global environmental solutions

Micheldever

Appedix 12-3:Botanical Survey and Assessment

SLR Ref : 402-03620-00004

June 2012

Version: Rev 1

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1.0 INTRODUCTION

This report presents the findings of a botanical survey undertaken at Micheldever in 2012.

It has been prepared by SLR Consulting Limited (SLR) on behalf of Clean Power Properties Limited to provide further information in support of a planning application and environmental impact assessment.

1.1 Background

The application site at Micheldever is wholly contained within the larger Micheldever Oil Terminal Site of Importance for Nature Conservation (SINC). This SINC was designated in 1992 by Hampshire County Council, following botanical survey, due to the presence of calcareous grassland over formerly exposed chalk substrate. A copy of the designation is presented in Appendix 1.

Micheldever Oil Terminal SINC measures 12ha in size. Of this, approximately 6ha of the northern part of the SINC falls within the application site boundary.

A detailed botanical re-survey was undertaken in 2012 at the application site in order to assess the calcareous grassland and to determine whether the site still meets the criteria for a SINC in Hampshire.

1.2 SINC Criteria

The Hampshire criteria for Neutral/Acid/Calcareous grassland are quite general and they imply that only long-established grasslands should be designated. The criteria are as follows:

- 2A - Agriculturally unimproved grassland;
- 2B - Semi-improved grasslands which retain a significant element of unimproved grassland; and
- 2D - Grasslands which have become impoverished through inappropriate management but which have retained sufficient elements of relict unimproved grassland to enable recovery.

Hampshire Biodiversity Partnership's Habitat Action Plan (HAP) for Lowland Calcareous Grassland also describes the characteristics of this national BAP habitat type and its distribution and extent. It also describes important chalk grassland stands having developed on old quarries and chalk spoil heaps, as well as on roadsides, banks and verges and along railway lines. In this, the HAP implies that important chalk grasslands can also establish on secondary sites.

1.3 Survey Aims

The objectives of the study were to:

- document the botanical interest of the application site, particularly the calcareous grassland;
- evaluate the habitat-types present within the application site in respect to the Hampshire SINC selection criteria; and
- evaluate these habitats in a local, regional and national context.

The results of the study are presented within this report.

2.0 SURVEY METHODOLOGY

2.1 Survey Area

The application site boundary is marked by a red line boundary on Drawing 1 – Phase I Habitat survey. The survey area included the application site and land surrounding the application site, as shown on Drawing 1.

2.2 Ecological Data Collection

Records of SINCs and notable and protected plant species within 2km of the application site were sought from Hampshire Biological Information Centre (HBIC). Where appropriate these records are reproduced below. Data received from HBIC is presented in Appendix 12-1 of Chapter 12 of the Environmental Statement.

2.3 Field Survey Methods

A more detailed botanical survey of the grassland habitats within and around the application site was undertaken to add further detail to the original Phase 1 report by Pell Frischmann (Appendix 12-2 of Chapter 12 of the ES) and to enable a full ecological impact assessment to be undertaken. Comprehensive species lists for the grassland habitat was made and the relative abundance of each species was described according to the DAFOR scale: (D) Dominant, (A) Abundant, (F) Frequent, (O) Occasional or (R) Rare. Each assessment of abundance was prefixed by an L (Locally) if appropriate – i.e. Locally Dominant.

2.4 Personnel

The botanical survey was undertaken at the application site by Andrew McCarthy, Technical Director at SLR consulting. Andrew has over 20 years professional consultancy experience and is an accomplished botanist.

2.5 Survey Constraints

The botanical survey visit was undertaken during clear weather, in June. The surveys were undertaken at an ideal time of year and additional survey would be unlikely to materially alter the conclusions of this report.

3.0 SURVEY RESULTS

3.1 Habitats

The application site has been divided for clarity into four distinct ecological zones; as indicated by Target Notes 1-4 on Drawing 1. These areas were separated on the basis of the presence of distinct plant communities and the successional stages demonstrated in each. The communities appear to be related in the main to substrate, period since last disturbance and level of rabbit-grazing.

The site was surveyed by an experienced botanist on the 8th June 2012 and plan of the communities were mapped in Drawing 1.

3.1.1 Within the application site

The application site supports a mosaic of chalk grassland and related habitats at various stages of succession; from bare ground, through species-poor open zones dominated by bryophytes, to herb-rich grassland, invading scrub and woodland.

More detailed information on each of the four areas within the application site is presented below:

Target Note 1

Grassland is the dominant plant community throughout much of the eastern (plateau) area of the site. It has a well-developed herb-dominated turf of modest height, characterised by mats of salad burnet (*Sanguisorba minor*), creeping cinquefoil (*Potentilla reptans*), wild strawberry (*Fragaria vesca*) and locally hairy violet (*Viola hirta*), together with locally conspicuous mats of bryophytes. Grasses such as crested hair-grass (*Koeleria macrantha*), sheep's fescue (*Festuca ovina*) and false brome (*Brachypodium sylvaticum*) are frequent throughout.

There are a wide variety of species indicative of base-rich conditions over chalk bedrock here, including the previously mentioned salad burnet and wild strawberry, as well as common bird's-foot-trefoil (*Lotus corniculatus*), wild basil (*Clinopodium vulgare*) and wild thyme (*Thymus polytrichus);* the latter being a characteristic dominant on the numerous anthills that are becoming established. Lower plants are abundant; the chalk grassland indicator species yellow feather-moss (*Homalothecium lutecens*) is widespread, as is springy turf-moss (*Rhytidiadelphus squarrosus*). Other herbs typical of this grassland include perforate St John's-wort (*Hypericum perforatum*) and hairy St. John's-wort (*H. Hirsutum*), yarrow (*Achillea millefolium*), agrimony (*Agrimonia eupatoria*), self-heal (*Prunella vulgaris*), autumn hawkbit (*Leontodon autumnalis*) and rough hawkbit (*L. hispidus*), black knapweed (*Centaurea nigra*), locally common centaury (*Centaurium erythraea*) and, very locally on anthills, the eyebright *Euphrasia nemorosa*. In open areas close to the site entrance, species of more disturbed ground are characteristic; for example viper's-bugloss (*Echium vulgare*), common stork's-bill (*Erodium cicutarium*) and long-stalked crane's-bill (*Geranium columbinum*).

The grassland is becoming invaded by scrub and appears to be maintained as an open mosaic in large part by rabbit grazing. Typical invading species are dogwood (*Cornus sanguinaeus*), wild privet (*Ligustrum vulgare*), whitebeam (*Sorbus* sp.), and bramble (*Rubus fruticosus* agg.).

Target Note 2

Grassland is dominant along the embankment / chalk scarp which runs north-south through the application site. This embankment, which is steeper at its northern end and shallower at the southern, eventually grades into level ground in the area south of the application site. Dominant vegetation here is grassland, which is at an earlier succession stage than the plateau grassland in Target Note 1; the substrate here is more open than in TN 1, and there are patches of exposed chalky soil and flints present in many areas.

The range of grassland plant species is rather different to that of TN1; whilst the flora is locally dominated by salad burnet across large areas, wild thyme is more abundant here and is not restricted to anthills; instead it is dominant or co-dominant across wide areas of turf. Long-stalked crane's-bill (*Geranium collumbinum*) is also more widespread, as is mouse-ear hawkweed (*Hieracium pilosella*) and wild basil. Species such as perforate St John's-wort, wild strawberry and creeping cinquefoil are typical associates, as is yellow feather-moss. The herbs common milkwort (*Polygala vulgaris*) and fairy flax (*Linum catharticum*) are largely confined to grassland on this embankment and anthills are again common here. Grasses such as crested hair-grass, red fescue (*Festuca rubra*), sheep's fescue and false brome are frequent.

Scrub is well developed; dogwood and wild privet being especially well developed.

Target Note 3

This is an open plateau area below the scarp described in TN 2, comprising grassland over chalk with flints. The area supports open, heavily rabbit-grazed and herb-dominated chalk grassland; it is lower in height than the upper plateau grassland as a result of its earlier succession stage and much more intensive rabbit grazing. The community is herb-rich and dominated by salad burnet and wild thyme, together with associate species such as dwarf thistle (*Cirsium acaule*), hairy violet, wild strawberry and creeping cinquefoil, common bird's-foot-trefoil and wild basil; there are extensive stands of glaucous sedge (*Carex flacca*) locally. Bryophytes include yellow feather-moss, slender ditrichum (*Ditrichum gracile*), comb moss (*Ctenidium molluscum* var *molluscum*) and occasional rough-stalked feather-moss (*Brachythecium rutabulum*). The lichen community, whilst species poor, is well developed and there are extensive patches of *Cladonia* (awaiting ID confirmation). Comb moss is a Hampshire BAP species.

Comment [a1]: Please see the comment about this species further on in the report.

Unlike in the embankment grassland to the east, there are few areas of bare ground. The scrub species hawthorn (*Crataegus monogyna*), wild privet and dogwood are all invading on the edges of the open grassland, however there is little invasion into the centre as rabbit grazing appears to be preventing its establishment at present.

Target Note 4

The open habitat on the western side of the rail sidings is the youngest of the plant communities in terms of successional stage, and it appears to have developed over concrete rather than chalk, as have the other communities described in TN's 1-3 above. There is a large area in the centre of this zone which is almost devoid of vegetation, with the exception of a few sparse cushion-forming mosses, whilst to the north the ground layer comprises mainly Acrocarp mosses such as *Barbula* sp (awaiting ID confirmation to species level), as well as small amounts of spiral extinguisher-moss (*Encalypta streptocarpa*) and common pocket-moss (*Fissidens taxifolius*). To the north, habitat has been invaded by dogwood and wild privet scrub and this is more or less continuous at the extreme northern end beneath the exposed chalk cliff face.

To the south of the central bare zone the habitat is more open and the plant community, whilst not as species-rich as that to the east, more closely resembles chalk grassland. It is dominated by mats of salad burnet, wild strawberry and hairy violet, with scattered common ragwort (*Senecio jacobaea*) and perforate St. John's-wort. There is little wild thyme here. The habitat is grazed by rabbits and there is much scuffed, bare ground indicative of local water-logging; this has been followed by rapid drying and flaking, and many bryophyte cushions have become detached from the substrate beneath. *Cladonia* lichens are well developed in this area (awaiting ID confirmation to species level).

3.1.2 Surrounding habitats

The eastern boundary of the application site comprises a well-developed belt of mature woodland supporting sycamore (*Acer pseudoplatanus*) and silver birch (*Betula pendula*) in the north and a planted double row of mature beech (*Fagus sylvatica*) to the south. The far north of the application site comprises a chalk cliff face up to around 18m in height with scrub beneath. The western boundary of the application site is marked by a concrete wall above the railway line. The southern application site boundary cuts across the chalk grassland and scrub mosaic and is less easily defined. Further south still the edge of the Micheldever Oil Terminal SINC is bound by a steep revetted concrete slope, which drops to the railway sidings further south.

4.0 DISCUSSION AND EVALUATION

Evaluation of species and assemblages follows guidelines set out by the Institute of Ecology and Environmental Management (2006)[1].

The 2012 survey was undertaken in part to provide a current set of baseline data on the botanical resource, and also to establish whether or not the site still comprises 'Calcareous Grassland' and, by extension, whether it still warrants designation as a SINC.

Whilst a few of the species found during 1992 were not recorded during this examination - in particular along the central embankment (where fairy flax appeared to have declined in abundance for example) the open grasslands were found to be still species-rich and well-structured, with the large majority of the original species assemblage still present. In addition, the habitat structure across the site was found to be complex, in particular on the plateau grassland on the eastern side.

A number of plant species were added to the 1992 species list (e.g. common milkwort) and it was considered that the 'absent species' from the 1992 list were probably present in low numbers originally and had probably been overlooked during 2012 (grassland habitat structure did not appear to have changed significantly since 1992 and there did not appear to be any obvious reason for the 'loss' of species from the site).

Of the taxa recorded during the botanical survey, comb moss, is listed as a Hampshire priority species, although it is not subject to a specific species action plan (SAP). The reason for this species inclusion is a little unclear since the British Bryological Society (BBS) describe *Ctenidium molluscum (*var *molluscum*) as a 'widespread' species and note that 'its presence frequently alerts the bryologist to the possibility of uncommon species nearby'. The BBS distribution map indicates it occurs across the whole of the UK. Hampshire is considered to be a national stronghold for this species, supporting at least 10% of the national population.

Comment [a2]: please check and discuss

Comment [a3]: Reference?

In summary, it was concluded that the majority of open habitats still fall into the category 'Calcareous Grassland' (a National Priority Habitat) in view of the presence of a wide range of chalk grassland indicator species. In view of this, and given the complex mosaic of habitats present, the SINC designation remains valid.

The presence of well-developed chalk grassland, which is also designated as a SINC is considered to be an ecological receptor of County value.

[1] Institute of Ecology and Environmental Management (2006) *Guidelines for Ecological Impact Assessment in the United Kingdom*

APPENDIX 1 – PRESENCE AND ABUNDANCE OF SPECIES AT MICHELDEVER

COMMON NAME	TN1	TN2	TN3	TN4
Dogwood	LA	LF	LF	LA
Hawthorn	LA	LD	LA	LA
Wild privet	LA	LF	LF	LA
Field-rose		O	O	
Dog rose	O	LO	O	
Bramble	LD	LO	O	O
Yarrow	LF		R	
Agrimony	LF	LO	O	
Daisy	LA	O	LF	
Common knapweed	LF	O		
Common centaury	O		R	
Common mouse-ear			LA	
Dwarf thistle			LF	
Creeping thistle	O	R	O	
Spear thistle	O	O	R	
Wild basil	LA		LA	
Viper's bugloss	LA	R	R	O
Common stork's-bill	O			

LATIN NAME	COMMON NAME	TN1	TN2	TN3	TN4
Euphrasia nemorosa	Eyebright	R			
Fragaria vesca	Wild strawberry	LD	LD	LA	LD
Geranium columbinum	Long-stalked crane's-bill	LA	LF		
Glechoma hederaceae	Ground-ivy	LA	O	O	
Hypericum hirsutum	Hairy St John's-wort	LF			
Hypericum perforatum	Perforate St John's-wort	F	LF	F	LA
Leontodon autumnalis	Autumn hawkbit	O	F	LF	
Leontodon hispidus	Rough hawkbit	LF	F	LF	
Leucanthemum vulgare	Ox-eye daisy	LD			
Linum catharticum	Fairy flax		R	R	
Lotus corniculatus	Common bird's-foot trefoil	LD	LA	LA	
Picris echoides	Bristly oxtongue	R		O	
Pilosella officinarum	Mouse-ear hawkweed	O	LD	LA	
Plantago lanceolata	Ribwort plantain	O	O	LF	
Polygala vulgaris	Common milkwort		O	O	
Potentilla reptans	Creeping cinquefoil	LD	LD	LA	LD
Prunella vulgaris	Selfheal	LA	LA	LA	LD
Reseda lutea	Wild mignonette	LF			
Sanguisorba minor	Salad burnet	LA	LD	LD	LD
Sedum acre	Biting stonecrop			R	
Senecio jacobaea	Common ragwort	LF	LF	F	F
Thymus polytrichus	Wild thyme	LD	LD	LD	O
Verbascum thapsus	Great mullein	O			
Veronica arvensis	Wall speedwell	LF	LF	R	
Veronica chamaedrys	Germander speedwell	LA	R	LA	
Veronica persica	Common field-speedwell		O	O	

LATIN NAME	COMMON NAME	TN1	TN2	TN3	TN4
Viola hirta	Hairy violet	LA	LA	LA	LA
Viola riviniana	Common dog-violet		LA	LA	
GRASSES SEDGES ETC					
Agrostis capillaris	Common bent	O			
Agrostis stolonifera	Creeping bent	LA			
Anthoxanthum odoratum	Sweet vernal-grass	LA			
Brachypodium sylvaticum	False brome	LF	O	O	
Festuca ovina	Sheep's fescue	LF	LF	O	
Festuca rubra	Red fescue		LF		
Koeleria macrantha	Crested hair-grass	LF	O	O	
Poa annua	Annual meadow-grass	LF			
Carex flacca	Glaucous sedge	O	LA	LD	
Carex panicea	Carnation sedge	R			
Carex sylvatica	Wood sedge	R			
LOWER PLANTS					
Barbula sp.	a moss (awaiting confirmation)	LD			
Brachythecium rutabulum	Rough-stalked feather-moss			R	
Ctenidium molluscum var *molluscum*	Comb-moss			O	
Ditrichum gracile	Slender ditrichum			O	
Encalypta streptocarpa	Spiral extinguisher-moss		O		O
Fissidens taxifolius	Common pocket-moss		O		O
Homalothecium lutescens	Yellow feather-moss	LF	LD	LD	O
Pseudoscleropodium purum	Neat feather-moss	O		LA	

	COMMON NAME	TN1	TN2	TN3	TN4
sus	Springy turf-moss	LD	O	LF	
	a lichen (awaiting ID confirmation)	F	F	LD	O