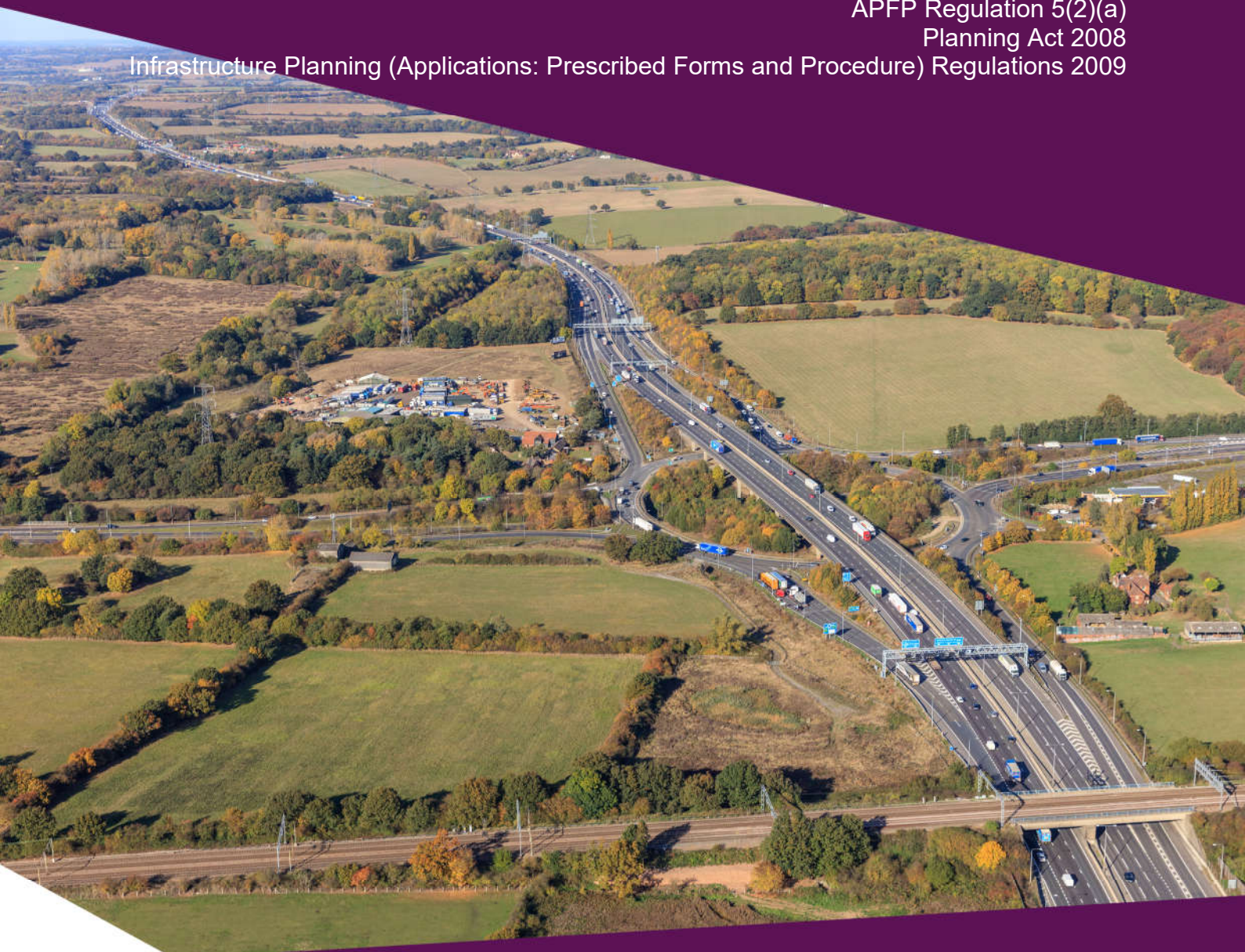
M25 junction 28 improvement scheme
TR010029
6.3 Environmental Statement
Appendix 7.4: National vegetation classification

APFP Regulation 5(2)(a)
Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



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Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M25 junction 28 scheme
Development Consent Order 202[x]

6.3 ENVIRONMENTAL STATEMENT
APPENDIX 7.4: NATIONAL VEGETATION CLASSIFICATION

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Version	Date	Status of Version
1	May 2020	Application issue

Table of contents

Appendix 7.4
National vegetation classification

National Vegetation Classification Survey

Report: M25 Junction 28

Date: January 2020

Submitted to:
Atkins

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Revision History

Revision	Date	Amendment
1	7th Nov 2017	1st version in relation to design drawing HE551519 - ATK - HGN -M25J28 - DR - D - 0294
2	7th June 2019	Edited to be ES appendix. Issue for HE review.
3	11th November 2019	Updated following client review

Revision	Date	Amendment
4	30th January 2020	Updated changes in relation to final comments and amended DCO boundary

Contents

1 Introduction

1.1 Background and Survey Objectives

ADAS were commissioned by Atkins to undertake a suite of ecological surveys of an area of land adjacent to Junction 28 of the M25. The land is proposed to be re-developed as part of improvement works to the junction which Highways England will be undertaking. Through the Phase 1 survey (ADAS, Nov 2017) a range of habitats were identified including semi-natural broad-leaved woodland and semi-improved grassland. To further understand these habitat types and how they may or may not form an important ecological component of the locally designated sites a vegetation survey to characterise the vegetation according to the National Vegetation Classification (Rodwell 1992) was undertaken. The NVC survey was undertaken by an ADAS Ecologists (see Annex 1 for lead surveyor experience)

Separate botanical surveys were also undertaken for the Ingrebourne River and the Weald Brook (which runs through the western part of the site and joins the Ingrebourne River) and are reported in the M25 Junction 28 aquatic survey report (Appendix 7.6) and river corridor surveys, (Appendix 7.5).

1.2 Site Description- Habitats

The survey area focused on the land within the DCO boundary subject to impacts during construction and operation of the Scheme. For this reason, survey was focused on the land north west of Junction 28, where the new loop road will be constructed. Outside of this area, there are temporary works associated with the gas main diversion south of the A12 (west of junction 28). All other works within the DCO boundary are limited to the existing carriageway of the A12 and M25 (e.g. replacement of signs on existing gantries). The survey covered two woodlands, Alder Wood and The Grove, and semi-improved grassland habitats identified by the Phase 1 habitat survey. The locations of these habitats are illustrated in Figure 1 below and are part of the wider site outlined on the figure in Annex 2. For the purpose of this report, names have been given to the meadows to aid in their location. Fleabane Meadow and Woodland Ride are located to the east of the Weald Brook and South West Meadow to the west of the Weald Brook.

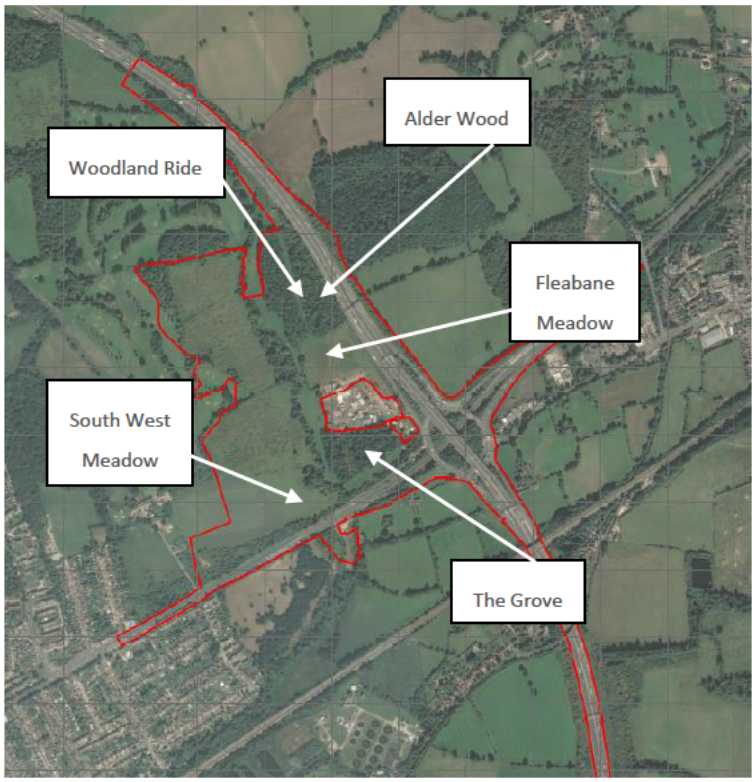

Figure 1: Location of areas surveyed under NVC (ADAS general mapping tool (2019)

2 Methodology

2.1 Site Survey

A detailed vegetation survey of the survey area was carried out during August 2017, led by an experienced and competent experienced botanist (see surveyor experience in Annex 1). Reference was made to guidelines published in the National Vegetation Classification (NVC), User's handbook (JNCC, 2006).

Establishing NVC communities provides information on the importance of a site. This information can also be of use to show the direction of change that vegetation communities may take under particular management conditions.

An initial walkover of the survey area was carried out in June 2017 and homogenous vegetation types were mapped ready for later sampling. Photographs of the habitats are presented in Annex 3. Further visits in July 2018 also aided with the NVC survey to provide a full species list for the site and can be viewed in the Phase 1 Report (ADAS, 2019). Sampling took the form of recording percentage covers for botanical species within defined plots or quadrats.

The NVC uses different sized quadrats depending on the type of vegetation to be sampled. The grassland was sampled using standard plots of 2m x 2m and woodland used two quadrats sizes; a 50m x 50m quadrat to assess the canopy and within that area two 4m x 4m quadrats taken to assess the ground flora.

Typically, five sets of quadrats were used within each area (Figure 1 – above) so that 15 quadrats were used to identify the grassland and 10 (large) and 20 (smaller) quadrats to identify the woodlands.

2.2 National Vegetation Classification (NVC)

NVC is a systematic classification of the vegetation types or communities present within the British Isles. The classification is published in the 5 volumes of the British Plant Communities series by Rodwell *et al* and is comprehensive in its coverage of habitat types. Each volume covers a different group of vegetation types and includes keys and a detailed account of each community. These accounts are the primary source for identifying plant communities and consists of detailed descriptions of the species composition, structure, habitat and ecological relationships, geographical distribution and any sub-communities. Each community also has a floristic table which summarises the species frequency and abundance values characteristic of the vegetation.

2.3 Characterising the Plant Communities and their Value

The samples collected in the field survey were compared to NVC communities' data using both conventional and computer methods. A review of the NVC literature was carried out (see Section 4 below). Floristic tables for each of the stands sampled were constructed using the field data. They are the easiest way to allow direct comparison with the floristic tables published in British plant communities for each NVC community. NVC frequency values and a domin range (as described in Section 2.5 below) were calculated for each species within the habitats surveyed. This data is summarised in Annex 4. The records of the plants recorded were analysed using MATCH.

2.4 MATCH Computer Programme

The MATCH computer program (Malloch, 1992) was used as an aid to NVC analysis. This is achieved by the statistical ranking of species, which have the closest fit to community descriptions in the NVC. MATCH suffers from the disadvantage that it fails to recognise atypical stands of vegetation. Therefore, suggested communities are sometimes incorrect. Nevertheless, the purely objective nature of the program renders it a valuable aid to community description.

Despite other limitations, MATCH has the advantage that it is not subjective and information given to the programme will always produce the same result. It is therefore a useful tool in highlighting the direction of change occurring in vegetation communities. The top three appropriate MATCH scores for each area surveyed were compiled and the most appropriate score represented within the report. Where the scores are close or two or more scores could be used to identify the habitat all the results are shown in the results.

2.5 Frequency and Abundance in the NVC

The following definitions are used to identify frequency and abundance values which can then define a community as unique:

Frequency is how often a species is encountered in different stands or samples of a vegetation type, irrespective of how much of that species is present in each stand or sample.

NVC frequency classes

I =1-20% (i.e. 2 samples in 10) scarce

II=21-40% occasional

III=41-60% frequent

IV= 62-80% constant

V=81-100% constant

Abundance describes how much of a species is present in a stand or sample irrespective of how frequently the species is encountered in moving from one stand to another.

The domin scale of cover/abundance

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

Species are described as constants if they occur in more than 60% of the samples in a vegetation type, either in frequency class V or IV. Species occurring in less than 60% of samples are termed associates in frequency classes III, II, or I.

A preferential shows an affiliation to a particular vegetation type, being of either high or low frequency. A differential has a more exclusive preference for a particular vegetation type.

Fidelity is the faithfulness of a species to a particular vegetation type. A character species has an especially marked fidelity for a particular vegetation type.

Abundance can de described using terms such as dominant, abundant or terms such as sparse for low covers.

2.6 Habitat Quality

Based on the findings of the survey a degree of habitat quality was assigned to the habitats. Habitat quality is set out in broad terms and within the context of the following descriptions which have been prepared specific to this site:

Poor – a habitat that has been partially been destroyed, very few indicators are present, impacted by heavy grazing, creating severe areas of poaching, impacted by extensive areas of invasive species or where undesirable species are frequent.

Moderate – a range of indicators are present but where they occur many few are abundant and most are only rare to occasional, there is a degree of structural diversity but there is evidence of over grazing, and where invasive and undesirable species are only occasional to rare.

High – An intact habitat with a good representation of indicative indicator species, and good structural diversity and where invasive and undesirable species are rare to not present.

2.7 Limitations/Constraints

The survey was conducted in August 2017 in dry weather by ADAS ecologists. August is a suitable time of year to survey habitats and sufficient data was collected to be able to determine the value of the ecological features of interest and to determine the required mitigation. However, some of the woodland plant species had either gone over (started to die back), such as bluebells, or the flowers had died (*Violas*) making some species identification difficult to species level or to assess the spread of certain species. May would be a more appropriate month to undertake woodland botanical surveys however it is considered sufficient evidence was collected in order to determine the value of habitats onsite and for NVC analysis. The heavy deer grazing was also a factor however this was likely to cause more of a reduction of botanical species onsite, in particular in the wooded areas through extensive poaching and overgrazing.

The wildlife and wider ecological interest of a site can change. The report presented here is a statement of the findings of the survey carried out in August 2017. Between 2017 and the final edits in 2020 there have been no significant changes to the habitat or management within the DCO boundary, this was confirmed by the updated Phase 1 Habitat Survey in 2019 (see Phase 1 Habitat Survey Report, Appendix 7.3 of the Environmental Statement). Hence the results of the survey are considered to still be a true representation.

It is important to remember that the NVC cannot describe all variation in plant communities and atypical or intermediates stands are common. It recognises the key types, however stands exist at all stages of intermediary between named communities. Many atypical or impoverished types will not fit satisfactorily within the NVC. New vegetation types not currently covered by the NVC are still being described from Britain.

3 Results

3.1 Survey Data

Where appropriate to aid in illustrating the sites surveyed, photos are provided in Annex 3.

The survey data is summarised in Annex 4, for each stand sampled using the same frequency classes and domin values employed in the floristic tables published in the NVC British Plant Communities volumes.

In the following sections, the results for the broad habitat types are described and results of the MATCH analysis presented.

3.2 Semi-improved Grassland

The total count for species occurring in the semi-improved grassland was 59 species. Of these species, four were considered to be abundant to frequent, these are: *Agrostis stolonifera, Cynosurus cristatus, Holcus lanatus and Pulicaria dysenterica.* All other species were occasional to rare.

The initial appraisal identified three homogeneous semi-improved grassland habitat types, identified as Fleabane Meadow, Woodland Ride and South West Meadow on Figure 1. Five quadrats were used to assess each of these three grassland areas.

Using MATCH the results identify that the field to the west had affinities with the following NVC communities:

Table 1: Table summarising some of the key findings from the grassland survey.

Area	Results	Species per quadrat	Total species count
Grassland (Whole site)	The only constant throughout the grassland on the survey site was: *Agrostis capillaris*. There were 13 grass species, 21 herbs and two sedges.	8.3	37
Fleabane Meadow	There were two constants: *Agrostis capillaris* and *Pulicaria pratensis*. There were 11 grass species to 3 herbs and one sedge.	8	16
Woodland Ride	There were two constants: *Agrostis capillaris* and *Trifolium repens*. There were 5 grass species to 8 herbs and one sedge	8.2	14
South West Meadow	There were three constants: *Agrostis capillaris, Dactylis glomerata* and *Arrhenatherum elatius*. There were 7 grasses to 13 forb species	8.6	19

The following tables display the results of the NVC analysis using MATCH. When the results for the entire grassland are viewed in Table 2 below, it is clear that the vegetation in the survey site had the clearest association with MG6 *Lolium perenne – Cynosurus cristatus* grassland:

Table 2: The 3 highest ranking communities of the NVC calculated by MATCH for the entire grassland.

NVC community- entire semi-improved grassland	Coefficient
MG6a *Alopecurus pratensis* variant	49.4

NVC community- entire semi-improved grassland	Coefficient
MG6b *Anthoxanthum odoratum* sub community	47.5
MG6 *Lolium perenne – Cynosurus cristatus*	47.2

The results for Fleabane Meadow (Photo 2) were not so clear-cut as shown in Table 3 below. The matching coefficients for MG9b come close to that for MG6a suggesting that this area contains characteristics of both communities.

Table 3: The 3 highest ranking NVC grassland communities calculated by MATCH for grassland Fleabane Meadow

NVC community- Fleabane meadow	Coefficient
MG9b – *Arrenhantherum elatius* sub community	43
MG6a - *Alopecurus pratensis* variant	37.2
MG9 – *Holcus lanatus – Deschampsia cespitosa* grassland	37.2

The Woodland Ride was fairly well grazed down by the deer and in many places short, resembling more of a regularly maintained grassland.

Table 4: The 3 highest ranking NVC grassland communities calculated by MATCH for grassland Woodland Ride

NVC community- woodland ride	Coefficient
MG6a - *Alopecurus pratensis* variant	41.5
MG7b – *Lolium perenne – Poa trivialis* leys	41.1
MG6 - *Lolium perenne – Cynosurus cristatus*	40.6

The South West Meadow (Photo 1) returned a range of NVC community types and the lowest coefficients suggesting the field surveys have not identified a particularly strong fit for this section of grassland.

Table 5: The 3 highest ranking NVC grassland communities calculated by MATCH for grassland South West Meadow

NVC community- south west meadow	Coefficient
MG9b - *Arrenhantherum elatius* sub community	39.2
MG1d – *Pastinca sativa* sub community	37.3
OV23d - *Arrenhantherum elatius – Medicago lupulina* sub-community	37.0

3.3 Woodland

The woodland surveyed identified a total of 39 species (Annex 4). Of these, 6 species were identified as ancient woodland indicators (AWI): *Acer campestre, Carpinus betulus, Carex sylvatica, Hyacinthoides non-scripta, Prunus avium* and *Viola sp., , , , , .* In general terms the constant species included *Fraxinus excelsior, Crataegus monogyna and Mercurialis perennis.* All other species were frequent to rare.

The two woodlands, The Grove and Alder Wood are considered too different in terms of their vegetation community types (as one is an ash plantation and the other a native oak woodland) to compare the results as a combined woodland. Therefore, the woods are considered separately as follows:

Table 6: Table summarising some of the key findings from the woodland survey

Area	Results	Number of AWI	Total species count
Alder Wood	There were three constants:. *Fraxinus excelsior, Crataegus monogyna, Mercurialis perennis*. In total 7 woody species, 8 herbs, 5 grasses, 3 sedges and 1 rush species recorded with in the woodland.	4	24
The Grove	There was one constant: *Quercus robur*. In total 11 woody species, 10 herbs, 4 grasses and 1 fern recorded within the woodland.	3	26

The total count for species occurring in the Alder woodland was 24 species (Photo 4). Of these, two woody species were constant: *Fraxinus excelsior* and *Crataegus monogyna.* The only ground flora constant was *Mercurialis perennis.* The results indicate the strongest coefficient with a sub community in the W8 classification - *Fraxinus excelsior - Acer campestre – Mercurialis* woodland, with a looser connection with *Fagus sylvatica – Mercurialis perennis* W12 woodland.

Table 7: The 3 highest ranking NVC grassland communities calculated by MATCH for Alder Wood

NVC community- Alder Wood	Coefficient
W8d - *Hedra helix* sub community	34.8
W12 – *Fagus sylvatica – Mercuralis perennis* sub community	30.1
W12a - *Mercurialis perennis* sub community	28.8

The total count for species occurring in The Grove (Photos 5 and 6) woodland was 26 species with *Quercus robur* as the only constant. The results indicate that the best fit is with a sub community of the W10 *Quercus robur – Pteridium aquilinum – Rubus fruticosus* woodland.

Table 8: The 3 highest ranking NVC grassland communities calculated by MATCH for The Grove

NVC community- The Grove	Coefficient
W10d – *Acer pseudoplatanus – Primula oxalis* sub community	40.8
W10c – *Holcus lanatus* sub community	37.8
W10b – *Anemone nemorosa* sub community	37.8

4 Discussion- Review of Relevant NVC Communities

Based on the MATCH results and a review of the literature, the results of the habitat types considered most appropriate for the site are set out below.

4.1 Semi-improved Grassland

The sub-community MG6b *Anthoxanthum odoratum* is considered to be the best fit as an overall classification for the semi-improved grassland habitat of the site. This grassland is considered a richer grassland habitat within the MG6 *Lolium perenne – Cynosurus cristatus* grassland classification, which states that species such as *Agrostis capillaris* shares dominance with other key grass species. Other species which are identified as also being characteristic include *Rumex acetosa, Hypochaeris radicata, Centaurea nigra, Leucanthemum vulgare*, which are also present, but they tend to be in low numbers across the whole grassland habitat and were not necessarily picked up within the NVC survey but were recorded in the site walk over.

The suggestion that the grassland also has an affinity with MG6a is an indication that the grassland is grazed by deer and could indicate reseeding of the grassland in the past as a perennial rye grassland, which is slowly diversifying from a more MG7 Rye grass ley into a more species rich MG6. Indeed, the data received from Greenspace Information for Greater London included data from a 2001 Phase 1 survey of the same location which indicates parcels for the grassland were a mix of improved and semi-improved grassland.

The MG9 influence as indicated by South West Meadow does not appear to be a good fit as suggested by MATCH as the key constant *Agrostis capillaris* tends not to be a dominant species and hence this habitat type is more associated with tussocky grasses. However, the text does state that finer grasses become more abundant where there is grazing, which is very much the case with the South West Meadow where there is year round grazing by deer.

The habitat quality of the grassland overall is considered to be moderate based on the indication that indicators are present for more neutral unimproved grassland but tend to be only rare to occasional. The grazing by deer is also having a slight negative effect especially where the sward is being opened up and

the non-native goldenrod (*Solidago* sp.) has started to establish (Photo 3 – Annex 3). In regard to the *Solidago* sp. there are areas to the west of the Weald Brook where it forms extensive patches and it can be considered that these areas of grassland are of poor habitat quality as a result (the extent of the *Solidago* sp. is presented in the Phase 1 habitat map in the ADAS Phase 1 Report).

MG6 grassland is a habitat that can be in transition between the more species poor MG7 *Lolium perenne* leys grass habitats and the more species rich MG5 *Cynosurus cristatus* – *Centaurea nigra* grassland. However, these grasslands tend to be closer in their characteristics to the former of these community types but with the occasional presence of indicators of more unimproved grassland. This value drops where the *Solidago* sp. becomes more dominant.

4.2 Woodland

The NVC communities identified by MATCH for Alder Wood and The Grove appear to provide the best fits for the woodlands. In each the following is considered:

Alder Wood (W8d) – To some extent this woodland has a bias in that the *Fraxinus excelsior* has been planted but the text identifies that these woodland types can be dominated by *Fraxinus excelsior* with a sparse understory with more sparse *Crataegus monogyna* being present with little or no *Acer campestre* and the trees are often more or less of an even age. This description does neatly fit Alder Wood with the exception that the shrub and ground layer has been further adversely affected not only by the dense high canopy but the impacts of the deer on site. W12 woodland has a close association with W8 especially where there is a dominant canopy layer and where *Mercurialis perennis* is a constant.

Alder Wood in terms of habitat quality is considered to be in poor condition due to the neglect of the woodland forming an even age structure and deer having a negative impact on both the shrub and ground layer of the habitat creating a very strong browse line and preventing any tree seedlings from establishing and reducing the overall floral diversity.

The Grove showed the best fit with W10 with, based on the text, W10c *Holcus lanatus* sub-community as the most appropriate woodland type. W10c is distinctive by a high canopy of *Quercus robur* with occasional *Betula pendula* and where the conifer *Pinus sylvestris* is invading from nearby stands (which is the case in The Grove). The notable difference between the text and the species recorded is the absence of *Pteridium aquilinum* which has a negative effect on *Hyacinthoides non-scripta*. In The Grove *Hyacinthoides non-scripta* appears to be fairly frequent as noted by the presence of the dead stems when conducting the survey. There is a potential that the invasive Spanish bluebell (*Hyacinthoides hispanica*) and the hybrid (*Hyacinthoides x massartiana*) could be present but this was not possible to determine at the time of survey. However, the GiGL records have previously identified *Hyacinthoides non-scripta* on site from 2001. Overall the habitat had a more diverse canopy than that of Alder Wood but was still impacted by the deer browsing adversely affecting the shrub and ground layer. Overall the habitat is

considered to be of a moderate habitat quality. This habitat quality could decrease to poor if a more invasive species of *Hyacinthoides* sp. is found to be present on site.

Both the Grove and Alder wood had a number of large trees, typically they were oak trees and they may have formed part of historical boundaries. In accordance with the Arbouricultural Impact Assessment (Appendix 7.7 of the Environmental Statement), four veteran trees run along the western boundary of Alder Wood and include trees: T142, T114, T077 and T074. There was a single veteran tree identified within Grove Wood located on its southern boundary: T021. No other veteran trees were identified within either of the woodlands themselves.

In terms of the woodlands age neither are considered have been present continuously since pre 1600 which would make them of ancient origin. Neither of woodlands had an extensive list of ancient woodland indicators and neither have been identified on the ancient woodland inventory listed under the Defra website: (https://magic.defra.gov.uk/MagicMap.aspx). In addition the biological records did not return any of the woodlands within the survey area as being an ancient wood. Based on the evidence it is likely that The Grove is older than Alder Wood based on the plantation nature of Alder Wood and its regular shape, in addition the Grove supported a much wider diversity of woody species, which appear to have naturalised over time.

The NVC survey identified the woodlands as W8 and W10. Both these NVC woodland habitat types are listed under the Lowland Mixed Deciduous Woodland Biodiversity Action Plan which now forms one of the habitats of principal importance under the Natural Environment and Rural Communities Act 2006.

In summary the NVC habitats as identified on site are shown in Table 9a and 9b below:

Table 9a Summary of the grassland NVC habitats

Section	NVC result (best fit)	Species Diversity
Semi-improved grassland (all three sections of grassland)	MG6b	Moderate.

Table 9b Summary of the woodland NVC habitats

Section	NVC result (best fit)	Species Diversity
Alder Wood	W8d	Poor
The Grove	W10	Moderate

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Annex 1: Lead surveyor experience

The surveyor has been involved with undertaking NVC surveys for 20 years since completing an NVC project at university to map the woodlands across Nottinghamshire. Since then the surveyor has carried out numerous NVC surveys of a range of habitats that include grassland, woodland and moorland predominantly in a consultancy capacity. The surveyor has completed NVC training in 2006 with the Field Studies Council and continues to develop botanical skills and has attended numerous courses over the years, whilst also tutoring others in the industry through the FSC run Identiplant course.

Annex 2: The DCO Boundary and Location

See following page

ATKINS

M25, Junction 28
Improvement

DCO Location

DCO boundary

Drawn by Paul Taylor 31/01/2020, Verified by James Simpson 31/01/2020

N
W E
S

Scale 1:10,000 at A3 size

Imagery taken from Microsoft Virtual Earth (Bing) via ArcGIS software
January 2020

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ADAS

Annex 3: Habitat & Species Photos

Photograph 1 – semi-improved grassland located to the west of Weald brook (south west meadow)

Photograph 2 – semi-improved grassland with an abundance of common fleabane (Fleabane meadow).

Photograph 3 – Goldenrod starting to colonise grassland of the south west meadow.

Photograph 4 – Alder Wood – showing a clear browse line to the edge of the wood.

Photograph 5 – The Grove

Photograph 6 – The Grove – Scot's pine plantation

Annex 4: Species List with Frequency and Abundance Values

Semi-improved grassland

Common Name	Latin name	Fleabane meadow	Woodland ride	South west meadow
Common bent	*Agrostis capillaris*	V(2-4)	V(2-5)	V(6-8)
Creeping bent	*Agrostis stolonifera*	II(4)	II(4-5)	IV(1-4)
Marsh foxtail	*Alopecurus geniculatus*	IV(1-2)		
Meadow foxtail	*Alopecurus pratensis*	I(2)		
False oat-grass	*Arrhenatherum elatius*	III(5-7)		V(4-6)
Crested dog's-tail	*Cynosurus cristatus*	I(3)	IV(4)	
Cock's-foot	*Dactylis glomerata*	II(2-3)		V(3-6)
Tufted Hair-grass	*Deschampsia cespitosa*	I(2)		
Tall fescue	*Festuca arundinacea*			I(4)
Yorkshire-fog	*Holcus lanatus*	III(1-4)		II(2-3)
Meadow barley	*Hordeum secalinium*	III(2-5)		
Rye grass	*Lolium perennie*	II(2-5)	III(2-4)	
Smaller cat's-tail	*Phleum bertolonii*			I(3)
Rough meadow grass	*Poa trivialis*		IV(2-5)	
Yarrow	*Achillea millefolium*			I(2)
Agrimony	*Agrimonia eupatoria*			I(2)
Common mouse ear	*Cerastium fontanum*		II(2-3)	
Creeping thistle	*Cirsium arvense*		I(2)	
Lady's bedstraw	*Galium verum*			I(1)
Perforate St John's-wort	*Hypericum perforatum*			I(6)

Common Name	Latin name	Fleabane meadow	Woodland ride	South west meadow
Common Cat's-ear	*Hypochaeris radicata*			II(2)
Common Bird's-foot-trefoil	*Lotus corniculatus*			I(6)
Water mint	*Mentha aquatica*		I(2)	
Corn mint	*Mentha arvensis*			I(3)
Greater plantain	*Plantago major*		II(1-4)	
Creeping cinquefoil	*Potentilla reptans*	I(4)	I(2)	
Common fleabane	*Pulicaria dysenterica*	V(7-8)	III(1-7)	
Meadow buttercup	*Ranunculus acris*	I(3)		
Sheep's sorrel	*Rumex acetosella*			I(2)
Upright hedge parsley	*Torilis japonica*			I(3)
Red clover	*Trifolium pratense*			I(1)
White clover	*Trifolium repens*		V(5-7)	
Field speedwell	*Veronica persica*			I(4)
Thyme leaved speedwell	*Veronica serpylllfolia*		II(1-2)	
Smooth tare	*Vicia tetrasperma*			I(3)
Grey sedge	*Carex divulsa*	I(2)		
Hairy sedge	*Carex hirta*		I(1)	
		16	15	20

Semi-natural woodland

(Ancient woodland indicator species marked in bold)

Common Name	Latin name	Alder wood	The Grove
Field maple	***Acer campestre***	**III(2-6)**	
Sycamore	*Acer pseudoplatanus*	I(2)	
Creeping bent	*Agrostis stolonifera*	II(4-7)	II(4-8)
Garlic mustard	*Alliaria petiolata*		I(3)
False oat-grass	*Arrhenatherum elatius*	III(5-8)	
Silver birch	*Betula pendula*		II(3-4)
False wood-brome	*Brachypodium sylvaticum*	II(4-6)	I(2-3)
Grey sedge	*Carex divulsa*	I(1-2)	
False fox-sedge	*Carex otrubae*	II(4-7)	
Wood sedge	***Carex sylvatica***	**I(1)**	
Hornbeam	***Carpinus betulus***	**II(1-5)**	**II(3-4)**
Enchanter's-nightshade	*Circaea lutetiana*		II(2-3)
Hemlock	*Conium maculatum*		I(2)
Field bindweed	*Convolvulus arvensis*	I(2-3)	
Hazel	*Corylus avellana*		II(3)
Hawthorn	*Crataegus monogyna*	V(2-6)	II(3-4)
Tufted Hair-grass	*Deschampsia cespitosa*	II(2-3)	
Foxglove	*Digitalis purpurea*		I(2)
Broad Buckler-fern	*Dryopteris dilatata*		I(4)
Beech	*Fagus sylvatica*		II(4)
Ash	*Fraxinus excelsior*	V(5-9)	II(4-5)
Wood avens	*Geum urbanum*	I(1)	
Yorkshire fog	*Holcus lanatus*		IV(2-8)

Common Name	Latin name	Alder wood	The Grove
Bluebell	***Hyacinthoides non-scripta***		**IV(3-7)**
Hard rush	*Juncus inflexus*	I(3)	
Dog's mercury	*Mercurialis perennis*	IV(2-9)	II(2-7)
Scot's pine	*Pinus sylvestris*		I(4)
Rough meadow-grass	*Poa trivialis*	III(3-7)	III(2-6)
Wild cherry	***Prunus avium***		**II(4)**
Blackthorn	*Prunus spinosa*		II(3)
Pedunculate oak	*Quercus robur*	II(2-4)	V(7-10)
Bramble	*Rubus fruticosus agg.*	III(2-3)	III(2-6)
Elder	*Sambucus nigra*	I(2)	I(3)
Greater stitchwort	*Stellaria holostea*		I(2)
Wood sage	*Teucrium scorodonia*		II(3-5)
White clover	*Trifolium repens*	I(3)	
Common nettle	*Urtica dioica*	III(1-4)	II(2-3)
Germander speedwell	*Veronica chamaedrys*	I(2)	
Violet	***Viola sp.***	**I(2)**	
		24	26

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