



APPENDIX 6-1

BOTANICAL STUDY

Botanical Study - Table of Contents

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1. INTRODUCTION

As described in Section 6.4.3.2 of Chapter 6 of this EIAR, detailed habitat classification and assessment was undertaken by MKO at targeted locations within the development footprint, with relevés undertaken on the 08th May 2020, 22nd May 2020, 22nd July 2020, 4th September 2020 within representative habitats at each turbine base and associated infrastructure. Habitat verification surveys were subsequently carried out on the 30th March 2021 to ensure habitat composition remained the same as previous surveys.

1.1 Statement of Authority

The habitat surveys to inform this assessment were undertaken by David McNicholas (BSc., MSc., MCIEEM), Patrick Ellison (B.Sc., MSc., ACIEEM) and Katie Pender (B.Sc.).

All surveyors have relevant academic qualifications and experience in botanical survey and assessment and are competent experts in undertaking the ecological surveys to inform the habitat classification.

2. SURVEY METHODOLOGY

A total of 23 detailed relevés were undertaken within the construction footprint or representative habitats within the proposed development site and wider area within the landownership. The location of each is provided on Figure 6-3, Chapter 6 of this EIAR.

Detailed habitat classification and assessment was undertaken by MKO at targeted locations within the development footprint, with relevés undertaken on the 08th May 2020, 22nd May 2020, 22nd July 2020, 4th September 2020 within habitats representative of those at each turbine base and associated infrastructure. Habitat verification surveys were subsequently carried out on the 30th March 2021 to ensure habitat composition remained the same as previous surveys. The extent of each habitat on site was mapped on site using aerial photography, hand-held GPS and smartphone technology. A representative photograph was also taken for each of the habitats recorded on site, including all quadrat locations.

The survey results were then analysed in accordance the Irish Vegetation Classification (IVC) system. The IVC is a project with aims to classify, describe, and map in detail all aspects of natural and semi-natural vegetation in Ireland within a single, unified framework. The National Vegetation Database (NVD), upon which the IVC is based, holds data for over 30,000 relevés and is the core resource upon which the classification system is based.

A fundamental requirement of the IVC is to “aid in definition and identification of EU Habitat Directive (92/43/EEC) Annex I habitats” and to ‘inform the planning process, for example through environmental impact assessments’.

The Engine for Relevés to Irish Communities Assignment (ERICA)¹ is a web application for assigning vegetation data to communities defined by the Irish Vegetation Classification (IVC). Data can be

¹ Perrin, 2019, ERICA – Engine for Relevés to Irish Communities Assignment V5.0 User’s Manual, Online, Available at: https://biodiversityireland.shinyapps.io/vegetation-classification/_w_9cd4889a/manual.pdf, Accessed: 10.10.2020.

uploaded, checked for errors and analysed and the results can then be downloaded. ERICA works with both quantitative vegetation cover data (such as are recorded in relevés and other types of botanical recording plots) and presence/absence data, such as species lists. ERICA covers grasslands, woodland, duneland, heaths, bogs, fens, mires, freshwater, saline waters, rocky habitats, scrub, strandline, saltmarsh and weed communities (Perrin, 2019).

The data collected from the botanical assessments was uploaded to ERICA, analysed and the results data downloaded.

The analysis procedure uses a clustering process to assign classification affinity to vegetation plots based on a degree of membership to each of the communities defined by the IVC. Table 6-2 details the categorizing types of plots utilizing the clustering analysis. This categorizing procedure was utilized to determine if the grassland plots within the study area had any affinity to Annex I grassland and whether further assessment was required.

Table 1: Categorising types of plots using clustering analysis (after Wiser & de Cáceres, 2013).

Plot Type	Definition
Assigned	The plot has membership ≥ 0.5 for one of the vegetation communities and therefore relates to the core definition of that vegetation community.
Unassigned	The plot has membership ≥ 0.5 for the noise class and is poorly represented by the current classification scheme
Transitional	The plot has membership < 0.5 for all vegetation communities and for the noise class. It falls within the scope of the current classification scheme but does not relate to the core definition of any of the vegetation communities.

Habitats considered to be of ecological significance and in particular having the potential to correspond to those listed in Annex I of the EU Habitats Directive 92/43/EEC were identified and classified as Key Ecological Receptors (KERs).

The data within the following tables pertains to these detailed vegetation and habitat surveys undertaken for the purposes of habitat classification and assessment of ecological value of grassland habitats within the proposed development site.

NB. Detailed information on quadrat data has only been provided below for areas of grassland where the habitat potentially corresponded to an Annex 1 community, or where habitat classification was less clear. Species lists for areas that obviously represented improved agricultural grassland from the quadrat data have not been provided below.

* *Where habitat classification marked in this way, this is a very species-rich grassland community of which most examples correspond with the priority EU HD Annex I habitat 6210 Orchid-rich calcareous grassland.

3.

RESULTS

3.1

Quadrat 1 (08.05.2020)

Quadrat 1	Grid Reference: ITM 0587858 0742748	Date: 08.05.2020
Common Name	Scientific Name	% Cover
Cat's ear	<i>Hypochaeris radicata</i>	2

Field wood rush	<i>Luzula campestris</i>	2
Dandelion	<i>Taraxacum officinale agg</i>	2
Vernal sedge	<i>Carex caryophyllea</i>	3
Tormentil	<i>Potentilla erecta</i>	3
Wild thyme	<i>Thymus polytrichus</i>	3
White clover	<i>Trifolium repens</i>	3
Violet	<i>Viola riviniana reichenbachiana</i>	3
Early Purple Orchid	<i>Orchis mascula</i>	3
Upright brome	<i>Bromopsis erecta</i>	5
Bird's foot-trefoil	<i>Lotus corniculatus</i>	5
Ribwort plantain	<i>Plantago lanceolata</i>	5
Self-heal	<i>Prunella vulgaris</i>	5
Lady's bedstraw	<i>Galium verum</i>	7
Yorkshire fog	<i>Holcus lanatus</i>	7
Rough hawkbit	<i>Leontodon hispidus</i>	7
Blackthorn	<i>Prunus spinosa</i>	7
Crested dog's tail	<i>Cynosurus cristatus</i>	10
Yarrow	<i>Achillea millefolium</i>	15
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	15
Knapweed	<i>Centaurea nigra</i>	15
	<i>Pleurozium schreberi</i>	60
Habitat Classification as per the Irish Vegetation Classification (IVC)		Cynosurus cristatus – Trifolium pratense grassland (GL3D)**
Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**	



Plate 6-1-1: *Cynosurus cristatus* – *Trifolium pratense* grassland (GL3D) transitional to *Briza media* – *Thymus polytrichus* grassland (GL3A) with a notable number of Early Purple Orchid (*Orchis mascula*) at the location of Quadrat 1.

3.2

Quadrat 2 (08.05.2020)

Quadrat 2	Grid Reference: ITM 0588206 0742413	Date: 08.05.2020
Common Name	Scientific Name	% Cover
Blackthorn	<i>Prunus spinosa</i>	0.5
Creeping buttercup	<i>Ranunculus repens</i>	0.5
Field chickweed	<i>Cerastium arvense</i>	0.5
Herb Robert	<i>Geranium robertianum</i>	0.5
Bugle	<i>Ajuga reptans</i>	0.5
Bracken	<i>Pteridium aquilinum</i>	0.5
Field wood rush	<i>Luzula campestris</i>	1
Dandelion	<i>Taraxacum officinale agg</i>	1
Violet	<i>Viola riviniana reichenbachiana</i>	1
Early Purple Orchid	<i>Orchis mascula</i>	1
Glaucous sedge	<i>Carex flacca</i>	1
Tormentil	<i>Potentilla erecta</i>	2
Vernal sedge	<i>Carex caryophyllea</i>	2
Daisy	<i>Bellis perennis</i>	2
Soft brome	<i>Bromus hordeaceus</i>	2
Blue moor grass	<i>Sesleria caerulea</i>	2
Green-ribbed sedge	<i>Carex binervis</i>	2
Yarrow	<i>Achillea millefolium</i>	3
Ribwort plantain	<i>Plantago lanceolata</i>	3
St. John's Wort	<i>Hypericum perforatum</i>	3
Carline thistle	<i>Carlina vulgaris</i>	3
Rough Hawkbit	<i>Leontodon hispidus</i>	5
Common knapweed	<i>Centaurea nigra</i>	5
Mountain Everlasting	<i>Antennaria dioica</i>	5
Red fescue	<i>Festuca rubra</i>	5
	<i>Cladonia convoluta</i>	7
Cat's-ear	<i>Hypochaeris radicata</i>	10
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	10
Bird's foot-trefoil	<i>Lotus corniculatus</i>	10
Crested dog's tail	<i>Cynosurus cristatus</i>	15
Wild thyme	<i>Thymus polytrichus</i>	20
Habitat Classification as per the Irish Vegetation Classification (IVC)	<i>Briza media - Thymus polytrichus</i> grassland (GL3A)**	
Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**	



Plate 6-1-2: *Briza media* - *Thymus polytrichus* grassland (GL3A) with exposed limestone at the location of Quadrat 2

3.3

Quadrat 3 (08.05.2020)

Quadrat 3	Grid Reference: ITM 0588359 0742630	Date: 08.05.2020
Common name	Scientific name	% Cover
Early Purple Orchid	<i>Orchis mascula</i>	0.5
Vernal sedge	<i>Carex caryophyllea</i>	2
Common sorrel	<i>Rumex acetosa</i>	2
Bulbous buttercup	<i>Ranunculus bulbosus</i>	2
Tormentil	<i>Potentilla erecta</i>	3
Wood rush	<i>Luzula campestris</i>	3
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	3
Mouse-ear hawkweed	<i>Pilosella officinarum</i>	3
Ribwort plantain	<i>Plantago lanceolata</i>	5
Yellow rattle	<i>Rhinanthus minor</i>	5
Wild carrot	<i>Daucus carota</i>	5
Glaucous sedge	<i>Carex flacca</i>	5
Crested dog's-tail	<i>Cynosurus cristatus</i>	7
Bird's foot-trefoil	<i>Lotus corniculatus</i>	7
Lady's bedstraw	<i>Galium verum</i>	7
Common knapweed	<i>Centaurea nigra</i>	10
Kidney vetch	<i>Anthyllis vulneraria</i>	10
Rough hawkbit	<i>Leontodon hispidus</i>	20
Habitat Classification as per the Irish Vegetation Classification (IVC)		<i>Briza media</i> - <i>Thymus polytrichus</i> grassland (GL3A)**
Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**	



Plate 6-1-3: *Briza media* - *Thymus polytrichus* grassland (GL3A) at the location of Quadrat 3

3.4

Quadrat 4 (08.05.2020)

Quadrat 4	Grid Reference: ITM 0588309 0742937	Date: 08.05.2020
Common name	Scientific name	% Cover
	<i>Cladonia convoluta</i>	0.5
Early Purple Orchid	<i>Orchis mascula</i>	1
Dandelion	<i>Taraxacum officinale agg</i>	2
Vernal sedge	<i>Carex caryophyllea</i>	2
Violet	<i>Viola riviniana reichenbachiana</i>	2
St. John's Wort	<i>Hypericum perforatum</i>	2
Green-ribbed sedge	<i>Carex binervis</i>	2
Maidenhair spleenwort	<i>Asplenium trichomanes</i>	2
Tormentil	<i>Potentilla erecta</i>	3
Woodrush	<i>Luzula campestris</i>	3
Wild thyme	<i>Thymus polytrichus</i>	3
Mountain everlasting	<i>Antennaria dioica</i>	3
Common milkwort	<i>Polygala vulgaris</i>	3
Bracken	<i>Pteridium aquilinum</i>	3
Lady's bedstraw	<i>Galium verum</i>	3
Ling heather	<i>Calluna vulgaris</i>	5
Crested dog's tail	<i>Cynosurus cristatus</i>	5
Daisy	<i>Bellis perennis</i>	5
Self-heal	<i>Prunella vulgaris</i>	10
Common knapweed	<i>Centaurea nigra</i>	10
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	10
Blue moor grass	<i>Sesleria caerulea</i>	10
	<i>Rhytidadelphus squarrosus</i>	30
Habitat Classification as per the Irish Vegetation Classification (IVC)		<i>Briza media</i> - <i>Thymus polytrichus</i> grassland (GL3A)**
Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**	



Plate 6-1-4: *Briza media* - *Thymus polytrichus* grassland (GL3A) with exposed limestone at the location of Quadrat 4.

3.5

Quadrat 5 (08.05.2020)

Quadrat 5	Grid Reference: ITM 0589324 0744590	Date: 08.05.2020
Common name	Scientific name	% Cover
Self-heal	<i>Prunella vulgaris</i>	0.5
Field chickweed	<i>Cerastium arvense</i>	0.5
Blue moor grass	<i>Sesleria caerulea</i>	0.5
Mouse-ear hawkweed	<i>Pilosella officinarum</i>	0.5
Bracken	<i>Pteridium aquilinum</i>	2
Yorkshire fog	<i>Holcus lanatus</i>	3
Daisy	<i>Bellis perennis</i>	3
Early purple orchid	<i>Orchis mascula</i>	3
Germander speedwell	<i>Veronica chamaedrys</i>	3
Bird's foot-trefoil	<i>Lotus corniculatus</i>	3
Field woodrush	<i>Luzula campestris</i>	5
Dandelion	<i>Taraxacum officinale agg</i>	5
Blackthorn	<i>Prunus spinosa</i>	5
Red fescue	<i>Festuca rubra</i>	5
Cock's foot	<i>Dactylis glomerata</i>	5
Ribwort plantain	<i>Plantago lanceolata</i>	7
Bulbous buttercup	<i>Ranunculus bulbosus</i>	7
Yarrow	<i>Achillea millefolium</i>	20
White clover	<i>Trifolium repens</i>	20
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	20
	<i>Rhytidadelphus squarrosus</i>	50
Habitat Classification as per the Irish Vegetation Classification (IVC)		<i>Cynosurus cristatus – Trifolium pratense</i> grassland (GL3D)**
Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**	



Plate 6-1-5: *Cynosurus cristatus* – *Trifolium pratense* grassland (GL3D) at the location of Quadrat 5.

3.6

Quadrat 6 (08.05.2020)

Quadrat 6	Grid reference: ITM 0589327 0744263	Date: 08.05.20
Common name	Scientific name	% Cover
Vernal sedge	<i>Carex caryophyllea</i>	0.5
Early purple orchid	<i>Orchis mascula</i>	0.5
Bracken	<i>Pteridium aquilinum</i>	0.5
Mountain everlasting	<i>Antennaria dioica</i>	2
Tormentil	<i>Potentilla erecta</i>	3
Ribwort plantain	<i>Plantago lanceolata</i>	3
Bird's foot-trefoil	<i>Lotus corniculatus</i>	3
Hawthorn	<i>Crataegus monogyna</i>	3
Lady's bedstraw	<i>Galium verum</i>	3
Ling heather	<i>Calluna vulgaris</i>	5
Crested dog's tail	<i>Cynosurus cristatus</i>	5
Lousewort	<i>Pedicularis sylvatica</i>	5
Common vetch	<i>Vicia sativa</i>	5
Yarrow	<i>Achillea millefolium</i>	7
Rough hawkbit	<i>Leontodon hispidus</i>	7
Red fescue	<i>Festuca rubra</i>	7
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	10
Common knapweed	<i>Centaurea nigra</i>	20
Habitat Classification as per the Irish Vegetation Classification (IVC)	<i>Briza media - Thymus polytrichus</i> grassland (GL3A)**	
Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**	



Plate 6-1-6: *Briza media* - *Thymus polytrichus* (GL3A) grassland at the location of Quadrat 6.

3.7

Quadrat 7 (08.05.2020)

Quadrat 7	Grid reference: ITM 0589497 0744067	Date: 08.05.2020
Common name	Scientific name	% Cover
Violet	<i>Viola riviniana reichenbachiana</i>	0.5
St. John's wort	<i>Hypericum perforatum</i>	0.5
Cock's foot	<i>Dactylis glomerata</i>	0.5
Vernal sedge	<i>Carex caryophyllea</i>	2
Daisy	<i>Bellis perennis</i>	2
Early purple orchid	<i>Orchis mascula</i>	2
	<i>Hypnum cupressiforme</i>	2
Tormentil	<i>Potentilla erecta</i>	3
Yarrow	<i>Achillea millefolium</i>	3
Wild thyme	<i>Thymus polytrichus</i>	3
Blackthorn	<i>Prunus spinosa</i>	3
Red fescue	<i>Festuca rubra</i>	3
Mouse-ear hawkweed	<i>Pilosella officinarum</i>	3
Common wilkwort	<i>Polygala vulgaris</i>	3
Bracken	<i>Pteridium aquilinum</i>	3
Lady's bedstraw	<i>Galium verum</i>	3
Field woodrush	<i>Luzula campestris</i>	5
	<i>Rhytidadelphus loreus</i>	5
Common knapweed	<i>Centaurea nigra</i>	7
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	7
Rough hawkbit	<i>Leontodon hispidus</i>	20
	<i>Rhytidadelphus squarrosus</i>	20

Habitat Classification as per the Irish Vegetation Classification (IVC)	<i>Briza media</i> - <i>Thymus</i> <i>polytrichus</i> grassland (GL3A)**
Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**



Plate 6-1-7: *Briza media* - *Thymus polytrichus* (GL3A) grassland present at the location of Quadrat 7.

3.8

Quadrat 8 (22.05.2020)

Quadrat 1	Grid reference: ITM 0587198 0748498	Date: 22.05.2020
Common name	Scientific name	% Cover
Violet	<i>Viola riviniana reichenbachiana</i>	0.5
Wild thyme	<i>Thymus polytrichus</i>	0.5
Bird's foot-trefoil	<i>Lotus corniculatus</i>	0.5
Cock's foot	<i>Dactylis glomerata</i>	0.5
Common bent	<i>Agrostis capillaris</i>	0.5
Common field-speedwell	<i>Veronica persica</i>	0.5
Flea sedge	<i>Carex pulicaris</i>	0.5
Creeping cinquefoil	<i>Potentilla reptans</i>	2
Field woodrush	<i>Luzula campestris</i>	2
Green-ribbed sedge	<i>Carex binervis</i>	2
Yorkshire fog	<i>Holcus lanatus</i>	3
Creeping buttercup	<i>Ranunculus repens</i>	3
Wild carrot	<i>Daucus carota</i>	3
Mouse-ear hawkweed	<i>Pilosella officinarum</i>	3
Lady's bedstraw	<i>Galium verum</i>	3
Common sorrel	<i>Rumex acetosa</i>	4
Yarrow	<i>Achillea millefolium</i>	5
Ribwort plantain	<i>Plantago lanceolata</i>	5
Crested dog's tail	<i>Cynosurus cristatus</i>	5
	<i>Pleurozium schreberi</i>	5
Bracken	<i>Pteridium aquilinum</i>	5
Marsh thistle	<i>Cirsium palustre</i>	5
Quaking grass	<i>Briza media</i>	5

Red fescue	<i>Festuca rubra</i>	7
	<i>Rhytidadelphus squarrosus</i>	7
Red clover	<i>Trifolium pratense</i>	7
	<i>Hylocomium splendens</i>	15
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	20
Habitat Classification as per the Irish Vegetation Classification (IVC)		<i>Agrostis capillaris</i> – <i>Potentilla erecta</i> grassland (GL4C)**
Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**	



Plate 6-1-8: *Agrostis capillaris* – *Potentilla erecta* grassland (GL4C) at the location of Quadrat 8.

3.9

Quadrat 9 (22.05.2020)

Quadrat 2	Grid reference: ITM 0586535 0748115	Date: 22.05.2020
Common name	Scientific name	% Cover
Yarrow	<i>Achillea millefolium</i>	0.5
Violet	<i>Viola riviniana reichenbachiana</i>	0.5
Wild thyme	<i>Thymus polytrichus</i>	0.5
Creeping buttercup	<i>Ranunculus repens</i>	0.5
Bracken	<i>Pteridium aquilinum</i>	0.5
Common vetch	<i>Vicia sativa</i>	0.5
Devil's bit scabious	<i>Succisa pratensis</i>	0.5
Downy oat-grass	<i>Helictotrichon pubescens</i>	0.5
Mouse-ear hawkweed	<i>Pilosella officinarum</i>	1
Common milkwort	<i>Polygala vulgaris</i>	1
Lady's mantle	<i>Alchemilla glabra</i>	1
Daisy	<i>Bellis perennis</i>	2
Early purple orchid	<i>Orchis mascula</i>	2
Glaucous sedge	<i>Carex flacca</i>	2
Bird's foot-trefoil	<i>Lotus corniculatus</i>	2
Cock's foot	<i>Dactylis glomerata</i>	2
Cowslip	<i>Primula veris</i>	2
Common knapweed	<i>Centaurea nigra</i>	3
Yorkshire fog	<i>Holcus lanatus</i>	3
Wild carrot	<i>Daucus carota</i>	3
Quaking grass	<i>Briza media</i>	3
Red clover	<i>Trifolium pratense</i>	3
Ribwort plantain	<i>Plantago lanceolata</i>	5
Red fescue	<i>Festuca rubra</i>	5

	<i>Hylocomium splendens</i>	5
	<i>Ctenidium molluscum</i>	5
Rough hawkbit	<i>Leontodon hispidus</i>	7
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	10
Habitat Classification as per the Irish Vegetation Classification (IVC)		<i>Briza media - Thymus polytrichus</i> grassland (GL3A)**
Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**	



Plate 6-1-9 *Briza media - Thymus polytrichus* grassland (GL3A) with exposed limestone at the location of Quadrat 9

3.10 Quadrat 10 (22.05.2020)

Quadrat 3	Grid reference: ITM 0586307 0748324	Date: 22.05.2020
Common name:	Scientific name:	% Cover
Ribwort plantain	<i>Plantago lanceolata</i>	0.5
Wild carrot	<i>Daucus carota</i>	0.5
Common sorrel	<i>Rumex acetosa</i>	0.5
Mouse-ear chickweed	<i>Cerastium fontanum</i>	0.5
Broad-leaved dock	<i>Rumex obtusifolius</i>	0.5
Daisy	<i>Bellis perennis</i>	2
Creeping bent	<i>Agrostis stolonifera</i>	5
Creeping buttercup	<i>Ranunculus repens</i>	7
Upright brome	<i>Bromopsis erecta</i>	20
Yorkshire fog	<i>Holcus lanatus</i>	30
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	40
Habitat Classification as per the Irish Vegetation Classification (IVC)		<i>Holcus lanatus – Lolium perenne grassland</i> (GL2C)
Annex 1 Affinity?	No	



Plate 6-1-10 *Holcus lanatus* – *Lolium perenne* grassland (GL2C) at the location of Quadrat 10.

3.11

Quadrat 11 (22.05.2020)

Quadrat 4	Grid reference: 0586912 0747888	22.05.2020
Common name:	Scientific name:	% Cover
Common sorrel	<i>Rumex acetosa</i>	0.5
Field woodrush	<i>Luzula campestris</i>	3
Creeping buttercup	<i>Ranunculus repens</i>	3
Bulbous buttercup	<i>Ranunculus bulbosus</i>	3
Pignut	<i>Conopodium majus</i>	4
Yellow rattle	<i>Rhinanthus minor</i>	5
Red clover	<i>Trifolium pratense</i>	5
	<i>Rhytidadelphus squarrosum</i>	10
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	60
Habitat Classification as per the Irish Vegetation Classification (IVC)		<i>Festuca rubra</i> - <i>Rhinanthus minor</i> grassland (GL3E)
Annex 1 Affinity?	No	



Plate 6-1-11: *Festuca rubra* – *Rhinanthus minor* grassland (GL3E) at the location of Quadrat 11.

3.12

Quadrat 12 (22.05.2020)

Quadrat 5	Grid reference: ITM 0590469 0744433	22.05.2020
Common name:	Scientific name:	% Cover
Field woodrush	<i>Luzula campestris</i>	1
Early purple orchid	<i>Orchis mascula</i>	1
Downy oat-grass	<i>Helictotrichon pubescens</i>	1
Common knapweed	<i>Centaurea nigra</i>	2
Bracken	<i>Pteridium aquilinum</i>	2
Wild thyme	<i>Thymus polytrichus</i>	3
Bulbous buttercup	<i>Ranunculus bulbosus</i>	3
Pignut	<i>Conopodium majus</i>	3
	<i>Ctenidium molluscum</i>	3
Yarrow	<i>Achillea millefolium</i>	5
Yorkshire fog	<i>Holcus lanatus</i>	5
	<i>Rhytidadelphus squarrosus</i>	5
Lady's bedstraw	<i>Galium verum</i>	7
	<i>Hylocomium splendens</i>	7
White clover	<i>Trifolium repens</i>	10
Bird's foot-trefoil	<i>Lotus corniculatus</i>	10
Quaking grass	<i>Briza media</i>	10
Ribwort plantain	<i>Plantago lanceolata</i>	20
Red fescue	<i>Festuca rubra</i>	20
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	25
Habitat Classification as per the Irish Vegetation Classification (IVC)		Transitional calcareous grassland (not clearly assigned).
Annex 1 Affinity?	<i>Yes</i> - 6210 Orchid-rich calcareous grassland** (<i>The surrounding area within this calcareous grassland field comprised orchid-rich calcareous grassland</i>)	



Plate 6-1-12: Transitional calcareous grassland community in the location of Quadrat 12.

3.13 Quadrat 13 (22.07.2020)

Quadrat 2	Grid reference: ITM 0588250 0742984	Date: 22.07.2020
Common name	Scientific name	% Cover
Ribwort plantain	<i>Plantago lanceolata</i>	0.5
St. John's Wort	<i>Hypericum perforatum</i>	0.5
Daisy	<i>Bellis perennis</i>	0.5
Carline thistle	<i>Carlina vulgaris</i>	0.5
Glaucous sedge	<i>Carex flacca</i>	0.5
	<i>Cladonia squamosa</i>	0.5
Yarrow	<i>Achillea millefolium</i>	1
Rough hawkbit	<i>Leontodon hispidus</i>	1
Lady's bedstraw	<i>Galium verum</i>	1
Marsh thistle	<i>Cirsium palustre</i>	1
Tormentil	<i>Potentilla erecta</i>	2
Wild thyme	<i>Thymus polytrichus</i>	3
Hawthorn	<i>Crataegus monogyna</i>	4
White clover	<i>Trifolium repens</i>	5
Quaking grass	<i>Briza media</i>	5
Common bent	<i>Agrostis capillaris</i>	5
Violet	<i>Viola riviniana reichenbachiana</i>	7
Blackthorn	<i>Prunus spinosa</i>	7
Bird's foot-trefoil	<i>Lotus corniculatus</i>	10
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	15
Bracken	<i>Pteridium aquilinum</i>	20
Habitat Classification as per the Irish Vegetation Classification (IVC)		<i>Briza media - Thymus polytrichus</i> grassland (GL3A)**

Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**
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Plate 6-1-13: *Briza media* - *Thymus polytrichus* (GL3A) grassland in the location of Quadrat 13.

3.14

Quadrat 14 (22.07.2020)

Quadrat 3	Grid reference: ITM 0589065 0744777	Date: 22.07.2020
Common name	Scientific name	% Cover
Vernal sedge	<i>Carex caryophyllea</i>	0.5
Yarrow	<i>Achillea millefolium</i>	2
Tormentil	<i>Potentilla erecta</i>	3
White clover	<i>Trifolium repens</i>	5
Ribwort plantain	<i>Plantago lanceolata</i>	5
Yorkshire fog	<i>Holcus lanatus</i>	5
Common sorrel	<i>Rumex acetosa</i>	5
Bracken	<i>Pteridium aquilinum</i>	5
Bird's foot-trefoil	<i>Lotus corniculatus</i>	10
Lady's bedstraw	<i>Galium verum</i>	10
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	50
Habitat Classification as per the Irish Vegetation Classification (IVC)	<i>Agrostis capillaris</i> – <i>Trifolium repens</i> grassland (GL4A)	



Plate 6-1-14: *Agrostis capillaris* – *Trifolium repens* (GLAA) grassland at the location of Quadrat 14.

3.15

Quadrat 15 (22.07.2020)

Quadrat 4	Grid reference: ITM 0589049 0744588	Date: 22.07.2020
Common name	Scientific name	% Cover
Red fescue	<i>Festuca rubra</i>	0.5
Lady's bedstraw	<i>Galium verum</i>	0.5
Common spotted orchid	<i>Dactylorhiza fuchsii</i>	0.5
Heath grass	<i>Danthonia decumbens</i>	0.5
Wild thyme	<i>Thymus polytrichus</i>	1
Mouse-ear hawkweed	<i>Pilosella officinarum</i>	1
Autumn hawkbit	<i>Leontodon autumnalis</i>	1
Crested dog's tail	<i>Cynosurus cristatus</i>	2
Glaucous sedge	<i>Carex flacca</i>	2
Bird's foot-trefoil	<i>Lotus corniculatus</i>	2
Red clover	<i>Trifolium pratense</i>	2
Devil's bit scabious	<i>Succisa pratensis</i>	2
Tormentil	<i>Potentilla erecta</i>	3
White clover	<i>Trifolium repens</i>	3
False oat grass	<i>Arrhenatherum elatius</i>	3
Yorkshire fog	<i>Holcus lanatus</i>	5
Eyebright	<i>Euphrasia officinalis agg</i>	5
Common meadow-grass	<i>Poa pratensis humilis</i>	5
Quaking grass	<i>Briza media</i>	7
Ribwort plantain	<i>Plantago lanceolata</i>	10
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	10
Bracken	<i>Pteridium aquilinum</i>	30
Habitat Classification as per the Irish Vegetation Classification (IVC)		<i>Briza media - Thymus polytrichus</i> grassland (GL3A)**

Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**
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Plate 6-1-15: *Briza media* - *Thymus polytrichus* (GL3A) grassland at the location of Quadrat 15.

3.16

Quadrat 16 (22.07.2020)

Quadrat 5	Grid reference: ITM 0590396 0745009	Date: 22.07.2020
Common name	Scientific name	% Cover
Blackthorn	<i>Prunus spinosa</i>	0.5
Red clover	<i>Trifolium pratense</i>	0.5
Red bartsia	<i>Odontites vernus</i>	0.5
Tormentil	<i>Potentilla erecta</i>	1
Meadow buttercup	<i>Ranunculus acris</i>	1
Common germander	<i>Veronica persica</i>	1
Ribwort plantain	<i>Plantago lanceolata</i>	2
Creeping thistle	<i>Cirsium arvense</i>	2
Yarrow	<i>Achillea millefolium</i>	3
Pignut	<i>Conopodium majus</i>	3
Annual meadow-grass	<i>Poa annua</i>	3
Crested dog's tail	<i>Cynosurus cristatus</i>	15
Yorkshire fog	<i>Holcus lanatus</i>	20
White clover	<i>Trifolium repens</i>	30
Perennial rye grass	<i>Lolium perenne</i>	30
Habitat Classification as per the Irish Vegetation Classification (IVC)		<i>Lolium perenne</i> – <i>Trifolium repens</i> grassland (GL3B)
Annex 1 Affinity?	No	



Plate 6-1-16: *Lolium perenne* – *Trifolium repens* (GL3B) grassland at the location of Quadrat 16.

3.17

Quadrat 17 (04.09.2020)

Quadrat 1	Grid reference: ITM 0589635 0744100	Date: 04.09.2020
Common name	Scientific name	% Cover
Daisy	<i>Bellis perennis</i>	0.5
Carline thistle	<i>Carlina vulgaris</i>	0.5
Common milkwort	<i>Polygala vulgaris</i>	0.5
Hawthorn	<i>Crataegus monogyna</i>	0.5
Cock's foot	<i>Dactylis glomerata</i>	0.5
Field gentian	<i>Gentianella campestris</i>	0.5
Carnation sedge	<i>Carex panicea</i>	0.5
Red clover	<i>Trifolium pratense</i>	1
Tormentil	<i>Potentilla erecta</i>	2
Self-heal	<i>Prunella vulgaris</i>	2
Eyebright	<i>Euphrasia officinalis agg</i>	2
Pignut	<i>Conopodium majus</i>	2
Fairyflax	<i>Linum catharticum</i>	2
	<i>Campylopus flexuosus</i>	2
Yarrow	<i>Achillea millefolium</i>	5
Ribwort plantain	<i>Plantago lanceolata</i>	5
Rough hawkbit	<i>Leontodon hispidus</i>	5
Glaucous sedge	<i>Carex flacca</i>	5
Lady's bedstraw	<i>Galium verum</i>	5
Smooth meadow-grass	<i>Poa pratensis humilis</i>	5
Devil's bit scabious	<i>Succisa pratensis</i>	5
Rough meadow-grass	<i>Poa trivialis</i>	5
Red fescue	<i>Festuca rubra</i>	7
Common knapweed	<i>Centaurea nigra</i>	10

Wild thyme	<i>Thymus polytrichus</i>	15
Mouse-ear hawkweed	<i>Pilosella officinarum</i>	15
Crested dog's tail	<i>Cynosurus cristatus</i>	20
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	20
Autumn hawkbit	<i>Leontodon autumnalis</i>	30
Habitat Classification as per the Irish Vegetation Classification (IVC)	<i>Briza media - Thymus polytrichus</i> grassland (GL3A)**	
Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**	



Plate 6-1-17: *Briza media - Thymus polytrichus* grassland (GL3A) at the location of Quadrat 17

3.18

Quadrat 18 (04.09.2020)

Quadrat 2	Grid reference: ITM 0589047 0744523	Date: 04.09.2020
Common name	Scientific name	% Cover
White clover	<i>Trifolium repens</i>	0.5
Common milkwort	<i>Polygala vulgaris</i>	0.5
Mouse-ear hawkweed	<i>Pilosella officinarum</i>	1
Eyebright	<i>Euphrasia officinalis agg</i>	1
Tormentil	<i>Potentilla erecta</i>	2
Rough hawkbit	<i>Leontodon hispidus</i>	2
Devil's bit scabious	<i>Succisa pratensis</i>	2
Wild thyme	<i>Thymus polytrichus</i>	3
Bird's foot-trefoil	<i>Lotus corniculatus</i>	3
Bracken	<i>Pteridium aquilinum</i>	4
Yarrow	<i>Achillea millefolium</i>	5
Yorkshire fog	<i>Holcus lanatus</i>	5
Lady's bedstraw	<i>Galium verum</i>	5
Cock's foot	<i>Dactylis glomerata</i>	5
Quaking grass	<i>Briza media</i>	5
Red clover	<i>Trifolium pratense</i>	5
Crested dog's tail	<i>Cynosurus cristatus</i>	10
Ribwort plantain	<i>Plantago lanceolata</i>	15
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	25
Habitat Classification as per the Irish Vegetation Classification (IVC)		<i>Briza media - Thymus polytrichus</i> grassland (GL3A)**
Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**	



Plate 6-1-18: *Briza media* - *Thymus polytrichus* grassland (GL3A) – transitional- *Festuca rubra* – *Plantago lanceolata* grassland (GL3C) grassland present at the location of Quadrat 18

3.19

Quadrat 19 (04.09.2020)

Quadrat 3	Grid reference: ITM 0587867 0743639	Date: 04.09.2020
Common name	Scientific name	% Cover
Field woodrush	<i>Luzula campestris</i>	0.5
White clover	<i>Trifolium repens</i>	0.5
Self-heal	<i>Prunella vulgaris</i>	0.5
Glaucous sedge	<i>Carex flacca</i>	0.5
Mouse-ear hawkweed	<i>Pilosella officinarum</i>	0.5
Bracken	<i>Pteridium aquilinum</i>	0.5
Pignut	<i>Conopodium majus</i>	0.5
Salad burnet	<i>Sanguisorba minor</i>	0.5
	<i>Hylocomium splendens</i>	0.5
Wild thyme	<i>Thymus polytrichus</i>	2
Violet	<i>Viola riviniana reichenbachiana</i>	3
Bird's foot-trefoil	<i>Lotus corniculatus</i>	3
Lady's bedstraw	<i>Galium verum</i>	3
	<i>Rhytidadelphus squarrosum</i>	5
Marsh thistle	<i>Cirsium palustre</i>	5
Smooth meadow-grass	<i>Poa pratensis humilis</i>	5
Creeping buttercup	<i>Ranunculus repens</i>	7
Yarrow	<i>Achillea millefolium</i>	10
Ribwort plantain	<i>Plantago lanceolata</i>	10
Rough hawkbit	<i>Leontodon hispidus</i>	20
Daisy	<i>Bellis perennis</i>	20
Crested dog's tail	<i>Cynosurus cristatus</i>	40
Habitat Classification as per the Irish Vegetation Classification (IVC)	Transitional calcareous grassland (not clearly assigned).	

Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland** (<i>The surrounding area within this calcareous grassland field comprised orchid-rich calcareous grassland</i>)
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Plate 6-1-19 Transitional calcareous grassland at the location of Quadrat 19 location.

3.20

Quadrat 20 (24.09.2020)

Quadrat 1	Grid reference: ITM 0586616 0748044	Date: 24.09.2020
Common name	Scientific name	% Cover
Yarrow	<i>Achillea millefolium</i>	2
Rough hawkbit	<i>Leontodon hispidus</i>	2
Marsh thistle	<i>Cirsium palustre</i>	2
Creeping buttercup	<i>Ranunculus repens</i>	3
Lady's bedstraw	<i>Galium verum</i>	3
Devil's bit scabious	<i>Succisa pratensis</i>	3
Mouse-ear chickweed	<i>Cerastium fontanum</i>	3
Silverweed	<i>Potentilla anserina</i>	5
Smooth meadow-grass	<i>Poa pratensis humilis</i>	5
Meadow foxtail	<i>Alopecurus pratensis</i>	7
Ribwort plantain	<i>Plantago lanceolata</i>	10
Red clover	<i>Trifolium pratense</i>	10
Rough meadow-grass	<i>Poa trivialis</i>	10
Common knapweed	<i>Centaurea nigra</i>	20
Yorkshire fog	<i>Holcus lanatus</i>	20
Cock's foot	<i>Dactylis glomerata</i>	20
Habitat Classification as per the Irish Vegetation Classification (IVC)	Festuca rubra – Plantago lanceolata grassland (GL3C)**	
Annex 1 Affinity?	Yes - 6210 Orchid-rich calcareous grassland**	



Plate 6-1-20: *Festuca rubra* – *Plantago lanceolata* grassland (GL3C) at the location of Quadrat 20.

3.21

Quadrat 21 (24.09.2020)

Quadrat 2	Grid reference: ITM 0591120 0744453	Date: 24.09.2020
Common name	Scientific name	% Cover
Broad-leaved dock	<i>Rumex obtusifolius</i>	2
Dandelion	<i>Taraxacum officinale agg</i>	5
Perennial ryegrass	<i>Lolium perenne</i>	90
Habitat Classification as per the Irish Vegetation Classification (IVC)	<i>Poa annua – Plantago major</i> weed community (WE1E)	
Annex 1 Affinity?	No	



Plate 6-1-21: *Festuca rubra – Poa annua – Plantago major* weed community (WE1E) at the location of Quadrat 21

3.22

Quadrat 22 (24.09.2020)

Quadrat 3	Grid reference: ITM 0591467 0744125	Date: 24.09.2020
Common name	Scientific name	% Cover
Yarrow	<i>Achillea millefolium</i>	2
White clover	<i>Trifolium repens</i>	2
Common sorrel	<i>Rumex acetosa</i>	2
Cock's foot	<i>Dactylis glomerata</i>	3
Ribwort plantain	<i>Plantago lanceolata</i>	5
Creeping buttercup	<i>Ranunculus repens</i>	5
Perennial rye grass	<i>Lolium perenne</i>	10
Yorkshire fog	<i>Holcus lanatus</i>	70
Habitat Classification as per the Irish Vegetation Classification (IVC)		<i>Holcus lanatus</i> – <i>Lolium perenne</i> grassland (GL2C)
Annex 1 Affinity?	No	



Plate 6-1-22: *Holcus lanatus* – *Lolium perenne* grassland (GL2C) at the location of Quadrat 22

