

Appendix 10.1 Extended Phase 1 Habitat Survey



M74 JUNCTION 5, RAITH

EXTENDED PHASE 1 HABITAT SURVEY

Final Report

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1 INTRODUCTION

1.1 Background

A Phase 1 Habitat Survey with associated consultations and desk study was carried out on the Raith area, as it is an efficient and systematic way to gain an appreciation of the main habitats and important wildlife species of geographic areas. The survey was carried out at an optimal time of year (May to June), which allows for the accurate survey of common habitat types; including woodland, grassland, wetland and running water.

There are additional technical ecological survey appendices underpinned by this habitat survey and these should be referred to as appropriate.

1.2 Methods

Consultations and Desk Study

A consultation and data collation exercise was carried out in order to obtain up to date baseline information prior to ecological surveys being conducted. Statutory and non-statutory bodies and individual experts with potential interests were contacted for information and comment. Consultations with the following organisations and individuals were undertaken:

- Botanical Society of the British Isles (BSBI);
- Butterfly Conservation;
- Central Scotland Forest Trust;
- Concern for Swifts;
- Forestry Commission Strathclyde Conservancy;
- Glasgow City Council Biodiversity Officer;
- Hamilton Natural History Society;
- North Lanarkshire Council's Ecology and Planning / Development Departments;
- Rosemary Green, Independent Expert on Otter and Water Vole;
- Royal Society for the Protection of Birds (RSPB Scotland);
- Scottish Environmental Protection Agency (SEPA);
- Scottish Executive Environment Group (Countryside and Natural Heritage);
- Scottish Natural Heritage (SNH, Lanark Office);
- South Lanarkshire Council Planning / Development Departments / Ranger Service; and
- South Lanarkshire Council Biodiversity Officer.

In addition to consultations, desk study gained up to date information and data on the wildlife habitats and species within the survey area. This was achieved using published literature, unpublished reports and Internet web sites.

Extended Phase 1 Habitat Survey

The area of ecological survey extends approximately 500 m out from the road and junction centre lines of the proposed scheme. The survey area is shown in Figure 10.1. The area



was surveyed following the guidance published in the Handbook for Phase 1 Habitat Survey (JNCC, 2003). The methodology allows data collection and analysis to be made on the habitats and associated species of geographic locations in a relatively short period of time. Consequently, this report facilitates informed decisions in the ecology chapter of the Stage 3 DMRB assessment and also underpins specialised ecology surveys (e.g. bird surveys).

Habitats, species and dominant plant community types were described and recorded on a 1:10 000 scale map of the site (see Figure 10.1). Target notes (**TN**), linked to the Phase 1 habitat map, were produced to provide greater detail on specific habitats or features of particular ecological interest and are listed in Table 1. Species lists, including all plants and incidental records of fauna, are listed in Tables 2 and 3, respectively. Higher plant species nomenclature follows Stace (1997) and bryophyte nomenclature follows Watson (1981).

It must be noted that due to the time over which the survey was completed in the early summer, it may be possible that further plant species are present and have not been recorded in some of the survey area, for example early flowering species present in the spring that die back during the summer months. However, experienced botanists have carried out both this and detailed NCV botanical survey of designated areas and areas of scheme land-take and it is not considered that any notable plant species, material to the assessment of the proposed scheme, have been overlooked.



1.3 Organisation of the Results

For ease of reference to ecological features, the existing road network divides the survey area into four fairly comparable sized sections. These are:

- **Hamilton Low Parks SSSI** is located to the west of the M74 and to the south of the A725. The area is transected by the River Clyde and the north bank defines the southern margin of the survey area. This specific area is called Raith Haugh but the name Hamilton Low Parks SSSI is preferred as the former place name is not well known;
- **Bothwell Park** lies to the north of the A725 and to the east of the M74. It is located in South Lanarkshire. Bothwell Park Farm lies at the northern edge of the section;
- **Laignland** lies north of the A725 and west of the M74. The western suburbs of Bothwell (Laignlands Road and Bothwellpark Road) delineate its western margin; and
- **Strathclyde Country Park** is situated to the south of the A725 and to the east of the M74. The north end of Strathclyde Loch lies within this section. Unlike the rest of the Raith area that is situated within South Lanarkshire this section of the survey area is in North Lanarkshire.

In addition, between the two latter mentioned areas there is a subordinate part of the survey area (NS712579) that is constrained by the A725, the B7071 link road to Raith junction and the River Clyde. Also, there are moderately large landscaped areas within Raith junction (e.g. roundabout islands). Their ecological value is likely to be low due to the high volume of traffic in the area and they are not considered in any detail here.

The results of the Extended Phase 1 habitat survey are divided firstly into sub-sections based on the main habitat categories of the Phase 1 habitat classification system (JNCC, 2003). Phase 1 habitat categories that are relevant to this report are:

- Woodland and scrub;
- Grassland and marsh;
- Tall herb and fen;
- Swamp, marginal and inundation;
- Open water; and
- Miscellaneous (which covers man-made features e.g. boundaries).



2 ECOLOGICAL SITES

2.1 Statutory Protected Ecological Sites

There are no designated sites of international ecological significance within, or in the vicinity of, the survey area. The Clyde Valley Woodlands SAC (Special Area of Conservation) is the nearest internationally designated site to the Raith junction area and the northernmost part of this SAC lies about 4 km southeast of the survey area.

The southern part of the survey area that lies between the M74 and A725 comprises land, open water and watercourses designated as SSSI (Hamilton Low Parks SSSI) which are ecologically important at a national level. The land was first designated as a nature reserve by The Wild Birds (Low Parks Sanctuary, Hamilton) Order, 1956 (under the National Parks and Access to the Countryside Act 1949). The site is situated within South Lanarkshire. The SSSI was notified in 1986 as a biological SSSI as its habitats support breeding bird species of national importance. Furthermore, the site also attracts significant numbers of wintering wetland birds. Most importantly, woodland that lies on the south bank of the River Clyde, outside the survey area, contains one of the largest heronries in Scotland. Consultations indicate that public access to the land that forms the SSSI has been actively discouraged in recent times. The SSSI comprises two areas (NS718575 and NS727567; bisected by the M74) of wet grassland, open water and woodland that are adjacent to the River Clyde. They cover a total area of 107.6 ha with only a moderately small proportion of the SSSI situated within the survey area.

Strathclyde Country Park is recognised in the national and local planning framework for its valuable role in providing opportunities for urban populations to gain access to attractive areas of countryside for recreation and enjoyment of the natural heritage (Scottish Office, 1998; North Lanarkshire Council, 2003). However, the Country Park's wildlife habitats are not statutorily protected as part of this environmental designation. Hamilton Low Parks SSSI lies within the considerably larger Hamilton Low Parks area, which includes a golf course, sports ground and Hamilton racecourse as well as the SSSI. The Country Park encompasses the road verges of the A725 (NS712583) and land between the A725 and the B7071 (NS712579) that lies west of the SSSI.

Local Nature Reserves (LNRs) are statutory protected sites of, at least, local wildlife importance that are managed by local authorities for nature conservation but have high levels of public amenity (Bell and McGillivray, 2000). Consultations indicate that there are no designated LNRs within, or in the vicinity of, the survey area.

2.2 Non-statutory Ecological Sites

There are three SINC (Sites Important for Nature Conservation) that either lie within or partly within the survey area. A detailed botanical survey of all SINC in the survey area is described in Appendix 10.2. SINC are a common type of non-statutory designated site considered to be of regional or local ecological importance (NPPG14, Scottish Office, 1998).

South Lanarkshire SINC

Bothwell Corridor Site VIII (NS715592; 5 ha) – Bothwell Park Wood and Disused Railway is a woodland and scrub dominated site that lies at the northern part of the survey area. With the exception of the disused railway, this SINC lies within the survey area; and

Bothwell Corridor Site IX (NS713588) – Laignland / Bothwell Park Wetlands is composed of three sub-sites of approximately comparable, moderate-sized areas. These are:

- Laignland Wetland 1 (NS716589, 4 ha) is an area of wetland and wet woodland that forms the largest part of the SINC and is adjacent to the A725;
- Laignland Wetland 2 (NS714590, 2.5 ha) is an area of wetland that runs north from the M74 to the southern edge of Bothwell Park Wood; and
- Laignland Wetland 3 (NS712587, 3.5 ha) is an area of wetland, including two areas of open water that lies along the southern edge of the M74 embankment in the Laignland area. The site is isolated from the northern sections of the Laignland Wetland SINC by the M74.

There are appreciably large areas of grassland and scrub within the SINC that are located on high ground above the wetlands. These parts of the SINC are considered to be ecologically less significant compared to the wetland areas as they feature little in the SINC report on the area (Watson, 1990). A large mound of grassland and scattered scrub divides Laignland Wetlands 1 and 2 and a horse field and mature woodland form the grounds of Bothwell Park House (the wooded grounds are private). Scrub and grassland are also located at the northern edge of Laignland Wetland 3 in the steep ground that rises up to Bothwell Farm Road.

North Lanarkshire SINC

The northern edge of the SINC at Strathclyde Country Park (North Lanarkshire SINC 75/1a) lies within the southeast part of the survey area. This part of the SINC comprises Strathclyde Loch, its shoreline and a man-made island. However, the SINC also includes native woodland that fringes the South Calder Water about 0.5 km southeast of the survey area. The local BAP (North Lanarkshire Council, 2000) recognises the general ecological value of all wildlife habitats of the country park to the local area.



Other Non-Statutory Ecological Designations

The area's Structure Plan (Glasgow and the Clyde Valley Structure Plan Joint Committee, 2000) considers that the only strategic environmental resource in the Raith area is Strathclyde Country Park because of its recreational facilities and not because of its ecological significance. Furthermore, only the North Lanarkshire section of the survey area (see the above paragraph on North Lanarkshire SINC) lies within the project area of the Central Scotland Forest. This is an initiative that aims to benefit disadvantaged communities that lie within the Central Scotland Plateau by improving their natural environment (Central Scotland Forest Strategy, 2004) and, although Strathclyde Country Park features in the project's local strategies, the Raith area is not included in the project's plans. On the other hand, the structure plan indicates that the Raith area lies within the strategic environmental resource of the Clyde Valley Green Belt. This zone could potentially encompass the proposed Clyde Valley Community Forest whose main aim would be to benefit the region ecologically and socially by promoting urban forestry projects (Forestry Commission Scotland, 2003).

South Lanarkshire Greenspace was formed in 2001 (formerly the South Lanarkshire River Valley Project) to improve the local environment and benefit the biodiversity of a zone of the upper Clyde Valley (includes the Raith area) with a strong emphasis on local community involvement. Consultation indicated that South Lanarkshire Greenspace speaks out on general ecological issues through the South Lanarkshire Biodiversity Partnership, as they are one of their key partners.

The Scottish Wildlife Trust's (SWT) Wildlife Sites (WS) system complements the local authority operated SINC system as it seeks to conserve sites of local and district level ecological importance (SWT, 2002). Like SINC, the planning framework for WS is laid out in NPPG14 and consequently North Lanarkshire and South Lanarkshire Council's local planning systems incorporate policies on WS. Consultations with the SWT indicate that there are no listed or provisional WS in, or in the vicinity of, the survey area.

2.3 Wildlife Corridors

Together the SINC and SSSI of the Raith area form part of a "green network" of regional importance (Glasgow and the Clyde Valley Structure Plan Joint Committee, 2000). The Clyde Valley is the most important wildlife corridor in the area and Raith is an important link in the chain of wildlife habitats of this corridor. The general ecological value of the Laighland Wetlands SINC is considered to be of high ecological importance (Watson, 1990) as they are an extension of the interconnected wetlands in the southern part of the Raith area. The Hamilton Low Parks (principally the SSSI section of the Low Parks) and the Strathclyde Country Park SINC form part of the Clyde Valley wildlife corridor.

2.4 Habitats

Native Woodland and Scrub

Woodland is an important feature of the survey area but consultations and Phase 1 habitat survey indicate that it is not the principal wildlife habitat in the immediate vicinity of Raith junction where wetland and grassland habitats dominate. The level of woodland cover in the survey area reflects the fairly low cover of woodland in Lanarkshire (14% in South Lanarkshire; South Lanarkshire Biodiversity Partnership, 2003). To address this problem native woodland is a priority habitat in the Lanarkshire Local Biodiversity Action Plans (LBAPs). No key South Lanarkshire woodland sites as listed in the South Lanarkshire LBAP are located in the vicinity of the survey area. However, there are considerable areas of Inventory Ancient Woodland (IAW) and Long-Established Woodland near the south and east margins of the survey area (e.g. Blackmuir Plantation that lies west of the B7071 and south of the A724/A725). North Lanarkshire does have a comparable key woodland site listing in its LBAP. The nearest North Lanarkshire native woodland with IAW is SINC 75/1a (South Calder River Valley) that lies mainly within the north-eastern section of Strathclyde Country Park.

The SSSI and SINC of the survey area contain woodland and scrub of varying type and ecological significance. The most significant native woodland in the survey area is the Bothwell Park SINC with the central part of the site (**TN 12**) composed of IAW and the rest of the SINC is semi-natural Woodland. Even so the woodland is not considered to be a key site in South Lanarkshire and this implies that the SINC is principally only locally significant.

The vegetation of the semi-natural woodland (**TN 12**) reflects its IAW status, and most notably the woodland contains extensive stands of the ancient woodland indicator species bluebell (*Hyacinthoides non-scripta*). Although this species is given some degree of protection by the Wildlife and Countryside Act (1981, and amendments) from commercial bulb picking, the species is not featured in the South Lanarkshire BAP. In contrast the species is featured in the North Lanarkshire BAP but only because of its wide public appeal.

To the south of Bothwell Park SINC subordinate amounts of semi-natural Scottish Inventory Woodland form the margins of the Laignlands Wetlands SINC. This border area between the two SINC is dominated by scrub, although there is an area of high forest wet woodland that fringes the low lying, poorly drained southern edge of Bothwell Park SINC (**TN 13**).

To the northeast of Raith junction a limited amount of semi-natural Woodland is present in part of Strathclyde Country Park, and it is found close to the A725, but woodland plantation typifies this part of Strathclyde Country Park.

To the southwest of the survey area woodland is not the dominant feature of the Hamilton Low Parks SSSI, which lies within the survey area. There is however a small sized area of woodland and scrub close to the M74 embankment (**TN 4**), which is semi-natural Inventory Woodland. Also, some stretches of the riverbank of the River Clyde are vegetated by scrubby willows (e.g. **TN 1**) but riparian woodland cover levels are low overall. This is probably a consequence of the soft alluvial soils that form this part of the SSSI which are prone to river erosion caused by natural channel migration.

Plantation Woodland

There are no commercial plantations within the survey area and all woodland plantations have been created for landscape and public amenity enhancement purposes. Native broad-leaved species have been generally planted with only a minor amount of non-native broad-leaves and conifers. Moderately young broad-leaved plantation woodland is common in the Strathclyde Country Park area and has been created as strips and small blocks of woodland that compliment extensive areas of amenity grassland and man-made recreational facilities (e.g. hotel and restaurant complex). The ecological merits of these newly created wildlife habitats are outlined in the North Lanarkshire LBAP but they are not deemed significant enough to be BAP priority habitats. Similar landscape planting fringes the footpath / cycle path that lies at the northern edge of the SSSI on the steep, southern embankment of the A725. The landscaping at the north edge of the SSSI was created as part of improvements to Raith junction in the past. Moreover, introduced scrub and semi-mature woodland plantation form part of the landscaping of the road verges and “road islands” of Raith junction. This habitat is of low ecological interest, mainly due to its proximity to the busy junction, but is used by breeding and wintering birds.

Grassland

Improved and semi-improved neutral grassland constitute an important part of the survey area. There is a South Lanarkshire Habitat Action Plan (HAP) for agricultural habitats (HAP FH1). The HAP outlines the ecological importance of farming in the district and how the implementation of ecologically sound agricultural practices will promote this connection.

Semi-improved grasslands are the dominant habitat in the Laighland area (**TN 17**) and much of the SSSI (**TN 5**) and the southern part of Bothwell Park. Only the SSSI contains grassland that has any degree of species diversity and they also tend to be very wet in character bordering on marshy grassland. Even so the semi-improved grasslands of the area are predominantly rank in nature which does not benefit species diversity. In fact extensive areas of tall ruderal habitat have succeeded grassland and this is particularly evident in the riparian zone of the River Clyde. The rank nature of these habitats is the result of the lack of long-term vegetation control in the grasslands of the area. Nevertheless, the grasslands of the SSSI benefit from appreciably high levels of browsing and grazing by roe deer (*Capreolus capreolus*), rabbit (*Oryctolagus cuniculus*) and brown hare (*Lepus europaeus*) (**TN 5**) and this has probably helped to prevent wholesale “scrubbing up” of the SSSI. Even so, grazing and browsing by wild animals do not prevent the build up of rank grassland as effectively as sheep or cattle and this would probably be required to reduce the rank nature of the SSSI's vegetation.

Improved grassland has a very restricted abundance within the Raith junction area, being limited to the paddock in the grounds of Bothwell Park House (NS.713.591).

Amenity grassland characterises most of the landscape of the Strathclyde Country Park and the verges and “road islands” of Raith junction. The habitat is of low ecological significance.

Open Water

Six areas of standing open water are present in the survey area (TN 3, 10, 14, 16, 19 and 20) existing as small- to medium-sized ponds except for Strathclyde Loch. The outlines of the survey area's waterbodies on the most recent Ordnance Survey map (Explorer sheet 343) exaggerate the amount of open water in the ponds of the area as they are, in practice, extensively colonised by tall herb fen and swamp habitat. The pond shown on the Ordnance Survey map in the southern part of Laighlands (TN 17) has been reclaimed and is now grassland for much of the year and only intermittently wet. However, just to the southeast of this locality there is a small pond with wetland vegetation (TN 16) that has probably only recently developed. Aerial photographs illustrate that a large water body is present close to the M74 embankment in the Laighlands area (TN 19). Field survey indicates that this pond is now considerably smaller in extent, probably as a result of changes to the drainage of the site. Also, a moderate-sized former pond at the northern part of Bothwell Park area (TN 14) has probably suffered from the long-term effects of siltation and colonisation by swamp vegetation. Therefore, the level of open water in the survey area appears to have decreased to a significant degree in recent times.

Standing open water has considerable status in the Lanarkshire LBAPs and is covered by a priority HAP (South Lanarkshire HAP FWH2). Apart from the small, shallow area of open water at the southern edge of Laighlands (TN 16) open water habitat is situated in non-statutory designated land (Laighlands Wetland SINC) and statutory designated land (Hamilton Low Parks SSSI).

With the exception of Strathclyde Loch, which is artificial and managed for recreation and sport, most areas of open water in the survey are not actively managed. Some of the ponds may owe their origin to subsidence caused by deep mining of the area in past times (most notably in the Laighlands and Bothwell Park areas) combined with large-scale landscaping associated with the M74 construction almost 40 years ago. The margins of all the ponds in the area have been subject to wetland vegetation development as they are suitably shallow with soft muddy substrate. Consequently open water forms only a small proportion of much of the area's wetlands.

Marsh, Tall Herb Fen and Swamp Habitat

Wetland habitats are an important part of the Raith area as most of it lies within the floodplain of the River Clyde. The Laighlands Wetland SINC and SSSI section of the survey area contain significantly sized areas of marsh, tall herb fen and swamp habitat (TN 3, 6, 9, 10, 14, 15, 19, and 20). There is a small area of wetland habitat in the southern edge of Laighlands (TN 16) that has no ecological designation, suffers heavily from poaching by livestock and is of low conservation interest.

Consultations with the BSBI indicate that there are two locally uncommon plants in the ponds of the Laighlands Wetlands SINC. Mudwort (*Limsella aquatica*) is scarce throughout the UK (only being found in less than 100 different 10 x 10 km grid squares in total) and it becomes progressively rarer to the north (Stace, 1997). The species is found in all the

ponds of the Laignlands Wetland SINC and in the Hamilton Low Parks SSSI. Most notably the species is only found in one other site in Lanarkshire. Grey club-rush (*Schoenoplectus tabernaemontani*) has been recorded in Laignland Wetland 3. Watson (1990) indicates that the species was present in Laignland Wetland 1 in the early 1990s. The plant has a very scattered inland UK distribution (Stace, 1997) although it is commoner in coastal areas. In addition the BSBI indicates that the plant is only known to occur in two other Lanarkshire sites. Even so, mudwort and grey club-rush are not South Lanarkshire BAP species. These species are unrecorded in North Lanarkshire.

Tall Ruderal Habitat

Tall ruderal habitat dominates the southern section of the SSSI and especially the riparian zone (TN 2, 7 and 8). This area is mainly vegetated by herbaceous plants that colonise the partly eroded soft alluvial soils of the steep, high riverbank and adjacent floodplain. Some willow scrub is also present in the riparian zone but it is subordinate compared with the tall ruderal vegetation. Botanical diversity is appreciably high at target note 8 locality with locally interesting, but nationally common, plants including viper's bugloss (*Echium vulgare*), reflexed stonecrop (*Sedum rupestre*), bittersweet (*Solanum dulcamara*) and tansy (*Tanacetum vulgare*). There are a few plants of water figwort (*Scrophularia auriculata*) found at the southern edge of the survey area. This is a plant that is generally rare in Scotland (Stace, 1997). Water figwort is a North Lanarkshire LBAP species as it is vulnerable and locally rare, but is not included in the South Lanarkshire BAP.

Invasive plants are uncommon in the survey area with Indian balsam (*Impatiens glandulifera*) occasionally present in the riparian zone of the River Clyde. There are a small number of plants of the non-native common blue-sow-thistle (*Cicorbita macrophylla*) also in the riparian zone, but in the experience of the surveyor the species is not strongly invasive in nature.

Running Water

Rivers and streams are both priority UK BAP habitats in the South and North Lanarkshire LBAPs, recognising the significance of watercourses as they support a very wide range of wildlife and form important wildlife corridors. The River Clyde is a major watercourse identified for its high ecological significance to Lanarkshire and it is almost entirely natural where it flows close to the survey area (with the exception of bridges).

In the survey area there is a drainage system composed of minor watercourses and land drains that feed into the River Clyde (see TN 1). In Strathclyde Country Park there is a land drain system whose water quality appears to be low (with considerable iron oxide staining) and of low ecological value.

The main watercourse system in the area is composed of two minor watercourses that drain land to the north of the survey area. The watercourses meet in the complex of wetlands at Bothwell Park with the subsequent watercourse passing through the Laignland wetlands and the northern and western margins of the SSSI. In the latter area the land drain from

Strathclyde Country Park land adjoins the main watercourse at the southern edge of the woodland by the M74 embankment (TN 4). In general the Raith drainage system is ecologically significant as it links the Bothwell Park - Laighlands wetland complex and the SSSI.

Field observations in 2004 and 2006 and consultation with South Lanarkshire Council (Tom Macgregor, *pers. comm.*, 2004) indicate that several sections of channel in the Laighland and Hamilton Low Parks SSSI areas have been subject to channel dredging and channel widening over a number of years. Consequently channel and margin vegetation are poorly developed. The watercourse contains long culverted sections where it meets the M74 (NS712589) and the A725 (NS712584). Such structures are deleterious to the local ecology (e.g. potentially restricting the movement of wildlife). At its downstream end the watercourse feeds into the wetland within the SSSI (NS714578), which drains into the River Clyde at its southeast edge (TN 1 locality).

Marginal Habitat

Marginal habitat (wetland habitat that fringes watercourses) is not a significant feature of the ditches and watercourses of the survey area. It is either the case that watercourses are too fast flowing for marginal habitat to develop (most notably the River Clyde) or watercourses that have at one time contained marginal vegetation have subsequently been extensively dug out and dredged.

Marginal habitat is incorporated in the rivers / streams and standing open water priority North Lanarkshire HAPs. In the case of the South Lanarkshire LBAP, the conservation of marginal habitat is not expressly defined but is recognised within the standing freshwater HAP.

Boundaries

Man-made boundaries are prevalent throughout the survey area and they have been created to control livestock, to mark land ownership boundaries and to deter public access, most importantly to the M74. Fencing is the dominant boundary type in the area with a mixture of wire and post and post and rail fencing. The latter forms boundaries for land that borders public roads and also between the public footpath / cycle path and the SSSI.

Man-made ditches are often overlooked as a boundary type. The ecological benefits of ditches (e.g. the natural filtration of pollutants by wetland vegetation) is recognised in the field boundary HAP of the South Lanarkshire BAP (HAP FH2). In the survey area a wide slow flowing ditch with abundant swamp vegetation is present at the base of the embankment of the A725 and M74 in the Bothwell Park area. This ditch separates the habitats of Bothwell Park from the high traffic volume Raith junction, making Bothwell Park rather ecologically detached from much of the Raith area. A comparable ditch joins the vegetated ponds of the Laighlands Wetland SINC (wetland site 3) that lies south of the M74. Watercourses in the Strathclyde Country Park section of the survey area comprise slow-



flowing man-made ditches. The water quality of these ditches appears to be poor (supported by water quality investigation carried out as part of the scheme development).

Within the survey area there is a scattering of defunct, species-poor, hedging. Hedgerows are concentrated in the grazed grasslands of Laignland and the improved grasslands of Bothwell Park. The field boundary HAP in the South Lanarkshire LBAP notes the ecological benefits of hedges, for example as wildlife corridors, and the Plan's main aim is to increase the abundance of species-rich hedging across the district.

Built-up Areas

Buildings and road bridges are important features of the survey area's landscape, many of which could have potential as bat roosts. Habitats associated with the built environment have no status in the North Lanarkshire LBAP. In contrast, the South Lanarkshire LBAP contains an urban Habitat Action Plan (HAP) that recognises that gardens, churchyards and cemeteries have considerable capacity to support wildlife such as pipistrelle bats, amphibians, butterflies and common garden birds.

Buildings, gardens and other man-made structures are present to varying degrees across the survey area. There are numerous buildings with large private gardens located at the edges of the survey area in the Laignland and Bothwell Park areas. Due to their peripheral position and private ownership, these areas were not surveyed in detail. Within Strathclyde Country Park there are a number of buildings, however survey did not detect protected species associated with the built environment of this area.

Bridges are a significant built feature of the survey area, but showed no evidence of supporting or being suitable for notable or protected species (such as bats).

2.5 Common Mammals

Brown hare (*Lepus europaeus*) is a UK BAP and a South and North Lanarkshire BAP species, as there are indications that the UK population has declined significantly in recent years. Brown hare are present in the grasslands of Hamilton Low Parks SSSI (TN 5).

There is a population of roe deer and rabbit within the survey area, especially within the SSSI (TN 4 and 5).

2.6 Summary Evaluation

Key local and priority UK BAP habitats comprising native species woodland, open water and rivers and streams are present in the survey area. Together they form an important link in the Clyde Valley wildlife corridor. However, the presence of the A725 and M74 effectively isolate the northern part of the Raith area from the wildlife corridor.



A variety of wildlife habitats have become established in the Raith area since it was extensively landformed as part of the M74 construction almost 40 years ago. Two nationally uncommon plant species (mudwort and grey club-rush) have previously been recorded in the wetlands of the area, but were not recorded during the recent surveys in relation to the proposed scheme. Most of the plant species recorded during survey are either native or invasive alien species. Garden escape species are rare, with the exception of Indian balsam, which is fairly common in the riparian zone of the River Clyde.

Woodland has a generally fragmented distribution within the survey area. Even the riparian woodland of the River Clyde is quite fragmented, possibly due to natural floodplain dynamics. Generally speaking, the woodlands of the Raith area are not considered to be key sites within the Clyde Valley region.

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Table 1 Target Notes

TN#	Target Note
1	Dense willow scrub surrounds the outfall of the minor watercourse (that drains Raith Haugh) into the River Clyde.
2	<p>Tall ruderal habitat dominates land close to the bank of the River Clyde. With abundant nettle (<i>Urtica dioica</i>), Indian balsam and ground-elder (<i>Aegopodium podagraria</i>). In addition, there is occasional rosebay willowherb (<i>Chamerion angustifolium</i>), few-flowered garlic (<i>Allium paradoxum</i>), garlic mustard (<i>Alliaria petiolata</i>), cuckooflower (<i>Cardamine pratensis</i>) and common comfrey (<i>Symphytum officinale</i>).</p> <p>A peacock butterfly (<i>Inachis io</i>) was recorded.</p>
3	Moderately large shallow-sided pond with an area of open water in its centre surrounded by bulrush (<i>Typha latifolia</i>) swamp.
4	<p>Small semi-improved woodland (copse like) with varied structure and species. Most of the woodland is open with a canopy level dominated by sycamore (<i>Acer pseudoplatanus</i>), with occasional ash (<i>Fraxinus excelsior</i>) and oak (<i>Quercus</i> sp.) Beech (<i>Fagus sylvatica</i>) and whitebeam (<i>Sorbus aria</i>) are rare. The shrub layer is mostly poorly developed with occasional elder (<i>Sambucus nigra</i>). An exception is a dense stand of hawthorn (<i>Crataegus monogyna</i>) adjacent to where a pipeline crosses the burn. In the woodland the ground layer vegetation is well developed. In places it is grassy with dominant meadow foxtail (<i>Alopecurus pratensis</i>). However, in other parts it is composed of abundant bluebell, cleavers (<i>Galium aparine</i>), bramble (<i>Rubus fruticosus</i> agg.), occasional raspberry (<i>Rubus idaeus</i>), lesser celandine (<i>Ranunculus ficaria</i>), ground-elder, few-flowered garlic (<i>Allium paradoxum</i>), common nettle, wood dock (<i>Rumex sanguineus</i>), red campion (<i>Silene dioica</i>), and hedge woundwort (<i>Stachys sylvatica</i>), nipplewort (<i>Lapsana communis</i>), male fern (<i>Dryopteris filix-mas</i>), hogweed (<i>Heracleum sphondylium</i>) and wild angelica (<i>Angelica sylvestris</i>).</p> <p>A rabbit warren was present in the wood and roe deer prints were common throughout.</p>
5	A flat lying area of semi-improved neutral grassland on soft alluvial soil. The area is often inundated when the River Clyde floods. Much of the grassland is wet. The sward is varied in composition with meadow foxtail (<i>Alopecurus pratensis</i>) being the dominant grass with



TN#	Target Note
	<p>subordinate amounts of Yorkshire fog (<i>Holcus lanatus</i>) and tufted hair-grass (<i>Deschampsia cespitosa</i>). There are, however, some small poorly draining areas dominated by reed canary-grass (<i>Phalaris arundinacea</i>). The sward is made up of abundant cleavers, nettle, cow parsley (<i>Anthriscus sylvestris</i>), and frequent creeping thistle (<i>Cirsium arvense</i>). Crosswort (<i>Cruciata laevipes</i>) and wild angelica. Occuring rarely in the sward are male fern, common hemp-nettle (<i>Galeopsis tetrahit</i>) and spear thistle (<i>Cirsium vulgare</i>).</p> <p>A doe and buck roe deer were present in the area. Also the partial skeleton of a brown hare was present at the northern edge of the semi-improved neutral grassland.</p>
6	<p>An area of swamp vegetation dominated by reed canary-grass. Marsh-marigold (<i>Caltha palustris</i>) is occasionally present. The species diversity of the swamp is low.</p>
7	<p>A tall ruderal dominated habitat where dicot species diversity is high. Monocot species are rare in the area. The substrate of the area is comparable to that of Target Note 5, except that the soil is better draining. There are no dominant species. Species that are abundant are nettle, hogweed, lesser celandine, and common comfrey. Creeping thistle is frequent and reed canary-grass, few-flowered garlic, rosebay willowherb, hedge woundwort, crosswort, cow parsley and meadowsweet (<i>Filipendula ulmaria</i>) are occasionally found.</p> <p>A small tortoiseshell butterfly (<i>Aglais urticae</i>) was noted in the area.</p>
8	<p>A tall ruderal habitat with high floral species diversity dominated the area close to the banks of the River Clyde. The bank vegetation itself is described at the end of the note. The substrate is comparable with that described for Target Note 5. No species is dominant but there are small areas where ground-elder, garlic mustard, and Yorkshire fog (<i>Holcus lanatus</i>) are locally dominant. Species, characteristic of the overall area, are great willowherb (<i>Epilobium hirsutum</i>), meadowsweet, red campion, raspberry, and water figwort (<i>Scrophularia auriculata</i>). Species less commonly found are bluebell, sweet cicely (<i>Myrrhis odorata</i>), herb Robert (<i>Geranium robertianum</i>), cock's-foot (<i>Dactylis glomerata</i>), water avens (<i>Geum rivale</i>), meadow buttercup (<i>Ranunculus acris</i>), wood horsetail (<i>Equisetum sylvaticum</i>), greater stitchwort (<i>Stellaria holostea</i>), mugwort (<i>Artemisia vulgaris</i>), common sorrel (<i>Rumex acetosa</i>), cuckooflower, field forget-me-not</p>



TN#	Target Note
	<p>(<i>Myosotis arvensis</i>), and creeping thistle.</p> <p>The banks of the River Clyde are almost vertical, 2-3m high and composed of soft sandy silt. They are partly vegetated by a diverse range of species (Indian balsam is locally dominant). They include; mugwort, meadowsweet, common figwort (<i>Scrophularia nodosa</i>), broad-leaved dock (<i>Rumex obtusifolius</i>), creeping thistle, great willowherb, tansy (<i>Tanacetum vulgare</i>), dandelion (<i>Taraxacum officinale</i> agg.), field forget-me-not, soft rush (<i>Juncus effusus</i>), nettle, wavy bitter-cress (<i>Cardamine flexuosa</i>) and shepherd's-purse (<i>Capsella bursa-pastoris</i>). Some locally unusual plants are present; viper's-bugloss, branched bur-reed (<i>Sparganium erectum</i>), reflexed stonecrop (<i>Sedum rupestre</i>), bittersweet (<i>Solanum dulcamara</i>), water figwort, common blue-sow-thistle (<i>Cicerbita macrophylla</i>), and common vetch (<i>Vicia sativa</i>).</p> <p>Banded snail species are common in the area.</p>
9	<p>A 5-7 m wide swampy ditch defines most of the southern boundary of the Bothwell Park area where it adjoins the M74 and A725. The rate of water flow is slow. This makes the area quite inaccessible. Tall-herb fen vegetation is common, composed of soft rush, great willowherb, and meadowsweet. Water quality appears to be poor with ferric staining prevalent in the eastern part of the ditch.</p>
10	<p>A wetland is located in a depression that lies at the base of the A725 embankment to the southeast and a steep bank of scrub to the north. To the south a mounded area of semi-improved neutral grassland contains the wetland. It is likely that the wetland has been intentionally created. The hydrological regime of the wetland appears to be stable with an indirect inflow of water from a burn to the north balanced by an outflow from the south (which feeds the ditch described in Target Note 9). The centre of the wetland area is a moderately large area of open water fringed by a variety of swamp communities. The water is free of excessive floating vegetation. Bulrush, common reed (<i>Phragmites australis</i>) and bottle sedge (<i>Carex rostrata</i>) are the common swamp vegetation types.</p> <p>Frog (<i>Rana temporaria</i>) tadpoles are abundant.</p>
11	<p>An area of sheltered semi-natural woodland of a scrubby appearance lies within a narrow steep sided valley that lies to the north of the wetland described in Target Note 10. Species are birch, oak and</p>



TN#	Target Note
	hawthorn, and the groundlayer is not well developed. Conditions vary from grassy to muddy close to the watercourse. Livestock grazing and poaching levels are fairly high and result in low botanical diversity.
12	The eastern edge of Bothwell Park wood is an open, high canopy, woodland dominated by oak with occasional ash. Bluebells dominate the ground layer with abundant cleavers, frequent greater stitchwort and occasional wood sorrel (<i>Oxalis acetosella</i>). Occurring rarely are wood avens (<i>Geum urbanum</i>) and pignut (<i>Conopodium majus</i>). Further west, towards the centre of the wood, which was once traversed by a railway cutting, the woods are dense (and impenetrable in places) with a very diverse age structure and ground flora. The canopy composition is similar to the woodland to the east. The shrub layer is abundant and includes elder, hawthorn and blackthorn (<i>Prunus spinosa</i>). Ground layer species include abundant herb Robert with occasional bluebell, lesser celandine, cleavers, wood avens, pignut, nettle, and rare patches of wood anemone (<i>Anemone nemorosa</i>).
13	Semi-natural woodland with wetland affinities dominates the southern parts of Bothwell Park wood. This part of the woodlands is situated at the base of an old railway cutting. There is good age structure with the canopy and scrub layer made up of willow species with equally common birch and hawthorn. Ground layer vegetation is fairly well developed, except in the wettest areas where the ground is bare and muddy. Present are abundant nettle and wild angelica with frequent barren strawberry (<i>Potentilla sterilis</i>) and occasional bramble and wood dock. Rarer are hedge woundwort and soft rush. Roe deer tracks are prevalent in this part of Bothwell Park wood.
14	A swamp dominated wetland lies at the northwest of Bothwell Park. It is fed by a small watercourse that comes from the north (along the old railway cutting) and the wetland feeds the western part of the ditch that flows along the base of the M74 embankment (Target Note 9). The wetland comprises a variety of swamp communities. The northern part is the wettest and deepest part (formerly an open water area) and the community is bulrush and water horsetail (<i>Equisetum fluviatile</i>). The fringes of the wetlands are characterised by abundant meadowsweet with occasional great willowherb and wild angelica.
15	The southern half of the wetland at the northwest of Bothwell Park is borderline between swamp and marsh. The former is slightly more



TN#	Target Note
	abundant than the latter. It is dominated by soft rush with abundant tufted hair-grass, occasional wild angelica and rare meadowsweet. Scattered willow (<i>Salix</i> sp.) and hawthorn are present in the southern part of the wetland.
16	A small shallow pond lies in semi-improved grassland just beside the embankment of the A725. It is fairly poached by horses and the water is turbid and muddy. Soft rush with abundant creeping buttercup and jointed rush (<i>Juncus articulatus</i>) dominate the marginal vegetation of the pond.
17	A semi-improved neutral grassland with subordinate marshy areas dominated by soft rush or hard rush. The grassland is used for horses. It is enclosed by wire fences and a species-poor defunct hedge bisects the field. The dominant species in the sward is perennial rye grass with abundant meadow buttercup, occasional dandelion, cuckooflower, daisy (<i>Bellis perennis</i>), greater plantain (<i>Plantago major</i>), thyme-leaved speedwell (<i>Veronica serpyllifolia</i>) and ribwort plantain (<i>Plantago lanceolata</i>). Rare in the sward are curled dock (<i>Rumex crispus</i>) and broad-leaved dock.
18	A broad (8-10m wide) steep-sided ditch (2m deep) with moderately fast water channel (2-3m wide) forms the eastern edge of the Laignland wetlands. The margins of the ditch are swamp with great willowherb, water mint (<i>Mentha aquatica</i>), meadowsweet, common water-plantain (<i>Alisma plantago-aquatica</i>) and soft rush. The northern margin of the ditch is vegetated by scattered hawthorn, dense bramble, rosebay willowherb, broad-leaved dock, cow parsley and creeping thistle. The southern margin of the area is a 10-20m wide band of soft rush and hard rush (<i>Juncus inflexus</i>).
19	This is the most extensive wetland of Laignland. It is linear in shape and follows the base of the west side of the M74 embankment (vegetated by dense scrub). The inflow to the wetland is from the north with the outflow to the south (Target Note 18). A variety of swamp communities are present with bulrush-dominated swamp prevalent to the north and east of the wetland. The western fringes of the open water are characterised by a swamp community of jointed rush with lesser amounts of mare's-tail (<i>Hippuris vulgaris</i>), common water-plantain, water horsetail and great willowherb. Further out a soft rush dominated community, borderline between swamp and marsh, with occasional great willowherb and creeping buttercup is present at



TN#	Target Note
	<p>the western edge of the wetland. The ditch that feeds the wetland is swampy in nature with vegetation including water horsetail, common water-plantain, great willowherb and watercress (<i>Rorippa nasturtium-aquaticum</i>).</p> <p>Orange tip butterflies (<i>Anthocharis cardamines</i>) are common at the marshy edges of the wetland.</p>
20	<p>A watercourse that comes from the Bothwell Park area feeds the northernmost wetland of Laighland. This wetland has a more secluded situation compared to the others of Bothwell Haugh, being enclosed by the steep embankment of the A74 and semi-improved neutral grassland and dense hawthorn scrub that rises up to join the Bothwell Park Road. The wetland includes a moderately large area of open water at its centre. Fringing this is a belt of bulrush-dominated swamp. Out from this is a band composed of water horsetail with lesser amounts of bulrush, mare's-tail, common water-plantain and a moss species. The outer edge of the wetland is composed of a shallow swamp community dominated by soft rush with lesser amounts of wild angelica, water horsetail, broad-leaved dock, creeping thistle, great willowherb and cuckooflower.</p>
21	<p>Almost impenetrable scrub covers the M74's southern embankment and to the south of the northern edge of Laighland (that has semi-improved neutral grassland and dense scrub).</p>

Table 2 Botanical species present in the survey area

Common Name	Scientific Name
TREES	
Sycamore	<i>Acer pseudoplatanus</i>
Alder	<i>Alnus glutinosa</i>
Birch species	<i>Betula sp.</i>
Beech	<i>Fagus sylvatica</i>
Ash	<i>Fraxinus excelsior</i>
Scots pine	<i>Pinus sylvestris</i>
Oak species	<i>Quercus sp.</i>
Willow species	<i>Salix sp.</i>
White willow	<i>Salix alba</i>
Crack willow	<i>Salix fragilis</i>
Whitebeam	<i>Sorbus aria</i>
SHRUBS	
Hawthorn	<i>Crataegus monogyna</i>
Wild cherry	<i>Prunus avium</i>
Blackthorn	<i>Prunus spinosa</i>
Raspberry	<i>Rubus idaeus</i>
Bramble	<i>Rubus fruticosus agg.</i>
Osier willow	<i>Salix viminalis</i>
Willow species	<i>Salix sp.</i>
Elder	<i>Sambucus nigra</i>
GRASSES	
Meadow foxtail	<i>Alopecurus pratensis</i>
Sweet vernal-grass	<i>Anthoxanthum odoratum</i>
Crested dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot	<i>Dactylis glomerata</i>
Tufted hair-grass	<i>Deschampsia cespitosa</i>
Red fescue	<i>Festuca rubra</i>
Yorkshire fog	<i>Holcus lanatus</i>
Reed canary-grass	<i>Phalaris arundinacea</i>
Common reed	<i>Phragmites australis</i>
SEDGES	
Bottle sedge	<i>Carex rostrata</i>
RUSHES	
Jointed rush	<i>Juncus articulatus</i>
Compact rush	<i>Juncus conglomeratus</i>
Soft rush	<i>Juncus effusus</i>
Hard rush	<i>Juncus inflexus</i>
HERBS	
Ground-elder	<i>Aegopodium podagraria</i>
Common water-plantain	<i>Alisma plantago-aquatica</i>
Garlic mustard	<i>Alliaria petiolata</i>



Common Name	Scientific Name
Few-flowered garlic	<i>Allium paradoxum</i>
Wood anemone	<i>Anemone nemorosa</i>
Wild angelica	<i>Angelica sylvestris</i>
Cow parsley	<i>Anthriscus sylvestris</i>
Mugwort	<i>Artemisia vulgaris</i>
Daisy	<i>Bellis perennis</i>
Marsh marigold	<i>Caltha palustris</i>
Shepherd's-purse	<i>Capsella bursa-pastoris</i>
Wavy bitter-cress	<i>Cardamine flexuosa</i>
Cuckooflower	<i>Cardamine pratensis</i>
Rosebay willowherb	<i>Chamerion angustifolium</i>
Common blue-sow-thistle	<i>Cicerbita macrophylla</i>
Creeping thistle	<i>Cirsium arvense</i>
Spear thistle	<i>Cirsium vulgare</i>
Pignut	<i>Conopodium majus</i>
Cruciata laevipes	<i>Crosswort</i>
Viper's bugloss	<i>Echium vulgare</i>
Great willowherb	<i>Epilobium hirsutum</i>
Marsh willowherb	<i>Epilobium palustre</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Common hemp-nettle	<i>Galeopsis tetrahit</i>
Cleavers	<i>Galium aparine</i>
Herb-robert	<i>Geranium robertianum</i>
Water avens	<i>Geum rivale</i>
Wood avens	<i>Geum urbanum</i>
Hogweed	<i>Heracleum sphondylium</i>
Mare's-tail	<i>Hippuris vulgaris</i>
Bluebell	<i>Hyacinthoides non-scripta</i>
Indian balsam	<i>Impatiens glandulifera</i>
Nipplewort	<i>Lapsana communis</i>
Water mint	<i>Mentha aquatica</i>
Field forget-me-not	<i>Myosotis arvensis</i>
Sweet cicely	<i>Myrrhis odorata</i>
Wood sorrel	<i>Oxalis acetosella</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Greater plantain	<i>Plantago major</i>
Silverweed	<i>Potentilla anserina</i>
Barren strawberry	<i>Potentilla sterilis</i>
Meadow buttercup	<i>Ranunculus acris</i>
Lesser celandine	<i>Ranunculus ficaria</i>
Creeping buttercup	<i>Ranunculus repens</i>
Watercress	<i>Rorippa nasturtium-aquaticum</i>
Common sorrel	<i>Rumex acetosa</i>
Curled dock	<i>Rumex crispus</i>
Broad-leaved dock	<i>Rumex obtusifolius</i>
Wood dock	<i>Rumex sanguineus</i>
Water figwort	<i>Scrophularia auriculata</i>
Common figwort	<i>Scrophularia nodosa</i>
Red campion	<i>Silene dioica</i>



Common Name	Scientific Name
Bittersweet	<i>Solanum dulcamara</i>
Branched bur-reed	<i>Sparganium erectum</i>
Hedge woundwort	<i>Stachys sylvatica</i>
Greater stitchwort	<i>Stellaria holostea</i>
Common chickweed	<i>Stellaria media</i>
Wood stitchwort	<i>Stellaria nemorum</i>
Russian comfrey	<i>Symphytum x uplandicum</i>
Tansy	<i>Tanacetum vulgare</i>
Dandelion	<i>Taraxacum agg.</i>
White clover	<i>Trifolium repens</i>
Colt's-foot	<i>Tussilago farfara</i>
Bulrush	<i>Typha latifolia</i>
Common nettle	<i>Urtica dioica</i>
Common valerian	<i>Valeriana officinalis</i>
Germander speedwell	<i>Veronica chamaedrys</i>
Thyme-leaved speedwell	<i>Veronica serpyllifolia</i>
Common vetch	<i>Vicia sativa</i>
FERNS & ALLIES	
Male fern	<i>Dryopteris filix-mas</i>
Field horsetail	<i>Equisetum arvense</i>
Water horsetail	<i>Equisetum fluviatile</i>
Wood horsetail	<i>Equisetum sylvaticum</i>

Table 3 Fauna present in the survey area

Common Name	Scientific Name
Mammals	
Roe deer	<i>Capreolus capreolus</i>
Brown hare	<i>Lepus europaeus</i>
Otter	<i>Lutra lutra</i>
Badger	<i>Meles meles</i>
Common field vole	<i>Microstis agrestis</i>
Rabbit	<i>Oryctolagus cuniculus</i>
Grey squirrel	<i>Sciurus carolinensis</i>
Common shrew	<i>Sorex araneus</i>
Fox	<i>Vulpes vulpes</i>
Amphibians	
Common frog	<i>Rana temporaria</i>
Invertebrates	
Small tortoiseshell butterfly	<i>Aglais urticae</i>
Banded snail species	<i>Cepea sp.</i>
Peacock butterfly	<i>Inachis io</i>