



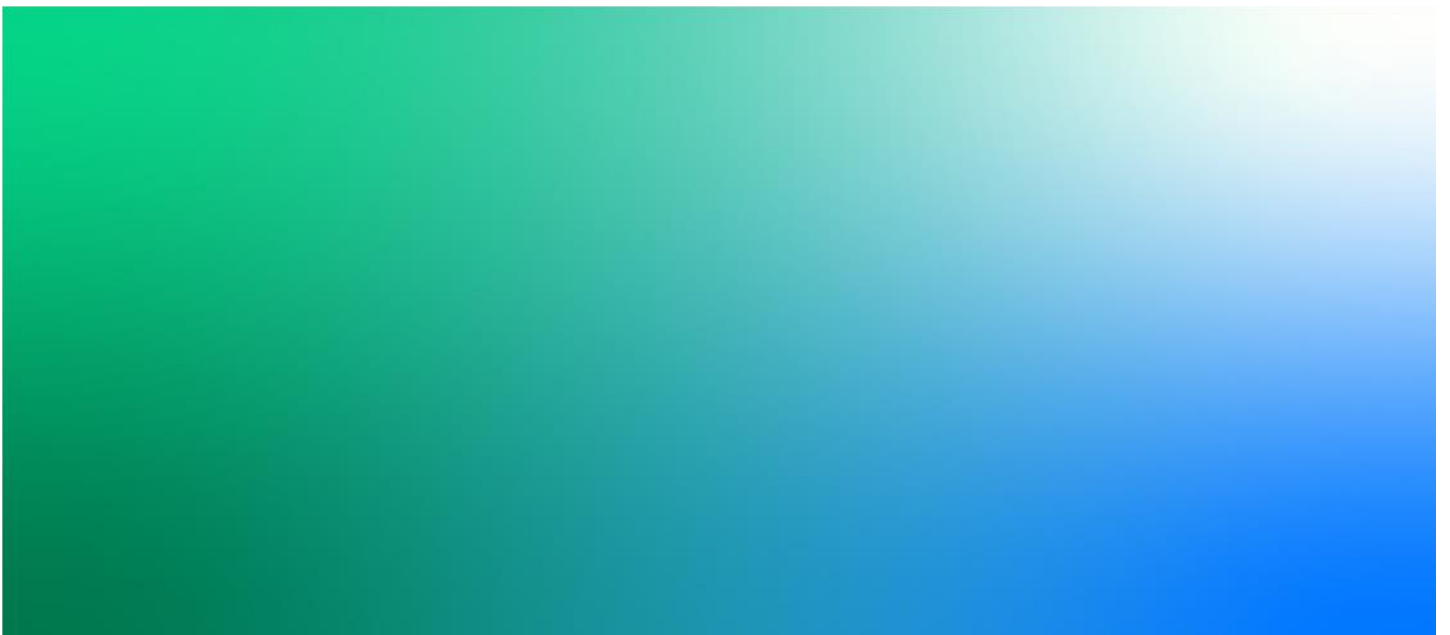
## Oxford Flood Alleviation Scheme

Botanical Survey Report Addendum

IMSE500177-CH2-XX-00-SU-EN-0739 | 1.1

December 2022

Environment Agency



Oxford Flood Alleviation Scheme

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## Executive Summary

The Oxford Flood Alleviation Scheme (FAS ('hereafter referred to as the 'proposed Scheme')) is critical in reducing the long-term risk of flooding to residential and commercial properties on the floodplain in the Oxford area. The principal component of the FAS is a new channel to the west of the city centre, accompanied by modifications to the Seacourt, Hinksey and Bulstake streams, designed to reduce water levels in the river during flood events without increasing levels further downstream. A planning application was submitted for the proposed Scheme in March 2022 (Planning Application Reference MW.0027/22 Flood Alleviation Scheme).

During the consultation period for the planning application, comments were received via a Regulation 25 request in relation to the categorisation and condition assessment of a number of grasslands and one fen area within the planning application boundary. This report therefore presents the results of additional botanical surveys undertaken in June and July 2022, to address these comments.

The survey comprised the following elements: Habitat survey following the UK Habitat Classification (UKHab) survey methodology (UK Habitat Classification Working Group, 2018); habitat condition assessment using Defra Metric 3.0 condition survey sheets (Natural England, July 2021); and quadrat sampling in specific locations to inform the habitat type and/or condition.

Thirty-five separate land parcels (GIS polygons) were consequently re-surveyed in 2022. The results can be found on the Webmapper in the following location:

<https://jacobs.maps.arcgis.com/apps/instant/sidebar/index.html?appid=2727f926785144708a5932da64fc4b80>

The majority of the grassland surveyed was categorised within the UKHab level 3, as 'g3 other neutral grassland', defined as vegetation dominated by grasses and herbs on a range of neutral soils, usually with a pH of between 4.5 and 6.5. This included one parcel (21) categorised as g3c6 and two parcels of g3c8 (19.1 and 25.1). Two parcels were also classified as g4 modified grassland.

In respect to changes in habitat classification since 2020, 16 parcels were re-classified as other neutral grassland (g3, g3c, g3c8) whilst one parcel was reclassified from g3c to g4. Changes in condition assessment were noted for the majority of re-surveyed parcels. These were generally increases in the condition scoring.

These changes were considered partly due to the change in the assessment criteria used between different revisions of the Defra Metric (2.0 and 3.0). In addition, g4 modified grassland now has its own condition sheet (low distinctiveness habitat).

Changes to the habitat classification and condition assessment for these 35 land parcels will be applied to a revised version of the Defra Metric (v 3.0) to update the assessment of Biodiversity Net Gain for the proposed Scheme. This is the subject of a separate report.

# 1. Introduction

## 1.1 The Scheme

The Oxford Flood Alleviation Scheme (FAS ('hereafter referred to as the 'proposed Scheme')) is critical in reducing the long-term risk of flooding to residential and commercial properties on the floodplain in the Oxford area. The principal component of the FAS is a new channel to the west of the city centre, accompanied by modifications to the Seacourt, Hinksey and Bulstake streams, designed to reduce water levels in the river during flood events without increasing levels further downstream.

A planning application was submitted for the proposed Scheme in March 2022 (Planning Application Reference MW.0027/22 Flood Alleviation Scheme). This was supported by an Environmental Statement (ES) describing the baseline ecological status which included:

- **ES Appendix C-3 the Habitat and Botanical Survey Report** Document Number IMSE500177-CH2-XX-00-SU-EN-0734 (Jacobs, October 2021). Surveys to support this report were undertaken in 2020. Full results of the 2020 survey, including lists of plants recorded and photographs, are available to view online via an interactive map at the following web address: <https://jacobs.maps.arcgis.com/apps/instant/attachmentviewer/index.html?appid=3e0155afbbbf4e4d814c316894e7f6fd> and,
- **ES Appendix S Biodiversity Metric**, Document Number IMSE500177-CH2-00-00-DT-EN-0020 (Jacobs, February 2022).

During the consultation period for the planning application a Regulation 25 request for additional information was issued, comments were received from both statutory and non-statutory consultees. A number of these related to the categorisation and condition assessment of grassland areas within the planning application boundary. A summary of those relevant to this exercise are included in Appendix A. In general, these comments related to:

- Modified grassland (habitat g4 of the UK Habitats Classification) which had been assessed as being of 'poor' condition in 2020 using the Defra Metric 2.0 guidance (Natural England, July 2019). For this condition assessment, modified grassland could only be assessed as being of poor condition. However, the Defra Metric 3.0 guidance was subsequently released (Natural England, July 2021) which included three condition categories, 'good', 'moderate' and 'poor'. Re-evaluation of these grasslands was therefore required;
- Request for re-sampling and/or ground truthing of some grassland areas which had previously been subject to limitations during the 2020 survey i.e., areas that had been subject to a summer hay cut immediately prior to botanical surveys taking place or where the habitat categorisation and/or distinctiveness had been challenged during consultation;
- Areas of grassland where no condition assessment had been undertaken in 2020; and;
- The botanical value of the MG4 mitigation areas (habitat categorisation and condition assessment).

## 1.2 Purpose of this report

This report presents the results of additional botanical surveys undertaken in June and July 2022, to address comments received during the planning consultation period. These additional surveys therefore included:

- Verification of the habitat classification and condition assessment of grassland areas that had been recorded in 2020 as 'modified grassland' (habitat g4 of the UK Habitats Classification);

- Verification of the habitat classification and condition assessment of grassland areas that had been subject to a hay cut prior to the 2020 surveys,
- Collection of field data to inform a condition assessment for areas where this data was not collected in 2020 and/or a precautionary assessment had been applied; and,
- Verification of the habitat classification and condition assessment of the areas that were proposed for use as MG4 mitigation areas (Jacobs, January 2022) in order to confirm the proposed ecological enhancements will deliver significant improvements.

## 2. Methodology

The survey comprised the following elements:

- Habitat survey following the UK Habitat Classification (UKHab) survey methodology (UK Habitat Classification Working Group, 2018);
- Habitat condition assessment using Defra Metric 3.0 condition survey sheets<sup>1</sup> (Natural England, July 2021); and,
- Quadrat sampling in specific locations to inform the habitat type and/or condition.

### 2.1 Survey Area

Habitat survey and condition assessment was undertaken within 35 specified grassland areas ('land parcels' / or GIS 'polygons') within the red line boundary from the 2020 survey to meet the objectives described in Section 1: Introduction (Also refer to Table 1 below). Polygon locations can be found at the following Webmapper location: <https://jacobs.maps.arcgis.com/apps/instant/sidebar/index.html?appid=2727f926785144708a5932da64fc4b80>

**Table 1: Justification for re-survey in 2022 (some land parcels may be in multiple categories)**

Reason for 2022 Re-Survey	Land Parcel / Polygon Numbers
Verification of the habitat classification and condition assessment of grassland areas that had been recorded in 2020 as 'modified grassland' (habitat g4 of the UK Habitats Classification)	1, 2, 3, 14, 16, 18, 19, 20, 22, 23, 24, 25.
Verification of the habitat classification and condition assessment of grassland areas that had been subject to a hay cut prior to the 2020 surveys	4, 5, 6, 10, 11, 12, 13, 15, 17.
Collection of field data to inform a condition assessment for areas where this data was not collected in 2020 and/or a precautionary assessment had been applied	4, 7, 8, 13, 15, 16, 17.
Verification of the habitat classification and condition assessment of grassland areas that were proposed for use as MG4 mitigation areas	4, 5, 6, 7, 8, 9, 10.
Any other polygons identified for additional survey during field surveys	21

These land parcels were mostly defined using GIS polygon boundaries from the 2020 baseline surveys. However, in five instances (Polygons 6, 10, 11, 19 and 25). there was a need to subdivide polygons into one or more separate polygons to distinguish either different habitats or sub-habitats (Refer to Table 2 below).

<sup>1</sup> Although Defra Metric 3.1 was released in April 2022 prior to the 2022 surveys taking place, it was necessary to use the Defra 3.0 Metric to keep the consistency of the assessment throughout the planning process.

## 2.2 Habitat survey

The habitat survey followed the UK Habitat Classification survey methodology (UK Habitat Classification Working Group, 2018).

All habitats within the specified grassland areas (or 'land parcels') were described and mapped according to the UKHab guidance (Butcher *et al.*, 2020). This involved walking across the survey area and recording the vegetation types and habitats present. The relative abundance of vascular plant species was also recorded using the DAFOR scale (Dominant (D), Abundant (A), Frequent (F), Occasional (O) and Rare (R). See Table 2 below for more detail.

Weather conditions were mostly dry with sunny intervals and were suitable for undertaking a thorough survey. Botanical taxonomic nomenclature follows the New Flora of the British Isles, Fourth Edition (Stace, 2019).

**Table 2: Percentage cover values DAFOR scale**

% cover	DAFOR value
>75	Dominant
50-75	Abundant
25-50	Frequent
10-25	Occasional
<10	Rare

## 2.3 Habitat condition assessment

For each of the discrete land parcels, a condition assessment was undertaken following the Defra Biodiversity Metric 3.0 Calculation Tool (Natural England, July 2021).

Habitat condition is an appraisal of the quality of the habitat. In relation to the DEFRA metric, the 'condition' component of quality measures the biological 'working-order' of a habitat type judged against the perceived ecological optimum state for that particular habitat (Panks *et al.*, 2022). Habitat condition could be assessed as belonging to one of three categories; Good, Moderate and Poor for g4 modified grassland (low distinctiveness) g3c/g3c6 other neutral grassland (medium, high and very high distinctiveness) or f2f other swamps wetland habitat (Refer to Appendix B for condition sheets).

## 2.4 Quadrat Sampling

As part of the survey, a number of random 1m<sup>2</sup> quadrats were placed within each field parcel and the number of vascular plant taxa recorded. The number of quadrats selected in a particular field varied according to how uniform the vegetation appeared, with a higher number recorded where it was more heterogenous (but still the same UKHab classification). The placement of quadrats remained random within each area. The results are presented as the average number of species per quadrat for each field parcel.

This data was used to inform the Biodiversity Net Gain (BNG) baseline as the average number of species per 1m<sup>2</sup> is a consideration for both habitat type and, in the case of low distinctive grasslands, the condition score.

## 2.5 Survey timing

The habitat survey was carried out over 22<sup>nd</sup>, 23<sup>rd</sup>, 24<sup>th</sup> and 30<sup>th</sup> June and 1<sup>st</sup> July 2022, to ensure that grassland habitats were at their optimum and before any cutting took place. The following table (Table 3) details the weather conditions at the time of survey.

**Table 3: Weather Conditions during 2022 Surveys**



Date	Weather Conditions
22 <sup>nd</sup> June 2022	Dry and warm. Maximum temperature of 25 ° c
23 <sup>rd</sup> June 2022	Mostly dray apart from a sharp shower in the morning. Overcast in afternoon. Temperatures between 20-23 ° c
24 <sup>th</sup> June 2022	Overcast but dry and warm. Light southerly wind. Temperatures between 20-23 ° c.
30 <sup>th</sup> June 2022	Showers midday otherwise cloudy intermittent sunny spells. Temperatures 12-18 ° c.
1 <sup>st</sup> July 2022	Cloudy with intermittent sunny spells. Temperatures 12-20 ° c.

## 2.6 Surveyors

The surveys were led by Jeremy Halls MCIEEM, who has over 30 years' experience as an ecologist and botanist and David Molesworth who has over 25 years of experience as a botanist and has FISC level 4.

## 2.7 Limitations

The 2022 survey was undertaken at an optimum time of year and in advance of any hay cuts being undertaken. Some 'spring species' may not have been visible, but this will not have altered the results of the habitat categorisation or condition assessment.

## 3. Results

The summary results of the 2022 survey are presented in Table 4 and described below. Appendix C also summarises the condition assessment scores for each polygon, whilst species lists and DAFOR assessments can be found in Appendix D. A webmapper which presents a figure of the polygons and survey results can be found at the following location:

<https://jacobs.maps.arcgis.com/apps/instant/sidebar/index.html?appid=2727f926785144708a5932da64fc4b80>.

### 3.1 Habitat survey

#### 3.1.1 Other neutral grassland g3c

The majority of the grassland surveyed (32 of 35 parcels) was categorised within the UKHab level 3, as 'g3 other neutral grassland', defined as vegetation dominated by grasses and herbs on a range of neutral soils, usually with a pH of between 4.5 and 6.5.

The majority of these g3 parcels (24 of these 32 parcels) were further classified to the subgroup g3c (other neutral grassland), defined as neutral grassland that does not meet the definition of either g3a (lowland meadows) or g3b (upland meadows). This composition and quality of this grassland can be variable but typically it has less than 30% perennial rye grass and 9 to 15 species per metre squared. Four of the parcels (10.2 – 10.5) were particularly species-poor and similar in categorisation to the National Vegetation Classification (NVC) category of OV28, *Agrostis stolonifera* -*Ranunculus repens* community.

Furthermore, one parcel (21) was recorded as g3c6, neutral grassland with a mixture of grass species including palatable ones such as perennial rye-grass *Lolium perenne*, crested dog's tail *Cynosurus cristatus* and sweet vernal-grass *Anthoxanthum odoratum*.

Two parcels (19.1 and 25.1) were also classified as g3c8 *Holcus*-*Juncus* neutral grassland, with Yorkshire fog *Holcus lanatus* and rushes *Juncus* spp.

#### 3.1.2 Modified grassland g4

Two parcels were classified as 'g4 modified grassland', vegetation dominated by a few fast-growing grasses on fertile neutral soils, frequently characterised by abundant perennial rye-grass and white clover, low species diversity and indications of more intensive management.

#### 3.1.3 Other swamps f2f

Land parcel 9 was classified as 'other swamps' habitat, as it had been in the 2020 survey. It is dominated by greater pond sedge *Carex riparia* but has a number of associated species in a tall herb mosaic community including great hairy willowherb *Epilobium hirsutum*, common comfrey *Symphytum officinale* and meadowsweet *Filipendula ulmaria*. One plant of the invasive Himalayan balsam *Impatiens glandulifera* was also noted. This parcel will not be directly affected by the construction works but is on the edge of the area identified for the MG4 grassland compensation and will be retained as 'Other Swamp'.

#### 3.1.4 Changes between habitat classifications from 2020 to 2022

The following changes to habitat classifications were recorded to habitats that were re-surveyed in 2022:

- Sixteen of the parcels that were classified as g4 modified grassland in 2020 were reclassified as other neutral grassland (g3, g3c, g3c8) in 2022;
- One parcel (parcel 6.1) was reclassified from g3c to g4;

- There were five further re-classifications within the g3 category: g3c to g3 (parcel 10.1) and g3c6 to g3c (parcels 5, 6, 8 and 10); and,
- The classification remained the same for the remaining 14 parcels.

**Table 4. Comparative results from 2020 and 2022 UKHab and condition assessment surveys**

Parcel	Date	2020 UKHab	2022 UKHab	2020 Condition Assessment	2022 Condition Assessment	Average no. species per 1m <sup>2</sup> quadrat (2022)	Quadrat sample size i.e. number of quadrats per parcel (n=)
1	22/06/2022	g4	g3c	Poor	Moderate	6.8	16
2	22/06/2022	g4	g3c	Poor	Moderate	7.6	10
3	23/06/2022	g4	g3c	Poor	Moderate	7.3	7
4	23/06/2022	g3c	g3c	N/A	Moderate	7.3	5
5	23/06/2022	g3c6	g3c	Moderate	Moderate	9	1
6	23/06/2022	g3c6	g3c	Good	Moderate	11.7	3
6.1	23/06/2022	g3c (OV24)	g4	Fairly poor	Moderate	4	2
7	23/06/2022	g4	g3c	Poor	Moderate	11	3
8	23/06/2022	g3c6	g3c	N/A	Moderate	N/A	N/A
9	23/06/2022	f2f	f2f	N/A	Moderate	N/A	N/A
10	30/06/2022	g3c6	g3c	Good	Moderate	10.8	15
10.1	30/06/2022	g3c	g3	Poor	Moderate	N/A	N/A
10.2	30/06/2022	g3c	g3c (OV28)	Fairly poor	Moderate	9.2	3
10.3	30/06/2022	g3c	g3c (OV28)	Fairly poor	Moderate	6.8	8
10.4	30/06/2022	g3c	g3c (OV28)	Fairly poor	Moderate	6.3	3
10.5	30/06/2022	g3c	g3c (OV28)	Poor	Moderate	6.3	7
11	30/06/2022	g3c	g3c	Moderate	Moderate	9.3	3
11.1	23/06/2022	g3c	g3c	Moderate	Moderate	N/A	N/A
12	30/06/2022	g4	g3c	Poor	Moderate	9.7	3
13	24/06/2022	g3c	g3c	Poor	Moderate	10.5	2
14	30/06/2022	g4	g3	Poor	Moderate	9.2	9
15	24/06/2022	g3c	g3c	N/A	Moderate	10.5	2
16	24/06/2022	g4	g3c	N/A	Moderate	10.6	3
17	30/06/2022	g3c	g3c	N/A	Moderate	10.7	3
18	30/06/2022	g4	g3c	Poor	Moderate	6.3	10
19	30/06/2022	g4	g3	Poor	Moderate	8.6	9
19.1	30/06/2022	g4	g3c8	Poor	Moderate	8	4
20	30/06/2022	g4	g4	Poor	Good	5.5	4
21	01/07/2022	g3c6	g3c6	Poor	Moderate	12.2	5
22	01/07/2022	g4	g3	Poor	Moderate	9.4	7
23	01/07/2022	g4	g3	Poor	Moderate	11.8	6
24	01/07/2022	g4	g3	Poor	Moderate	11.4	5
25	01/07/2022	g4	g3	Poor	Moderate	7.3	3
25.1	01/07/2022	g4	g3c8	Poor	Moderate	8	5
25.2	01/07/2022	g4	g3	Poor	Moderate	7	3

Modified grassland g4

Other Neutral Grassland g3/g3c/g3c6/g3c8

Other Swamps f2f

### 3.2 Condition assessment

The following changes to condition assessments were recorded for habitats that were re-surveyed in 2022 (Refer to Appendix C for a summary of condition assessment scores):

- For 24 of the 29 polygons where there was an assessment undertaken in 2020, the condition was considered to be higher in 2022, with the change mostly being from 'poor' to 'moderate' condition;
- Two parcels (6 and 10) were re-assessed and downgraded from good to moderate condition; and,
- The condition of three parcels remains unchanged since 2020 (5,11 and 11.1).

It is also noted that of the 13 parcels that were proposed for MG4 mitigation areas (4, 5, 6, 6.1, 7, 8, 9,10, 10.1, 10.2, 10.3, 10.4 and 10.5), all were assessed as having a moderate condition in 2022. This includes seven condition upgrades, two downgrades, three which were previously unassessed and one that remained unchanged. These changes are largely reflective of the differences in the condition assessment criteria between revisions 2.0 and 3.0 of the metric and/or possible changes in land management between surveys (e.g., cessation of grazing or absence of cutting).

## 4. Conclusion

This report presents the results of additional botanical surveys undertaken in June and July 2022, to address comments received during the planning consultation period. These additional surveys therefore included:

- Verification of the habitat classification and condition assessment of grassland areas that had been recorded in 2020 as 'modified grassland' (habitat g4 of the UK Habitats Classification);
- Verification of the habitat classification and condition assessment of grassland areas that had been subject to a hay cut prior to the 2020 surveys,
- Collection of field data to inform a condition assessment for areas where this data was not collected in 2020 and/or a precautionary assessment had been applied; and,
- Verification of the habitat classification and condition assessment of grassland areas that were proposed for use as MG4 mitigation areas.

Thirty-five separate land parcels (GIS polygons) were consequently re-surveyed in 2022. The results are shown on the Webmapper in the following location:

<https://jacobs.maps.arcgis.com/apps/instant/sidebar/index.html?appid=2727f926785144708a5932da64fc4b80>.

The majority of the grassland surveyed was categorised within the UKHab level 3, as 'g3 other neutral grassland', defined as vegetation dominated by grasses and herbs on a range of neutral soils, usually with a pH of between 4.5 and 6.5. This included one parcel (21) categorised as g3c6 and two parcels of g3c8 (19.1 and 25.1). Two parcels were classified as g4 modified grassland. One parcel of 'other swamp' f2f was also classified as moderate condition.

In respect to changes in habitat classification since 2020, 16 parcels were re-classified as other neutral grassland (g3, g3c, g3c8) whilst one parcel was reclassified from g3c to g4. Changes in condition assessment were noted for the majority of re-surveyed parcels. These were generally increases in condition.

These changes are considered partly due to the change in the assessment criteria used between the different revisions of the Defra Metric (2.0 and 3.0). In addition, g4 modified grassland now has its own condition sheet (for low distinctiveness habitat), allowing categorisation of this habitat as 'poor', 'moderate' or 'good' (previously just one category; 'poor').

Changes to the habitat classification and condition assessment for these 35 land parcels will be applied to a revised version of the Defra Metric (v 3.0) to update the assessment of Biodiversity Net Gain for the proposed Scheme. This is the subject of a separate report.

## 5. References

Natural England, July 2019. The Biodiversity Metric 2.0 (JP029). [Online] Available at: <http://nepubprod.appspot.com/publication/5850908674228224> [Accessed between June 2022 and November 2022].

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Jacobs, October 2021. ES Appendix C-3 Habitat and Botanical Survey Report Document Number IMSE500177-CH2-XX-00-SU-EN-0734.

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Jacobs, January 2022. ES Appendix D-23. MG4 Grassland: Mitigation Strategy. Document Number IMSE500177-CH2-XX-A2B-RP-EN-0709|2.

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### Web pages

Webmapper for Habitat and Botanical Survey Results 2020.

<https://jacobs.maps.arcgis.com/apps/instant/attachmentviewer/index.html?appid=3e0155afbbb4e4d814c316894e7f6fd>

Webmapper for Habitat and Botanical Survey Results 2022.

<https://jacobs.maps.arcgis.com/apps/instant/sidebar/index.html?appid=2727f926785144708a5932da64fc4b80>

## **Appendix A. Summary of Relevant Planning Consultation Comments from Statutory and Non-Statutory Consultees**



Date	Consultee	Comments
26 <sup>th</sup> May 2022	Principal Biodiversity Officer, Oxfordshire County Council.	<p>Many areas of modified grassland habitats are reported as being in poor condition, but it is unclear from the information supplied on which condition scores they failed. A comparison with the photograph and species lists supplied suggest they may in fact not be in poor condition.</p>
		<p>It is reported for some polygons that no condition assessment was undertaken and yet the habitats are reported as being in poor condition. The Biodiversity Metric 3.0 Technical Supplement indicates that if survey limitations prevent any criteria from being confidently and accurately assessed, then a precautionary approach should be taken. If a definitive pass or fail cannot be assigned for condition criteria, then it should be assumed they have passed. The assumed condition of on-site baseline habitats should be reviewed in accordance with this guidance, or additional data collected to support condition assessments.</p>
		<p>In recognition that the translocation of turfs may not be successful, the applicant proposes to create 17.8ha of MG4 grassland by sowing seeds from existing MG4 meadows. The information submitted indicates that these fields are broadly suitable in terms of their hydrology and nutrient status. However, further information on the current habitat quality of these fields is needed to inform understanding of the uplift in biodiversity value that would be achieved through the proposed seeding. It is apparent from the baseline habitat information submitted that some of these areas support more species-rich grassland, whilst others had been cut at the time of survey; further information on the existing botanical value of these fields is requested, as well as an assessment of the increase in biodiversity that would be achieved through their enhancement.</p>
No date provided	Dr. Tim King MA MSc DPhil Dip Stat FRSB C Biol FLS MRES MCIEEM	<p>The current biodiversity is much higher than the EA would have us believe. It is quite possible that the overall net terrestrial biodiversity might turn out weakly positive or even negative. This has major implications for the whole project. At least the calculation has to be withdrawn, re-sampled, and re-calculated before being re-submitted.</p> <p><i>In particular, a competent plant ecologist needs to resample this whole area this summer, before some of it is cut for hay in early July.</i></p>
		<p>My own quadrat sampling shows that most of the fields between Willow Walk and the Old Abingdon Road average more than eight plant species a square metre, in many cases (e.g. Long Meadow) considerably more, up to 19. Most can be attributed to a recognised NVC plant community (MG6, MG&amp;, MG11, MG15 etc.) interpreted <i>sensu lato</i>. This means that</p>

Date	Consultee	Comments
		<p>many of the 'modified grasslands' (up to eight species, multiplier 2) on the maps are in fact 'neutral grasslands of medium distinctiveness', doubling their baseline score (multiplier 4). The majority are in 'good' condition (multiplier 3), under the most recent criteria, rather than the 'poor' condition (multiplier 1) indicated for the majority on the Jacobs maps in the planning application.</p>
23 <sup>rd</sup> May 2022	Bioscan (on behalf of Oxford Preservation Trust)	<p>'..... we note there appear to be fundamental flaws in the applicant's Biodiversity Net Gain assessments which mean that the three potential sites east of Hinksey Meadow identified for attempted creation of MG4 in compensation for losses at Hinksey Meadow, have been grossly undervalued as 'poor condition' and misclassified as 'low distinctiveness' habitat in their baseline state. Bioscan have visited these fields and correct application of UKHab methodology and of the up-to-date Metric 3.1 condition assessments (the applicant relies on the problematic and now superseded Metric 2.0 condition assessment methodology) shows these assessments to be incorrect. In fact, the proposed compensation delivery on this land appears to be proposed at the expense of habitats worthy of retention and restoration in their own right. This creates a cycle of diminishing returns and seriously calls into question the applicant's claims that the project overall can deliver net gain. The timelines to delivery of 'good' habitat condition also need to be considered in the context of the less than certain security of these proposed compensation sites. We note that these timelines are inconsistent with the on-the-ground reality of timelines for flood meadow habitat restoration in this part of the Thames corridor. As well as the realities outlined in the scientific literature referenced above, we note the incongruity between the fact that fields north of Botley Road that are subject to Countryside Stewardship (and indeed OPT's fields east of Willow Walk), have been assigned low distinctiveness and a condition of 'poor' in the applicant's BNG assessment, notwithstanding a period of years of secured, funded and optimised nature conservation management. Yet the applicant contends that, under its watch, and absent any detail, very similar fields can be transformed from 'low' to 'moderate' (or even high) distinctiveness and from 'poor' to 'good' condition in a mere 15 years'.</p>

**Appendix B. Condition Sheets for Low Distinctiveness Grassland, Medium, High and Very High Distinctiveness Grasslands and Wetland (Defra Metric 3.0, Natural England July 2021)**

Condition Sheet: GRASSLAND Habitat Type (low distinctiveness)		
UKHab Habitat Type(s)		
Grassland - Modified grassland		
Habitat Description		
<a href="#">See UKHab</a>		
Condition Assessment Criteria		
1	There must be 6-8 species per m <sup>2</sup> . Note - if a grassland has 9 or more species per m <sup>2</sup> it should be classified as a moderate distinctiveness grassland habitat type. <b>NB - this criterion is non-negotiable for achieving good condition.</b>	
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	
3	Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of shrubs with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	
4	Physical damage evident in less than 5% of total grassland area, such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities.	
5	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	
6	Cover of bracken less than 20%.	
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species <sup>1</sup> make up less than 5% of ground cover.	
Condition Assessment Result		Condition Assessment Score
Passes 6 or 7 of 7 criteria including non-negotiable criterion 7		Good (3)
Passes 4 or 5 of 7 criteria; OR Passes 6 of 7 criteria excluding non-negotiable criterion 7		Moderate (2)
Passes 0, 1, 2 or 3 of 7 criteria		Poor (1)
Notes		
<p><b>Footnote 1</b> - Species considered undesirable for this habitat type include: Creeping thistle <i>Cirsium arvense</i>, spear thistle <i>Cirsium vulgare</i>, curled dock <i>Rumex crispus</i>, broad-leaved dock <i>Rumex obtusifolius</i>, common nettle <i>Urtica dioica</i>, greater plantain <i>Plantago major</i>, white clover <i>Trifolium repens</i>, cow parsley <i>Anthriscus sylvestris</i>.</p>		

Condition Sheet: GRASSLAND Habitat Type (medium, high & very high distinctiveness)	
<b>UKHab Habitat Type(s)</b>	
Grassland - Lowland calcareous grassland Grassland - Lowland dry acid grassland Grassland - Lowland meadows Grassland - Other lowland acid grassland Grassland - Other neutral grassland Grassland - Tall herb communities* Grassland - Upland acid grassland Grassland - Upland calcareous grassland Grassland - Upland hay meadows Sparsely vegetated land - Calaminarian grassland	
<b>Habitat Description</b>	
<a href="#">See UKHab</a>	
* Note Tall herb habitat that does not meet the definition of Annex 1 habitat 'Tall herb communities (H6430)' should be recorded as "Other neutral grassland"	
<b>Condition Assessment Criteria</b>	
1	The appearance and composition of the vegetation closely matches characteristics of the specific grassland habitat type (see UKHab definition). Wildflowers, sedges and indicator species for the specific grassland habitat type are very clearly and easily visible throughout the sward.
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.
3	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.
4	Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.
5	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of undesirable species <sup>1</sup> and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.
<b>Condition Assessment Result</b>	
Passes 5 of 5 criteria	
Passes 3 or 4 of 5 criteria	
Passes 0, 1 or 2 of 5 criteria	
<b>Condition Assessment Score</b>	
Good (3)	
Moderate (2)	
Poor (1)	
<b>Notes</b>	
<b>Footnote 1</b> - Species considered undesirable for this habitat type include: Creeping thistle <i>Cirsium arvense</i> , spear thistle <i>Cirsium vulgare</i> , curled dock <i>Rumex crispus</i> , broad-leaved dock <i>Rumex obtusifolius</i> , common nettle <i>Urtica dioica</i> , creeping buttercup <i>Ranunculus repens</i> , greater plantain <i>Plantago major</i> , white clover <i>Trifolium repens</i> , cow parsley <i>Anthriscus sylvestris</i> .	

Condition Sheet: WETLAND Habitat Type
<b>UKHab Habitat Type(s)</b>
<p><b>Grassland - Floodplain wetland mosaic (CFGM)</b> [Use this condition sheet unless associated with a species rich grassland sward, reedbed or fen, in which case record and assess as the relevant habitat type (plus Ditch condition sheet for any ditches)].</p> <p><b>Wetland - Blanket bog</b></p> <p><b>Wetland - Depression on peat substrates (H7150)</b></p> <p><b>Wetland - Fens (upland and lowland)</b></p> <p><b>Wetland - Lowland raised bog</b></p> <p><b>Wetland - Oceanic valley mire [1] (D2.1)</b></p> <p><b>Wetland - Purple moor grass and rush pastures</b></p> <p><b>Wetland - Reedbeds</b></p> <p><b>Wetland - Transition mires and quaking bogs (H7140)</b></p>
<b>Habitat Description</b>
<p><a href="#">For Oceanic valley mires - see EUNIS</a></p> <p><b>Floodplain wetland mosaic (CFGM)</b> - Where an area is included within the (soon to be published) "Floodplain Wetland Mosaic Habitat Inventory" as extant habitat OR included within the "Floodplain with potential for restoration to Wetland Mosaic" layer it should be recorded within the metric as FWM habitat. In these cases the ditches form an integral part of the habitat and should not be recorded separately as linear features in the Rivers &amp; Streams part of the metric.</p> <p>If it is NOT included within either layer of the inventory it should be assessed, and entered into the metric, as the appropriate habitat (e.g. modified grassland, cereal crop, temporary lakes, ponds and pools). Any ditches should be recorded separately within the River and Streams part of the metric.</p> <p>Until this new inventory is published, you should use existing inventories for floodplain habitats, including the Coastal and Floodplain Grazing Marsh layer of the Priority Habitat Inventory (England) and any local habitat data.</p> <p><a href="https://data.gov.uk/dataset/4b6ddab7-6c0f-4407-946e-d6499f19fcde/priority-habitat-inventory-engl">https://data.gov.uk/dataset/4b6ddab7-6c0f-4407-946e-d6499f19fcde/priority-habitat-inventory-engl</a></p> <p>For all other wetland habitats see <a href="#">UKHab</a></p>

## Botanical Survey Report Addendum

Condition Assessment Criteria	
<b>CORE CRITERIA - Applicable to all wetland habitat types:</b>	
1	The water table is at or near the surface throughout the year, this could be open water or saturation of soil at the surface. There is no artificial drainage, unless specifically to maintain water levels as specified above. <b>NB - this criterion is non-negotiable for achieving good condition.</b>
2	The appearance and composition of the vegetation closely matches characteristics of the specific wetland habitat type (see definitions and links above). Indicator species for the specific wetland habitat type <sup>1</sup> are very clearly and easily visible.
3	The water supplies (groundwater, surfacewater and/or rainwater) to the wetland are of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution.
4	Cover of scrub and scattered trees less than 10%.
5	Cover of bare ground less than 5%.
6	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species <sup>1</sup> make up less than 5% of ground cover.
<b>ADDITIONAL CRITERION - only applicable to Fen and Purple moor grass and rush pasture habitat type:</b>	
7a	No more than 25% of the fen area has a continuous cover of litter (i.e. dead vegetation) preventing regeneration.
<b>ADDITIONAL CRITERION - only applicable to Bog habitat type:</b>	
7b	Sphagnum and cottongrasses are at least frequent. Cover of ericaceous dwarf-shrubs <sup>2</sup> is less than 75%.
<b>ADDITIONAL CRITERION - only applicable to Reedbed habitat type:</b>	
7c	The reedbed has a diverse structure with between 60 and 80% reeds. Other areas may include open water (at least 10%), species-rich fen and/or wet woodland.
<b>ADDITIONAL CRITERION - only applicable to Floodplain wetland mosaic (CFGM) habitat type:</b>	
7d	All ditches recorded within the habitat achieve Good condition as assessed using the Ditch condition sheet.

## Botanical Survey Report Addendum

Condition Assessment Result	Condition Assessment Score
<b>If 6 criteria assessed:</b>	
<ul style="list-style-type: none"> <li>• Passes 5 or 6 of 6 core criteria, INCLUDING non-negotiable core criterion 1</li> </ul>	Good (3)
<ul style="list-style-type: none"> <li>• Passes 3 or 4 of 6 core criteria; OR</li> <li>• Passes 5 of 6 core criteria EXCLUDING non-negotiable core criterion 1</li> </ul>	Moderate (2)
<ul style="list-style-type: none"> <li>• Passes 0, 1 or 2 of 6 core criteria</li> </ul>	Poor (1)
<b>If 7 criteria assessed:</b>	
<ul style="list-style-type: none"> <li>• Passes 5 or 6 of 6 core criteria, INCLUDING non-negotiable core criterion 1; AND</li> <li>• Passes additional criterion 7a, 7b, 7c OR 7d where applicable</li> </ul>	Good (3)
<ul style="list-style-type: none"> <li>• Passes 4 or 5 of 7 criteria; OR</li> <li>• Passes 6 of 7 criteria EXCLUDING either non-negotiable core criterion 1 or additional criterion 7a, 7b, 7c OR 7d</li> </ul>	Moderate (2)
<ul style="list-style-type: none"> <li>• Passes 0, 1, 2 or 3 of 7 criteria</li> </ul>	Poor (1)
Notes	
<p><b>Footnote 1</b> - For fens, specify what fen type is present - alkaline, neutral, acidic/eutrophic, mesotrophic, oligotrophic.</p> <p><b>Footnote 2</b> - Species considered undesirable for this habitat type include: creeping thistle <i>Cirsium arvense</i>, spear thistle <i>Cirsium vulgare</i>, common nettle <i>Urtica dioica</i>, docks <i>Rumex</i> spp., cherry laurel <i>Prunus laurocerasus</i>, common ragwort <i>Jacobaea vulgaris</i>.</p> <p><b>Footnote 3</b> - Ericaceous dwarf shrubs include: crowberry <i>Empetrum nigrum</i>, cowberry <i>Vaccinium vitis-idaea</i>, bog bilberry <i>Vaccinium uliginosum</i>, cranberry <i>Vaccinium oxycoccos</i>, heather <i>Calluna vulgaris</i>, cross-leaved heath <i>Erica tetralix</i>, bog-rosemary <i>Andromeda polifolia</i>, bog myrtle <i>Myrica gale</i>.</p>	



## **Appendix C. Summary of Condition Assessment Scores for each land parcel / GIS polygon.**

Botanical Survey Report Addendum

Polygon	Condition Sheet Used - Distinctiveness (refer to Appendix B)	Condition Assessment Criteria (Pass = Y, Fail = N)							Condition Assessment Score	Condition
		1	2	3	4	5	6	7		
1	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
2	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
3	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
4	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
5	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
6	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
6.1	Low	N	N	Y	Y	N	Y	Y	4	Moderate
7	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
8	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
9	Wetland	Y	Y	?	Y	Y	N	N/A	4	Moderate
10	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
10.1	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
10.2	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
10.3	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
10.4	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
10.5	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
11	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
11.1	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
12	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
13	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
14	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
15	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
16	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate

Botanical Survey Report Addendum

Polygon	Condition Sheet Used - Distinctiveness (refer to Appendix B)	Condition Assessment Criteria (Pass = Y, Fail = N)							Condition Assessment Score	Condition
		1	2	3	4	5	6	7		
17	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
18	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
19	Med, High, V.High	Y	N	Y	Y	N	N/A	N/A	3	Moderate
19.1	Med, High, V.High	Y	N	Y	Y	N	N/A	N/A	3	Moderate
20	Low	Y	Y	Y	N	Y	Y	Y	6	Good
21	Med, High, V.High	Y	Y	N	Y	Y	N/A	N/A	4	Moderate
22	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
23	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
24	Med, High, V.High	Y	N	N	Y	Y	N/A	N/A	3	Moderate
25	Med, High, V.High	Y	N	Y	Y	N	N/A	N/A	3	Moderate
25.1	Med, High, V.High	Y	N	Y	Y	N	N/A	N/A	3	Moderate
25.2	Med, High, V.High	Y	N	Y	Y	N	N/A	N/A	3	Moderate

## Appendix D. Species Lists and DAFOR Assessments for each land parcel / GIS polygon

Percentage cover values DAFOR scale

DAFOR value	Abbreviation appearing in Table below	% cover
Dominant	D	>75
Abundant	A	50-75
Frequent	F	25-50
Occasional	O	10-25
Rare	R	<10

Scientific Name	Common Name	Polygon Number																																			
		1	2	3	4	5	6	6.1	7	8	9	10	10.1	10.2	10.3	10.4	10.5	11	11.1	12	13	14	15	16	17	18	19	19.1	20	21	22	23	24	25	25.1	25.2	
Adder's Tongue	<i>Ophioglossum vulgatum</i>	R	R	-	-	-	-	-	R	-	-	-	-	-	-	-	-	0	-	0	-	0	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Autumn Hawkbit	<i>Leontodon autumnalis</i>	-	-	-	-	-	-	-	-	-	0	-	-	-	0	0	-	-	-	-	0	-	-	-	-	R	-	-	0	-	R	-	-	-	-	-	-
Bittersweet	<i>Solanum dulcamara</i>	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Black Knapweed	<i>Centaurea nigra</i>	R	-	R	-	-	-	R	-	-	R	-	-	-	-	-	R	R	-	0	R	F	-	R	-	-	-	-	-	-	R	-	-	R	-	-	
Black Medick	<i>Medicago lupulina</i>	-	-	-	R	-	-	-	-	-	0	-	-	-	-	-	R	F	-	0	R	F	-	0	-	-	-	-	0	-	-	-	-	-	-	-	
Bramble	<i>Rubus fruticosus agg.</i>	-	-	-	-	-	-	-	-	R	-	R	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Bristly Ox-tongue	<i>Picris echioides</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Broad-Leaved Dock	<i>Rumex obtusifolius</i>	R	-	R	R	-	-	-	-	-	R	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	F	-	-	-	-	-	-	-	-	
Broom-rape	<i>Orobanche sp.</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cat's-ear	<i>Hypochaeris radicata</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	
Cleavers	<i>Galium aparine</i>	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Clustered Dock	<i>Rumex conglomeratus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-
Cocksfoot	<i>Dactylis glomerata</i>	0	F-LA	F-LA	F	F	0		0		0	0	-	-	-	-	0	F	F	F-LA	0	F-LA	F	LA	-	R	-	-	0	R	0	F	0	-	0		
Common Bent	<i>Agrostis capillaris</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	R	-	-	-	-	-	R	-	F	F	0	F	-	R	-	-	
Common Broomrape	<i>Orobanche minor</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Common Comfrey	<i>Symphytum officinale</i>	-	-	-	-	R	-	-	-	-	F	R	0	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Common Couch	<i>Elytrigia repens</i>	R	-	-	-	-	-	-	-	-	R	-	-	R	-	-	R	-	R	-	-	-	-	-	-	R	-	-	R	-	-	-	-	-	-	-	-

Scientific Name	Common Name	Polygon Number																																				
		1	2	3	4	5	6	6.1	7	8	9	10	10.1	10.2	10.3	10.4	10.5	11	11.1	12	13	14	15	16	17	18	19	19.1	20	21	22	23	24	25	25.1	25.2		
Common Fleabane	<i>Pulicaria dysenterica</i>	-	-	O		R	-	-	-	-	-	-	O	R	-	-	-	R	-	-	-	R	-	R	-	-	R	-	-	-	-	-	-	-	-	-	-	-
Common meadow-grass	<i>Poa pratensis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	
Common Meadow-Rue	<i>Thalictrum flavum</i>	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Common Mouse-ear	<i>Cerastium fontanum</i>	-	-	-	-	O	-	O	F	-	-	-	-	-	-	-	-	R	R	-	-	R	O	-	R	R	-	-	R	-	R	-	R	-	-	-	-	
Common Ragwort	<i>Senecio jacobaea</i>	-	-	-	-	O	-	R		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R		-	-	-	-	R		R		R		R	
Common Reed	<i>Phragmites australis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	-	R		O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Common Soft-brome	<i>Bromus hordeaceus</i>	O-LF	F-LA	F-LD	R	-	R		R	O	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	R	O	O	-	O	O	R	R	R	O	R		
Common Sorrel	<i>Rumex acetosa</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	R	R	-	R	-	-		
Cow Parsley	<i>Anthriscus sylvestris</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cowslip	<i>Primula veris</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	
Creeping Bent	<i>Agrostis stolonifera</i>	F-LA		O	F	-	-	-	-	O-LA	-	F	-	F	A	A	A	F	F	F	-	F	-	-	A	F	O	F	F	-	F	-	-	F	F	F		
Creeping Buttercup	<i>Ranunculus repens</i>	A	O	F	F-LA	O	O	O	F	F	-	F	-	F	F	A	A	F	-	O	-	-	O	O	F	-	-	-	F	-	-	-	-	-	O	-	-	
Creeping Cinquefoil	<i>Potentilla reptans</i>	-	-	-	-	-	-	-	-	F	-	-	-	-	-	-	-	O	-	-	-	-	-	-	-	-	-	-	-	O	-	-	-	-	-	-	-	-
Creeping Thistle	<i>Cirsium arvense</i>	-	-	R	-	-	-	-	-	R		O	R	-	-	-	-	R	-	-	-	O	-	-	-	F	O	R	O	O	O	O	O	O	O	O	F	O
Crested Dog's-Tail	<i>Cynosurus cristatus</i>	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	-	-	-	R	-	-	-	R	R	-	O		R	-	-	-	-	-	-	
Curled Dock	<i>Rumex crispus</i>	R	R	-	-	-	R	-	-	-	-	R	R	R	R	-	-	R	-	R	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	R	-	-
Cut-leaved Crane's-bill	<i>Geranium dissectum</i>	R	R	-	-	R	R	R	O	-	-	-	-	-	-	-	-	R	-	R		R		R	-	-	-	-	R	-	-	-	-	-	-	R	-	-
Daisy	<i>Bellis perennis</i>	R	R	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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		1	2	3	4	5	6	6.1	7	8	9	10	10.1	10.2	10.3	10.4	10.5	11	11.1	12	13	14	15	16	17	18	19	19.1	20	21	22	23	24	25	25.1	25.2		
Dandelion	<i>Taraxacum agg.</i>	O	R	-	-	O	F	O	F	-	-	-	-	-	-	-	-	F	F	F	-	-	A	A	F	-	O	-	-	O	-	-	-	-	-	-	-	
Dogwood	<i>Cornus sanguinea</i>	-	-	-	-	-	-	-	-	-	-	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
European ash	<i>Fraxinus excelsior</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
False Fox-sedge	<i>Carex otrubae</i>	-	-	-	O	-	-	-	-	-	-	R	O	-	-	R	-	-	-	-	-	-	-	-	-	-	R	O	-	-	-	-	-	-	-	-	R	
False Oat-grass	<i>Arrhenatherum elatius</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	F	O	R	-	-	R	-	R	-	-	R	-	R	R	R	-	-	-		
Field Horsetail	<i>Equisetum arvense</i>	R	-	R	-	-	-	-	O	-	-	-	R	-	-	-	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Goat's-Beard	<i>Tragopogon pratensis</i>	-	-	-	R	O	O	-	R	-	-	-	-	-	-	-	R	R	R	F-LA	-	R	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	
Goat's-rue	<i>Galega officinalis</i>	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Good King Henry	<i>Chenopodium bonus-henricus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	
Great Burnet	<i>Sanguisorba officinalis</i>	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Great Willowherb	<i>Epilobium hirsutum</i>	-	-	-	-	-	-	-	-	A	-	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater Bird's-foot-trefoil	<i>Lotus pedunculatus</i>	-	R	-	-	-	R	-	-	R	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater Plantain	<i>Plantago major</i>	-	-	-	-	-	R	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	-	-	-	-	-	-	-	-	-	-
Hard Rush	<i>Juncus inflexus</i>	-	-	-	-	-	-	-	O	-	-	R	-	R	-	-	R	-	-	-	R	-	-	-	-	-	R	R	F	-	-	-	-	-	R	F	R	
Hawthorn	<i>Crataegus monogyna</i>	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hedge Bindweed	<i>Calystegia sepium</i>	-	-	-	-	-	-	-	-	F	-	O	-	-	-	-	O	-	R	-	-	-	-	-	-	-	-	O	-	-	-	-	-	-	-	R	-	-
Himalayan balsam	<i>Impatiens glandulifera</i>	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Hoary Ragwort	<i>Senecio erucifolius</i>	-	R	R	R	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hogweed	<i>Heracleum sphondylium</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	
Hop Trefoil	<i>Trifolium campestre</i>	-	-	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-		
Horsetail	<i>Equisetum sp</i>	-	-	-	-	-	-	-	-	-	O	-	-	-	-	-	-	-	-	O	-	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Lady's Bedstraw	<i>Galium verum</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	O	-	-	R	-	-	-	-	-	F	-	R	R	-	-	-		
Lesser Trefoil	<i>Trifolium dubium</i>	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	O	-	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Marsh Thistle	<i>Cirsium palustre</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	-	-	
Meadow Barley	<i>Hordeum secalinum</i>	F-LA		F-LA		-	-	-	O	-	-	-	-	R	-	-	-	-	-	-	R	-	R	R	-	O	F	O	O	O	F		R	O	O	O		
Meadow Buttercup	<i>Ranunculus acris</i>	F	R	O	A	O	O	-	F-LA	O	-	O	-	-	-	-	-	F	O	F	-	O	F-LA	F-LA	F	R	F	-	-	R	O	O	F	O	O	O		
Meadow Foxtail	<i>Alopecurus pratensis</i>	-	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	R	-	R	-	R	-	R	
Meadow Vetchling	<i>Lathyrus pratensis</i>	-	R	R	-	-	F-LA	-	R	-	F	R	-	R	R	R	R	O	-	R	-	O	O	R	F	R	-	-	-	-	-	R	-	-	R	-	-	R
Meadowsweet	<i>Filipendula ulmaria</i>	R	R	-	-	-	R	-	-	-	F	O	F	R	O	R	R	O	-	R	R	O	-	-	R	R	-	-	-	-	-	-	-	-	-	-	-	
Common Nettle	<i>Urtica dioica</i>	-	-	-	-	-	-	-	-	-	A	R	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	-	-	-	R	-	-	-	R	
Ox-eye Daisy	<i>Leucanthemum vulgare</i>	R	-	-	R	-	R	-	R	-	-	-	-	-	-	-	-	-	R	O	R	O	R	O	O	O	-	-	-	-	-	-	-	-	-	-	-	
Pendulous Sedge	<i>Carex pendula</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	
Pepper-Saxifrage	<i>Silaum silaus</i>	R	R	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Perennial Rye-Grass	<i>Lolium perenne</i>	O	F	O	-	-	O		R	-	-	-	-	-	-	-	-	R	F	-	R	R	R	R	-	R	R	R	A	O	O	O	O	O	O	-	O	
Perforate St-John's Wort	<i>Hypericum perforatum</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	



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		1	2	3	4	5	6	6.1	7	8	9	10	10.1	10.2	10.3	10.4	10.5	11	11.1	12	13	14	15	16	17	18	19	19.1	20	21	22	23	24	25	25.1	25.2		
Pond sedge	<i>Carex riparia</i>	-	-	-	-	-	-	-	-	-	A-LD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Purple-loosestrife	<i>Lythrum salicaria</i>	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Pyramidal Orchid	<i>Anacamptis pyramidalis</i>	-	R		R	R	R	-	-	-	-	-	-	-	-	-	R	O	R	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Quaking-grass	<i>Briza media</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	O	-	-	-	-	-		
Ragged-robin	<i>Silene flos-cuculi</i>	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	
Red Clover	<i>Trifolium pratense</i>	-	O	O	F	R	F-LA	-	O	O	-	F	-	F	F	O	O	F	F	F	F-LA	-	LA	O	O	-	R	-	-	O	-	-	-	-	-	-	-	
Red Fescue	<i>Festuca rubra</i>	O	O-LF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	-	-	R	-	-	A	O	-	-	-	-	
Ribwort Plantain	<i>Plantago lanceolata</i>	O	O	O	F	R	F	R	O	O	F	F	-	O	-	R	R	R	-	-	F-LA	R	R	R	R	-	R	-	O	R	-	R	-	-	-	-	-	
Rough Hawk's-Beard	<i>Crepis biennis</i>	-	O	-	F-LA		A	-	O	F	-	O	-	-	-	-	-	O	F	F	A	O	A	A	F	-	-	-	-	-	-	-	-	-	-	-	-	-
Rough Meadow-grass	<i>Poa trivialis</i>	-	-	-	-	-	-	-	-	-	-	-	-	O	F	F	F	O	-	-	-	O	-	-	-	-	O	O	O	F	O	F	O	F	O	F	-	F
Rose	<i>Rosa sp.</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selfheal	<i>Prunella vulgaris</i>	-	R	-	O	R	F	-	O	O	-	R	-	R	-	-	-	R	R	O	O	R	F	F	O	R	R	-	-	-	-	-	-	-	-	-	-	-
Silverweed	<i>Potentilla anserina</i>	R	-	O	-	-	-	-	-	-	F	-	-	-	R	-	-	R	-	-	-	-	-	-	-	-	F	-	O	-	-	-	-	-	-	-	-	-
Smooth Hawk's-beard	<i>Crepis capillaris</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	-	-	-	-	-	-	-	-
Soft-rush	<i>Juncus effusus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	R	R				R		
Spear Thistle	<i>Cirsium vulgare</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	R	-	-	R	R	O	F	R	-	R	
Spiked Sedge	<i>Carex spicata</i>	-	-	-	-	-	R	-	-	-	-	O	-	-	-	-	O	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>	-	-	-	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	O	R	-	R		

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Tall Fescue	<i>Schedonorus arundinacea</i>	F-LA	O-LA	O-LA	F	O	O	-	D	-	O	F	R	O	R	-	-	F	F	F	A		D	D	F	O	O	O	-	R	-	R	R	A	O	A	
Timothy	<i>Phleum pratense</i>	O	O	O	R	-	R	-	-	-	-	-	-	-	-	-	-	O	R	-	-	O	-	-	O	O	R	O	R	R	O	O	F	O	F		
Tufted Hair-Grass	<i>Deschampsia caespitosa</i>	R	R	R	-	-	-	-	-	-	R	-	-	R	-	-	O	-	-	-	-	-	-	-	-	F	R	O	-	R	R	-	-	O	F	O	
Tufted Vetch	<i>Vicia cracca</i>	-	R	-	F-LA	-	F-LA	-	R	F	O-LF	O	O	F	F	F	F	F	R	O	O	-	-	R	R	-	R	R	-	R	R	-	-	-	R	-	
Upright hedge-parsley	<i>Torilis japonica</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
White Clover	<i>Trifolium repens</i>	F	R	O	O	-	O	-	F	F	-	O	-	O	R	-	-	-	R	R	F-LA	-	F	O	-	R	-	R	F	O	R	F	O	-	-	-	
Wild Angelica	<i>Angelica sylvestris</i>	-	-	R	O	O	R	-	-	R	O	F	R	-	-	-	-	R	R	O	R	F	R	-	-	-	-	-	-	-	-	-	-	-	-	-	
Wild Carrot	<i>Daucus carota</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	D	O		O	D	R		R	-	-	-	-	-	-	-	-	-	-	-	
Willow	<i>Salix sp (sapling)</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Yarrow	<i>Achillea millefolium</i>	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	F	-	F	O	-	-	-	
Yellow Oat-grass	<i>Trisetum flavescens</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	-	-	-	-	-	R	R	-	-	F	-	O	O	-	-	-	
Yellow-Rattle	<i>Rhinanthus minor</i>	-	-	-	-	-	R	-	-	-	O-LA	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yorkshire-Fog	<i>Holcus lanatus</i>	R	O	O	LD	D	F-LD	D	O	A-LD	F	F	-	F	O	O	O	F	F	F	F-LA	F	F-LA	F-LA	-	A	A	F	O	F	F	O	A	A	F	A	