Appendix 10.3

Extended Phase 1 Habitat Survey of Proposed Locations for SuDS Facilities 2007

Appendix 10.3

Extended Phase 1 Habitat Survey of Proposed Locations for SuDS Facilities 2007

Contents

List of Figures

1. Introduction

1.1 Project Background

This report details the findings of an extended Phase 1 habitat survey, undertaken by Young Associates (Environmental Consultants) Ltd. (YA)[1] in July 2007. The survey covered the proposed locations for Sustainable Drainage (SuDS) facilities, as part of the M8/M73/M74 Network Improvements scheme. In brief, the proposed SuDS facilities will comprise a series of swales, basins, open drains and piped water which will attenuate and provide treatment for road runoff. A detailed description of the proposed SuDS facilities for the M8/M73/M74 Network Improvements scheme is given in Chapter 15 of the Environmental Statement for the scheme. This will improve the existing situation, as there is currently no treatment of runoff before it is discharged to the receiving environment.

The overall aims of the survey are to:

- describe the baseline natural environment at the proposed locations of the SuDS facilities, including habitats and any observed signs of protected or notable species;
- inform the micro-positioning of SuDS facilities in order to avoid or reduce adverse ecological impacts; and
- allow the effective planning and implementation of any mitigation that may be required.

The locations of proposed SuDS facilities were surveyed (see Figure 1). Additional locations were also surveyed but later rejected due to their unsuitability on environmental or engineering grounds. The results of the extended Phase 1 habitat surveys are presented in relation to each proposed facility location and a summary of each location is given. The overall impact of the proposed SUDS facilities is also discussed.

Historical data

Previous ecological surveys, conducted by Young Associates (Environmental Consultants) Ltd. (YA)[1] as part of the M8 Baillieston to Newhouse Environmental Statement and M74 Junction 5, Raith Environmental Statement (MFJV, 2007a and 2007b), noted the presence of protected species along the M8 route corridor and around Raith Junction. Controlled plant species, such as Japanese knotweed (*Fallopia japonica*) and giant hogweed (*Heracleum mantegazzianum*) were also recorded (YA, 2006).

[1] Part of AMEC Earth and Environmental (UK) Ltd since November 2007.

2. Methodology

The extended Phase 1 Habitat Survey was carried out on the 6th and 13th July 2007 by two suitably qualified and experienced ecologists. One surveyor was a full member of the Institute of Ecology and Environmental Management (IEEM) and other surveyor held associate membership of the IEEM. Survey effort was focused around the proposed locations of SuDs facilities (numbered and described here in relation to their Drainage Network) as shown in Figure 1, which form part of developing design of the M8/M73/M74 Network Improvements scheme.

Phase 1 habitat survey is a standardised method of recording habitat types and characteristic vegetation, as set out in the 'Handbook for Phase 1 Habitat Survey – a technique for Environmental Audit' (JNCC, 1993). The habitat survey method was extended in accordance with the 'Guidelines for Baseline Ecological Assessment' (IEA, 1995) through the additional recording of specific features indicating the presence, or likely presence, of protected species or other species of nature conservation significance. Incidental records of other faunal species were made, and the habitats and wildlife signs recorded were plotted on suitably scaled maps of the survey area (see Figures 2-11).

Descriptive "target notes" (TN) were made to provide details of characteristic habitats, features of ecological interest, or any other features to aid ecologically sensitive design or mitigation. Target notes also allow recording of habitat areas that are too small to map (e.g. small groups of trees) and different species compositions within a habitat type (e.g. semi-natural broadleaved plantation of oak or beech). Higher plant species nomenclature follows Stace, 1997. Target notes are included at the end of this report (Section 6).

Whilst not a comprehensive botanical or protected species survey, the extended Phase 1 method of survey enables suitably trained and experienced ecologists to obtain an understanding of the ecology of a site such that it is possible either:

- to confirm the conservation significance of the site and assess the potential for impacts on habitats/species likely to represent a material consideration in planning terms; or

- to establish the scope and extent of any additional specialist ecological surveys that will be required before such confirmation can be made.

An extended Phase 1 habitat survey provides a snapshot of the area surveyed at a particular time. The absence of evidence of protected species at one time does not necessarily preclude those species being present in future, especially where habitat is suitable and the site lies within the species' range. This report does not describe the ecology of protected species, badger (*Meles meles*) and otter (*Lutra lutra*). Confidential reports on these two species, in relation to the M8/M73/M74 Network Improvement scheme, have been prepared as part of the assessment of the scheme and are held by Transport Scotland.

3. Results and Evaluation

3.1 Introduction

Eleven proposed SuDS network locations, Networks 1-9 and 12-14 were surveyed[2]. Subsequent to the survey, several of the identified locations for SuDS features, specifically attenuation basins with permanent wet pools, were excluded from the scheme design (e.g. Network 14) on engineering and environmental grounds, in consultation with SEPA. This report describes the Network locations that have been carried forward as part of the scheme road drainage management design. SuDS Network locations 10 and 11 are located within the Raith (M74, Junction 5) road improvement scheme and are not considered further by this report. A separate ecological assessment has been carried out on SuDS facilities for Raith Junction (Mouchel Fairhurst JV, 2007b).

The ecological evaluation for each SuDS network are given below. Network locations and Phase 1 habitat information is provided in Figures 2-11 of this report, along with descriptive Target Notes (TNs) in Section 6.

3.2 Networks 1 and 13

SuDS networks 1 and 13 (Figure 2) are grouped together in this report are they are located very close to each other. Network 1 is located on the north side of the M8 and borders a relatively large area of well-maintained parkland, comprising amenity grassland with scattered, mature broad-leaved trees. Network 13 is situated on the south side of the M8 and borders a moderately large area of flat-lying semi-improved neutral grassland, which forms part of a business park. The site is becoming increasingly developed and the neutral grassland will in time be wholly replaced by the built environment, which is likely to include landscaping. Overall, no species of high conservation value were recorded and the value of habitats in the vicinity of the proposed SuDS networks are low.

3.3 Network 2

The proposed location for Network 2 is set in farmland adjacent to the south-bound carriageway of the M73, approximately 100 m north of the North Calder Water (Figure 3). The land covering the proposed site was predominantly improved grassland (TN3), with areas of rank, species-rich grassland immediately to the west and south-west (TN4-6).

The proposed scheme will affect two hawthorn (*Crataegus monogyna*) hedges (TN1 and 2). However, these were found to be species poor and of low conservation value. The proposed outfall will affect two areas of species-rich grassland (TN5 and 6) and discharge into the North Calder Water, ca. 20 m upstream of the M73. No species of high conservation value were noted in either of the grassland areas.

[2] SuDS Networks 1 and 13 are grouped together in this report as they are located very close to each other.

3.4 Network 3

Network 3 (Figure 4) lies north of the junction between the A74 and the north-bound carriageway of the M73 adjacent to Calderbraes Golf Course and to a lesser extent the southbound carriageway of the M73. Treatment and attenuation would be provided in the form of filter drains, a sedimentation forebay, a permanent wet pool and attenuation volume prior to discharge to the North Calder Water. Control structures will be incorporated such that serious spillages can be mitigated.

The surrounding area is predominanted by intensely managed agricultural grassland and amenity grassland (golf course). Minor areas of dense scrub and young broad-leaved plantation (TN7, 8 and 9) dominate the area that is proposed to contain the Network 3 SuDS facility. No species of high conservation value were recorded. Two hawthorn hedges would also be affected by the proposed drainage scheme. However, the hedges, dense scrub and plantations provide potential habitat for breeding birds. The SuDS network is proposed to discharge into the North Calder Water where it flows through a very narrow, steep-sided valley which contains semi-natural broad-leaved woodland. This area of woodland is of locally high ecological value.

3.5 Network 4

SuDS Network 4 is proposed to drain the east and westbound carriageways of the M74 located immediately west of where the motorway (including Junction 3 on the M74) passes over the North Calder Water (Figure 5). The proposed solution is to use a combination of surface and subsurface facilities to provide a degree of attenuation prior to discharge into the North Calder Wate (including filter drains leading to enhanced swales). Extensive areas of dense scrub dominate both carriageways by Junction 3 on the M74. Further west of Junction 3, the SuDS network is principally located close to the eastbound carriageway of the motorway, and comprises, from east to west, semi-improved neutral grassland, a large active quarry, and an area of bare ground. Only a short section of the westbound carriageway of the M74 borders the SuDS network and comprises an extensive area of bare ground.

The principal feature of the SuDS Network 4 is a section of open drain located within species-rich, semi-improved neutral grassland (TN 12), with small areas of young broad-leaved plantation located close to where the drain is proposed to discharge into the North Calder Water.

3.6 Network 5

This SuDS network (Figure 6) is proposed to drain the northbound carriageway of the M73 by Maryville Junction. Young mixed plantation (TN 10) and a minor area of semi-improved neutral grassland (TN 11) border the section of carriageway of the M73 that would be drained by the SuDS network (Figure 6). The principal features of the proposed SuDS network is a basin located adjacent to the eastern bank of the North Calder Water, approximately 50 m downstream from the M74. The habitats by the proposed basin comprised a mix of semi-improved neutral grassland (TN 13 and 14) with scattered scrub. The proposed outfall from the SuDS facilitiy would be located in mature broad-leaved plantation which dominates the eastern side of the North Calder Water. A small field of

rank semi-improved grassland with stands of tall ruderal vegetation, partly surrounded by species-rich hedge (TN 15) is located close to where a proposed access road to the SuDS facility would adjoin an exiting access road. The woodland habitats (plantation, scrub and hedges) provide potential habitat for breeding birds. The species-rich grassland provides good habitat for invertebrate species. While the grazed areas of grassland are less diverse, the patches of scrub provides potential habitat for foraging birds.
The new waterbody created by the SUDS facility will have good connectivity with the surrounding habitat and adds a small area of new wetland habitat.

3.7 Network 6

Network 6 SuDS network (Figure 7) drains approximately 1 km of both carriageways of the M74 located just east of Maryville Junction (Figure 7). Both carriageways are predominantly bordered by broad-leaved plantation, with minor areas of semi-improved neutral grassland. The proposed SuDS network main feature is a basin located within a moderate sized field of semi-improved neutral grassland (grazed by horses). The outfall of the SuDS network is proposed to be sited within an area of semi-natural broad-leaved woodland on the north bank of the River Clyde.

3.8 Network 7

This SuDS network (Figure 8) is proposed to comprise an enhanced dry swale structure possibly with check dams; a more linear feature with less earthworks requirements. This location lies within a thin strip of land between the M74 and Myers Burn (TN 17) to the north (Figure 8), beyond which lies the industrial estate on Gray's Road. The area affected includes a young poplar (*Populus* spp.) plantation that borders the southbound carriageway of the M74 (TN 16), a strip of bare ground (which is often used as a footpath), and the bank-side vegetation on the south bank of the burn.

The Myers Burn was found to be of low conservation value. Visual inspection of the water within the burn suggests that it is of poor quality, no plant growth within the burn was noted and bank-side vegetation showed limited diversity. No species of high conservation value were recorded within the area surveyed; however, the plantation woodland provides potential habitat for breeding birds.

3.9 Network 8

This proposed SuDS Network 8 (Figure 9) would drain both carriageways of an approximately 1 km long section of the M74 situated between the Bellshill Road and Raith Junction (Figure 9). Assessment has been made on the capacity of the SuDS facilities present at Raith; the conclusion being that sufficient capacity is available to accommodate the discharge from the proposed drainage scheme in this area. The network would therefore drain into a treatment basin and outfall into the River Clyde within the Raith Junction area (outside the scope of this report). The carriageways of the section of motorway drained by the SuDS network are dominated by broad-leaved plantation woodland, with subordinate areas of semi-improved neutral grassland with scattered scrub (bordering on dense scrub in places). The SuDS network will also drain

the junction that allows access to and from Raith Services (southbound), which is dominated by amenity grassland landscaping.

No species of high conservation value were recorded within the area surveyed; however, the plantation woodland and scattered scrub provides potential habitat for breeding birds.

3.10 Network 9

The area affected by Network 9 (Figure 10) comprises a mix of woodland (TN 18-21), extensive flat areas of rank tall ruderal vegetation and semi-improved neutral grassland (with scattered scrub), which borders the M74. Network 9 lies adjacent to the southern bank of the River Clyde (located 30-80 m north of this SuDS location), and is also situated relatively close to the north-west section of Strathclyde Loch. The location of this SuDS network is adjacent to the northern edge of Hamilton Low Parks SSSI and the southern margin of Strathclyde Country Park. Due to the context of this outfall location (on an embankment, adjacent to the SSSI), the proposed solution is to use a combination of surface and subsurface facilities to provide a degree of attenuation prior to discharge into the receiving watercourse.

The woodland and areas of rank grassland provide potential breeding and feeding habitat for a variety of bird species.

3.11 Network 12

The proposed location for Network 12 (Figure 11) is in an area of rank grassland north east of Woodhead Farm close to the east bank of North Calder Water, just after it passes under the M73. The habitat at this location is predominantly semi-improved neutral grassland with patches of scrub and lone trees (TN 23). A small section of broadleaved woodland (TN 22) on the east bank of the river may be affected by the proposed SuDS Basin and its outfall into the North Calder Water. The new waterbody created by the SUDS facility will have good connectivity with the surrounding habitat and adds a small area of new wetland habitat.

No species of high conservation value were recorded during the survey: however, the woodland, scrub and lone trees provide potential habitat for breeding birds.

4. Recommendations

4.1 Introduction

General recommendations that are not network specific are given below. Each of the proposed network locations are then considered in turn and any specific advice noted.

4.2 General Recommendations

SUDS Outfalls
Mitigation should seek to minimise removal of tree cover and disturbance to riparian habitat during construction of outfalls. It is preferable where practicable, to use open ditches rather than culverts, which would provide wetland habitat and potential movement corridors between watercourses and the proposed SuDS facilities, which themselves provide small areas of new open water and marginal wetland habitat. Otters in particular would be likely to benefit, as this species is known to move freely along both the North Calder Water and the River Clyde and will use a variety of habitat types alongside the riparian corridor.

Breeding Birds
Suitable habitat for breeding birds was noted at many of the proposed network locations. It is recommend that any vegetation removal or tree felling required should be carried out outside the bird breeding season (generally March - August inclusive but may extend beyond this period).

If vegetation removal is required during the bird breeding season all the affected vegetation should be checked by a qualified and experienced ecologist immediately prior to clearance, in order to assess whether breeding birds will be disturbed. It is also advised that this course of action be agreed with SNH (or the relevant Local Authority ecologist) in advance.

Under UK legislation all birds and their nests are protected by Section 1 of the Wildlife and Countryside Act (1981), as amended. This protection was extended by the Nature Conservation (Scotland) Act 2004. It is an offence under this legislation to:

- intentionally or recklessly kill, injure, or take any wild bird;
- intentionally or recklessly take, damage or destroy the nest of any such bird while in use or being built; or
- intentionally or recklessly take or destroy the egg of any such wild bird.

Otters
Otters are active along the reaches of the North Calder Water and River Clyde that are crossed by the proposed scheme. The otter is a European Protected Species (EPS), protected by the EC Habitats Directive as implemented by the Conservation (Natural Habitats, &c) Regulations 1994 and The Conservation (Natural Habitats & c.) Amendment (Scotland) Regulations 2007.

The regulations now provide protection to EPS, making it illegal to intentionally or recklessly:

- harass or disturb an EPS;
- capture, injure or kill an EPS; or
- destroy, damage or obstruct access to the resting place or breeding site of an EPS.

The otter is also included within the UK BAP and is listed as a species most urgently in need of action. In view of the confirmed presence of otters along the North Calder Water and River Clyde close to the scheme, SNH must be consulted prior to any on-site construction being undertaken near to these watercourses. It is likely that some work adjacent to the North Calder Water will require to be carried out under a European Protected Species Licence. Notwithstanding this, the Contractor should set in place an Environmental Management Plan which would include measures to protect otters. It is recommended that temporary obstructions to watercourses, or their banks are avoided or minimised, as these may impact upon otter movement. As otters are most active at night it is recommended that construction works within 30 m of the River Clyde or North Calder Water take place within daylight hours wherever possible. Contractors should be made aware that otters are active along these watercourses.

It is recommended that a pre-construction otter survey be conducted by a suitably experienced ecologist immediately prior to commencement of works for any works within 30 m of the River Clyde or North Calder Water with any mitigation measures already identified being reviewed and adapted as necessary.

Due diligence and good practice in line with SEPA Guidelines should also be employed at all times to prevent harmful runoff from the works from reaching watercourses or any groundwater sources that may be present in the area. All re-fuelling should be carried out at least 10 m from any watercourse.

Bats
All bat species are , like otter, European Protected Species (EPS), protected by the EC Habitats Directive as implemented by the Conservation (Natural Habitats, &c) Regulations 1994 and The Conservation (Natural Habitats & c.) Amendment (Scotland) Regulations 2007.. The Habitat Regulations make it illegal to: intentionally or recklessly kill, injure or capture (take) bats; deliberately or recklessly disturb bats (whether in a roost or not); damage, destroy or obstruct access to bat roosts, whether or not bats are present at the time.

There are legal implications for sites with bats present, whereby licences must be obtained for development proposals and works. In order to obtain a licence there is a strict three point test that must be met which includes demonstration that there will be no changes to the species' favourable conservation status.

Although there were no trees noted within the survey area that exhibited high potential for use as a bat roost, woodland habitat around the survey area is considered to be of value for bat feeding and/or as commuting corridors for bats. The proposed works to create road drainage control features and SUDS facilities will entail only very limited effects on trees.

It is therefore recommended that any woodland habitat that will be affected by the proposed works receive dawn and dusk surveys, to assess levels of bat use.

Badger

Badgers and their setts are protected under the Protection of Badgers Act 1992 and the Wildlife and Countryside Act 1981, both amended by the Nature Conservation (Scotland) Act 2004 . These Acts makes it an offence to knowingly cause or permit :

- damage, destruction or obstruction of access to a badger sett;
- a dog to enter a badger sett; or
- disturbance to a badger when it is occupying a sett.

They also make it an offence to:

- to intentionally or recklessly kill, injure or take a badger;
- to cruelly ill-treat a badger;

The results of a badger survey of the scheme is confidential and is held by Transport Scotland.

A pre-construction survey for badger should be undertaken within potentially suitable habitat affected by the scheme construction. Any badger setts identified by preconstruction surveys should be avoided and construction methods should be chosen so as to minimise vibration and therefore prevent any significant disturbance.

Construction and any associated activities, such as site access or storage of plant materials and machinery, should take place at least 30 m from any known sett. Suitable fencing should be erected to prevent site personnel and/or equipment presence within that distance. If work does need to take place within at least 30 m of a sett a development licence will be required. A suitable method statement would need to be developed and agreed with SNH as part of the development licence application.

Other Protected Species

No signs of any other protected species were recorded during survey. Detailed searches for water vole (*Arvicola terrestris*) were carried out along ditches and watercourses within the survey area. The survey area is not considered to be of high potential for other species, for example water vole, that are legally protected and/or of high conservation value.

Controlled Species

No controlled plant species, such as Japanese knotweed or giant hogweed were recorded. Himalayan balsam (*Impatiens glandulifera*) was noted in SuDS Network 9 in habitats that border the River Clyde. This plant is not covered by any legislation but it often out-competes native plants, reducing native biodiversity. It is recommended that Himalayan balsam within the works of the scheme is controlled to prevent its spread and to improve the conservation quality of the areas where it is presently found.

As invasive species such as Japanese knotweed can spread very quickly and can colonise new areas over several seasons, it is recommended that a specific survey for invasive species is carried out sufficiently in advance of construction to allow an eradication programme to be set in place before site works for the scheme commence.

4.3 Per Network Recommendations

Note that this section does not take into account the protected species, otter and badger. Recommendations on these species, in respect to the proposed SuDS networks, is given in confidential annexes to this report, held by Transport Scotland.

Networks 1 and 13
No specific recommendations are made for Networks 1 and 13.

Network 2
There is no specific advice with respect to the SuDS facility or outfall location. See Section 4.2, above, for relevant general recommendations regarding breeding birds.

Network 3
Creation of a SUDS facility would result in loss of some tree/scrub cover within a locally valuable woodland habitat. The new waterbody created by the SUDS facility will have good connectivity with the surrounding habitat and adds a small area of new wetland habitat.

Network 6
There is no specific advice with respect to the SUDS basin or outfall location within this network. The new waterbody created by the SUDS facility will have good connectivity with the surrounding habitat and adds a small area of new wetland habitat.

Network 7
There is no specific advice with respect to this location.

Network 8
The woodlands at this location are of potential use for breeding birds.

Network 9
The woodlands at this location are of potential use for breeding birds and other protected species.

Network 12
The riparian woodland at this location is of potential use for a variety of species, including breeding birds.

5. References

Institute of Environmental Assessment (1995) *Guidelines for Baseline Ecological Assessment*. Spon Press; London.

JNCC (2003) *Handbook for Pahse 1 Habitat Survey – A Technique for Environmental Audit*. Joint Nature Conservation Committee; Peterborough.

Milne-Redhead, E. (1990) *The BSBI Black Poplar survey, 1973-88*. Watsonia 18:1-5.

Mouchel Fairhurst JV (2007a) *M8 Baillieston to Newhouse - Environmental Statement-Updated 2007.* http://www.m8completion.com

Mouchel Fairhurst JV (2007b) *M74 Junction 5 – Raith - Environmental Statement.* http://www.m8completion.com

Young Associates (2006) *M8 Stage 3 Ecology and Nature Conservation*. Young Associates (Env. Cons.) Ltd.; Edinburgh.

6. Target Notes

Target Notes are set out in Table 1 below and should be read in conjunction with Figures 1- 11.

Target Note Number	Grid Reference	Details
1	NS 69180 63423	Hawthorn (*Crataegus monogyna*) hedge, ca. 4 m tall. Stands were ca. 1 m apart and the hedge was not stock proof.
2	NS 69102 63383	Hawthorn hedge, ca. 1.5 m tall, heavily pruned. Stands ca. 1 m spaced and hedge was not stock proof.
3	NS 69172 63295	Recently mown improved grassland with signs of cattle use in the form of dung and foot prints
4	NS 69053 63225	A sward of rank semi-improved neutral grassland with scattered scrub and a dense patch of brambles (*Rubus fruticosus*) the southern end.
5	NS 69098 63212	Un-mown patch of semi-improved neutral grassland. Crested dog's-tail (*Cynosurus cristatus*) and Yorkshire fog (*Holcus lanatus*) were dominant. Self-heal (Prunella spp.), common spotted orchid (*Dactylorhiza fuchsii*) and Timothy grass (*Phleum pratense*) were occasional.
6	NS 68042 62157	Species rich, semi-improved neutral grassland. Grass species noted were; false oat-grass (*Arrhenatherum elatius*), sweet vernal-grass (*Anthoxanthum odorata*), tufted hair-grass (*Deschampsia cespitosa*), cocksfoot (*Dactylis glomerata*) and smooth meadow-grass (*Poa pratensis*). Herbs noted included; black knapweed (*Centaurea nigra*), Yellow Goatsbeard (*Tragopogon pratensis*), common spotted orchid, hairy tare (*Vicia hirsuta*) as well as patches of rosebay willowherb (*Epilobium angustifolium*). A dense patch of scrub comprised of a mixture of common broom (*Cytisus scoparius*), hawthorn and common gorse (*Ulex europaeus*) was also recorded.
7	NS 68536 62242	Dense continuous scrub comprised of hawthorn and black elder (*Sambucus nigra*).
8	NS 68585 62234	Young broadleaved plantation comprised of oak (*Quercus* spp.) and common alder (*Alnus glutinosa*) with occasional larch (*Larix spp.*). Dense scrub and ground layer at western edge, dominated by hawthorn and bramble respectively.
9	NS 68476 62175	Young broadleaved plantation, 6-8 m tall, dominated by close planted birch (*Betula* spp.) and cherry (*Prunus* spp.). Sparse

Target Note Number	Grid Reference	Details
		ground layer with some ox-eye daisy (*Leucanthemum vulgare*), lady's mantle (*Alchemilla* spp.) and upright hedge parsley (*Torilis japonica*).
10	NS 68479 62109	Young mixed plantation, 6-8 m tall, dominated by birch with frequent Scot's pine (*Pinus sylvestris*), aspen *(Populus tremula)* and bird cherry (*Prunus padus*). Each of the above species had been planted in blocks. Also note were occasional larch, rowan (*Sorbus aucuparia*) and sycamore (*Acer pseudoplatanus*). The species rich ground layer included; rough stalked meadow grass (*Poa trivialis*), broad-leaved helleborine (*Epipactis helleborine*), stinging nettle (*Urtica dioica*) and mat-grass (*Nardus stricta*). A small amount of rabbit (*Oryctolagus cuniculus*) digging was also noted.
11	NS 68369 62117	Rank, species-rich semi-improved neutral grassland. Dominated by false oat-grass with patches of tufted hair-grass and creeping soft grass (*Holcus mollis*). Herb species noted included: marsh woundwort (*Stachys palustris*), creeping thistle (*Cirsium arvense*), black knapweed, lesser stitchwort (*Stellaria graminea*), greater bird's-foot trefoil (*Lotus uliginosus*) and comfry (*Symphytum officinale*).
12	NS 67991 62094	Species-rich semi-improved neutral grassland comprised of a mix of grass species. These included; false oat-grass, tufted hair-grass, reed canary-grass (*Phalaris arundinacea*), crested dog's tail, and sweet vernal-grass. Herb species noted included; broad-leaved willowherb (*Epilobium montanum*), yellow rattle (*Rhinanthus minor*), meadowsweet (*Filipendula ulmaria*), creeping thistle, marsh thistle (*Cirsium palustre*), meadow crane's bill (*Geranium pratense*), lesser stitchwort and wild angelica *(Angelica sylvestris)*. Eight six-spot burnet moths (*Zygaena filipendulae*) were observed.
13	NS 68100 62020	Narrow border of species-rich, rank (ca. 1.5 m tall), semi-improved neutral grassland dominated by false oat-grass. Other grass species noted were; cocksfoot, crested dog's tail, sweet vernal-grass and creeping soft grass. Herbs noted include; creeping thistle, black knapweed, self-heal, curled dock (*Rumex crispus*), common hogweed (*Heracleum sphondylium*), wild angelica, stitchwort and great willowherb
14	NS 68180 61992	Semi-improved neutral grassland with scattered hawthorn scrub and ragwort (*Senecio jacobaea*).
15	NS 68371 61805	Mosaic of rank, semi-improved neutral grassland and patches of rosebay willowherb. Grass areas were dominated by false oat-

Target Note Number	Grid Reference	Details
		grass, with abundant cocksfoot. Herb species noted include; tansy (*Tanacetum vulgare*), smooth sow-thistle (*Sonchus oleraceus*), common fumitory (*Fumaria officinalis*), black knapweed, white dead nettle (*Lamium album*), and ribwort plantain (*Plantago lanceolata*). Raspberry (*Rubus idaeus*) and bramble patches were also observed.
16	NS 70405 60604	Broadleaved plantation dominated by poplar (*Populus* spp.). Continuous scrub layer dominated by hawthorn with occasional young poplar (< 5 m tall).
17	NS 70494 60555	Myers Burn. Narrow (< 2 m wide) watercourse with steep almost vertical banks. Water, depth ca. 0.15 m, was dirty brown colour and slow flowing. There was no emergent vegetation within the watercourse and the banks were dominated by rosebay willowherb and stinging nettle.
18	NS 72600 56904	Immature Scot's pine plantation, ca. 8 m tall with sparse ground layer and occasional larch
19	NS 72673 56823	Mixed plantation of ash and pine (*Pinus* spp.).
20	NS 72845 56647	Young broadleaved plantation. Ground layer dominated by false oat-grass. Occasional Himalayan balsam (*Impatiens glandulifera*) noted at southern end of plantation.
21	NS 72930 56558	Mixed plantation woodland.
22	NS 68910 63080	Semi-natural broadleaved woodland. Dominated by willow and birch with broom and bramble scrub layer. Reed canary-grass also present.
23	NS 68948 63066	Rank, species rich semi-improved neutral grassland with scattered hawthorn and ash scrub. Species noted include: Yellow Goatsbeard, meadow vetchling (*Lathyrus pratensis*), hairy tare (*Vicia hirsute*) and common spotted orchid.

Figures