

Site name:	River Flit CWS
Status(es):	County Wildlife Site
Gridref:	TL02
Area:	39.2 hectares
Council(s):	Central Bedfordshire
History:	
1990	CWS recognized
2007	Boundary clarified to include specific features
CWS recognized for:	River Adjacent habitats, including ponds, leat, ditches, rough grassland, ruderal vegetation, scrub, copses, plantations, wet woodland, mature trees and pollards.
Main habitats present:	
UK BAP Priority	River Floodplain grazing marsh Wet Woodland
Other habitat(s)	Leat and ditches Ponds Neutral grassland Scrub Mature trees and pollards Copses and plantations Ruderal vegetation

Site Description:

Phase 1 Survey 1990

A County Wildlife Site comprising the entire length of the River Flit.

Boundary Clarifications 2006/2007

Following an extensive survey in 2006 the following features adjacent to the River Flit were additionally included within the boundary of the County Wildlife Site on 24/05/2007 and 15/06/2007:

- The pond at the source of the river (TL036264).
- The belt of mixed scrub and mature trees at TL027290 immediately to the south of the M1. (Important in buffering the river from the adjacent intensively managed farmland).
- The small field, pond and wood on south side of river at TL025295 (W. of Old Park Farm).
- The row of mature Oaks and scrub on W bank, N of Poplars Nursery (TL025303).
- The two small copses either side of Toddington Road, Harlington at TL026306.
- The narrow fields of rough grassland and scrub to the W of the river north of Toddington Road to Quinton.
- A field of MG10 grassland at TL021325.
- MG1/set-aside adjacent to the river between the above field and Moor's Plantation CWS.
- A block of wet woodland at TL02233255.
- A strip of poplars at TL03193381.
- The leat to Flitwick Mill and outflows beyond into Flitwick Moor.
- Two ditches west of Flitwick Moor and east of the railway.
- Two ditches between Flitwick Moor and Flitton Moor.
- Channels east of the A6 in Clophill.
- A strip of plantation along the river at TL12053900.
- A block of planted woodland at TL131390.
- A small block of willows at TL13263906.
- The willow plantation TL137392 containing stands of S3 greater tussock sedge swamp and W6 alder coppice. Also the areas of ruderal and wetland vegetation and old willows at TL137391.

- The willow plantation at TL141393 with associated wetland and ruderal vegetation and old willows and adjacent areas of open wetland and ruderal vegetation to the north and south of the river.
- The area of open ruderal vegetation and scattered scrub and trees to the east of the road bridge at TL145393 and an area of ruderal vegetation to the east of the Flit alongside the Ivel Navigation at TL146393 containing numerous large white willows and scattered grey willow scrub.

Detailed maps for specific sections of the River Flit CWS can be obtained from the BRMC.

CWS Survey August 2006:

The following descriptions from the survey includes some land adjacent to the River Flit CWS but this has been retained to allow the context of the CWS to be appreciated.

For the purposes of this survey the Flit was been divided into three sections:

- Chalton to Flitwick Railway Line
- Flitwick Railway Line to Clophill A6
- Clophill A6 to Ivel Navigation

Chalton to Flitwick Railway Line

Watercourses:

The headwater of the River Flit is a relatively fast flowing shallow chalk stream with clear water, gravel beds, occasional meanders and small debris dams. The bed is mostly of gravel or silt, with occasional areas of deep sediment in slow flowing sections such as near Chalton and the sewage works. It mostly runs through a steep-sided, deep channel that is often heavily shaded by hedgerows, scrub and trees; though is not heavily channelled where it emerges from the culvert under the M1 motorway. It is also more natural in character where it runs alongside Fancott Wood SSSI containing shallow banks, meanders and gravel beds.

No aquatic or emergent vegetation is present in the heavily shaded sections. Locally abundant watercress sp. (*Rorippa* sp.) with frequent sweet grass sp. (*Glyceria* sp.) and foals watercress (*Apium nodiflorum*); and occasional water mint (*Mentha aquatica*) and brooklime (*Veronica beccabunga*) are present in more open sections, though in these open sections the channel is often overgrown with tall vegetation, mostly great willowherb (*Epilobium hirsutum*) with frequent bitter-sweet (*Solanum dulcamara*), and occasional meadowsweet (*Filipendula ulmaria*), wild angelica (*Angelica sylvestris*), water figwort (*Scrophularia auriculata*), yellow iris (*Iris pseudacorus*) and creeping buttercup (*Ranunculus repens*). Common duckweed (*Lemna minor*) is locally abundant on still sections of the river and adjacent ditches.

It is shaded along much of its length by mature scrub and hedgerows, mostly hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) with frequent ash (*Fraxinus excelsior*) standards; and occasional elder (*Sambucus nigra*), grey willow (*Salix cinerea*), dog rose (*Rosa canina*), elm (*Ulmus* sp.), wayfaring tree (*Viburnum lantana*), dogwood (*Cornus sanguinea*), hazel (*Corylus avellana*), field maple (*Acer campestre*) and wild clematis (*Clematis vitalba*). Mature trees of various species are scattered along its length including ash, sycamore and Norway maple (*Acer pseudoplatanus* and *A. platanoides*), horse chestnut (*Aesculus hippocastanum*), pedunculate oak (*Quercus robur*), hybrid poplar sp. (*Populus* sp.), weeping willow (*Salix* sp.), and crack willow and white willow (*Salix fragilis* and *S. alba*); some of the willows consisting of old pollards and multi-stemmed specimens.

Where shaded, the chalk banks support little or no vegetation apart from locally abundant ivy (*Hedera helix*), pendulous sedge (*Carex pendula*) and cow parsley (*Anthriscus sylvestris*), with occasional ground ivy (*Glechoma hederacea*), dog's mercury (*Mercurialis perennis*), cuckoo pint (*Arum maculatum*), lesser burdock (*Arctium minus*) and herb robert (*Geranium robertianum*). Bramble (*Rubus fruticosus*) (W24-Rubus-Holcus underscrub); MG1-Arrhenatheron grassland and hedge bindweed (*Calystegia sepium*) dominates the open sections of the banks with occasional rosebay willowherb (*Chamerion angustifolium*), hop (*Humulus lupulus*), creeping thistle (*Cirsium arvense*) and nettle (*Urtica dioica*).

North of Chalton Sewage Works to where it crosses the A5120 the Flit becomes larger and faster flowing as a result of discharges from the sewage works, and often has a gravelly or stony bed.

Canadian waterweed (*Elodea canadensis*) is locally abundant in the river, in places choking the channel such as near Old Park Farm; with curly water thyme (*Lagarosiphon major*) and water starwort (*Callitriche* sp.) also frequent. Branched bur-reed (*Sparganium erectum*) is also locally abundant with occasional fool's watercress, watercress, reedmace (*Typha latifolia*), water chickweed (*Myosoton aquaticum*), reed canary grass (*Phalaris arundinacea*) and marsh foxtail (*Alopecurus geniculatus*) along the margins. A ford near Cowbridge Farm at TL025283 contains abundant watercress with frequent reedmace in the river to the south of it.

The banks are mostly covered in ruderal vegetation dominated by nettle, great willowherb, hedge bindweed and hemlock (*Conium maculatum*), scattered mixed scrub, stands of dense scrub, and numerous mature trees including oak, ash, sycamore, field maple, beech (*Fagus sylvatica*), poplar, white willow and crack willow; though the river is generally less shaded than the section south of the sewage works.

The numerous seasonally wet ditches in this section of the valley are either heavily shaded by hedges, scrub and trees or choked with great willowherb, branched bur-reed or reed canary grass (*Phalaris arundinacea*) with occasional other species including square-stalked St. Johns wort (*Hypericum tetrapterum*), lesser pond sedge (*Carex acutiformis*) and soft rush (*Juncus effusus*) where open.

The Flit to the west of Westoning is very variable in character; being slow-flowing and deep with a sandy or silty bed in places, with other sections being shallow and fast-flowing with a stony or gravelly bed, physical features including occasional riffles, debris dams, tree roots and gravel bars. Wet flushes feed into the river from the adjacent pastureland near Westoning Manor. Aquatic and marginal vegetation is not abundant due to the often shady conditions, though water starwort, Canadian waterweed and curly water thyme are locally frequent. Marginal stands of common reed (*Phragmites australis*) are also a feature of this section of the river, often dominating adjoining side ditches. Branched bur-reed is abundant in the river near Flitwick Manor. Other marginal species include brooklime, fool's watercress, watercress, water forget-me-not (*Myosotis scorpioides*), sweet-grass sp., water chickweed, reed canary grass, soft rush, water figwort and water pepper (*Persicaria hydropiper*). The open banks support nettle, common comfrey (*Symphytum officinale*), great willowherb, Himalayan balsam (*Impatiens glandulifera*) and bramble with occasional meadowsweet, purple loosestrife (*Lythrum salicaria*), teasel, angelica, and broom (*Cytisus scoparius*). Broad buckler fern (*Dryopteris dilatata*) and male fern (*Dryopteris filix-mas*) are occasional on shaded banks adjacent to woodland.

The river along this section is often heavily shaded by mature trees and belts of woodland, and much of the adjacent land consists mostly of improved sheep, horse and cattle grazed pastureland and parkland, some of it quite wet in places such as near Moors Plantation CWS. The area is prone to flooding and a small area of arable land at TL028335 on the edge of Flitwick Manor has been abandoned as a result of this, and is now dominated by redshank (*Persicaria maculosa*) and soft rush. A wide range of tree and scrub species are present along the river, with frequent mature oak and sycamore, and occasional poplar, grey willow, hawthorn, ash, birch, horse chestnut, apple sp. (*Malus* sp.), common lime (*Tilia vulgaris*) and Scots and Corsican pine (*Pinus sylvestris* and *P. nigra*). Rows of alder (*Alnus glutinosa*) trees are a particular feature along the river between Westoning Manor and Flitwick Manor. Some of the side ditches contain rows of crack and white willows and contain chalybeate springs issuing from the Greensand.

The side channel that runs parallel to the river between Moors Plantation and Flitwick Manor is choked with branched bur-reed, reed canary grass and marsh horsetail (*Equisetum palustre*) with occasional great willowherb, purple loosestrife, meadowsweet, soft rush and reedmace. The banks support dense bramble scrub and ruderal vegetation including nettle, comfrey and hemlock; and grassland species such as black knapweed (*Centaurea nigra*) and meadow vetchling (*Lathyrus pratensis*) are present at low frequency. Hawthorn, blackthorn, elder and broom scrub and numerous oak trees are scattered along its length.

The river between the A5120 and the railway line on the southern edge of Flitwick is slow-medium flowing with a predominantly silty bed and contains occasional branched bur-reed, water starwort and broad-leaved pondweed (*Potamogeton natans*). Himalayan balsam is locally abundant on open sections of the banks, though many of the banks are shaded by mature trees and scrub including ash, oak, sycamore, willow, hawthorn and alder.

Much of the land to the south of the river consists of improved pasture, though some of the wet side ditches that cross it are reasonably diverse, one in particular at TL035337 supporting a wide range of wetland species including water figwort, water mint, sweet grass sp., square-stalked St. Johns wort, brooklime, water plantain (*Alisma plantago-aquatica*), purple loosestrife, fool's watercress, reedmace,

branched bur-reed and reed canary grass. Much of the land between the millstream and the river consists of disturbed land dominated by ephemeral vegetation or improved horse pasture.

The millstream at TL035341 is choked with branched bur-reed, reed sweet grass (*Glyceria maxima*) and watercress with frequent Himalayan balsam, and occasional great willowherb, fool's watercress, purple loosestrife and meadowsweet. The banks are dominated by nettle, comfrey and other ruderal vegetation with scattered sycamore, willow and elder.

Adjacent Habitats:

The source of the River Flit near Chalton at TL036264 consists of a large pond in a field of unmanaged species-poor grassland. The pond has been recently dredged, and had its banks re-profiled, and contains an artificial island with wooden banks. The water is very green and turbid with no obvious aquatic vegetation, though it was reported that prior to the recent dredging lots of floating vegetation was present. The only wetland vegetation is a small area of yellow iris and common reed in the southwest corner. The banks are covered in ruderal vegetation including nettle, hedge bindweed, creeping thistle, great willowherb and bittersweet. The island is covered in mayweeds and other ephemeral species. Occasional scattered scrub of hawthorn, blackthorn, grey willow and dog rose is present on the banks. A multi-stemmed crack willow is present on the northern bank with a weeping willow and an ash pollard on its southern bank. A few geese had been introduced to the pond in the three months prior to the survey.

To the north of the source of the Flit on the eastern side of the M1 motorway at TL036266 is a large hybrid poplar plantation with occasional alder. Beneath the wide-spaced mature poplars is scattered scrub and coarse ruderal vegetation containing occasional meadowsweet. Alongside the Flit through Chalton are small fields of horse grazed pasture and areas of rough MG1b grassland, ruderal vegetation and scattered scrub containing abundant hogweed (*Heracleum sphondylium*), nettle, hedge bindweed and other species. A former area of pasture between the Flit and the M1 to the west of the motorway at TL034267 had been recently ploughed.

Alongside the Flit on the western edge of Chalton Sewage Works at TL027272 is an extensive area of rough MG1 grassland dominated by false oat grass (*Arrhenatherum elatius*), Yorkshire fog (*Holcus lanatus*) and red fescue (*Festuca rubra*) that contains large banks and mounds. As well as containing abundant hogweed and other coarse species such as creeping and spear thistle (*Cirsium vulgare*), field horsetail (*Equisetum arvense*), great willowherb and nettle, a range of more interesting species are present including locally frequent marsh woundwort (*Stachys palustris*) and occasional meadow vetchling, meadowsweet, cowslip (*Primula veris*), agrimony (*Agrimonia eupatoria*), black knapweed, hoary ragwort (*Senecio erucifolius*), tufted vetch (*Vicia cracca*), hairy St. Johns wort (*Hypericum hirsutum*), teasel (*Dipsacus fullonum*), field bindweed (*Convolvulus arvensis*) and red clover (*Trifolium pratense*). The grassland contains scattered trees and scrub including hawthorn, blackthorn, field maple, hazel, dogwood, oak, wild clematis, ash, dog rose, grey willow and white willow. Stands of dense W22-Prunus-Rubus are also present in places.

To the north at TL027273 is a small area of scrubby woodland dominated by hazel and hawthorn with occasional wild cherry (*Prunus avium*), guelder rose (*Viburnum opulus*), field maple, elder, blackthorn and clematis. Dog's mercury and ivy are locally dominant in the field layer with ground ivy, nettle and bluebell (*Hyacinthoides non-scripta*).

The settling lagoons in the sewage works are fringed by common reed and occasional reed-mace. The chalk stream running along the eastern edge of the sewage works is steep sided and slow-medium flowing and is mostly heavily shaded by dense scrub and trees.

The land either side of the river to the north of the sewage works is predominantly arable with occasional game cover, though many of the fields have fringes of MG1 grassland up to 5m wide. Of particular note is a narrow belt of mature mixed scrub and mature trees at TL027290, including a number of large poplars, which runs along the western side of the river directly to the south of the M1 motorway near the Toddington service area. Between the M1 and the A5120 much of the land adjacent to the river consists of unmanaged farmland dominated by rough MG1 grassland and ruderal vegetation, generally species poor and coarse but containing grassland and wetland species such as black knapweed, angelica, meadowsweet, lesser pond sedge, tufted vetch, white campion (*Silene latifolia*), lady's bedstraw (*Galium verum*), lesser stitchwort (*Stellaria graminea*) and water mint at low frequency. A dry pond in a field near Old Park Farm at TL025295 between the river and the motorway contains large stands of yellow iris with occasional jointed rush (*Juncus articulatus*), sweet grass sp. and false

fox sedge (*Carex otrubae*). To the northwest of this field is a stand of mature woodland next to the river that contains mature ash, oak, sycamore and poplars, with field maple, hawthorn, elder, hazel and blackthorn in the understorey. This section of the river is heavily shaded by dense grey willow and osier (*Salix viminalis*) scrub but still contains occasional Canadian waterweed.

A number of stands of poplar plantation have been planted adjacent to the motorway and also support scattered scrub and ruderal vegetation.

South of Poplars Nursery at TL024300 is an ash plantation that contains occasional wild cherry, field maple, oak, alder and pine sp. (*Pinus* sp.) with nettle abundant in the field layer. A row of numerous mature oaks with dense scrub run along the western bank of the Flit at TL025303 to the northeast of the nursery, with small copses of mature oak and ash either side of Toddington Road, Harlington at TL026306. Ivy carpets the ground in these copses with occasional ground ivy and wood avens (*Geum urbanum*).

The CWS at Poplars Nursery was not surveyed in detail but appears to have been heavily disturbed with earth being moved into mounds.

The areas of rough grassland to the west of the river north of Toddington Road, Harlington contain frequent dense and scattered scrub, mostly of hawthorn, bramble, dog rose and elm.

Adjacent to the west of the river near Westoning at TL022324 is a stand of mature alder coppice just under 2 ha in area, with occasional downy birch (*Betula pubescens*) and oak, typical of W6-Alnus-Urtica woodland. The understorey contains grey willow and occasional elder; and broad buckler fern is abundant in the field layer in the middle of the wood with frequent to abundant *Polytrichum* moss. Other species present include frequent nettle, herb robert and ground ivy; and occasional male fern, soft rush, bittersweet and three-veined sandwort (*Moehringia trinervia*). A wetter peaty area nearer the river contains a stand of grey willow (W1-Salix woodland) with locally dominant soft rush, lesser pond sedge (S7-carex swamp) and reed sweet grass (S5-Glyceria swamp). A range of wetland species are present including frequent skullcap (*Scutellaria galericulata*) and occasional water mint, yellow iris, water pepper and angelica. The woodland becomes drier towards its southwestern edge with pedunculate oak dominating the canopy and bramble and common reed in the field layer, grading to a W10-Quercus-Pteridium-Rubus community.

To the north of this area of woodland at TL021325 is an area of semi-improved MG10-Holcus-Juncus rush-pasture containing locally abundant soft rush. A shaded, muddy ditch containing numerous mature oaks runs along its northwestern boundary. Between here and Moors Plantation CWS is a large area of permanent set-aside and rough grassland and wetland vegetation containing a pond, the location of which was the former site of the wetland known as Westoning Moor that was lost as a result of drainage.

On the eastern side of the Flit are further stands of secondary woodland at Westoning Manor. The southernmost section at TL022326 has characteristics of wet woodland with occasional damp channels and chalybeate springs. The canopy is dominated by mature poplars with ash, sycamore, crack willow and occasional oak, horse chestnut and Scots pine. There is frequent standing and lying deadwood, and the scrubby understorey contains blackthorn, hawthorn, elder, grey willow and English elm (*Ulmus procera*). The field layer contains locally abundant dog's mercury with nettle, ground ivy, bramble, herb robert, creeping soft grass (*Holcus mollis*), and occasional meadowsweet, common reed, male fern and cuckoo pint. Glades contain dense stands of meadowsweet with lesser burdock, common hemp-nettle (*Galeopsis tetrahit*) and hedge bindweed.

The northern area at TL022328 lies on greensand and consists of mature plantations of Scots pine and larch (*Larix* sp.) with locally dominant pedunculate oak and occasional birch and ash. The understorey contains occasional elder, elm, rhododendron (*Rhododendron ponticum*) and oak saplings. The woodland is quite open in places with bramble and sheep's sorrel (*Rumex acetosella*) locally abundant in the field layer, Foxglove (*Digitalis purpurea*) is locally frequent with Yorkshire fog, creeping soft grass, common bent (*Agrostis capillaris*), occasional broad buckler fern, and mosses typical of greensand soils such as *Dicranum scoparium*. The field layer beneath the dense canopy is mostly bare. Ground ivy, soft rush and common reed become frequent in the field layer at the north end of this area on moister soils.

Priestlymoor Plantation to the southwest of Flitwick Manor at TL026337 is dominated by mature poplar and birch with bracken (*Pteridium aquilinum*) dominating the field layer.

Flitwick Manor at TL030339 to the southwest of Flitwick contains an extensive range of habitats including parkland, open water, rush pasture and woodland.

A mature poplar plantation alongside the A5120 at TL032338 contains frequent sycamore with occasional holly, yew, oak and elder. Many of the trees are ivy covered, and ivy dominates the field layer with frequent dog's mercury and occasional nettle and wood avens.

The railway embankment at TL037342 is dominated by MG1 grassland, ruderal vegetation, bramble and hawthorn scrub with scattered oak, sycamore and willow.

Flitwick Railway Line to Clophill A6

Watercourses:

The Flit to the east of the railway is slow-medium flowing with turbid water and a silty bed. Physical features include exposed tree roots, weirs, riffles, pools and debris dams. The banks are usually quite steep, though are shallower through Flitwick Moor SSSI. Some sections contain little or no obvious aquatic vegetation, though in other places broad-leaved pondweed and rigid hornwort (*Ceratophyllum demersum*) is locally abundant with locally frequent Canadian waterweed, water starwort and common duckweed. Marginal vegetation includes locally abundant branched bur-reed, common reed and reed canary grass; and occasional fool's watercress, watercress, hemp agrimony (*Eupatorium cannabinum*), meadowsweet and purple loosestrife. The banks are mostly dominated by comfrey and nettle with frequent to locally abundant Himalayan balsam and occasional butterbur (*Petasites hybridus*), teasel, hogweed and water chickweed. Where livestock can access the river in some of the pastureland, the banks are heavily grazed and poached.

Much of the first section of the Flit runs alongside and through Flitwick Moor SSSI and CWS that contains a range of habitats including mature alder woodland, willow scrub, neutral and marshy grassland and open wetland vegetation. Rows of crack willow (including numerous old pollards) and alder shade much of the river through the SSSI with occasional grey willow, poplar, birch, pedunculate oak, ash, sycamore and hawthorn.

The millstream between the railway and Greenfield Road is very slow-flowing and silty with no obvious aquatic vegetation. It is fringed with reed sweet grass, reed canary grass, great willowherb and occasional yellow iris. Some of its banks are artificial along the backs of the gardens with ruderal vegetation dominated by nettle, comfrey and hedge bindweed and locally frequent butterbur on the banks within the SSSI. The narrower streams to the east of Flitwick Mill are choked with reed sweet grass, reed canary grass and pond sedge with comfrey dominating the banks. Rows of alders and occasional willows, ash, sycamore and poplars are scattered along its banks.

To the east of Flitwick Moor the Flit runs between a mixture of arable, pasture and rough grassland. The river is mostly slow-medium flowing with a silty bed though has occasional shallow, faster flowing sections with a stony bed. The river is generally more open, though some sections heavily shaded by mature alder, ash, oak, birch, poplar, aspen, crack willow and white willow trees (including old pollards) and belts of scrub including elder, hawthorn, *Prunus* sp., field maple, apple sp., aspen, grey and goat willow shade some sections. A particular feature of the river between Hollington Basin and Pennyfathers Moor are a number of native black poplars (*Populus nigra* ssp. *betulifolia*). The banks of the river through the fields within Pennyfathers Moor CWS are lined with crack willows including numerous old and collapsing pollards.

Much of the adjacent farmland is on peaty soils with numerous wet ditches and streams. The ditches are generally still or slow-flowing with a silty bed and often contain chalybeate deposits. Some of the larger streams such as the millstream that runs through Water End at Maulden support aquatic species such as water starwort, rigid hornwort, common duckweed and Canadian pondweed. Rows of alders and willows (including old pollards), grey willow scrub and scattered native black poplar, oaks, ash, sycamore and other mature trees shade some ditches though in open sections they are often choked with wetland vegetation such as reed canary grass, great willowherb, reedmace, common reed, reed sweet grass, Himalayan balsam and branched bur-reed, with occasional meadowsweet, hemp agrimony, angelica, common water plantain, water mint, water forget-me-not, marsh horsetail, greater birdsfoot trefoil and purple loosestrife. The banks are covered in comfrey and other ruderal vegetation such as hemlock, and occasional bramble scrub.

Adjacent Habitats:

The area of horse pasture to the east of the railway at TL038343 lies on peaty soil and consists of species-poor MG10 rush pasture containing locally dominant soft rush. The wet ditches running through it contain a good range of wetland plants including locally dominant branched bur-reed and occasional water mint, common water plantain, purple loosestrife, soft rush, common reed, reed canary grass and marsh horsetail. The unmanaged field to the east at TL039343 consists of MG1 grassland and rough wetland vegetation containing frequent purple loosestrife and comfrey, and occasional meadowsweet, reed canary grass, soft rush and common hemp-nettle. The field is more diverse at the end nearest the millstream, and contains a pond at its northwestern end containing little aquatic vegetation but fringed with reed sweet grass, reed canary grass and great willowherb. The southeastern half of the next field to the east at TL040344 contains occasional purple loosestrife while the northwestern half consists of MG1 and ruderal vegetation dominated by nettle and thistles. The field to the northeast also contains abundant purple loosestrife with meadowsweet, greater birdsfoot trefoil (*Lotus pedunculatus*), angelica, water mint and fleabane (*Pulicaria dysenterica*). The ditches between these fields are lined with rows of collapsing crack willows and scattered grey willow scrub with a row of wild cherry along one section.

Church Farm to the northeast of Flitton Moor consists of an area of ex-arable farmland on peaty soil divided by numerous wet ditches containing chalybeate deposits. The area is in the Countryside Stewardship Scheme and now consists mostly of ungrazed rough grassland, both dry MG1 and wetter MG10 communities. The dry grassland is generally species poor and dominated by grasses such as cocksfoot (*Dactylis glomerata*) and creeping bent with locally frequent creeping thistle and field horsetail (*Equisetum arvense*). The MG10 community is dominated by dense tussocks of soft rush with locally dominant common hemp nettle and occasional greater birdsfoot trefoil and purple loosestrife. The ditches contain locally abundant branched bur-reed, reedmace, reed sweet grass and common duckweed with occasional hemp agrimony, gipsywort, yellow iris, purple loosestrife and reed canary grass, and are often lined with birch, oak, alder and grey willow. A small area of mature W6 alder woodland at TL057362 contains abundant bramble and broad buckler fern in the field layer with lesser pond sedge locally dominant in wetter areas. Two ponds have been recently dug at TL057362 and TL058363. Their bases are peaty with no vegetation apart from abundant soft rush on the banks. A small amount of reedmace is present at the southwest end of the northeastern pond. The spoil from the ponds has been heaped up nearby to the northwest of both ponds. At TL060363 is a young broad-leaved plantation that is used as a tree nursery.

Further extensive areas of semi-improved MG10 are present at Hollington Farm that are dominated by Yorkshire fog with stands of soft rush. The fields are horse grazed and quite disturbed with frequent redshank and large areas of bare peat. Other species at low frequency include gipsywort, water chickweed and common hemp nettle. Areas of semi-improved acid grassland resembling a U1-Festuca-Agrostis-Rumex community dominated by common bent with locally abundant sheep's sorrel are present in drier areas with frequent birch regeneration. Some of the hedges have been restored by planting up gaps with a mixture of species including hazel, dogwood, guelder rose and wayfaring tree.

The field adjacent to the bypass at Hollington Basin at TL063367 contains grazed MG9-Holcus-Deschampsia grassland dominated by tufted hair grass (*Deschampsia cespitosa*) and contains a large area that is flooded for much of the year.

A large area of permanent set-aside to the southwest of Pennyfathers Moor is managed by mowing. The grassland is species poor with locally dominant soft rush (MG10) and wood small reed (*Calamagrostis epigeios*), with occasional purple loosestrife, common toadflax (*Linaria vulgaris*), creeping thistle, common hemp-nettle and angelica. Comfrey and nettle dominated ruderal vegetation is dominant nearer the river with snowdrops (*Galanthus nivalis*) along the riverbank. The ditches contain abundant soft rush with locally frequent purple loosestrife and occasional reed sweet grass and reedmace.

Small areas of willow and alder woodland have been planted alongside the bypass. A small area of woodland to the southwest of Water End Fisheries TL068369 contains a range of species including alder, white poplar (*Populus alba*), sycamore, ash, crack and white willow, black poplar, aspen (*Populus tremula*), field maple, osier, grey alder (*Alnus incana*) and apple sp. The field to the northeast consists of species poor MG1 grassland with occasional white campion and thistles, and scattered broom and oak saplings. Ruderal vegetation is present along the millstream.

The lakes at Water End Fisheries at TL071372 contain little or no aquatic vegetation with occasional marginal reedmace and great willowherb. The banks contain scattered young alder, willow, birch and grey willow scrub. The stream along its northeastern edge is fast flowing with a stony bed. It is shaded

at its northern end by mature oak, sycamore and elder and a row of crack willow pollards run alongside it down to the bypass. The ditch is more open at the south end with occasional purple loosestrife and hemp agrimony. To the northeast of the fisheries are areas of mature crack willow-dominated woodland with open areas of ruderal and wetland vegetation and scattered scrub and tree saplings of species such as alder, ash, sycamore, hawthorn, bramble, hazel, birch and oak.

At TL070367 is a stand of mature W6 alder coppice c. 0.9 ha in size that also contains poplar sp., ash and oak with dense birch along its northeastern edge. Many of the trees are ivy-covered and the field layer is dominated by nettle and ground ivy with locally abundant herb robert and bracken, and occasional dog's mercury, common reed, hedge woundwort (*Stachys sylvatica*), three-veined sandwort, comfrey, common hemp-nettle, Himalayan balsam, yellow iris and broad buckler fern with a small amount of Japanese knotweed.

The field to the northeast at TL071368 contains soft-rush dominated MG10 rush-pasture on peaty soil with locally abundant Yorkshire fog and heath groundsel (*Senecio sylvaticus*), locally frequent common hemp nettle, and occasional angelica, lesser stitchwort, nettle, rosebay willowherb and bittersweet. Large areas of bare peat are present in the east of the field that contain frequent redshank, and hemlock is dominant near the river. The field contains scattered birch saplings and grey willow scrub. Reedmace dominates the northeastern boundary ditch and common reed dominates the southeast ditch with dense bracken on its banks. The set-aside fields to the northeast consist of MG9 and MG10 grassland dominated by tufted hair grass and soft rush with occasional Heath groundsel and angelica among other species present.

At TL077373 is an area of willows and rough grassland. An area at its western end has been stripped down to the gravel and the soil put in a large bund on its northern edge. The stripped area consists of bare ground, ephemeral vegetation and sparse grassland containing locally abundant water mint, frequent wild carrot (*Daucus carota*), and occasional great mullein (*Verbascum thapsus*), water figwort, melilot sp. (*Melilotus* sp.), black medick (*Medicago lupulina*), red bartsia (*Odontites verna*), teasel, bristly ox-tongue, greater and ribwort plantain (*Plantago major* and *P. lanceolata*), creeping and spear thistles, weld (*Reseda luteola*), ground ivy, upright hedge parsley (*Torilis japonica*), tansy (*Tanacetum vulgare*), pendulous sedge, hemp agrimony, hedge bedstraw (*Galium mollugo*), Oxford ragwort, Canadian fleabane (*Conyza canadensis*), perforate St. Johns wort (*Hypericum perforatum*), black knapweed, Yorkshire fog, creeping cinquefoil, hard rush and silverweed (*Potentilla anserina*). The unstripped area to the east consists of coarser MG1 grassland containing similar grassland species grading to nettle and comfrey dominated ruderal vegetation. Scattered white and crack willow, and grey willow, birch, alder hawthorn, dog rose, elder, bramble and buddleia scrub is scattered over the area.

The area to the west of the caravan park at TL078374 contains mixed woodland dominated by Norway spruce (*Picea abies*) and alder with ash, poplar sp., and white and crack willow, with nettle dominating the field layer. The northern half of the area consists of open MG1 and ruderal vegetation dominated by comfrey, nettle and hedge bindweed with occasional purple loosestrife, yellow iris, angelica and thistles, with scattered spruce trees.

At TL081375 to the southwest of the A6 roundabout is a young plantation containing a range of tree and shrub species including alder, birch, wild cherry, ash, poplar sp., oak, Scots pine, crack willow, goat willow, guelder rose and hawthorn. Rough MG1 grassland containing occasional black knapweed and white willow, and bramble scrub is present beneath the young trees. Himalayan balsam, nettle and comfrey dominates some of the clearings among the trees with occasional angelica, butterbur and common reed also present.

South of the river at TL081374 is a small stand of alders and open ruderal vegetation dominated by nettle, docks and hemlock with frequent comfrey and teasel. Alongside the A6 is a row of willows and ash with nettle and bracken in the field layer. In the southeast corner on higher ground at TL082374 is a small stand of sycamore woodland with oak and hawthorn, and nettle dominating the field layer.

Clophill A6 to Ivel Navigation

Watercourses:

The Flit runs between a mixture of arable, pasture and rough grassland through this section. The river is mostly slow-medium flowing with a silty bed though has occasional shallow, faster flowing sections with a gravelly or stony bed. Physical features include exposed tree roots, weirs, riffles, pools and debris dams. Aquatic vegetation includes locally frequent rigid hornwort, water starwort, broad-leaved

pondweed and common duckweed. Marginal vegetation includes locally abundant branched bur-reed, reed sweet grass, common reed, greater pond sedge and reed canary grass; and occasional fool's watercress, reedmace, water mint, water forget-me-not, watercress, angelica, yellow iris, marsh woundwort, meadowsweet, brooklime, common club-rush (*Scirpus lacustris*), hemp agrimony and purple loosestrife. The banks are mostly dominated by comfrey and nettle with frequent to locally abundant hedge bindweed, great willowherb, hemlock, Himalayan balsam and occasional butterbur, greater burdock, water figwort, teasel, small teasel (*Dipsacus pilosus*), hogweed and water chickweed. Where livestock can access the river in some of the pastureland, the banks are heavily grazed and poached. The river is shaded in places by a similar range of trees, with rows of alder being a particular feature as well as locally frequent crack willow and white willow trees (including old pollards), and occasional ash, oak, birch, sycamore, poplar, Scots pine, and belts of scrub including elder, hawthorn, elm, field maple, osier, grey and goat willow.

Numerous ditches and smaller streams are present throughout the area which are generally still or slow-flowing with a silty bed and often contain chalybeate deposits. Some of the streams, such as the side stream to the south of the A507, are faster flowing with a gravelly or stony bed and the larger streams support aquatic species such as water starwort, common duckweed and rigid hornwort. Rows of alders and willows (including old pollards), grey willow scrub and scattered native black poplar, oaks, ash, hazel, field maple, sycamore and other mature trees shade some ditches though in open sections they are often choked with wetland vegetation such as reed canary grass, great willowherb, reedmace, common reed, reed sweet grass, Himalayan balsam and branched bur-reed, with occasional meadowsweet, hemp agrimony, angelica, common water plantain, lesser pond sedge, water mint, fool's watercress, sweet grass sp., soft rush, water forget-me-not, marsh horsetail, yellow iris, brooklime, greater birdsfoot trefoil and purple loosestrife. The banks are often dominated by nettle, comfrey and other ruderal vegetation such as hemlock; with wetland species such as butterbur and water chickweed, and occasional bramble scrub.

Through the base at Chicksands the stream has been dammed with weirs and sluices to create a series of three lakes. The lakes are heavily silted and the water is turbid, still or very slow-flowing. Little aquatic vegetation is present though the eastern lake contains occasional yellow water lily (*Nuphar lutea*) (A8-Nuphar community). Marginal vegetation includes branched bur-reed, reed canary grass, common reed, reed sweet grass, reedmace, greater pond sedge, water forget-me-not, gipsywort and yellow iris. Species on the banks include great willowherb, Himalayan balsam, meadowsweet, water figwort, purple loosestrife, nettle, comfrey, angelica, marsh woundwort and hemp agrimony. Rows of alder, crack, white and weeping willow fringe many of the banks with occasional large specimens of beech, sweet chestnut (*Castanea sativa*) and London plane in places. Artificial banks are present at the weirs.

The River Hit joins the Flit where it becomes the Ivel Navigation, and is slow flowing with a silted bed. The channel contains abundant reed sweet grass with occasional purple loosestrife, and nettle and comfrey dominate the banks.

Adjacent Habitats:

The area around Clophill contains numerous small fields of semi-improved pastureland, mostly horse-grazed. The grassland often contains frequent thistles, ragwort and docks with finer species such as selfheal (*Prunella vulgaris*), birdsfoot trefoil (*Lotus corniculatus*), ribwort plantain, buttercup sp., black knapweed, clovers and yarrow. Some of the grassland grades to a U1 acid community with frequent common bent and occasional sheep's sorrel and catsear (*Hypochaeris radicata*). Many of these pastures are species poor and show signs of overgrazing with lots of bare ground. Abandoned and less heavily grazed areas such as along the river are often dominated by nettle, Himalayan balsam and other coarse species with occasional wetland species such as reed canary grass and purple loosestrife. Numerous overgrown hedges are present between the fields, mostly hawthorn dominated and often gappy.

Small patches of willow woodland are present in places with occasional other woody species such as ash and sycamore. At TL088376 is a 1 ha area of woodland on peaty soil dominated by alder and sycamore with occasional ash, pedunculate oak and birch, including some large specimens. The understorey contains abundant elder with occasional elm, hazel and sycamore saplings. The sparse field layer contains ivy, ground ivy, nettle, bluebell and occasional dog's mercury. The ditch along the eastern edge is seasonally wet.

The disused fuller's earth works to the east of Clophill contain a range of habitats including two extensive lakes, rough grassland, ruderal vegetation, wet ditches and scattered scrub. Both lakes

contain islands and their banks have frequent alder and willow regeneration. Aquatic and marginal species in the lakes include abundant soft rush, occasional amphibious bistort (*Persicaria amphibia*), gipsywort, Himalayan balsam, reedmace, great willowherb, common reed and club-rush sp. (*Scirpus* sp.). The small waterbody to the south of the eastern lake is fringed by common reed with scattered grey willow and alder saplings.

The ditches at the site contain chalybeate deposits and are often choked with branched bur-reed, common reed, lesser pond sedge, reedmace, great willowherb, gipsywort, soft rush or reed sweet grass; with locally frequent purple loosestrife, meadowsweet, field horsetail, black knapweed, reed canary grass, tansy, Himalayan balsam and comfrey on the banks. Alders and grey willow scrub fringe some of the ditches.

Much of the grassland at the site is species poor MG1 with areas of soft rush dominated MG10. Some shallow seasonally flooded areas of bare peat are present that are fringed or dominated by soft rush and common bent with locally frequent redshank, and occasional reedmace, purple loosestrife and gipsywort. Ruderal vegetation dominated by comfrey, nettle or hemlock is also frequent, especially along the river.

Along the northern edge of the workings is an area of finer U1 acid and MG1 neutral grassland with scattered birch regeneration and shallow flooded areas of bare peat and gravel. Common bent dominates the more acid U1 communities with locally abundant haresfoot clover (*Trifolium arvense*), yarrow and sheep's sorrel. Mosses and lichens are frequent on very sparsely grassy areas. Other species in the grassland areas include abundant ribwort plantain, locally frequent black knapweed and wild carrot, and occasional common toadflax, field scabious (*Knautia arvensis*), birdsfoot trefoil, salad burnet (*Sanguisorba minor*), ox-eye daisy (*Leucanthemum vulgare*) and lady's bedstraw.

Areas of young woodland have been planted near the lakes containing alder, birch, oak, ash and field maple.

To the west of Upper Alders CWS near Beadlow are a number of small copses of woodland next to the river containing mature alder, ash and oak. An area of planted woodland at TL112386 contains field maple, oak, ash, lime, hazel and hawthorn. A field of cattle grazed rough grassland on peaty soil at TL114388 contains frequent tufted hair grass, nettle and thistles with occasional common reed at the western end. The set-aside field to the south at TL114387 is overgrown with dense hemlock, nettle and thistles.

The belt of woodland to the north of the western lake at Chicksands consists of young Scots pine with occasional sycamore and ash. Much of the other land to the north of the lake consists of close mown parkland containing numerous veteran specimens of trees including sweet chestnut. The land between the lakes and the Flit consists of close-mown amenity grassland used as sports fields with occasional stands of willow and alder.

To the north of Lower Alders CWS at TL131391 is a field of rough grassland in the Countryside Stewardship Scheme with a small area of planted woodland containing alder, field maple, Norway maple, poplar, birch, oak, ash, wild cherry, crack willow, wayfaring tree and hazel. Rough grassland and ruderal vegetation is present beneath the young trees, with species including red campion (*Silene dioica*), hemp agrimony, common hemp nettle, comfrey and nettle. The woodland is surrounded by wet ditches dominated by common reed.

At TL133391 is an area of osier and grey willow scrub with mature alders and white willows.

At Shefford Hardwicke Farm at TL137392 is a plantation of wide-spaced young and mature white willows on peaty soil. Some large willows have been recently felled and the area is grazed by sheep. Rough grassland and ruderal vegetation is present in the field layer that is dominated by nettle and comfrey with hedge bindweed, wetland thistle (*Carduus acanthoides*), docks, hogweed, common hemp nettle, angelica and ground ivy. Of particular interest are large stands of greater tussock sedge (*Carex paniculata*) (S3 *Carex* sedge-swamp). The sedge forms dense stands of tall tussocks though few other wetland species are present apart from occasional reed sweet grass and pond sedge. Near the S3 swamp is a small stand of W6 alder coppice with nettle and ground ivy dominating the field layer with very occasional greater tussock sedge and soft rush. A wet hollow in the northwest of the plantation is dominated by dense alder regeneration with reed sweet grass S5 swamp in more open areas and occasional bittersweet and soft rush.

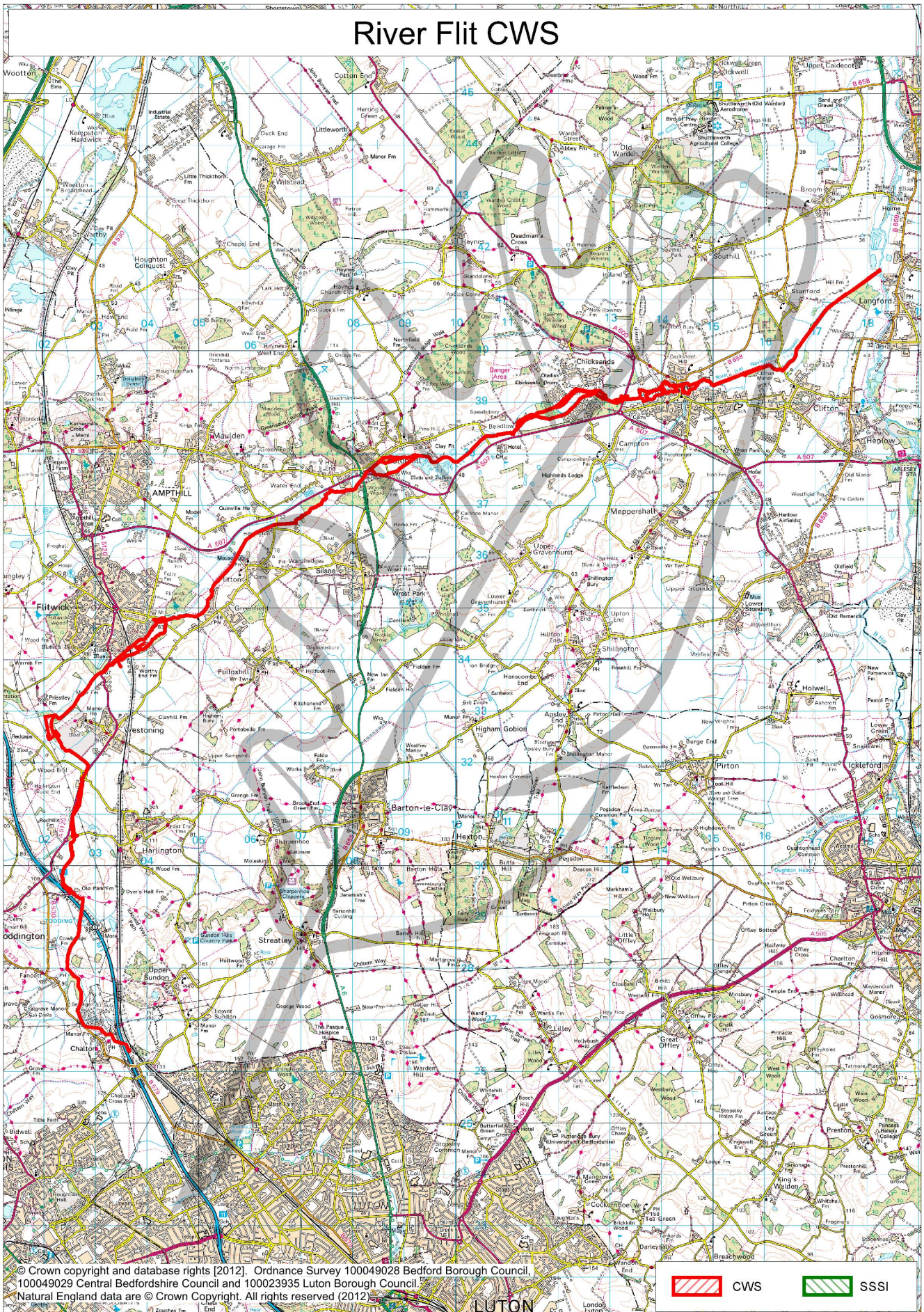
To the south of a wet ditch at TL137391 are further areas of ruderal vegetation and rough grassland dominated by nettle and comfrey with occasional reed canary grass, common hemp nettle, greater pond sedge and a couple of stools of greater tussock sedge. Frequent alder saplings and scattered mature crack and white willow are present, including some particularly large specimens along the wet ditches. Part of an area of ruderal vegetation at TL136390 has been scraped and the earth heaped into a mound. The fields to the west consist of improved pasture with occasional scattered alders and willows. The area of pasture to the east at TL139392 is improved but contains seasonally wet ditches containing frequent hairy sedge (*Carex hirta*) with occasional soft and hard rush.

To the north at TL135395 is an area of dry woodland dominated by ash with occasional oak, alder, willow, sycamore and Scots pine. The understorey contains hawthorn, elder and red currant (*Ribes rubrum*), and the field layer is typical of a W8-Fraxinus-Acer-Mercurialis community, being dominated by dog's mercury with nettle, ground ivy, cuckoo pint and occasional pendulous sedge.

The Flit passes through the disused Old Warden Disused Railway CWS between walls at TL140393. The railway embankment is covered in dense scrub and trees, mostly ash and hawthorn. To the east of the railway is a further area of white willow plantation at TL141393, including large old willows along some of the ditches. Scattered hawthorn and elder scrub is present, and the field layer consists mostly of nettle, Himalayan balsam and comfrey dominated ruderal vegetation with occasional hemlock, though pond sedge and reed sweet grass swamp is present in places. Areas of ruderal vegetation and scattered trees are also present to the north of the river. To the east of the plantation at TL142393 is an area of similar open ruderal vegetation containing occasional reed sweet grass and bramble scrub around the edges.

A similar area of open comfrey dominated ruderal vegetation is also present to the east of the road bridge at TL145393 and contains scattered elder and grey willow scrub, birch and oak. An area of similar ruderal vegetation to the east of the Flit alongside the Ivel Navigation at TL146393 contains numerous large white willows and scattered grey willow scrub.

River Flit CWS



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