RESULTS & EVALUATION OF AN ECOLOGICAL SURVEY OF THREE SECTIONS OF A PROPOSED CYCLEWAY AT WHITWORTH IN ROSSENDALE, LANCASHIRE

A REPORT TO GROUNDWORK PENNINE LANCASHIRE

BY THE WILDLIFE TRUST FOR LANCASHIRE, MANCHESTER & NORTH MERSEYSIDE

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Rachael Marsden, Landscape Architect for Groundwork Pennine Lancashire, who commissioned the Wildlife Trust to carry out the survey and provided maps of the sections to be surveyed.

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An introduction to the Wildlife Trust for Lancashire, Manchester and North Merseyside

The Wildlife Trust is a registered charity and non-profit making organisation dedicated to protecting wildlife and natural habitats throughout Lancashire, Greater Manchester and Merseyside (north of the Mersey). It is one of 47 independent charities that together form a national partnership, The Wildlife Trusts - the largest voluntary body in the UK concerned with all aspects of wildlife. Established by volunteers in 1962, the Wildlife Trust is governed by a voluntary council elected by its 16,000+ members. On a day to day basis work is undertaken by a team of around 90 staff, headed by a Chief Executive, who work closely with volunteers in every area of activity. The Trust's headquarters is based at The Barn in Cuerden Valley Park, a 600 acre country park south of Preston. Other staff are based at the Trust's centres in Bolton, Burnley, Heysham, Mere Sands Wood (West Lancashire), Penwortham (south of Preston), Preston, Seaforth (Liverpool) and Wigan.

The Trust's vision is ...

> "*To be the key voice for nature conservation within our region and to use our knowledge and expertise to help the people and organisations of Lancashire, Manchester and North Merseyside to enjoy, understand and take action to conserve their wildlife and its habitats*".

It will achieve this through the implementation of our development plan by focusing on key areas of activity which are given below:

- **Education and Training** - NVQ training in ecology and environmental management, 17 Wildlife Watch groups, outreach work in schools, specialist Environmental Education Centre and staff, conferences, training and sharing days.
- **Land Management** - the Trust directly manages over 2,000 acres of land comprising a sample of the key habitats in the county, many of international importance for nature conservation.
- **Planning and Survey** - monitoring over 30,000 planning applications per annum, appearing at Public Inquiries, influencing Local Plan policy, consultancy and advisory work for local authorities.
- **Wildlife Sites System** - operating an acclaimed Wildlife Sites System in partnership with English Nature and Lancashire County Council.
- **Biodiversity** - a key partner in the preparation and implementation of Lancashire's Biodiversity Action Plan.
- **Sustainability** - Trust staff and volunteers active throughout the county, innovative can recycling, allotments and community composting schemes.
- **Urban Conservation** - the Trust operates Urban Wildlife Projects in Bolton, Burnley, Liverpool, Preston & Wigan with plans to establish similar projects in other areas.
- **Liaison** - the Trust works with all 25 county, district and metropolitan councils, the environment voluntary sector, companies and community groups across Lancashire. It is involved in a wide range of initiatives and partnerships including ELWOOD, River Valley Initiatives and Lancashire Rural Futures to

name a few. It also administers the SITA Lancashire Environmental Fund (Landfill Tax Credit Scheme).

- **Volunteer Involvement** - Its network of volunteers, members and supporters permeate almost every town and village in the area. They organise events programmes, work parties, surveys, fund-raising events and keep a vigilant eye on potential threats to wildlife.
- **Fund-raising** - the Trust works in partnership with many business supporters on conservation projects, education initiatives and fund-raising events. A major membership recruitment scheme is in progress and a legacy campaign was launched in 1998.

Mr John Lamb M.Sc. is one of five regional conservation officers employed by the Trust with Mr Lamb being the conservation officer for East Lancashire. Mr Lamb graduated from Liverpool University in 1986 with a B.Sc. Honours degree in Environmental Biology. In 1987 he worked as a countryside ranger on the internationally important sand dune system of the Sefton Coast before heading south to Wye College, Kent, to study for a M.Sc. degree in Landscape Ecology, Design & Maintenance. Mr Lamb then worked for the Nature Conservancy Council as Assistant Scientific Officer and undertook a research contract for Dr George Peterken examining the ecological effects of the "Great Storm" of 16 October 1987. Mr Lamb then returned to Lancashire to take up his first post with the then Lancashire Trust for Nature Conservation, as Woodland Officer for the Central Lancashire Woodland Project surveying ancient woodlands in the Ribble Valley. He completed a Phase 2 habitat survey of sites in Burnley District and initiated an urban wildlife survey of Preston before moving to the Isle of Man to undertake a Phase 1 habitat survey for the Isle of Man government. In 1992 he took up the position of Conservation Officer with the Manx Wildlife Trust, a post he held for six years. In July 1998 John returned to his home county to take up his present position as Conservation Officer for East Lancashire with the Wildlife Trust. In 2007 John became a member of the Institute of Ecology and Environmental Management (IEEM) and trained to be an auditor for The Wildlife Trust's Biodiversity Benchmark.

The duties of Conservation Officer include the following areas of work:

- Managing the Trust's nature reserves in the five districts of East Lancashire;
- Representing the Trust at meetings of various partnerships and initiatives;
- Providing information and advice to land managers, Trust members and members of the public;
- Commenting on planning applications, reviews of local plans and other documents in East Lancashire, and
- Undertaking ecological survey work, normally on a consultancy basis, both in East Lancashire and elsewhere in the Trust's area.

1. SUMMARY

Surveys of higher plants were carried out for the sections of the proposed cycleway on the 20th August 2007. The surveys recorded 98 species, 81 (82.7%) of which are native to the UK and 17 (17.3%) introduced species, including nine trees/shrubs and six herbaceous plants.

The highest number of species was found in section 3, i.e. 78, with 54 in section 1 and 38 in section 2. Section 3 also has the highest number of native species and non-native species at 64 and 14 respectively, hence section 3 has the highest number of species, the highest numbers of both native and non-native species, the highest proportion of non-native species and the lowest proportion of native species.

The proposed cycleway supports plants that are typical of a variety of habitat types including woodland and shady places, neutral grassland, damp grassland habitats, tall ruderal vegetation and disturbed ground. Additional habitat types and species are present adjacent to the route/disused railway line.

Whilst the native species recorded are common in South Lancashire, nine of the 41 native herbaceous plants (22%) are included on the list of qualifying species for Biological Heritage Site (BHS) status for semi-natural grasslands. Of the nine, three (33%) are found in both sections 1 and 2, whereas eight (89%) are found in section 3. However, the three sections do not qualify under the BHS guidelines for site selection for the habitat types present or for flowering plants and ferns.

It is important to conserve the features of interest that already exists through continuation or reinstatement of sympathetic management, but there are also a number of ways in which the wildlife value of the site could be enhanced, in particular by grassland areas being managed sympathetically as a wildflower meadow.

A number of species of butterfly and a variety of other invertebrates were noted during the survey and from the grasses and wildflowers present the cycleway has the potential to support at least 14 species of butterflies.

It is concluded that the proposed cycleway has existing features of ecological interest but these do not qualify for Local Wildlife Site status. If constructed with care, a cycleway along the proposed route could have a minimal impact upon the existing features of interest.

Recommendations include the route of the cycleway following the existing “desire lines” and that care is taken to avoid encroachment onto the areas of grassland that support wildflowers. Bird nesting and bat roosting boxes could also be erected on suitable trees along the route.

With the diversity of wildlife in the local area there is scope for information on the natural history to feature on any information boards or leaflets that may be produced along the route.

Subject to the site being risk assessed and hazards made safe, local schools could be given the chance to use the site as an outdoor classroom, where appropriate.

2. BACKGROUND AND INTRODUCTION

In July 2007 the Wildlife Trust was contacted by Rachael Marsden, Landscape Architect for Groundwork Pennine Lancashire in respect of surveying the three off-road sections of the proposed cycleway through Whitworth in the Borough Of Rossendale. Maps showing the routes of the three off-road sections to be surveyed were provided and the sections were surveyed on the 20th August 2007.

Grid references:

Section 1 SD 887 193 – SD 882 197
Section 2 SD 889 200 – SD 890 205
Section 3 SD 891 207 – SD 884 214

Map coverage:

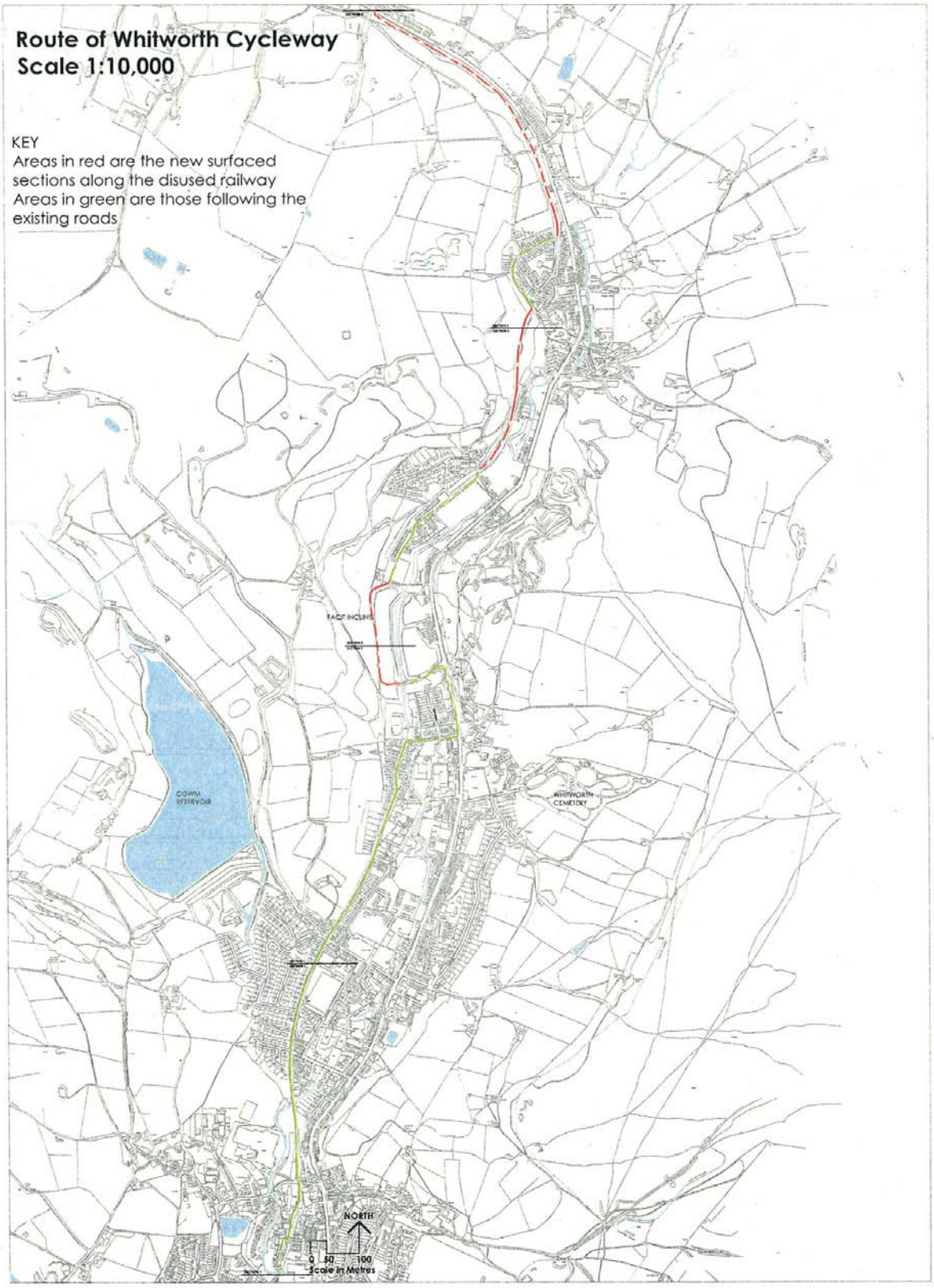
OS Landranger 103 Blackburn and 109 Manchester 1:50,000 scale,
OS Outdoor Leisure 21 South Pennines 1:25,000,
OS Sheets SD 81 NE and SD 82 NW 1:10,000.

A standard system of land classification has been developed called the Phase 1 habitat survey that identifies some 90 major habitat types including different types of woodland, grassland, heath, bog, coastal, artificial habitats and boundary features etc. Lancashire was surveyed, District by District between 1984 and 1992, with the Whitworth area being surveyed at various times between May 1984 and March 1988. The accuracy of the survey can vary depending on the time of year, weather conditions on the day and diligence of the surveyor(s). “Target Notes” are written to describe sites or features of ecological interest or features that cannot be mapped or easily described. No Target Notes were written for sections 1, 2 or 3 of the disused railway line, although one was written for the line to the west of section 3 at SD880215 in July 1984.

The cycleway lies within a much larger Less Favoured Area (Severely Disadvantaged), which can have implications for landowners, principally farmers, in terms of land management and grant aid (see www.MAGIC.gov.uk).

The 1st edition Ordnance Survey maps and aerial photographs of the area taken in the 1940’s, 1960’s and 2000’s can be accessed via the Lancashire County Council MARIO Mapping System on www.mario.lancashire.gov.uk

Figure 1. Location map of the three off-road sections of cycleway (red dash lines)



3. SECTION DESCRIPTIONS

3.1 Section 1

Section 1 starts at the end of an unused tarmac road that crosses over a river/stream. The first few metres comprises miscellaneous hardcore and chippings with a mound of linear spoil in front of the fenceline ahead. This area is enclosed by post and mesh fencing on three sides with a stile in the left hand corner of the fence ahead. The vegetation along both the side fences is unmanaged grassland with tall ruderal vegetation (i.e. plants such as nettles, thistles, docks and rosebay willowherb) including perennial rye-grass, false oat-grass, nettle, creeping thistle, Indian balsam, white clover, cock's-foot, dandelion, ragwort, creeping buttercup, Yorkshire fog, broad-leaved dock, red fescue and autumn hawkbit. A cinnabar moth caterpillar was observed feeding on a ragwort plant.

Vegetation developing on the hardcore includes ragwort, false oat-grass, prickly sow-thistle, an unidentified willowherb, dandelion, Yorkshire fog, cock's-foot, lesser trefoil, creeping buttercup, common mouse-ear, nettle and white clover.

The route then passes through a field of improved grassland that was being grazed to a short turf by several horses and foals. Note that the fields used to be a tip and have been reclaimed. The proposed route sweeps uphill across the field then follows the fenceline to leave the field through a gate & stile. The vegetation along the route included perennial rye-grass, meadow buttercup, creeping buttercup, greater plantain, white clover, daisy, self-heal, crested dog's-tail, ribwort plantain, slender rush, common bent, tufted hair-grass, soft-rush, broad-leaved dock, marsh foxtail, annual meadow-grass, curled dock, rough meadow-grass, toad rush and floating sweet-grass.

The route then follows a track enclosed between post and mesh fencing and is ungrazed and unmanaged grassland locally dominated by perennial rye-grass, crested dogs-tail, Yorkshire fog and slender rush. A larch plantation is present on the uphill (west) slope with a row of planted trees (alder, hawthorn, aspen, oak and birch) on the slope down to the field to the east. Other flora included common bent, timothy, soft-rush, floating sweet-grass, red fescue, meadow buttercup, white clover, daisy, ribwort plantain, aspen (seedlings), creeping buttercup, dandelion, lesser trefoil, common mouse-ear, common vetch, bramble, meadow vetchling, self-heal, creeping thistle, curled dock, tufted hair-grass and an unidentified willowherb.

A metal seven-bar gate crosses the track, with a stile on the left hand side. Beyond the gate the tracks is initially grassed and dominated by perennial rye-grass, Yorkshire fog and crested dog's-tail. Other flora included white clover, rough meadow-grass, slender rush, soft-rush, daisy, annual meadow-grass, curled dock, an unidentified willowherb and greater plantain.

The proposed route then follows a track leading downhill to the east. The northwest side of the track border a garden and starts with a pile of stones with snowberry, great willowherb, herb-Robert, nettle, broad-leaved dock, Yorkshire fog, common bent, goat willow, an unidentified willowherb, cock's-foot and with cheery tree in the adjacent garden. A grassy slope then reaches up to the garden boundary post and mesh fencing and has scattered young ash trees with rose and hawthorn shrubs. Additional

flora includes broad-buckler fern, large bindweed, a bridewort shrub and bramble. There had been some dumping of garden waste on the slope. A metal gate was present at the end of the track together with Japanese rose.

The southeast side of the track is bounded by a post and mesh fence with trees on the other side (alder, hawthorn, hazel and willow). The flora included Yorkshire fog, false oat-grass, field horsetail, broad-leaved dock, creeping buttercup, common bent, creeping bent, tufted hair-grass, common vetch, cock's-foot, nettle, yellow iris, unidentified willowherb, herb-Robert, great willowherb and red fescue.

3.2 Section 2

The section heads up a slope from Oak Street and through two square timber posts with post and mesh fencing either side. The initial section of grassland on the slope is unmanaged and locally dominated by timothy, Yorkshire fog and perennial rye-grass with white clover and cock's-foot. Beyond the two posts the route is lined by two fences and is locally dominated by Yorkshire fog, timothy, slender rush and annual meadow-grass with patches of rosebay willowherb and nettles. Other flora includes creeping buttercup, white clover, creeping thistle, meadow vetchling, common bird's-foot-trefoil, ragwort, false oat-grass, meadow buttercup, crested dog's-tail, tufted hair-grass, common bent, greater plantain, ribwort plantain, red clover, bramble, broad-leaved dock, broad-buckler fern, common couch, aspen (sapling), dandelion, great willowherb, common sorrel, soft-rush, rough meadow-grass, greater bird's-foot-trefoil, smooth meadow-grass, creeping bent and grey willow. The route is well used by dog walkers with abundant dock muck present.

A ditch is present along part of the western edge and had flowing water for part of its length on the day on survey. Additional flora noted on the banks included male fern, goat willow, sycamore and great willowherb. Otherwise no wetland or aquatic vegetation was observed.

The section goes through a post and mesh fencing onto a short section of mown grassland with a row of garages on the right hand side. The route then follows a hardcore slope down to Old Lane.

This section has a larch plantation on the western side and grazed grassland to the northeast with a broadleaved plantation to the east (mid-section).

The following fauna were noted: meadow brown, green-veined white, hawker dragonfly and grasshopper.

3.3 Section 3

The start of this section leaves Knowsley Crescent and the vegetation initially is closely mown with a solitary sycamore tree present (to be removed?). Pineappleweed is present along the roadside. The mown vegetation is dominated by perennial rye-grass and other species noted in the sward include daisy, greater plantain, dandelion, white clover, red clover, ragwort, broad-leaved dock, meadow crane's-bill, ribwort plantain and common sorrel.

A comprehensive survey of the existing path/mown route was made difficult by the grass being regularly and closely mown. Instead separate lists of the uncut vegetation either side of the mown strip were recorded as follows:

The following 45 species were recorded along the western edge: reed canary-grass, nettle, Yorkshire fog, meadow foxtail, perennial rye-grass, meadow crane's-bill, ragwort, elder, creeping thistle, false oat-grass, red fescue, meadow vetchling, hogweed, creeping bent, timothy, rosebay willowherb, greater bird's-foot-trefoil, montbretia, Japanese knotweed, creeping buttercup, common vetch, marsh woundwort, Indian balsam, male fern, lady-fern, common sorrel, cock's-foot, an unidentified willowherb, soft-rush, dandelion, great willowherb, herb-Robert, bog stitchwort, a pine (sapling), tufted vetch, tufted hair-grass, bush vetch, sweet vernal-grass, broad buckler-fern, an unidentified brome, creeping soft-grass and common bent.

A horse is tethered along the route and there was locally abundant meadow crane's-bill in the vicinity. The horse had been tethered to the north in the recent past, its grazing range extending up onto an embankment that supports acidic vegetation dominated by wavy hair-grass, with heather, bilberry and rowan. Indian balsam is locally dominant either side of a bridge that crosses the route.

A stream flows down the slope from the west and enters a culvert. A few damp/wet areas are present along the route, presumably linked to blocked drains in the vicinity.

A few trees have been planted in the northern part of this section, i.e. Norway maple and grey alder. Here the flora is locally dominated by creeping soft-grass, creeping buttercup and rosebay willowherb with abundant ferns on the railway wall and with heather and an unidentified hawkweed present. A few cherry trees are present along/adjacent to the proposed cycleway opposite the Shore Service Station.

The northern part of the eastern section is initially open with a steep drop down to the road that would need to be fenced off. Further south the drop is fenced off by the houses and a line of trees have been planted (including ash, sycamore, rowan and willow).

The following 58 species were recorded along the eastern edge: nettle, cock's-foot, creeping thistle, creeping buttercup, dandelion, Yorkshire fog, common bent, rosebay willowherb, smooth meadow-grass, tufted hair-grass, an unidentified brome, common sorrel, tufted vetch, white clover, an unidentified hawkweed, bush vetch, knapweed, ragwort, grey alder (suckers), lady-fern, creeping soft-grass, common bird's-foot-trefoil, meadow vetchling, male fern, ribwort plantain, self-heal, an unidentified willowherb, creeping buttercup, meadow buttercup, bramble, snowberry, broad buckler-fern, broad-leaved willowherb, ivy (cultivated variety - garden escape), Indain balsam, common vetch, herb-Robert, comfrey, an unidentified grass (cultivated variety - garden escape), hawthorn, cherry laurel (recent planting), lady's-mantle, creeping bent, greater plantain, broad-leaved dock, perennial rye-grass, field horsetail, common bent, goat willow, meadow foxtail, sweet vernal-grass, elder, meadow crane's-bill, ribwort plantain, rowan, Japanese rose, false oat-grass, hemp-agrimony, Japanese knotweed, hogweed and common cat's-ear.

Additional species are present adjacent to the disused railway line and include elm trees (possibly two species), Norway maple, blackcurrant, sycamore and a cultivated hawthorn. A compost bin was also present in the vicinity of the recently panted cherry laurel shrubs. The common cat's-ear was present by an elm tree where a path comes up onto the disused railway line from the east.

The following butterflies were seen along the eastern edge: green-veined white, small copper and meadow brown.

Note that of the 78 species recorded along section 3, 25 species were found on the east side and not the west side and a further 10 species were found on the west side and not the east. This means that 35 species (44.9%) were found only on one side of the track. This emphasises the need for the working wayleave for the cycle way to be kept to a minimum and for care to be taken not to damage or destroy the vegetation either side of the cycleway.

3.4 Adjacent land uses and wildlife corridors

The Phase 1 habitat survey of the surrounding area shows the following:

Section 1 passes through an area of acidic grassland, but note that the fields grazed by horses used to be a tip and have been reclaimed and reseeded as improved grassland and the vegetation along the unmanaged section is neutral and not acidic. There has also been some tree planting particularly to the west of the disused railway line.

Section 2 is shown as being acidic grassland to the west with built-up land to the east, although the route of the cycleway is neutral grassland and not acidic. There has also been some tree planting particularly to the west of the disused railway line.

Section 3 shows the land to the east of the line to be built-up but the southern part of the line to the west has an area of acidic grassland associated with a small square-shaped reservoir. The land to the west has been planted with a mixture of broadleaved and coniferous trees. A Target Note for SD 888212 states that the mixed plantation was about 10 years old in 1984, hence was planted around 1984, i.e. approx. 23 years ago. The central part of the line on the west bank, particularly to the south of the footbridge, is acidic with a mosaic of acidic grassland and dry dwarf shrub heath. However, the banking will not be affected by the cycleway and was excluded from the survey.

The Rossendale Local Plan 1990-2001 (RBC 1995) indicates the following:

For Section 1, the river corridor is a Greenland covered by Policy E.1, the fields grazed by horse are in an Employment Site (J.1) and the disused railway line is a Valley Way covered by Policy C.10.

For Sections 2 and 3 the disused railway line is a Valley Way covered by Policy C.10 and the land either side is Green Belt (Policy DS.3).

In being situated on the urban/rural edge, the site more likely to attract visiting and migratory species than a site that is isolated from the wider countryside. However, the numbers and species of fauna that will visit the woodland are not only dependent upon management of the site itself but also activities in the adjacent land and in the wider countryside.

Wildlife corridors are part of Policy E.3 Nature Conservation in the Rosendale District Local Plan (RBC 1995) and point 2 states that

> "The Council will seek to link natural habitats, greenlands and other open spaces in order to create wildlife corridors through both rural and urban areas"

However, the wildlife corridors are not highlighted on the Proposals Map of the Local Plan.

Policy C.10 also states that Valley Ways will provide

> "A wildlife corridor and links to enable the movement of wildlife".

Linear features such as watercourses and disused railway lines normally function as wildlife corridors and/or links between sites and areas of semi-natural habitat types.

There are two BHS within 1 kilometre or so of the disused railway line, as follows:

Site name	BHS ref	Qualifying guideline(s)	Area (ha)
Taddy Lodge, Whitworth	82SE01	Odonata (Od4)	3.8
Duckworth Bank, Whitworth	82SE02	Grassland (Gr3)	2.7

Comparisons could be made to the species found along the proposed cycleway with those found in the above BHS and, where appropriate, additional species could be planted in suitable locations along the route if these areas were to be managed sympathetically.

4. EVALUATION

4.1 Habitats

The main habitat types along the three sections of disused railway line are neutral grassland with patches of tall ruderal vegetation (i.e. plants such as nettles, thistles, docks and rosebay willowherb). The route of Section 1 passes through a field of improved grassland and a strip of grassland through section 3 is regularly mown, which is termed amenity grassland under the Phase 1 habitat survey (JNCC 1993).

The quality of the neutral grassland along the sections is variable in terms of the plant species composition. The grassland along sections 1 and 2 is dominated by grasses and is relatively species poor but between them the grassland in sections 1 and 2 support five of the native herbaceous plants that are on the list of qualifying species for Biological Heritage Site status for semi-natural grasslands, i.e. meadow vetchling, autumn hawkbit, common bird's-foot-trefoil, greater bird's-foot-trefoil and self-heal. Sections 1 and 2 also support other wildflowers, including meadow buttercup, common vetch and red clover.

However, the grassland in section 3 is more species-rich and supports eight of the native herbaceous plants that are on the list of qualifying species for Biological Heritage Site status for semi-natural grasslands, i.e. lady's-mantle, knapweed, meadow crane's-bill (see photo 1), common cat's-ear, meadow vetchling, common bird's-foot-trefoil, greater bird's-foot-trefoil and self-heal. Ten species from the list are required for BHS status and qualifying sites need to be at least 0.5ha in size. Section 3 also supports other wildflowers including several that weren't found in sections 1 and 2 including hemp-agrimony (see photo 2), hawkweed, marsh woundwort, tufted vetch and bush vetch. It is recommended that the areas of species-rich grassland along section 3 are managed sympathetically as a wildflower meadow.

Small patches of ephemeral vegetation (plant communities maintained by disturbance and trampling) are present at entrances onto the site and along the paths and the flora includes annual meadow-grass, greater plantain, creeping buttercup, slender rush and dandelion.

Areas of bare ground are present along the route or where only sparse vegetation persists or has been created by disturbance. Bare ground can be important not only in providing opportunities for seeds to germinate but may also be used by invertebrates such as solitary bees and wasps.

Additional habitats are present either side of the proposed cycleway and include woodland (coniferous plantation, broadleaved plantation and mixed plantation), acidic grassland and heathland (mid-part of section 3), a stream (Section 1) and ditches (section 2).

Photo 1. Meadow crane's-bill along Section 3 of the proposed Whitworth cycleway (photo taken by John Lamb).

Photo 2. Hemp-agrimony along Section 3 of the proposed Whitworth cycleway (photo taken by John Lamb).

4.2 Higher plants

A total of 98 plant species were recorded on the site, (appendix 1), of which 81 (82.7%) are native to the UK and 17 (17.3%) have been introduced to the UK.

The highest number of species was found in section 3, i.e. 78, with 54 in section 1 and 38 in section 2. However, section 3 has the highest number of native species and non-native species with 64 and 14 respectively, i.e. 82.1% to 17.9%. In comparison section 1 has 48 native and six non-native species, i.e. 88.9:11.1% and section 2 has 36 native to two non-native, i.e. 94.7:5.3%. Hence section 3 has the highest number of species, the highest numbers of both native and non-native species, the highest proportion of non-native species and the lowest proportion of native species.

The native species of trees and shrubs, in particular oak and willow, support many more species of insects than the introduced trees (figure 2), as the insects tend not to be introduced with the trees and are adapted to survive in different climates to the UK.

Nine of the 41 native herbaceous plants (22%) are included on the list of qualifying species for Biological Heritage Site status for semi-natural grasslands. Of the nine, three (33%) are found in both sections 1 and 2, whereas eight (89%) are found in section 3.

The native species recorded along the proposed cycleway are mainly common or very common in South Lancashire* (Savidge *et al* 1963), with no rare species, see appendix 1. However, the Flora of South Lancashire is currently in the process of being revised and updated and the status of species recorded in the woodland should be re-evaluated following its publication.

The proposed cycleway supports plants that are typical of woodland and shady places such as creeping soft-grass, herb-Robert and several species of sedges and ferns. Additional woodland plants may be present but due to the timing of the survey would not be visible and were not recorded during the survey.

The cycleway also supports plants that are typical of neutral grassland such as knapweed, common cat's-ear, meadow crane's-bill, meadow vetchling, bird's-foot-trefoil, selfheal, meadow buttercup, red clover and vetches.

The cycleway also supports plants that are typical of damp/wetland habitats such as willows, marsh foxtail, floating sweet-grass, rushes, yellow iris, marsh woundwort and bog stitchwort.

The route also has stands of tall ruderal vegetation (creeping thistle, rosebay willowherb, great willowherb, common hogweed, docks and nettles). They may form large beds dominated by one or more species or occur scattered in amongst grassland vegetation. The creeping thistle, common ragwort, curled and broad-leaved docks are notifiable weeds under the Weeds Act 1959 that should be prevented from seeding onto agricultural land.

The majority of the tall ruderal plants, including the notifiable weeds, are excellent sources of nectar for a range of invertebrates and many of the seeds are eaten by birds.

The hollow stems are also used as hibernation/over-wintering sites by invertebrates. Hence a balance is required in respect of controlling the risk of them seeding onto agricultural land and their value for wildlife.

* Note: South Lancashire refers to the Vice County that covers the area south of the River Ribble, including the Borough of Rossendale.

Figure 2. Numbers of insect and mite species associated with trees and shrubs (after Kennedy and Southwood 1986).

Tree/shrub	Scientific name	Number of associated
Willows	Salix (5 species)	450
Oak	Quercus robur & petraea	423
Birch	Betula (2 species)	334
Hawthorn	Crataegus monogyna	209
Poplars	Populus (4 species)	189
Scots Pine	Pinus sylvestris	172
Sloe	Prunus spinosa	153
Alder	Alnus glutinosa	141
Elms	Ulmus (2 species)	124
Crab apple	Malus sylvestris	118
Hazel	Corylus avellana	106
Beech	Fagus sylvatica	98
Norway Spruce*	Picea abies	70
Ash	Fraxinus excelsior	68
Mountain ash	Sorbus aucuparia	58
Lime	Tilia (2 species)	57
Hornbeam	Carpinus betulus	51
Field maple	Acer campestre	51
Sycamore*	Acer pseudoplatanus	43
European larch*	Larix decidua	38
Juniper	Juniperus communis	32
Sweet chestnut*	Castanea sativa	11
Holly	Ilex aquifolium	10
Horse chestnut*	Aesculus hippocastanum	9
Walnut*	Juglans regia	7
Yew*	Taxus baccata	6
Holm oak*	Quercus ilex	5
False acacia*	Robinia pseudoacacia	2

Non-native trees to the UK are marked (*)

Note: although some native species such as mountain ash and holly, do not have a high insect count they are valuable in providing berries for birds and in the case of the holly blue butterfly.

The Postcode Plants Database (www.nhm.ac.uk/projects/fff) can be used to find which species are locally native to the relevant Postcode Area.

4.3 Limitations of the field survey

The survey concentrated on recording the higher plants in the field and not lower plants (mosses, liverworts, algae, lichens and fungi). During the time available it was only possible to make casual observations of fauna. It is not possible to record 100% of the plant species that grow on a plot of land from any one visit or indeed over any one year. At least three visits spread between spring, summer and autumn are necessary to record the majority of the flowering plants, but even then some species do not appear every year and disturbance events may provide the opportunity for species to colonise that have not previously been recorded on a site. Although the author is confident that the majority of native species of higher plants identifiable at the time of the field survey will have been recorded, it should be noted that the species lists may not be complete for any or all of the following reasons:

- timing of survey, e.g. spring-flowering (vernal) species not being visible at the time of the survey and late-flowering species being overlooked,
- inconspicuousness of certain species allowing them to be easily missed,
- species being obscured by other vegetation or hidden under dense scrub/trees,
- species not being identifiable to species level,
- specimens of species with many sub-species, varieties, sectional or microspecies not being determined, in particular dandelions and brambles,
- hybrids between two or more species not being determined,
- impenetrability of areas of dense vegetation or inaccessibility due to site safety, e.g. steep or unsafe slopes,
- there being one or a small number of individuals which may easily be missed if not “stumbled across”, and
- certain weather or light conditions which affect or reduce the vision of the surveyor and/or the visibility of the species.

4.3 Invertebrates

Three species of butterfly were seen during the higher plant surveys, i.e. green-veined white, meadow brown and small copper. In addition a hawker dragonfly was noted and a grasshopper was heard. Other invertebrates including slugs, spiders, flies and hoverflies were also noted. In addition to the cinnabar moth caterpillar observed on common ragwort, a few moths were disturbed during the survey but were not caught for identification.

The food plants on which the female butterflies lay their eggs and that the caterpillars eat are listed in figure 3. The brown butterflies use grass species, which are abundant on the site, the orange tip and green veined white use cuckooflower, hedge garlic and hedge mustard. The comma, red admiral, peacock and small tortoiseshell butterflies lay their eggs on nettles and the caterpillars eat the leaves.

Moths are attracted to plants that produce their nectar at night (because they are pollinated by night-flying insects) such as night-scented stocks, evening primrose and honeysuckle.

Figure 3. Common butterflies in East Lancashire and their foodplants:

Butterfly	Plants on which the adult female lays her eggs
Comma	* nettles
Common blue	* bird's-foot-trefoil
Gatekeeper	* grasses, mainly bents and fescues
Green-veined white	wild crucifers
Holly blue	holly in spring and ivy in summer
Large skipper	* grasses
Large white	Crucifers, especially Brassicas
Meadow brown	* grasses; bents, fescues and Poa's
Orange tip	cuckooflower and garlic mustard
Painted lady	* thistles, mallows and nettles
Peacock	* nettles
Red admiral	* nettles
Small copper	* common and sheep's sorrel
Small heath	* grasses; bents, fescues and Poa's
Small skipper	* grasses, mainly Yorkshire fog
Small tortoiseshell	* nettles
Small white	Crucifers, especially Brassicas
Speckled wood	* grasses; cock's-foot and Yorkshire fog
Wall	* grasses; cock's-foot and Yorkshire fog

* = recorded along the route of the proposed cycleway at Whitworth. Hence the cycleway has the potential to support at least 14 species of butterflies.

Other types of invertebrates will also occur along the proposed cycleway and may include bees, wasps, weevils, beetles, snails and damselflies (which often feed well away from ponds). In common with most if not all sites, if the invertebrates were surveyed in detail then the number of species would exceed that of any other group, see figure 4.

Figure 4. Number of native terrestrial and freshwater species in the UK compared with recent global estimates of described species in major groups excluding bacteria, viruses and algae.

Group	World species	UK species		Lancashire	Rossendale
Flowering plants and stoneworts	>250,000	1,500	(0.6%)	?	?
Lichens	>17,000	1,500	(8.8%)	?	?
Bryophytes	>14,000	1,000	(7.1%)	?	?
Ferns	>12,000	80	(0.7%)	?	?
Fungi	>70,000	15,000	(21.4%)	?	?
Invertebrates	>1,290,000	30,500	(2.4%)	?	?
Freshwater fish	>8,500	38	(0.4%)	?	?
Amphibians	>4,000	6	(0.2%)	?	?
Reptiles	>6,500	6	(0.1%)	?	?
Birds	9,881	390	(3.9%)	?	?
Mammals	4,327	48	(1.1%)	?	?

5. DISCUSSION

The proposed cycleway at Whitworth already supports a variety of micro-habitats and the survey recorded 98 species of higher plants. The three sections do not qualify under the BHS guidelines for site selection for the habitat types present or for flowering plants and ferns.

It is important to conserve the features of interest that already exists through continuation or reinstatement of sympathetic management, but there are also a number of ways in which the wildlife value of the site could be enhanced.

For breeding butterfly colonies to become established it is important to provide the relevant food plant(s), i.e. the species that the adult lays her eggs on and that the caterpillars eat. The brown butterflies and skippers use grasses which would be in abundance in the proposed wildflower meadow areas, the orange tip and green veined white use cuckooflower, hedge garlic and hedge mustard. The comma, red admiral, peacock and small tortoiseshell butterflies lay their eggs on nettles and the caterpillars eat the leaves hence nettle beds should be retained.

Care needs to be taken not to damage existing areas of ecological interest, principally the parts of section 3 that support the eight native herbaceous plants that are included on the list of qualifying species for BHS status for semi-natural grasslands.

Bird nesting boxes and bat roosting boxes could be erected on suitable trees. In addition bird feeding stations could be provided if one or more local residents were prepared to keep them topped up with food and water.

Management

Grasslands can be valuable for a range of flora (higher and lower plants), fungi and fauna (birds, mammals, amphibians and invertebrates) whether they are managed or not. Management normally involves cutting with the cuttings removed as in hay making, or grazing by livestock. If unmanaged, the tussocks of tall grasses such as tufted hair-grass and cock's-foot can form valuable habitat for invertebrates and small mammals and provide over-wintering sites in the thatch, in tussocks or in standing plant stems. However, in the absence of management grasslands are normally invaded by trees and shrubs and will eventually become woodland and the species composition will change from those that require open conditions to those that can tolerate or require shaded conditions. Often a balance between the two needs to be reached.

Whilst woodland is seen as a good thing it can be at the expense of valuable grasslands and other open habitats that support a characteristic range of plants, birds and invertebrates.

In order to maintain the presence of grassland habitats and diversity of plant species along the proposed cycleway, management will be required. Ideally this would involve an annual cut after the plants have flowered and set seed (no earlier than September) with the cuttings raked up and either deposited in an agreed non-sensitive area or removed from the site (e.g. to be made into compost).

Interpretation

With the diversity of wildlife in the local area there is scope for information on the natural history to feature on any information boards or leaflets that may be produced along the route.

6. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions can be made:

6.1 The proposed cycleway has existing features of ecological interest but the three sections do not qualify for Local Wildlife Site status for their habitat types or vascular plants and ferns.

6.2 If constructed with care, a cycleway could be constructed along the proposed route that would have a minimal impact upon the existing features of ecological interest. The working wayleave should be kept to a minimum and spoil, hardcore, machinery and equipment should not be deposited or stored on areas of wildflower interest.

It is recommended that:

6.3 Certain areas of grassland are managed as wildflower meadows in order to conserve and enhance the populations of existing wildflowers.

6.4 The route of the cycleway follows the existing "desire line" and care is taken to avoid encroachment onto the areas of grassland that support the wildflowers of interest, including those on the list in the BHS guidelines.

6.5 Bird nesting and bat roosting boxes are erected on suitable trees along the route.

6.6 That any information boards and/or leaflets include natural history including trees/shrubs, habitat types, wildflowers, invertebrates and management requirements for semi-natural grassland areas.

6.7 Subject to the site being risk assessed and hazards made safe, that local schools are given the chance to use the site as an outdoor classroom, where appropriate.

7. REFERENCES

The following publications are referred to in the text, have been consulted and/or are relevant to the preparation of this report:

Asher, J. *et al* (2001) *The Millennium Atlas of Butterflies in Britain and Ireland.* Oxford University Press.

Borough of Rossendale (1995) *Rossendale District Local Plan 1990-2001*. Borough of Rossendale, Bacup.

Joint Nature Conservation Committee (1993) *Handbook for Phase 1 habitat survey - a technique for environmental audit.* JNCC, Peterborough.

Kelly and Harwood (1993) *Wildlife Habitats in Lancashire.* Lancashire County Council, Preston.

Kennedy and Southwood T.R.E. (1986) *The numbers of insect and mite species associated with trees and shrubs - a reassessment*. Journal of Ecology.

Lancashire County Council/English Nature (1984-88) *Phase 1 habitat survey.* Field maps and "Target Notes".

Lancashire County Council/Lancashire Wildlife Trust (1998) *Lancashire County Heritage Sites Scheme. Biological Heritage Sites. Guidelines for Site Selection.* Lancashire County Planning Department, Preston.

Savidge, J.P. *et al* (1963) *Travis's Flora of South Lancashire*. Liverpool Botanical Society.

Stace, C. (1997) *New Flora of the British Isles.* Second Edition. Cambridge University Press.

Survey and report by:

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August 2007

Appendix 1. Vascular plants recorded along Whitworth Cycleway							
		Status	**NR/NS**	**Section**	**Section**	**Section**	
Scientific Name	**Common Name**	**N/I**	**BHS**	**1**	**2**	**3**	
Grasses (22 species)							
Agrostis capillaris	Common bent	N,c		1	1	1	3
Agrostis stolonifera	Creeping bent	N,c		1	1	1	3
Alopecurus geniculatus	Marsh foxtail	N,c		1			1
Alopecurus pratensis	Meadow foxtail	N,vc				1	1
Anthoxanthum odoratum	Sweet vernal-grass	N,c				1	1
Arrhenatherum elatius	False oat-grass	N,c		1	1	1	3
Bromus sp.	an unidentified brome	-				1	1
Cynosurus cristatus	Crested dog's-tail	N,c		1	1		2
Dactylis glomerata	Cock's-foot	N,c		1	1	1	3
Deschampsia cespitosa	Tufted hair-grass	N,c		1	1	1	3
Elytrigia repens	Common couch	N,vc			1		1
Festuca rubra agg.	Red fescue	N,vc		1		1	2
Glyceria fluitans	Floating sweet-grass	N,c		1			1
Holcus lanatus	Yorkshire fog	N,vc		1	1	1	3
Holcus mollis	Creeping soft-grass	N,c				1	1
Lolium perenne	Perennial rye-grass	N,vc		1	1	1	3
Phalaris arundinacea	Reed canary-grass	N,c				1	1
Phleum pratensis	Timothy	N,c		1	1	1	3
Poa annua	Annual meadow-grass	N,vc		1	1		2
Poa pratensis	Smooth meadow-grass	N,vc			1	1	2
Poa trivalis	Rough meadow-grass	N,vc		1	1		2
?	an unidentified grass	I				1	1
		Sub-total		14	13	16	
Rushes, horsetails and ferns (7 species)							
Athyrium filix-femina	Lady-fern	N,c				1	1
Dryopteris dilatata	Broad buckler-fern	N,c		1	1	1	3
Dryopteris filix-mas	Male fern	N,c			1	1	2
Equisetum arvense	Field horsetail	N,c		1		1	2
Juncus bufonius	Toad rush	N,c		1			1
Juncus effusus	Soft-rush	N,vc		1	1	1	3
Juncus tenuis	Slender Rush	I, f/lc		1	1		2
		Sub-total		5	4	5	
Native trees and shrubs (13 species)							
Crataegus monogyna	Hawthorn	N,c		1		1	2
Fraxinus excelsior	Ash	N,c		1			1
Populus tremula	Aspen	N,f		1			1
Prunus sp.	an unidentified cherry	-		1		1	2
Ribes nigrum	Blackcurrant	N,o				1	1

Appendix 1. Vascular plants recorded along Whitworth Cycleway							
		Status	**NR/NS**	**Section**	**Section**	**Section**	
Scientific Name	**Common Name**	**N/I**	**BHS**	**1**	**2**	**3**	
Rosa canina agg.	Dog-rose	N,c		1			1
Rubus fruticosus agg.	Bramble	N		1	1	1	3
Salix caprea	Goat willow	N,c		1	1	1	3
Salix cinerea	Grey willow	N,c			1		1
Sambucus nigra	Elder	N,c				1	1
Sorbus aucuparia	Rowan	N,c				1	1
Ulmus glabra	Wych elm	N,c				1	1
Ulmus sp.	an unidentified elm	-				1	1
		Sub-total		7	3	9	
Non-native trees and shrubs (9 species)							
Acer platanoides	Norway maple	I				1	1
Acer pseudoplatanus	Sycamore	I,c			1	1	2
Alnus incana	Grey alder	I,r				1	1
Crataegus sp. (cultivated)	a cultivated hawthorn	I				1	1
Pinus sp.	an unidentified pine	I,c				1	1
Prunus laurocerasus	Cherry laurel	I,c				1	1
Rosa rugosa	Japanese rose	I,r		1		1	2
Spiraea sp.	an unidentified bridewort	I		1			1
Symphoricarpos albus	Snowberry	I,c		1		1	2
		Sub-total		3	1	8	
Native herbaceous plants (41 species)							
Alchemilla vulgaris agg.	non-specified Lady's-mantle	N	Gr3			1	1
Bellis perennis	Daisy	N,c		1		1	2
Centaurea nigra	Knapweed	N,c	Gr3			1	1
Cerastium fontanum	Common mouse-ear	N,c		1			1
Chamerion angustifolium	Rosebay willowherb	N,c			1	1	2
Cirsium arvense	Creeping thistle	N,vc		1	1	1	3
Epilobium hirsutum	Great willowherb	N,c		1	1	1	3
Epilobium montanum	Broad-leaved willowherb	N,c				1	1
Epilobium sp.	an unidentified willowherb	-		1		1	2
Euphatorium cannabinum	Hemp-agrimony	N,c				1	1
Geranium pratense	Meadow crane's-bill	N,o	Gr3			1	1
Geranium robertianum	Herb-Robert	N,c		1		1	2
Heracleum sphondylium	Common hogweed	N,c				1	1
Hieracium sp.	an unidentified hawkweed	N				1	1
Hypochaeris radicata	Common cat's-ear	N,c	Gr3			1	1
Iris pseudacorus	Yellow iris	N,c		1			1
Lathyrus pratensis	Meadow vetchling	N,c	Gr3	1	1	1	3
Leontodon autumnalis	Autumn hawkbit	N,c	Gr3	1			1
Lotus corniculatus	Common bird's-foot-trefoil	N,vc	Gr3		1	1	2
Lotus pedunculatus	Greater bird's-foot-trefoil	N,c	Gr3		1	1	2

Appendix 1. Vascular plants recorded along Whitworth Cycleway							
		Status	**NR/NS**	**Section**	**Section**	**Section**	
Scientific Name	**Common Name**	**N/I**	**BHS**	**1**	**2**	**3**	
Matricaria discoidea	Pineappleweed	I,c				1	1
Plantago lanceolata	Ribwort plantain	N,vc		1	1	1	3
Plantago major	Greater plantain	N,vc		1	1	1	3
Prunella vulgaris	Selfheal	N,vc	Gr3	1		1	2
Ranunculus acris	Meadow buttercup	N,c		1	1	1	3
Ranunculus repens	Creeping buttercup	N,vc		1	1	1	3
Rumex acetosa	Common sorrel	N,c			1	1	2
Rumex crispus	Curled dock	N,c		1			1
Rumex obtusifolius	Broad-leaved dock	N,c		1	1	1	3
Senecio jacobaea	Common ragwort	N,c		1	1	1	3
Sonchus asper	Prickly sow-thistle	N,c		1			1
Stachys palustris	Marsh woundwort	N,c				1	1
Stellaria uliginosa	Bog stitchwort	N,c				1	1
Taraxacum officinale agg.	Dandelion	N,vc		1	1	1	3
Trifolium dubium	Lesser trefoil	N,c		1			1
Trifolium pratense	Red clover	N,c			1	1	2
Trifolium repens	White clover	N,vc		1	1	1	3
Urtica dioica	Nettle	N,c		1	1	1	3
Vicia cracca	Tufted vetch	N,c				1	1
Vicia sativa	Common vetch	N,c		1		1	2
Vicia sepium	Bush vetch	N,c				1	1
		Sub-total		23	17	35	
Non-native herbaceous plants (6 species)							
Calystegia silvatica	Large bindweed	I,c		1			1
Crocosmia x crocosmiiflora	Montbretia	I				1	1
Fallopia japonica	Japanese knotweed	I				1	1
Hedera sp. (cultivated variety)	a cultivated ivy	I				1	1
Impatiens glandulifera	Indian balsam	I,c-la		1		1	2
Symphytum sp.	an unidentified comfrey	-				1	1
		Sub-total		2	0	5	
	Total per section			**54**	**38**	**78**	
KEY:	**STATUS:**		**Total no. of species = 98**				
agg. = aggregate	N = Native to the UK						
sp.= species (singular)	I = Introduced to the UK						
	a = abundant	c = common					
	f = frequent	l = locally					
	o = occasional	r = rare					
	v = very	? = uncertain/not known					
Plant names follow Stace C. (1997) New Flora of the British Isles. 2nd Edition.							
Status follows Savidge, J.P. *et al* (1963) Travis's Flora of South Lancashire.							