A303 Amesbury to Berwick Down

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6.3 Environmental Statement Appendices

Appendix 8.4 Botanical survey report

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A303 Stonehenge

Amesbury to Berwick Down

Botanical Survey Report 2017

Arup Atkins Joint Venture

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Foreword

The A303/A358 corridor is a vital connection between the South West and London and the South East. While the majority of the road has been dualled, there are still over 35 miles of single carriageway. These sections act as bottlenecks for users of the route resulting in congestion, particularly in the summer months and at weekends, delays to traffic travelling between the M3 and the South West and an increased risk of accidents. The A303 passes through the Stonehenge, Avebury and Associated Sites World Heritage Site, separating the stones from other scheduled monuments and severely limiting the enjoyment of the wider site.

The A303 Stonehenge (Amesbury to Berwick Down) scheme is part of the wider package of proposals for the A303/A358 corridor designed to transform the connectivity to and from the South West by creating an expressway. This would comprise of consistently good dual carriageway roads with grade-separated junctions, giving most users a motorway-quality journey. The A303/A358 package was identified in the 2014 National Infrastructure Plan as one of the country's Top 40 priority infrastructure projects.

The proposals by Highways England to upgrade the A303 past Stonehenge consist of an eight mile (13 kilometre) stretch from Amesbury in the east, through the Stonehenge World Heritage Site (WHS) and the village of Winterbourne Stoke, to Berwick Down in the west. Proposals include a 1.8 mile (2.9 kilometre) tunnel with approach roads inside the WHS, a new bypass for Winterbourne Stoke (passing either north or south of the village) and improvements to existing junctions with the A345 and A360.

Highways England (HE) commissioned the Arup-Atkins Joint Venture (AAJV) to undertake the Options Phase for the scheme starting in January 2016. The AAJV was also commissioned by HE to undertake detailed botanical surveys relevant to these proposed route options, in order to de-risk the next stages of the project, due to the fast-tracked nature of the scheme. This report presents the findings of the detailed botanical surveys, which were undertaken by botanical specialist Sharon Pilkington on behalf of the AAJV. The AAJV and Sharon Pilkington would like to thank the landowners for their help and consideration during the course of the surveys.

Executive Summary

The AAJV were commissioned by Highways England to undertake a series of detailed botanical surveys as part of a programme of ecological surveys to inform the design of the proposed A303 Stonehenge (Amesbury to Berwick Down) Scheme. This report presents the baseline survey results recorded during the 2017 botanical surveys relevant to each of the three route options proposed at the time (1Na, 1Sa and 1Nd). It is intended that the information in this report will be used to identify and assess the potential implications of the Scheme and inform mitigation and compensation for significant vegetation communities and species.

A framework of European and national legislation, and planning policy guidance exists to protect and conserve plants.

Surveys included Parsonage Down chalk grassland monitoring, National Vegetation Classification (NVC) surveys of the following sites: Countess Swamp County Wildlife Site (CWS) and River Avon Site of Special Scientific Interest (SSSI), Countess Cutting CWS, River Till SSSI (north and south), and Diamond Wood. Surveys also included rare arable plant surveys across the three route options along with potential portal locations.

Following analysis and interpretation of the survey data for each site, each vegetation community has been accorded a relative intrinsic botanical value taking into account a number of criteria, including:

- Its perceived nature conservation importance e.g. uncommon or rare NVC communities, NERC Act Section 41 habitats;
- Its goodness of fit with published NVC communities;
- The presence of plants of recognised conservation importance or other plant species of restricted ecological amplitude; and
- Its botanical diversity.

Full results and discussion are presented within Annex 1 of this report. Botanical values ascribed varied, ranging from high on Parsonage Down, the A19 NVC community on the River Till, and submerged aquatic vegetation community on the River Avon through moderate and lower value communities elsewhere.

The light chalky soils of farmland across the survey area and further afield (for example east towards Andover and south towards Salisbury) have long been known to support diverse communities of uncommon and declining arable plant species. Some of the interest of the A303 road corridor was characterised during the previous road enhancement ecological assessment. The findings of the current survey indicate that much of the farmland in the survey area is intensively managed, with high levels of fertiliser input and /or herbicide application likely to be the main reason for poorly developed communities of arable plants in many of the fields. A few arable landholdings retain some fields with high arable plant diversity. Although no populations of any particularly rare species were seen in the course of the assessment, it is clear that these fields retain a valuable seed bank of a number of declining species that are nowadays rarely encountered in Wiltshire's arable habitats.

Where proposed portal locations would include land take of cultivated ground (farmland), communities of declining arable plants were relatively diverse, but otherwise these areas should be considered to be of low botanical interest. Vegetation communities within these areas are generally of low intrinsic value, although the reversion grassland at Normanton

Down should be regarded as being of low to moderate value having developed some of the floristic character of lowland calcareous grassland.

These surveys fulfilled their objectives in recording the significant vegetation assemblages across the route options. A complete assessment of potential impacts to such communities and constituent species will be undertaken within the Environmental Impact Assessment (EIA) for the preferred route option, along with details of mitigation and compensation measures as appropriate.

1 Introduction

1.1 Project Background

1.1.1 The A303 Stonehenge (Amesbury to Berwick Down) Scheme forms part of the A303/A30 trunk route, which provides vital east-west connectivity between London and the South West and is also part of the Trans-European Network-Transport (TEN-T). The A303, which runs for approximately 150 kilometres from Junction 8 of the M3 near Basingstoke towards Taunton and Exeter, serves not only long distance traffic but also intermediate regional destinations via connecting major north-south route options as well as local small and medium sized settlements along the route.

1.1.2 Recognising the importance of the A303/A358 Corridor and the problems along it, the Government has committed in its Road Investment Strategy (RIS) to create an 'Expressway' to the South West via the A303/A358 route by 2029. The A303 Stonehenge scheme, involving dualling the A303 between Amesbury and Berwick Down, including the construction of a tunnel at least 1.8 miles (2.9 kilometres) long as the road passes Stonehenge, has been prioritised within the first RIS period (2015/16 to 2019/20).

1.1.3 Following public consultation in January 2017, three routes were recommended for detailed assessment during 2017, Route Options 1Na, 1Sa and 1Nd.

1.2 Scope of the Document

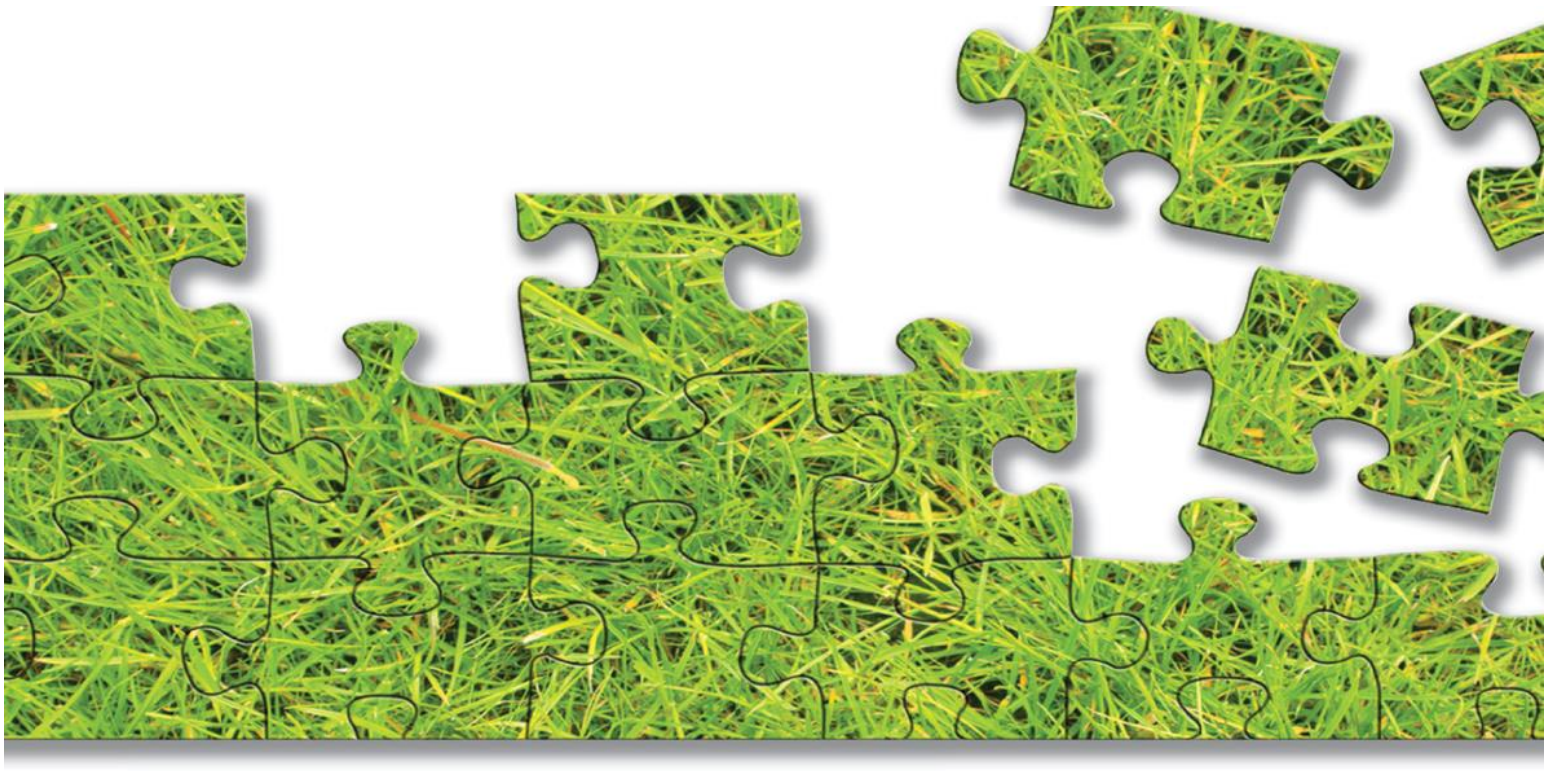
1.2.1 This report presents the baseline survey results recorded during the 2017 botanical surveys. It is intended that the information in this report will be used with the results of other ecological surveys to identify and assess the potential implications of the scheme and inform mitigation and compensation for impacts to vegetation communities and constituent species.

1.2.2 This baseline report can be used to accompany any future Development Consent Order (DCO) and associated Environmental Impact Assessment (EIA) for the Scheme.

1.2.3 Sharon Pilkington, botanical specialist, was commissioned to undertake these surveys on behalf of the AAJV. The full survey report which details the methodology used and describes the results of the 2017 botanical surveys can be found in Annex 1 of this report.

Annexes

Annex 1 - 2017 Botanical Survey report



VEGETATION SURVEY & ASSESSMENT

A303 STONEHENGE TO BERWICK DOWN ENHANCEMENTS

BOTANICAL ASSESSMENT

November 2017

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1. INTRODUCTION

1.1 Scope of Work and Objectives

This report brings together the results of a number of different botanical surveys, all of which were undertaken in 2017 to provide a baseline of information about habitats and species within areas of land with potential to be directly or indirectly affected by the proposed alignment options for the A303 Stonehenge to Berwick Down road enhancement scheme.

The work included the following botanical elements:

- Parsonage Down chalk grassland monitoring: establishing a baseline for monitoring the response of unimproved chalk grassland to changes in air quality;
- National Vegetation Classification of vegetation in potentially sensitive areas including the northern and southern River Till valley, Diamond Wood, Countess Cutting Wildlife Site, Countess Swamp Wildlife Site and adjacent parts of the River Avon Special Area of Conservation;
- Arable plant surveys to identify any particularly diverse assemblages of species of farmland; and
- Characterisation of the species and vegetation communities of land where the proposed portals would be located.

1.2 Legislation and Conservation Context

The legislative provisions in Great Britain for the protection of wild plants are contained primarily in the Wildlife and Countryside Act, 1981, Section 13, with protected wild plants listed on Schedule 8. In practice, few British wild plants are directly protected by legislation relevant to the kind of impacts caused by major infrastructure projects.

Valuation of species conservation importance is generally determined against a set of national and regional criteria of rarity and threat (Table I).

Table 1: Criteria used to define Plants of National/ Regional Conservation Importance

Conservation Category	Status	Definition	Reference
Extent	Nationally Rare (NR)	A taxon present in 1-15 10km Ordnance Survey grid squares in Britain post-1950	*New Atlas of the British and Irish Flora* (2002) by C.D Preston, D.A. Pearman and T.D. Dines.
	Nationally Scarce (NS)	A taxon present in 16-100 10km Ordnance Survey grid squares in Britain post-1950	
	Locally Rare (LR) or Locally Scarce (LS)	LR – a taxon present in 1-3 1km OS squares in South Wiltshire. LS – present in 4-10 squares.	*Wiltshire Rare Plant Register* (2007) by S. Pilkington
Threat (IUCN Red List)	Critically Endangered (CR)	A taxon facing an extremely high risk of regional extinction in the wild in the near future.	*The Vascular Plant Red Data List for Great Britain* (2005) by JNCC (Eds. C.M Cheffings and L. Farrell). Also: *A Vascular Plant Red List for England* (2014) by BSBI (Eds. P.A. Stroh et al)
	Endangered (EN)	A taxon that is not CR but facing a very high risk of regional extinction in the wild in the immediate future.	
	Vulnerable (VU)	A taxon that is not CR or EN, but facing a high risk of regional extinction in the medium-term future.	
Conservation	NERC Act Section 41	A taxon identified by the Secretary of State as being of principle importance for the purpose of conserving biodiversity in England.	Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006

Vegetation communities of the highest ecological importance are generally recognised and protected through the formal designation of sites including Sites of Special Scientific Interest (SSSIs). Where sites also support habitats listed on Annex I of the EU Habitats Directive many have also been notified as Special Areas of Conservation (SACs).

Outside statutory designated sites, many habitats of high ecological value have been recognised by selection of BAP Priority Habitats under the former UK Biodiversity Action Plan. In England, the UK BAP lists have subsequently been used to draw up statutory lists of habitats that are of principal importance for the conservation of biodiversity in under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

2. METHODOLOGY

2.1 Survey Area

Surveys were undertaken in various places, as indicated in Figure 1.1 and 1.2. All work was undertaken by Sharon Pilkington CEnv MCIEEM, a Wiltshire-based professional botanist, bryologist and vegetation ecologist with more than 15 years' experience of botanical assessment.

2.2 Survey Types and Methods

2.2.1 Chalk Grassland Monitoring

Parsonage Down SSSI is an outlying part of Salisbury Plain SAC. Parsonage Bank is the closest part of the site to the A303 and is, historically, one of the most botanically interesting areas of Parsonage Down. Wild (1988) characterised the grassland on its steep north-facing slope largely as the *Succisa pratensis – Leucanthemum vulgare* sub-community of CG2 *Festuca ovina – Avenula pratensis* grassland, a vegetation type largely confined to chalk and other limestones in south- west Britain. Parsonage Bank historically has supported a fluctuating population of Early Gentian *Gentianella anglica* (thought to be a British endemic) and other Nationally Scarce species including Field Fleawort *Tephroseris integrifolius* subsp. *integrifolius*, Burnt Orchid *Neotinea ustulata* and Dwarf Sedge *Carex humilis*.

Parsonage Bank would most likely show the earliest signs of vegetation change in response to any potential effects of changes in atmospheric pollution levels from the proposed scheme, either in isolation or in combination with some other environmental change (such as agricultural spray drift, climate change etc.).

Three sets of 100 m long linear transects approximately parallel to the A303 were set up across Parsonage Bank. Transects were positioned using a GPS/GLONASS receiver[1] at the bottom, middle and top of the bank over a linear distance of 75m in approximately the same places as in 2002 (NPA 2003). Figure 2 shows these locations.

Twenty quadrats were randomly placed along each transect, each comprising nested sub-quadrats of 10 x 10, 25 x 25, 50 x 50 and 100 x 100 cm. For each size class of sub-quadrat, presence of all vascular plants and bryophytes was recorded. In addition, for the largest size class (100 x 100 cm), percentage cover of each species was also estimated. This nested quadrat design allows changes in frequency of occurrence of rare species in different quadrat size classes to be detected between years. The estimates of percentage cover can be used to detect any changes in the more common species.

The transect series was sampled on 5-7 June 2017, an optimal time of year for identification of species of lowland calcareous grassland.

2.2.2 National Vegetation Classification

Baseline classification of vegetation communities in five different locations was undertaken during the optimal survey period for lowland habitats. Habitats in the River Till valley were surveyed on 12 June (north) and 13 June (south). Chalk grassland in Countess Cutting Wildlife Site (WS[2]) was surveyed on 15 June and part of Countess Swamp WS and the adjacent River Avon were surveyed on 18 August. Characterisation of Diamond Wood (8 June) also followed NVC methodology as a precautionary approach although it was considered likely to be of mainly planted origin.

[1] Garmin model GPSMAP64S

[2] In Wiltshire Wildlife Sites are non-statutory sites recognised as being of county importance for wildlife

Standard National Vegetation Classification (NVC) sampling methodology (Rodwell 2006) was employed for all vegetation types likely to fall within the scope of the NVC. None of the wooded habitats was sufficiently large to be sampled by standard means and for these the minimalistic NVC woodland sampling approach set out by Hall, Kirby & Whitbread (2004) was used.

Five quadrats were sampled in most stands of vegetation with distinct floristics and physiognomy although some stands of limited extent were necessarily sampled with fewer quadrats.

MATCH[3] software was employed to analyse the quadrat data and to highlight potential affinities with published NVC communities/sub-communities. Such analysis produces a numerical coefficient of similarity on a scale from 0 to 100 for each dataset. It indicates a 'goodness of fit' with documented NVC communities and as a general rule, the higher the number, the more confidence there normally is with the result.

Surveyor experience and detailed descriptions of vegetation communities provided by Rodwell (1991, 1992, 1995 and 2000) were subsequently used to confirm the classification of each stand in NVC terms as appropriate.

2.2.3 Arable Plants

The light soils of south Wiltshire have long been known to be important to communities of declining arable plants (Wilson 1993).

A number of arable fields likely to be impacted by the alignment options were identified from habitat surveys of the area. In addition, as some uncommon arable species are known to persist in short-term pasture laid over former arable land and sometimes in more permanent grassland, pastures that were found to support interesting assemblages of arable species previously (NPA 2003) were also shortlisted for assessment.

Table 2. Scoring categories for arable plant species

Score	Species Status
9	Threatened: Critically Endangered (CR)
8	Threatened: Endangered (EN)
7	Threatened: Vulnerable
6	Near Threatened (NT)
5	Additional Nationally Scarce, in 16-100 10km squares; change index < -1.0
4	Additional Nationally Scarce: in 51-100 10km squares, change index > -1.0
3	Species of local concern: in 101 to 500 10km squares
2	Species of local concern: in 501 to 1000 10km squares
1	Species of local concern: in 1001 to 1500 10km squares, change index < 0.0 i.e. negative

From Byfield & Wilson (2005)

[3] Vegetation analysis software developed by scientists from the University of Lancaster for NVC classification.

Plantlife has developed a methodology for determining sites of importance for arable plant conservation (Byfield & Wilson, 2005). Although it is aimed principally at identifying nationally important sites (Important Arable Plant Areas), the methodology works equally well on a smaller scale. It works on the premise that certain rare and declining plants indicative of arable habitats are assigned a numerical score between 1 and 9 (Table 2). When assessing the arable plant assemblage of a site (at farm, field or field margin level), the individual scores are summed to give an overall score.

Figures 1.1 and 1.2 show the field margins that were surveyed using this methodology. Others were discounted on the grounds that habitat was found to be unsuitable for arable species. Surveys for arable plants were undertaken during the period 17 – 19 July 2017, the timing of which is optimal for identification of the majority of species in this group.

2.2.4 Portals

Three potential portal impact areas were surveyed on 7 July 2017 by means of a species inventory survey. The purpose of these surveys was to characterise the floristic and structural composition of the vegetation and to identify any habitats or populations of species of particular conservation importance, against the criteria set out in Table 1 and described in Section 1.2.

2.3 Limitations and Assumptions

All surveys were undertaken at an optimal time of year and in reasonable weather conditions and only a few constraints were encountered.

At Parsonage Down, placement of all transects could not be made entirely within calcareous grassland likely to be classified as CG2 across the part of Parsonage Bank that was monitored previously. Placement of the transects was based on an NVC survey of Parsonage Down from nearly thirty years ago (Wild 2008) and it is highly probable that vegetation communities on Parsonage Bank have changed in floristic composition and/or extent since then.

Although the fieldwork was undertaken at a good time of year for finding *Gentianella anglica* and *Neotinea ustulata*, none were seen within any quadrats on Parsonage Bank. It is possible that cold, dry weather in the preceding months may have delayed or inhibited flowering of these species.

During the arable plant survey, certain fields were in the process of being harvested and so could not be accessed.

At Countess Swamp WS, it was difficult to sample quadrats in some vegetation that had been recently cut. Nearby, tall beds of emergent vegetation below the banks of the River Avon meant that aquatic macrophyte communities in the main flow of the river were only partially visible from the banks and so could only be subjectively described.

3. RESULTS

Botanical nomenclature used in this report follows Stace (2010) for vascular plants and Hill *et al* (2008) for bryophytes.

3.1 Chalk Grassland Monitoring

The quadrat data are presented in Appendix I.

3.2 Vegetation Classification

Appendix II provides tabulated data collected from all sites where NVC sampling was undertaken.

3.2.1 River Till (north)

Figure 3.1 shows the vegetation communities present in and around the River Till. At this point the winterbourne flowed through cattle-grazed pasture of low botanical interest characterised by MG7b *Lolium perenne – Poa trivialis* leys (coefficient of similarity 56.0). The sward was of low diversity and characterised by high cover of Perennial Rye-grass *Lolium perenne*, Yorkshire-fog *Holcus lanatus*, Cock's-foot *Dactylis glomerata* and Red Fescue *Festuca rubra* with few associated forbs.

MG7b is typically highly productive agricultural grassland that has very low botanical or ecological value.

The periodically inundated bed of the Till supported discontinuous beds of wet grassland. These were variably diverse and classified as MG13 *Agrostis stolonifera – Alopecurus geniculatus* grassland (coefficients of similarity 42.0 and 46.3). The vegetation was typically associated with low silt shelves deposited at the edge of the river, giving way to MG7b on higher ground. Constant and preferential species included Creeping Bent *Agrostis stolonifera*, Marsh Foxtail *Alopecurus geniculatus*, Rough Meadow-grass *Poa trivialis* and locally prominent Water Forget-me-not *Myosotis scorpioides*, Fool's Water-cress *Apium nodiflorum* and Brooklime *Veronica beccabunga*.

Fragmentary stands of MG13 are frequently associated with sluggish lowland streams and rivers and field ponds where fluctuating water levels keep silty soils moist or waterlogged.

Upstream, vegetation in the channel became complex and could not be referred to any NVC community. It included small patches of Reed Canary-grass *Phalaris arundinacea*, *Apium nodiflorum*, Fat Duckweed *Lemna gibba* and gravelly islands supporting MG7 grassland.

Where deeper water was ponded in the Till at the upper end of the survey area, a poorly developed form of A19 *Ranunculus aquatilis* community was present (coefficient of similarity 33.4). It was characterised by significant amounts of Common Water-crowfoot *Ranunculus aquatilis*, Pond Water-crowfoot *R. peltatus* and *Lemna gibba* as well as plants more typical of inundation vegetation e.g. *Alopecurus geniculatus*, *Apium nodiflorum* and Common Water-cress *Nasturtium officinale*.

The River Till SSSI forms part of the River Avon SAC and water-crowfoot beds such as those represented by the A19 community fall within the Annex 1 habitat *3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation* for which the SAC has been designated in part.

3.2.2 River Till (south)

Figure 3.2 shows the vegetation communities associated with this section of the Till. In this part of the valley the river flowed through wet woodland that could not be confidently classified as any NVC type. Its canopy was dominated by sprawling Crack Willow *Salix fragilis* agg. with local occurrences of White Willow *Salix alba* over an understorey of Grey Willow *Salix cinerea* subsp. *oleifolia*. The field layer was dominated by tall herbs including Common Nettle *Urtica dioica* and Hemlock Water-dropwort *Oenanthe crocata*. The woodland also supported diverse communities of common epiphytic and ground-dwelling mosses and liverworts.

Because the riverbed was mostly in deep shade cast by overhanging trees and shrubs, it did not support any well-developed aquatic macrophyte communities and negligible emergent/marginal vegetation.

Grazed pasture east of the river supported typical grassland communities of floodplain pasture. MG9 *Holcus lanatus – Deschampsia cespitosa* grassland was characterised by mixtures of *Agrostis stolonifera*, *Holcus lanatus*, Tufted Hair-grass *Deschampsia cespitosa*, *Poa trivialis*, and Hard Rush *Juncus inflexus* along with a limited array of herbs e.g. Amphibious Bistort *Persicaria amphibia*, *Urtica dioica* and Wild Angelica *Angelica sylvestris*. The analysis of the data confirmed a reasonable goodness of fit to MG9 (similarity coefficient 50.8) but no sub-community could be confirmed.

MG9 grassland is a distinctive kind of vegetation that is highly characteristic of permanently moist, gleyed clay soils, often in floodplains where there is periodic flooding.

On slightly higher ground MG9 was replaced by species-poor MG1b *Arrhenatherum elatius* grassland, placed with a high level of confidence in the *Urtica dioica* sub-community (coefficient of similarity 57.1). Dominant species of the tall, coarsely-structured sward included False Oat-grass *Arrhenatherum elatius*, *Poa trivialis*, *Holcus lanatus*, *Urtica dioica* and various large common umbellifers.

MG1 is a ubiquitous and low value type of lowland grassland typical of fertile, well-drained neutral soils with light or negligible grazing. The *Urtica* sub-community is particularly common in areas of intensive arable agriculture where there is enrichment from run-off or spray drift of fertilisers.

Where a plantation of poplar trees had been recently felled, an ill-defined form of open vegetation characterised by mixtures of rushes, wet-ground forbs and tall perennial herbs was present. This was classified as OV26 *Epilobium hirsutum* vegetation (coefficient of similarity 53.9). Dominants included *Oenanthe crocata*, *Phalaris arundinacea*, *Angelica sylvestris* and *Urtica dioica*. Great Willowherb *Epilobium hirsutum* was locally prominent. Many of the poplars were beginning to re-grow from the cut stumps.

OV26 is a very common kind of tall herb vegetation that occurs in well-lit situations on moist and fertile soils around ponds and by watercourses, in silting ditches and in transition mires.

The remainder of the survey area to the west of the river was cultivated farmland.

3.2.3 Countess Cutting WS

Countess Cutting (Figure 3.3) lies on the northern side of the A303 and faces south. It supported a form of secondary calcareous grassland that had developed naturally over time as the bare chalk face of the cutting has weathered.

Analysis of quadrats placed the vegetation in CG3 *Bromopsis erecta* grassland (coefficient of similarity 42.8) but no sub-community could be confirmed.

The CG3 was moderately rich in species and also supported swarms of two common orchid species near the bottom of the slope. The sward was sparse, with patches of bare chalk and was typified by prominent Upright Brome *Bromopsis erecta*, Salad Burnet *Poterium sanguisorba* subsp. *sanguisorba*,

hawkweed *Hieracium* Sect. *Hieracium*[4] and locally, Mouse-ear Hawkweed *Pilosella officinarum*. Scrub, tree saplings and Traveller's-joy *Clematis vitalba* were beginning to advance across the face of the cutting from both top and the bottom.

CG3 is a characteristic form of unimproved grassland over dry, strongly calcareous soils in the lowlands. It is a qualifying NVC community of the Section 41 important habitat *Lowland Calcareous Grassland*.

3.2.4 Countess Swamp WS and River Avon SAC

Countess Swamp WS supported a mosaic of tall sedge and herb vegetation typical of lowland riverside habitats (Figure 3.4). It included stands of S28b *Phalaris arundinacea* tall-herb fen (*Epilobium hirsutum – Urtica dioica* sub-community) were characterised by mixtures of *Phalaris arundinacea*, *Urtica dioica*, Cleavers *Galium aparine* and Hedge Bindweed *Calystegia sepium*. Lesser Pond-sedge *Carex acutiformis* was over-represented in the community, and probably spreading into it due to increased soil waterlogging in the area as a result of blocked drains. Data analysis returned a good coefficient of similarity (49.3) to S28b.

S28 is a frequent vegetation type alongside fluctuating watercourses and standing water, often on alluvial mineral soils which are seasonally wet but not waterlogged. The *Epilobium hirsutum – Urtica dioica* sub-community is the most frequent form of S28 in situations where there is some enrichment from nitrates and phosphates.

Other tall vegetation included communities without NVC classification including *Glyceria maxima – Galium aparine* vegetation. This community supported abundant Reed Sweet-grass *Glyceria maxima* alongside several weedy species including *Calystegia sepium* and *Galium aparine; Carex acutiformis* was also locally frequent. A small population of Meadow Rue *Thalictrum flavum*, which is a local and declining species in Wiltshire, was present in this community.

Mature willow-dominated woodland could not be assigned with confidence to any NVC type. Its canopy was characterised by tall, sprawling hybrid willows (*Salix* x *rubens*), suggesting a history of planting. Below, the poorly-developed understorey and field layer supported a suite of species typical of relatively dry secondary woodlands on fertile soils.

Dense stands of S14 *Sparganium erectum* swamp (coefficient of similarity 55.0) dominated both river margins north of the A303 road bridge and in places grew several metres out into deeper water. Branched Bur-reed *Sparganium erectum* was dominant, with few associates: Bittersweet *Solanum dulcamara* and *Myosotis scorpioides* were the most frequent. *Lemna gibba* was also frequent where the stems of *Sparganium* provided some respite from the water current.

S14 is highly tolerant of moderate currents and is one of the commonest emergent vegetation types along lowland watercourses. It occurs widely in shallow, mesotrophic to eutrophic waters on mineral substrates.

The extensive beds of *Sparganium erectum* obscured much of the deeper water from the riverbank. It was not therefore possible to attempt to classify the aquatic community by sampling. However, visible species included many typical of chalk rivers including abundant Unbranched Bur-reed *Sparganium emersum*, *Elodea canadensis*, one or more water-starworts *Callitriche*, Stream Water-crowfoot *Ranunculus penicillatus* Perfoliate Pondweed *Potamogeton perfoliatus*, Fennel Pondweed *P. pectinatus* and Arrowhead *Sagittaria sagittifolia*.

South of the A303 road bridge, riverbank vegetation in Lords Walk was disturbed and shaded by numerous introduced poplars and other riverside trees and shrubs. Vegetation on the banks and

[4] At the time of survey it was not possible to identify this plant to species level.

between paths and woodland/pasture was characterised by patchy *Epilobium hirsutum* over tall weedy mixtures of *Urtica dioica*, *Galium aparine* and Common Comfrey *Symphytum officinale*. Analysis of two sets of quadrats from stands of this vegetation affirmed a reasonable match with undifferentiated OV26 *Epilobium hirsutum* vegetation (coefficients of similarity 53.4 and 59.9).

3.2.5 Diamond Wood

Prior to the survey, it was unclear if Diamond Wood (Figure 3.5) was of semi-natural or planted origins. However, its floristic composition and structure offered strong evidence for the latter and plantings within the wood suggest that it may have been planted as a game covert.

The majority of the woodland appeared to be less than 100 years old, although a few of the trees looked a little older. Its canopy species included Scots Pine *Pinus sylvestris*, Beech *Fagus sylvatica* and Silver Birch *Betula pendula* over an understorey of shrubs often planted in groups. These included native species of local provenance including Buckthorn *Rhamnus cathartica*, Wayfaring-tree *Viburnum opulus* and Hawthorn *Crataegus monogyna*. Plantings also included a variegated-leaved form of Wild Privet *Ligustrum vulgare*. Elder *Sambucus nigra* and Blackthorn *Prunus spinosa* had probably colonised the wood naturally.

The field layer was quite grassy in character and lacked any species indicative of old woodland. Prominent species included *Urtica dioica*, Wood Avens *Geum urbanum*, *Poa trivialis* and False Brome *Brachypodium sylvaticum*. The woodland appeared almost entirely unmanaged and fallen dead wood was common. There were also a few small glades of rough unmanaged neutral grassland not sampled but likely to be referable to a species-poor form of MG1 *Arrhenatherum elatius* grassland.

Quadrats were sampled in Diamond Wood as a means of characterising its flora in detail but as expected it could not be classified with any confidence as any NVC woodland type.

A linear earthwork marks the western edge of Diamond Wood. Although outside the wood itself and not part of the formal NVC sampling, this bank was noted to support unimproved calcareous grassland dominated by *Bromopsis erecta* and referable to CG3d, the *Festuca rubra – Schedonorus arundinaceus* sub-community of *Bromopsis erecta* grassland. This sub-community is typical of places where there has been little or no recent grazing.

3.3 Arable Plants

Margins in 27 fields were surveyed; another 4 fields were not surveyed as habitat no longer appeared suitable for arable species or because harvesting operations were underway. Appendix III provides a record of all plants recorded in the course of the fieldwork.

Figure 4 ranks each field according to its arable plant score, with results provided on a field-by-field basis in Tables 3.1 and 3.2.

Field 18 (wheat) had the highest score (25) and supported 7 species of interest in its margins. Its eastern margin was particularly interesting, with a wide weedy margin supporting strong populations of Corn Parsley *Petroselinum segetum* and Venus's-looking-glass *Legousia hybrida*. It was the only field in the survey area to support a population of Narrow-fruited Cornsalad *Valerianella dentata* and one of only 3 to support Prickly Poppy *Papaver argemone*.

An oat crop nearby (Field 26) also had a rich community of arable plants in its weedy margins (scoring 20). Six species of interest were present, with most interest in the corners, where strong populations of Dense-flowered Fumitory *Fumaria densiflora*, Rough Poppy *Papaver hybridum*, *P. argemone* and *Petroselinum segetum* were found.

Three other fields achieved a score of 10-19. Field 5, another cultivated field, supported the only population of Rye Brome *Bromus secalinus*[5] found in the survey area but its margins were not particularly diverse. Field 9 (wheat) at the time of survey, only scored 14 (6 species) but was of particular note for its very large population of *Petroselinum segetum* (numbering hundreds of plants along the elevated western crop margin). It also supported substantial populations of Round-leaved Fluellen *Kickxia spuria*, only found in 4 fields and Maple-leaved Goosefoot *Chenopodium hybridum*.

Sixteen other fields had more limited arable plant interest, with an overall score of 9 or less. These fields almost exclusively supported between 1 and 3 of the species of interest, with *Chenopodium hybridum* and *Petroselinum segetum* being seen most frequently. Field 29, which comprised disturbed ground around the boundaries of a large pig enclosure, was an exception with 6 low-scoring species found, including Dwarf Mallow *Malva neglecta* and Common Broomrape *Orobanche minor*, which were not seen anywhere else.

Five of the fields supported only common arable plants and were considered to be of negligible interest.

[5] Numerous new populations of this species have been reported throughout the UK since 2000 and a review of its conservation status is required.

Table 3.1 Field Scores

			Field Reference															
Species	**Common name**	**Score**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Alopecurus myosuroides	Black-grass	2	1															
Bromus secalinus	Rye Brome	7					1											
Chaenorhinum minus	Small Toadflax	1		1			1	1		1						1		
Chenopodium hybridum	Maple-leaved Goosefoot	3		1			1				1				1		1	
Euphorbia exigua	Dwarf Spurge	6						1								1		
Fumaria densiflora	Dense-flowered Fumitory	3									1							
Kickxia spuria	Round-leaved Fluellen	3							1	1	1		1					
Lamium amplexicaule	Henbit Dead-nettle	1									1							
Legousia hybrida	Venus's-looking-glass	3																
Malva neglecta	Dwarf Mallow	2																
Mercurialis annua	Annual Mercury	2															1	
Orobanche minor	Common Broomrape	2																
Papaver argemone	Prickly Poppy	7																
Papaver hybridum	Rough Poppy	3		1							1							
Petroselinum segetum	Corn Parsley	3										1	1					
Sherardia arvensis	Field Madder	1									1		1			1		
Valerianella dentata	Narrow-fruited Cornsalad	8																
Veronica polita	Grey Field-speedwell	2																
	Field assemblage score		**2**	**7**	**0**	**NS**	**11**	**7**	**3**	**4**	**14**	**3**	**7**	**0**	**3**	**8**	**5**	**NS**

NS= Not surveyed

Table 3.2 Field Scores

			Field Reference														
Species	**Common name**	**Score**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**
Alopecurus myosuroides	Black-grass	2		1									1			1	
Bromus secalinus	Rye Brome	7															
Chaenorhinum minus	Small Toadflax	1													1	1	
Chenopodium hybridum	Maple-leaved Goosefoot	3				1				1		1				1	
Euphorbia exigua	Dwarf Spurge	6															
Fumaria densiflora	Dense-flowered Fumitory	3										1				1	
Kickxia spuria	Round-leaved Fluellen	3															
Lamium amplexicaule	Henbit Dead-nettle	1		1											1	1	
Legousia hybrida	Venus's-looking-glass	3		1													
Malva neglecta	Dwarf Mallow	2													1		
Mercurialis annua	Annual Mercury	2															
Orobanche minor	Common Broomrape	2													1		
Papaver argemone	Prickly Poppy	7		1							1	1					
Papaver hybridum	Rough Poppy	3										1					
Petroselinum segetum	Corn Parsley	3		1				1				1					
Sherardia arvensis	Field Madder	1		1								1			1		
Valerianella dentata	Narrow-fruited Cornsalad	8		1													
Veronica polita	Grey Field-speedwell	2													1		
Field assemblage score			**0**	**25**	**NS**	**3**	**0**	**3**	**0**	**3**	**7**	**20**	**2**	**0**	**9**	**10**	**NS**

3.4 Portals

Data collected during the portal surveys are tabulated in Appendix IV, whilst Figures 5.1 and 5.2 indicate areas of botanical interest as described below.

3.4.1 Western Portal Option 1NA

This portal area fell completely within arable land which at the time of survey was under cultivation of wheat and oilseed rape. Both crops appeared to be intensively managed and there were very few non-crop plants within the crops. An uncultivated margin between the fields supported a mixed community of arable plants, including some of interest (see Field 30, Section 3.3 and Figure 4).

All other species recorded in this area were considered to be common and widespread species.

A population of Red Duckweed *Lemna turionifera* covered the surface of a water-filled trough at Ordnance Survey grid reference SU1124 4104, just outside the portal area. This species was first recorded in Britain in 2008 and Rumsey & Lansdown (2012) consider it to be either previously overlooked as a more common species or a natural colonist. It has no formal conservation status as yet but its current distribution in Britain matches that of recognised Nationally Scarce species. In South Wiltshire it has so far been reported in 3 1km OS grid squares so can be regarded as Locally Rare (Pilkington (2007).

3.4.2 Western Portal Option 1ND

Although smaller than Option 1NA, this area included arable land, with a herb-rich sown uncultivated margin, a permanent grassy bank and National Trust land under reversion from farmland to calcareous grassland.

Some botanical interest was found in the crop margins, which supported a diverse community of arable plants. This field was not covered by the arable plant survey but had it been, it would have achieved a score of 11, based on the presence of 5 indicator species (Field Madder *Sherardia arvensis*, Henbit Dead-nettle *Lamium amplexicaule*, *Papaver hybridum*, Dwarf Spurge *Euphorbia exigua* and Small Toadflax *Chaenorhinum minus*).

The reversion grassland was not without botanical interest although it supported no populations of species of conservation interest. It would probably not be classifiable in NVC terms as it was intermediate between neutral and calcareous grassland. It comprised a cattle-grazed dense sward averaging 80cm high, with abundant *Holcus lanatus*, *Arrhenatherum elatius*, *Bromopsis erecta*, Crested Dog's-tail *Cynosurus cristatus*, *Dactylis glomerata* and *Festuca rubra*. Prominent forbs included Sainfoin *Onobrychis viciifolia*, Red Clover *Trifolium pratense*, Ribwort Plantain *Plantago lanceolata* and Meadow Buttercup *Ranunculus acris*.

3.4.3 Eastern Portal (Bowtie Field)

Habitats within this portal area included cultivated land (barley), rough neutral grassland and scrub margins and a small planted copse.

The barley field supported a diverse community of arable weeds along its southern edge. In one place (SU1412 4207) the margin was 3-4 m wide and the crop weak. Strong populations of *Fumaria densiflora*, *Chaenorhinum minus*, *Legousia hybrida* and *Euphorbia exigua* were present there. If the field had been included in the arable plant assessment it would have achieved a score of 17, which would have been the third highest of all fields. Widespread species elsewhere in the crop included Perennial Sow-thistle *Sonchus arvensis*, Field Bindweed *Convolvulus arvensis*, Charlock *Sinapis arvensis* and Scarlet Pimpernel *Anagallis arvensis*.

No populations of any notable species were found elsewhere in the survey area and other habitats were of low botanical interest. The rough grassland and scrub was unmanaged and supported abundant *Arrhenatherum elatius*, Hogweed *Heracleum sphondylium*, *Urtica dioica* and *Clematis vitalba* in a matrix of scattered calcicolous scrub (*Crataegus monogyna*, *Ligustrum vulgare*, *Rhamnus cathartica*, Spindle *Euonymus europaeus* etc.).

The copse was fenced off and included a single planted mature Beech *Fagus sylvatica* tree over many recently planted and mostly dead Beech saplings. The understorey was lacking and the field layer comprised ruderal mixtures of *Urtica dioica*, *Galium aparine*, *Convolvulus arvensis*, *Heracleum sphondylium* and Black Horehound *Ballota nigra*.

4. CONCLUSIONS

4.1 Vegetation Communities

Following analysis and interpretation of the NVC data for each site, each vegetation community has been accorded a relative intrinsic botanical value taking into account a number of criteria, including:

- Its perceived nature conservation importance e.g. uncommon or rare NVC communities, NERC Act Section 41 habitats;
- Its goodness of fit with published NVC communities;
- The presence of plants of recognised conservation importance or other plant species of restricted ecological amplitude; and
- Its botanical diversity.

Table 4.1 River Till (north)

Vegetation Community	Botanical Value	Rationale
A19 community	High	• Water-crowfoot vegetation qualifying as Annex I habitat 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation
Dense *Apium nodiflorum*	Negligible	• Not referable to any NVC type • Very low diversity
Indeterminate inundation vegetation	Low	• Not referable to any NVC type • Very low diversity
MG13 grassland	Low	• Common wet grassland type • Moderately diverse
MG7b grassland	Low	• Ubiquitous type of agricultural grassland • Low diversity • Supports a small population of locally uncommon/declining herb (*Petroselinum segetum*) on its northern boundary bank

Table 4.2 River Till (south)

Vegetation Community	Botanical Value	Rationale
Cultivated land	Negligible	• Intensively managed crop • Margins support common arable plants
MG1b grassland	Negligible	• Ubiquitous kind of rough neutral grassland • Low diversity
MG9 grassland	Low	• Frequent kind of floodplain grassland • Moderate diversity but grasses over-represented
Mixed *Salix* woodland	Low-Moderate	• Wet woodland of any kind is rare in Wiltshire • Moderate diversity • Not referable to any NVC type
OV26 community	Low	• Very common kind of wet-ground vegetation • Of relatively recent origin • Moderate diversity

Table 4.3 Countess Cutting WS

Vegetation Community	Botanical Value	Rationale
CG3 grassland	High	• Qualifying NVC type in Section 41 important habitat *Lowland Calcareous Grassland* • Secondary origins – atypical example of CG3 • Moderate - high diversity

Table 4.4 Countess Swamp WS and River Avon SAC

Vegetation Community	Botanical Value	Rationale
Glyceria – Galium swamp	Low	• Not referable to any NVC type • Degraded by invasion of *Carex acutiformis* • Supports population of locally uncommon plant (*Thalictrum flavum*)
Mixed *Salix* woodland	Low	• Possibly of planted origin • Moderate diversity • Not referable to any NVC type
OV26 community	Negligible	• Very common kind of wet-ground vegetation • Low diversity
Populus x *canadensis* plantation	Negligible	• Planted, mature non-native trees • OV26 vegetation/scrub below
S14 swamp	Low	• Common riparian vegetation community
S28b tall-herb fen	Low	• Common wetland vegetation type • *Epilobium – Urtica* sub-community indicates enrichment • Degraded by invasion of *Carex acutiformis*
Submerged aquatic vegetation	High	• Well-developed submerged vegetation community • High diversity, includes species indicative of high-quality chalk river • Vegetation likely to fall within Annex 1 habitat *3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation* • Established population of Schedule 9 invasive plant (*Elodea canadensis*) present

Table 4.5 Diamond Wood

Vegetation Community	Botanical Value	Rationale
CG3d grassland	High	• Not sampled but distinctive kind of vegetation qualifying as Section 41 important habitat *Lowland Calcareous Grassland* • Unmanaged • Moderate diversity
Broad-leaved plantation woodland	Low	• Secondary planted woodland • Not referable to any NVC type • Rare example of wooded habitat in intensively arable area

4.2 Arable Plant Communities

The light chalky soils of farmland across the survey area and further afield (for example east towards Andover and south towards Salisbury) have long been known to support diverse communities of uncommon and declining arable plant species. Some of the interest of the A303 road corridor was characterised during the previous road enhancement ecological assessment (NPA 2003). The findings of the current survey indicate that much of the farmland in the survey area is intensively managed, with high levels of fertiliser input and /or herbicide application likely to be the main reason for poorly developed communities of arable plants in many of the fields.

A few arable landholdings retain some fields with high arable plant diversity. Although no populations of any particularly rare species were seen in the course of the assessment, it is clear that these fields retain a valuable seed bank of a number of declining species that are nowadays rarely encountered in Wiltshire's arable habitats.

Table 5 provides a broad evaluation of the arable plant communities using individual field scores. These valuations are relative to arable communities in the Stonehenge A303 area / south Wiltshire chalk farmland.

Table 5. Valuation of Arable Plant Communities

Field/Margin Score	Value	Field Reference	No. of fields
20+	High	18, 26	2
10-19	Moderate	5, 9, 30	3
1-9	Low	1, 2, 6-8, 20, 11, 13-15, 20, 22, 24, 25, 27, 29	16
0	Negligible	3, 12, 17, 21, 23, 28	6

4.3 Portals

Where portals would include land take of cultivated ground (farmland), communities of declining arable plants were relatively diverse, but otherwise these areas should be considered to be of low botanical interest.

Vegetation communities within these areas are generally of low intrinsic value, although the reversion grassland at Normanton Down should be regarded as being of low to moderate value having developed some of the floristic character of lowland calcareous grassland.

5. RECOMMENDATIONS

This section is concerned with recommending some generic mitigation proposals that could be used to offset as yet unknown impacts on ecological receptors of significant botanical value as a result of the proposed road enhancements.

5.1 Calcareous Grassland Enhancement and Creation

Loss of, or damage to, calcareous grassland such as at Countess Cutting WS and the earthwork alongside Diamond Wood could be mitigated by creation of new calcareous grassland alongside the new road alignment. The development of chalk grassland on the steep road bank at Countess Cutting has taken place naturally over many years and there are local seed sources in the area e.g. at Parsonage Down, Yarnbury Castle and nearby on Salisbury Plain. It is therefore recommended that similar chalk grassland is allowed to develop naturally i.e. without any deliberate seeding or planting on any freshly exposed chalk cuttings or embankments associated with the new road alignment.

If Countess Cutting is unaffected by the road enhancements then it is recommended that its condition is improved by implementation of scrub and tree clearance. At present the bank is unmanaged and tree saplings and native scrub are beginning to encroach on its open chalk grassland.

5.2 Improving Farmland for Arable Plants

To mitigate loss of any arable land supporting diverse communities of declining arable plants, it is recommended that local farmers should be encouraged to take up any relevant agri-environment options promoting such communities in working farmland.

The A303 corridor lies within an area identified by Natural England as being a high priority for arable plants. Although closed to new applicants, Entry-level Stewardship Options promoting arable plant diversity on cultivated land include EF10 *Unharvested cereal headlands for birds and rare arable plants* and EF11 *Uncropped Cultivated Margins for Rare Arable Plants*.

5.3 Wetland Habitat Restoration

Although Countess Swamp WS has been identified as an area of high conservation value, its botanical interest appears to be in decline because of the advance of tall rhizomatous sedges (mainly *Carex acutiformis*) across open riverside habitats. The spread of such tall pond-sedges is normally an indicator of increased soil waterlogging.

It is therefore recommended that waterlogging in Countess Swamp is addressed by restoring regular clearance management of drains in the site to allow water to drain into the River Avon.

REFERENCES

Byfield A. and Wilson P. 2005. **Important Arable Plant Areas: Identifying priority sites for arable plant conservation in the United Kingdom**. Plantlife, Salisbury.

Hall J.E., Kirby K.J., and Whitbread A.M. 2004 (revised). **National Vegetation Classification: Field Guide to Woodland**. Joint Nature Conservation Committee.

Hill M.O., Blackstock T.H., Long D.G. and Rothero G.P. 2008. **A Checklist and Census Catalogue of British and Irish Bryophytes**. British Bryological Society.

NPA. 2003. **A303 Stonehenge Improvement: Environmental Statement Volume 2 Part 3 Nature Conservation and Biodiversity**. Unpublished report for Mott MacDonald/Highways Agency. Nicholas Pearson Associates Ltd, Bath.

Pilkington S.L. 2007. **Wiltshire Rare Plant Register**. Privately published, Westbury.

Rodwell J.S. (Ed.) 1991. **British Plant Communities Volume 1: Woodlands and scrub**. Cambridge University Press.

Rodwell J.S. (Ed.) 1992. **British Plant Communities Volume 3: Grasslands and montane communities**. Cambridge University Press.

Rodwell J.S. (Ed.) 1995. **British Plant Communities Volume 4: Aquatic communities and tall-herb fens**. Cambridge University Press.

Rodwell J.S. (Ed.) 2000. **British Plant Communities Volume 5: Maritime communities and vegetation of open habitats**. Cambridge University Press.

Rodwell J.S. 2006. **National Vegetation Classification Users' handbook**. Joint Nature Conservation Committee, Peterborough.

Rumsey F. and Lansdown R.V. 2012. **Identification: Duckweeds and other simple floating aquatic plants**. British Wildlife 23:5 pp326-334. British Wildlife Publishing.

Stace C.A. 2010. **New Flora of the British Isles** (3rd edition). Cambridge University Press.

Wild, R. 1988. **Parsonage Down NNR Grassland National Vegetation Classification**. Unpublished report.

Wilson P. 1993. **Wiltshire's Arable Weed Flora**. In The Wiltshire Flora pp 43–48. Pisces Publications, Newbury.

Figure 1.1 Survey Locations

- Portal
- NVC
- Arable plants
- Parsonage Bank

0 500 1000 1500 2000 m

Figure 1.2 Survey Locations

- Portal
- NVC
- Arable plants
- Parsonage Bank

Western Portal
IN(D)

Western Portal
IN(A)

Eastern Portal

0 500 1000 1500 2000 m

Transect 1

	Q1				Q2				Q3				Q4				Q5				Q6				Q7				Q8				Q9				Q10			
	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10
Agrostis capillaris													1	1	1																		1	1	1		1			
Asperula cynanchica																													1											
Avenula pratensis	5				10	1	1	1	10	1	1	1					10	1	1		20	1	1	1	10	1	1		10	1	1		10	1	1	1	5	1	1	
Avenula pubescens					1																																			
Bellis perennis					1	1	1	1					1	1	1	1	1	1			1																1			
Brachythecium rutabulum	1																1				1	1	1	1																
Briza media	10	1	1	1	1			1					10	1	1	1	15	1	1	1	15	1	1	1	10	1	1		10	1	1	1	10	1	1		15	1	1	1
Calliergonella cuspidata	25	1	1		10	1	1	1	20	1	1	1	15	1	1		15	1	1	1	10	1	1		15	1	1	1	10	1	1	1	10				1			
Campanula rotundifolia					1	1	1	1																	1				1	1	1	1	1	1	1					
Campylium protensum																																								
Carex caryophyllea	1				1	1	1	1																													1			
Carex flacca	5	1	1		2	1	1	1	5	1			1	1	1	1	1	1	1	1	5	1			2	1							5	1	1	1	10	1	1	1
Carex humilis																																								
Centaurea nigra					1				1	1	1	1									10	1							5	1	1									
Centaurea scabiosa																																								
Cerastium fontanum																																								
Cirsium acaule	5	1			2	1	1		10				5	1			10	1	1		10	1	1		10	1	1		10	1	1	1	5	1	1	1	20	1	1	1
Ctenidium molluscum																																								
Cynosurus cristatus	1				2				2	1	1	1									2	1	1		1				1	1	1		2	1						
Dactylis glomerata	5	1	1	1	5	1	1	1	5	1	1	1	5	1	1		5	1			2	1	1		5				5	1	1		5	1	1					
Euphrasia nemorosa																																								
Festuca ovina / rubra	15	1	1	1	30	1	1	1	30	1	1	1	40	1	1	1	20	1	1	1	20	1	1	1	15	1	1	1	15	1	1	1	5	1	1	1	15	1	1	1
Fissidens dubius																																	1	1	1					
Galium verum													5	1	1		2								1				1	1	1	1	1				5	1		
Helianthemum nummularium																					10								1				2	1	1	1				
Hippocrepis comosa																																								
Homalothecium lutescens																					1																			
Koeleria macrantha	5	1	1						5	1	1	1	1	1			1	1	1		1	1			1				2	1	1		1	1	1					
Lapsana communis																																								
Leontodon hispidus	10	1	1	1	10	1	1		25	1	1	1	10	1	1	1	10	1	1	1	10	1	1		5	1			10	1	1	1	10	1	1	1	20	1	1	1
Leucanthemum vulgare																																								
Linum catharticum	1	1			1				1	1	1		1	1			1	1	1		1	1			1	1	1	1					1	1	1		1	1	1	1
Lolium perenne	1	1			1	1	1	1	2	1	1																													
Lotus corniculatus	25	1	1	1	25	1	1	1	25	1	1	1	20	1	1		15	1	1	1	10	1	1	1	15	1	1	1	15	1	1	1	10	1	1	1	15	1	1	1
Medicago lupulina					1								1	1	1		1																1	1						
Onobrychis viciifolia																																	10							
Pilosella officinarum	1	1							2	1			1	1	1	1	1	1	1		5				5	1	1	1	2	1							2	1		
Plantago lanceolata	10	1	1	1	5	1	1	1	10	1	1	1	15	1	1	1	10	1	1	1	15	1	1	1	10	1	1	1	10	1	1	1	5	1	1	1	10	1	1	
Plantago media																																					5			
Polygala calcarea																																								
Polygala vulgaris																																					1	1		
Poterium sanguisorba	20	1	1	1	2	1	1	1	5	1	1	1	10	1	1		5	1	1		10	1	1	1	10	1	1	1	5	1	1	1								
Primula veris	2				5	1	1	1	5	1			2	1	1		5	1			5	1	1		15	1	1		10	1	1	1	10	1	1	1	5	1	1	1
Prunella vulgaris	1	1			1	1	1						1																								1	1		
Pseudoscleropodium purum	20	1	1	1	20	1	1	1	10	1			10	1	1	1	5	1			5	1							10	1	1		5	1			5	1	1	1
Ranunculus acris	1	1																																						
Ranunculus bulbosus	2	1	1	1	2	1	1		2	1	1		2	1	1	1	2	1	1	1	5	1	1		2	1	1		2	1	1	1	1	1	1	1	2	1	1	1
Scabiosa columbaria	2	1	1	1	2	1	1	1					5	1	1	1									2	1	1		2	1			10	1	1		5	1		
Schedonorus arundinaceus																													5	1							1	1	1	
Schedonorus pratensis									1				1								2	1			2	1			5	1	1		5	1	1	1	5	1	1	1
Senecio jacobaea																					1																			
Serratula tinctoria	1								1	1							1	1	1		1	1			5	1	1		2				2	1	1					
Succisa pratensis	15	1	1		20	1	1		1	1	1		5	1	1	1	25	1			15	1	1	1	15	1	1		10	1			10	1	1	1	5	1		
Taraxacum agg.					1	1							1																											
Thymus polytrichus																	1	1	1						1	1	1						1	1	1	1				
Trifolium pratense	1	1	1		1	1	1	1													5				1	1	1	1	2	1										
Trisetum flavescens	1	1	1		1	1	1		2				2	1	1	1	1	1	1	1																				
Viola hirta																																								
X Schedolium loliaceum	1								1	1	1																													

	Q11				Q12				Q13				Q14				Q15				Q16				Q17				Q18				Q19				Q20			
	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10
Agrostis capillaris													2	1	1														1											
Asperula cynanchica																	1	1							1	1	1	1	1	1	1		1				1	1		
Avenula pratensis	10	1	1	1	20	1	1	1	10	1	1	1	15	1	1	1	20	1	1	1	15	1	1	1	15	1	1	1	10	1	1	1	10	1	1	1	15	1	1	
Avenula pubescens																																								
Bellis perennis	1												1	1	1	1	1	1			1												1							
Brachythecium rutabulum																																								
Briza media	10	1	1	1	10	1	1	1	15	1	1	1	15	1	1		5	1	1		10	1			10	1	1	1	15	1	1	1	10	1	1	1	10	1	1	1
Calliergonella cuspidata	15	1	1		25	1			5	1	1		5	1	1		10	1	1	1	5	1	1	1	10	1	1		5	1	1		10	1	1		5	1	1	1
Campanula rotundifolia	1	1	1	1					5	1	1		1	1			1	1			2	1	1	1	1	1							1	1	1		1	1	1	
Campylium protensum																					1	1											1	1						
Carex caryophyllea	1								1								1	1			1	1	1	1																
Carex flacca	15	1	1		10	1	1	1	10	1	1	1	10	1	1		1				5	1	1		5	1	1	1	10	1	1		15	1	1	1	5	1	1	1
Carex humilis																									2	1	1	1	5				5	1			1			
Centaurea nigra	5	1																			1	1	1	1					5	1			5	1			5	1	1	
Centaurea scabiosa																									1															
Cerastium fontanum													1																											
Cirsium acaule	10	1	1		15	1	1		15	1	1	1	15	1	1		5	1	1	1	5	1	1	1	15	1	1	1	10	1			15	1	1	1	10	1	1	1
Ctenidium molluscum					1	1			1	1	1																													
Cynosurus cristatus	1	1	1		2	1	1		2	1	1	1	5	1	1		1	1							1								1	1						
Dactylis glomerata	2	1			2	1	1		5	1			5	1	1		5				2	1	1		5	1	1	1	2	1	1		5	1	1	1	2	1	1	
Euphrasia nemorosa																													1											
Festuca ovina / rubra	15	1	1	1	15	1	1	1	15	1	1	1	10	1	1	1	10	1	1	1	10	1	1	1	10	1	1	1	10	1	1	1	15	1	1	1	20	1	1	1
Fissidens dubius									1	1	1	1													1															
Galium verum	2	1	1	1									2	1	1		5	1	1		5	1			5	1	1	1	5	1	1		5	1	1	1	5	1		
Helianthemum nummularium	5	1			10	1	1	1	10	1	1	1																												
Hippocrepis comosa																					1								1	1	1									
Homalothecium lutescens																																					1	1		
Koeleria macrantha	1	1			2	1	1	1	5	1			1	1	1		2	1	1	1	5	1	1	1	5	1	1	1	10	1	1	1	5				5	1	1	1
Lapsana communis																																								
Leontodon hispidus	15	1	1		30	1			10	1	1	1	20	1	1	1	10	1	1		5	1	1	1	5	1	1	1					10	1	1		10	1	1	
Leucanthemum vulgare																	1	1																						
Linum catharticum	1				1	1			1	1	1		1				1				1	1			1				1	1	1	1	1	1			1	1	1	
Lolium perenne																																								
Lotus corniculatus	10	1	1		20	1	1		10	1	1	1	10	1	1		10	1	1	1	15	1	1	1	15	1	1	1	15	1	1	1	5	1	1	1	10	1		
Medicago lupulina	1	1	1																		1				1	1	1		1				1				1	1	1	1
Onobrychis viciifolia					5	1	1	1	10				5	1	1	1					5				5	1	1	1					5				5	1	1	1
Pilosella officinarum	5	1	1	1	2				5	1	1		5				2	1	1		5	1	1	1	5	1	1		5	1	1	1	5	1	1	1	2	1	1	1
Plantago lanceolata	10	1	1	1	5	1	1	1	5	1	1	1	5	1	1	1	5	1	1	1	5	1	1		5	1	1	1	5	1	1		5	1	1		5	1	1	1
Plantago media	5	1																			2												5							
Polygala calcarea					1												1				1	1	1						2											
Polygala vulgaris																									1															
Poterium sanguisorba	10	1	1	1	5	1	1	1	10	1	1	1	5	1	1		5	1	1	1	10	1	1	1	10	1	1	1	10	1	1	1	10	1	1		10	1		
Primula veris													2	1			1																2				5	1	1	1
Prunella vulgaris	2	1			5	1											1												5	1	1		2	1						
Pseudoscleropodium purum	5	1	1		20	1	1	1	10	1	1	1	10	1	1	1	30	1	1	1	10	1	1	1	15	1	1		10	1	1		5				10	1	1	
Ranunculus acris																																								
Ranunculus bulbosus	2	1	1	1	5	1	1	1	2	1	1	1	1	1			1	1			2	1	1	1	2				2	1	1	1	1	1	1	1	2	1	1	1
Scabiosa columbaria	5	1	1		2	1	1		10	1							2	1			5	1	1	1	1				5	1	1		1							
Schedonorus arundinaceus					1	1																																		
Schedonorus pratensis	2	1	1						1				2	1	1	1					5	1	1		5	1	1	1	2	1	1	1	2	1	1					
Senecio jacobaea																					1				1												1	1		
Serratula tinctoria	1	1	1																														5	1	1					
Succisa pratensis	5	1	1	1	5	1			10	1			10	1			20	1	1	1	15	1	1	1	25	1	1	1	10	1	1	1	5	1	1	1	5			
Taraxacum agg.																																								
Thymus polytrichus					1	1	1	1													1	1	1																	
Trifolium pratense	1	1							1				1				5	1			5	1	1	1					1				5	1			2	1	1	1
Trisetum flavescens																																								
Viola hirta									2	1	1	1	2	1	1																									
X Schedolium loliaceum																																								

Transect 2

Species	Q1				Q2				Q3				Q4				Q5			
	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10
Achillea millefolium																				
Agrostis capillaris	1	1	1		1				1	1	1	1	5	1	1	1				
Asperula cynanchica																				
Avenula pratensis	1				5								1	1	1					
Avenula pubescens																	5	1	1	1
Bellis perennis																				
Briza media																				
Calliergonella cuspidata	1	1															1	1	1	
Campanula rotundifolia																				
Carex caryophyllea																				
Carex flacca	1																1	1	1	1
Carex humilis																				
Centaurea nigra	5	1							1	1	1	1	1				2	1	1	
Centaurea scabiosa																				
Cirsium acaule																				
Cynosurus cristatus																				
Dactylis glomerata	2	1	1						5	1	1	1					1			
Festuca ovina / rubra																				
Festuca rubra	80	1	1	1	80	1	1	1	85	1	1	1	80	1	1	1	80	1	1	1
Filipendula vulgaris																				
Galium verum	10	1	1	1	10	1	1	1	10	1			10	1	1	1				
Helianthemum nummularium	1								1				1							
Homalothecium lutescens																	1			
Koeleria macrantha	2	1	1	1	3	1	1	1	1	1	1	1	1	1			1	1	1	
Leucanthemum vulgare																				
Linum catharticum																				
Lotus corniculatus	5	1	1	1	5	1	1	1	5	1	1	1	5	1	1		5	1	1	1
Luzula campestris													1	1			1	1		
Medicago lupulina																	1			
Onobrychis viciifolia																				
Phleum bertolonii	2	1			2	1	1		2	1	1		5	1	1	1	2	1		
Pilosella officinarum																				
Plantago lanceolata	5	1	1		5	1			5	1	1	1	5	1	1		5	1	1	
Plantago media																				
Poa humilis	1	1	1	1																
Poa pratensis									1								1			
Poterium sanguisorba					5	1							1	1	1		5	1		
Primula veris																				
Prunella vulgaris																				
Pseudoscleropodium purum	1	1	1	1	1	1			1	1	1		1	1			1	1	1	
Ranunculus bulbosus	5	1	1	1	2	1			2	1	1	1	5	1	1		5	1	1	1
Rhytidiadelphus squarrosus	15	1	1		15	1	1		10	1	1		5	1	1	1				
Scabiosa columbaria																				
Schedonorus pratensis	1	1	1	1									1	1			10	1	1	1
Senecio jacobaea	1																5			
Serratula tinctoria									1	1							1	1	1	
Succisa pratensis	2				1	1														
Thatch	5	1	1	1	10	1	1	1	2	1			5	1	1	1	5	1	1	
Thymus polytrichus																				
Trifolium pratense					1	1	1		1	1							1	1	1	
Trifolium repens																				
Trisetum flavescens	1	1	1	1	1	1							1	1						

Species	Q6				Q7				Q8				Q9				Q10			
	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10
Achillea millefolium																				
Agrostis capillaris	1	1	1	1	1	1	1		1	1	1		1	1	1	1	1			
Asperula cynanchica					1	1			1											
Avenula pratensis					5	1			10	1			10	1	1	1	10	1	1	1
Avenula pubescens									1				1							
Bellis perennis													1	1						
Briza media					5	1							5	1	1		1	1		
Calliergonella cuspidata					1	1			1				2	1			5	1		
Campanula rotundifolia	1	1	1		1								1							
Carex caryophyllea																				
Carex flacca					1				1				1	1	1	1	1	1	1	
Carex humilis																				
Centaurea nigra					1				5	1			5	1	1	1	5	1	1	1
Centaurea scabiosa																	1			
Cirsium acaule	2												1	1			2	1	1	1
Cynosurus cristatus																				
Dactylis glomerata	1				1				1								1			
Festuca ovina / rubra																				
Festuca rubra	85	1	1	1	65	1	1	1	75	1	1	1	65	1	1	1	65	1	1	1
Filipendula vulgaris									5											
Galium verum	10	1	1	1					10	1	1	1	10	1			5	1	1	1
Helianthemum nummularium					10				1				10	1	1	1	5	1	1	
Homalothecium lutescens													1	1	1					
Koeleria macrantha	2	1			2	1	1						5	1	1	1	2	1	1	1
Leucanthemum vulgare													1	1						
Linum catharticum																				
Lotus corniculatus	5	1			15	1			5	1	1		5	1	1		5	1	1	
Luzula campestris																				
Medicago lupulina													1	1	1					
Onobrychis viciifolia																				
Phleum bertolonii	2	1			5	1	1	1	2	1	1						1	1		
Pilosella officinarum													1							
Plantago lanceolata	2				5	1			10	1	1		10	1	1		10	1	1	
Plantago media									1											
Poa humilis									1	1										
Poa pratensis	1				1	1	1	1												
Poterium sanguisorba	1				5	1			10	1	1		10	1	1		10	1	1	
Primula veris					1												2			
Prunella vulgaris																				
Pseudoscleropodium purum	10	1			10	1	1		10	1	1	1	10	1	1	1	10	1	1	1
Ranunculus bulbosus	10	1	1		5	1	1		2	1	1	1	5	1	1	1	5	1	1	1
Rhytidiadelphus squarrosus	5	1	1		20	1	1	1	5	1			1				1	1		
Scabiosa columbaria					1								1	1	1		5	1	1	
Schedonorus pratensis	1				5	1			5	1	1	1	5	1	1	1	5	1	1	1
Senecio jacobaea													1							
Serratula tinctoria					1	1	1		1								1	1		
Succisa pratensis	5				5				2				5	1			10	1		
Thatch	5	1	1	1	5	1			5	1	1	1	5	1	1	1	5	1	1	1
Thymus polytrichus													1							
Trifolium pratense	2				1	1											5	1		
Trifolium repens	2	1	1	1																
Trisetum flavescens					1	1	1						1							

Species	Q11				Q12				Q13				Q14				Q15			
	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10
Achillea millefolium																				
Agrostis capillaris	1	1	1		1	1	1		1	1			1	1	1	1				
Asperula cynanchica	1	1	1	1					2								2	1	1	
Avenula pratensis	15	1	1	1	5	1	1		10	1	1		5	1	1		5	1	1	
Avenula pubescens																				
Bellis perennis																				
Briza media	1	1	1	1	5	1	1	1	5	1	1	1	5	1	1	1	10	1	1	1
Calliergonella cuspidata	2	1	1		1	1							1	1	1					
Campanula rotundifolia																				
Carex caryophyllea	1								1				1	1	1	1	1			
Carex flacca	1				2	1	1	1	5	1	1		5	1	1	1	2	1	1	1
Carex humilis	5	1																		
Centaurea nigra	1								2	1			5	1	1		1			
Centaurea scabiosa																				
Cirsium acaule	10	1			5	1			10	1	1	1	10	1	1	1	10			
Cynosurus cristatus									1				1				1	1		
Dactylis glomerata	2	1	1		5	1	1						2	1			1	1	1	
Festuca ovina / rubra									45	1	1	1	40	1	1	1	45	1	1	1
Festuca rubra	20	1	1	1	55	1	1	1												
Filipendula vulgaris																	1			
Galium verum	5	1	1		5	1							2				2			
Helianthemum nummularium	15	1	1	1	5				5				5	1	1	1	1	1	1	
Homalothecium lutescens	1	1			1															
Koeleria macrantha	5	1	1	1	5	1	1	1	5	1	1	1	5	1	1	1	5	1		
Leucanthemum vulgare																				
Linum catharticum									1								1			
Lotus corniculatus	10	1	1		5	1	1	1	5	1	1	1	10	1	1	1	5	1	1	1
Luzula campestris																				
Medicago lupulina					1	1	1	1					1							
Onobrychis viciifolia									1											
Phleum bertolonii									5	1	1	1	1				1			
Pilosella officinarum					1	1			1	1	1	1	2	1	1	1				
Plantago lanceolata	10	1	1	1	5	1	1	1	5	1	1	1	5	1	1	1	10	1	1	1
Plantago media																				
Poa humilis																				
Poa pratensis																				
Poterium sanguisorba	10	1	1	1	10	1	1	1	15	1	1	1	10	1	1	1	10	1	1	
Primula veris									2	1			1				1			
Prunella vulgaris	1	1	1	1	1	1	1		1	1			1	1	1	1				
Pseudoscleropodium purum	5	1	1	1	10	1	1		5	1	1	1	5	1	1	1	5	1	1	1
Ranunculus bulbosus	5	1	1	1	5	1	1	1	5	1	1		5	1	1	1	2	1	1	1
Rhytidiadelphus squarrosus	1	1	1																	
Scabiosa columbaria	1				5	1			5	1	1	1	5	1	1	1	5	1	1	
Schedonorus pratensis	5	1	1	1					10	1	1		5	1	1		10	1		
Senecio jacobaea																				
Serratula tinctoria									1											
Succisa pratensis	10	1	1		10	1	1		10	1	1	1	10	1	1	1	10	1		
Thatch					5												5	1	1	1
Thymus polytrichus																				
Trifolium pratense					1	1	1		1	1	1	1	2	1	1		5	1		
Trifolium repens																				
Trisetum flavescens													1	1	1					

Species	Q16				Q17				Q18				Q19				Q20			
	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10
Achillea millefolium	1																			
Agrostis capillaris					2	1	1	1					1	1	1	1	1	1		
Asperula cynanchica									1	1	1	1								
Avenula pratensis	5	1	1		10	1	1	1	5	1	1	1	10	1	1	1	10	1	1	1
Avenula pubescens																				
Bellis perennis									1											
Briza media	5	1	1		10	1	1	1	15	1	1	1	10	1	1	1	5	1		
Calliergonella cuspidata	1	1							1				1							
Campanula rotundifolia	1	1	1	1	1	1			1								1			
Carex caryophyllea	1	1							1	1	1		1				1			
Carex flacca	5	1	1	1					1	1			1	1			1	1	1	1
Carex humilis									1				5				1	1		
Centaurea nigra	5	1	1		1	1			5	1	1	1	10	1						
Centaurea scabiosa																				
Cirsium acaule	5	1			10	1			10	1	1	1	5				5	1	1	1
Cynosurus cristatus	5	1	1														1	1	1	
Dactylis glomerata	5	1	1		5	1			5	1	1		2	1	1		1	1	1	1
Festuca ovina / rubra	35	1	1	1					40	1	1	1								
Festuca rubra					45	1	1	1					40	1	1	1	30	1	1	1
Filipendula vulgaris																				
Galium verum	10				5	1	1						10	1	1					
Helianthemum nummularium	5	1	1	1	5	1	1	1	5	1			5	1	1		2	1	1	1
Homalothecium lutescens									1	1										
Koeleria macrantha	5	1	1	1	15	1	1	1	15	1	1	1	5	1	1	1	5	1	1	1
Leucanthemum vulgare																				
Linum catharticum	1								1	1	1	1	1				1			
Lotus corniculatus	10	1	1	1	5	1	1	1	10	1	1	1	5	1	1		5	1	1	1
Luzula campestris																	1			
Medicago lupulina					1								1							
Onobrychis viciifolia																				
Phleum bertolonii	1	1	1		2	1											1	1	1	1
Pilosella officinarum	1	1			1				2	1	1		1				1			
Plantago lanceolata	5	1	1		10	1	1	1	2	1	1	1	5	1	1		5	1	1	1
Plantago media																				
Poa humilis																				
Poa pratensis																				
Poterium sanguisorba	10	1	1	1	5	1	1	1	10	1	1	1	10	1	1	1	5	1	1	
Primula veris	5								1				2				10	1	1	1
Prunella vulgaris	1	1	1						1											
Pseudoscleropodium purum	20	1	1		10	1	1	1	30	1	1	1	10	1			5	1	1	1
Ranunculus bulbosus	5	1	1		5	1	1	1	5	1	1		5	1	1		5	1	1	
Rhytidiadelphus squarrosus																				
Scabiosa columbaria	5	1	1		5	1			5	1	1									
Schedonorus pratensis	10	1	1	1	10	1	1	1					5	1	1		25	1	1	1
Senecio jacobaea																				
Serratula tinctoria	1	1	1	1	2				1	1	1		2	1			2	1	1	
Succisa pratensis	10	1			5				10	1	1	1	5				1	1		
Thatch									10	1	1	1	5	1			10	1	1	1
Thymus polytrichus																				
Trifolium pratense	5	1			5	1	1		5				2				1			
Trifolium repens																				
Trisetum flavescens																				

Transect 3

	Q1				Q2				Q3				Q4				Q5			
	100	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**
Achillea millefolium													1	1						
Agrostis capillaris									1	1	1	1	1				1			
Agrostis stolonifera																				
Avenula pratensis																	5	1	1	1
Avenula pubescens	1	1	1		5	1	1	1	5	1			5				5	1		
Bare soil									5				5				10	1		
Bellis perennis																				
Briza media									5	1	1	1	5	1	1	1	1	1		
Calliergonella cuspidata																				
Campanula rotundifolia																				
Carex caryophyllea																				
Carex flacca									1	1	1						1	1		
Centaurea nigra																				
Cerastium fontanum					1												1			
Cirsium acaule	5	1	1	1	5				2	1	1		5	1	1		5	1	1	
Cynosurus cristatus	1	1	1	1									1	1	1	1	1			
Dactylis glomerata	20	1	1	1	10	1	1	1	10	1	1		10	1	1	1	1	1	1	1
Festuca ovina																				
Festuca rubra	75	1	1	1	70	1	1	1	75	1	1	1	75	1	1	1	50	1	1	1
Galium verum	5	1	1	1	10	1	1	1	5	1	1	1	5	1	1	1	10			
Holcus lanatus	1												5	1	1					
Koeleria macrantha	1	1	1	1					1	1	1	1	5	1	1	1	2	1	1	1
Lathyrus pratensis																				
Leontodon hispidus																				
Linum catharticum																				
Lolium perenne																				
Lotus corniculatus	1	1			5	1	1		5	1			5	1	1	1	5	1	1	1
Medicago lupulina													2	1	1	1	1	1	1	1
Phleum bertolonii					1	1	1	1												
Pilosella officinarum													1	1	1	1				
Pimpinella saxifraga																				
Plantago lanceolata																				
Plantago media																				
Poa humilis	1				5	1											1	1		
Poa pratensis													1				10			
Poterium sanguisorba	5	1			2				5	1	1	1	5	1	1		10	1	1	1
Primula veris													1				5	1		
Prunella vulgaris																				
Pseudoscleropodium purum																				
Ranunculus bulbosus	5	1	1		5	1			2				2	1	1					
Ranunculus repens																				
Rumex acetosa																				
Scabiosa columbaria													1	1						
Schedonorus arundinaceus																	1	1	1	
Schedonorus pratensis	5	1	1						5	1	1	1	2	1	1		5	1		
Senecio jacobaea									1											
Succisa pratensis																				
Taraxacum agg.					5	1			5				1	1	1					
Thatch	5	1			10	1			10	1	1			15	1		10	1		
Trifolium pratense													1	1	1	1				
Veronica chamedrys	1	1	1		1	1	1													
Vicia cracca																				

	Q6				Q7				Q8				Q9				Q10			
	100	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**
Achillea millefolium																				
Agrostis capillaris					1	1							1	1			5			
Agrostis stolonifera																	1			
Avenula pratensis																				
Avenula pubescens	2	1	1		10	1	1	1	10	1	1		1	1	1		10	1	1	1
Bare soil	5	1	1						5	1			10	1			10			
Bellis perennis									2											
Briza media	5	1	1	1	1	1	1	1					5	1	1	1				
Calliergonella cuspidata																				
Campanula rotundifolia																				
Carex caryophyllea																				
Carex flacca	5	1			2	1											5	1	1	
Centaurea nigra																				
Cerastium fontanum																				
Cirsium acaule					25	1			5				10	1	1		10	1		
Cynosurus cristatus	2	1											5	1			1			
Dactylis glomerata	10	1	1		10	1	1	1	10	1	1		10	1	1	1	5	1	1	1
Festuca ovina																				
Festuca rubra	50	1	1	1	65	1	1	1	70	1	1	1	50	1	1	1	70	1	1	1
Galium verum	15	1	1		10	1	1	1	10	1	1	1	10	1	1	1	5	1	1	
Holcus lanatus	5	1	1		5				5	1										
Koeleria macrantha	5	1	1	1	1	1	1		1	1	1	1	2	1	1		1			
Lathyrus pratensis																				
Leontodon hispidus																				
Linum catharticum													1							
Lolium perenne					1	1	1		5	1							1			
Lotus corniculatus	5	1	1	1									5	1	1		5	1		
Medicago lupulina	1	1											2	1			1			
Phleum bertolonii													5	1						
Pilosella officinarum													2	1						
Pimpinella saxifraga					1															
Plantago lanceolata	1				10	1	1		5	1	1						5	1		
Plantago media																				
Poa humilis	1	1							2								1			
Poa pratensis					1				10	1	1		10	1			2			
Poterium sanguisorba	5	1	1	1	10	1			5	1	1	1	10	1	1		10	1	1	
Primula veris	1	1	1	1	5	1			5				5	1			5			
Prunella vulgaris																				
Pseudoscleropodium purum													1							
Ranunculus bulbosus					2	1	1	1	5				10	1	1		5	1	1	
Ranunculus repens																				
Rumex acetosa																				
Scabiosa columbaria									5				5	1			2			
Schedonorus arundinaceus																				
Schedonorus pratensis	5	1	1	1	2	1	1		5	1	1	1	1				5			
Senecio jacobaea																				
Succisa pratensis													1	1	1					
Taraxacum agg.					1	1			1	1	1						1	1	1	
Thatch	10	1	1		5	1			5	1	1						5	1	1	
Trifolium pratense	1	1			2	1	1		2	1			1				2			
Veronica chamedrys	10	1	1	1	5				5	1	1	1								
Vicia cracca	5	1																		

	Q11				Q12				Q13				Q14				Q15			
	100	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**
Achillea millefolium																				
Agrostis capillaris					1	1							1	1	1	1	1	1	1	
Agrostis stolonifera													1				1	1		
Avenula pratensis																	5	1		
Avenula pubescens					10	1	1	1	2	1			5	1	1	1	5	1	1	1
Bare soil	10	1			5	1			10	1			10	1						
Bellis perennis					5	1														
Briza media	5	1	1	1	5	1			5				5	1	1	1	5	1	1	
Calliergonella cuspidata																	5			
Campanula rotundifolia													1	1						
Carex caryophyllea																				
Carex flacca	2				10	1	1	1	2	1	1		5	1	1	1	2	1		
Centaurea nigra					5								5	1						
Cerastium fontanum																				
Cirsium acaule	5	1	1	1	15	1	1	1	5	1	1		10	1	1		5	1	1	1
Cynosurus cristatus	10	1			5	1							5	1						
Dactylis glomerata	25	1	1		5	1	1	1	10	1	1	1	5	1	1	1	5	1	1	
Festuca ovina													1	1						
Festuca rubra	35	1			45	1	1	1	70	1	1	1	35	1	1	1	40	1	1	1
Galium verum	10	1	1	1	10	1	1		10	1	1		5	1	1	1	10	1	1	1
Holcus lanatus																	1	1	1	
Koeleria macrantha	5	1	1	1	2	1	1	1	2	1	1	1	2	1	1	1	5	1	1	1
Lathyrus pratensis	5	1																		
Leontodon hispidus													5	1						
Linum catharticum					1															
Lolium perenne	5	1			5								2							
Lotus corniculatus	10	1	1	1	5	1	1	1	5				10	1	1		10	1	1	1
Medicago lupulina					2	1			2											
Phleum bertolonii	1	1											1							
Pilosella officinarum					1	1							5							
Pimpinella saxifraga																				
Plantago lanceolata	5	1	1		5	1	1	1	10	1	1		5	1	1		5	1	1	
Plantago media					10															
Poa humilis	5	1	1																	
Poa pratensis	1				1												1			
Poterium sanguisorba	10	1	1	1	10	1	1	1	5	1	1	1	10	1	1	1	10	1	1	
Primula veris	5	1			2	1			5	1	1		5	1	1		5	1		
Prunella vulgaris	1	1																		
Pseudoscleropodium purum	2	1											1	1	1	1				
Ranunculus bulbosus	5	1	1	1	1				5	1	1						5	1	1	
Ranunculus repens																				
Rumex acetosa	1																			
Scabiosa columbaria	2	1			2	1			5				5	1	1					
Schedonorus arundinaceus									10											
Schedonorus pratensis	5	1			1	1	1	1	5	1	1		5	1	1	1	10	1		
Senecio jacobaea																				
Succisa pratensis													2	1	1					
Taraxacum agg.	1	1	1	1	1								1	1	1					
Thatch	5				5	1			5	1	1	1					5	1	1	1
Trifolium pratense	5	1	1		2	1	1		2				5	1	1	1	2	1	1	
Veronica chamedrys																				
Vicia cracca																				

	Q16				Q17				Q18				Q19				Q20			
	100	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**
Achillea millefolium																				
Agrostis capillaris																	1	1	1	1
Agrostis stolonifera									1	1										
Avenula pratensis	10	1	1		20	1	1		15	1	1		15	1	1	1	10	1		
Avenula pubescens	5	1			5	1			5	1	1	1	5	1	1	1	5	1	1	1
Bare soil	5	1			10	1	1	1												
Bellis perennis																				
Briza media	2	1	1	1	1	1			5	1	1		2	1	1		10	1		
Calliergonella cuspidata																				
Campanula rotundifolia																				
Carex caryophyllea									1	1	1	1								
Carex flacca	5	1			1	1	1	1	2	1	1	1	1				5	1	1	
Centaurea nigra									5								1			
Cerastium fontanum																				
Cirsium acaule	10	1	1		10	1	1		5								15	1	1	
Cynosurus cristatus																	2			
Dactylis glomerata	5	1	1		5	1	1	1	10	1			10	1	1	1	5	1		
Festuca ovina																				
Festuca rubra	40	1	1	1	25	1	1	1	45	1	1	1	40	1	1	1	65	1	1	1
Galium verum	15	1	1	1	10	1	1	1	10	1	1	1	10	1	1	1	5	1	1	1
Holcus lanatus	5				1	1	1	1									1			
Koeleria macrantha	5	1	1	1	5	1	1	1	5	1	1	1	1	1	1		2	1	1	1
Lathyrus pratensis																				
Leontodon hispidus	5	1	1	1	10	1	1		10	1	1		5	1			10	1	1	1
Linum catharticum									1	1	1									
Lolium perenne																				
Lotus corniculatus	5	1	1		2				10	1	1	1	5	1	1		5	1	1	1
Medicago lupulina																				
Phleum bertolonii	1	1			1	1			1	1	1	1					1	1		
Pilosella officinarum																				
Pimpinella saxifraga																				
Plantago lanceolata	5	1	1		5	1	1		5	1	1		5	1	1		5	1	1	1
Plantago media									5											
Poa humilis													1	1			1	1		
Poa pratensis																				
Poterium sanguisorba	10	1	1	1	10	1	1		5	1	1	1	10	1	1	1	10	1	1	
Primula veris	2								5	1	1		5	1	1		5	1		
Prunella vulgaris																				
Pseudoscleropodium purum									1	1	1	1					1	1		
Ranunculus bulbosus	2	1	1	1	5	1	1	1	2	1	1		5				5	1	1	1
Ranunculus repens													1							
Rumex acetosa																				
Scabiosa columbaria																	2	1		
Schedonorus arundinaceus																				
Schedonorus pratensis	15	1	1		30	1	1		15	1	1	1	30	1	1		20	1		
Senecio jacobaea																				
Succisa pratensis																				
Taraxacum agg.					2	1	1		1	1	1	1	5							
Thatch	5	1	1	1	10	1			10	1			10	1	1	1				
Trifolium pratense	2				2				1	1			1							
Veronica chamedrys																				
Vicia cracca																				

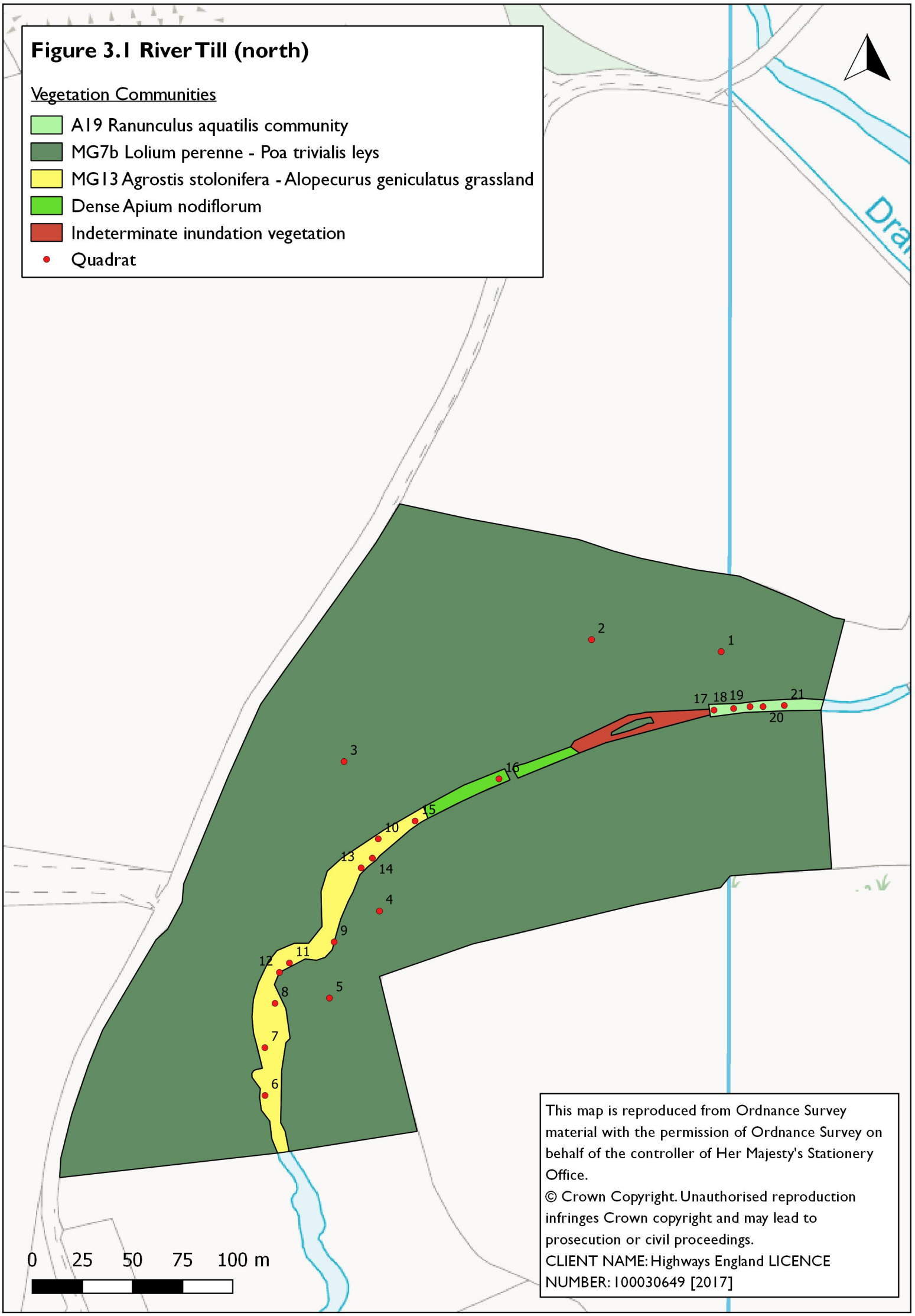
Figure 3.1 River Till (north)
Vegetation Communities
A19 Ranunculus aquatilis community
MG7b Lolium perenne - Poa trivialis leys
MG13 Agrostis stolonifera - Alopecurus geniculatus grassland
Dense Apium nodiflorum
Indeterminate inundation vegetation
Quadrat
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
0 25 50 75 100 m
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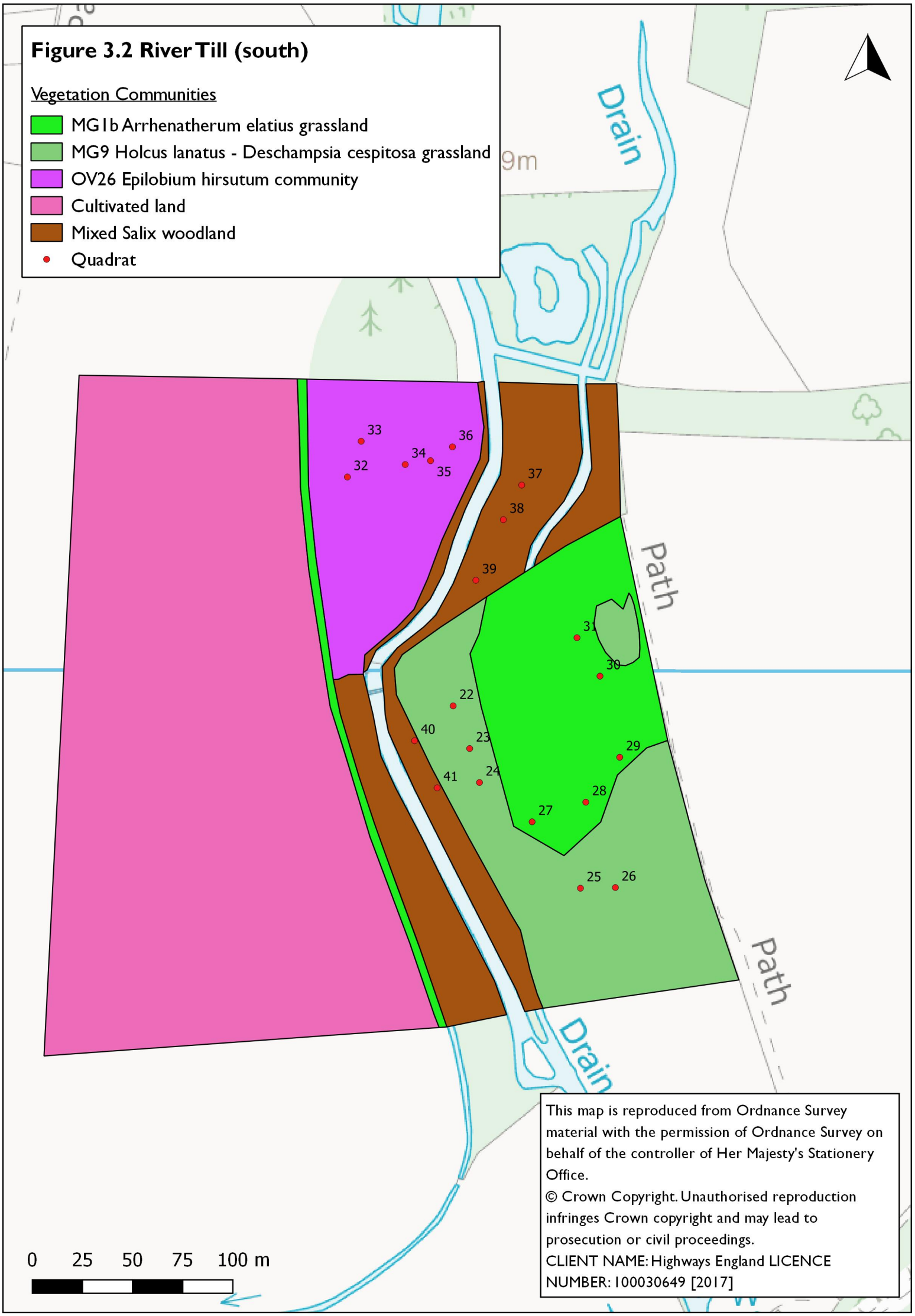

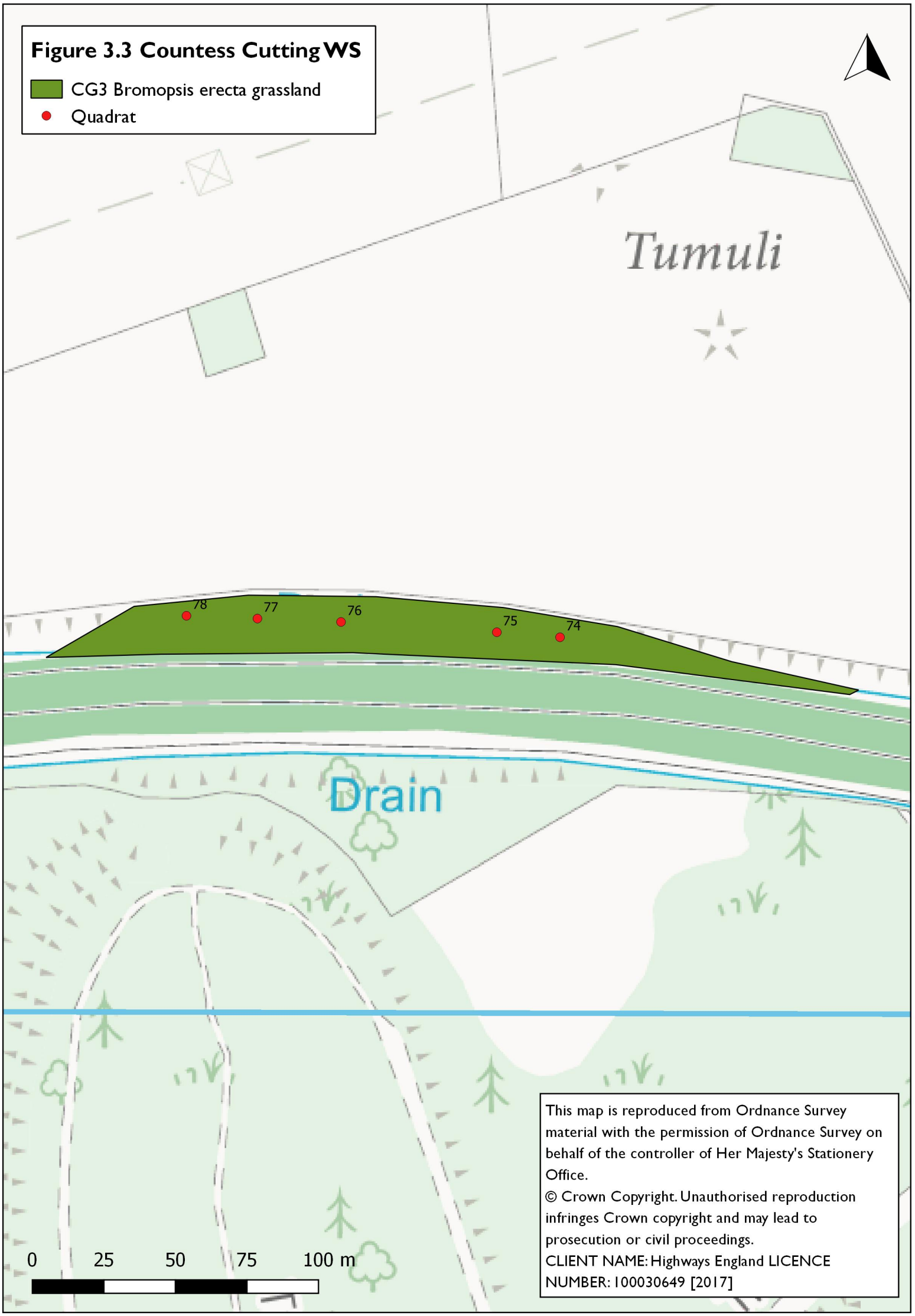
Figure 3.3 Countess Cutting WS
CG3 Bromopsis erecta grassland
Quadrat
Tumuli
78
77
76
75
74
Drain
0
25
50
75
100 m
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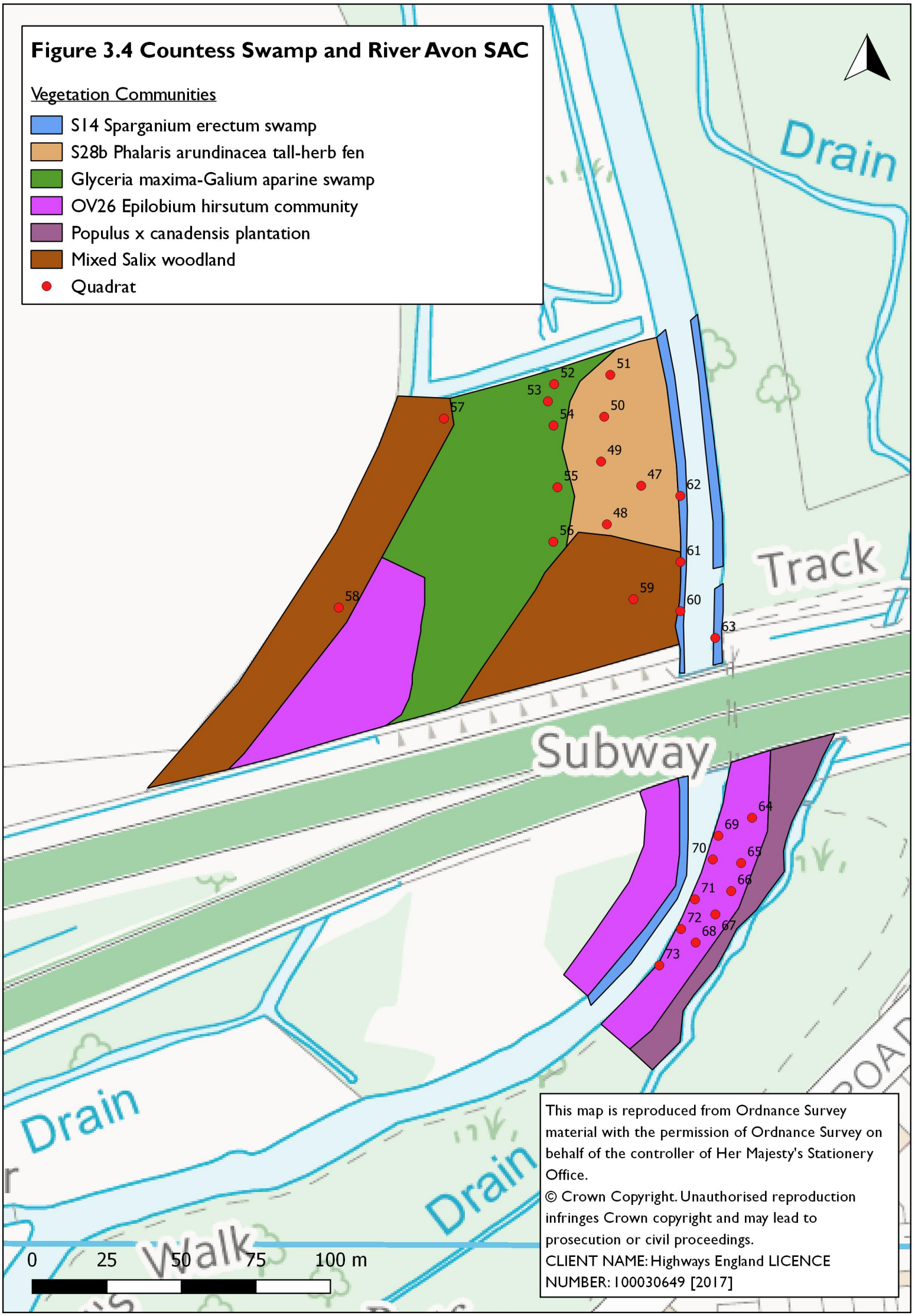
Figure 3.4 Countess Swamp and River Avon SAC
Vegetation Communities
S14 Sparganium erectum swamp
S28b Phalaris arundinacea tall-herb fen
Glyceria maxima-Galium aparine swamp
OV26 Epilobium hirsutum community
Populus x canadensis plantation
Mixed Salix woodland
Quadrat
Drain
Track
Subway
Drain
Drain
Walk
51
52
53
50
57
54
49
47
55
62
48
56
61
58
59
60
63
64
69
70
65
66
71
72
68
67
73
0
25
50
75
100 m
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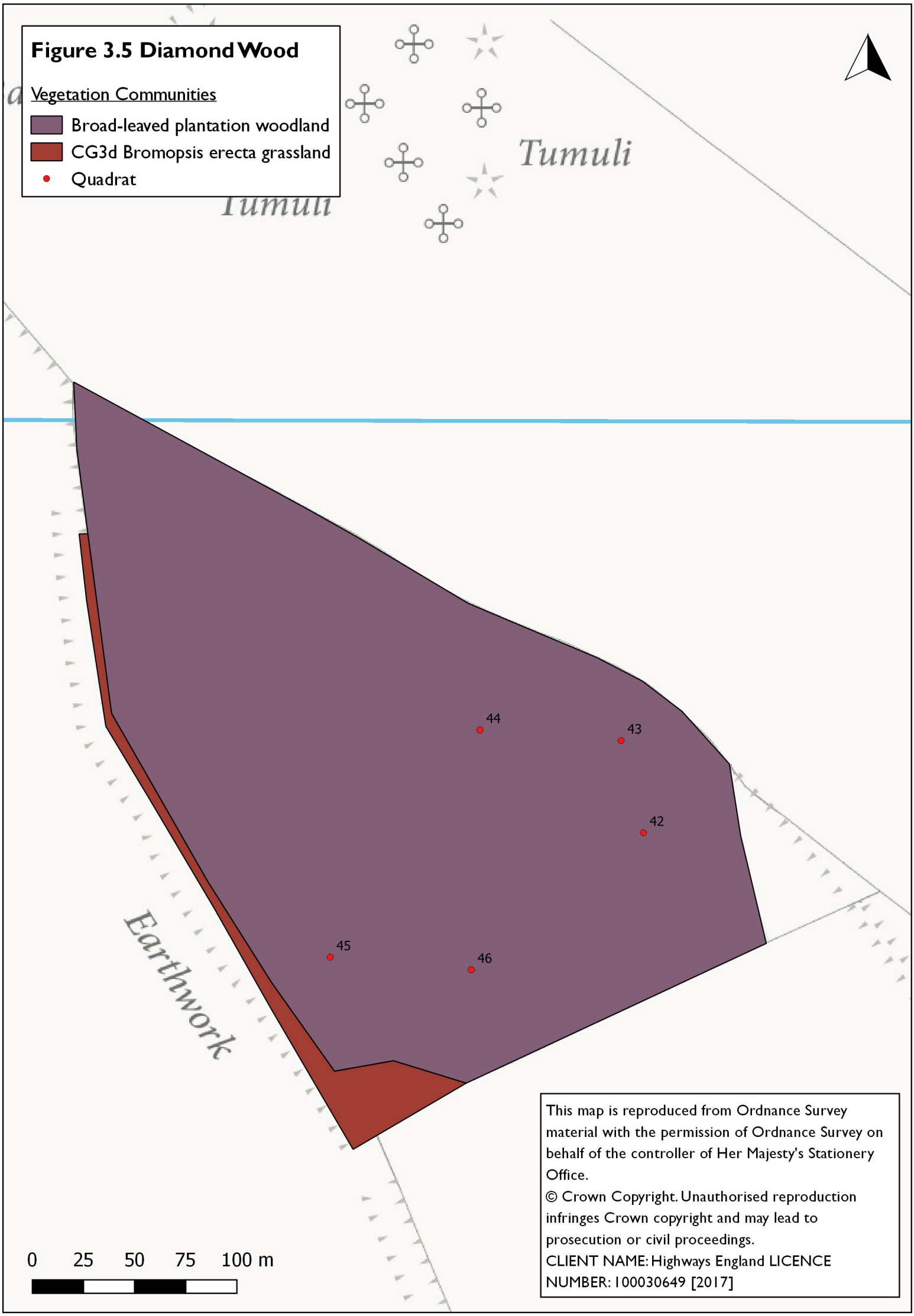
Figure 3.5 Diamond Wood
Vegetation Communities
Broad-leaved plantation woodland
CG3d Bromopsis erecta grassland
Quadrat
Tumuli
Tumuli
Earthwork
44
43
42
45
46
0 25 50 75 100 m
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Figure 4 Arable plant survey results

- Score >20
- Score 10-19
- Score 1-9
- Score 0
- Not surveyed

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

0 500 1000 1500 2000 m

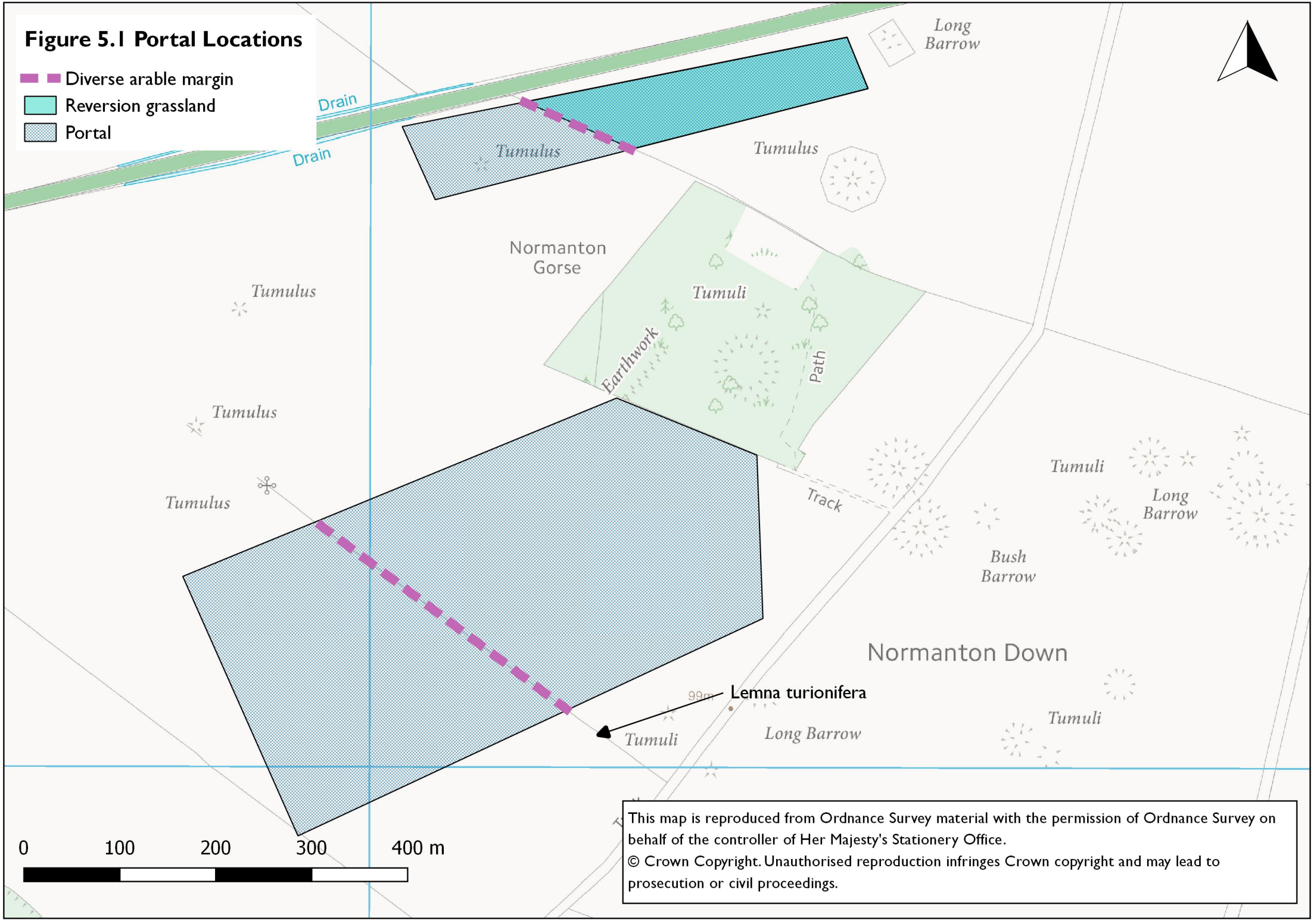
Figure 5.1 Portal Locations
Diverse arable margin
Reversion grassland
Portal
Drain
Drain
Long Barrow
Tumulus
Tumulus
Normanton Gorse
Tumulus
Tumuli
Earthwork
Path
Tumulus
Tumulus
Track
Tumuli
Long Barrow
Bush Barrow
Normanton Down
99m
Lemna turionifera
Tumuli
Long Barrow
Tumuli
0
100
200
300
400 m
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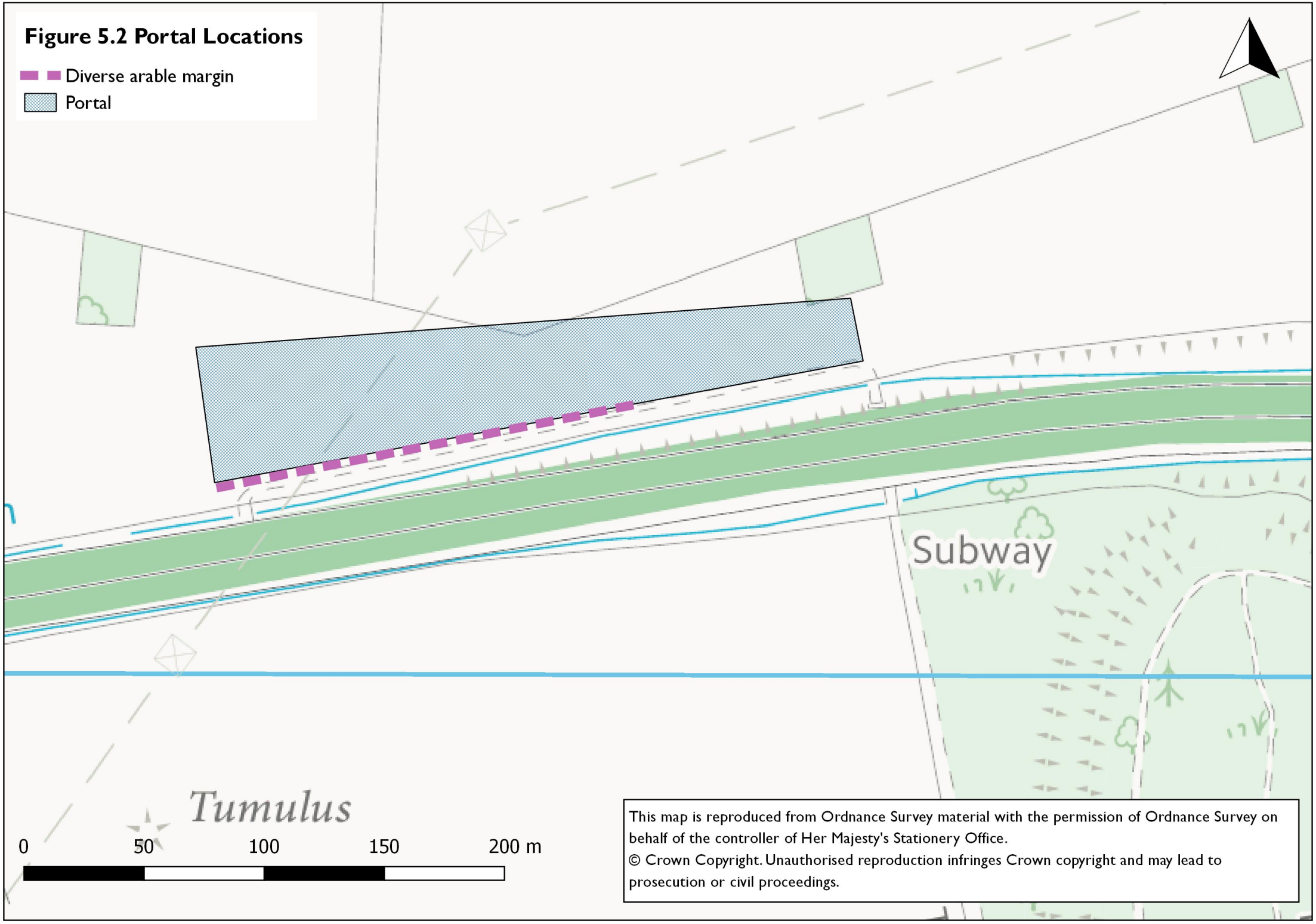

APPENDIX I: PARSONAGE BANK TRANSECT DATA

TRANSECT 1

	Q1				Q2				Q3				Q4				Q5			
	100	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**
Agrostis capillaris													1	1	1					
Asperula cynanchica																				
Avenula pratensis	5				10	1	1	1	10	1	1	1					10	1	1	
Avenula pubescens					1															
Bellis perennis					1	1	1	1					1	1	1	1	1	1		
Brachythecium rutabulum	1																1			
Briza media	10	1	1	1	1			1					10	1	1	1	15	1	1	1
Calliergonella cuspidata	25	1	1		10	1	1	1	20	1	1	1	15	1	1		15	1	1	1
Campanula rotundifolia					1	1	1	1												
Campylium protensum																				
Carex caryophyllea	1				1	1	1	1												
Carex flacca	5	1	1		2	1	1	1	5	1			1	1	1	1	1	1	1	1
Carex humilis																				
Centaurea nigra					1				1	1	1	1								
Centaurea scabiosa																				
Cerastium fontanum																				
Cirsium acaule	5	1			2	1	1		10				5	1			10	1	1	
Ctenidium molluscum																				
Cynosurus cristatus	1				2				2	1	1	1								
Dactylis glomerata	5	1	1	1	5	1	1	1	5	1	1	1	5	1	1		5	1		
Euphrasia nemorosa																				
Festuca ovina / rubra	15	1	1	1	30	1	1	1	30	1	1	1	40	1	1	1	20	1	1	1
Fissidens dubius																				
Galium verum													5	1	1		2			
Helianthemum nummularium																				
Hippocrepis comosa																				
Homalothecium lutescens																				
Koeleria macrantha	5	1	1						5	1	1	1	1	1			1	1	1	
Lapsana communis																				
Leontodon hispidus	10	1	1	1	10	1	1		25	1	1	1	10	1	1	1	10	1	1	1
Leucanthemum vulgare																				
Linum catharticum	1	1			1				1	1	1		1	1			1	1	1	
Lolium perenne	1	1			1	1	1	1	2	1	1									
Lotus corniculatus	25	1	1	1	25	1	1	1	25	1	1	1	20	1	1		15	1	1	1
Medicago lupulina					1								1	1	1		1			
Onobrychis viciifolia																				
Pilosella officinarum	1	1							2	1			1	1	1	1	1	1	1	
Plantago lanceolata	10	1	1	1	5	1	1	1	10	1	1	1	15	1	1	1	10	1	1	1
Plantago media																				
Polygala calcarea																				
Polygala vulgaris																				
Poterium sanguisorba	20	1	1	1	2	1	1	1	5	1	1	1	10	1	1		5	1	1	
Primula veris	2				5	1	1	1	5	1			2	1	1		5	1		
Prunella vulgaris	1	1			1	1	1						1							
Pseudoscleropodium purum	20	1	1	1	20	1	1	1	10	1			10	1	1	1	5	1		
Ranunculus acris	1	1																		
Ranunculus bulbosus	2	1	1	1	2	1	1		2	1	1		2	1	1	1	2	1	1	1
Scabiosa columbaria	2	1	1	1	2	1	1	1					5	1	1	1				
Schedonorus arundinaceus																				
Schedonorus pratensis									1				1							
Senecio jacobaea																				
Serratula tinctoria	1								1	1							1	1	1	
Succisa pratensis	15	1	1		20	1	1		1	1	1		5	1	1	1	25	1		
Taraxacum agg.					1	1							1							
Thymus polytrichus																	1	1	1	
Trifolium pratense	1	1	1		1	1	1	1												
Trisetum flavescens	1	1	1		1	1	1		2				2	1	1	1	1	1	1	1
Viola hirta																				
X Schedolium loliaceum	1								1	1	1									

	Q6				Q7				Q8				Q9				Q10			
	100	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**
Agrostis capillaris													1	1	1		1			
Asperula cynanchica									1											
Avenula pratensis	20	1	1	1	10	1	1		10	1	1		10	1	1	1	5	1	1	
Avenula pubescens																				
Bellis perennis	1																1			
Brachythecium rutabulum	1	1	1	1																
Briza media	15	1	1	1	10	1	1		10	1	1	1	10	1	1		15	1	1	1
Calliergonella cuspidata	10	1	1		15	1	1	1	10	1	1	1	10				1			
Campanula rotundifolia					1				1	1	1	1	1	1	1					
Campylium protensum																				
Carex caryophyllea																	1			
Carex flacca	5	1			2	1							5	1	1	1	10	1	1	1
Carex humilis																				
Centaurea nigra	10	1							5	1	1									
Centaurea scabiosa																				
Cerastium fontanum																				
Cirsium acaule	10	1	1		10	1	1		10	1	1	1	5	1	1	1	20	1	1	1
Ctenidium molluscum																				
Cynosurus cristatus	2	1	1		1				1	1	1		2	1						
Dactylis glomerata	2	1	1		5				5	1	1		5	1	1					
Euphrasia nemorosa																				
Festuca ovina / rubra	20	1	1	1	15	1	1	1	15	1	1	1	5	1	1	1	15	1	1	1
Fissidens dubius													1	1	1					
Galium verum					1				1	1	1	1	1				5	1		
Helianthemum nummularium	10								1				2	1	1	1				
Hippocrepis comosa																				
Homalothecium lutescens	1																			
Koeleria macrantha	1	1			1				2	1	1		1	1	1					
Lapsana communis																				
Leontodon hispidus	10	1	1		5	1			10	1	1	1	10	1	1	1	20	1	1	1
Leucanthemum vulgare																				
Linum catharticum	1	1			1	1	1	1					1	1	1		1	1	1	1
Lolium perenne																				
Lotus corniculatus	10	1	1	1	15	1	1	1	15	1	1	1	10	1	1	1	15	1	1	1
Medicago lupulina													1	1						
Onobrychis viciifolia													10							
Pilosella officinarum	5				5	1	1	1	2	1							2	1		
Plantago lanceolata	15	1	1	1	10	1	1	1	10	1	1	1	5	1	1	1	10	1	1	
Plantago media																	5			
Polygala calcarea																				
Polygala vulgaris																	1	1		
Poterium sanguisorba	10	1	1	1	10	1	1	1	5	1	1	1								
Primula veris	5	1	1		15	1	1		10	1	1	1	10	1	1	1	5	1	1	1
Prunella vulgaris																	1	1		
Pseudoscleropodium purum	5	1							10	1	1		5	1			5	1	1	1
Ranunculus acris																				
Ranunculus bulbosus	5	1	1		2	1	1		2	1	1	1	1	1	1	1	2	1	1	1
Scabiosa columbaria					2	1	1		2	1			10	1	1		5	1		
Schedonorus arundinaceus									5	1							1	1	1	
Schedonorus pratensis	2	1			2	1			5	1	1		5	1	1	1	5	1	1	1
Senecio jacobaea	1																			
Serratula tinctoria	1	1			5	1	1		2				2	1	1					
Succisa pratensis	15	1	1	1	15	1	1		10	1			10	1	1	1	5	1		
Taraxacum agg.																				
Thymus polytrichus					1	1	1						1	1	1	1				
Trifolium pratense	5				1	1	1	1	2	1										
Trisetum flavescens																				
Viola hirta																				
X Schedolium loliaceum																				

	Q11				Q12				Q13				Q14				Q15			
	100	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**
Agrostis capillaris													2	1	1					
Asperula cynanchica																	1	1		
Avenula pratensis	10	1	1	1	20	1	1	1	10	1	1	1	15	1	1	1	20	1	1	1
Avenula pubescens																				
Bellis perennis	1												1	1	1	1	1	1		
Brachythecium rutabulum																				
Briza media	10	1	1	1	10	1	1	1	15	1	1	1	15	1	1		5	1	1	
Calliergonella cuspidata	15	1	1		25	1			5	1	1		5	1	1		10	1	1	1
Campanula rotundifolia	1	1	1	1					5	1	1		1	1			1	1		
Campylium protensum																				
Carex caryophyllea	1								1								1	1		
Carex flacca	15	1	1		10	1	1	1	10	1	1	1	10	1	1		1			
Carex humilis																				
Centaurea nigra	5	1																		
Centaurea scabiosa																				
Cerastium fontanum													1							
Cirsium acaule	10	1	1		15	1	1		15	1	1	1	15	1	1		5	1	1	1
Ctenidium molluscum					1	1			1	1	1									
Cynosurus cristatus	1	1	1		2	1	1		2	1	1	1	5	1	1		1	1		
Dactylis glomerata	2	1			2	1	1		5	1			5	1	1		5			
Euphrasia nemorosa																				
Festuca ovina / rubra	15	1	1	1	15	1	1	1	15	1	1	1	10	1	1	1	10	1	1	1
Fissidens dubius									1	1	1	1								
Galium verum	2	1	1	1									2	1	1		5	1	1	
Helianthemum nummularium	5	1			10	1	1	1	10	1	1	1								
Hippocrepis comosa																				
Homalothecium lutescens																				
Koeleria macrantha	1	1			2	1	1	1	5	1			1	1	1		2	1	1	1
Lapsana communis																				
Leontodon hispidus	15	1	1		30	1			10	1	1	1	20	1	1	1	10	1	1	
Leucanthemum vulgare																	1	1		
Linum catharticum	1				1	1			1	1	1		1				1			
Lolium perenne																				
Lotus corniculatus	10	1	1		20	1	1		10	1	1	1	10	1	1		10	1	1	1
Medicago lupulina	1	1	1																	
Onobrychis viciifolia					5	1	1	1	10				5	1	1	1				
Pilosella officinarum	5	1	1	1	2				5	1	1		5				2	1	1	
Plantago lanceolata	10	1	1	1	5	1	1	1	5	1	1	1	5	1	1	1	5	1	1	1
Plantago media	5	1																		
Polygala calcarea					1												1			
Polygala vulgaris																				
Poterium sanguisorba	10	1	1	1	5	1	1	1	10	1	1	1	5	1	1		5	1	1	1
Primula veris													2	1			1			
Prunella vulgaris	2	1			5	1											1			
Pseudoscleropodium purum	5	1	1		20	1	1	1	10	1	1	1	10	1	1	1	30	1	1	1
Ranunculus acris																				
Ranunculus bulbosus	2	1	1	1	5	1	1	1	2	1	1	1	1	1			1	1		
Scabiosa columbaria	5	1	1		2	1	1		10	1							2	1		
Schedonorus arundinaceus					1	1														
Schedonorus pratensis	2	1	1						1				2	1	1	1				
Senecio jacobaea																				
Serratula tinctoria	1	1	1																	
Succisa pratensis	5	1	1	1	5	1			10	1			10	1			20	1	1	1
Taraxacum agg.																				
Thymus polytrichus					1	1	1	1												
Trifolium pratense	1	1							1				1				5	1		
Trisetum flavescens																				
Viola hirta									2	1	1	1	2	1	1					
X Schedolium loliaceum																				

	Q16				Q17				Q18				Q19				Q20			
	100	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**
Agrostis capillaris									1											
Asperula cynanchica					1	1	1	1	1	1	1		1				1	1		
Avenula pratensis	15	1	1	1	15	1	1	1	10	1	1	1	10	1	1	1	15	1	1	
Avenula pubescens																				
Bellis perennis	1												1							
Brachythecium rutabulum																				
Briza media	10	1			10	1	1	1	15	1	1	1	10	1	1	1	10	1	1	1
Calliergonella cuspidata	5	1	1	1	10	1	1		5	1	1		10	1	1		5	1	1	1
Campanula rotundifolia	2	1	1	1	1	1							1	1	1		1	1	1	
Campylium protensum	1	1											1	1						
Carex caryophyllea	1	1	1	1																
Carex flacca	5	1	1		5	1	1	1	10	1	1		15	1	1	1	5	1	1	1
Carex humilis					2	1	1	1	5				5	1			1			
Centaurea nigra	1	1	1	1					5	1			5	1			5	1	1	
Centaurea scabiosa					1															
Cerastium fontanum																				
Cirsium acaule	5	1	1	1	15	1	1	1	10	1			15	1	1	1	10	1	1	1
Ctenidium molluscum																				
Cynosurus cristatus					1								1	1						
Dactylis glomerata	2	1	1		5	1	1	1	2	1	1		5	1	1	1	2	1	1	
Euphrasia nemorosa									1											
Festuca ovina / rubra	10	1	1	1	10	1	1	1	10	1	1	1	15	1	1	1	20	1	1	1
Fissidens dubius					1															
Galium verum	5	1			5	1	1	1	5	1	1		5	1	1	1	5	1		
Helianthemum nummularium																				
Hippocrepis comosa	1								1	1	1									
Homalothecium lutescens																	1	1		
Koeleria macrantha	5	1	1	1	5	1	1	1	10	1	1	1	5				5	1	1	1
Lapsana communis																				
Leontodon hispidus	5	1	1	1	5	1	1	1					10	1	1		10	1	1	
Leucanthemum vulgare																				
Linum catharticum	1	1			1				1	1	1	1	1	1			1	1	1	
Lolium perenne																				
Lotus corniculatus	15	1	1	1	15	1	1	1	15	1	1	1	5	1	1	1	10	1		
Medicago lupulina	1				1	1	1		1				1				1	1	1	1
Onobrychis viciifolia	5				5	1	1	1					5				5	1	1	1
Pilosella officinarum	5	1	1	1	5	1	1		5	1	1	1	5	1	1	1	2	1	1	1
Plantago lanceolata	5	1	1		5	1	1	1	5	1	1		5	1	1		5	1	1	1
Plantago media	2												5							
Polygala calcarea	1	1	1						2											
Polygala vulgaris					1															
Poterium sanguisorba	10	1	1	1	10	1	1	1	10	1	1	1	10	1	1		10	1		
Primula veris													2				5	1	1	1
Prunella vulgaris									5	1	1		2	1						
Pseudoscleropodium purum	10	1	1	1	15	1	1		10	1	1		5				10	1	1	
Ranunculus acris																				
Ranunculus bulbosus	2	1	1	1	2				2	1	1	1	1	1	1	1	2	1	1	1
Scabiosa columbaria	5	1	1	1	1				5	1	1		1							
Schedonorus arundinaceus																				
Schedonorus pratensis	5	1	1		5	1	1	1	2	1	1	1	2	1	1					
Senecio jacobaea	1				1												1	1		
Serratula tinctoria													5	1	1					
Succisa pratensis	15	1	1	1	25	1	1	1	10	1	1	1	5	1	1	1	5			
Taraxacum agg.																				
Thymus polytrichus	1	1	1																	
Trifolium pratense	5	1	1	1					1				5	1			2	1	1	1
Trisetum flavescens																				
Viola hirta																				
X Schedolium loliaceum																				

Data are presented in linear order from 0 m moving toward 100 m, where 100 = 100 cm x 100 cm quadrat size etc. Estimated percentage cover of each species is given for the largest quadrat only; in the sub-quadrats 1 = present and a blank cell means a species was not recorded.

TRANSECT 2

	Q1				Q2				Q3				Q4				Q5			
	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10
Achillea millefolium																				
Agrostis capillaris	1	1	1		1				1	1	1	1	5	1	1	1				
Asperula cynanchica																				
Avenula pratensis	1				5								1	1	1					
Avenula pubescens																	5	1	1	1
Bellis perennis																				
Briza media																				
Calliergonella cuspidata	1	1															1	1	1	
Campanula rotundifolia																				
Carex caryophyllea																				
Carex flacca	1																1	1	1	1
Carex humilis																				
Centaurea nigra	5	1							1	1	1	1	1				2	1	1	
Centaurea scabiosa																				
Cirsium acaule																				
Cynosurus cristatus																				
Dactylis glomerata	2	1	1						5	1	1	1					1			
Festuca ovina / rubra																				
Festuca rubra	80	1	1	1	80	1	1	1	85	1	1	1	80	1	1	1	80	1	1	1
Filipendula vulgaris																				
Galium verum	10	1	1	1	10	1	1	1	10	1			10	1	1	1				
Helianthemum nummularium	1								1				1							
Homalothecium lutescens																	1			
Koeleria macrantha	2	1	1	1	3	1	1	1	1	1	1	1	1	1			1	1	1	
Leucanthemum vulgare																				
Linum catharticum																				
Lotus corniculatus	5	1	1	1	5	1	1	1	5	1	1	1	5	1	1		5	1	1	1
Luzula campestris													1	1			1	1		
Medicago lupulina																	1			
Onobrychis viciifolia																				
Phleum bertolonii	2	1			2	1	1		2	1	1		5	1	1	1	2	1		
Pilosella officinarum																				
Plantago lanceolata	5	1	1		5	1			5	1	1	1	5	1	1		5	1	1	
Plantago media																				
Poa humilis	1	1	1	1																
Poa pratensis									1								1			
Poterium sanguisorba					5	1							1	1	1		5	1		
Primula veris																				
Prunella vulgaris																				
Pseudoscleropodium purum	1	1	1	1	1	1			1	1	1		1	1			1	1	1	
Ranunculus bulbosus	5	1	1	1	2	1			2	1	1	1	5	1	1		5	1	1	1
Rhytidiadelphus squarrosus	15	1	1		15	1	1		10	1	1		5	1	1	1				
Scabiosa columbaria																				
Schedonorus pratensis	1	1	1	1									1	1			10	1	1	1
Senecio jacobaea	1																5			
Serratula tinctoria									1	1							1	1	1	
Succisa pratensis	2				1	1														
Thatch	5	1	1	1	10	1	1	1	2	1			5	1	1	1	5	1	1	
Thymus polytrichus																				
Trifolium pratense					1	1	1		1	1							1	1	1	
Trifolium repens																				
Trisetum flavescens	1	1	1	1	1	1							1	1						

	Q6				Q7				Q8				Q9				Q10			
	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10
Achillea millefolium																				
Agrostis capillaris	1	1	1	1	1	1	1		1	1	1		1	1	1	1	1			
Asperula cynanchica					1	1			1											
Avenula pratensis					5	1			10	1			10	1	1	1	10	1	1	1
Avenula pubescens									1				1							
Bellis perennis													1	1						
Briza media					5	1							5	1	1		1	1		
Calliergonella cuspidata					1	1			1				2	1			5	1		
Campanula rotundifolia	1	1	1		1								1							
Carex caryophyllea																				
Carex flacca					1				1				1	1	1	1	1	1	1	
Carex humilis																				
Centaurea nigra					1				5	1			5	1	1	1	5	1	1	1
Centaurea scabiosa																	1			
Cirsium acaule	2												1	1			2	1	1	1
Cynosurus cristatus																				
Dactylis glomerata	1				1				1								1			
Festuca ovina / rubra																				
Festuca rubra	85	1	1	1	65	1	1	1	75	1	1	1	65	1	1	1	65	1	1	1
Filipendula vulgaris									5											
Galium verum	10	1	1	1					10	1	1	1	10	1			5	1	1	1
Helianthemum nummularium					10				1				10	1	1	1	5	1	1	
Homalothecium lutescens													1	1	1					
Koeleria macrantha	2	1			2	1	1						5	1	1	1	2	1	1	1
Leucanthemum vulgare													1	1						
Linum catharticum																				
Lotus corniculatus	5	1			15	1			5	1	1		5	1	1		5	1	1	
Luzula campestris																				
Medicago lupulina													1	1	1					
Onobrychis viciifolia																				
Phleum bertolonii	2	1			5	1	1	1	2	1	1						1	1		
Pilosella officinarum													1							
Plantago lanceolata	2				5	1			10	1	1		10	1	1		10	1	1	
Plantago media									1											
Poa humilis									1	1										
Poa pratensis	1				1	1	1	1												
Poterium sanguisorba	1				5	1			10	1	1		10	1	1		10	1	1	
Primula veris					1												2			
Prunella vulgaris																				
Pseudoscleropodium purum	10	1			10	1	1		10	1	1	1	10	1	1	1	10	1	1	1
Ranunculus bulbosus	10	1	1		5	1	1		2	1	1	1	5	1	1	1	5	1	1	1
Rhytidiadelphus squarrosus	5	1	1		20	1	1	1	5	1			1				1	1		
Scabiosa columbaria					1								1	1	1		5	1	1	
Schedonorus pratensis	1				5	1			5	1	1	1	5	1	1	1	5	1	1	1
Senecio jacobaea													1							
Serratula tinctoria					1	1	1		1								1	1		
Succisa pratensis	5				5				2				5	1			10	1		
Thatch	5	1	1	1	5	1			5	1	1	1	5	1	1	1	5	1	1	1
Thymus polytrichus													1							
Trifolium pratense	2				1	1											5	1		
Trifolium repens	2	1	1	1																
Trisetum flavescens					1	1	1						1							

	Q11				Q12				Q13				Q14				Q15			
	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10
Achillea millefolium																				
Agrostis capillaris	1	1	1		1	1	1		1	1			1	1	1	1				
Asperula cynanchica	1	1	1	1					2								2	1	1	
Avenula pratensis	15	1	1	1	5	1	1		10	1	1		5	1	1		5	1	1	
Avenula pubescens																				
Bellis perennis																				
Briza media	1	1	1	1	5	1	1	1	5	1	1	1	5	1	1	1	10	1	1	1
Calliergonella cuspidata	2	1	1		1	1							1	1	1					
Campanula rotundifolia																				
Carex caryophyllea	1								1				1	1	1	1	1			
Carex flacca	1				2	1	1	1	5	1	1		5	1	1	1	2	1	1	1
Carex humilis	5	1																		
Centaurea nigra	1								2	1			5	1	1		1			
Centaurea scabiosa																				
Cirsium acaule	10	1			5	1			10	1	1	1	10	1	1	1	10			
Cynosurus cristatus									1				1				1	1		
Dactylis glomerata	2	1	1		5	1	1						2	1			1	1	1	
Festuca ovina / rubra									45	1	1	1	40	1	1	1	45	1	1	1
Festuca rubra	20	1	1	1	55	1	1	1												
Filipendula vulgaris																	1			
Galium verum	5	1	1		5	1							2				2			
Helianthemum nummularium	15	1	1	1	5				5				5	1	1	1	1	1	1	
Homalothecium lutescens	1	1			1															
Koeleria macrantha	5	1	1	1	5	1	1	1	5	1	1	1	5	1	1	1	5	1		
Leucanthemum vulgare																				
Linum catharticum									1								1			
Lotus corniculatus	10	1	1		5	1	1	1	5	1	1	1	10	1	1	1	5	1	1	1
Luzula campestris																				
Medicago lupulina					1	1	1	1					1							
Onobrychis viciifolia									1											
Phleum bertolonii									5	1	1	1	1				1			
Pilosella officinarum					1	1			1	1	1	1	2	1	1	1				
Plantago lanceolata	10	1	1	1	5	1	1	1	5	1	1	1	5	1	1	1	10	1	1	1
Plantago media																				
Poa humilis																				
Poa pratensis																				
Poterium sanguisorba	10	1	1	1	10	1	1	1	15	1	1	1	10	1	1	1	10	1	1	
Primula veris									2	1			1				1			
Prunella vulgaris	1	1	1	1	1	1	1		1	1			1	1	1	1				
Pseudoscleropodium purum	5	1	1	1	10	1	1		5	1	1	1	5	1	1	1	5	1	1	1
Ranunculus bulbosus	5	1	1	1	5	1	1	1	5	1	1		5	1	1	1	2	1	1	1
Rhytidiadelphus squarrosus	1	1	1																	
Scabiosa columbaria	1				5	1			5	1	1	1	5	1	1	1	5	1	1	
Schedonorus pratensis	5	1	1	1					10	1	1		5	1	1		10	1		
Senecio jacobaea																				
Serratula tinctoria									1											
Succisa pratensis	10	1	1		10	1	1		10	1	1	1	10	1	1	1	10	1		
Thatch					5												5	1	1	1
Thymus polytrichus																				
Trifolium pratense					1	1	1		1	1	1	1	2	1	1		5	1		
Trifolium repens																				
Trisetum flavescens													1	1	1					

	Q16				Q17				Q18				Q19				Q20			
	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10	100	50	25	10
Achillea millefolium	1																			
Agrostis capillaris					2	1	1	1					1	1	1	1	1	1		
Asperula cynanchica									1	1	1	1								
Avenula pratensis	5	1	1		10	1	1	1	5	1	1	1	10	1	1	1	10	1	1	1
Avenula pubescens																				
Bellis perennis									1											
Briza media	5	1	1		10	1	1	1	15	1	1	1	10	1	1	1	5	1		
Calliergonella cuspidata	1	1							1				1							
Campanula rotundifolia	1	1	1	1	1	1			1								1			
Carex caryophyllea	1	1							1	1	1		1				1			
Carex flacca	5	1	1	1					1	1			1	1			1	1	1	1
Carex humilis									1				5				1	1		
Centaurea nigra	5	1	1		1	1			5	1	1	1	10	1						
Centaurea scabiosa																				
Cirsium acaule	5	1			10	1			10	1	1	1	5				5	1	1	1
Cynosurus cristatus	5	1	1														1	1	1	
Dactylis glomerata	5	1	1		5	1			5	1	1		2	1	1		1	1	1	1
Festuca ovina / rubra	35	1	1	1					40	1	1	1								
Festuca rubra					45	1	1	1					40	1	1	1	30	1	1	1
Filipendula vulgaris																				
Galium verum	10				5	1	1						10	1	1					
Helianthemum nummularium	5	1	1	1	5	1	1	1	5	1			5	1	1		2	1	1	1
Homalothecium lutescens									1	1										
Koeleria macrantha	5	1	1	1	15	1	1	1	15	1	1	1	5	1	1	1	5	1	1	1
Leucanthemum vulgare																				
Linum catharticum	1								1	1	1	1	1				1			
Lotus corniculatus	10	1	1	1	5	1	1	1	10	1	1	1	5	1	1		5	1	1	1
Luzula campestris																	1			
Medicago lupulina					1								1							
Onobrychis viciifolia																				
Phleum bertolonii	1	1	1		2	1											1	1	1	1
Pilosella officinarum	1	1			1				2	1	1		1				1			
Plantago lanceolata	5	1	1		10	1	1	1	2	1	1	1	5	1	1		5	1	1	1
Plantago media																				
Poa humilis																				
Poa pratensis																				
Poterium sanguisorba	10	1	1	1	5	1	1	1	10	1	1	1	10	1	1	1	5	1	1	
Primula veris	5								1				2				10	1	1	1
Prunella vulgaris	1	1	1						1											
Pseudoscleropodium purum	20	1	1		10	1	1	1	30	1	1	1	10	1			5	1	1	1
Ranunculus bulbosus	5	1	1		5	1	1	1	5	1	1		5	1	1		5	1	1	
Rhytidiadelphus squarrosus																				
Scabiosa columbaria	5	1	1		5	1			5	1	1									
Schedonorus pratensis	10	1	1	1	10	1	1	1					5	1	1		25	1	1	1
Senecio jacobaea																				
Serratula tinctoria	1	1	1	1	2				1	1	1		2	1			2	1	1	
Succisa pratensis	10	1			5				10	1	1	1	5				1	1		
Thatch									10	1	1	1	5	1			10	1	1	1
Thymus polytrichus																				
Trifolium pratense	5	1			5	1	1		5				2				1			
Trifolium repens																				
Trisetum flavescens																				

TRANSECT 3

	Q1				Q2				Q3				Q4				Q5			
	100	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**
Achillea millefolium													1	1						
Agrostis capillaris									1	1	1	1	1				1			
Agrostis stolonifera																				
Avenula pratensis																	5	1	1	1
Avenula pubescens	1	1	1		5	1	1	1	5	1			5				5	1		
Bare soil									5				5				10	1		
Bellis perennis																				
Briza media									5	1	1	1	5	1	1	1	1	1		
Calliergonella cuspidata																				
Campanula rotundifolia																				
Carex caryophyllea																				
Carex flacca									1	1	1						1	1		
Centaurea nigra																				
Cerastium fontanum					1												1			
Cirsium acaule	5	1	1	1	5				2	1	1		5	1	1		5	1	1	
Cynosurus cristatus	1	1	1	1									1	1	1	1	1			
Dactylis glomerata	20	1	1	1	10	1	1	1	10	1	1		10	1	1	1	1	1	1	1
Festuca ovina																				
Festuca rubra	75	1	1	1	70	1	1	1	75	1	1	1	75	1	1	1	50	1	1	1
Galium verum	5	1	1	1	10	1	1	1	5	1	1	1	5	1	1	1	10			
Holcus lanatus	1												5	1	1					
Koeleria macrantha	1	1	1	1					1	1	1	1	5	1	1	1	2	1	1	1
Lathyrus pratensis																				
Leontodon hispidus																				
Linum catharticum																				
Lolium perenne																				
Lotus corniculatus	1	1			5	1	1		5	1			5	1	1	1	5	1	1	1
Medicago lupulina													2	1	1	1	1	1	1	1
Phleum bertolonii					1	1	1	1												
Pilosella officinarum													1	1	1	1				
Pimpinella saxifraga																				
Plantago lanceolata																				
Plantago media																				
Poa humilis	1				5	1											1	1		
Poa pratensis													1				10			
Poterium sanguisorba	5	1			2				5	1	1	1	5	1	1		10	1	1	1
Primula veris													1				5	1		
Prunella vulgaris																				
Pseudoscleropodium purum																				
Ranunculus bulbosus	5	1	1		5	1			2				2	1	1					
Ranunculus repens																				
Rumex acetosa																				
Scabiosa columbaria													1	1						
Schedonorus arundinaceus																	1	1	1	
Schedonorus pratensis	5	1	1						5	1	1	1	2	1	1		5	1		
Senecio jacobaea									1											
Succisa pratensis																				
Taraxacum agg.					5	1			5				1	1	1					
Thatch	5	1			10	1			10	1	1			15	1		10	1		
Trifolium pratense													1	1	1	1				
Veronica chamedrys	1	1	1		1	1	1													
Vicia cracca																				

	Q6				Q7				Q8				Q9				Q10			
	100	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**
Achillea millefolium																				
Agrostis capillaris					1	1							1	1			5			
Agrostis stolonifera																	1			
Avenula pratensis																				
Avenula pubescens	2	1	1		10	1	1	1	10	1	1		1	1	1		10	1	1	1
Bare soil	5	1	1						5	1			10	1			10			
Bellis perennis									2											
Briza media	5	1	1	1	1	1	1	1					5	1	1	1				
Calliergonella cuspidata																				
Campanula rotundifolia																				
Carex caryophyllea																				
Carex flacca	5	1			2	1											5	1	1	
Centaurea nigra																				
Cerastium fontanum																				
Cirsium acaule					25	1			5				10	1	1		10	1		
Cynosurus cristatus	2	1											5	1			1			
Dactylis glomerata	10	1	1		10	1	1	1	10	1	1		10	1	1	1	5	1	1	1
Festuca ovina																				
Festuca rubra	50	1	1	1	65	1	1	1	70	1	1	1	50	1	1	1	70	1	1	1
Galium verum	15	1	1		10	1	1	1	10	1	1	1	10	1	1	1	5	1	1	
Holcus lanatus	5	1	1		5				5	1										
Koeleria macrantha	5	1	1	1	1	1	1		1	1	1	1	2	1	1		1			
Lathyrus pratensis																				
Leontodon hispidus																				
Linum catharticum													1							
Lolium perenne					1	1	1		5	1							1			
Lotus corniculatus	5	1	1	1									5	1	1		5	1		
Medicago lupulina	1	1											2	1			1			
Phleum bertolonii													5	1						
Pilosella officinarum													2	1						
Pimpinella saxifraga					1															
Plantago lanceolata	1				10	1	1		5	1	1						5	1		
Plantago media																				
Poa humilis	1	1							2								1			
Poa pratensis					1				10	1	1		10	1			2			
Poterium sanguisorba	5	1	1	1	10	1			5	1	1	1	10	1	1		10	1	1	
Primula veris	1	1	1	1	5	1			5				5	1			5			
Prunella vulgaris																				
Pseudoscleropodium purum													1							
Ranunculus bulbosus					2	1	1	1	5				10	1	1		5	1	1	
Ranunculus repens																				
Rumex acetosa																				
Scabiosa columbaria									5				5	1			2			
Schedonorus arundinaceus																				
Schedonorus pratensis	5	1	1	1	2	1	1		5	1	1	1	1				5			
Senecio jacobaea																				
Succisa pratensis													1	1	1					
Taraxacum agg.					1	1			1	1	1						1	1	1	
Thatch	10	1	1		5	1			5	1	1						5	1	1	
Trifolium pratense	1	1			2	1	1		2	1			1				2			
Veronica chamedrys	10	1	1	1	5				5	1	1	1								
Vicia cracca	5	1																		

	Q11				Q12				Q13				Q14				Q15			
	100	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**
Achillea millefolium																				
Agrostis capillaris					1	1							1	1	1	1	1	1	1	
Agrostis stolonifera													1				1	1		
Avenula pratensis																	5	1		
Avenula pubescens					10	1	1	1	2	1			5	1	1	1	5	1	1	1
Bare soil	10	1			5	1			10	1			10	1						
Bellis perennis					5	1														
Briza media	5	1	1	1	5	1			5				5	1	1	1	5	1	1	
Calliergonella cuspidata																	5			
Campanula rotundifolia													1	1						
Carex caryophyllea																				
Carex flacca	2				10	1	1	1	2	1	1		5	1	1	1	2	1		
Centaurea nigra					5								5	1						
Cerastium fontanum																				
Cirsium acaule	5	1	1	1	15	1	1	1	5	1	1		10	1	1		5	1	1	1
Cynosurus cristatus	10	1			5	1							5	1						
Dactylis glomerata	25	1	1		5	1	1	1	10	1	1	1	5	1	1	1	5	1	1	
Festuca ovina													1	1						
Festuca rubra	35	1			45	1	1	1	70	1	1	1	35	1	1	1	40	1	1	1
Galium verum	10	1	1	1	10	1	1		10	1	1		5	1	1	1	10	1	1	1
Holcus lanatus																	1	1	1	
Koeleria macrantha	5	1	1	1	2	1	1	1	2	1	1	1	2	1	1	1	5	1	1	1
Lathyrus pratensis	5	1																		
Leontodon hispidus													5	1						
Linum catharticum					1															
Lolium perenne	5	1			5								2							
Lotus corniculatus	10	1	1	1	5	1	1	1	5				10	1	1		10	1	1	1
Medicago lupulina					2	1			2											
Phleum bertolonii	1	1											1							
Pilosella officinarum					1	1							5							
Pimpinella saxifraga																				
Plantago lanceolata	5	1	1		5	1	1	1	10	1	1		5	1	1		5	1	1	
Plantago media					10															
Poa humilis	5	1	1																	
Poa pratensis	1				1												1			
Poterium sanguisorba	10	1	1	1	10	1	1	1	5	1	1	1	10	1	1	1	10	1	1	
Primula veris	5	1			2	1			5	1	1		5	1	1		5	1		
Prunella vulgaris	1	1																		
Pseudoscleropodium purum	2	1											1	1	1	1				
Ranunculus bulbosus	5	1	1	1	1				5	1	1						5	1	1	
Ranunculus repens																				
Rumex acetosa	1																			
Scabiosa columbaria	2	1			2	1			5				5	1	1					
Schedonorus arundinaceus									10											
Schedonorus pratensis	5	1			1	1	1	1	5	1	1		5	1	1	1	10	1		
Senecio jacobaea																				
Succisa pratensis													2	1	1					
Taraxacum agg.	1	1	1	1	1								1	1	1					
Thatch	5				5	1			5	1	1	1					5	1	1	1
Trifolium pratense	5	1	1		2	1	1		2				5	1	1	1	2	1	1	
Veronica chamedrys																				
Vicia cracca																				

	Q16				Q17				Q18				Q19				Q20			
	100	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**	**100**	**50**	**25**	**10**
Achillea millefolium																				
Agrostis capillaris																	1	1	1	1
Agrostis stolonifera									1	1										
Avenula pratensis	10	1	1		20	1	1		15	1	1		15	1	1	1	10	1		
Avenula pubescens	5	1			5	1			5	1	1	1	5	1	1	1	5	1	1	1
Bare soil	5	1			10	1	1	1												
Bellis perennis																				
Briza media	2	1	1	1	1	1			5	1	1		2	1	1		10	1		
Calliergonella cuspidata																				
Campanula rotundifolia																				
Carex caryophyllea									1	1	1	1								
Carex flacca	5	1			1	1	1	1	2	1	1	1	1				5	1	1	
Centaurea nigra									5								1			
Cerastium fontanum																				
Cirsium acaule	10	1	1		10	1	1		5								15	1	1	
Cynosurus cristatus																	2			
Dactylis glomerata	5	1	1		5	1	1	1	10	1			10	1	1	1	5	1		
Festuca ovina																				
Festuca rubra	40	1	1	1	25	1	1	1	45	1	1	1	40	1	1	1	65	1	1	1
Galium verum	15	1	1	1	10	1	1	1	10	1	1	1	10	1	1	1	5	1	1	1
Holcus lanatus	5				1	1	1	1									1			
Koeleria macrantha	5	1	1	1	5	1	1	1	5	1	1	1	1	1	1		2	1	1	1
Lathyrus pratensis																				
Leontodon hispidus	5	1	1	1	10	1	1		10	1	1		5	1			10	1	1	1
Linum catharticum									1	1	1									
Lolium perenne																				
Lotus corniculatus	5	1	1		2				10	1	1	1	5	1	1		5	1	1	1
Medicago lupulina																				
Phleum bertolonii	1	1			1	1			1	1	1	1					1	1		
Pilosella officinarum																				
Pimpinella saxifraga																				
Plantago lanceolata	5	1	1		5	1	1		5	1	1		5	1	1		5	1	1	1
Plantago media									5											
Poa humilis													1	1			1	1		
Poa pratensis																				
Poterium sanguisorba	10	1	1	1	10	1	1		5	1	1	1	10	1	1	1	10	1	1	
Primula veris	2								5	1	1		5	1	1		5	1		
Prunella vulgaris																				
Pseudoscleropodium purum									1	1	1	1					1	1		
Ranunculus bulbosus	2	1	1	1	5	1	1	1	2	1	1		5				5	1	1	1
Ranunculus repens													1							
Rumex acetosa																				
Scabiosa columbaria																	2	1		
Schedonorus arundinaceus																				
Schedonorus pratensis	15	1	1		30	1	1		15	1	1	1	30	1	1		20	1		
Senecio jacobaea																				
Succisa pratensis									1	1	1									
Taraxacum agg.					2	1	1		1	1	1	1	5							
Thatch	5	1	1	1	10	1			10	1			10	1	1	1				
Trifolium pratense	2				2				1	1			1							
Veronica chamedrys																				
Vicia cracca																				

APPENDIX II: NVC DATA

Site name		Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N	Till N
Grid reference		SU 07997 41620	SU 07933 41626	SU 07809 41565	SU 07820 41492	SU 07802 41448	SU 07772 41407	SU 07771 41422	SU 07771 41447	SU 07804 41476	SU 07823 41524	SU 07782 41462	SU 07780 41457	SU 07817 41515	SU 07824 41518	SU 07845 41536	SU 07884 41553	SU 07994 41591	SU 08004 41593	SU 08011 41595	SU 08017 41595	SU 08030 41595
Quadrat number		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Veg unit		MG7b	MG7b	MG7b	MG7b	MG7b	MG13	MG13	MG13	MG13	MG13	MG13	MG13	MG13	MG13	MG13	N/A	A19	A19	A19	A19	A19
Agrostis stolonifera																						
Alopecurus geniculatus	Creeping Bent	2	4	3	4	5	7	6	5	1		4	1	2	2							
Apium nodiflorum	Marsh Foxtail							3	1	5	5	7	5	5	6	7	1	5	5	4	4	5
Arrhenatherum elatius	Fool's-water-cress						2	4			4		2				9	5	5	5	4	6
Brachythecium rutabulum	False Oat-Grass		2	6	7																	
Bromus hordeaceus	Rough-stalked Feather-moss				3																	
Carex hirta	Soft-brome	2				2																
Cerastium fontanum	Hairy Sedge				5																	
Cladophora agg.	Common Mouse-ear	1		1		1						1	1									
Convolvulus arvensis	A filamentous green alga																	6		4		
Cratoneuron filicinum	Field Bindweed					4																
Dactylis glomerata	Fern-leaved Hook-moss						2							3	3	2						
Epilobium parviflorum	Cock's-foot	6	4	4	4	4																
Festuca rubra	Hoary Willowherb											4	4	5	5							
Fontinalis antipyretica	Red Fescue	7	7	5	5	5																
Galium palustre	Greater Water-moss										2						2					
Geranium dissectum	Marsh-bedstraw											2	4									
Glyceria fluitans	Cut-leaved Crane's-bill		1		2	4																
Holcus lanatus	Floating Sweet-grass									1		7	8	9	6	7	2	3		5		5
Lemna gibba	Yorkshire-fog	5	6	5	4	8			1			4	2		4	2						
Leptodictyum riparium	Fat Duckweed								3	1	2					2	4	8	8	9	9	9
Lolium perenne	Kneiff's Feather-moss						2					4	3	3	3	2	3					
Mentha aquatica	Perennial Rye-grass	3	5	6	5	4						1										
Myosotis scorpioides	Water Mint						4		2													
Nasturtium officinale	Water Forget-me-not						7	6	9	7	8		4	3	5		4	1	4	2	3	4
Phalaris arundinacea	Water-cress							6	2			1	4					1	4	4	6	1
Phleum bertolonii	Reed Canary-grass														2	1	5					
Poa trivialis	Smaller Cat's-tail	2			4	2																
Potentilla anserina	Rough Meadow-grass	3	4	4	3	4	3	3	2		1	3	4	4	5	4						
Ranunculus acris	Silverweed											4										
Ranunculus aquatilis	Meadow Buttercup	4		1																		
Ranunculus peltatus	Common Water-crowfoot										1						1	4	3	3	4	3
Ranunculus repens	Pond Water-crowfoot																	2	4	3	4	2
Rumex conglomeratus	Creeping Buttercup		4	4	1							1	1									
Schedonorus arundinaceus	Clustered Dock						1	4	1			2	1								1	1
Senecio aquaticus	Tall Fescue	2																				
Taraxacum agg.	Marsh Ragwort							1				5	4		1	1						
Veronica anagallis-aquatica	Dandelion				1																	
Veronica beccabunga	Blue Water-speedwell								5	4	1					1						
Thatch	Brooklime						7	4			4	2										
Bare ground		5	4	4	5	5																
Unvegetated open water			4				5	4	4	2	4	5	4	5	4	5	5					

Abundance within quadrats is recorded using the Domin scale, where:

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

Site name			Till S	Till S	Till S	Till S	Till S	Till S	Till S	Till S	Till S	Till S
Grid reference			SU 07653 39987	SU 07661 39967	SU 07666 39950	SU 07715 39898	SU 07734 39898	SU 07692 39931	SU 07718 39940	SU 07736 39963	SU 07726 40002	SU 07714 40023
Quadrat number			22	23	24	25	26	27	28	29	30	31
Veg unit			MG9	MG9	MG9	MG9	MG9	MG1b	MG1b	MG1b	MG1b	MG1b
		Structural unit										
Agrostis stolonifera	Creeping Bent		6	8	8	6	5					
Alopecurus pratensis	Meadow Foxtail							2				2
Amblystegium serpens	Creeping Feather-moss											
Angelica sylvestris	Wild Angelica		4		4		5					
Anisantha sterilis	Barren Brome								4	3		
Anthriscus sylvestris	Cow Parsley								4	1	1	1
Arrhenatherum elatius	False Oat-Grass		4	5	3	4	4	6	7	9	5	8
Brachypodium sylvaticum	False-brome											
Brachythecium rutabulum	Rough-stalked Feather-moss		3	3	3	2	3					
Calliergonella cuspidata	Pointed Spear-moss				2							
Calystegia sepium	Hedge Bindweed											
Cardamine pratensis	Cuckooflower											
Carex hirta	Hairy Sedge		4	2		2						
Cerastium fontanum	Common Mouse-ear					2	1					
Cirsium arvense	Creeping Thistle			1			1			4		
Cirsium palustre	Marsh Thistle											
Cirsium vulgare	Spear Thistle						1	4	1	1	2	1
Conocephalum conicum	Great Scented Liverwort											
Crataegus monogyna	Hawthorn	Understorey										
Cryphaea heteromalla	Lateral Cryphaea											
Dactylis glomerata	Cock's-foot								5		7	
Deschampsia cespitosa	Tufted Hair-grass		4	2	4	4	2			4		
Eleocharis palustris	Common Spike-rush				3	4						
Epilobium hirsutum	Great Willowherb											
Equisetum arvense	Field Horsetail											
Equisetum palustre	Marsh Horsetail				4	1						
Eupatorium cannabinum	Hemp-agrimony											
Festuca rubra	Red Fescue											4
Filipendula ulmaria	Meadowsweet			4								
Fraxinus excelsior	Ash	Field layer										
Fraxinus excelsior	Ash	Understorey										
Fraxinus excelsior	Ash	Canopy										
Frullania dilatata	Dilated Scalewort											
Galium aparine	Cleavers		2	1		4	3	1				2
Galium palustre	Marsh-bedstraw		1	1			2					
Galium uliginosum	Fen Bedstraw											
Geranium pyrenaicum	Hedgerow Crane's-bill								1	1	4	1
Geranium robertianum	Herb-Robert											
Glyceria maxima	Reed Sweet-grass											
Hedera helix	Common Ivy	Canopy										
Heracleum sphondylium	Hogweed									2	6	4
Holcus lanatus	Yorkshire-fog		4	5	5	7	5	8	4	4	5	5
Homalothecium sericeum	Silky Wall Feather-moss											
Hypnum cupressiforme agg.												
Hypnum cupressiforme var. r	Supine Plait-moss											
Iris pseudacorus	Yellow Iris											
Juncus acutiflorus	Sharp-flowered Rush											
Juncus inflexus	Hard Rush		8	7	7	6	7					
Kindbergia praelonga	Common Feather-moss											
Lunularia cruciata	Crescent-cup Liverwort											
Lycopus europaeus	Gypsywort											
Mentha aquatica	Water Mint											
Metzgeria consanguinea	Whiskered Veilwort											
Metzgeria furcata	Forked Veilwort											
Myosotis arvensis	Field Forget-me-not										1	3
Myosotis scorpioides	Water Forget-me-not											
Oenanthe crocata	Hemlock Water-dropwort											
Orthotrichum affine	Wood Bristle-moss											
Orthotrichum diaphanum	White-tipped Bristle-moss											
Orthotrichum lyellii	Lyell's Bristle-moss											
Oxyrrhynchium hians	Swartz's Feather-moss					2						
Pellia endiviifolia	Endive Pellia											
Persicaria amphibia	Amphibious Bistort		1	5		5						
Phalaris arundinacea	Reed Canary-grass			2	4	4	1					
Phleum bertolonii	Smaller Cat's-tail		2									
Plagiomnium undulatum	Hart's-tongue Thyme-moss											
Plantago lanceolata	Ribwort Plantain			2								
Poa trivialis	Rough Meadow-grass		5	4	5	4	5	5	4	4	4	4
Ranunculus repens	Creeping Buttercup			2		2	2					2
Rhizomnium punctatum	Dotted Thyme-moss											
Rumex obtusifolius	Broad-leaved Dock									4		
Rumex sanguineus	Wood Dock						2			4		
Salix alba	White Willow	Understorey										
Salix alba	White Willow	Canopy										
Salix cinerea subsp. oleifolia	Grey Willow	Canopy										
Salix cinerea subsp. oleifolia	Grey Willow	Understorey										
Salix triandra	Almond Willow											
Salix fragilis agg.	Crack Willow	Understorey										
Salix fragilis agg.	Crack Willow	Canopy										
Sambucus nigra	Elder	Understorey										
Schedonorus giganteus	Giant Fescue											
Scleropodium cespitans	Tufted Feather-moss											
Scrophularia auriculata	Water Figwort											
Senecio aquaticus	Marsh Ragwort											
Senecio jacobaea	Common Ragwort											1
Silene flos-cuculi	Ragged-Robin											
Solanum dulcamara	Bittersweet											
Stachys palustris	Marsh Woundwort											
Stachys sylvatica	Hedge Woundwort											
Taraxacum agg.	Dandelion					1				1	1	
Ulmus procera	English Elm	Understorey										
Urtica dioica	Common Nettle		2	1	4	1	6	4	8	5	5	4
Veronica chamaedrys	Germander Speedwell											2
Viburnum opulus	Guelder-rose	Understorey										
Zygodon viridissimus	Green Yoke-moss											
Thatch			4	4	2	4	4		4	3	3	4
Bare ground								4		4	4	1

Site name			Till S	Till S	Till S	Till S	Till S	Till S	Till S	Till S	Till S	Till S
Grid reference			SU 07599 40102	SU 07607 40119	SU 07628 40110	SU 07641 40110	SU 07652 40116	SU 07686 40096	SU 07678 40077	SU 07663 40050	SU 07632 39972	SU 07645 39947
Quadrat number			32	33	34	35	36	37	Mixed Salix	Mixed Salix	Mixed Salix	41
Veg unit			OV26	OV26	OV26	OV26	OV26	Mixed Salix woodland	Mixed Salix woodland	Mixed Salix woodland	Mixed Salix woodland	Mixed Salix woodland
		Structural unit										
Agrostis stolonifera	Creeping Bent			2		2						
Alopecurus pratensis	Meadow Foxtail											
Amblystegium serpens	Creeping Feather-moss							2		3		3
Angelica sylvestris	Wild Angelica		7	4	6	1			1	1		
Anisantha sterilis	Barren Brome										1	
Anthriscus sylvestris	Cow Parsley											
Arrhenatherum elatius	False Oat-Grass				4	3	2					
Brachypodium sylvaticum	False-brome										4	
Brachythecium rutabulum	Rough-stalked Feather-moss				3			3	3	3	4	4
Calliergonella cuspidata	Pointed Spear-moss											
Calystegia sepium	Hedge Bindweed					4	4		3			
Cardamine pratensis	Cuckooflower									1		1
Carex hirta	Hairy Sedge											
Cerastium fontanum	Common Mouse-ear											
Cirsium arvense	Creeping Thistle			1	2	1	3					
Cirsium palustre	Marsh Thistle				4							
Cirsium vulgare	Spear Thistle					1						
Conocephalum conicum	Great Scented Liverwort								1	2		3
Crataegus monogyna	Hawthorn	Understorey						4	1	4		
Cryphaea heteromalla	Lateral Cryphaea							2	1			2
Dactylis glomerata	Cock's-foot											1
Deschampsia cespitosa	Tufted Hair-grass		4	4	4		2					
Eleocharis palustris	Common Spike-rush											
Epilobium hirsutum	Great Willowherb		4	4	2							
Equisetum arvense	Field Horsetail		1			2						
Equisetum palustre	Marsh Horsetail											
Eupatorium cannabinum	Hemp-agrimony									4		
Festuca rubra	Red Fescue											
Filipendula ulmaria	Meadowsweet				2	2		1	4	1		2
Fraxinus excelsior	Ash	Field layer						1			3	4
Fraxinus excelsior	Ash	Understorey							4	4	4	
Fraxinus excelsior	Ash	Canopy						1	4	4		
Frullania dilatata	Dilated Scalewort							3	2	2	3	3
Galium aparine	Cleavers		3	4	4	4	5	2	4			
Galium palustre	Marsh-bedstraw					2						1
Galium uliginosum	Fen Bedstraw					3						
Geranium pyrenaicum	Hedgerow Crane's-bill											
Geranium robertianum	Herb-Robert							4	2	2	3	6
Glyceria maxima	Reed Sweet-grass								2			
Hedera helix	Common Ivy	Canopy						1		1	4	
Heracleum sphondylium	Hogweed											
Holcus lanatus	Yorkshire-fog						2					
Homalothecium sericeum	Silky Wall Feather-moss								3	3		3
Hypnum cupressiforme agg.								3	3		4	3
Hypnum cupressiforme var. r	Supine Plait-moss										2	
Iris pseudacorus	Yellow Iris								1	4		
Juncus acutiflorus	Sharp-flowered Rush					5						
Juncus inflexus	Hard Rush		3				2					
Kindbergia praelonga	Common Feather-moss							2	2	3		3
Lunularia cruciata	Crescent-cup Liverwort									3		
Lycopus europaeus	Gypsywort									3		
Mentha aquatica	Water Mint		2	1		3	3	3	1	4	4	2
Metzgeria consanguinea	Whiskered Veilwort							3				
Metzgeria furcata	Forked Veilwort							3	2		2	2
Myosotis arvensis	Field Forget-me-not											
Myosotis scorpioides	Water Forget-me-not							3	4	6	4	4
Oenanthe crocata	Hemlock Water-dropwort		8	9	7	7	9	8	9	8	8	4
Orthotrichum affine	Wood Bristle-moss							3	1		3	3
Orthotrichum diaphanum	White-tipped Bristle-moss							2				
Orthotrichum lyellii	Lyell's Bristle-moss										2	1
Oxyrrhynchium hians	Swartz's Feather-moss											
Pellia endiviifolia	Endive Pellia											2
Persicaria amphibia	Amphibious Bistort					2						
Phalaris arundinacea	Reed Canary-grass		5	4	4	5	3					
Phleum bertolonii	Smaller Cat's-tail											
Plagiomnium undulatum	Hart's-tongue Thyme-moss							2		3		
Plantago lanceolata	Ribwort Plantain											
Poa trivialis	Rough Meadow-grass		3	3	3	3	4	3	2	5	4	4
Ranunculus repens	Creeping Buttercup					1		1			1	
Rhizomnium punctatum	Dotted Thyme-moss										2	3
Rumex obtusifolius	Broad-leaved Dock		1	1		1						
Rumex sanguineus	Wood Dock		4	1		2	1	1		1	1	2
Salix alba	White Willow	Understorey							4			
Salix alba	White Willow	Canopy							6	6		
Salix cinerea subsp. oleifolia	Grey Willow	Canopy									8	10
Salix cinerea subsp. oleifolia	Grey Willow	Understorey						5	5	7	7	6
Salix triandra	Almond Willow											
Salix fragilis agg.	Crack Willow	Understorey						8	4	5	5	
Salix fragilis agg.	Crack Willow	Canopy						8	6	5	6	
Sambucus nigra	Elder	Understorey							5			
Schedonorus giganteus	Giant Fescue		1		2		2		1		3	
Scleropodium cespitans	Tufted Feather-moss									3		2
Scrophularia auriculata	Water Figwort		2	1	3		2					1
Senecio aquaticus	Marsh Ragwort											
Senecio jacobaea	Common Ragwort											
Silene flos-cuculi	Ragged-Robin											
Solanum dulcamara	Bittersweet		1	2	1			2	2	2	3	2
Stachys palustris	Marsh Woundwort		1									
Stachys sylvatica	Hedge Woundwort									2		
Taraxacum agg.	Dandelion				1							
Ulmus procera	English Elm	Understorey						2				
Urtica dioica	Common Nettle		4	4	5	5	4	5	5	4	5	4
Veronica chamaedrys	Germander Speedwell											
Viburnum opulus	Guelder-rose	Understorey								4	4	
Zygodon viridissimus	Green Yoke-moss								2			
Thatch			5	6	6	5	5	6	5		4	
Bare ground												

Site name		Countess Cutting	Countess Cutting	Countess Cutting	Countess Cutting	Countess Cutting
Grid reference		SU 14683 42134	SU 14663 42137	SU 14607 42136	SU 14577 42141	SU 14553 42138
Quadrat number		74	75	76	77	78
Veg unit		CG3	CG3	CG3	CG3	CG3
Achillea millefolium	Yarrow					1
Anacamptis pyramidalis	Pyramidal Orchid	1				
Anthyllis vulneraria	Kidney Vetch				1	
Arrhenatherum elatius	False Oat-Grass	2	2		2	4
Brachypodium sylvaticum	False-brome	2	2		3	1
Bromopsis erecta	Upright Brome	4	5	5	4	4
Centaurium erythraea	Common Centaury	1		1		
Cirsium acaule	Dwarf Thistle	1		4		
Clematis vitalba	Traveller's-joy	4		4	1	4
Crataegus monogyna (seedlir	Hawthorn					1
Dactylis glomerata	Cock's-foot	1			1	2
Dactylorhiza fuchsii	Common Spotted-orchid	3	4	1	3	4
Dactylorhiza x grandis	D. fuchsii x praetermissa	1				
Daucus carota	Carrot	2	2		3	1
Erigeron acris	Blue Fleabane			1	3	
Euphrasia nemorosa	Eyebright			1	3	3
Festuca rubra	Red Fescue		2		2	3
Fissidens dubius	Rock Pocket-moss			2		
Fraxinus excelsior (seedling)	Ash		1	1	2	1
Galium album	Hedge Bedstraw		1	4	4	4
Hieracium Section Hieracium	Hawkweed	7	8	8	7	7
Hippocrepis comosa	Horseshoe Vetch			4		
Inula conyzae	Ploughman's-spikenard			1		
Leontodon hispidus	Rough Hawkbit	3	4			1
Leucanthemum vulgare	Oxeye Daisy	2	2	3	4	4
Linum catharticum	Fairy Flax	3		3	3	3
Melilotus altissimus	Tall Melilot			2		
Pilosella officinarum	Mouse-ear-hawkweed	6	4	4		
Plantago lanceolata	Ribwort Plantain	3	4	2	4	4
Poterium sanguisorba subsp.	Salad Burnet	5	6	4	5	6
Prunella vulgaris	Selfheal	1				3
Senecio jacobaea	Common Ragwort			1		1
Taraxacum agg.	Dandelion	4	2		1	2
Weissia species	A moss		3	3	2	4
Bare ground		5	5	5	6	6

Site name			Countess Swamp	Countess Swamp	Countess Swamp	Countess Swamp	Countess Swamp	Countess Swamp	Countess Swamp	Countess Swamp	Countess Swamp	Countess Swamp	Countess Swamp	Countess Swamp	Countess Swamp
Grid reference			SU 15858 42255	SU 15840 42241	SU 15838 42262	SU 15839 42277	SU 15841 42291	SU 15824 42292	SU 15824 42286	SU 15822 42274	SU 15826 42257	SU 15827 42238	SU 15780 42284	SU 15741 42216	SU 15849 42216
Quadrat number			47	48	49	50	51	52	53	54	55	56	57	58	59
Veg unit		Structural unit	Carex-Phalaris swamp	Carex-Phalaris swamp	Carex-Phalaris swamp	Carex-Phalaris swamp	Carex-Phalaris swamp	Glyceria-Galium veg	Glyceria-Galium veg	Glyceria-Galium veg	Glyceria-Galium veg	Glyceria-Galium veg	Mixed Salix woodland	Mixed Salix woodland	Mixed Salix woodland
Acer pseudoplatanus	Sycamore	Canopy											4		
Alliaria petiolata	Garlic Mustard														
Amblystegium serpens	Creeping Feather-moss													3	
Angelica sylvestris	Wild Angelica		1		1	1	4	1						1	
Anthriscus sylvestris	Cow Parsley														
Arctium minus	Lesser Burdock												1		
Arrhenatherum elatius	False Oat-Grass							2							
Arum maculatum	Lords-and-Ladies												2	3	2
Brachypodium sylvaticum	False-brome												3		
Brachythecium rutabulum	Rough-stalked Feather-moss								3				3	3	3
Bromopsis ramosa	Hairy-brome													2	3
Bryum capillare	Capillary Thread-moss													2	
Callitriche agg.	Water-starwort														
Calystegia sepium	Hedge Bindweed		4	5	5	4	4	4	3	4	4				
Cardamine sp.	Bitter-cress														
Carex acutiformis	Lesser Pond-sedge		10	8	10	9	8	5	1		4	4			
Cirsium arvense	Creeping Thistle														
Cirsium vulgare	Spear Thistle														
Crataegus monogyna	Hawthorn	Understorey											5	6	8
Cryphaea heteromalla	Lateral Cryphaea													2	2
Epilobium hirsutum	Great Willowherb		1								2				
Equisetum arvense	Field Horsetail							1			1	1			
Equisetum palustre	Marsh Horsetail									1					
Eupatorium cannabinum	Hemp-agrimony			1				5			1				
Filipendula ulmaria	Meadowsweet			2			1	3			2	2			
Fissidens taxifolius	Common Pocket-moss														
Frullania dilatata	Dilated Scalewort													2	
Galium aparine	Cleavers		4	5	5	6	4	4	3	3	3	2	3	4	3
Galium palustre	Marsh-bedstraw														
Geranium robertianum	Herb-Robert												5		
Geum urbanum	Wood Avens												2		
Glechoma hederacea	Ground-ivy														2
Glyceria maxima	Reed Sweet-grass		1	3		1	3	8	10	10	9	10			
Hedera helix	Common Ivy	Canopy											1	4	
Hedera helix	Common Ivy	Field layer													2
Heracleum sphondylium	Hogweed					1									
Homalothecium sericeum	Silky Wall Feather-moss												3	3	
Hypericum tetrapterum	Square-stalked St John's-wort														
Hypnum cupressiforme agg.													3	3	3
Hypnum cupressiforme var. resupinatum	Supine Plait-moss														
Iris pseudacorus	Yellow Iris										4				
Kindbergia praelonga	Common Feather-moss												3	3	4
Lemna gibba	Fat Duckweed								3	2		2		3	
Lemna minor	Common Duckweed								3			2			
Leucodon sciuroides	Squirrel-tail Moss													1	
Lythrum salicaria	Purple-loosestrife									1	1				
Mentha aquatica	Water Mint														
Metzgeria furcata	Forked Veilwort													2	
Myosotis scorpioides	Water Forget-me-not														
Nasturtium officinale	Water-cress														
Nuphar lutea	Yellow Water-lily														
Oenanthe crocata	Hemlock Water-dropwort			2					1	1	4	5			
Orthotrichum affine	Wood Bristle-moss														2
Orthotrichum diaphanum	White-tipped Bristle-moss												2		
Orthotrichum lyellii	Lyell's Bristle-moss													2	
Orthotrichum tenellum	Slender Bristle-moss													2	2
Oxyrrhynchium hians	Swartz's Feather-moss			2		1	3	3	3	2	2				
Persicaria amphibia	Amphibious Bistort														
Phalaris arundinacea	Reed Canary-grass		4	6	2	2	7		1	2	4	2			
Poa trivialis	Rough Meadow-grass														
Polypodium interjectum	Intermediate Polypody												2		
Radula complanata	Even Scalewort													3	
Ranunculus repens	Creeping Buttercup														
Rumex sanguineus	Wood Dock				1		3							1	
Sagittaria sagittifolia	Arrowhead														
Salix cinerea subsp. oleifolia	Rusty Willow	Understorey													1
Salix viminalis	Osier														
Salix x rubens	Crack Willow x White Willow	Canopy											9	9	8
Sambucus nigra	Elder	Understorey												1	
Schedonorus giganteus	Giant Fescue														
Scrophularia auriculata	Water Figwort														
Solanum dulcamara	Bittersweet		1						1	4	1			1	
Sparganium emersum	Unbranched Bur-reed														
Sparganium erectum	Branched Bur-reed														1
Stachys sylvatica	Hedge Woundwort														
Symphytum officinale	Common Comfrey		1	5	1	4	5	5		1	1	4	1	1	
Thalictrum flavum	Common Meadow-rue										5				
Ulmus glabra	Wych Elm	Understorey											4	2	
Ulmus procera	English Elm	Understorey												4	
Ulota phyllantha	Frizzled Pincushion													1	
Urtica dioica	Common Nettle		2	1	4	4	4	4		2	1	2	10	9	9
Valeriana officinalis	Common Valerian											1			
Veronica anagallis-aquatica	Blue Water-speedwell														

Site name		River Avon	River Avon	River Avon	River Avon	Lords Walk	Lords Walk	Lords Walk	Lords Walk	Lords Walk	Lords Walk	Lords Walk	Lords Walk	Lords Walk	Lords Walk
Grid reference		SU 15871 42217	SU 15871 42228	SU 15868 42248	SU 15883 42200	SU 15889 42143	SU 15888 42125	SU 15886 42119	SU 15882 42113	SU 15877 42102	SU 15885 42144	SU 15885 42134	SU 15878 42117	SU 15870 42100	SU 15863 42092
Quadrat number		60	61	62	63	64	65	66	67	68	69	70	71	72	73
Veg unit		S14	S14	S14	S14	OV26	OV26	OV26	OV26	OV26	OV26	OV26	OV26	OV26	OV26
Acer pseudoplatanus	Sycamore														
Alliaria petiolata	Garlic Mustard						1	2	1			4			
Amblystegium serpens	Creeping Feather-moss														
Angelica sylvestris	Wild Angelica					1									
Anthriscus sylvestris	Cow Parsley													1	1
Arctium minus	Lesser Burdock														
Arrhenatherum elatius	False Oat-Grass								1				2		
Arum maculatum	Lords-and-Ladies														
Brachypodium sylvaticum	False-brome														
Brachythecium rutabulum	Rough-stalked Feather-moss					3	2	2	3	4	3		2	3	
Bromopsis ramosa	Hairy-brome														
Bryum capillare	Capillary Thread-moss														
Callitriche agg.	Water-starwort		2												
Calystegia sepium	Hedge Bindweed				2			2							
Cardamine sp.	Bitter-cress								1		2				
Carex acutiformis	Lesser Pond-sedge	3													
Cirsium arvense	Creeping Thistle						2				2				
Cirsium vulgare	Spear Thistle										1		2	4	1
Crataegus monogyna	Hawthorn														
Cryphaea heteromalla	Lateral Cryphaea														
Epilobium hirsutum	Great Willowherb				5		1		1	4	10	10	9	10	10
Equisetum arvense	Field Horsetail														
Equisetum palustre	Marsh Horsetail														
Eupatorium cannabinum	Hemp-agrimony														
Filipendula ulmaria	Meadowsweet							2			2	1	4		
Fissidens taxifolius	Common Pocket-moss											2			
Frullania dilatata	Dilated Scalewort														
Galium aparine	Cleavers					6	5	4	4	5	5	4	3	4	3
Galium palustre	Marsh-bedstraw				4										
Geranium robertianum	Herb-Robert														
Geum urbanum	Wood Avens														
Glechoma hederacea	Ground-ivy														
Glyceria maxima	Reed Sweet-grass								1						
Hedera helix	Common Ivy														
Hedera helix	Common Ivy														
Heracleum sphondylium	Hogweed							1			1				
Homalothecium sericeum	Silky Wall Feather-moss														
Hypericum tetrapterum	Square-stalked St John's-wort									1	3		3	3	
Hypnum cupressiforme agg.															
Hypnum cupressiforme var. resupinatum	Supine Plait-moss														
Iris pseudacorus	Yellow Iris														
Kindbergia praelonga	Common Feather-moss								3	3	4	3	3	3	
Lemna gibba	Fat Duckweed	4	5	5											
Lemna minor	Common Duckweed	3													
Leucodon sciuroides	Squirrel-tail Moss														
Lythrum salicaria	Purple-loosestrife			1	1										
Mentha aquatica	Water Mint				4						1				
Metzgeria furcata	Forked Veilwort														
Myosotis scorpioides	Water Forget-me-not		4	4	4				1						
Nasturtium officinale	Water-cress		2												
Nuphar lutea	Yellow Water-lily	2													
Oenanthe crocata	Hemlock Water-dropwort														
Orthotrichum affine	Wood Bristle-moss														
Orthotrichum diaphanum	White-tipped Bristle-moss														
Orthotrichum lyellii	Lyell's Bristle-moss														
Orthotrichum tenellum	Slender Bristle-moss														
Oxyrrhynchium hians	Swartz's Feather-moss														
Persicaria amphibia	Amphibious Bistort													1	
Phalaris arundinacea	Reed Canary-grass											2			
Poa trivialis	Rough Meadow-grass											2			
Polypodium interjectum	Intermediate Polypody														
Radula complanata	Even Scalewort														
Ranunculus repens	Creeping Buttercup											3	4	4	
Rumex sanguineus	Wood Dock							1				2	3	3	
Sagittaria sagittifolia	Arrowhead														
Salix cinerea subsp. oleifolia	Rusty Willow														
Salix viminalis	Osier													1	
Salix x rubens	Crack Willow x White Willow														
Sambucus nigra	Elder														
Schedonorus giganteus	Giant Fescue							1			2		2		
Scrophularia auriculata	Water Figwort										4				
Solanum dulcamara	Bittersweet	5	6	4	4						1				
Sparganium emersum	Unbranched Bur-reed														
Sparganium erectum	Branched Bur-reed	10	9	10	9										
Stachys sylvatica	Hedge Woundwort														
Symphytum officinale	Common Comfrey					1	4	4	5	2	1			5	5
Thalictrum flavum	Common Meadow-rue														
Ulmus glabra	Wych Elm														
Ulmus procera	English Elm														
Ulota phyllantha	Frizzled Pincushion														
Urtica dioica	Common Nettle					9	9	10	10	10	4	4	4	2	4
Valeriana officinalis	Common Valerian										1				
Veronica anagallis-aquatica	Blue Water-speedwell		2												

Site name			Diamond Wood	Diamond Wood	Diamond Wood	Diamond Wood	Diamond Wood
Grid reference			SU 10625 40799	SU 10614 40844	SU 10545 40849	SU 10472 40738	SU 10541 40732
Quadrat number			42	43	44	45	46
Veg unit			BL Plantation	BL Plantation	BL Plantation	BL Plantation	BL Plantation
		Structural unit					
Agrimonia eupatoria	Agrimony						1
Anisantha sterilis	Barren Brome						2
Betula species	Birch	Understorey			1	5	
Arrhenatherum elatius	False Oat-Grass						3
Betula pendula	Silver Birch	Canopy		5			
Brachypodium sylvaticum	False-brome		6	5	3	3	4
Brachythecium rutabulum	Rough-stalked Feather-moss		4	3	3	3	2
Bryonia dioica	White Bryony						1
Chaerophyllum temulum	Rough Chervil			4			2
Corylus avellana	Hazel	Understorey		4			
Crataegus monogyna	Hawthorn	Understorey	7	8	7	7	5
Cryphaea heteromalla	Lateral Cryphaea		2	2	2		2
Dactylis glomerata	Cock's-foot			1			4
Euonymus europaeus	Spindle	Understorey			4		
Fagus sylvatica	Beech	Canopy			7	4	
Galium aparine	Cleavers		4	7	4	1	4
Geranium robertianum	Herb-Robert		1	5	1	1	3
Geum urbanum	Wood Avens		4	4	1	1	3
Glechoma hederacea	Ground-ivy		3	2	4	3	3
Hedera helix	Common Ivy	Field layer		2		8	
Hedera helix	Common Ivy	Canopy				4	
Heracleum sphondylium	Hogweed						1
Hypnum cupressiforme agg.			2		2		
Kindbergia praelonga	Common Feather-moss		5	3	4	4	
Ligustrum vulgare	Wild Privet	Understorey	1		4	1	1
Lophocolea heterophylla	Variable-leaved Crestwort				3		
Metzgeria consanguinea	Whiskered Veilwort		2	2	3		3
Metzgeria furcata	Forked Veilwort		3				
Orthotrichum affine	Wood Bristle-moss		3	2	2	3	3
Orthotrichum diaphanum	White-tipped Bristle-moss					3	
Orthotrichum pulchellum	Elegant Bristle-moss			1			
Orthotrichum tenellum	Slender Bristle-moss						1
Pinus sylvestris	Scots Pine	Canopy	8	5	6	8	5
Poa trivialis	Rough Meadow-grass			2			4
Prunus spinosa	Blackthorn	Understorey	4		5		4
Radula complanata	Even Scalewort		2				
Rhamnus cathartica	Buckthorn	Understorey	5	4			4
Rhynchostegium confertum	Clustered Feather-moss					3	
Rubus fruticosus agg.	Bramble	Field layer	2	5	2		4
Sambucus nigra	Elder	Understorey	4	2	4	4	1
Urtica dioica	Common Nettle		7	6	7	9	6
Veronica chamaedrys	Germander Speedwell		1				3
Viburnum lantana	Wayfaring-tree	Understorey	4	4	4		1
Zygodon viridissimus	Green Yoke-moss				2	2	

APPENDIX III: ARABLE PLANT SPECIES LIST

Scientific Name	Common Name
Aethusa cynapium	Fool's Parsley
Agrostis stolonifera	Creeping Bent
Alopecurus myosuroides	Black-grass
Anagallis arvensis	Scarlet Pimpernel
Anisantha diandra	Great Brome
Anisantha sterilis	Barren Brome
Anthriscus sylvestris	Cow Parsley
Aphanes arvensis	Parsley-piert
Arctium minus	Lesser Burdock
Arenaria serpyllifolia	Thyme-leaved Sandwort
Arrhenatherum elatius	False Oat-Grass
Artemisia vulgaris	Mugwort
Atriplex prostrata	Spear-leaved Orache
Avena fatua	Wild-oat
Bromus hordeaceus	Soft-brome
Bromus secalinus	Rye Brome
Bryonia dioica	White Bryony
Capsella bursa-pastoris	Shepherd's-purse
Carduus nutans	Musk Thistle
Cerastium fontanum	Common Mouse-ear
Chaenorhinum minus	Small Toadflax
Chaerophyllum temulum	Rough Chervil
Chenopodium album	Fat-hen
Chenopodium hybridum	Maple-leaved Goosefoot
Cirsium arvense	Creeping Thistle
Cirsium vulgare	Spear Thistle
Convolvulus arvensis	Field Bindweed
Dactylis glomerata	Cock's-foot
Dipsacus fullonum	Wild Teasel
Elytrigia repens	Common Couch
Epilobium ciliatum	American Willowherb
Epilobium parviflorum	Hoary Willowherb
Epilobium tetragonum	Square-stalked Willowherb
Euphorbia exigua	Dwarf Spurge
Euphorbia helioscopia	Sun Spurge
Euphorbia peplus	Petty Spurge
Fallopia convolvulus	Black-bindweed
Festuca rubra	Red Fescue
Fraxinus excelsior	Ash
Fumaria densiflora	Dense-flowered Fumitory
Fumaria officinalis	Common Fumitory
Galium aparine	Cleavers
Geranium dissectum	Cut-leaved Crane's-bill
Geranium molle	Dove's-foot Crane's-bill
Geranium pyrenaicum	Hedgerow Crane's-bill
Geum urbanum	Wood Avens
Glechoma hederacea	Ground-ivy
Heracleum sphondylium	Hogweed
Holcus lanatus	Yorkshire-fog
Kickxia spuria	Round-leaved Fluellen
Lamium amplexicaule	Henbit Dead-nettle
Lamium purpureum	Red Dead-nettle
Lapsana communis	Nipplewort
Legousia hybrida	Venus's-looking-glass

Scientific Name	Common Name
Lepidium coronopus	Swine-cress
Linaria vulgaris	Common Toadflax
Lolium perenne	Perennial Rye-grass
Malva neglecta	Dwarf Mallow
Malva sylvestris	Common Mallow
Matricaria chamomilla	Scented Mayweed
Matricaria discoidea	Pineappleweed
Medicago lupulina	Black Medick
Mercurialis annua	Annual Mercury
Myosotis arvensis	Field Forget-me-not
Orobanche minor	Common Broomrape
Papaver argemone	Prickly Poppy
Papaver dubium	Long-headed Poppy
Papaver hybridum	Rough Poppy
Papaver rhoeas	Common Poppy
Pastinaca sativa subsp. sylvestris	Wild Parsnip
Petroselinum segetum	Corn Parsley
Pimpinella saxifraga	Burnet-saxifrage
Plantago lanceolata	Ribwort Plantain
Plantago major	Greater Plantain
Poa annua	Annual Meadow-grass
Poa trivialis	Rough Meadow-grass
Polygonum aviculare	Knotgrass
Prunus spinosa	Blackthorn
Ranunculus repens	Creeping Buttercup
Reseda lutea	Wild Mignonette
Rumex crispus	Curled Dock
Rumex obtusifolius	Broad-leaved Dock
Senecio jacobaea	Common Ragwort
Senecio vulgaris	Groundsel
Sherardia arvensis	Field Madder
Silene latifolia	White Campion
Sinapis arvensis	Charlock
Sisymbrium officinale	Hedge Mustard
Solanum nigrum	Black Nightshade
Sonchus arvensis	Perennial Sow-thistle
Sonchus asper	Prickly Sow-thistle
Stellaria media	Common Chickweed
Taraxacum agg.	Dandelion
Trifolium repens	White Clover
Tripleurospermum inodorum	Scentless Mayweed
Urtica dioica	Common Nettle
Urtica urens	Small Nettle
Valerianella dentata	Narrow-fruited Cornsalad
Veronica arvensis	Wall Speedwell
Veronica persica	Common Field-speedwell
Veronica polita	Grey Field-speedwell
Vicia cracca	Tufted Vetch
Viola arvensis	Field Pansy
Vulpia myuros	Rat's-tail Fescue

APPENDIX IV: PORTAL DATA

Presence of species is indicated by 1

		Western Portal	Western Portal	Western Portal	Western Portal	Eastern Portal	Eastern Portal	Eastern Portal
Species	**Common name**	**1N(A)**	**1N(D)**	**1N(D)**	**1N(D)**	**Bowtie Field**	**Bowtie Field**	**Bowtie Field**
		Arable	Arable and sown headlands	Permanent Grassland	Reversion grassland	Arable	Scrub and rough grassland	Broad-leaved plantation
Acer campestre	Field Maple							1
Acer pseudoplatanus	Sycamore						1	
Achillea millefolium	Yarrow						1	
Aethusa cynapium	Fool's Parsley	1	1			1		
Agrimonia eupatoria	Agrimony						1	
Agrostis stolonifera	Creeping Bent					1		
Alliaria petiolata	Garlic Mustard							1
Alopecurus myosuroides	Black-grass	1				1		
Anagallis arvensis	Scarlet Pimpernel	1	1			1		1
Anisantha sterilis	Barren Brome	1	1			1	1	1
Anthoxanthum odoratum	Sweet Vernal-grass					1		
Anthriscus sylvestris	Cow Parsley							1
Anthyllis vulneraria	Kidney Vetch		1					
Aphanes arvensis	Parsley-piert		1					
Arctium minus	Lesser Burdock	1				1		
Arenaria serpyllifolia	Thyme-leaved Sandwort	1	1					
Arrhenatherum elatius	False Oat-Grass	1	1		1	1	1	1
Artemisia vulgaris	Mugwort	1	1			1	1	
Asperula cynanchica	Squinancywort							
Atriplex prostrata	Spear-leaved Orache	1	1					
Avena fatua	Wild-oat					1		
Ballota nigra	Black Horehound							1
Brachypodium sylvaticum	False-brome							1
Briza media	Quaking-grass				1			
Bromopsis erecta	Upright Brome			1	1			
Bromus hordeaceus	Soft-brome			1			1	
Bryonia dioica	White Bryony							1
Calystegia sepium	Hedge Bindweed						1	
Capsella bursa-pastoris	Shepherd's-purse	1	1			1		
Carduus nutans	Musk Thistle	1	1	1				
Centaurea nigra	Common Knapweed		1		1		1	
Centaurea scabiosa	Greater Knapweed		1					
Cerastium fontanum	Common Mouse-ear			1	1		1	
Chaenorhinum minus	Small Toadflax	1	1			1		
Chaerophyllum temulum	Rough Chervil					1		
Chamerion angustifolium	Rosebay Willowherb						1	
Chenopodium album	Fat-hen	1				1		1
Chenopodium hybridum	Maple-leaved Goosefoot	1						
Cirsium arvense	Creeping Thistle	1	1		1	1		
Cirsium vulgare	Spear Thistle	1		1	1		1	
Clematis vitalba	Traveller's-joy						1	1
Clinopodium vulgare	Wild Basil						1	
Conium maculatum	Hemlock		1					
Convolvulus arvensis	Field Bindweed					1		1
Cornus sanguinea	Dogwood						1	
Corylus avellana	Hazel			1				
Crataegus monogyna	Hawthorn						1	1
Crepis capillaris	Smooth Hawk's-beard	1		1	1			
Crepis vesicaria	Beaked Hawk's-beard		1		1			
Cynosurus cristatus	Crested Dog's-tail				1			
Dactylis glomerata	Cock's-foot		1		1		1	
Daucus carota	Carrot		1					
Elytrigia repens	Common Couch					1		
Epilobium ciliatum	American Willowherb	1		1				
Epilobium parviflorum	Hoary Willowherb	1						
Euonymus europaeus	Spindle						1	1
Euphorbia exigua	Dwarf Spurge		1			1		
Euphorbia helioscopia	Sun Spurge	1				1		
Fagus sylvatica	Beech							1
Fallopia convolvulus	Black-bindweed	1	1			1		
Festuca rubra	Red Fescue		1	1	1		1	
Fraxinus excelsior	Ash						1	
Fumaria densiflora	Dense-flowered Fumitory	1				1		
Fumaria officinalis	Common Fumitory	1	1			1		
Galium album	Hedge Bedstraw		1				1	
Galium aparine	Cleavers					1	1	1

		Western Portal	Western Portal	Western Portal	Western Portal	Eastern Portal	Eastern Portal	Eastern Portal
Species	**Common name**	**IN(A)**	**IN(D)**	**IN(D)**	**IN(D)**	**Bowtie Field**	**Bowtie Field**	**Bowtie Field**
		Arable	Arable and sown headlands	Permanent Grassland	Reversion grassland	Arable	Scrub and rough grassland	Broad-leaved plantation
Galium verum	Lady's Bedstraw		I					
Geranium dissectum	Cut-leaved Crane's-bill	I	I	I		I		
Geranium molle	Dove's-foot Crane's-bill	I	I			I		
Geranium pyrenaicum	Hedgerow Crane's-bill	I		I				
Geum urbanum	Wood Avens			I			I	
Glechoma hederacea	Ground-ivy						I	
Hedera helix	Common Ivy						I	
Heracleum sphondylium	Hogweed					I	I	I
Holcus lanatus	Yorkshire-fog			I	I			
Hypericum hirsutum	Hairy St John's-wort						I	
Hypericum perforatum	Perforate St John's-wort						I	
Knautia arvensis	Field Scabious		I	I				
Lamium album	White Dead-nettle						I	
Lamium amplexicaule	Henbit Dead-nettle	I	I					
Lapsana communis	Nipplewort	I				I		
Legousia hybrida	Venus's-looking-glass					I		
Lepidium coronopus	Swine-cress	I						
Leucanthemum vulgare	Oxeye Daisy		I		I			
Ligustrum vulgare	Wild Privet						I	
Lolium perenne	Perennial Rye-grass						I	
Lotus corniculatus	Common Bird's-foot-trefoil		I		I			
Malva sylvestris	Common Mallow		I					
Matricaria discoidea	Pineappleweed					I		
Medicago lupulina	Black Medick	I	I	I	I		I	
Mercurialis perennis	Dog's Mercury							I
Myosotis arvensis	Field Forget-me-not		I			I	I	I
Onobrychis viciifolia	Sainfoin			I	I			
Papaver dubium	Long-headed Poppy	I						
Papaver hybridum	Rough Poppy		I					
Papaver rhoeas	Common Poppy	I	I			I		I
Pastinaca sativa subsp. sylvest	Wild Parsnip	I		I			I	
Persicaria maculosa	Redshank		I					
Plantago lanceolata	Ribwort Plantain		I	I			I	
Plantago major	Greater Plantain					I	I	
Plantago media	Hoary Plantain				I			
Poa annua	Annual Meadow-grass	I				I		
Poa pratensis	Smooth Meadow-grass				I			
Polygonum arenastrum	Equal-leaved Knotgrass	I				I		
Polygonum aviculare	Knotgrass	I	I					
Potentilla reptans	Creeping Cinquefoil						I	
Prunus spinosa	Blackthorn						I	
Ranunculus acris	Meadow Buttercup				I			
Reseda lutea	Wild Mignonette	I	I					
Rhamnus cathartica	Buckthorn						I	
Rosa canina	Dog-rose						I	
Rubus fruticosus agg.	Bramble			I			I	I
Rumex acetosa	Common Sorrel				I			
Rumex crispus	Curled Dock		I				I	
Sambucus nigra	Elder						I	I
Scabiosa columbaria	Small Scabious		I					
Schedonorus pratensis	Meadow Fescue				I			
Senecio jacobaea	Common Ragwort	I		I	I			
Senecio vulgaris	Groundsel	I	I			I	I	
Sherardia arvensis	Field Madder		I			I		
Silene latifolia	White Campion	I					I	
Sinapis arvensis	Charlock		I			I	I	
Sisymbrium officinale	Hedge Mustard	I	I					
Sonchus arvensis	Perennial Sow-thistle					I		
Sonchus asper	Prickly Sow-thistle	I	I			I		I
Sonchus oleraceus	Smooth Sow-thistle					I		
Stachys palustris	Marsh Woundwort						I	
Stellaria media	Common Chickweed	I						
Taraxacum agg.	Dandelion		I		I			
Torilis japonica	Upright Hedge-parsley			I				
Trifolium campestre	Hop Trefoil			I				
Trifolium pratense	Red Clover		I		I			
Trifolium repens	White Clover		I	I			I	
Tripleurospermum inodorum	Scentless Mayweed	I						
Trisetum flavescens	Yellow Oat-grass			I			I	
Urtica dioica	Common Nettle	I	I				I	I
Veronica arvensis	Wall Speedwell		I			I		
Veronica chamaedrys	Germander Speedwell	I					I	
Veronica persica	Common Field-speedwell		I			I		
Veronica polita	Grey Field-speedwell					I		
Viburnum lantana	Wayfaring-tree						I	
Viburnum opulus	Guelder-rose						I	
Vicia sativa	Common Vetch		I					
Viola arvensis	Field Pansy	I						

If you need help accessing this or any other Highways England information, please call **0300 123 5000** and we will help you.

This document is also available on our website at **www.gov.uk/highways**

If you have any enquiries about this document email **info@a303stonehenge.co.uk** or call **0300 123 5000***.

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