Wrexham Industrial Estate

784-B067397

National Vegetation Classification Survey Report

TSL Projects Ltd.

March 2025

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TETRA TECH

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EXECUTIVE SUMMARY

Contents	Summary
Site Location	The site is located at Norish Ltd, Unit 13 Ash Rd South, Wrexham Industrial Estate, LL13 9UG in Wrexham and is centred at Ordnance Survey National Grid Reference SJ 38036 50371 (Figure 1).
Proposals	Proposals have been put forward to expand the current Norish Ltd. chilled food distribution centre to the east and west of the existing industrial unit. This is to increase the warehouse capacity and improve site access (Planning Application ref.P/2024/0247). As part of the proposal, ca.0.8ha of grassland will be lost to the west and east of the site. Following the latest comments received from Natural Resources Wales in their consultation response to Wrexham Council (received on 11th June 2024), concern was expressed about the proposed loss of grassland and potential implications to notable butterfly interests on site.
Scope of this Survey(s)	A National Vegetation Classification (NVC) survey was undertaken on two areas of grassland, which for the purpose of this report have been identified as the 'western component' and the 'eastern component'. Additionally, a targeted mapping exercise has been undertaken to spatially record the foodplant of notable butterflies of relevance to the site. These surveys had the following aims: • Determine the grassland communities present, their extent within the site and assess their importance. • Map the food sources of dingy and grizzled butterfly across the site which comprises common bird's-foot trefoil *Lotus corniculatus* (dingy) and agrimony *Agrimonia eupatoria*, creeping cinquefoil *Potentila reptans*, and wild strawberry *Fregaria vesca* (grizzled). • Determine if any potential impacts on the grassland communities are likely to arise from the development. • Provide preliminary advice and outline strategies to avoid/mitigate/compensate for any likely impacts on important grassland communities.
Results and Evaluation	Both the west and east components were subject to NVC and were found to be indicative of the mesotrophic grassland community: MG9 *Holcus lanatus – Deschampsia cespitosa*. It was evident that both components have been subject to the same historic mowing regime, indicated by the deficiency of grassy tussocks, a common structural characteristic of this grassland community. Despite this, at the time of survey, the two components had been left unmown and the average sward height was ca. 30cm - 40cm, rising to 50cm at the margins. This has resulted in an open vegetation with moderate structural variation. The west component was present on a very gentle westerly slope. It presented a visually uniform sward and was the more species deficient of the two surveyed areas,

	with an average 10 species per 2m^2 quadrat. Here nutrient enrichment was more prevalent. The east component presented a visibly more varied composition, with a patch appearance where the water table was at or close to the surface. The species richness was much greater than for the west component with an average of 16 species per 2m^2 quadrat. Although similar species indicative of nutrient enrichment were still present in this location, including perennial ryegrass and dandelion, these were present only sporadically. Of key contrast to the west component is the prevalence of a moss layer. In review of the current distribution of semi-improved neutral grassland within the wider context of Wrexham Industrial Estate, the amount on site, contributes a relatively small proportion in the wider landscape. It does however act as a 'stepping stone' for species migration. Large sites with suitable habitats, which are generally considered to be greater than 2ha, will support the largest most secure population. However, small sites with a propensity to support only small populations, when acting as part of a network of nearby colonies, are of equal significance (Butterfly Conservation, undated). As such the site's import to dingy and grizzled skipper populations should be considered as part of the collective of grassland habitats within the Wrexham Industrial Estate.
Recommendations	Given the presence of favoured plants on site and known occurrence of these butterflies in the wider area, it is recommended that both species are assumed present on site. As such it is therefore recommended that appropriate mitigation be undertaken to retain, and if possible, enhance the larval food resource, breeding, nectaring and basking areas within the site. These actions should be recorded in a mitigation strategy.

1.0 INTRODUCTION

1.1 BACKGROUND

Tetra Tech was commissioned by Carney Sweeney on behalf of TSL Projects Ltd. in June 2024 to undertake a National Vegetation Classification (NVC) survey (also known as a British Plant Communities survey) at Norish Ltd., Wrexham Industrial Estate, hereafter referred to as "the site". This survey also included a targeted mapping exercise to record the location and abundance of specific plant species, which are the foodplant for two skipper butterflies of conservation priority: dingy *Erynnis tages* and grizzled *Pyrgus malvae.*

These surveys were undertaken based on the latest comments received from Natural Resources Wales in their consultation response to Wrexham Council (received on 11th June 2024), which expressed concern over the proposed loss of grassland, potential impacts on the site's notable butterfly populations and net loss of skipper habitat.

This report has been prepared by Senior Ecologist, Robert Gavan BSc ACIEEM, with assistance from Alex Cropper BSc ACIEEM. The conditions pertinent to it are provided in Appendix A.

1.2 SITE LOCATION

The site is located at Norish Ltd, Unit 13 Ash Rd South, Wrexham Industrial Estate, in Wrexham and is centred at Ordnance Survey National Grid Reference SJ 38036 50371 (Figure 1). It comprises a large metal warehouse, a smaller brick office building and areas of hard standing for associated parking and access. The buildings were surrounded by areas of neutral grassland, dense scrub; predominantly comprised of willow *Salix* sp. and hawthorn *Crataegus monogyna*, and broadleaf woodland.

1.3 DEVELOPMENT PROPOSALS

It is proposed that the current Norish Ltd. chilled food distribution centre is extended, along with the associated landscaping works to improve site access (P/2024/0247). This proposed expansion will result in the loss of ca.0.5ha of grassland habitat to the west, and with potential impacts to a marshy grassland habitat to the east. These grassland communities will be referred to as 'west component' and 'east component' respectively throughout the report.

1.4 PURPOSE OF THE REPORT

Dingy skipper and grizzled skipper are listed as priority species under Section 7 of the Environment (Wales) Act (2016). Both species of have been identified as a possible constraint to the development proposal and the purpose of this assessment is to:

- Determine the grassland communities, their extent within the site and assess their importance.
- Map larval food plants of dingy and grizzled skipper butterfly across the site.
- Determine if any potential impacts on the grassland communities are likely to arise from the development.

- Provide preliminary advice and outline strategies to avoid, mitigate and/or compensate for any likely impacts on important grassland communities.

The details of this report will remain valid until July 2026 (24 months), after which the validity of this assessment should be reviewed to determine whether further updates are necessary.

The recommendations within this report should be reviewed (and reassessed if necessary) should there be any changes to the red line boundary or development proposals which this report was based on.

2.0 METHODS

2.1 HISTORIC SURVEYS

A Preliminary Ecological Appraisal was completed for the proposed works in February 2024, by *Just Mammals Limited.* The following habitats were recorded of relevance to this assessment and are described below:

1. *'Semi-improved neutral grassland: This habitat is present surrounding the majority of the two buildings on site. It appears to be regularly managed as it is of a uniform height'*
2. *'Marshy grassland: This habitat is present toward the east…Its character is a combination of marshy grassland and semi-improved neutral grassland based on species present, however, several discrete waterlogged areas were noted along with a general wetness to the substrate.*

These Phase 1 habitats (JNCC, 2010) are considered of moderate species-richness and indicative of mesotrophic conditions following a review of the baseline report. The following habitats were recorded of relevance to this assessment and are described below. It is also evident that hydrological influences are present to the east of the site where 'marshy grassland' was identified. The provided species lists for both grasslands did not identify species known to be the food source for either dingy or grizzled skipper. However, as the survey was undertaken in February, there are significant constraints associated with vegetative identification, and these species are not likely to have been identified at that time of year.

2.2 DESK STUDY

The desktop study comprised of a search for records and information pertinent to:

- Habitats listed as Annex 1 in the Joint Nature Conservation Committee (JNCC) habitat table within 500m of the site.
- Priority habitats listed under Section 7 of the Environment (Wales) Act (2016) within 500m of the site.
- Statutory designated sites within 2km of the site.
- Historical land management (aerial interpretation).

This was achieved using a variety of open sources including, Natural Resources Wales (NRW) Map Viewer[1], Multi Agency Geographic Information for the Countryside (MAGIC)[2] website, a review of historic maps (National Library of Scotland, undated)[3], and Ordnance Survey (OS) and Aerial Imagery[4]. The search was conducted in July 2024.

Furthermore, a data search was obtained from COFNOD in June 2024 of invertebrate records from within 1 km of the site boundary. A search of 1 km was completed due to the context of the site being within Wrexham Industrial Estate, which supports known populations of dingy skipper and grizzled skipper.

[1] Viewed online at https://naturalresources.wales/evidence-and-data/maps/browse-map-of-data-about-the-natural-environment/?lang=en
[2] Viewed online at https://magic.defra.gov.uk
[3] Viewed online at Side by side georeferenced maps viewer - Map images - National Library of Scotland (nls.uk)
[4] Viewed online at https://www.bing.com/maps

2.3 FIELD SURVEYS

2.3.1 NVC Survey

The NVC survey was undertaken on the 25th of June 2024. The weather conditions were sunny, with a light breeze and the temperature was 18˚C. The survey was undertaken by suitably qualified senior ecologist Joel Giordano (Field Identification Skills Certificate Level 5 – Professional).

The NVC survey was undertaken following the standard method (Hill et al. 2005; Rodwell, 2006). Quadrats were deliberately selected to represent the range of vegetation present on the site. For each quadrat, the GPS location was noted, and a photograph taken. Vegetation cover and height were estimated by eye. Species were recorded in 2m x 2m quadrats using the DOMIN cover scale estimated by eye as shoot frequency (Table 1). Allocation of the NVC communities was carried out by comparison of the quadrats against the NVC tables, and also by running each quadrat through the keys.

Table 1. Cover Ranges for DOMIN Cover Scale

Domin cover values	% cover ranges
10	91-100%
9	76-90%
8	51-75%
7	34-50%
6	26-33%
5	11-25%
4	4-10%
3	<4%; many individuals
2	<4%; several individuals
1	<4%; few individuals

Five quadrats were recorded in each vegetation type to allow constancy tables to be compiled. Constancies were calculated as follows (Rodwell 2006): V =81-100% quadrats. IV = 61-80% quadrats, III = 41-60% quadrats, II = 21-40 % quadrats, I = 1-20% quadrats.

Further analysis was carried out using the *R Modular Analysis of Vegetation Information System* (MAVIS) web application software (Marshall *et al.*, 2024). This software calculates a similarity coefficient between the quadrat sample(s) and the NVC tables using the Czekanowski coefficient. The top five matching coefficients are displayed and indicate potential matches against NVC communities (Appendix B). This analysis has been used with caution, as the results indicate possible relationships rather than statements of fact (Palmer, 1992).

NVC communities are referred to as they appear in the five editions of British Plant Communities; where scientific names have changed due to taxonomic revision since the relevant volumes of British Plant Communities were published (Rodwell, 1991-2000), the NVC community name has been retained to avoid confusion.

2.3.2 Foodplant mapping

There is no pre-determined method for mapping individual floristic species and so the survey design was produced using professional judgement. A list of the larval foodplants associated with grassland for dingy skipper and grizzled skipper was taken from *Life Cycles of British and Irish Butterflies* (Eeles, 2019) and included:

- Dingy Skipper: common bird's-foot trefoil, greater bird's-foot trefoil and horseshoe vetch
- Grizzled skipper: agrimony, creeping cinquefoil, and wild strawberry

The full extent of the grassland habitat was traversed. Approximate linear transects were followed, which were separated by 3m intervals, to ensure the entirety of the sward was inspected for foodplants. Where identified, a GPS coordinate was taken and their extent mapped.

2.4 LIMITATIONS

The optimal period for botanical surveys is between April and September, although specific habitats and species have their own optimal periods for survey. This survey was carried out in late-June and is adequate for assessing grassland NVC types, although it is possible that some species which appear late in the season may have been missed (e.g. the late-flowering melancholy thistle *Cirsium heterophyllum*).

Notwithstanding the limitations highlighted above, the survey effort applied is considered sufficient to meet the primary aims of this report and were undertaken in accordance with best practice (Rodwell, 2006).

The details of this report will remain valid until June 2026 (24 months), after which the validity of this assessment should be reviewed to determine whether further updates are necessary.

Note that the recommendations within this report should be reviewed (and reassessed if necessary) should there be any changes to the red line boundary or development proposals which this report was based on.

3.0 RESULTS

3.1 DESK STUDY

The desk study data from CODNOD returned 42 records of grizzled skipper and 41 records of dingy skipper from within 1km of the site. The closest record for both species was recorded 94m from the site centroid and within 10m of the site boundary in 2004. The most recent record for both species was obtained in May 2024, within 570m of the site centroid.

A review of NRW Interactive Map and MAGIC identified no Annex 1 habitats or statutory designated sites within 500m and 2km of the site respectively.

There were several blocks of woodland, considered to meet criteria as lowland mixed deciduous woodland (HoPI) within 500m, however the closest grassland HoPI was coastal flood plain grazing marsh, located 1.3km to the south of the site, along the Afon Clywedog (River Clywedog). This habitat was not functionally connected to the site with extensive industrial land of limited ecological value between the two areas.

3.2 FIELD SURVEYS

Both the west and east components were subject to NVC and were found to be indicative of the mesotrophic grassland community: MG9 *Holcus lanatus – Deschampsia cespitosa*. It was evident that both components have been subject to the same historic mowing regime, indicated by the deficiency of grassy tussocks, a common structural characteristic of the MG9 grassland community. Despite this, at the time of survey, the two components had been left unmown and the average sward height was ca. 30cm - 40cm, rising to 50cm at the margins. This has resulted in an open vegetation with moderate structural variation. The communities present, are mapped in Figure 3 and the quadrat data are presented in Appendix B.

A small extent of amenity grassland to the south of the site was considered of limited ecological value. This area was a regularly mown area of amenity grassland and so was not subject to NVC.

West Component - MG9 *Holcus lanatus – Deschampsia cespitosa* grassland community.

The west component was present on a relatively flat landscape with some evidence of anthropogenic disturbance such as isolated patches of rubble and disturbed ground. The majority of the grassland presented a visually uniform sward and was the more species deficient of the two surveyed areas, with an average of 10 species per $2m^2$ quadrat. Here nutrient enrichment was more prevalent with an abundance nutrient favouring species such as curled dock *Rumex crispus,* dandelion *Taraxicum agg.,* perennial ryegrass *Lolium perenne,* and daisy *bellis perennis.* The grassland was dominated by Yorkshire fog *Holcus lanatus,* and with tufted-hair grass *Deschampsia cespitosa* frequent. Both species provided a consistent abundance across all quadrats, which is a definitive component of the MG9 community. Red fescue *Festuca rubra*, crested dog's-tail *Cynosurus cristatus* and both creeping *Agrostis stolonifera* and common bent *Agrostic capillaris* were also recorded but appeared only sporadically in the sward. In relation to herbs, both creeping buttercup *Ranunculus repens* and meadow buttercup *Ranunculus acris* were abundant, with creeping buttercup more prevalent in the west providing further evidence of increased nutrient enrichment. Localised area of spiked rush *Carex spicata* and false fox sedge *Carex otrubae* was

identified. Species identified within the grassland are indicative of MG9 communities which have been subject to sward cropping, either through grazing or mowing (Rodwell, 1992).

Several orchids were identified across the sward, which fell beyond the extents of the quadrats. These included bee orchid *Ophrys apifera* and pyramidal orchid *Anacamptis pyramidalis.* Of relevance to this assessment, **bird's-foot trefoil** was also recorded as single specimens to the south and north of the grass component with **creeping cinquefoil** recorded in three patches evenly spread across the site.

Analysis run through RMAVIS indicated a moderate affinity (0.49) to the MG9 *Holcus lanatus – Deschampsia cespitosa* grassland community. There are two sub communities associated with this MG9 grassland but given the current management regime and the lack of key species associated with either, it is more appropriate to conclude the classification at the primary community.

East Component - MG9 *Holcus lanatus – Deschampsia cespitosa* grassland community.

The east component presented a visibly more species rich and structurally diverse. Two depressions where identified with hydrological influence of the vegetation composition. These areas were dominated by rushes (hard *Juncus inflexus* and compact *Juncus conglomeratus*) and glaucous sedge *Carex flacca* with false fox sedge scattered throughout. The topography was again, gently sloping, but with an easterly aspect in this area. There was a notable increase in species richness compared to the west with an average of 16 species per $2m^2$ quadrat. Although similar species indicative of nutrient enrichment were present, including perennial ryegrass and dandelion, these were sporadically distributed, and in low abundance. Of key contrast to the west component is the prevalence of a clearly identifiable bryophyte layer. Three species were identified including cypress plait moss *Hypnum cupressiforme*, springy turf moss *Rhytidiadelphus squarrosus*, and pointed spear moss *Calliergonella cuspidate*, the latter of these species was a dominant component of the sward understorey, and of key influence when considering the grassland's sub-community classification.

In contrast to an indicative MG9 community tufted hair grass was identified in relatively low abundances, although consistent throughout. In its place red fescue shared a co-dominance with Yorkshire fog, whilst sweet vernal grass *Anthoxanthum odoratum* was locally frequent and false oatgrass *Arrhentharum elatius,* meadow foxtail *Alopecurus pratensis* and a both creeping and common bent, were recorded only occasionally. The sward assemblage was diverse, with a variety of sedges including false fox sedge *Carex obtrubae*, spiked sedge, and glaucous sedge *Carex flacca.* This latter species was recorded as frequent to occasional across the quadrats and indicates more basic ground conditions. In relation to herbs, no single species was consistent throughout with the exception of meadow and creeping buttercup. Remaining herbs were never recorded in significant abundances, but were all indicative of mesotrophic conditions, such as meadow vetchling *Lathyrus pratensis,* **bird's-foot trefoil**, grass vetchling *Lathyrus nissolia* hoary ragwort *Senecio erucifolius*, flea-bane *Pulicaria dysenterica* and common vetch *Vicia sativa.*

Orchids were again identified in this grassland component and included bee orchid, whilst **creeping cinquefoil** was observed to have a local abundance to the north of the component along the woodland fringe.

Analysis run through RMAVIS indicated a moderate affinity to both MG9a *Poa trivialis* sub-community (0.50) and MG9b *Arrhenantherum elatius* sub-community (0.47). The key differentiator between these two communities aside from the prevalence of the named species, is the moisture regime. Given the heterogeneity across the east component both sub-communities are likely present, with MG9a in areas of

higher soil moisture, and MG9b in better drained locations. In assessing the grassland as a single component, it is appropriate to conclude the classification at the primary community.

4.0 EVALUATION

The MG9 NVC community thrives in poorly drained permanent pastures and is widespread throughout the British lowlands (Rodwell, 2006). This community typically includes tufted hair grass and Yorkshire fog as constant species, and while it does not host any rare species, its structural heterogeneity, which is often associated with a mosaic of grass tussocks, plays a crucial role in supporting invertebrates, birds, and mammals. A full list of the species identified on site, and a comparison of their conservation status in Great Britain and Wales is provided in Appendix C. For reference, all species were considered of 'Least Concern' or conservation status 'Not Applicable' in line with the *Red Data List for Wales / Rhestr o Blanhigion Fasgwlaidd Data Coch ar gyfer Cymru* (Dines, 2006).

Vascular plants of note

No species were identified that are present within the Vascular Plant Red List for England (Stroh et al., 2014) that includes species listings for England and Great Britan.

Foodplants

Of the listed foodplants associated with dingy skipper and grizzled skipper, common bird's-foot trefoil (dingy) and creeping cinquefoil (grizzled) were identified on site (Figure 3). The remaining species: agrimony and wild strawberry (grizzled) and greater bird's-foot trefoil and horseshow vetch (dingy) were not recorded.

Whilst both the east and west components contained skipper foodplants, their abundance varied across grasslands. To the east, there was a greater abundance of bird's-foot trefoil, with a single localised area of creeping cinquefoil. To the west the converse was present, with only two individuals of bird's-foot trefoil, and localised patches of creeping cinquefoil.

As a collective, the site hosts several larval foodplants to support both dingy and grizzled skipper, and without further targeted surveys it is assumed both species are present on site. The proposed development would result in the loss of approximately 0.8ha of grassland within the western and eastern components. **It is reasonable to assume that the loss of the patches of creeping cinquefoil and bird's-foot trefoil, would have no immediate significant impacts to local dingy skipper and grizzled skipper populations.**

In review of the current distribution of semi-improved neutral grassland within the Wrexham Industrial Estate, the amount on site, contributes a relatively small proportion in the wider landscape. It does however act as a 'stepping stone' for species migration. Large sites with suitable habitats, which are generally considered to be greater than 2ha, will support the largest most secure population. However, small sites with a propensity to support only small populations, when acting as part of a network of nearby colonies, are of equal significance (Butterfly Conservation, undated). As such the site's import to dingy and grizzled skipper populations should be considered as part of the collective of grassland habitats within the Wrexham Industrial Estate.

5.0 RECOMMENDATIONS

The site contains the NVC grassland community MG9 *Holcus lanataus – Deschampsia cespitosa*, which is not associated with rare botanical species, but is associated with structural variation, which improves niche frequency in support of invertebrate, bird and mammal populations. The east component was also identified as species-rich, further enhancing its value to biodiversity.

The larval food plants associated with dingy skipper and grizzled skipper, were identified across both grassland components and without further targeted surveys it is assumed both species are present on site. A greater abundance of creeping cinquefoil was observed in the west component, which will be subject to removal under the proposed development.

It is possible that a targeted invertebrate survey, during the appropriate time of year, could provide evidence to suggest that both skipper butterflies are likely absent from site. However, as the larval foodplants are present the likelihood of new individuals dispersing to site from local satellite populations cannot be ruled out. It is therefore recommended that a precautionary approach be adopted and that both species are assumed present on site albeit in low numbers. As such appropriate mitigation should be undertaken to retain, and if possible, enhance the larval food resource of the site for these species. These actions should be recorded in a mitigation strategy which should include the following recommendations:

- Measures to enhance grassland communities on site. This can be achieved through:
    - Interventions to the unaffected grassland to the east of the site (east component), adopting a management regime which promotes the establishment and abundance of larval food plants and increases structural heterogeneity.
    - Creation of appropriate grassland elsewhere within the site, which, following interventions, can support the larval food plants. A suitable location for this is the southern area of amenity grassland. If possible, it is recommended that seed from available larval food plants present within the site is used. However, it is understood there may be season constraints on availability, and a seed mix containing the appropriate species would suffice.
- Measures to enhance the habitat for dingy skipper and grizzled skipper including ground scalping and the construction of a butterfly bank. This will create a habitat mosaic including vital bare ground which will provide breeding, nectaring and warm basking areas.
- It is recommended that vegetation removal is undertaken outside of the larval and emergence periods for dingy skipper and grizzled skipper (April – August inclusive). Please note, grizzled skipper overwinter as pupae amongst low vegetation (less than 30cm) and supervision by an Ecological Clerk of Works will be required for vegetation clearance during this period.
- The above measures to enhance foodplant availability and suitable habitat opportunities within the site will suffice as appropriate mitigation with the overall aim of no net loss of dingy and skipper habitat as a minimum.

6.0 BIBLIOGRAPHY

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FIGURES

FIGURE 1: Site Location Plan

FIGURE 2: NVC Communities and Larval Food Plants



Site Location Plan

Wrexham Industrial Estate

Thermotraffic Ltd.

Legend

Site boundary

Notes:

Drawn by: DYLAN.GUSSMAN

Checked by: BD

Office: Southampton

Figure No. 1

Revision No. A

19 August 2024

0 30 60 90 120 Meters

Scale 1:3,000 @A3

British National Grid

NGR: 338072E 350402N

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Dingy and Grizzled Skipper Larval Food Plant Map

Wrexham Industrial Estate

TSL Projects Ltd.

Legend

- Site boundary
- Creeping Cinquefoil
- Bird's-foot trefoil
- NVC MG9 *Holcus lanatas-Deschampsia cespitosa*
- Bird's-foot Trefoil
- Quadrat Location

W1 W2 W3 W4 W5 E1 E2 E3 E4 E5

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Notes:

Drawn by: DYLAN.GUSSMAN

Checked by: Rob Gavan

Figure No. 2

Revision No. A

19 August 2024

0 20 40 60 80 Meters

Scale 1:1,500 @A3

British National Grid

NGR: 338091E 350382N

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APPENDICES

APPENDIX A: Report Conditions

APPENDIX B: QUADRAT DATA

APPENDIX C: SITE SPECIES LIST

APPENDIX A: REPORT CONDITIONS

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APPENDIX B: QUADRAT DATA

West Component



Plate 1. Indicative composition of west component facing north.

The west component was present on a very gentle westerly slope. It presented a visually uniform sward and was the more species deficient of the two surveyed areas, with an average 10 species per $2m^2$ quadrat. Here nutrient enrichment was more prevalent.

NVC Community: MG9 *Holcus lanatus – Deschampsia cespitosa*

RMAVIS NVC Assignment
MG9 (0.49)
MG9b (0.47)
MG4c (0.47)
AgBpb (0.45)
MG6a (0.45)

Species	**Latin**	**Q1** SJ 37990 50440	**Q2** SJ 37974 50423	**Q3** SJ 37994 50404	**Q4** SJ 37972 50389	**Q5** SJ 37980 50368
Common Bent	*Agrostis capillaris*		15	10		
Creeping Bent	*Agrostis stolonifera*	3			3	5
Sweet Vernal Grass	*Anthoxanthum odoratum*	5	10			
Common Daisy	*Bellis perennis*		3	1		2
Spiked Sedge	*Carex spicata*				10	1
Knapweed	*Centaurea nigra*	3				1
Common Mouse-ear	*Cerastium fontanum*				3	
Spear Thistle	*Cirsium vulgare*					2
Crested Dog's-tail	*Cynosurus cristatus*				10	
Tufted Hair Grass	*Deschampsia cespitosa*	5	3	30	10	5
Couch Grass	*Elytrigia repens*					3
Red Fescue	*Festuca rubra*	30		10	10	40
Cut-leaved Crane's-bill	*Geranium dissectum*					5
Yorkshire Fog	*Holcus lanatus*	60	50	50	40	60
Perennial Rye-grass	*Lolium perenne*	10	20	5	20	10
creeping cinquefoil	*Potentilla reptans*			2	5	
Meadow Buttercup	*Ranunculus acris*	30	5	3		
Creeping Buttercup	*Ranunculus repens*		5	2	30	40
Curled Dock	*Rumex crispus*		5		1	
Smooth Sow-thistle	*Sonchus oleraceus*					2
Lesser Stitchwort	*Stellaria graminea*		2			3
Dandelion	*Taraxacum agg.*					1
Lesser Trefoil	*Trifolium dubium*					2

East Component



Plate 2. Indicative composition of east component facing north.

The sward presented a visibly more varied composition, with a patchy appearance where the water table was at or close to the surface. The species richness was much greater than for the west component with an average of 16 species per $2m^2$ quadrat. Of key contrast to the west component is the prevalence of a moss layer.

NVC Community: MG9a *Holcus lanatus – Deschampsia cespitosa* *Poa trivialis* sub-community

RMAVIS NVC Assignment
MG9 (0.50)
MG9a (0.50)
MG9b (0.47)
MG4c (0.46)
MG4v2 (0.45)

Species	**Latin**	**Q1** SJ 38161 50291	**Q2** SJ 38126 50300	**Q3** SJ 38157 50321	**Q4** SJ 38157 50321	**Q5** SJ 38144 50361
Common Bent	*Agrostis capillaris*		3	5		3
Creeping Bent	*Agrostis stolonifera*				3	
Meadow Fox-tail	*Alopecurus pratensis*				2	
Sweet Vernal Grass	*Anthoxanthum odoratum*	3	20		5	
False Oat-grass	*Arrhenatherum elatius*			2		3
Pointed Spear Moss	*Calliergonella cuspidata*	40	20	10	10	
Glaucous Sedge	*Carex flacca*	10	10	5		2
False Fox Sedge	*Carex otrubae*				1	1
Spiked Sedge	*Carex spicata*		5			
Knapweed	*Centaurea nigra*				3	
Common Mouse-ear	*Cerastium fontanum*	1	1			
Crested Dog's-tail	*Cynosurus cristatus*	3			2	
Tufted Hair Grass	*Deschampsia cespitosa*	2	5		2	4
Red Fescue	*Festuca rubra*	30	45	60	30	30
Cut-leaved Crane's-bill	*Geranium dissectum*					2
Yorkshire Fog	*Holcus lanatus*	55	30	25	70	60
Cypress Plait Moss	*Hypnum cupressiforme*	5				
Grass Vetchling	*Lathyrus nissolia*				1	
Meadow Vetchling	*Lathyrus pratensis*			5	3	3
Rough Hawkbit	*Leontodon hispidus*			1		
Oxe-eye Daisy	*Leucanthemum vulgare*	3		15		
Perennial Rye-grass	*Lolium perenne*			3	2	2
Bird's-foot Trefoil	*Lotus corniculatus*			3		
Smooth Meadow Grass	*Poa pratensis*	5		2		
Flea-bane	*Pulicaria dysenterica*		2			
Meadow Buttercup	*Ranunculus acris*	5	3	3	2	20
Creeping Buttercup	*Ranunculus repens*	8	3	8	5	

Springy Turf Moss	*Rhytidiadelphus squarrosus*	5		30	5	
Curled Dock	*Rumex crispus*					1
Tall Fescue	*Schedonorus arundinaceus*					5
Hoary Ragwort	*Senecio erucifolius*	2	2		3	
Dandelion	*Taraxacum agg.*		1			
Red Clover	*Trifolium pratense*		3	2		
Tufted Vetch	*Vicia cracca*					3
Common Vetch	*Vicia sativa*		2	2		2

APPENDIX C: SITE SPECIES LIST AND RED LIST DATA

Scientific Name	Vernacular Name	Wales. Red List Status	GB Red List Status
Agrostis capillaris	Common Bent	LC	LC
A. stolonifera	Creeping Bent	LC	LC
Alopecurus pratensis	Meadow Fox-tail	LC	LC
Anacamptis pyramidalis	Pyramidal orchid	LC	LC
Anthoxanthum odoratum	Sweet Vernal Grass	LC	LC
Arrhenatherum elatius	False Oat-grass	LC	LC
Bellis perennis	Common Daisy	LC	LC
Calliergonella cuspidata	Pointed Spear Moss	N/A	N/A
Carex flacca	Glaucous Sedge	LC	LC
C. otrubae	False Fox Sedge	LC	LC
C. spicata	Spiked Sedge	LC	LC
Centaurea nigra	Knapweed	LC	LC
Cerastium fontanum	Common Mouse-ear	LC	LC
Cirsium vulgare	Spear Thistle	LC	LC
Cynosurus cristatus	Crested Dog's-tail	LC	LC
Deschampsia cespitosa	Tufted Hair Grass	LC	LC
Elytrigia repens	Couch Grass	LC	LC
Festuca rubra	Red Fescue	LC	LC
Geranium dissectum	Cut-leaved Crane's-bill	LC	LC
Holcus lanatus	Yorkshire Fog	LC	LC
Hypnum cupressiforme	Cypress Plait Moss	LC	LC
Jacobaea erucifolia	Hoary Ragwort	LC	LC
Juncus conglomeratus	Compact Rush	LC	LC
J. inflexus	Hard Rush	LC	LC
Lathyrus nissolia	Grass Vetchling	LC	LC
L. pratensis	Meadow Vetchling	LC	LC
Leontodon hispidus	Rough Hawkbit	LC	LC
Leucanthemum vulgare	Oxe-eye Daisy	LC	LC
Lolium perenne	Perennial Rye-grass	LC	LC
Lotus corniculatus	Bird's-foot Trefoil	LC	LC
Poa pratensis	Smooth Meadow Grass	LC	LC
Potentilla reptans	Creeping Cinquefoil	LC	LC
Pulicaria dysenterica	Flea-bane	LC	LC
Ophrys apifera	Bee orchid	LC	LC
Ranunculus acris	Meadow Buttercup	LC	LC
R. repens	Creeping Buttercup	LC	LC
Rhytidiadelphus squarrosus	Springy Turf Moss	LC	LC
Rumex crispus	Curled Dock	LC	LC
Schedonorus arundinaceus	Tall Fescue	LC	LC
Sonchus oleraceus	Smooth Sow-thistle	LC	LC
Stellaria graminea	Lesser Stitchwort	LC	LC

Scientific Name	Vernacular Name	Wales. Red List Status	GB Red List Status
Taraxacum agg.	Dandelion	LC	LC
Trifolium dubium	Lesser Trefoil	LC	LC
T. pratense	Red Clover	LC	LC
T. repens	White Clover	LC	LC
Vicia cracca	Tufted Vetch	LC	LC
V. sativa	Common Vetch	LC	LC