

Kingsmere Ecological Monitoring  
Report 2012

Countryside Properties  
(Bicester) plc

August 2012

# Kingsmere Ecological Monitoring Report

## Countryside Properties (Bicester) plc

August 2012

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## SUMMARY

1. Terence O'Rourke Ltd were appointed by Countryside Properties (Bicester) plc to produce an Ecological Management Plan (EMP) in February 2009 for the land surrounding Whitelands Farm, south-west of Bicester, Oxfordshire (Grid reference SP 570 219).
2. To assess the success of the EMP targeted monitoring surveys for specific habitats are to be undertaken annually along with targeted faunal surveys once every two years.
3. Vegetation surveys of the translocated calcareous grassland, the woodlands and the Pingle Brook were undertaken in 2012.
4. Fewer typical calcareous grassland species were present within the translocated grassland in 2012 than in 2011, and those that were recorded were less abundant than they had been in 2011. Species such as false oat-grass were also found to be more abundant than in 2011. This is indicative of these competitive grass species having gained a stronger foothold and essentially starting to out-compete the finer, more desirable calcareous grassland species. It can be concluded from these results that it is imperative that the mowing regime as prescribed in the EMP is implemented. The EMP specifies that it should be mown five times a year in May, June, July, August and September. All arisings should be removed from the site.
5. Similarly to 2011, the woodlands were generally found to be relatively species-poor and lack the structural diversity associated with overall biodiversity within woodland habitats. However, some tree clearance, tree planting and creation of paths has been undertaken and an improvement in the structure and species diversity would be expected in five to ten years time.
6. The survey of the Pingle Brook supported the results of the 2011 survey that the channel is prone to choking by one or two dominant species. Some clearance of sections of the channel has been undertaken in accordance with recommendations from the 2011 monitoring. This should continue to encourage floral diversity in this habitat.
7. The 2012 ecological monitoring visit confirmed that the wetland, hedgerows and informal grasslands had been seeded and / or planted. However, it is recommended that the quadrats and detailed monitoring commences in 2013 due to the early stages in the development of these habitats in 2012.

## 1.0 INTRODUCTION

Terence O'Rourke Ltd were appointed by Countryside Properties (Bicester) plc to produce an Ecological Management Plan (EMP) in February 2009 for the land surrounding Whitelands Farm, south-west of Bicester, Oxfordshire (Grid reference: SP 570 219). The site is currently being developed into 1,585 new homes, a primary and secondary school, a mix-use local centre and public green space. The EMP outlines the principles, aims and key requirements for managing the biodiversity of this site over a ten year period (2009 – 2019).

Prior to development the site mostly comprised intensively used arable farm land, generally thought to be of low biodiversity value. Habitats present included calcareous grassland which is a UK Biodiversity Action Plan (BAP) habitat, species rich (UK Habitat Action Plan (HAP)) and species poor hedgerows, woodland including three copses and one wet-woodland which are local and UK BAP habitats, and the Pingle Brook which forms part of the aquatic HAP of the Cherwell BAP. The EMP was aimed at improving the management of these habitats and enhancing them for wildlife as well as creating new wildlife habitats within the site.

The EMP aims included:

- To improve the structure and thus the biodiversity value of the three copses and wet woodland.
- To successfully re-establish the calcareous grassland and provide a management regime which results in herb-rich calcareous grassland.
- To enhance the site for birds, bats and invertebrates through the provision roosting and nesting opportunities in the form of purpose built bird, bat and insect boxes erected on mature trees within the hedgerows and woodland habitats. And to provide enhanced foraging sites through the planting of native species and their management.

To assess the success of the EMP and to determine any changes required to the habitat management regimes, specific habitats and fauna species will be monitored over a ten year period. This report provides details of the 2012 monitoring surveys which included vegetation surveys of the translocated calcareous grassland, the woodlands and the Pingle Brook.

Section 2 of the report details the methodologies adopted for the various surveys that were conducted whilst Section 3 provides an account of the survey results. A summary of the survey results and any recommendations for changes to the current management have been made in Section 4.

## 2.0 METHODOLOGY

### 2.1 *Calcareous grassland*

Six 2 by 2 metre quadrats were established within the translocation calcareous grassland on the 12<sup>th</sup> July 2011. A description of the locations of these was taken and their four corners were marked with yellow plastic pegs.

The six quadrats were revisited on the 18<sup>th</sup> July 2012 and vegetation in each quadrat was recorded using the Domin scale:

Cover of	91-100% is recorded as Domin	10
	76-90%	9
	51-75%	8
	34-50%	7
	26-33%	6
	11-25%	5
	4-10%	4
	<4% with many individuals	3
	<4% with several individuals	2
	<4% with few individuals	1

### 2.2 *Woodlands*

Four 10 by 10 metre quadrats were established within the woodlands, with one quadrat in each of the three copses and one in the wet woodland. The four corners of each quadrat were marked by spraying red spray on vegetation on or near to each corner. Photographs were taken from two opposite corners of each woodland quadrat as depicted on the plans provided as Appendix III to this report. Vegetation was recorded using the Domin scale as described above in 2.1.1.

### 2.3 *Pingle Brook*

A series of five fixed photography points were established along the Pingle Brook and a species list was compiled during a walkover survey of its length. Scores of abundance were allocated to each species using the DAFOR scale:

D	Dominant
A	Abundant
F	Frequent
O	Occasional
R	Rare
L	Local (used as a prefix to any of the above).

## 3.0 RESULTS

### 3.1 *Calcareous grassland*

Species recorded and their abundances within each quadrat are presented in Table 1 whilst a general description of the grassland, including some comparison to the results of the 2011 survey, is presented below.

Overall the grassland was of a similar nature to that described in 2011, and was of a coarse, tussocky nature with the average sward height being twenty to thirty centimetres in all quadrats. False oat-grass (*Arrhenatherum elatius*) was the only constant species throughout the six quadrats in 2012, although the other constants from 2011, cock's-foot (*Dactylis glomerata*), red fescue (*Festuca rubra*) and lady's bedstraw (*Galium verum*), continue to be the other most prominent species within the grassland sward.

A number of species which are associated with calcareous grassland which were present during the 2011 survey were not recorded during the 2012 survey. These include yarrow (*Achillea millefolium*), black knapweed (*Centaurea nigra*), glaucous sedge (*Carex flacca*), common bird's-foot trefoil (*Lotus corniculatus*), burnet saxifrage (*Pimpinella saxifraga*), hoary plantain (*Plantago media*) and red clover (*Trifolium pratense*). It is worth noting that these species were still present within the wider translocated grassland, but their absence from all six quadrats indicates a significant decline in these species.

A number of species were recorded in 2012 which were not previously recorded in 2011. These included some desirable species such as ox-eye daisy (*Leucanthemum vulgare*), sweet vernal-grass (*Anthoxanthum odoratum*) and common bent (*Agrostis capillaris*) and, perhaps more significantly, some highly competitive species such as common couch (*Elytrigia repens*) and common nettle (*Urtica dioica*).

The photographs which were taken from the north-western corner of each quadrat are presented in Appendix II.

**Table 1: Species recorded within each quadrat and their Domin scores**

Species		Quadrat						Frequency class	Domin range	2011 → 2012
Common name	Scientific name	1	2	3	4	5	6			
Common bent	<i>Agrostis capillaris</i>	-	2	2	-	2	-	III	2	*
Sweet vernal-grass	<i>Anthoxanthum odoratum</i>	-	-	-	-	2	-	I	2	*
False oat-grass	<i>Arrhenatherum elatius</i>	8	8	9	5	10	5	VI	5-10	↑
Upright brome	<i>Bromopsis erecta</i>	4	-	-	-	-	-	I	4	↓
Soft brome	<i>Bromus hordaceus</i>	-	-	2	-	-	-	I	2	*
Creeping thistle	<i>Cirsium arvense</i>	1	-	-	-	-	-	I	1	↔
Spear thistle	<i>Cirsium vulgare</i>	-	-	2	-	-	-	I	2	*
Field bindweed	<i>Convolvulus arvensis</i>	3	-	-	-	-	-	I	3	↔
Cock's-foot	<i>Dactylis glomerata</i>	3	3	3	4	-	-	IV	3-4	↔
Common couch	<i>Elytrigia repens</i>	-	-	-	-	2	8	II	2-8	*
Red fescue	<i>Festuca rubra</i>	7	5	4	7	-	6	V	4-7	↑
Cleavers	<i>Galium aparine</i>	-	-	-	-	1	-	I	1	*
Lady's bedstraw	<i>Galium verum</i>	2	-	-	4	2	3	IV	2-4	↓
Yorkshire-fog	<i>Holcus lanatus</i>	2	2	-	-	-	-	II	2	↔
Ox-eye daisy	<i>Leucanthemum vulgare</i>	-	2	-	-	-	-	I	2	*
Common poppy	<i>Papaver rhoeas</i>	-	-	-	-	1	-	I	1	*
Timothy	<i>Phleum pratense</i>	-	2	-	2	-	-	II	2	*



Species		Quadrat						Frequency class	Domin range	2011 → 2012
Common name	Scientific name	1	2	3	4	5	6			
Ribwort plantain	<i>Plantago lanecolata</i>	-	3	-	1	-	1	II	1-3	*
Creeping cinquefoil	<i>Potentilla reptans</i>	-	-	2	-	-	-	I	2	↔
Common sorrel	<i>Rumex acetosa</i>	-	-	-	-	-	2	I	2	↔
Curled dock	<i>Rumex crispus</i>	-	-	-	-	-	1	I	1	*
Salad burnet	<i>Sanguisorba minor</i>	2	-	-	-	-	-	I	2	↓
Smooth sow-thistle	<i>Sonchus oleraceus</i>	-	2	-	-	-	-	I	2	*
Common nettle	<i>Urtica dioica</i>	-	-	3	-	1	-	II	1-3	*

#### Key

- ↔ Similar frequency and abundance to 2011  
 ↑ An increased frequency and abundance compared to 2011  
 ↓ A decreased frequency and abundance compared to 2011  
 \* Not previously recorded

### 3.2 Woodlands

Tables 2 to 5 present the results of the woodland monitoring from both 2011 and 2012. These show that the vegetation was similar to that recorded in 2011 in all three dry woodlands. However, some work had evidently been undertaken in woodlands 2 and 3. This included some thinning of the understorey in both woodlands, creation of pathways through woodland 3 and planting of native shrubs around the boundaries of woodland 3. It is also worth noting that some of the trees that had been sprayed with red paint to mark the quadrat boundaries had been removed.

The vegetation around the margins of the wet woodland had grown considerably since 2011 with species such as great willowherb (*Epilobium hirsutum*) and spear thistle (*Cirsium vulgare*) being two of the most abundant species. A decline in some of the wetland flora such as fool's watercress (*Apium nodiflorum*) and water mint (*Mentha aquatica*) was observed and this is likely to relate to the increase in some ruderal species.

**Table 2: Species recorded in the woodland 1 quadrat and relevant Domin scores**

Species		Domin score	
Common name	Scientific name	2011	2012
<b>Canopy</b>			
Sycamore	<i>Acer pseudoplatanus</i>	4	4
Horse chestnut	<i>Aesculus hippocastanum</i>	5	3
Ash	<i>Fraxinus excelsior</i>	5	5
<b>Understorey</b>			
Sycamore saplings	<i>Acer pseudoplatanus</i>	3	2
Hawthorn	<i>Crataegus monogyna</i>	2	2
English elm	<i>Ulmus procera</i>	5	5
<b>Field layer / ground flora</b>			
Garlic mustard	<i>Alliaria petiolata</i>	4	2
Cow parsley	<i>Anthriscus sylvestris</i>	4	4
Lord's and ladies	<i>Arum maculatum</i>	1	-
Hairy brome	<i>Bromus ramosus</i>	2	2
Cleavers	<i>Galium aparine</i>		5
Herb-Robert	<i>Geranium robertianum</i>	5	6
Ivy	<i>Hedera helix</i>	10	10
Bramble	<i>Rubus fruticosus</i> agg.	4	-
Hedge woundwort	<i>Stachys sylvatica</i>	2	3
Common nettle	<i>Urtica dioica</i>	-	4

**Table 3: Species recorded in the woodland 2 quadrat and relevant Domin scores**

<b>Species</b>		<b>Domin scores</b>	
<b>Common name</b>	<b>Scientific name</b>	<b>2011</b>	<b>2012</b>
<b>Canopy</b>			
Sycamore	<i>Acer pseudoplatanus</i>	4	4
Horse chestnut	<i>Aesculus hippocastanum</i>	7	4
<b>Understorey</b>			
Horse chestnut sapling	<i>Aesculus hippocastanum</i>	-	2
Hawthorn	<i>Crataegus monogyna</i>	4	4
Ash saplings	<i>Fraxinus excelsior</i>	-	3
Privet	<i>Ligustrum vulgare</i>	5	3
Elder	<i>Sambucus nigra</i>	4	-
English elm	<i>Ulmus procera</i>	4	1
<b>Field layer / ground flora</b>			
Garlic mustard	<i>Alliaria petiolata</i>	4	4
Cow parsley	<i>Anthriscus sylvestris</i>	4	4
Hairy brome	<i>Bromus ramosus</i>	1	1
Ash saplings	<i>Fraxinus excelsior</i>	1	-
Cleavers	<i>Galium aparine</i>	4	6
Herb-Robert	<i>Geranium robertianum</i>	5	6
Ivy	<i>Hedera helix</i>	10	6
Bramble	<i>Rubus fruticosus</i> agg.	6	6
Hedge woundwort	<i>Stachys sylvatica</i>	4	5
Common nettle	<i>Urtica dioica</i>	4	4

**Table 4: Species recorded in the woodland 3 quadrat and relevant Domin scores**

<b>Species</b>		<b>Domin scores</b>	
<b>Common name</b>	<b>Scientific name</b>	<b>2011</b>	<b>2012</b>
<b><i>Canopy</i></b>			
Field maple	<i>Acer campestre</i>	4	4
Hawthorn	<i>Crataegus monogyna</i>	5	5
Ash	<i>Fraxinus excelsior</i>	4	4
English elm	<i>Ulmus procera</i>	4	4
<b><i>Understorey</i></b>			
Hawthorn	<i>Crataegus monogyna</i>	3	3
Ash saplings	<i>Fraxinus excelsior</i>	4	2
Privet	<i>Ligustrum vulgare</i>	-	1
Elder	<i>Sambucus nigra</i>	4	3
Wych elm	<i>Ulmus glabra</i>	-	3
English elm	<i>Ulmus procera</i>	4	3
<b><i>Field layer / ground flora</i></b>			
Garlic mustard	<i>Alliaria petiolata</i>	-	5
Cow parsley	<i>Anthriscus sylvestris</i>	3	4
Lord's and ladies	<i>Arum maculatum</i>	1	-
Hairy brome	<i>Bromus ramosus</i>	1	-
Cleavers	<i>Galium aparine</i>	-	3
Ground-ivy	<i>Glechoma hederacea</i>	10	10
Ivy	<i>Hedera helix</i>	10	10
Dog's mercury	<i>Mercurialis perennis</i>	4	4
Bramble	<i>Rubus fruticosus</i> <i>agg.</i>	-	6
Common nettle	<i>Urtica dioica</i>	9	10

**Table 5: Species recorded in the wet woodland quadrat and relevant Domin scores**

Species		Domin scores	
Common name	Scientific name	2011	2012
<b>Canopy</b>			
Ash	<i>Fraxinus excelsior</i>	4	4
Willow	<i>Salix sp.</i>	5	5
<b>Understorey</b>			
Hawthorn	<i>Crataegus monogyna</i>	4	4
Elder	<i>Sambucus nigra</i>	4	4
<b>Field layer / ground flora</b>			
Fool's watercress	<i>Apium nodiflorum</i>	1	-
Greater burdock	<i>Arctium lappa</i>	4	2
Mugwort	<i>Artemisia vulgaris</i>	-	4
Garlic mustard	<i>Alliaria petiolata</i>	4	-
Hedge bindweed	<i>Calystegia sepium</i>	-	5
Creeping thistle	<i>Cirsium arvense</i>	6	7
Spear thistle	<i>Cirsium vulgare</i>	-	8
Cock's-foot	<i>Dactylis glomerata</i>	-	4
Tufted hair-grass	<i>Deschampsia cespitosa</i>	1	1
American willowherb	<i>Epilobium adenocaulon</i>	-	3
Great willowherb	<i>Epilobium hirsutum</i>	6	6
Meadowsweet	<i>Fillipendula ulmaria</i>	4	2
Cleavers	<i>Galium aparine</i>	5	2
Hogweed	<i>Heracleum sphondylium</i>	4	-
Water mint	<i>Mentha aquatica</i>	1	-
Bristly ox-tongue	<i>Picris echioides</i>	4	2
Bramble	<i>Rubus fruticosus</i> agg.	5	3
Clustered dock	<i>Rumex conglomeratus</i>	-	3
Curled dock	<i>Rumex crispus</i>	1	3
Broad-leaved dock	<i>Rumex obtusifolius</i>	-	5
Willow sapling	<i>Salix sp/</i>	-	2
Water figwort	<i>Scrophularia auriculata</i>	-	3
Common ragwort	<i>Senecio jacobea</i>	-	7
Prickly sow-thistle	<i>Sonchus asper</i>	4	-
Hedge woundwort	<i>Stachys sylvatica</i>	-	3
Common nettle	<i>Urtica dioica</i>	4	3

### 3.3 Pingle Brook

The locations of the fixed photography points and the photographs that were taken at these points on the 12<sup>th</sup> July 2011 and 18<sup>th</sup> July 2012 are presented as Appendix IV whilst the DAFOR scores of plant species recorded in both 2011 and 2012 are presented below in Table 6. The species component was found to be very similar with a few additional species which are typical of this type of wetland habitat being recorded in 2012 indicating that as a whole the wetland flora is continuing to develop here following any disturbance caused during construction works in this area.

Stretches of the Pingle Brook had also evidently been cleared of water-cress (*Rorippa nasturtium-aquaticum*), and the channels in these areas mainly comprised bare ground. Other lengths of the Pingle Brook were still choked with this species, allowing little else to thrive here.

**Table 6: Species recorded within the channel of Pingle Brook and their DAFOR scores in 2011 and 2012**

Species		DAFOR score 2011	DAFOR score 2012
Common name	Scientific name		
Fool's watercress	<i>Apium nodiflorum</i>	-	LF
Great willowherb	<i>Epilobium hirsutum</i>	LA	LA
Floating sweet-grass	<i>Glyceria fluitans</i>	F/LD	F/LD
Hard rush	<i>Juncus inflexus</i>	LF	LF
Water mint	<i>Mentha aquatica</i>	LF	LF
Water forget-me-not	<i>Myosotis scorpioides</i>	LF	LF
Redshank	<i>Persicaria maculosa</i>	LF	LF
Creeping buttercup	<i>Ranunculus repens</i>	-	LF
Water-cress	<i>Rorippa nasturtium-aquaticum</i>	F/LD	LD
Water dock	<i>Rumex hydrolapathum</i>	-	O
Water figwort	<i>Scrophularia auriculata</i>	-	F
Branched bur-reed	<i>Sparganium erectum</i>	LF	LF
Blue water-speedwell	<i>Veronica anagallis-aquatica</i>	LO	-
Brooklime	<i>Veronica beccabunga</i>	-	LF

## **4.0 CONCLUSIONS AND RECOMMENDATIONS**

### **4.1 *Calcareous grassland***

The calcareous grassland was found to have decreased in quality since the 2011 survey. Several of the more desirable calcareous grassland plant species had disappeared from the quadrats, and a number of less desirable competitive grass species, such as common couch, were now present.

It is imperative that the mowing regime prescribed within the Kingsmere EMP should be implemented to prevent the coarse grassland species from out-competing the calcareous grassland species. In the absence of implementing sufficient management species such as burnet saxifrage and salad burnet are likely to be lost from this grassland in the next one or two years. It is therefore crucial to the success of the translocation that mowing is undertaken five times a year, at the end of May, June, July, August and September and that all arisings are removed.

### **4.2 *Woodlands***

The vegetation in the three dry woodlands was found to be very similar, both in terms of species component and abundance, to that recorded in 2011.

Some understorey clearance had taken place in woodlands 2 and 3, and native shrub species had been planted around the margins of woodland 3. A series of paths had also been created in woodland 3.

The results of the 2011 and 2012 woodland monitoring provides a useful baseline to assess future changes as further clearance of sycamore and ash seedlings takes place and more in the way of understorey planting takes place.

It is also worth noting that some trees that were used as marker posts for the permanent quadrats, and were marked using red spray paint, had been felled. All personnel undertaking woodland management should be made aware of the relevance of the red spray paint.

### **4.3 *Pingle Brook***

It is evident that the management of the channel vegetation which was recommended in the 2011 monitoring report has been implemented. This should continue, whereby dense vegetation is cleared from two ten metre sections of the channel every year. The results from the 2012 survey indicate that this management is proving successful with additional wetland species such as water dock and water figwort being recorded.

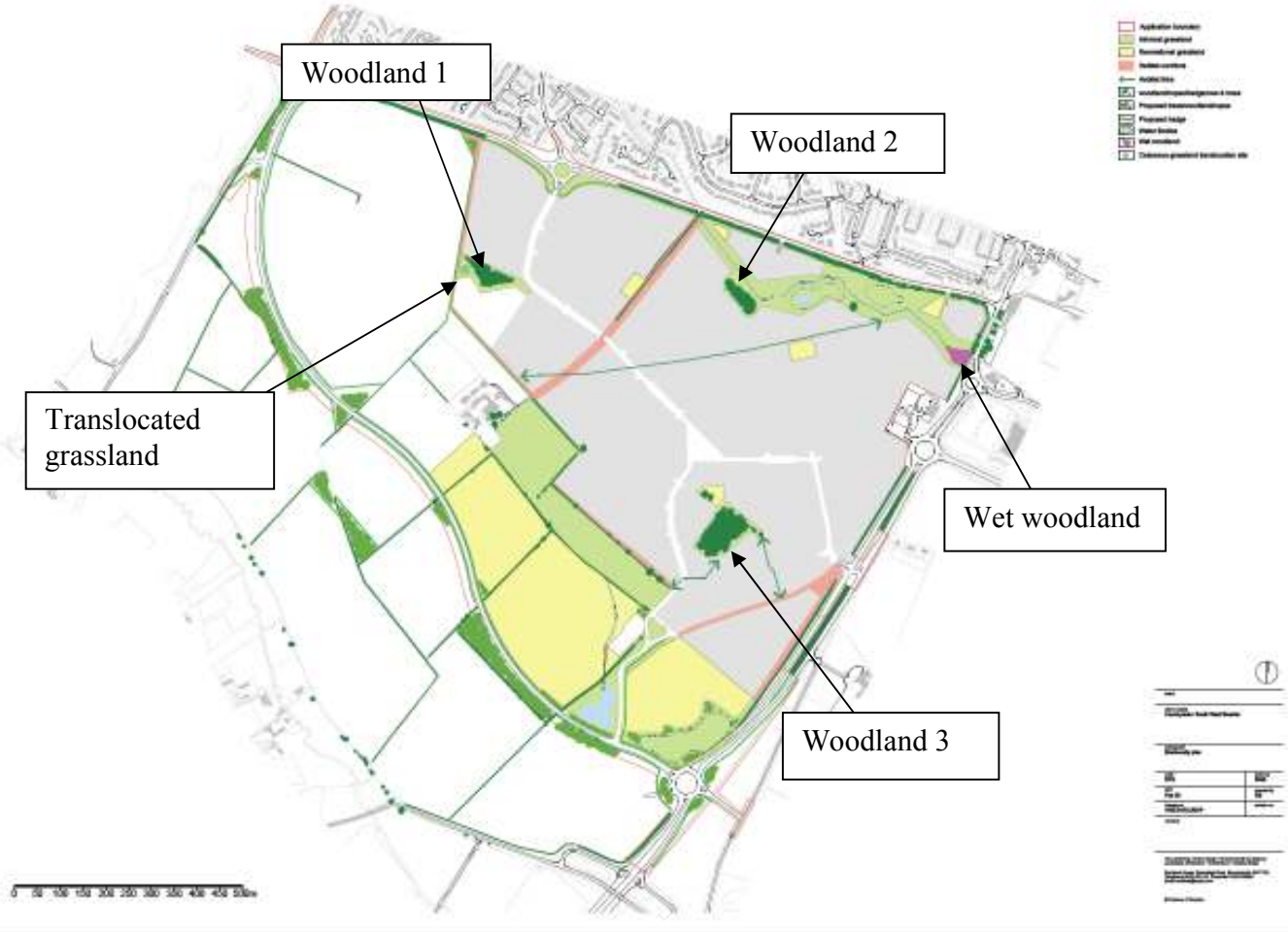
## **5.0 REFERENCES**

Terence O'Rourke, (2009), *Kingsmere Ecological Management Plan.*

Terence O'Rourke, (2011), *Kingsmere Ecological Monitoring report 2011.*



**APPENDIX I: Site plan**



## **APPENDIX II: Fixed point photographs of the calcareous grassland**



*Quadrat 1 - 2011*



*Quadrat 1 - 2012*



*Quadrat 2 - 2011*



*Quadrat 2 - 2012*



*Quadrat 3 – 2011*



*Quadrat 3 - 2012*



*Quadrat 4 – 2011*



*Quadrat 4 - 2012*



### APPENDIX III: Quadrat locations and photographs of woodland copses

*Woodland 1*



2011

2012



2011

2012



*Woodland 2*



*Woodland 3*

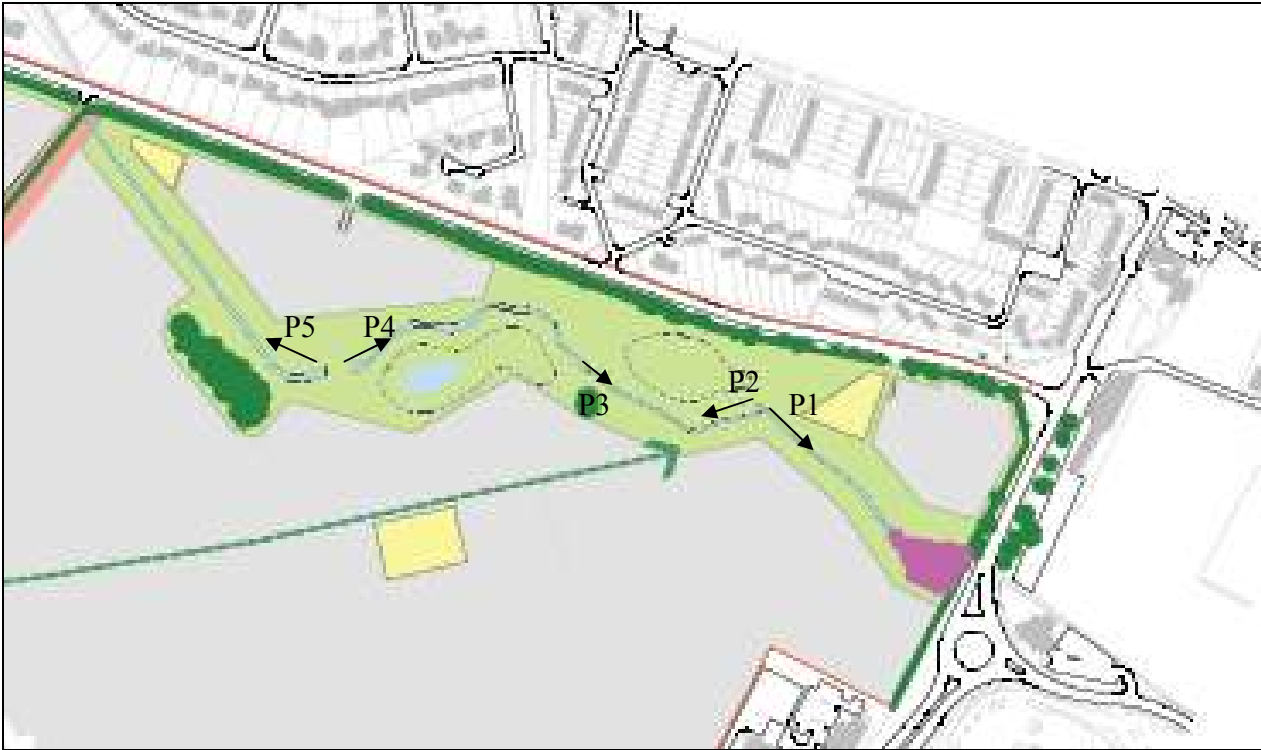




*Wet woodland*



**APPENDIX IV: Fixed point photography of Pingle Brook**







*Photo 1 – 2011*



*Photo 1 - 2012*



*Photo 2 -2011*



*Photo 2 - 2012*



*Photo 3 – 2011*



*Photo 3 - 2012*



*Photo 4 – 2011*



*Photo 4 - 2012*



*Photo 5 – 2011*



*Photo 5 - 2012*