plate 1a showing the non – Annex improved grassland adjoining the River Brosna (west of)

Plate 1b showing the non – Annex improved grassland adjoining the River Brosna (east of)

Plate 1c showing the non – Annex improved grassland adjoining the River Brosna (east of) and the continuation of the wooded esker ridge

Plate 2a showing probable qualifying (6210) Annex I grassland along the existing track / Westmeath Way approaching the R389.

Plate 2b showing the narrow band of probable Annex I grassland within the SAC c. 30 m west of the River Brosna

Plate 3 showing the basal rosette of bee orchid recorded in the larger abandoned quarry

Plate 4 showing the smaller abandoned quarry with patches of high nature value scrub and grassland

5 CONCLUSION

The designated grassland along the River Brosna at the intersection between RCO2 and the Split Hills and Long Hill Esker SAC is highly modified, improved agricultural grassland of negligible ecological value. There are no Annex I grassland communities present.

If any works are proposed across the wider study area from the River Brosna extending west to the R389, further ecological constraints will need to be considered. These include:

- probable qualifying Orchid-rich Calcareous Grassland [6210] as well as degraded forms of this habitat.
- potential high nature value grassland / Annex I grassland identified along the R389.
- protected fauna – smooth newt, badger, marsh fritillary butterfly, and common lizard.

6 REFERENCES

Fossitt, J.A. (2000) A Guide to Habitats in Ireland. The Heritage Council, Kilkenny.

NBDC (2025) Irish Vegetation Classification, Community Synopses [online] available at: https://biodiversityireland.ie/projects/ivc-classification-explorer/ [accessed 04 June 2025]

Martin, J.R., O'Neill, F.H. & Daly, O.H. (2018) The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats. Irish Wildlife Manuals, No. 102. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

Appendix A
Split Hills and Long Hill Esker SAC Site Synopsis

SITE SYNOPSIS

Site Name: Split Hills and Long Hill Esker SAC

Site Code: 001831

Split Hills and Long Hill Esker is a 5 km long site which crosses the main Galway-Dublin road mid-way between Kilbeggan and Tyrrellspass in Co. Westmeath. It is a prominent feature on the local landscape.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[6210] Orchid-rich Calcareous Grassland*

The main habitat at this site is semi-natural woodland dominated by Hazel (*Corylus avellana*), Ash (*Fraxinus excelsior*) and Hawthorn (*Crataegus monogyna*). Pedunculate Oak (*Quercus robur*), Wych Elm (*Ulmus glabra*) and Irish Whitebeam (*Sorbus hibernica*) are other important constituents. There are very fine examples of these trees throughout the site, with some of the Hazel trees, in particular, being impressive. The ground flora is species-rich and includes Primrose (*Primula vulgaris*), Enchanter's-nightshade (*Circaea lutetiana*), Golden-saxifrage (*Chrysosplenium oppositifolium*), Bluebell (*Hyacinthoides non-scripta*), Ground-ivy (*Glechoma hederacea*), Sanicle (*Sanicula europaea*) and other typical woodland plants. The scarce woodland grass, Wood Fescue (*Festuca altissima*), is present, and the scarce Bird's-nest Orchid (*Neottia nidus-avis*) has also been recorded here. The presence of Wych Elm is interesting in view of its decline due to Dutch elm disease.

Several areas of species-rich calcareous grassland occur, with typical calcicole species such as Yellow-wort (*Blackstonia perfoliata*), Carline Thistle (*Carlina vulgaris*), Mountain Everlasting (*Antennaria dioica*) and Early-purple Orchid (*Orchis mascula*). These occur on unstable old and active quarry faces, and on cleared woodland areas.

Areas of scrub with Blackthorn (*Prunus spinosa*) and Gorse (*Ulex europaeus*) occur, and regenerating Hazel scrub exists in some areas where woodland has been cleared. Other habitats in the site include a small lake and freshwater marsh with Slender Sedge (*Carex lasiocarpa*).

Narrow-leaved Bitter-cress (*Cardamine impatiens*) occurs among the woodland flora at this site. It is an annual or biennial, whose populations are known to 'disappear' in some years only to 'reappear' again. The species is protected under the Flora (Protection) Order, 1999, and this is its only known location in Ireland. Another legally protected species, Red Hemp-nettle (*Galeopsis angustifolia*), occurs on more open ground on the esker.

The main threat to the esker is quarrying for sand and gravel. This activity already occurs on the site at several locations. Grazing is a critical factor affecting esker habitats, and getting a balance right is important. The presence of too many grazers causes damage to the ground vegetation in both woodlands and grasslands and prevents regeneration of woody species. However, if the grazing level is too low, grasslands are vulnerable to the encroachment of scrub at the expense of species which require open conditions. Fertiliser application, associated with agricultural improvement, also leads to a reduction in species-richness of grasslands.

Split Hill and Long Hill Esker is one of the finest and longest wooded eskers in the country. It is also one of the few woodlands in the area and a fine geomorphological feature of great scenic value. The trees are particularly well-grown and impressive, and much of the woodland has developed naturally on its steep slopes. The presence of a species-rich ground flora, which includes a rare and legally protected plant species at its only known Irish location, makes this site of great botanical and ecological importance. The site also supports some excellent examples of calcareous grassland which is rich in orchids. The increasing rarity of this habitat (due to agricultural intensification) is recognised in that it is awarded priority status on Annex I of the E.U. Habitats Directive.

Appendix B
Split Hills and Long Hill Esker SAC Conservation Objectives

ISSN 2009-4086

National Parks and Wildlife Service

Conservation Objectives Series

Split Hills and Long Hill Esker SAC 001831

An Roinn Cultúir,
Oidhreachta agus Gaeltachta
Department of Culture,
Heritage and the Gaeltacht

National Parks and Wildlife Service,
Department of Culture, Heritage and the Gaeltacht,

90 King Street North, Dublin 7, D07 N7CV, Ireland.

Web: www.npws.ie
E-mail: nature.conservation@chg.gov.ie

Citation:

NPWS (2018) Conservation Objectives: Split Hills and Long Hill Esker SAC 001831. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

Series Editor: Rebecca Jeffrey
ISSN 2009-4086

Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area 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 favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

Qualifying Interests

**** indicates a priority habitat under the Habitats Directive***

001831	Split Hills and Long Hill Esker SAC

6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)

Supporting documents, relevant reports & publications

Supporting documents, NPWS reports and publications are available for download from: www.npws.ie/Publications

NPWS Documents

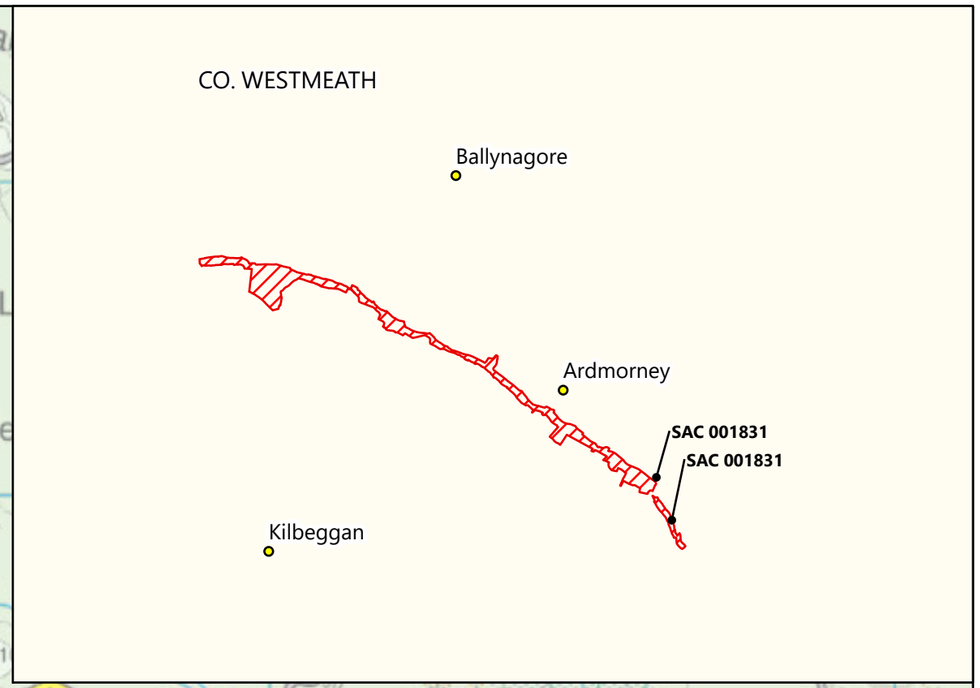
Year :	2007
Title :	Grasslands monitoring project 2006
Author :	Dwyer, R.; Crowley, W.; Wilson, F.
Series :	Unpublished report to NPWS
Year :	2013
Title :	Irish semi-natural grasslands survey 2007-2012
Author :	O'Neill, F.H.; Martin, J.R.; Devaney, F.M.; Perrin, P.M.
Series :	Irish Wildlife Manual No. 78
Year :	2013
Title :	Irish semi-natural grasslands survey annual report No. 5: Leinster (except Offaly, Longford, Dublin and Kildare)
Author :	Martin, J.R.; Devaney, F.M.; O'Neill, F.H.; Delaney, A.
Series :	Unpublished report to NPWS
Year :	2016
Title :	Ireland Red List No. 10: Vascular Plants
Author :	Wyse Jackson, M.; FitzPatrick, Ú.; Cole, E.; Jebb, M.; McFerran, D.; Sheehy Skeffington, M.; Wright, M.
Series :	Ireland Red Lists series, NPWS

6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)

To restore the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) in Split Hills and Long Hill Esker SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	The current total area of semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) in Split Hills and Long Hill Esker SAC is unknown. The habitat was surveyed as part of the Irish Semi-natural Grassland Survey (ISGS) (Martin et al., 2013; O'Neill et al., 2013) within the sub-sites Toorlisnamore (ISGS site code 2000), where the habitat is found on steeper esker slopes, and Ballymachugh (ISGS site code 2001). In the latter sub-site, the habitat occurs on steeper esker slopes with thin skeletal soils at the southern end of the esker (north and south of the road) and at the northern end in an old quarry. Further areas of the habitat in the SAC were also surveyed by Dwyer et al. (2007) as part of the Grassland Monitoring Project 2006
Habitat distribution	Occurrence	No decline, subject to natural processes	See the notes for Habitat area above
Vegetation composition: positive indicator species	Number at a representative number of 2m x 2m monitoring stops	At least seven positive indicator species present, including two "high quality" species	Attribute and target based on O'Neill et al. (2013) where the list of positive indicators, including high quality species, identified by the ISGS is presented. High quality indicators recorded by the ISGS in the habitat in the SAC include quaking grass (*Briza media*), carline thistle (*Carlina vulgaris*), spring sedge (*Carex caryophyllea*), fairy flax (*Linum catharticum*) and cowslip (*Primula veris*) and positive indicators include hairy oat-grass (*Helictotrichon pubescens*), common bird's-foot trefoil (*Lotus corniculatus*), marjoram (*Origanum vulgare*) and bulbous buttercup (*Ranunculus bulbosus*) (Martin et al., 2013; O'Neill et al., 2013). The Flora (Protection) Order, 2015 listed and Vulnerable red hemp-nettle (*Galeopsis angustifolia*) (Wyse Jackson et al., 2016) has been recorded on more open ground on the esker (NPWS internal files), but cannot be specifically assigned to this habitat
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Negative indicator species collectively not more than 20% cover, with cover by an individual species not more than 10%	Attribute and target based on O'Neill et al. (2013), where the list of negative indicator species is also presented
Vegetation composition: non-native species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of non-native species not more than 1%	Attribute and target based on O'Neill et al. (2013)
Vegetation composition: woody species and bracken	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of woody species (except certain listed species) and bracken (*Pteridium aquilinum*) not more than 5% cover	Woody species that can occur above 5% cover are juniper (*Juniperus communis*), burnet rose (*Rosa spinosissima*), mountain avens (*Dryas octopetala*) and hoary rock-rose (*Helianthemum oelandicum*). However, cover of these species above 25% may indicate transition to another Annex I habitat such as Alpine and Boreal heaths (4060) or *Juniperus communis* formations (5130). Attribute and target based on O'Neill et al. (2013)

Vegetation structure: broadleaf herb:grass ratio	Percentage at a representative number of 2m x 2m monitoring stops	Broadleaf herb component of vegetation between 40% and 90%	Attribute and target based on O'Neill et al. (2013)
Vegetation structure: sward height	Percentage at a representative number of 2m x 2m monitoring stops	At least 30% of sward between 5cm and 40cm tall	Attribute and target based on O'Neill et al. (2013)
Vegetation structure: litter	Percentage cover at a representative number of 2m x 2m monitoring stops	Litter cover not more than 25%	Attribute and target based on O'Neill et al. (2013)
Physical structure: bare soil	Percentage cover at a representative number of 2m x 2m monitoring stops	Not more than 10% bare soil	Attribute and target based on O'Neill et al. (2013)
Physical structure: disturbance	Area in local vicinity of a representative number of monitoring stops	Area of the habitat showing signs of serious grazing or other disturbance less than $20m^2$	Attribute and target based on O'Neill et al. (2013)



Legend

Split Hills and Long Hill Esker SAC 001831

An Roinn Cultúir, Oidhreachta agus Gaeltachta
Department of Culture, Heritage and the Gaeltacht

MAP 1:
SPLIT HILLS AND LONG HILL ESKER SAC
CONSERVATION OBJECTIVES
SAC DESIGNATION

Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE:
SAC 001831; version 3. CO. WESTMEATH

0 0.2 0.4 0.6 0.8 1 km

N

Map Version 1
Date: June 2018

Appendix C
Initial Wider Survey Species List

Semi-natural dry grasslands & scrub facies on calcareous substrates (6210); important orchid sites (*6210)

High Quality Positive Indicator Species

mountain everlasting *Antennaria dioica*

yellow-wort *Blackstonia perfoliata*

carline thistle *Carlina vulgaris*

fairy flax *Linum catharticum*

kidney vetch *Anthyllis vulneraria*

field scabious *Knautia arvensis*

salad burnet *Sanguisorba minor*

cowslip *Primula veris*

Orchids early purple orchid Orchis mascula, bee orchid Ophrys apifera, common fragrant orchid *Gymnadenia conopsea*

Positive Indicator Species

wild thyme *Thymus polytrichus*

wild carrot *Daucus carota*

lady's bedstraw *Galium verum*

mouse-ear-hawkweed *Pilosella officinarum*

birdsfoot trefoil *Lotus corniculatus*

rough/lesser hawkbit *Leontodon hispidus / L. saxatilis*

Pleurocarpous moss *Ctenidium molluscum*

Negative Indicator Species

false oatgrass Arrhenatherum elatius

creeping thistle Cirsium arvense

spear thistle Cirsium vulgare

common ragwort Senecio jacobaea

common nettle Urtica dioica

white clover Trifolium repens

Other recorded species

wild strawberry *Fragaria vesca*

self-heal *Prunella vulgaris*

daisy *Bellis perennis*

common centaury *Centaurium erythraea*

tormentil *Potentilla erecta*

weld *Reseda luteola*

devilsbit scabious *Succisa pratensis*

common knapweed *Centaurea nigra*

creeping cinquefoil *Potentilla reptans*

dandelion *Taraxacum officinale agg.*

Milkwort *Polygala spp.*

Catsear *Hypochaeris radicata*

coltsfoot *Tussilago farfara*

red fescue *Festuca rubra*

sweet vernal grass *Anthoxanthum odoratum*

greater plantain *Plantago major*

St. John's Worts *Hypericum spp.*

Field-wood rush *Luzula campestris*

Yarrow Achillea *millefolium*

a lady's mantle *Alchemilla spp.*

a violet *Viola sp.*

Unidentified vetches

neat feathermoss *Pseudoscleropodium purum*

Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) (6510)

High Quality Positive Indicator Species

Yellow Rattle *Rhinanthus minor*

ox-eye daisy *Leucanthemum vulgare*

Positive Indicator Species

meadowsweet *Filipendula ulmaria*

meadow foxtail *Alopecurus pratensis*

red clover *Trifolium pratense*

common hogweed *Heracleum sphondylium*

meadow buttercup *Ranunculus acris*

ribwort plantain *Plantago lanceolata*

meadow vetchling *Lathyrus pratensis*

common knapweed *Centaurea nigra*

birdsfoot trefoil Lotus corniculatus

rough/lesser hawkbit *Leontodon hispidus / L. saxatilis*

Negative Indicator Species

cock's-foot *Dactylis glomerata*

false oatgrass *Arrhenatherum elatius*

creeping thistle *Cirsium arvense*

spear thistle *Cirsium vulgare*

common ragwort *Senecio jacobaea*

common nettle *Urtica dioica*

white clover *Trifolium repens*

Other recorded species

sweet vernal grass *Anthoxanthum odoratum*

Yorkshire fog *Holcus lanatus*

germander speedwell *Veronica chamaedrys*

common mouse-ear *Cerastium fontanum*

common sorrel *Rumex acetosa*

cuckooflower *Cardamine pratensis*

dandelion *Taraxacum officinale* agg.

creeping buttercup *Ranunculus repens*

yarrow *Achillea millefolium*

pignut *Conopodium majus*

pointed spear-moss *Calliergonella cuspidata*

Appendix D
River Brosna SAC Grassland Botanical Survey – Update June 2025 (Quadrats)

Botanical Survey Data

Figure 1 Quadrat locations

Quadrat Species and % Cover

Q1	ITM 0635520 0737721
Species	**% cover**
cock's-foot *Dactylis glomerata*	15
perennial ryegrass *Lolium perenne*	35
soft-brome *Bromus hordeaceus*	< 4 a few individuals
rough meadow-grass *Poa trivialis*	45
common mouse-ear *Cerastium fontanum*	5
red clover *Trifolium pratense*	+
dandelion *Taraxacum officinale* agg.	< 4 several individuals
Bare ground	0
Vegetation	100

'+' indicates a just a single individual

Q2	ITM 0635518 0737750
Species	**% cover**
soft-brome *Bromus hordeaceus*	15
cock's-foot *Dactylis glomerata*	15
Yorkshire fog *Holcus lanatus*	25
rough meadow-grass *Poa trivialis*	< 4 a few individuals
perennial ryegrass *Lolium perenne*	55
dandelion *Taraxacum officinale* agg.	< 4 many individuals
daisy *Bellis perennis*	4
common mouse-ear *Cerastium fontanum*	< 4 many individuals
creeping cinquefoil *Potentilla reptans*	+
creeping buttercup *Ranunculus repens*	+
lesser trefoil *Trifolium dubium*	< 4 a few individuals
Bare ground	2
Vegetation	98

Q3	ITM 0635495 0737763
Species	**% cover**
annual meadow grass *Poa annua*	4
rough meadow-grass *Poa trivialis*	< 4 a few individuals
creeping bent *Agrostis stolonifera*	< 4 many individuals
greater plantain *Plantago major*	18
white *clover Trifolium repens*	< 4 a few individuals
dandelion *Taraxacum officinale* agg.	+
Pineappleweed *Matricaria discoidea*	< 4 a few individuals
Bare ground	78
Vegetation	22

Q4	ITM 0635511 0737785
Species	**% cover**
hairy brome *Bromopsis ramosa*	+
coarse tussock forming grass no ID	+
Yorkshire fog *Holcus lanatus*	< 4 many individuals
perennial ryegrass *Lolium perenne*	4
meadow grasses *Poa* spp.	15
greater plantain *Plantago major*	< 4 a few individuals
white clover *Trifolium repens*	15
common mouse-ear *Cerastium fontanum*	< 4 a few individuals
dandelion *Taraxacum officinale* agg.	< 4 a few individuals
common feather-moss *Kindbergia praelongum*	< 4 many individuals
Bare ground	25
Vegetation	75

Plates

Plate A showing Q1

Plate B showing Q2

Plate C showing Q3

Plate D showing Q4

Plate E showing improved agricultural grassland in the SAC east to the Brosna (Qs 1 and 2)

Plate F showing the bare ground and improved grassland edges within the SAC, immediately west of the Brosna (Qs 3 and 4)