

**A38 Derby Junctions**

**TR010022**

**Volume 6**

**6.3 Environmental Statement  
Appendices**

**Appendix 8.4c: Botanical Survey in  
2015**

Regulation 5(2)(a)

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Infrastructure Planning

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A38 Derby Junctions  
Development Consent Order 202[ ]

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**6.3 Environmental Statement Appendices  
Appendix 8.4c: Botanical Survey in 2015**

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# **A38 Derby Junctions**

## **Vegetation and Hedgerow Survey Report**

**Report No: 47071319-URS-05-RP-EN-011**

**March 2016**

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## 1. INTRODUCTION

### 1.1 Background and Scope

1.1.1 On July 14, 2014 AECOM was awarded the contract by Highways England to provide design services regarding the development of the A38 Derby Junctions Scheme (referred to herein as the proposed scheme). This proposed scheme concerns three junctions on the A38 in Derby as follows (refer to Figure 1):

- A38/ A5111 Kingsway junction;
- A38/ A52 Markeaton junction; and
- A38/ A61 Little Eaton junction.

1.1.2 These three junctions are spread over an approximate 5.5 km distance along the A38 to the west and north-west of Derby.

1.1.3 AECOM will be preparing an Environmental Assessment Report (EAR) which will assess whether the proposed scheme has the potential to result in significant environmental effects, taking into account impact avoidance measures that are embedded into the proposed scheme design, as well as standard management activities that will be adopted. In order to support the ecological impact assessment to be reported in the EAR, in January 2015 AECOM undertook an extended Phase 1 Habitat survey along the route of the proposed scheme. The results of the extended Phase 1 Habitat survey (AECOM, 2016, report number 47071319-URS-05-RP-EN-003) have been used to identify areas where further botanical data was considered necessary to inform the ecological impact assessment process. These habitats where further surveys were recommended were selected areas of grassland, hedgerows and other habitats comprising broad-leaved woodland plantation, scrub, ditch and standing water.

1.1.4 The recommended botanical surveys were undertaken on the June 18, and July 25, 2015. Results of the botanical surveys are documented herein together with relevant desktop data.

### 1.2 Study Site

1.2.1 The proposed scheme under appraisal (herein the proposed scheme footprint is referred to as the 'Site') encompass the Kingsway and Markeaton junctions, west of the City of Derby (Centroid SK 32801 36103) and the Little Eaton junction north of Derby (Centroid SK 36402 39990). A plan showing the Site boundaries is presented in Figures 2 and 3 in Appendix A. The ecological study area as referred to herein extends up to 50 m beyond the Site boundaries.

1.2.2 The A38 is an existing and busy arterial 'A' road carrying traffic around the west and north of the City of Derby. South of the Kingsway junction, the road enters a cutting and is bordered by semi-improved grassland and scrub covered verges. The central reservation south of Kingsway junction and the junction island in this location support a mosaic of habitat types, including semi-improved neutral grassland and native broadleaved woodland. Bramble Brook flows from the west of the proposed scheme in this location, through culverts located under the north-bound carriageway and the central reservation before connecting with further

culverts located between the junction islands. North of the Kingsway junction there is an area of mixed plantation represented by semi-mature trees on embankment.

1.2.3 The Markeaton junction section of the proposed scheme is bordered to the east by residential properties and to the west by parkland with veteran trees. The outfall from Markeaton Lake and Markeaton Brook flows through culverts beneath the existing A38 at the northern extent of the Markeaton junction section of the proposed scheme.

1.2.4 The western boundary of the proposed scheme at Little Eaton junction borders the road bridge over the River Derwent. The existing A38 is on embankment in this location, with the embankments themselves represented by areas of scrub and immature broadleaved plantation habitats. A variety of grassland habitats exist at the base of the embankments in this location.

### 1.3 Relevant Legislation

1.3.1 The botanical survey sought to identify the presence of protected or notable habitats and species, which in this case are covered under one or more of the following pieces of legislation:

- The Natural Environment and Rural Communities (NERC) Act 2006;
- The Wildlife and Countryside Act (1981) as amended (WCA);
- The EC Habitats Directive (Directive 92/43/ECC) as translated into UK law by The Habitats and Species Regulations 2010 (as amended);
- The Hedgerow Regulations 1997; and
- Section 41 of the NERC Act (2006).

1.3.2 Further details on Legislation and Policy are given in Appendix B.

1.3.3 The Post-2010 Biodiversity Framework covers the period 2011 – 2020 and replaces the UK Biodiversity Action Plan (UK BAP); which was launched in 1994 with the main aim '*To conserve and enhance biological diversity within the UK, and to contribute to the conservation of global biodiversity through all appropriate mechanisms*'.

1.3.4 The Lowland Derbyshire Local Biodiversity Action Plan (LBAP) contains all the species and habitats that are identified as being in need of assistance in Derbyshire (outside the Peak District). The habitat action plans listed under the LBAP are the semi-natural grassland Habitat Action Plan (HAP) and the floodplain grazing marsh HAP. In addition, wild flower rich grassland is listed as a priority habitat in the Derby Green Prints.

1.3.5 Highways England, through the national Road Investment Strategy (RIS), has set an aspiration that the operation, maintenance, and enhancement of the Strategic Road Network (SRN) should move to a position that delivers no net loss of biodiversity; and, in the long term, Highways England should deliver a net gain in biodiversity across its broader range of works. Highways England published a Biodiversity Plan (HEBP) in 2015 to show how it will work with service providers to

halt overall biodiversity loss, and maintain and enhance habitats and ecological networks. The Government requires Highways England to demonstrate progress against the HEBP, to secure an ongoing annual reduction in the loss of net biodiversity due to its activities. The HEBP provides a general plan to protect and increase biodiversity. The HEBP supersedes the preceding 2002 Highways Agency Biodiversity Action Plan (HABAP), which still however carries some relevance as it lists specific habitats of conservation concern. Boundary features (including hedgerows – ancient and/or species-rich), grassland features (including road verges) and woodland features (including ancient semi-natural woodland) are listed in the 2002 HABAP as priority habitats.

## **2. METHODOLOGY**

### **2.1 Desk-based Study**

- 2.1.1 A desk-based study was undertaken to identify internationally, nationally and locally designated statutory sites, local designated non-statutory sites, sites of local interest and records of protected and/ or notable species within 2 km of central OS grid locations of the proposed scheme. The OS grid references representing the central points of the Kingsway and Markeaton junctions section and the Little Eaton junction section desk-based study areas are SK 32801 36103 and SK 36402 39990, respectively.
- 2.1.2 The results of the 2015 Phase 1 habitat survey were used to identify areas of semi-natural grassland and hedgerows and any other habitats that required further surveys. These are detailed below.
- 2.1.3 The Highways England Environmental Information System (EnvIS) was also searched for any botanical records.

### **2.2 Botanical Survey**

#### Grassland

- 2.2.1 A total of 17 semi-improved grassland areas were identified for survey, nine were associated with the Markeaton and Kingsway junction section and eight were associated with the Little Eaton junction section. The location of these areas is shown on Figures 2 and 3 in Appendix A as follows:
- Areas 1A – 1F, 1I, 1K, 1L at the Markeaton and Kingsway junctions (see Figure 2); and
  - Areas 2A – 2E, 2H, 2J and 2K at the Little Eaton junction (see Figure 3).
- 2.2.2 Each of the 17 grassland areas was visited by a suitably experienced ecologist on the June 18, and July 1, 2015.
- 2.2.3 Photographs were taken of the grassland swards and notes taken on the grassland species composition, including an estimation of abundance of each species based on the DAFOR scale (as given below):
- D: Dominant
- A: Abundant
- F: Frequent
- O: Occasional or
- R: Rare
- 2.2.4 Additional notes collected were as follows:



- The presence of invasive weed species in the grassland, such as broad-leaved dock (*Rumex obtusifolius*) was recorded, as well as the presence of scrub and trees. The locations of stands of invasive non-native plant species such as Japanese knotweed (*Fallopia japonica*) were also noted; and
- Any signs of management or relevant site usage such as fly-tipping, or grazing were also recorded.

#### Hedgerow

- 2.2.5 The hedgerow survey was carried out based on the standard methods devised for the Hedgerow Regulations 1997 (DEFRA 2007).
- 2.2.6 Seven hedgerows were identified at Little Eaton junction and surveyed on July 1, and July 8, 2015. The locations of the seven hedgerows surveyed are shown on Figure 3 Appendix A and labelled H1 – H7.
- 2.2.7 No hedgerows were identified or surveyed at the Markeaton and Kingsway junctions.

#### Other Habitats

- 2.2.8 The Phase 1 habitat survey was undertaken in January/ February 2015. Therefore, to improve the habitat data set, additional botanical species notes were also gathered during the optimal survey period for flora (June/ July 2015) on scrub, broad-leaved woodland plantation, ditch and standing water habitats in six areas.
- 2.2.9 The location of the other habitat areas surveyed are shown on Figures 2 and 3 in Appendix A as follows:
- Areas 1H (scrub), 1G and 1J (broad-leaved woodland plantation) at Kingsway junction (Figure 2); and
  - Areas 2G (ditch), 2F (standing water) and 2I (broad-leaved woodland plantation) at Little Eaton junction (Figure 3).

## 2.3 Botanical Assessment

#### Grassland

- 2.3.1 The grasslands were assessed using criteria taken from the Derbyshire Wildlife Trust (2003, revised 2011) Local Wildlife Assessment Guidance. The criteria used is based on scoring the number of grassland indicator species in a habitat stand and if a score of eight or more is attained, then the grassland is considered worthy of consideration for local wildlife site status.
- 2.3.2 Further details are given in Appendix C. The indicator species are detailed in the results table in Appendix D.

#### Hedgerow

- 2.3.3 The hedgerows were assessed using the Hedgerow Regulations 1997 criteria for important hedgerows. The criteria are given in Appendix C. These regulations in addition to considering the wildlife and landscape value of the hedgerow,, assess

woody species diversity per 100 m. They also take account of the historical and archaeological value, such as the hedgerow as a historic parish or township boundary or its visibility related to historic buildings. The current report only assesses the hedgerows against the Wildlife and Landscape criteria and not the historical and archaeological value..

#### Other Habitats

2.3.4 Area 2F was assessed using the Open Water and Drawdown criteria taken from the Derbyshire Wildlife Trust (2003, revised 2011) Local Wildlife Assessment Guidance. The criteria used is based on scoring the number of drawdown indicator species in a habitat stand and if a score of five or more is attained, then the habitat is considered worthy of consideration for local wildlife site status.

2.3.5 Further details are given in Appendix C. The indicator species are detailed and highlighted in the results table in Appendix E.

## 2.4 Survey Limitations

#### Grassland

2.4.1 A species list was made of the narrow area of grassland abutting the south-eastern corner of the Kingsway junction (Area 1I, Figure 2). However, it was considered unsafe for surveyors to remain in the area due to health and safety reasons; the area is located directly adjacent to the A38 carriageway. Therefore, no DAFOR ratings were assigned to the species. However, this is not considered that this represents a limitation to the assessment of this area.

#### Hedgerows

2.4.2 The hedgerow surveys were undertaken in July, which is within the optimal time of year to identify woody species. Surveying in this month does, however, limit the assessment of the hedgerow ground flora due to overgrowth of woody vegetation obscuring observations. In this instance, based on the survey results and location of the hedges, it is considered unlikely that ancient woodland flora would have been recorded in the hedgerow ground flora. Additionally, the species-poor nature of the hedges made the ground flora information superfluous to the assessment. Therefore no significant survey constraints were identified.

#### General

2.4.3 The location of construction compounds and flood attenuation areas is yet to be determined; these areas have not been included within this survey.

### **3. RESULTS AND RECOMMENDATIONS**

#### **3.1 Desk-based Study**

3.1.1 There are no international, national or local statutory designated sites located within or directly adjacent to the proposed scheme.

3.1.2 There are four non-statutory designated sites i.e. Local Wildlife Sites (LWS) located within or directly adjacent to the proposed scheme boundary as follows:

- A38 Roundabout LWS (DE010) – semi-improved neutral grassland - within the Site boundaries at Kingsway junction;
- Bramble Brook and Margins LWS (DE014) - secondary broad-leaved woodland - within the Site boundary at Kingsway junction;
- Markeaton Park LWS (DE074) - wood pasture and parks including veteran trees - directly adjacent to the northern Site boundary at Markeaton junction; and
- Alferton Road Rough Grassland LWS (ER002) – floodplain grassland semi-improved - adjacent to the Little Eaton junction Site boundary.

3.1.3 Refer to the Phase 1 Habitat survey report for further details and locations of these sites (AECOM, 2015., report number 47071319-URS-05-RP-EN-003).

3.1.4 EnvIS provided no botanical records or areas of nature conservation interest.

#### **3.2 Grassland Survey**

3.2.1 Descriptions of the 17 grassland areas surveyed are given below with the locations of these areas shown on Figures 2 and 3 in Appendix A. Appendix D provides the Grassland Species list and Appendix F comprises site photographs. The grassland species composition for the various areas surveyed has been compared against the species list given in Table 2 of the Derbyshire Local Wildlife Sites Selection Guidelines 2003 (Revised 2011) (Appendix C). The indicator species have been detailed and highlighted in the results tables given in Appendix D.

3.2.2 The spatial areas given for the grasslands relate to the area lying within the potential works area for the road scheme.

Descriptions of Grassland Areas: Markeaton and Kingsway Junctions

3.2.3 A series of connected tall unmanaged grass fields lie adjacent to the A38 and west/ south/ west of Derby Hospital. Working from north to south the fields are identified as follows: Areas 1C, 1K, 1A and 1L. These areas are described below in the same order and are jointly referred to in the report as the “Hospital grasslands”. Descriptions for the remaining areas surveyed follow in alphabetical order.

#### *Area 1C Hospital Grasslands*

- 3.2.4 This is an approximate 0.40 ha area of tall, unmanaged, neutral grassland that is dominated by Yorkshire-fog (*Holcus lanatus*) with locally dominant rosebay willowherb (*Chamerion angustifolium*).
- 3.2.5 Locally frequent species include false oat-grass (*Arrhenatherum elatius*), red fescue (*Festuca rubra*) and meadow buttercup (*Ranunculus acris*). Occasional common bent (*Agrostis capillaris*), creeping bent (*Agrostis stolonifera*), meadow foxtail (*Alopecurus pratensis*), cow parsley (*Anthriscus sylvestris*), cock's-foot (*Dactylis glomerata*), hogweed (*Heracleum sphondylium*), perennial rye-grass (*Lolium perenne*), ribwort plantain (*Plantago lanceolata*), smooth meadow-grass (*Poa pratensis*) occur. Smaller herbs are rarer, due to the tall coarse sward and include common mouse-ear (*Cerastium fontanum*), meadow crane's-bill (*Geranium pratense*), goat's-beard (*Tragopogon pratensis*), selfheal (*Prunella vulgaris*) and red clover (*Trifolium pratense*).
- 3.2.6 This area supported two grassland indicator species: meadow crane's-bill and selfheal.

#### *Area 1K Hospital grasslands*

- 3.2.7 This approximate 0.03 ha area is a narrow corridor leading into Area 1A and Area 1K and has a similar flora to Area 1C, but it is a taller sward with higher abundance of false oat grass and with more scrub, comprised of locally dominant bramble (*Rubus fruticosus* agg.) and raspberry (*Rubus idaeus*).
- 3.2.8 This area supported two grassland indicator species: meadow crane's-bill and common bird's foot trefoil (*Lotus corniculatus*).

#### *Area 1A Hospital grasslands*

- 3.2.9 This approximate 0.62 ha area is also similar to Area 1C, but has stands of tall herbs such as great willow herb (*Epilobium hirsutum*) and stinging nettle and is a taller, coarser grass sward, with much common couch, false oat-grass and also soft rush (*Juncus effusus*). Bramble and common hawthorn (*Crataegus monogyna*) were also common, providing evidence of the lack of grassland management. The abundance of great willowherb and soft rush suggest that this area is slightly damper than Areas 1C and 1K.
- 3.2.10 This area supported one grassland indicator species, common vetch (*Vicia sativa* ssp *sativa*).

#### *Area 1L Hospital grasslands*

- 3.2.11 In this approximate 1.09 ha area Yorkshire-fog dominates with lesser amounts of false oat grass and frequent meadow foxtail (*Alopecurus pratensis*) and great willowherb. Some hawthorn scrub is present.
- 3.2.12 Tufted vetch (*Vicia cracca*), smooth tare (*Vicia tetrasperma*) and field horsetail (*Equisetum arvense*) are locally frequent, along with couch grass (*Elymus repens*), and smooth meadow-grass (*Poa pratensis*).

3.2.13 A range of species occurs in lesser amounts, including sweet vernal-grass (*Anthoxanthum odoratum*), cock's-foot and common vetch. The presence of wild angelica (*Angelica sylvestris*), common sedge (*Carex nigra*), tufted hair-grass (*Deschampsia cespitosa*) and hard rush (*Juncus inflexus*) suggest that in line with Area 1A, this is also a damper area within the Hospital grasslands.

3.2.14 This area supported three grassland indicator species: common and tufted vetches (*Vicia cracca*) and angelica.

#### Area 1B

3.2.15 This area is the A38 Roundabout Local Wildlife Site. This physically isolated, approximate 0.40 ha area lying between the A38 carriageways, is unmanaged neutral grassland which is suffering from extensive scrub encroachment due to lack of management. The grassland is drier at the eastern edge of the Site where open herb-rich patches occur and this is replaced in the western half by a damper sward which is typically dominated by species such as meadowsweet (*Filipendula ulmaria*), with other damp indicators such as soft-rush and wild angelica.

3.2.16 Red fescue (*Festuca rubra*) is dominant in much of the open sward, with lesser amounts of creeping bent, false oat-grass, cock's-foot, Yorkshire-fog and smooth meadow-grass.

3.2.17 Herbs recorded include black knapweed (*Centaurea nigra*), meadow vetchling (*Lathyrus pratensis*), zigzag clover (*Trifolium medium*), oxeye daisy (*Leucanthemum vulgare*), spotted-orchid (*Dactylorhiza fuchsii*), ribwort plantain (*Plantago lanceolata*), meadow buttercup, perforate st john's-wort (*Hypericum perforatum*), goat's-beard, hairy tare (*Vicia hirsuta*) and narrow leaved vetch (*Vicia sativa* ssp *nigra*).

3.2.18 Hoary ragwort (*Senecio erucifolius*) is frequent, and weed species such as dandelion agg. (*Taraxacum* agg.) are locally frequent.

3.2.19 Scrub encroachment is at least 40% cover, comprising largely dog-rose (*Rosa canina*), bramble and willow species. (*Salix* spp.). Some hawthorn scrub is also present.

This area supported nine grassland indicator species: wild angelica, common knapweed, common spotted orchid, meadowsweet, Hoary Ragwort, meadow vetchling, oxeye daisy, selfheal, zigzag clover and narrow-leaved vetch.

#### Area 1D

3.2.20 This tall unmanaged grassland occurs by the Kingsway roundabout and covers approximate 0.32 ha in area. It is dominated by false oat-grass with abundant red clover and frequent cow parsley, red fescue, hogweed and Yorkshire-fog, with lesser amounts of common mouse-ear, creeping thistle (*Cirsium arvense*), cock's-foot, ribwort plantain and smooth meadow-grass. It supports a herb component typical of neutral grassland, including meadow buttercup, creeping buttercup (*Ranunculus repens*), goat's-beard, yarrow (*Achillea millefolium*), common knapweed (*Centaurea nigra*), oxeye daisy (*Leucanthemum vulgare*) and tufted vetch (*Vicia cracca*).

This area supported four grassland indicator species: common and tufted vetches, common knapweed and oxeye daisy.

#### *Area 1E*

3.2.21 This is an approximate 1.04 ha area of managed grassland within the grounds of the Territorial Army site. It is largely grass-dominated, with herbs making up a much smaller proportion of the sward. There was a lot of grass thatch on the ground from mowing on site.

3.2.22 Red fescue is prominent in the sward with lesser amounts of common bent, false oat-grass, creeping thistle, meadow foxtail, cock's-foot, perennial rye-grass (*Lolium perenne*), couch grass and creeping bent. Herbs recorded include common knapweed, cleavers (*Galium aparine*), selfheal, meadow vetchling (*Lathyrus pratensis*), local stands of fox-and-cubs (*Pilosella aurantiaca*) and creeping cinquefoil (*Potentilla reptans*).

3.2.23 This area supported two grassland indicator species: common knapweed and meadow vetchling.

#### *Area 1F*

3.2.24 This is an area of approximately 2.03 ha of mown amenity grassland at Derby University. It is not species-rich and is dominated by perennial rye-grass with lesser amounts of grasses such as cock's-foot, Yorkshire-fog and smooth meadow-grass.

3.2.25 Herbs noted include black medick (*Medicago lupulina*), hogweed, creeping cinquefoil, meadow buttercup, creeping buttercup, dandelion agg. and red clover.

3.2.26 This area supported no grassland indicator species.

#### *Area 1I*

3.2.27 This is a small area of approximately 0.03 ha of unmanaged neutral grassland on the south-eastern corner of the Kingsway junction. It is dominated by oxeye daisy (*Leucanthemum vulgare*) and includes a high frequency of common herbs which are able to withstand the high levels of disturbance on a roadside verge. Other prominent species recorded include cow parsley, false oat-grass, common knapweed, wild teasel (*Dipsacus fullonum*), couch grass, red fescue, meadow vetchling, ribwort plantain, tansy (*Tanacetum vulgare*), upright hedge-parsley (*Torilis japonica*) and common vetch.

3.2.28 This area supported four grassland indicator species: oxeye daisy, common knapweed, common vetch and meadow vetchling.

#### Descriptions of Grassland Areas: Little Eaton Junction

#### *Area 2A*

3.2.29 This small plot of grassland covering less than approximately 0.02 ha occurs on a very steep road bank and is an establishing sward which was probably seeded within the last 12 months. It has a high level of bare ground and a sward dominated by young herbs with small amounts of grass cover. It includes early

colonisers such as tall rocket (*Sisymbrium altissimum*), groundsel (*Senecio vulgaris*) and field madder (*Sherardia arvensis*), which are expected to be out-competed when the sward develops.

3.2.30 Herb species recorded include oxeye daisy, common knapweed, common mouse-ear, creeping thistle, dove's-foot crane's-bill (*Geranium molle*), meadow buttercup, ribwort plantain, creeping buttercup, wild mignonette (*Reseda lutea*), common vetch. Grasses recorded included cock's-foot, red fescue, Yorkshire-fog, smooth and annual meadow-grass (*Poa annua*). Vigorous perennial weeds such as broad-leaved dock and common nettle were also recorded.

3.2.31 This area supported three grassland indicator species: common knapweed, oxeye daisy and common vetch.

#### Area 2B

3.2.32 This approximate 0.40 ha area is a very disturbed grassland field which is used as a storage, or work area for a turf farm. The dominance of creeping buttercup is evidence of disturbance, and this species was recorded alongside frequent stands of invasive common nettle and creeping thistle. The limited open grassland areas are species-poor, with much perennial rye-grass accompanied by lesser amounts of common grasses such as Yorkshire-fog, meadow foxtail, false oat-grass, rough meadow-grass (*Poa trivialis*) and cock's-foot.

3.2.33 Cleavers, hogweed, and common vetch were amongst the limited herb assemblage.

3.2.34 This area supported one grassland indicator species: common vetch.

#### Area 2C

3.2.35 This tall coarse grassland area covering of approximately 0.40 ha, occurs adjacent to the River River Derwent. It is probably enriched from river silt and is lacking any grassland management.

3.2.36 Couch grass and cleavers are dominant, with stands of common nettle common. Other grasses include cock's-foot, with lesser amounts of rough meadow-grass and false oat-grass.

3.2.37 The invasive species Himalayan balsam (*Impatiens glandulifera*) occurs in frequent stands, accompanied by other tall, robust herbs, such as creeping thistle, hogweed, dame's-violet (*Hesperis matronalis*), russian comfrey (*Symphytum x uplandicum*), garlic mustard (*Alliaria petiolata*) greater burdock (*Arctium lappa*), mugwort (*Artemisia vulgaris*) and meadow crane's-bill (*Geranium pratense*).

3.2.38 This area supported one grassland indicator species: meadow crane's-bill.

#### Area 2D

3.2.39 This is a horse grazed and species-poor neutral grassland of approximately 0.31 ha in area located by the River Derwent, with a large component of perennial rye-grass, along with grasses such as cock's-foot, red fescue, smooth meadow-grass, meadow foxtail, and false oat-grass.

- 3.2.40 Stands of common nettle have developed in response to horse- grazing. Other herbs recorded include frequent white clover (*Trifolium repens*) yarrow, ground-elder (*Aegopodium podagraria*), common mouse-ear, hogweed and meadow buttercup.
- 3.2.41 The invasive species Giant knotweed (*Fallopia sachalinensis*) borders the grassland fence along the river edge.
- 3.2.42 This area supported no grassland indicator species.

#### Area 2E

- 3.2.43 This is a horse-grazed field of approximately 3.44 ha by the A38, with local stands of perennial weeds such as common nettle, creeping thistle and spear thistle (*Cirsium vulgare*). The field is variously inundated through the seasons and the invasive New-Zealand pigmyweed (*Crassula helmsii*) is locally dominant. There is an area of open water with a draw down zone at the southern end of the field which is described separately in the notes for Area 2F given below.
- 3.2.44 Creeping bent and red fescue dominate the grasses, with lesser amounts of marsh foxtail (*Alopecurus geniculatus*) Yorkshire-fog, cock's-foot and smooth meadow-grass, perennial rye-grass is a minor grass component.
- 3.2.45 The effects of heavy horse-grazing were manifested in the frequent occurrence of: daisy (*Bellis perennis*) silverweed (*Potentilla anserina*), common ragwort (*Senecio jacobaea*) and creeping buttercup.
- 3.2.46 Meadow buttercup, ribwort plantain, meadowsweet, meadow crane's-bill, red clover were also noted, along with small amounts of more diminutive herbs, such as common mouse-ear, cut-leaved crane's-bill (*Geranium dissectum*) and dove's-foot crane's-bill.
- 3.2.47 This area supported three grassland indicator species: water forget-me-not, meadowsweet and meadow crane's bill.

#### Area 2H

- 3.2.48 This tall unmanaged and physically dense grassland sward covering approximately 0.04 ha, is overwhelmingly dominated by Yorkshire-fog, with lesser amounts of other robust grass species. Herbs are a very minor component of the sward.
- 3.2.49 Common bent is locally dominant with abundant false oat-grass and frequent meadow foxtail. Minor grass contribution includes smooth meadow-grass, cock's-foot and perennial rye-grass.
- 3.2.50 Herbs recorded included cleavers, hogweed, oxeye daisy, meadow buttercup, common vetch and bush vetch (*Vicia sepium*).
- 3.2.51 This area supported two grassland indicator species: oxeye daisy and common vetch.



### Area 2J

- 3.2.52 This approximate 0.96 ha area is a damp horse grazed pasture. It has small areas of very shallow, seasonal standing water with muddy margins.
- 3.2.53 The main sward components are meadow foxtail, tufted hair-grass, Yorkshire-fog and creeping buttercup, which are punctuated by stands of soft-rush and locally dominant common couch.
- 3.2.54 Creeping bent and smooth meadow-grass are also widespread and floating sweet-grass (*Glyceria fluitans*) dominates in the wetter hollows. Meadow fescue (*Schedonorus pratensis*) is occasional.
- 3.2.55 The herb component is quite varied and includes a range of species associated with damper areas such as common marsh bedstraw (*Galium palustre*), wild angelica, purple-loosestrife (*Lythrum salicaria*), water figwort (*Scrophularia auriculata*) and bog stitchwort (*Stellaria alsine*).
- 3.2.56 Common spotted-orchid was recorded rarely and other herb records made included meadow buttercup, wavy bitter-cress (*Cardamine flexuosa*), common mouse-ear, field horsetail (*Equisetum arvense*) and clustered dock (*Rumex conglomeratus*).
- 3.2.57 This area supported four grassland indicator species: wild angelica, common spotted orchid, bog stitchwort and lesser spearwort,

### Area 2K

- 3.2.58 This unmanaged species-rich grassland sward covering approximately 0.24 ha occurs on a steep slope near a sewage works on the A38. There is extensive scrub and tree encroachment from species including ash and common hawthorn. It is dominated by tall grasses, but also supports a good range of indicator grassland herb species and few "weed species". This area forms part of a larger habitat block and this was included in the survey area.
- 3.2.59 False oat-grass dominates, with frequent Yorkshire-fog. Other grass records include cock's-foot, red fescue, smooth meadow-grass, common bent and the less widely recorded yellow oat-grass (*Trisetum flavescens*),
- 3.2.60 Locally frequent oxeye daisy occurs with scattered meadow vetchling, common bird's-foot-trefoil, lupin (*Lupinus sp.*), burnet-saxifrage (*Pimpinella saxifraga*), meadow buttercup, common sorrel (*Rumex acetosa*), goat's-beard and smooth tare.
- 3.2.61 Records were also made for yarrow, bladder campion (*Silene vulgaris*), zigzag clover, germander speedwell (*Veronica chamaedrys*), common knapweed, ribwort plantain and bush vetch.
- 3.2.62 This area supported eight grassland indicator species: germander speedwell, oxeye daisy, zigzag clover, yellow oat-grass, burnet-saxifrage, selfheal, common bird's-foot-trefoil and meadow vetchling.

## Discussion

- 3.2.63 The 17 grassland areas were assessed for their nature conservation value based on whether they qualify for consideration as local wildlife sites. The list of grassland indicator species compiled by the Derbyshire Wildlife Trust within their 2003 (revised 2011) guidance on selection of Local Wildlife Sites has been used to assess the quality of the grassland areas which are classed as GR2 in this guidance. If the total score of indicator species (scoring 1 or 2 each) totals eight or more in a grassland stand (based on the survey area lying in the Nottinghamshire, Derbyshire & Yorkshire Coalfield natural character area), then it is worthy of consideration as a Local Wildlife Site. No scoring species of value 2 were recorded during the survey. This criterion has been applied to the surveyed grassland Areas. See Appendix C for more details.
- 3.2.64 Two grassland areas, Areas 1B and 2K stood out as being “indicator species-rich” and of higher nature conservation value than the remaining areas. Ten and eight indicator species were recorded at these sites respectively.
- 3.2.65 The next highest score was four indicator species, which was shared by Areas 1D and 2J. The remaining areas had three or less indicator species recorded; with Areas 1F and 2D having no indicator species recorded. Area 2D did, however, support a range of herbs and grasses such as cock's-foot, red fescue smooth meadow-grass, meadow foxtail, false oat-grass, yarrow, common mouse-ear, hogweed and meadow buttercup and showed signs of partial agricultural improvement and could be considered to be a poor semi-improved grassland.
- 3.2.66 Both Areas 1B and 2K are suffering from lack of management and colonisation by scrub. Management of Area 1B is physically restricted, due to its location between the carriageways of the A38 and Area 2K is on a steep bank, which prohibits cutting and makes stock grazing difficult. Without management it is likely that the grassland in these two areas will be overgrown by woody species within the next five to ten years.

### 3.3 Other Habitats

- 3.3.1 Appendix D comprises the plant list for the other habitats surveyed, whilst Appendix F provides site photographs. Figures 2 and 3 in Appendix A show the survey locations.

Description of Other Habitats: Markeaton and Kingsway Junctions

Broadleaved Plantation Woodland

Area 1G

- 3.3.2 This is an area of semi-mature, plantation woodland with a densely shaded, species-poor understorey.
- 3.3.3 The woody species recorded include dogwood (*Cornus sanguinea*), hawthorn, ash, ivy (*Hedera helix*), Himalayan balsam, poplar species (*Populus spp*), pedunculate oak (*Quercus robur*), bramble, crack-willow (*Salix fragilis*), elder (*Sambucus nigra*) and common nettle.

### Area 1J

- 3.3.4 This is an area of densely planted, semi-mature plantation woodland with poor understorey species diversity.
- 3.3.5 This plantation has a range of native and non-native tree and shrub species, including field maple (*Acer campestre*), Norway maple (*Acer platanoides*), sycamore (*Acer pseudoplatanus*), alder (*Alnus glutinosa*), hawthorn, ash, poplar species (*Populus spp*), Prunus species (*Prunus sp.*), pedunculate oak, osier (*Salix viminalis*), dog-rose, and bramble overtopping a tall species-poor ground-flora dominated by Himalayan balsam, common nettle and great willowherb.

### Scrub

#### Area 1H

- 3.3.6 This area of habitat is located by Area 1B, adjacent to the A38.
- 3.3.7 This is a scrub community dominated by bramble with large areas of common nettle.
- 3.3.8 Occasional stands of rosebay willowherb occur with smaller amounts of a range of coarse herbs such as cow parsley, false oat-grass, mugwort, hemlock (*Conium maculatum*), cock's-foot, male-fern (*Dryopteris filix-mas*), great willowherb, hogweed, timothy (*Phleum pratense*), rough meadow-grass, broad-leaved dock and red campion (*Silene dioica*).

### Description of Other Habitats: Little Eaton Junction

#### Ditch Banks with Tall Herbs

#### Area 2G

- 3.3.9 The area around and the A38 ditch banks are vegetated by a tall herb community with dominant common nettle, locally abundant false oat-grass and a range of occasional species including hemlock, cleavers, Yorkshire-fog, rough meadow-grass, water figwort, red campion and hogweed.
- 3.3.10 This community assemblage is typical for lowland England and is not unusual or rare.

#### Standing Water and Draw-down Zone

#### Area 2F

- 3.3.11 The species composition for the drawdown community Area 2F has been compared against the species list given in Table 4d of the Derbyshire Local Wildlife Sites Selection Guidelines 2003 (Revised 2011), which are the indicator species used to grade sites on their worthiness to be rated as local wildlife sites based on their draw-down flora. Stw2 is the habitat type referred to in DWT (2003, revised 2011) (see Appendix C for more detail). The indicator species have been highlighted in the results tables given in Appendix E.

- 3.3.12 This feature comprises a large shallow water body with a wide muddy drawdown zone. There is much bare mud and based on old fluctuation shores and the lack of aquatic open water macrophyte species, the water levels fluctuate widely. Water levels in the open water were less than 40 cm at the time of survey.
- 3.3.13 Within the drawdown zone locally dominant yellow iris (*Iris pseudacorus*) and New Zealand pygmyweed (*Crassula helmsii*) occurs, with frequent toad rush (*Juncus bufonius*) and also perennial rye-grass, amphibious bistort (*Persicaria amphibium*), creeping bent and common ragwort). Marsh foxtail, water chickweed (*Myosoton aquaticum*), celery-leaved buttercup (*Ranunculus scleratus*) and common water forget-me-not (*Myosotis scorpioides*) also occur, but much less widely.
- 3.3.14 This area supported eight drawdown indicator species; toad rush, creeping bent, common water forget-me-not, amphibious bistort, celery leaved buttercup, silverweed, water chickweed and marsh foxtail; satisfying the criterion (minimum five indicator species) for consideration as a Local Wildlife Site. It does, however, also include the highly invasive non-native species New Zealand pygmyweed.

### 3.4 Hedgerow Survey

- 3.4.1 The collated field results are presented in Appendix G, whilst photographs are given in Appendix F.
- 3.4.2 Seven hedgerows were surveyed and based on the 2007 Hedgerow Guidance all of them were species-poor, with limited numbers of tree and shrub species. The hedgerows were typically dominated by common hawthorn and elderberry. Crack willow, blackthorn and grey willow were also recorded in H5.
- 3.4.3 The hedgerows all contained low levels of gaps, apart from hedgerow 6, and can therefore be assessed under the Hedgerow Regulations Criteria as intact hedges.
- 3.4.4 None of the hedgerows surveyed meet the criteria for Important Hedgerows under the 1997 Hedgerow Regulations, but they do provide a valuable biodiversity habitat for use by a range of fauna such as birds and mammals of scrub and other farmland habitats.

### 3.5 Recommendations

#### Grassland

- 3.5.1 The results of the survey will be taken into account in order to define appropriate mitigation measures; these will be reported in the EAR which is being prepared.
- 3.5.2 Potential locations for enhancement will also be detailed in the EAR. This will include consideration of specific grassland habitat for future enhancement.

#### Hedgerows

- 3.5.3 None of the hedgerows surveyed are worthy of retention on grounds of species-rich composition.
- 3.5.4 Appropriate mitigation and enhancement measures for the loss of hedgerows will be reported in the EAR which is being prepared.

#### Other Habitats

- 3.5.5 The drawdown area Area 2F is located outside the proposed works area, but its hydrological needs should be taken into consideration when undertaking local works. It would be potentially adversely affected by changes in the drainage regime. This area lies in grassland Area 2E.
- 3.5.6 Invasive species encountered during the survey include New Zealand pigmyweed, Himalayan balsam and Japanese knotweed. Steps should be taken to avoid the spread of invasive weeds during any works and to ensure that suitable works method statements are prepared to assist this process. Depending on the programme, advance treatment of these species with a suitable herbicide is recommended.

## 4. SUMMARY

- 4.1.1 Botanical surveys were carried out on 17 areas of grassland, and six other habitat areas comprising scrub, broad-leaved plantation woodland and seasonal wetland (drawdown zone), on the 18 June and 1 July 2015.
- 4.1.2 The nature conservation assessment for grassland was carried out using criteria devised by DWT (2003, revised 2011). Each of the indicator species recorded during the surveys was only worth 1 point in the assessment system. No species valued at 2 points were recorded. The grasslands are all largely species-poor, apart from Areas 1B and 2K, which are considered to be species-rich. Area 1B is an approximate 0.4 ha area of isolated and unmanaged grassland, which is currently designated as the A38 Roundabout LWS at Kingsway junction. Area 2K is a smaller (0.25 ha), steep, unmanaged slope with grassland, which, like Area 1B, is succeeding to scrub. If left unmanaged both of the grassland areas are likely to become fully invaded by scrub within five to ten years, with associated reduction of grassland indicator species and their loss in due course.
- 4.1.3 The wetland drawdown area 2F has a minimum of five drawdown indicator species based on DWT Site Assessment Criteria, and assessed as species-rich. This area is currently designated as Alfreton Road Rough Grassland LWS at Little Eaton junction.
- 4.1.4 Using the standard methodology devised for the 1997 Hedgerow Regulations, hedgerow surveys were carried out on seven hedgerows on the 18 June and 1 July 2015 and the quality of the hedgerows assessed. Based on the 1997 Regulations, none of the seven hedgerows are worthy of retention on grounds of its species-composition. However, the hedgerows should be checked against archaeological criteria for ancient hedgerow designations.
- 4.1.5 Mitigation and enhancement for grassland, hedgerows and other habitats, as well as steps to avoid the spread of invasive plant species, will be considered as part of the proposed scheme design and EAR.

## 5. REFERENCES

AECOM (2015). A38 Junction - Extended Phase 1 Habitat survey (Report number 47071319-URS-05-RP-EN-003).

DEFRA (2007) Hedgerow Survey Handbook A standard procedure for local surveys in the UK Prepared on behalf of the Steering Group for the UK Biodiversity Action Plan for Hedgerows 2nd edition.

Derby Green Prints for Biodiversity –  
<http://derbyshirebiodiversity.org.uk/greenprints/index.php> (Accessed 09/09/2015)

Derbyshire Wildlife Trust Guidelines 2003 (Revised 2011) Derbyshire Local Wildlife Sites Selection (<http://www.derbyshirebiodiversity.org.uk>). Highways England Biodiversity Action Plan (2002).  
<http://webarchive.nationalarchives.gov.uk/20101110115126/http://www.highways.gov.uk/aboutus/1153.aspx> (Accessed 09/09/2015).

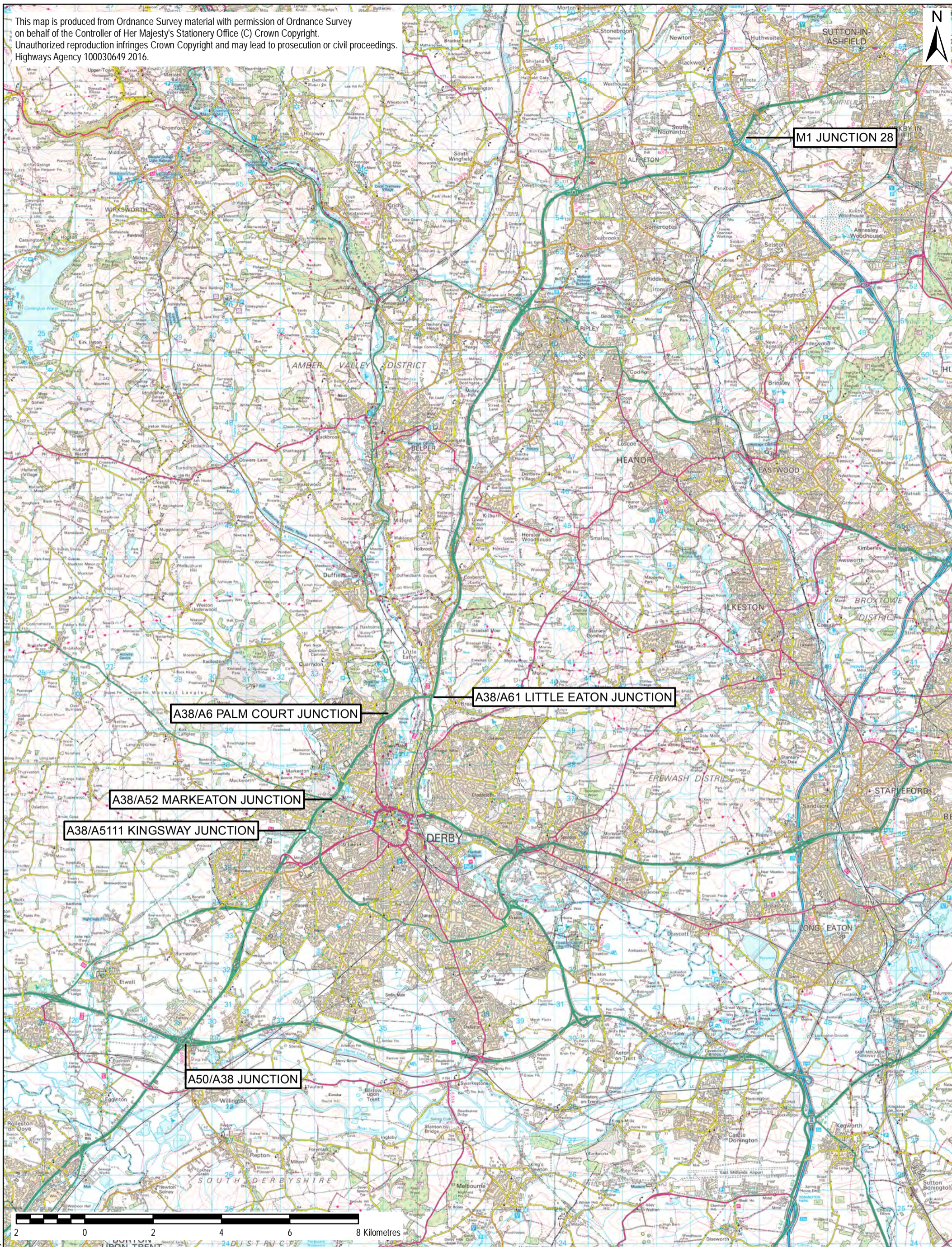
Highways England (2015). Our plan to protect and increase biodiversity. Publication code PR34/15.  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/441300/N150146\\_-\\_Highways\\_England\\_Biodiversity\\_Plan3lo.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/441300/N150146_-_Highways_England_Biodiversity_Plan3lo.pdf) (Accessed 09/09/2015).

Lowland Derbyshire Local Biodiversity Action Plan 2011-2020, Lowland Derbyshire Biodiversity Partnership

## **Appendix A      Figures**



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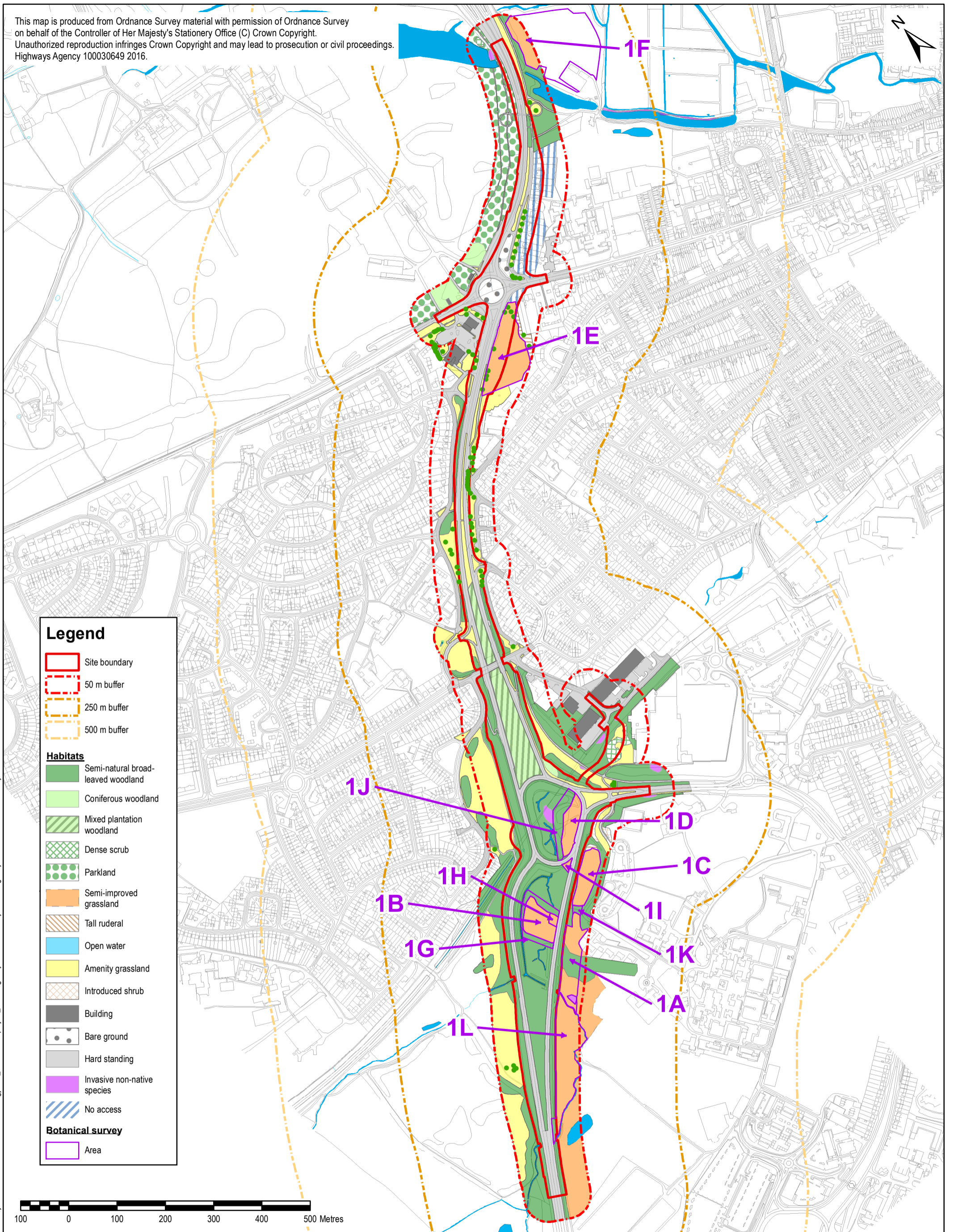


File Name: \\ch-wip-001\CH\_Roads\A38 Derby Jcns - POT133912 CAD12.1\WIP\FIGURE 1.1 - LOCATION PLAN F1.mxd

Project Title/Drawing Title		Project Number 47071319		Highways England Major projects Piccadilly Gate Store Street Manchester M1 2WD	
A38 DERBY JUNCTIONS SCHEME LOCATION PLAN		Drawn GB	Checked SW	Approved SW	
		Date 04/02/2016	Scale @ A3 1:100,000	Purpose of issue FINAL	
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**Legend**

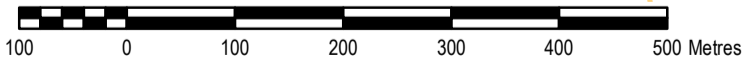
- Site boundary
- 50 m buffer
- 250 m buffer
- 500 m buffer

**Habitats**

- Semi-natural broad-leaved woodland
- Coniferous woodland
- Mixed plantation woodland
- Dense scrub
- Parkland
- Semi-improved grassland
- Tall ruderal
- Open water
- Amenity grassland
- Introduced shrub
- Building
- Bare ground
- Hard standing
- Invasive non-native species
- No access

**Botanical survey**

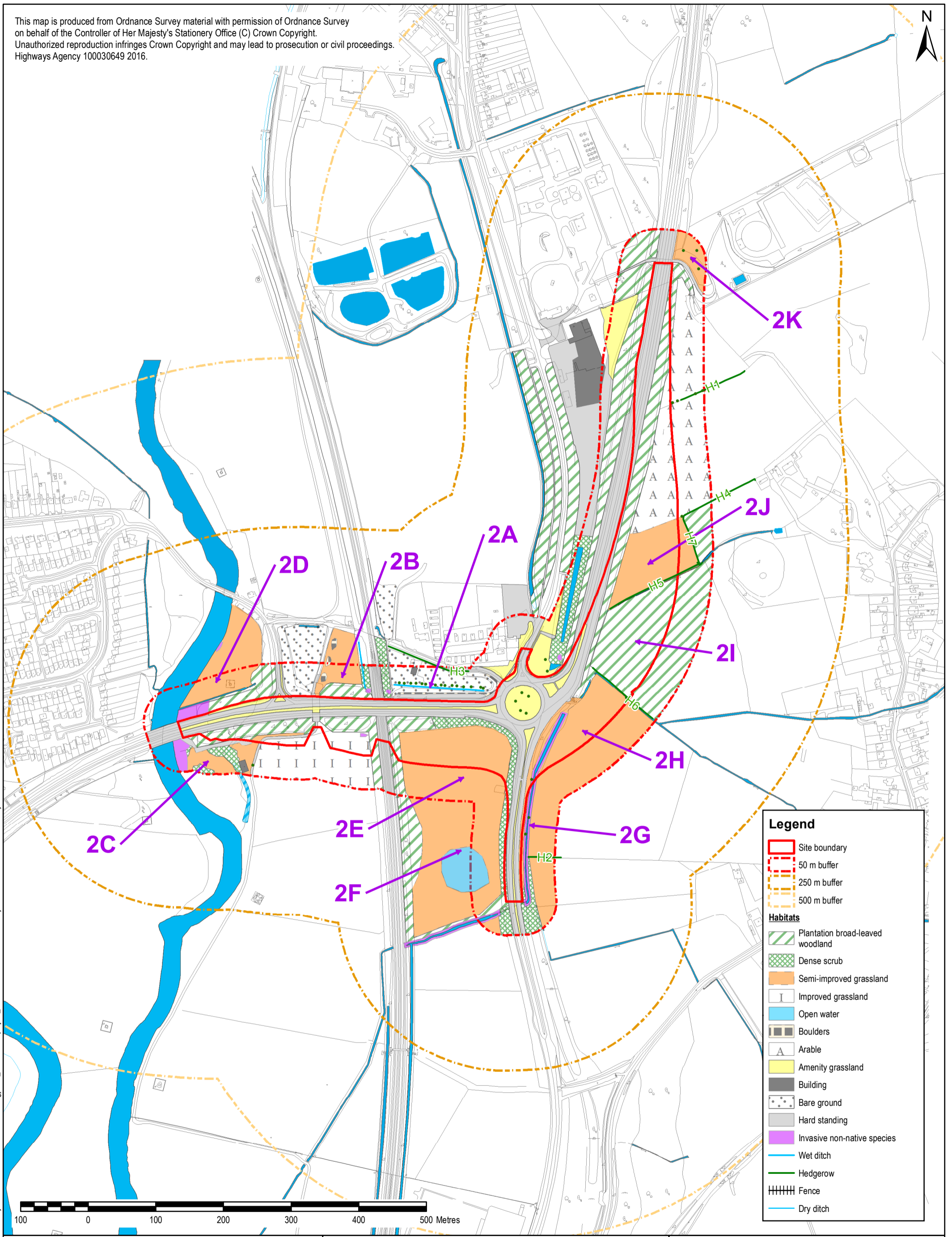
- Area



Project Title/Drawing Title <b>A38 DERBY JUNCTIONS MARKEATON AND KINGSWAY BOTANICAL SURVEY</b>			Project Number 47071319	Highways England Major projects Piccadilly Gate Store Street Manchester M1 2WD
Drawn GSB	Checked JS	Approved OB		
Date 03/03/2016	Scale @ A3 1:7,000	Purpose of issue FINAL	AECOM Royal Court Basil Close, Chesterfield Derbyshire, S41 7SL +44 (0) 1246 209221 +44 (0) 1246 209229 www.aecom.com	
Drawing Number Figure 2			Rev 3F	<b>AECOM</b>

File Name: X:\Highways Agency\47071390\_A38 Derby Junctions - Environment\Technical\Ecology\GIS - Chesterfield\project\_files\Kingsway\Botanical surveys\20160303.mxd

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**Legend**

- Site boundary
- 50 m buffer
- 250 m buffer
- 500 m buffer

**Habitats**

- Plantation broad-leaved woodland
- Dense scrub
- Semi-improved grassland
- Improved grassland
- Open water
- Boulders
- Arable
- Amenity grassland
- Building
- Bare ground
- Hard standing
- Invasive non-native species
- Wet ditch
- Hedgerow
- Fence
- Dry ditch

<p>Project Title/Drawing Title</p> <h2 style="margin: 0;">A38 DERBY JUNCTIONS LITTLE EATON BOTANICAL SURVEY</h2>			<p>AECOM Internal Project Number 47071319</p>		<p>Highways England Major projects Piccadilly Gate Store Street Manchester M1 2WD</p>	
<p>Drawn GSB</p>	<p>Checked JS</p>	<p>Approved OB</p>	<p>AECOM Royal Court Basil Close, Chesterfield Derbyshire, S41 7SL +44 (0) 1246 209221 +44 (0) 1246 209229 www.aecom.com</p>			
<p>Date 03/03/2016</p>		<p>Scale @ A3 1:5,000</p>		<p>Purpose of issue FINAL</p>		
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## **Appendix B      Relevant Legislation for Protected Species and Relevant Planning Policy Guidance**

### **Legislation Relating to Invasive Species**

Schedule 9 of the 1981 Wildlife and Countryside Act (as amended) details legislation covers the control of invasive plants and animals.

### **Legislation Relating to Plants**

All wild plants are protected against unauthorised removal or uprooting under Section 13 of the Wildlife and Countryside Act (WCA) 1981 (as amended). Plants listed on Schedule 8 of the Act are afforded additional protection against picking, uprooting, destruction and sale.

### **Legislation Relating to Hedgerows**

Under the Hedgerows Regulations 1997 it is against the law to remove or destroy certain hedgerows without permission from the local planning authority. The local planning authority is the enforcement body for offences created by the Regulations

Local planning authority permission is normally required before removing hedges that are at least 20 metres (66 feet) in length, more than 30 years old and contain certain plant species. The authority will assess the importance of the hedgerow using criteria set out in the regulations.

The Hedgerow regulations provide provision for hedgerow retention when hedges are considered to be "important" based on criteria set out in the regulations.

### **Planning Policy**

In December 2010, the Minister for Decentralisation and Planning, Greg Clark MP, announced a review of national planning policy, designed to consolidate all the existing Planning Policy Statements, Planning Policy Guidance's and various circulars into a single consolidated document aimed to make the planning system less complex, more accessible and to promote sustainable growth. Known as the National Planning Policy Framework (NPPF), it was published in final form in March 2012.

The publication of the NPPF supersedes the majority of the previous national Planning Policy Statement and Planning Policy Guidance. Thus, it now forms the principal national planning policy for development. It sets out the Government's key economic, social and environmental objectives and the planning policies needed to deliver them.

## **Appendix C      Assessment Criteria**

## Hedgerow Assessment Criteria

The following extract is from the Hedgerow Regulations 1997 (DEFRA 2007)

- (1) Subject to sub-paragraph (2), the hedgerow includes:
  - (a) at least 7 woody species;
  - (b) at least 6 woody species, and has associated with it at least 3 of the features specified in sub-paragraph (4);
  - (c) (c) at least 6 woody species, including one of the following—
    - black-poplar tree (*Populus nigra ssp betulifolia*);
    - large-leaved lime (*Tilia platyphyllos*);
    - small-leaved lime (*Tilia cordata*);
    - wild service-tree (*Sorbus torminalis*); or
  - (d) at least 5 woody species, and has associated with it at least 4 of the features specified in sub-paragraph (4),
  - (e) and the number of woody species in a hedgerow shall be ascertained in accordance with sub-paragraph (3).
- (2) Where the hedgerow in question is situated wholly or partly in the county (as constituted on 1st April 1997) of the City of Kingston upon Hull, Cumbria, Darlington, Durham, East Riding of Yorkshire, Hartlepool, Lancashire, Middlesbrough, North East Lincolnshire, North Lincolnshire, Northumberland, North Yorkshire, Redcar and Cleveland, Stockton-on-Tees, Tyne and Wear, West Yorkshire or York (14), the number of woody species mentioned in paragraphs (a) to (d) of sub-paragraph (1) is to be treated as reduced by one.
- (3) For the purposes of sub-paragraph (1) (and those of paragraph 8(b)):
  - (a) where the length of the hedgerow does not exceed 30 metres, count the number of woody species present in the hedgerow;
  - (b) where the length of the hedgerow exceeds 30 metres, but does not exceed 100 metres, count the number of woody species present in the central stretch of 30 metres;
  - (c) where the length of the hedgerow exceeds 100 metres, but does not exceed 200 metres, count the number of woody species present in the central stretch of 30 metres within each half of the hedgerow and divide the aggregate by two;

- (d) where the length of the hedgerow exceeds 200 metres, count the number of woody species present in the central stretch of 30 metres within each third of the hedgerow and divide the aggregate by three.
- (4) The features referred to in sub-paragraph (1)(b) and (d) (which include those referred to in paragraph 8(b)) are:
- (a) a bank or wall which supports the hedgerow along at least one half of its length;
  - (b) gaps which in aggregate do not exceed 10% of the length of the hedgerow;
  - (c) where the length of the hedgerow does not exceed 50 metres, at least one standard tree;
  - (d) where the length of the hedgerow exceeds 50 metres but does not exceed 100 metres, at least 2 standard trees;
  - (e) where the length of the hedgerow exceeds 100 metres, such number of standard trees (within any part of its length) as would when averaged over its total length amount to at least one for each 50 metres;
  - (f) at least 3 woodland species within one metre, in any direction, of the outermost edges of the hedgerow;
  - (g) a ditch along at least one half of the length of the hedgerow;
  - (h) connections scoring 4 points or more in accordance with sub-paragraph (5);
  - (i) a parallel hedge within 15 metres of the hedgerow.
- (5) For the purposes of sub-paragraph (4)(h) a connection with another hedgerow scores one point and a connection with a pond or a woodland in which the majority of trees are broad-leaved trees scores 2 points; and a hedgerow is connected with something not only if it meets it but also if it has a point within 10 metres of it and would meet it if the line of the hedgerow continued.

8. The hedgerow:

- (a) is adjacent to a bridleway or footpath, within the meaning of the Highways Act 1980(15), a road used as a public path, within the meaning of section 54 (duty to reclassify roads used as public paths) of the Wildlife and Countryside Act 1981(16), or a byway open to all traffic, within the meaning of Part III of the Wildlife and Countryside Act 1981(17), and
- (b) includes at least 4 woody species, ascertained in accordance with paragraph 7(3) and at least 2 of the features specified in paragraph 7(4)(a) to (g).



## Grassland Assessment Criteria

The study area was taken to be covered within the Nottinghamshire, Derbyshire & Yorkshire Coalfield grassland habitat assessment code Gr2: areas of semi-natural grasslands including grassland mosaics (DWT, 2003, revised 2011). This means that if one of the grassland areas within the site supported 8 or more grassland indicator species included in Table 2 below, then it could be assessed as having the potential value of a Local Wildlife Site. The relevant extracts from DWT (2003, revised 2011) including 'Table 2' (from the assessment guide), is given below.

"Gr2 Areas of semi-natural grassland including grassland mosaics that score the following values from the plant species within Table 2 (see below):

8 or more if in the following National Character Areas or in the Derby area:

- Needwood and South Derbyshire Claylands
- Potteries and Churnet Valley
- Mease/Sence Lowlands
- Melbourne Parklands
- Trent Valley Washlands
- Leicestershire & South Derbyshire Coalfield
- Nottinghamshire, Derbyshire & Yorkshire Coalfield" (the survey area)

**"Table 2: Vascular plant species of semi-natural grasslands in Derbyshire taken from DWT (2003, revised 2011)"**

Scoring	
All species score 1 with the exception of those species in bold (Derbyshire Vascular Plant Red Data List Species - 2009) which score 2.	
Scientific Name	Common Name
<i>Achillea ptarmica</i>	Sneezewort
<i>Agrimonia eupatoria</i>	Agrimony
<b><i>Agrimonia procera</i></b>	<b>Fragrant Agrimony</b>
<i>Agrostis canina</i>	Velvet Bent
<i>Agrostis vinealis</i>	Brown Bent
<i>Aira praecox</i>	Early Hair-grass
<i>Ajuga reptans</i>	Bugle
<i>Alchemilla filicaulis</i>	Lady's Mantle
<i>Alchemilla filicaulis</i> ssp. <i>vestita</i>	Lady's Mantle
<i>Alchemilla glabra</i>	Lady's Mantle
<i>Alchemilla xanthochlora</i>	Lady's Mantle
<i>Allium oleraceum</i>	Field Garlic
<b><i>Allium scorodoprasum</i></b>	<b>Sand Leek</b>
<b><i>Alopecurus aequalis</i></b>	<b>Orange Foxtail</b>
<b><i>Anacamptis morio</i></b>	<b>Green-winged Orchid</b>
<i>Anacamptis pyramidalis</i>	Pyramidal Orchid

Scoring	
All species score 1 with the exception of those species in bold (Derbyshire Vascular Plant Red Data List Species - 2009) which score 2.	
Scientific Name	Common Name
<i>Anemone nemorosa</i>	Wood Anemone
<i>Angelica sylvestris</i>	Wild Angelica
<b><i>Antennaria dioica</i></b>	<b>Mountain everlasting</b>
<i>Anthyllis vulneraria</i>	Kidney Vetch
<i>Aphanes australis</i>	Slender Parsley-piert
<i>Aquilegia vulgaris</i>	Columbine
<i>Arabis hirsuta</i>	Hairy Rock-cress
<i>Arenaria serpyllifolia</i>	Thyme-leaved Sandwort
<i>Astragalus glycyphyllos</i>	Wild Liquorice
<i>Betonica officinalis</i>	Betony
<i>Blackstonia perfoliata</i>	Yellow-wort
<b><i>Blysmus compressus</i></b>	<b>Flat Sedge</b>
<i>Botrychium lunaria</i>	Moonwort
<i>Briza media</i>	Quaking Grass
<i>Bromopsis erectus</i>	Upright Brome
<i>Bromus racemosus</i>	Smooth Brome
<i>Calluna vulgaris</i>	Heather
<i>Caltha palustris</i>	Marsh Marigold
<i>Campanula glomerata</i>	Clustered Bellflower
<i>Campanula rotundifolia</i>	Harebell
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carduus nutans</i>	Musk Thistle
<i>Carex acutiformis</i>	Lesser Pond-sedge
<i>Carex binervis</i>	Green-ribbed sedge
<i>Carex caryophyllea</i>	Spring Sedge
<i>Carex demissa</i>	Common Yellow Sedge
<b><i>Carex disticha</i></b>	<b>Brown Sedge</b>
<i>Carex echinata</i>	Star Sedge
<i>Carex ericetorum</i>	Rare Spring-sedge
<i>Carex flacca</i>	Glaucous Sedge
<b><i>Carex hostiana</i></b>	<b>Tawny Sedge</b>
<i>Carex laevigata</i>	Smooth-stalked Sedge
<i>Carex leporina</i>	Oval Sedge
<b><i>Carex montana</i></b>	<b>Soft-leaved Sedge</b>
<b><i>Carex muricata ssp. lamprocarpa</i></b>	<b>Prickly Sedge</b>
<i>Carex nigra</i>	Common Sedge

Scoring	
All species score 1 with the exception of those species in bold (Derbyshire Vascular Plant Red Data List Species - 2009) which score 2.	
Scientific Name	Common Name
<i>Carex panicea</i>	Carnation Sedge
<i>Carex pilulifera</i>	Pill Sedge
<i>Carex pulicaris</i>	Flea Sedge
<i>Carex spicata</i>	Spiked Sedge
<i>Carlina vulgaris</i>	Carlina Thistle
<i>Catapodium rigidum</i>	Fern Grass
<i>Centaurea nigra</i>	Common Knapweed
<i>Centaurea scabiosa</i>	Greater Knapweed
<i>Centaureum erythraea</i>	Common Centaury
<i>Cerastium arvense</i>	Field Mouse-ear
<i>Cirsium acaule</i>	Dwarf Thistle
<b><i>Cirsium dissectum</i></b>	<b>Meadow Thistle</b>
<i>Cirsium eriophorum</i>	Woolly Thistle
<i>Cirsium heterophyllum</i>	Melancholy Thistle
<b><i>Clinopodium acinos</i></b>	<b>Basil Thyme</b>
<i>Clinopodium vulgare</i>	Wild Basil
<b><i>Coeloglossum viride</i></b>	<b>Frog Orchid</b>
<b><i>Colchicum autumnale</i></b>	<b>Meadow Safron</b>
<i>Conopodium majus</i>	Pignut
<i>Crepis capillaris</i>	Smooth Hawk's-beard
<i>Crepis paludosa</i>	Marsh Hawk's-beard
<i>Dactylorhiza fuchsii</i>	Common Spotted-orchid
<i>Dactylorhiza hybrids</i>	Hybrid orchids
<b><i>Dactylorhiza incarnata</i></b>	<b>Early Marsh-orchid</b>
<i>Dactylorhiza maculata</i>	Heath-spotted-orchid
<i>Dactylorhiza praetermissa</i>	Southern Marsh-orchid
<i>Dactylorhiza purpurella</i>	Northern Marsh-orchid
<i>Danthonia decumbens</i>	Heath-grass
<i>Daucus carota</i>	Wild Carrot
<i>Deschampsia flexuosa</i>	Wavy Hair-grass
<b><i>Dianthus deltoides</i></b>	<b>Maiden Pink</b>
<i>Digitalis purpurea</i>	Foxglove
<i>Eleocharis palustris</i>	Common Spike-rush
<i>Epilobium palustre</i>	Marsh Willowherb
<i>Epilobium parviflorum</i>	Hoary Willowherb
<b><i>Epipactis atrorubens</i></b>	<b>Dark-red Helleborine</b>
<b><i>Epipactis palustris</i></b>	<b>Marsh Helleborine</b>

Scoring	
All species score 1 with the exception of those species in bold (Derbyshire Vascular Plant Red Data List Species - 2009) which score 2.	
Scientific Name	Common Name
<i>Equisetum palustre</i>	Marsh Horsetail
<i>Equisetum sylvaticum</i>	Wood Horsetail
<i>Erica cinerea</i>	Bell-heather
<i>Erica tetralix</i>	Cross-leaved Heather
<i>Erigeron acris</i>	Blue Fleabane
<i>Erodium cicutarium</i>	Common Stork's-bill
<i>Eupatorium cannabinum</i>	Hemp-agrimony
<b><i>Euphrasia anglica</i></b>	<b>Eyebright</b>
<i>Euphrasia confusa</i>	Eyebright
<i>Euphrasia nemorosa</i>	Eyebright
<b><i>Euphrasia officinalis ssp. pratensis</i></b>	<b>Eyebright</b>
<i>Festuca ovina</i>	Sheep's fescue
<i>Ficaria verna</i>	Lesser Celandine
<b><i>Filago vulgaris</i></b>	<b>Common Cudweed</b>
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Filipendula vulgaris</i>	Dropwort
<i>Fragaria vesca</i>	Wild Strawberry
<b><i>Galeopsis angustifolia</i></b>	<b>Red Hemp-nettle</b>
<i>Galium cruciata</i>	Crosswort
<i>Galium palustre</i>	Common Marsh-bedstraw
<i>Galium saxatile</i>	Heath Bedstraw
<i>Galium sternerii</i>	Limestone Bedstraw
<b><i>Galium uliginosum</i></b>	<b>Fen Bedstraw</b>
<i>Galium verum</i>	Lady's Bedstraw
<b><i>Genista anglica</i></b>	<b>Petty Whin</b>
<b><i>Genista tinctoria</i></b>	<b>Dyer's Greenweed</b>
<i>Gentianella amarella</i>	Autumn Gentian
<b><i>Gentianella campestris</i></b>	<b>Field Gentian</b>
<i>Geranium columbinum</i>	Long-stalked Crane's-bill
<i>Geranium pratense</i>	Meadow Crane's-bill
<i>Geranium pusillum</i>	Small-flowered Crane's-bill
<i>Geranium sanguineum</i>	Bloody Crane's-bill
<i>Geum rivale</i>	Water Avens
<b><i>Gnaphalium sylvaticum</i></b>	<b>Heath Cudweed</b>
<i>Gymnadenia conopsea</i>	Fragrant Orchid
<i>Helianthemum nummularium</i>	Common Rock-rose
<i>Helictotrichon pratensis</i>	Meadow Oat-grass

Scoring	
All species score 1 with the exception of those species in bold (Derbyshire Vascular Plant Red Data List Species - 2009) which score 2.	
Scientific Name	Common Name
<i>Helictotrichon pubescens</i>	Downy Oat-grass
<i>Hieracium spp.</i>	any Hawkweed
<b><i>Hippocrepis comosa</i></b>	<b>Horseshoe Vetch</b>
<i>Hordeum secalinum</i>	Meadow Barley
<i>Hyacinthoides non-scripta</i>	Bluebell
<i>Hydrocotyl vulgaris</i>	Marsh Pennywort
<i>Hypericum hirsutum</i>	Hairy St John's-wort
<i>Hypericum humifusum</i>	Trailing St John's-wort
<i>Hypericum maculatum</i>	Imperforate St John's-wort
<b><i>Hypericum montanum</i></b>	<b>Pale St John's-wort</b>
<i>Hypericum perforatum</i>	Perforate St John's-wort
<i>Hypericum pulchrum</i>	Slender St John's-wort
<i>Hypericum tetrapterum</i>	Square-stalked St John's-wort
<i>Hypochaeris radicata</i>	Cat's-ear
<i>Inula conyzae</i>	Ploughman's Spikenard
<i>Isolepis setacea</i>	Bristle Club-rush
<b><i>Jasione montana</i></b>	<b>Sheep's-bit</b>
<i>Juncus acutiflorus</i>	Sharp-flowered Rush
<i>Juncus bulbosus</i>	Bulbous Rush
<b><i>Juncus compressus</i></b>	<b>Round-fruited Rush</b>
<i>Juncus squarrosus</i>	Heath Rush
<b><i>Juniperus communis</i></b>	<b>Juniper</b>
<i>Knautia arvensis</i>	Field Scabious
<b><i>Koeleria macrantha</i></b>	<b>Crested Hair-grass</b>
<i>Lathyrus linifolius var. montana</i>	Bitter Vetch
<b><i>Lathyrus nissolia</i></b>	<b>Grass Vetchling</b>
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Leontodon hispidus</i>	Rough Hawkbit
<b><i>Leontodon saxatilis</i></b>	<b>Lesser Hawkbit</b>
<i>Leucanthemum vulgare</i>	Oxeye Daisy
<i>Linum catharticum</i>	Fairy Flax
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil
<i>Lotus pedunculatus</i>	Large Bird's-foot-trefoil
<b><i>Lotus tenuis</i></b>	<b>Narrow-leaved Bird's-foot-trefoil</b>
<i>Luzula campestris</i>	Field Wood-rush
<i>Luzula multiflora</i>	Heath Wood-rush
<i>Lysimachia nummularia</i>	Creeping Jenny

Scoring	
All species score 1 with the exception of those species in bold (Derbyshire Vascular Plant Red Data List Species - 2009) which score 2.	
Scientific Name	Common Name
<i>Malva moschata</i>	Musk Mallow
<i>Medicago lupulina</i>	Black Medick
<i>Mentha aquatica</i>	Water Mint
<i>Molinia caerulea</i>	Purple Moor-grass
<i>Myosotis discolor</i>	Changing Forget-me-not
<i>Myosotis ramosissima</i>	Early Forget-me-not
<i>Myosotis scorpiodes</i>	Water Forget-me-not
<i>Myosotis secunda</i>	Creeping Forget-me-not
<i>Narcissus pseudonarcissus</i>	Daffodil
<i>Nardus stricta</i>	Mat-grass
<b><i>Neotina ustulata</i></b>	<b>Burnt Orchid</b>
<i>Neottia ovata</i>	Common Twayblade
<i>Ononis repens</i>	Common Restharrow
<b><i>Ononis spinosa</i></b>	<b>Spiny Restharrow</b>
<i>Ophioglossum vulgatum</i>	Adder's-tongue Fern
<i>Ophrys apifera</i>	Bee Orchid
<b><i>Ophrys insectifera</i></b>	<b>Fly Orchid</b>
<i>Orchis mascula</i>	Early Purple Orchid
<i>Origanum vulgare</i>	Marjoram
<b><i>Ornithopus perpusillus</i></b>	<b>Bird's-foot</b>
<i>Parnassia palustris</i>	Grass-of-Parnassus
<i>Pedicularis sylvatica</i>	Lousewort
<i>Persicaria bistorta</i>	Common Bistort
<i>Phleum bertolonii</i>	Smaller Cat's-tail
<i>Picris hieracioides</i>	Hawkweed Oxtongue
<i>Pilosella officinarum</i>	Mouse-ear Hawkweed
<i>Pimpinella major</i>	Greater Burnet-saxifrage
<i>Pimpinella saxifraga</i>	Burnet-saxifrage
<i>Plantago media</i>	Hoary Plantain
<b><i>Platanthera chlorantha</i></b>	<b>Greater Butterfly Orchid</b>
<i>Poa compressa</i>	Flattened Meadow-grass
<i>Poa humilis</i>	Spreading Meadow-grass
<i>Polemonium caeruleum</i>	Jacob's-ladder
<i>Polygala serpyllifolia</i>	Heath Milkwort
<i>Polygala vulgaris</i>	Common Milkwort
<i>Potentilla anglica</i>	Trailing Tormentil
<i>Potentilla anserina</i>	Silverweed

Scoring	
All species score 1 with the exception of those species in bold (Derbyshire Vascular Plant Red Data List Species - 2009) which score 2.	
Scientific Name	Common Name
<b>Potentilla argentea</b>	<b>Hoary Cinquefoil</b>
<b>Potentilla crantzii</b>	<b>Alpine Cinquefoil</b>
<i>Potentilla erecta</i>	Tormentil
<b>Potentilla neumanniana</b>	<b>Spring Cinquefoil</b>
<i>Potentilla reptans</i>	Creeping Cinquefoil
<i>Potentilla sterilis</i>	Barren Strawberry
<i>Poterium sanguisorba</i>	Salad Burnet
<i>Primula veris</i>	Cowslip
<i>Primula vulgaris</i>	Primrose
<i>Prunella vulgaris</i>	Selfheal
<i>Pulicaria dysenterica</i>	Common Fleabane
<i>Ranunculus bulbosus</i>	Bulbous Buttercup
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Rhinanthus minor</i>	Hay Rattle
<i>Rumex acetosella</i>	Sheep's sorrel
<i>Sagina nodosa</i>	Knotted Pearlwort
<i>Sanguisorba officinalis</i>	Great Burnet
<i>Saxifraga granulata</i>	Meadow Saxifrage
<i>Saxifraga tridactylites</i>	Rue-leaved saxifrage
<i>Scabiosa columbaria</i>	Small Scabious
<i>Scorzoneroide autumnalis</i>	Autumn Hawkbit
<i>Scutellaria galericulata</i>	Skullcap
<i>Sedum acre</i>	Biting Stonecrop
<i>Sedum anglicum</i>	English Stonecrop
<i>Senecio aquaticus</i>	Marsh Ragwort
<i>Senecio erucifolius</i>	Hoary Ragwort
<i>Serratula tinctoria</i>	Saw-wort
<b>Silaum silaus</b>	<b>Pepper-saxifrage</b>
<i>Silene flos-cuculi</i>	Ragged Robin
<i>Solidago virgaurea</i>	Goldenrod
<i>Stachys palustris</i>	Marsh Woundwort
<i>Stellaria alsine</i>	Bog Stitchwort
<i>Stellaria graminea</i>	Lesser Stitchwort
<b>Stellaria palustris</b>	<b>Marsh Stitchwort</b>
<i>Succissa pratensis</i>	Devil's-bit Scabious
<i>Teucrium scorodonia</i>	Wood Sage
<b>Thalictrum flavum</b>	<b>Common Meadow-rue</b>

Scoring	
All species score 1 with the exception of those species in bold (Derbyshire Vascular Plant Red Data List Species - 2009) which score 2.	
Scientific Name	Common Name
<i>Thalictrum minus</i>	Lesser Meadow-rue
<i>Thymus polytrichus</i>	Wild Thyme
<i>Tragopogon pratensis</i>	Goat's-beard
<i>Trifolium arvense</i>	Hare's-foot Clover
<i>Trifolium campestre</i>	Hop Trefoil
<i>Trifolium medium</i>	Zigzag Clover
<i>Trifolium micranthum</i>	Slender Trefoil
<i>Trifolium striatum</i>	Knotted Clover
<b><i>Trifolium subterranean</i></b>	<b>Subterranean Clover</b>
<i>Triglochin palustris</i>	Marsh Arrowgrass
<i>Trisetum flavescens</i>	Yellow Oat Grass
<b><i>Trollius europaeus</i></b>	<b>Globe Flower</b>
<i>Vaccinium myrtillus</i>	Bilberry
<i>Valeriana officinalis</i>	Common Valerian
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Veronica officinalis</i>	Heath Speedwell
<b><i>Veronica scutellata</i></b>	<b>Marsh Speedwell</b>
<i>Vicia cracca</i>	Tufted Vetch
<i>Vicia sativa ssp. sativa</i>	Common Vetch
<i>Vicia sativa subsp. nigra</i>	Narrow-leaved Vetch
<i>Viola canina</i>	Heath Dog-violet
<i>Viola hirta</i>	Hairy Violet
<i>Viola lutea</i>	Mountain Pansy
<i>Viola reichenbachiana</i>	Early Dog-violet
<i>Viola riviniana</i>	Common Dog-violet



## Standing Water Draw Down Zone Assessment Criteria

The following seasonal drawdown assessment text is taken from DWT (2003, revised 2011). This guide applies to sites that hold standing water due to prolonged or seasonal flooding or standing water sites where the water table levels fluctuate.

“Stw4 A standing water site that supports seasonal drawdown zones and vegetation of open habitat characterised by:

(a) the presence of at least 5 species listed in ‘Table 4d’ (from the assessment guide)

(b) OR one of the following NVC communities:

OV28 *Agrostis stolonifera* – *Ranunculus repens*

OV29 *Alopecurus geniculatus* – *Rorippa palustris*

OV30 *Bidens tripartita* – *Persicaria amphibia*

OV31 *Rorippa palustris* – *Gnaphalium uliginosum*

OV32 *Myosotis scorpioides* – *Ranunculus sceleratus*

OV35 *Lythrum portula* – *Ranunculus flammula*

MG13 *Agrostis stolonifera* – *Alopecurus geniculatus* grassland”

“Table 4d: Indicative species list for drawdown zones and vegetation of inundation open habitat in Derbyshire taken from DWT (2003, revised 2011)”

Scoring	
All species score 1 with the exception of those species in bold (Derbyshire Vascular Plant Red Data List Species - 2009) which score 2.	
<ul style="list-style-type: none"> <li>Species marked with an astrix are specialist species of these conditions</li> </ul>	
Scientific Name	Common Name
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alisma plantago aquatica</i>	Water-plantain
<b><i>Alopecurus aequalis</i></b>	<b>Orange Foxtail*</b>
<i>Alopecurus geniculatus</i>	Marsh Foxtail
<i>Bidens cernua</i>	Nodding Bur-marigold
<i>Bidens tripartita</i>	Trifid Bur-marigold
<b><i>Blysmus compressus</i></b>	<b>Flat Sedge</b>
<i>Callitriche spp.</i>	Water-starworts
<i>Chenopodium polyspermum</i>	Many-seeded Goosefoot*
<i>Chenopodium rubrum</i>	Red Goosefoot
<b><i>Eleocharis acicularis</i></b>	<b>Needle Spike-rush*</b>
<i>Eleocharis palustris</i>	Common Spike-rush
<i>Glyceria declinata</i>	Small Sweet-grass
<i>Glyceria fluitans</i>	Floating Sweet-grass
<i>Glyceria notata</i>	Plicate Sweet-grass
<i>Gnaphalium uliginosum</i>	Marsh Cudweed
<i>Hydrocotyle vulgaris</i>	Marsh Pennywort
<i>Isolepis setacea</i>	Bristle Club-rush
<i>Juncus articulatus</i>	Jointed Rush
<i>Juncus bufonius</i>	Toad Rush
<i>Juncus bulbosus</i>	Bulbous Rush

Scoring	
All species score 1 with the exception of those species in bold (Derbyshire Vascular Plant Red Data List Species - 2009) which score 2.	
<ul style="list-style-type: none"> <li>• Species marked with an astrix are specialist species of these conditions</li> </ul>	
Scientific Name	Common Name
<b><i>Limosella aquatica</i></b>	<b>Mudwort*</b>
<i>Littorella uniflora</i>	Shoreweed*
<i>Lycopus europaeus</i>	Gypsywort
<i>Lysimachia nummularia</i>	Creeping-Jenny
<i>Lythrum portula</i>	Water Purslane*
<i>Mentha aquatica</i>	Water Mint
<i>Myosotis spp.</i>	Water Forget-me-nots
<i>Nasturtium microphyllum</i>	Narrow-fruited Water-cress
<i>Persicaria amphibia</i>	Amphibious Bistort
<i>Persicaria hydropiper</i>	Water-pepper
<i>Persicaria lapathifolia</i>	Pale Persicaria
<i>Persicaria maculosa</i>	Redshank
<b><i>Persicaria minor</i></b>	<b>Small Water-pepper*</b>
<i>Potentilla anserina</i>	Silverweed
<i>Pulicaria dysenterica</i>	Common Fleabane
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Ranunculus hederaceus</i>	Ivy-leaved Crowfoot
<i>Ranunculus omiophyllum</i>	Round-leaved Crowfoot
<i>Ranunculus sceleratus</i>	Celery-leaved Buttercup
<i>Ranunculus trichophyllum</i>	Thread-leaved Water-crowfoot
<i>Rorippa palustris</i>	Marsh Yellow-cress
<i>Rorippa sylvestris</i>	Creeping Yellow-cress
<i>Rumex maritimus</i>	Golden Dock*
<i>Rumex palustris</i>	Marsh Dock*
<i>Stachys palustris</i>	Marsh woundwort
<b><i>Stellaria palustris</i></b>	<b>Marsh Stitchwort</b>
<i>Stellaria uliginosum</i>	Bog Stitchwort
<i>Tripleurospermum inodorum</i>	Scentless Mayweed
<b><i>Veronica scutellata</i></b>	<b>Marsh Speedwell</b>

## **Appendix D      Grassland Species List**

Plant Species		Area																
		Markeaton and Kingsway Junction (Figure 1)									Little Eaton Junction (Figure 2)							
Scientific name	English name	1A	1B	1C	1D	1E	1F	1I	1K	1L	2A	2B	2C	2D	2E	2H	2J	2k
<i>Achillea millefolium</i>	Yarrow				R									✓				R
<i>Aegopodium podagraria</i>	Ground-elder													✓				
<i>Agropyron repens</i>	Common couch					O											LD	
<i>Agrostis capillaris</i>	Common Bent			O		LF		✓			R				F	LD		O
<i>Agrostis stolonifera</i>	Creeping Bent	F	O	O		O		✓			R				A		LD	
<i>Alliaria petiolata</i>	Garlic Mustard												R					
<i>Alnus glutinosa</i>	Alder																	
<i>Alopecurus geniculatus</i>	Marsh Foxtail														O			
<i>Alopecurus pratensis</i>	Meadow Foxtail			O		O		✓		F		O		✓		F	A-LD	
<b><i>Angelica sylvestris</i></b>	<b>Wild Angelica</b>		R							R							R	
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass									O								
<i>Anthriscus sylvestris</i>	Cow Parsley			O	F			✓	✓									
<i>Arctium lappa</i>	Greater Burdock												R					
<i>Armoracia rusticana</i>	Horse-radish														R			
<i>Arrhenatherum elatius</i>	False Oat-grass	A	O	LF	D	F		✓	✓	F		O	O	✓		A		D
<i>Artemisia vulgaris</i>	Mugwort												R					
<i>Bellis perennis</i>	Daisy														F			
<i>Bromus hordeaceus</i>	Soft-Brome															R		
<i>Cardamine flexuosa</i>	Wavy Bitter-cress																O	
<i>Carex nigra</i>	Common Sedge									R								
<b><i>Centaurea nigra</i></b>	<b>Common Knapweed</b>		R		R	O		✓			✓							F
<i>Cerastium fontanum</i>	Common Mouse-ear		R	R	O			✓			✓			✓	R		O	
<i>Cerastium glomeratum</i>	Sticky Mouse-ear																	
<i>Chamerion angustifolium</i>	Rosebay Willowherb			LD				✓										
<i>Cirsium arvense</i>	Creeping Thistle				O	LF					✓	LF	O		LD			O
<i>Cirsium vulgare</i>	Spear Thistle														LD			

Plant Species		Area																
		Markeaton and Kingsway Junction (Figure 1)									Little Eaton Junction (Figure 2)							
Scientific name	English name	1A	1B	1C	1D	1E	1F	1I	1K	1L	2A	2B	2C	2D	2E	2H	2J	2k
<i>Conium maculatum</i>	Hemlock																	
<i>Convolvulus arvensis</i>	Field Bindweed		O															O
<i>Crassula helmsii</i>	New Zealand Pigmyweed														LD			
<i>Crataegus monogyna</i>	Hawthorn									✓								F
<i>Cynosurus cristatus</i>	Crested Dog's-tail		O-LF							R								
<i>Dactylis glomerata</i>	Cock's-foot		O	O	O	O	O		✓	O	✓	O	F	A	O	O	O	O
<b><i>Dactylorhiza fuchsii</i></b>	<b>Common Spotted-orchid</b>		<b>O-LF</b>														<b>R</b>	
<i>Deschampsia caespitosa</i>	Tufted Hair-Grass		R							R							A	
<i>Dipsacus fullonum</i>	Wild Teasel							✓										
<i>Elymus repens</i>	Couch grass			O				✓		O-LF			D					
<i>Epilobium hirsutum</i>	Great Willowherb	F								F								
<i>Epilobium montanum</i>	Broad-leaved Willowherb			R					✓									
<i>Equisetum arvense</i>	Field horsetail									LF							LF	
<i>Fallopia japonica</i>	Japanese Knotweed													LA				
<i>Schedonorus pratensis</i>	Meadow Fescue																R	
<i>Festuca rubra</i>	Red Fescue		D	LF	F	A		✓	✓		✓			A	LF			F
<b><i>Filipendula ulmaria</i></b>	<b>Meadowsweet</b>		<b>LD</b>												<b>LD</b>			
<i>Fraxinus excelsior</i>	Ash																	O
<i>Galium aparine</i>	Cleavers					O						O	D				R	
<i>Galium palustre</i>	Common Marsh bedstraw																O	
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill										R							
<i>Geranium molle</i>	Dove's-foot Crane's-bill										O				R			
<b><i>Geranium pratense</i></b>	<b>Meadow Crane's-bill</b>			<b>R</b>					<b>O</b>				<b>R</b>		<b>O</b>			
<i>Geum urbanum</i>	Wood Avens	O	R															
<i>Glyceria fluitans</i>	Floating Sweet-grass																LF	
<i>Heracleum sphondylium</i>	Hogweed			O	F		O		O			O	O	O		R		

Plant Species		Area																
		Markeaton and Kingsway Junction (Figure 1)									Little Eaton Junction (Figure 2)							
Scientific name	English name	1A	1B	1C	1D	1E	1F	1I	1K	1L	2A	2B	2C	2D	2E	2H	2J	2k
<i>Hesperis matronalis</i>	Dame's-violet												O					
<i>Holcus lanatus</i>	Yorkshire-fog	A	O	D	F	LF	F		D	D	O	O-LF			O	D	A	F
<i>Hypericum perforatum</i>	Perforate St John's-wort		R															
<i>Hypochaeris radicata</i>	Cats ear		R															
<i>Impatiens glandulifera</i>	Himalayan Balsam												F					
<i>Juncus effusus</i>	Soft-rush	F	O														F	
<i>Juncus inflexus</i>	Hard Rush									R								
<b><i>Lathyrus pratensis</i></b>	<b>Meadow Vetchling</b>		<b>O</b>			<b>LF</b>		<b>✓</b>										<b>O</b>
<b><i>Leucanthemum vulgare</i></b>	<b>Oxeye Daisy</b>		<b>LF</b>		<b>R</b>			<b>✓</b>			<b>D</b>					<b>R</b>		<b>LF</b>
<i>Lolium perenne</i>	Perennial Rye-grass	O	R	O	O	LF	D		O	O		F		O	R	O		R
<b><i>Lotus corniculatus</i></b>	<b>Common Bird's-foot-trefoil</b>								<b>O</b>									<b>O</b>
<i>Lupinus sp.</i>	Lupin sp.																	O
<i>Lythrum salicaria</i>	Purple-loosestrife																<b>LD</b>	
<i>Medicago lupulina</i>	Black Medick		R		R		O											
<i>Myosoton aquaticum</i>	Water Chickweed														O			
<b><i>Myosotis scorpioides</i></b>	<b>Water forget me not</b>														<b>O</b>			
<i>Phleum pratense</i>	Timothy															R		
<i>Helminthotheca echioides</i>	Bristly Oxtongue							R										
<i>Pilosella aurantiaca</i>	Fox-and-cubs					LF												
<b><i>Pimpinella saxifraga</i></b>	<b>Burnet-saxifrage</b>																	<b>O</b>
<i>Plantago lanceolata</i>	Ribwort Plantain		O-LF		O	O		<b>✓</b>	O		O				O-F			O
<i>Poa annua</i>	Annual Meadow-grass											R						
<i>Poa pratensis</i>	Smooth Meadow-grass	O	O	O	O	O	O	<b>✓</b>	O	O-LF	O	O	O	A	O-F	R	O	O
<i>Poa trivialis</i>	Rough Meadow-grass	O			O							O	O					
<i>Potentilla anserina</i>	Silverweed														O			

Plant Species		Area																
		Markeaton and Kingsway Junction (Figure 1)									Little Eaton Junction (Figure 2)							
Scientific name	English name	1A	1B	1C	1D	1E	1F	1I	1K	1L	2A	2B	2C	2D	2E	2H	2J	2k
<i>Potentilla reptans</i>	Creeping Cinquefoil					F	LF											
<b>Prunella vulgaris</b>	<b>Selfheal</b>		O	R														O
<i>Ranunculus acris</i>	Meadow Buttercup		O-LF	LF	O			✓	✓		✓			✓	A	R	R	O
<b>Ranunculus flammula</b>	<b>Lesser spearwort</b>																R	
<i>Ranunculus repens</i>	Creeping Buttercup				O		F				O	D			A		A	
<i>Reseda lutea</i>	Wild Mignonette										✓							
<i>Rosa canina</i>	Dog-rose		LF															
<i>Rubus fruticosus</i> agg.	Bramble	O	LF						O-LD									
<i>Rubus idaeus</i>	Raspberry								O-LD									
<i>Rumex acetosa</i>	Common Sorrel		R						✓									O
<i>Rumex conglomeratus</i>	Clustered Dock																O	
<i>Rumex obtusifolius</i>	Broad-leaved Dock										✓							
<i>Salix</i> sp.	Willow spp.		R							✓								
<i>Scrophularia auriculata</i>	Water Figwort																R	
<b>Senecio erucifolius</b>	<b>Hoary Ragwort</b>		F															
<i>Senecio jacobaea</i>	Common Ragwort	O													F			
<i>Senecio vulgaris</i>	Groundsel										✓							
<i>Sherardia arvensis</i>	Field Madder										✓							
<i>Silene vulgaris</i>	Bladder Champion																	R
<i>Sisymbrium altissimum</i>	Tall Rocket										✓							
<i>Stachys arvensis</i>	Field Woundwort							✓										
<i>Stachys sylvatica</i>	Hedge Woundwort		R															
<b>Stellaria alsine</b>	<b>Bog stitchwort</b>																R	
<i>Symphytum x uplandicum</i>	Russian Comfrey												O					
<i>Tanacetum vulgare</i>	Tansy							✓										

Plant Species		Area																
		Markeaton and Kingsway Junction (Figure 1)									Little Eaton Junction (Figure 2)							
Scientific name	English name	1A	1B	1C	1D	1E	1F	1I	1K	1L	2A	2B	2C	2D	2E	2H	2J	2k
<i>Taraxacum officinale</i>	Dandelion Agg.		LF			O	F											
<i>Torilis japonica</i>	Upright Hedge-parsley							✓										
<i>Tragopogon pratensis</i>	Goat's-beard		O	R	O				✓									O
<b><i>Trifolium medium</i></b>	<b>Zigzag Clover</b>		<b>LD</b>															<b>R</b>
<i>Trifolium pratense</i>	Red Clover			R	A		F		✓						O			
<i>Trifolium repens</i>	White Clover			R					✓					F				
<b><i>Trisetum flavescens</i></b>	<b>Yellow Oat-grass</b>																	<b>O</b>
<i>Tussilago farfara</i>	Colt's-foot		R															
<i>Urtica dioica</i>	Common Nettle										✓	LD	LD	A	LD			
<b><i>Veronica chamaedrys</i></b>	<b>Germander Speedwell</b>																	<b>R</b>
<b><i>Vicia cracca</i></b>	<b>Tufted Vetch</b>				<b>R</b>					<b>LF</b>								
<i>Vicia hirsuta</i>	Hairy Tare		O							✓								R
<b><i>Vicia sativa ssp nigra</i></b>	<b>Narrow leaved vetch</b>		<b>O</b>															
<b><i>Vicia sativa ssp sativa</i></b>	<b>Common Vetch</b>	<b>O</b>			<b>R</b>			✓		<b>O</b>	✓	<b>R</b>				<b>R</b>		
<i>Vicia sepium</i>	Bush Vetch				O											R		R
<i>Vicia tetrasperma</i>	Smooth Tare	O	O							LF								O
TOTAL NUMBER OF LOCAL WILDLIFE SITE GRASSLAND INDICATOR SPECIES (all score 1 in Table 2 in Derbyshire Wildlife Trust 2003 rev 2011) (i.e. Species shown in red in the table)		1	10	2	4	2	0	4	2	3	3	1	1	0	3	2	4	8



D: Dominant, A: Abundant, F: Frequent, O: Occasional; or R: Rare  
✓ Present (No DAFOR score)





## **Appendix E      Plant List for Other Habitats**

Scientific name	Common name	1G	1H	1J	2F	2I
Acer campestre	Field maple			✓		
Acer platanoides	Norway maple			✓		
Acer pseudoplatanus	Sycamore			✓		O
<b>Agrostis stolonifera</b>	<b>Creeping Bent</b>				<b>LF</b>	
Alnus glutinosa	Common Alder			✓		R
<b>Alopecurus geniculatus</b>	<b>Marsh Foxtail</b>				<b>LF</b>	
Anthriscus sylvestris	Cow Parsley		✓			
Arrhenatherum elatius	False Oat-grass		✓		LA	
Artemisia vulgaris	Mugwort		✓			
Chamerion angustifolium	Rosebay Willowherb		O			
Cirsium vulgare	Spear Thistle				R	
Conium maculatum	Hemlock		✓		O	
Cornus sanguinea	Dogwood	✓				
Corylus avellana	Hazel					D
Crassula helmsii	New Zealand Pigmyweed				F-LD	
Crataegus monogyna	Hawthorn	✓		✓		R
Dactylis glomerata	Cock's-foot		✓			
Dryopteris filix-mas	Male-fern		✓			
Epilobium hirsutum	Great Willowherb		✓	✓		
Fraxinus excelsior	Ash	✓		✓		O
Galium aparine	Cleavers				O	D
Hedera helix	Ivy	✓				
Heracleum sphondylium	Hogweed		✓		O-LD	D
Holcus lanatus	Yorkshire-fog				O	
Impatiens glandulifera	Himalayan Balsam	A		✓		
Iris pseudacorus	Yellow Iris				LD	
<b>Juncus bufonius</b>	<b>Toad Rush</b>				<b>LF</b>	
Lolium perenne	Perennial Rye-grass			✓		
<b>Myosoton aquaticum</b>	<b>Water Chickweed</b>				<b>O</b>	
<b>Myosctis scorpioides</b>	<b>Water forget me not</b>				<b>O</b>	
Phleum pratensis	Timothy		O			
Poa trivialis	Rough Meadow-grass		✓		O	D
Persicaris amphibia	<b>Amphibious bistort</b>				<b>O</b>	
Populus spp.	Poplar species	✓		✓		
<b>Potentilla anserina</b>	<b>Silverweed</b>				<b>O</b>	
Prunus spp.	Prunus species			✓		O
Quercus robur	Pedunculate Oak	✓		✓		
Ranunculus repens	Creeping Buttercup				O	
<b>Ranunculus scleratus</b>	<b>Celery leaved buttercup</b>				<b>R</b>	
Rosa canina agg	Dog-rose			✓		
Rubus fruticosus agg.	Bramble	✓	D	✓		
Rumex obtusifolius	Broad-leaved Dock		✓			
Salix fragilis	Crack-willow	✓				
Salix spp.	Willow spp.	✓	✓			
Salix viminalis	Osier			✓		
Sambucus nigra	Elder	✓				R
Scrophularia auriculata	Water Figwort				O	
Senecio jacobaea	Common ragwort				O	
Silene dioica	Red Campion		✓		O	
Helmithotheca echioides	Prickly Sow-thistle		✓			
Stachys sylvatica	Hedge Woundwort					D
Urtica dioica	Common Nettle		D	✓	D	D
<b>TOTAL NUMBER OF LOCAL WILDLIFE SITE DRAWDOWN INDICATOR SPECIES (all score 1 in Table 4D in Derbyshire Wildlife Trust 2003 rev 2011)</b>					8	

## **Appendix F      Survey Photos**

Area	Plate
1A	
1B	

Area	Plate
1C	
1D	

Area	Plate
1F	 A photograph showing a person riding a green utility vehicle with a white trailer on a gravel path. The path is on the left, and a large, well-maintained green field extends to the right. In the background, there is a dense line of trees under a clear blue sky.
1B/1G	 A photograph of a dense thicket of green trees and bushes. The vegetation is lush and vibrant green, filling the frame. The sky is visible in the upper portion, showing some light clouds.



**Area**      **Plate**

1I



1K





Area	Plate
1L	
2A	







Area	Plate
2B	 <p>The top photograph shows a wide field of green vegetation, possibly a field of wildflowers or weeds, under a blue sky with scattered clouds. In the background, a white building with a blue logo is visible behind a fence. The bottom photograph shows a dirt path leading through a field of green vegetation. A large, light-colored rock is visible on the right side of the path. In the background, there are trees and a structure, possibly a bridge or overpass.</p>



Area	Plate
2C	 <p>The top photograph shows a person wearing a bright yellow-green high-visibility vest and a black backpack, standing in a field of tall, dense green grass. In the background, a concrete bridge spans across the field, with trees and utility poles visible under a blue sky with scattered clouds. The bottom photograph is a closer view of the same field, showing the texture and density of the tall grasses and some white flowers.</p>

Area	Plate
2D	
2E	

Area	Plate
2F	
2H	

Area	Plate
2I	
2J	

Area	Plate
2K	
Hedge 1	
Hedge 2	No photo
Hedge 3	No photo

Area	Plate
Hedge 4	
Hedge 5	
Hedge 6	No photo

Area	Plate
Hedge 7	



## **Appendix G      Hedgerow Survey Results**

Number	Grid reference (start – finish)	Dimensions and planting	Adjacent land-use and scoring features	Average woody species in 30 m samples	Presence of trees	% gap	Scoring species in Hedge bottom flora	Species-rich	Hedgerow regulations assessment
H1	<b>SK 36640, 40273 to 36762, 40336</b>	103 m long and 5 m< high  Width 4-5m  Single line  Dry ditch  No end connections	Arable	Two species: dominant common hawthorn, elderberry	Two mature pedunculate oak	<1% (4m)	None	No	<b>Not important</b>
H2	<b>SK 36040, 38765 to 36607 39764</b>	48 m long and 4m < high.  Width 3-4 m Double line  One end connection. Poorly maintained with numerous gaps <10 m wide	Arable	Three species: dominant common hawthorn, elderberry and ash	One semi-mature ash	Zero	None	No	<b>Not important</b>
H3	<b>SK 36199 40075 to 36358, 40026</b>	125 m long, 1-2 m high.  1-2 m wide recently laid  No end connections, adjacent to track/ road	Road and improved grassland	Two species: dominant common hawthorn, elderberry	None	None	None	No	<b>Not important</b>
H4	<b>SK 36640, 40273 to 36743, 40322</b>	128 m long and 5 m< high.	Arable and broad-leaved woodland plantation.	Two species: dominant common hawthorn, elderberry	One mature lime standard and two	Zero	None	No	<b>Not important</b>

Number	Grid reference (start – finish)	Dimensions and planting	Adjacent land-use and scoring features	Average woody species in 30 m samples	Presence of trees	% gap	Scoring species in Hedge bottom flora	Species-rich	Hedgerow regulations assessment
		Width 3-4 m Two end connections			semi-mature ash standards				
H5	<b>SK 36526, 40133 to 36659, 40198</b>	155 m long Two end connections, adjacent to track with brook flowing below.	Semi natural grassland and broad-leaved woodland plantation. Parallel dry ditch.	Species noted in hedge are crack willow, blackthorn, grey willow, common hawthorn, elderberry	Three willows	Zero	None	No	<b>Not important</b>
H6	<b>SK 36502, 40055 to 36603, 39962</b>	124 m long 2-3 m high, 3 m wide 2 connecting hedges	Improved grassland and stream	dominant ash, elder, oak, and blackthorn	Two mature ash trees	15 m	None	No (sufficient scoring species, but insufficient other scoring features)	<b>Not important</b>
H7	<b>SK 36640, 40273 to 36659, 40198</b>	79 m long and 5 m< high. Width 3-4 m Two end connections.	Arable and broad-leaved woodland plantation.	Three species: dominant common hawthorn, elderberry and bramble	One ash tree	Zero	None	No	<b>Not important</b>