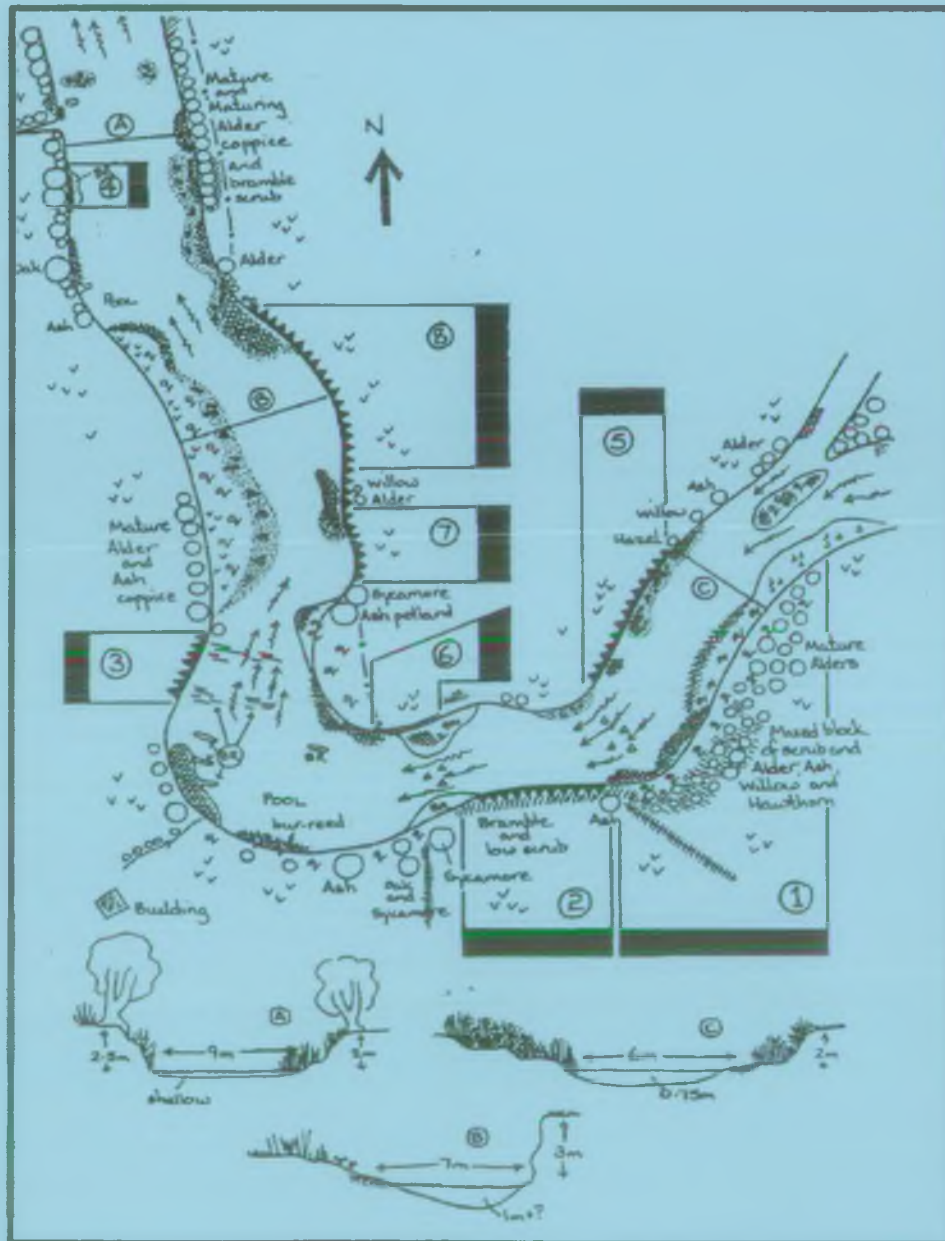




NRA

National Rivers Authority
South West Region

CORRIDOR SURVEY : RIVER BOVEY AND MINOR TRIBUTARIES



RIVER BOVEY & BOVEY MINOR TRIBUTARIES CORRIDOR SURVEY

October-November 1990

A REPORT PREPARED FOR THE NATIONAL RIVERS AUTHORITY

(SOUTH WEST REGION)

ECLOGUE

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ENVIRONMENT AGENCY



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Report compiled by Joan Shotton B.Sc.

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BOVEY MINOR TRIBUTARIES

INTRODUCTION

SURVEY

individual section maps and notes.

APPENDICES

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1. INTRODUCTION - a brief description of the river and its surroundings.

The Bovey is an upland and rural river in south Devon. It rises near Water Hill on Dartmoor at a height of 420m, flowing first north then east, then south east from North Bovey through Bovey Tracey to join the River Teign just south of Chudleigh Knighton. The Teign continues through Newton Abbott to enter the sea at Teignmouth.

The geological structure of the upper catchment area on Dartmoor is igneous granite. Between Manaton and Bovey Tracey the river cuts through slates and shales (Culm measures) of the carboniferous period. The soils here are loamy or silty acid soils and alluvium derived from granite and slates, with frequent bare rock and boulders. Below Bovey Tracey the underlying structure is Bovey Beds of the Eocene period overlain by river alluvium.

The town of Bovey Tracey is the only settlement on the length of river surveyed. Two main roads, the A38 and the A382, both with modern bridges, along with several minor roads, cross the river, but elsewhere there is very limited access. There is a footpath along parts of the north bank upstream, but no footpaths downstream from Bovey Tracey. Two bridges are of historical interest - the ancient packhorse bridge in Rudge Wood, and Drakeford Bridge with a datestone 1686. There is a weir and mill leat above Bovey Tracey.

In the upstream sections surveyed, the Bovey displays the characteristics of an upland river, flowing in a narrow, often rocky channel, steeply graded with rapids and small waterfalls, through a steep-sided well-wooded valley (Bovey Valley Woodlands National Nature Reserve - see Appendix C), and then through woods and meadows of the National Trust Parke Estate. Below Parke, the morphology changes abruptly to that of a lowland river, slower flowing in meanders through farmland with sheep and cattle in the riverside pastures. Below the A38, recent Clay Mine workings have encroached on large areas of farmland, and the mine roads are close to the river. There is considerable artificial bank reinforcement to prevent erosion on the bends. Bankside tree cover is almost continuous throughout, with a good variety of species of mixed ages, often coppiced and overhanging the channel. Ferns and bryophytes occur on many banksides, often in abundance, and include some rare species. Dipper and grey wagtail are quite common along most of the river, and kingfishers nest in the lower stretch. An excellent variety of woodland birds frequent bankside trees and nearby woods. Signs of otters were found throughout.

The Bovey was surveyed from Main River Limit at the junction of Becka Brook to the confluence with the river Teign, a distance of 10km.

2. METHODOLOGY

2.1 An outline of the surveying techniques used

The surveying technique is based closely on that set out in the Nature Conservancy Council publication 'Surveys of Wildlife in River Corridors - Draft Methodology' (1985). The method involves surveying each 500 metre section (half chainage as denoted by the National Rivers Authority), to assess its value to wildlife.

Each section was surveyed by one person working downstream. The channel was surveyed from mid-river whenever possible, and both banks were examined, as well as all land within the river corridor, which is defined as 50m to each side of the channel. Photographs were taken (from mid-river when possible), upstream and downstream at the beginning of each section.

A map was produced for each 500m section showing:

- a) Physical features such as river flow and substrates, and bank formations.
- b) Biological features such as tree cover, bankside and channel vegetation, and adjacent habitats.
- c) Any features of interest in the surrounding land.
- d) Key sites and features of particular importance to wildlife.
- e) Cross sections at 3 identifiable points.

These features are represented on the final maps by symbols as explained in the following table.

The final maps are based on field sketches, and the width of the channel has been exaggerated by a factor of approximately 2.5 to 3 for clarity.

The map of each section is accompanied by notes describing the characteristics of banksides, channel and adjacent land. Key sites and features of particular wildlife importance are identified on the map by numbered bold black lines, and correspondingly described in the notes. Specific management recommendations are made for each section, usually with reference to Key sites.




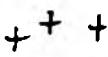
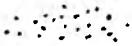
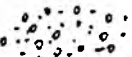
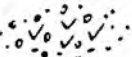

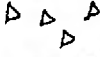
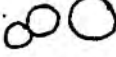
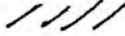

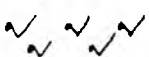


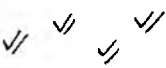
This is essentially a habitat survey, concentrating on broad areas of importance and localised points of interest. It does not deal comprehensively or definitively with the flora and fauna of the river, but identifies areas which are thought to be of particular wildlife interest, in the hope that they can be protected or improved. Species of particular significance for a healthy river environment, such as kingfisher, dipper, grey wagtail, sand martin and otter were given special attention.

Species lists of fauna and flora in Appendices A and B are not intended to be exhaustive lists, but simply a list of species encountered in a thorough but rapid survey of the river. It is recommended that more detailed studies be carried out, particularly with regard to fish populations, aquatic and other invertebrates, bryophytes and breeding birds. Also, no scientific information was collected with regard to water quality and levels of pollution.


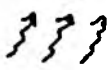

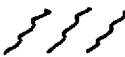

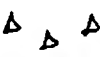

The survey was carried out during October and November 1990. At first, water levels were low, but some periods of heavy rain produced high water levels on several survey days (noted in the text where significant).

TABLE OF SYMBOLS FOR INTERPRETING THE MAPS

BANKSIDE AND MARGIN FEATURES

	earth cliff
	rock cliff
	artificial bank
	mud
	earth, sand or gravel
	shingle
	vegetated shingle
	cobbles
	boulders
	trees (showing relative sizes)
	scrub / shrubs
	reed or sedge
	dense ruderal vegetation
	sparse ruderal vegetation
	short grass (often grazed)
	long grass (usually ungrazed)

CHANNEL FEATURES

	pool
	riffle
	rapids
	run
	waterfall
	boulders
	trash / log jam



fallen log / tree



stump



island



water crowfoot (*Ranunculus* sp.)



Canadian pondweed (*Elodea canadensis*)



fool's water-cress (*Apium nodiflorum*)



common water-starwort (*Callitriche stagnalis*)

SUBSTRATES (submerged)

BR bedrock

b boulders

c cobbles

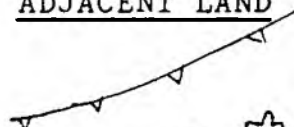
p pebbles

g gravel

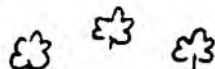
s sand

+ mud / silt

ADJACENT LAND



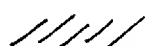
steep bank or river terrace (often as a result of changes in river course)



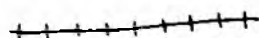
broadleaved woodland



coniferous woodland



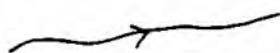
scrub / shrubs



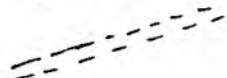
hedge



fence

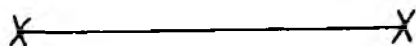


drain or stream



track

CROSS SECTION



2.2 Notes to table of symbols

The descriptions in inverted commas are taken from the NCC publication 'Surveys of Wildlife in River Corridors - Draft Methodology'.

Boulders are 'rocks larger than 25cm in diameter and up to 4m in diameter'.

Cobbles are 'rocks exceeding 6.5cm in diameter'.

Pebbles are 'smaller than cobbles but larger than 1.6cm in diameter'.

Gravel is 'smaller than pebbles and larger than 0.2cm in diameter'.

Silt is 'of soft texture and not abrasive'.

A riffle is 'shallow water flowing fast over coarse substrates; often the surface will be broken and cobbles and boulders may be exposed'.

A run is deeper water flowing fast, without exposed cobbles and boulders.

A pool is 'a distinct, deeper area of water, often resulting in slower velocity or a swirling of the water around a deep depression'.

A slack is an 'area of deep or shallow water where the velocity is slow due to a very shallow slope in the river'.

Earth cliffs are 'at least 1m high and have a slope ranging from 80 to greater than 90 degrees'.

Artificial banks 'may be of any substance - rock, concrete, wood, metal etc. They are usually vertical or steeply sloping'.

Bedrock is shown where it forms a sizeable outcrop in the channel or banksides.

Reed beds are composed of reeds and reed-like grasses forming distinct blocks on banksides, in the channel or in adjacent land.

Dense ruderal vegetation is composed of species such as nettles, Indian balsam or willowherb, in thick belts.

Sparse ruderal vegetation is composed of species such as thistles, or other weed species, less densely spaced and often combined with tall grasses.

Grass species: these areas are usually grazed, or colonized with short grasses and low-growing herb species.

Standard trees are those which have grown naturally without periodic coppicing or pollarding.

Coppiced trees are multi-stemmed, having regrown from periodic cutting.

Scrub habitats are usually blocks of hawthorn, blackthorn, bracken or bramble, of varying density.

Mud or bare earth on the bankside is usually the result of cattle grazing, often at a watering place or crossing.

Hedgerows are shown where they are a continuous and significant feature, not having fallen into neglect or been partially removed.

Semi-improved grassland is usually partly affected by the use of artificial fertiliser, and may be heavily grazed, so that it supports a relatively small range of grasses and herb species.

Unimproved grassland is unaffected by artificial fertiliser, and supports a varied community of grasses, sedges, rushes and herbs. This category encompasses a wide range of soil types, and also includes estuarine salt marsh.

Mud flats lie within the inter-tidal zone in estuarine sections, and are shown where they constitute a significant wildlife feature.

NB All land within the river corridor, unless otherwise stated in the text or shown on the map, is of improved or re-seeded grassland.

3. SUMMARY including notes on areas and species of particular interest.

3.1 General

This survey shows the River Bovey and its corridor to be of major value to wildlife. It is especially important in providing suitable habitat for otters which were found to be active along the entire length surveyed. The river has almost continuous bankside tree cover, predominantly coppiced alders, but including good numbers of mature oaks, ash and sycamore which provide potential resting sites or holt sites for otters where their root systems overhang the channel. Elsewhere, undisturbed stretches with old bank reinforcement of large boulders beside a deep channel, provide good cover for otters (spraints found in these situations indicated their use). The absence of footpaths and consequent lack of disturbance along much of the river contributes to the value for otters.

Dippers, kingfishers and grey wagtails frequent the river - see 3.2. The continuous and varied bankside trees and adjacent woods support a wide range of woodland birds.

The river corridor is of exceptional botanical value, especially the woodlands upstream, and many stretches of banksides with rich and diverse flora including ferns, mosses, liverworts and lichens.

3.2 The Main River length surveyed falls into two distinct sections :

a) Lowland river through Clay Mines and farmland
(Chainage 0.0 - 5.5)

This stretch is characterised by a slow flowing channel with meanders and frequent artificial bank reinforcement.

Banksides are mainly earth banks 1-2m high, often steep. Where banks are not grazed to the water's edge ruderal species such as Indian balsam, hemlock water-dropwort, nettles, brambles, bracken and coarse grasses are characteristic. Some shady banksides support ferns, ivy and liverworts. There are occasional shingle banks with annual flora, usually sparse. Bankside tree cover is almost continuous, with a variety of mixed age trees including alder, hazel, willow, oak, ash and sycamore, often coppiced and overhanging the channel. Some mature oak, ash and sycamore with root systems and trunks overhanging deep pools provide resting sites and potential holt sites for otters. There are a few short stretches of earth cliffs which provide potential kingfisher nest sites, at least one being in recent use.

The channel is 8-12m wide with long, slow flowing slacks of varying depth and substrates of sand, cobbles and mud, and occasional riffles over cobbles. Submerged vegetation is limited to colonies of water-starwort where the channel is slow and shallow, and occasional water-crowfoot in the riffles. Emergent vegetation, typically reed canary-grass, sweet-grass and branched bur-reed is limited to occasional stands, becoming more frequent downstream.

There are many stretches with substantial bank reinforcement of large boulders. Otters find cover where the boulders have crevices over deep water. The complete absence of footpaths from the Teign confluence to Bovey Tracey, together with a tree-lined secluded channel are important factors contributing to the suitability of this stretch for otters. Spraints were frequent throughout (apart from Chainage 2.5-3.5 which were surveyed in late November when the river was in flood, and rocks, stumps, etc. were wet and covered with fallen leaves, making conditions very difficult to find spraints or footprints). Pockets of dense brambles, gorse and coarse vegetation enclosed in tight bends of the river, especially Chainage 2.0-3.0 provide valuable lying-up cover for otters, and are attractive to small birds.

Dippers and grey wagtails were foraging where there are shallow fast-flowing riffles and near bridges, but less frequently downstream where the slow flowing deep channel does not provide suitable feeding grounds. The downstream section is more typical kingfisher habitat, especially where overhanging trees provide fishing perches over pools. There is evidence of a sand martin colony near the Teign confluence, but upstream from here there are no suitable sandy cliffs for nest sites, and the tree-lined channel does not provide good aerial feeding situations for sand martins.

At the extreme downstream stretch the river flows between arable fields and sheep pastures. From Chainage 0.5-1.5 the Clay Mine workings are close on both sides, although the river here is well vegetated and secluded. The disused railway at Chainage 1.5-2.0 provides good unmanaged scrubby habitat for woodland birds, and there are some herb-rich semi-improved pastures near the bridge. Elsewhere, pastures with sheep or cattle are mostly improved. Some old hedges provide a link between bankside trees and isolated woods for woodland birds.

b) Upland river through well wooded steep-sided valley
(Chainage 5.5 - 10.0)

This stretch displays the characteristics of an upland river. Banks are rocky with boulders and a rich variety of flora, including woodland species such as violet, primrose, sanicle, dog's mercury, wood sorrel, ground ivy, bugle, pink purslane, remote sedge and several ferns. Bankside tree cover is

continuous and overhanging on both banks, providing a shady secluded channel. Coppiced alder is dominant, but there is a good variety of species of mixed age, including oak, ash, sycamore, willow, holly and hazel, some coppiced or pollarded. Mosses, liverworts and lichens, including several rare species, grow on riverside rocks, boulders and trees.

The channel is 4-8m wide, fast flowing with rapids, riffles and small waterfalls and some sandy beaches. Substrates are sand and boulders. Large boulders in the stream bed often support abundant mosses. There is no submerged or emergent vegetation. Dippers were active throughout this stretch with a nest under the packhorse bridge. The fast flowing upland stream with rapids, small waterfalls and mossy boulders provides ideal feeding conditions. Grey wagtails were foraging near the weir. Otter spraints were found frequently on this stretch, where the generally secluded tree-lined channel and adjacent woodlands provide good otter habitat.

The adjacent woodland from Chainage 5.5-7.0 is the National Trust Parke Estate. There is some excellent mixed age broadleaved woodland on the estate. Ash and oak are the dominant species, with occasional sweet chestnut and beech, coppiced holly and hazel, and a rich ground flora including violet, primrose, bluebell, wood-rush, sedges and ferns. The woodlands are frequented by a good variety of birds. There are some unimproved or semi-improved pastures. A footpath close to the north bank in places is in frequent use, and there is considerable disturbance from dogs here.

The adjacent woodland (Rudge Wood) from Chainage 8.5-10.0 is part of the Bovey Valley Woodlands National Nature Reserve and is of exceptional botanical value. Sessile oak is predominant, but there is a valuable diversity of species including ash, birch and alder, a shrub layer with hazel, holly and honeysuckle. The rich ground flora includes wood-rush and a variety of ferns such as polypody, hard fern, male-fern, lady-fern, common buckler-fern, soft shield-fern and hart's-tongue. The valley bog with purple moor-grass and bog myrtle, and the old meadow as described with Map 9 are of note. The varied woodland and shrubs together with the undisturbed bog provide lying-up cover for otters. The woods support a wide range of woodland birds. Redstart, pied flycatcher and wood warbler, the characteristic species of western upland oakwoods, breed here, along with woodpeckers.

Management recommendations concentrate on preserving the valuable bankside tree cover which creates a secluded channel along most of the river. Mature oak, ash and sycamore are particularly important as potential otter holt or resting sites. Elsewhere, pockets of dense shrubs or coppice are designated as Key sites where they provide otter lying-up cover. In the upstream section there are many sites of botanical value which should be avoided during management work.

It should be noted that Chainage 8.5-10.0 is included in the Bovey Valley Woodlands National Nature Reserve, and the Nature Conservancy Council must be consulted prior to any management being undertaken.

4. GENERAL MANAGEMENT - recommendations to protect wildlife.

The guidelines set out here are applicable to all parts of the river, but it should be emphasized that they are generalised recommendations; the recommendations made in individual sections should be given priority.

CHANNEL MANAGEMENT

1. Submerged and emergent plant communities should be left intact wherever possible; where grazing of marginal plants has taken place, fencing of banks to exclude livestock would greatly improve the plant community. If removal of submerged vegetation is essential, cut material should be left at the side of the river for 24 hours to allow invertebrate species to return to the water. No herbicides should be used in the channel.
2. The naturally occurring variations in flow and substrate should be maintained; if any damage to this pattern occurs during management work, attempts should be made to reinstate the pattern. Larger substrates with bryophyte populations should always be left undisturbed.
3. The removal of shoals should be carried out only if essential; spreading is preferable to removal.
4. Islands, particularly those with vegetation cover, should be left intact and undisturbed.
5. Logs, flood debris and trash dams should be left intact wherever possible, as potential otter habitats.

BANKSIDE MANAGEMENT

1. Mature coppiced or pollarded trees which are in danger of collapsing should be carefully re-cut, working on short stretches (50m or less) in rotation, to minimise disturbance. No cutting should take place between March and July.
2. Mature standard trees should be left intact; if management work is essential, pollarding is preferable to felling.
3. Root systems, saddles and stumps should be left intact, and any bankside hollows associated with them should be left undisturbed.
4. Cut material from bankside trees should be made into stick and log piles at the side of the river, as described in the following section of this report. (The RSNC Otters and Rivers Project or the Devon Wildlife Trust can advise on suitable sites.)

5. Cut material should not be burnt within the channel, on banksides or in important habitats such as woodland, herb-rich grassland or wetland. Improved grassland and arable land are the only suitable sites for burning. Dead wood removed from the channel should be left at the bankside to rot, and not burnt or taken away.

6. Blocks or strips of scrub should not be disturbed when working on bankside trees.

7. Banksides which are rich in herb, fern or bryophyte species should be avoided. Management work should always be carried out from the least richly-vegetated banksides.

8. Open cliff sites should be left intact and undisturbed during management work as far as is practicable.

9. If it essential to cut herbaceous bankside vegetation, this should be carried out in late summer or autumn. Invasive species such as Indian balsam should be eradicated if possible.

10. Stands of tall reed species should be left undisturbed.

11. Certain areas of sparse banktop cover should be considered as sites for planting broadleaved tree species and native shrubs, as described in the following section.

12. Nest boxes for dippers may be installed at selected sites, such as under secluded bridges; old, irregular stonework in banksides or bridges should be retained.

ADJACENT LAND

1. When carrying out management work, machinery and vehicles should not enter sensitive areas such as semi-natural woodland, unimproved meadows, marshy grassland or bog flushes. These areas should generally be avoided.

2. Features such as oxbows and ponds should not be disturbed, and drainage ditches and feeder streams should only be cleared of vegetation if essential.

5. SUGGESTIONS for the creation of new wildlife habitats.

5.1 General

Most stretches of the Bovey provide excellent wildlife habitats as they are, therefore the scope for creation of new habitats is limited. The Bovey has well-wooded banksides along the entire length surveyed, and so it is not appropriate to make recommendations for additional tree planting. To add to the variety of habitats, planting schemes involving strips or blocks of shrubs would provide increased lying-up cover for otters. On relatively shallow banks this can be achieved either by planting shrub species such as blackthorn and bramble, or by fencing off the existing cover and allowing it to expand. The minimum size of scrub blocks likely to be of use to otters is about 5m wide by 5m long; ideally a far greater area of scrub (up to 20m in width) should be created, but this would mean encroaching on adjacent farmland. As an alternative to shrub planting, alder and willow species could be planted to a similar width and then regularly coppiced, to maintain a low, dense ground cover which would provide similar habitats. Fencing of planted banksides is likely to be necessary in most cases, to exclude grazing stock.

5.2 Fencing of banktops

In addition to the necessary fencing after shrub planting, areas of rough grassland or partial tree and scrub cover inside bends in the river are also possible sites for fencing, since they will rapidly develop into valuable dense ground cover for otters and other species, with a minimal loss of farmland and very little expense.

5.3 Log piles

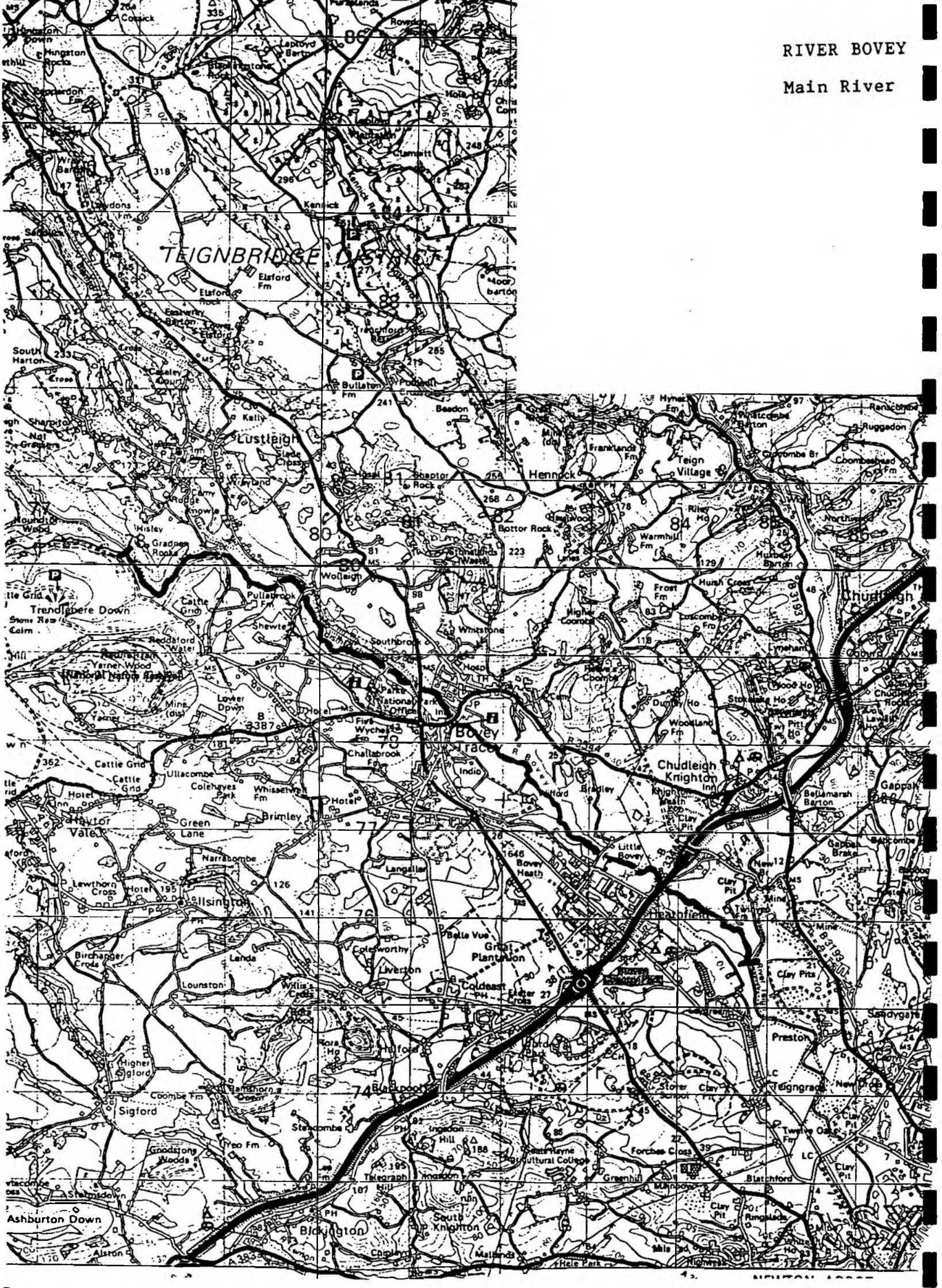
When management work is carried out on bankside trees, the cut material can usefully be made into stick and log piles rather than burnt, to provide lying-up cover for otters, as well as habitats for invertebrates, bryophytes and fungi. They should be sited close to the waters' edge (within 1m or so) and should be at least 5m long by 5m wide and 2m high. The larger logs and branches should be piled at the bottom, and the smaller material on the top. In areas where there is little natural cover for otters, log piles are particularly valuable features.

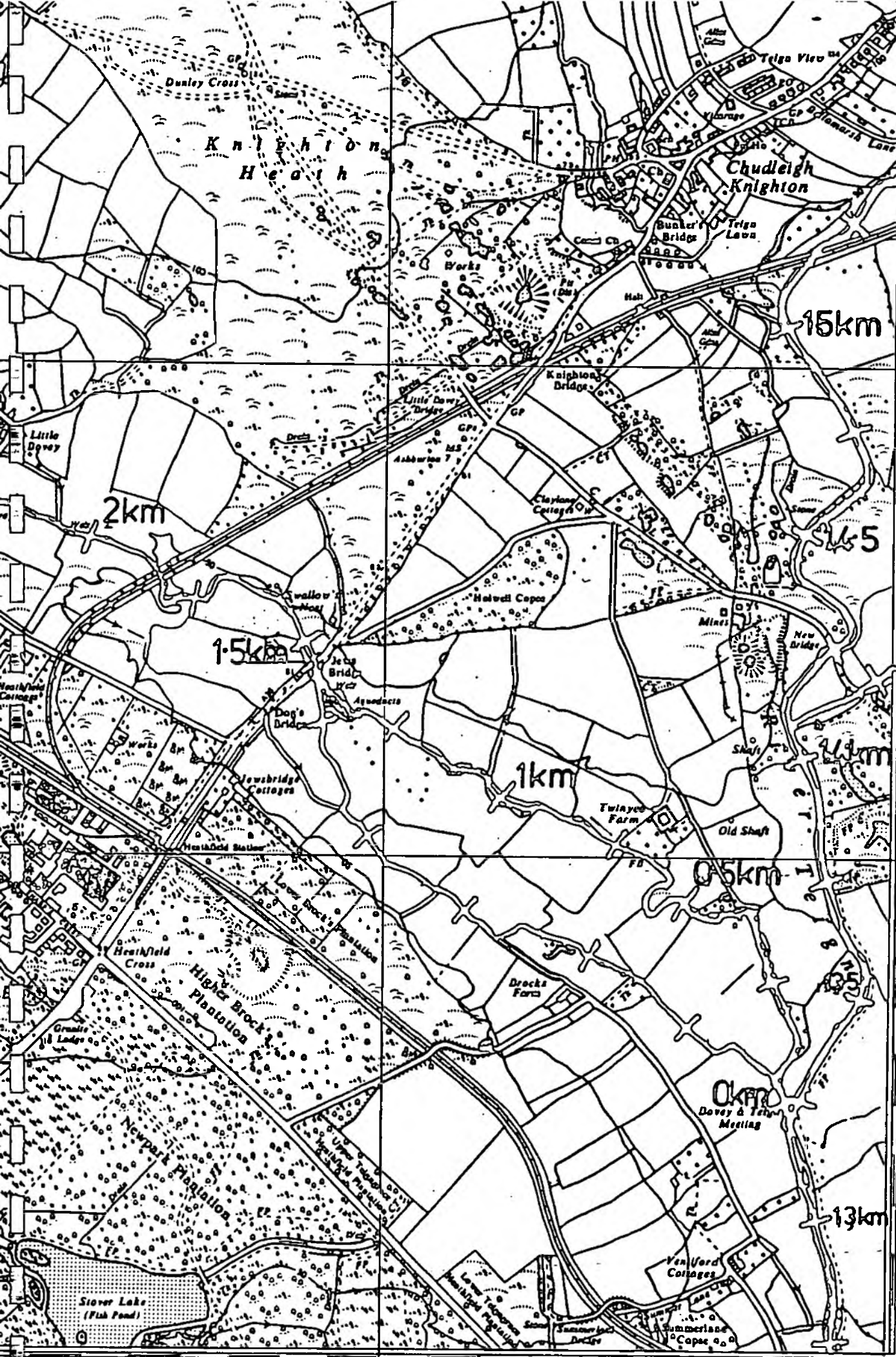
5.4 Nest boxes

The upper stretches of the Bovey are ideal habitat for dippers, but bridges for possible nesting sites are not plentiful. Therefore the siting of nest boxes beneath bridges which have no suitable natural ledges will be of value, as recommended in the text.

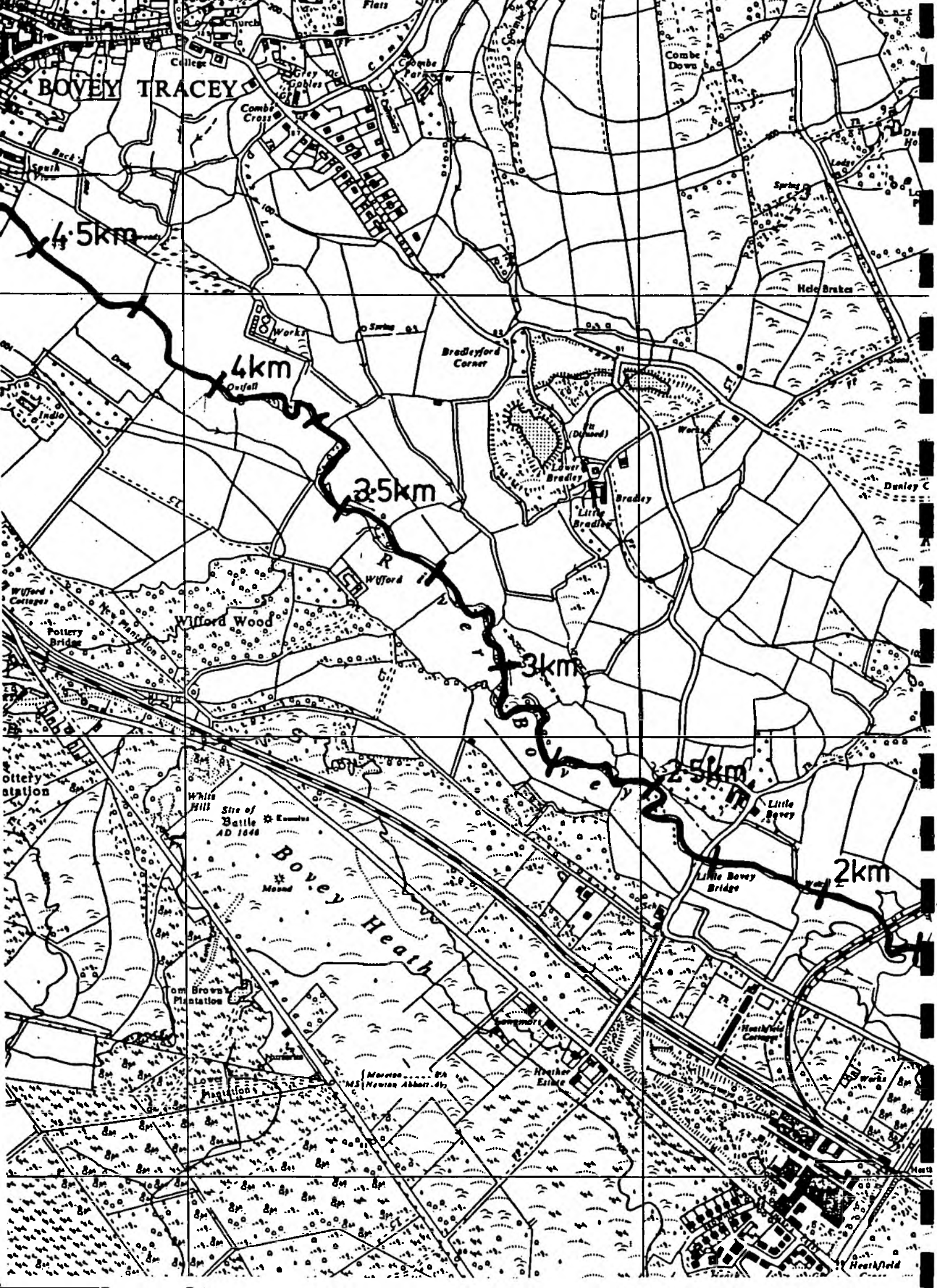
**MAPS SHOWING LOCATIONS OF
CHAINAGE LENGTHS**

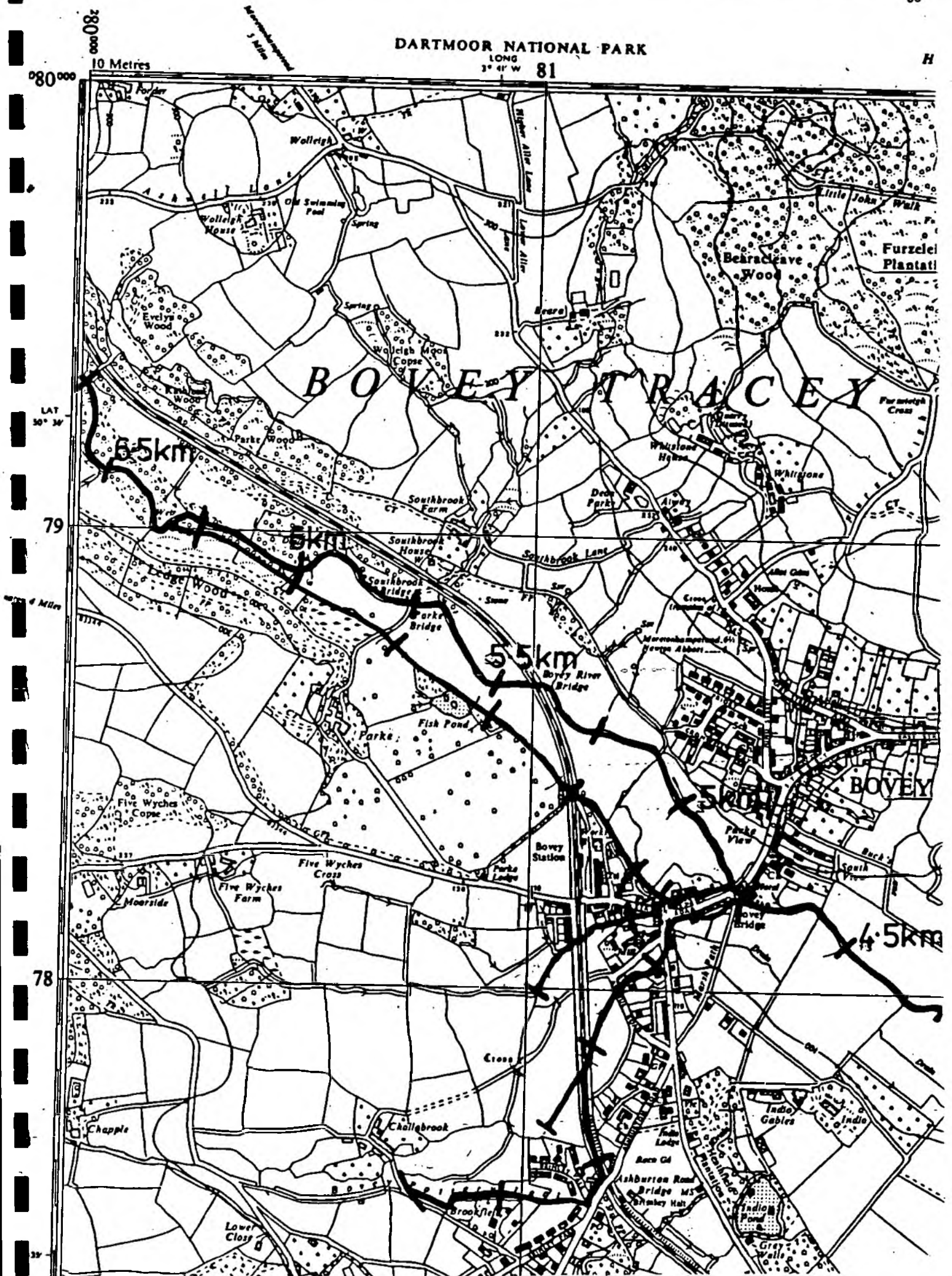
RIVER BOVEY
Main River





HENNOCK PH
KINGSTEIGNTON PH
77
KINGSTEIGNTON PH
76
LAT 50° 34'
075000
10 Metres
285000
Furlongs 8





NEWTON ABBOT RD
LUSTLEIGH PH

LUSTLEIGH PH LONG
3'42" W

78

082

8000

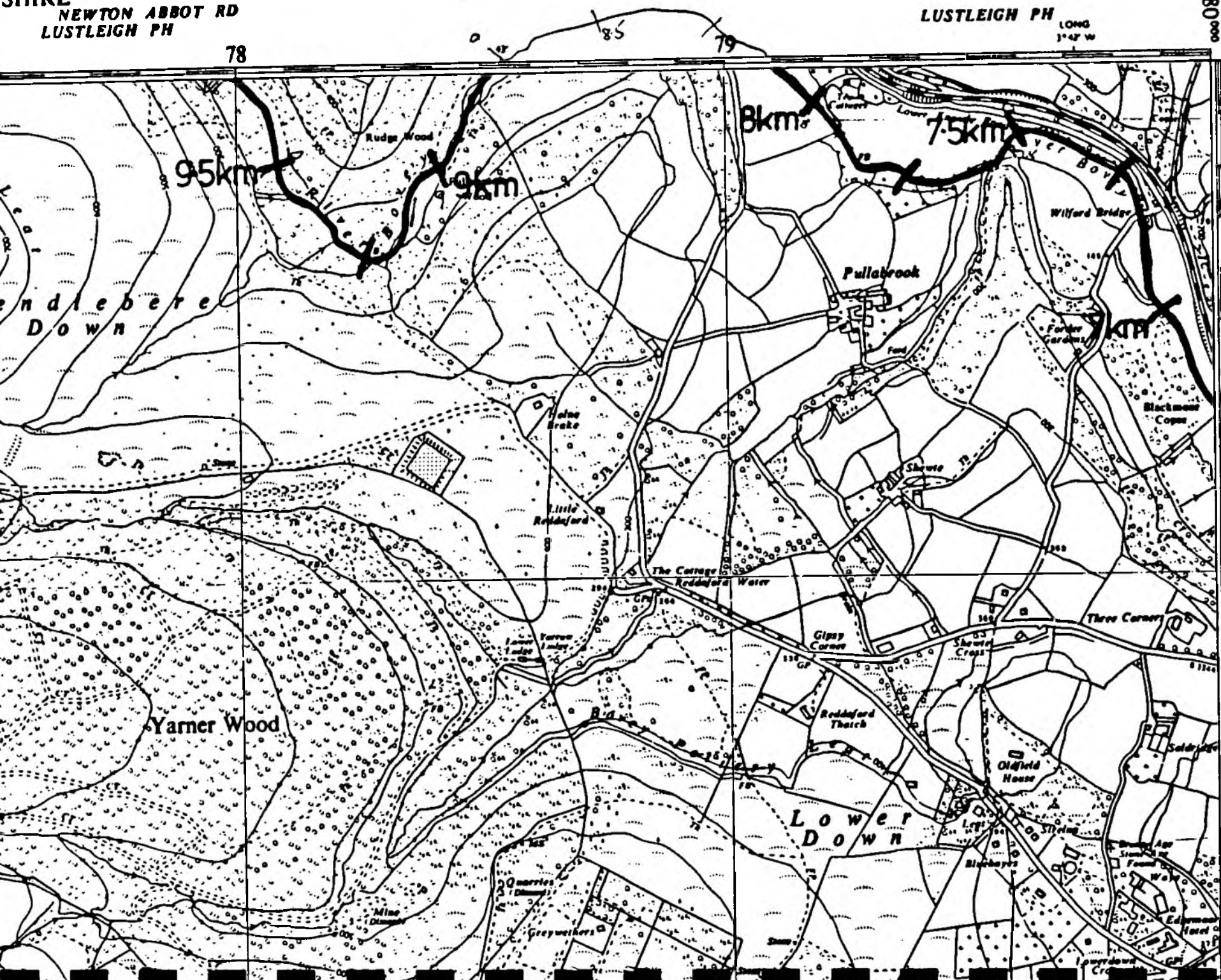
2 Miles

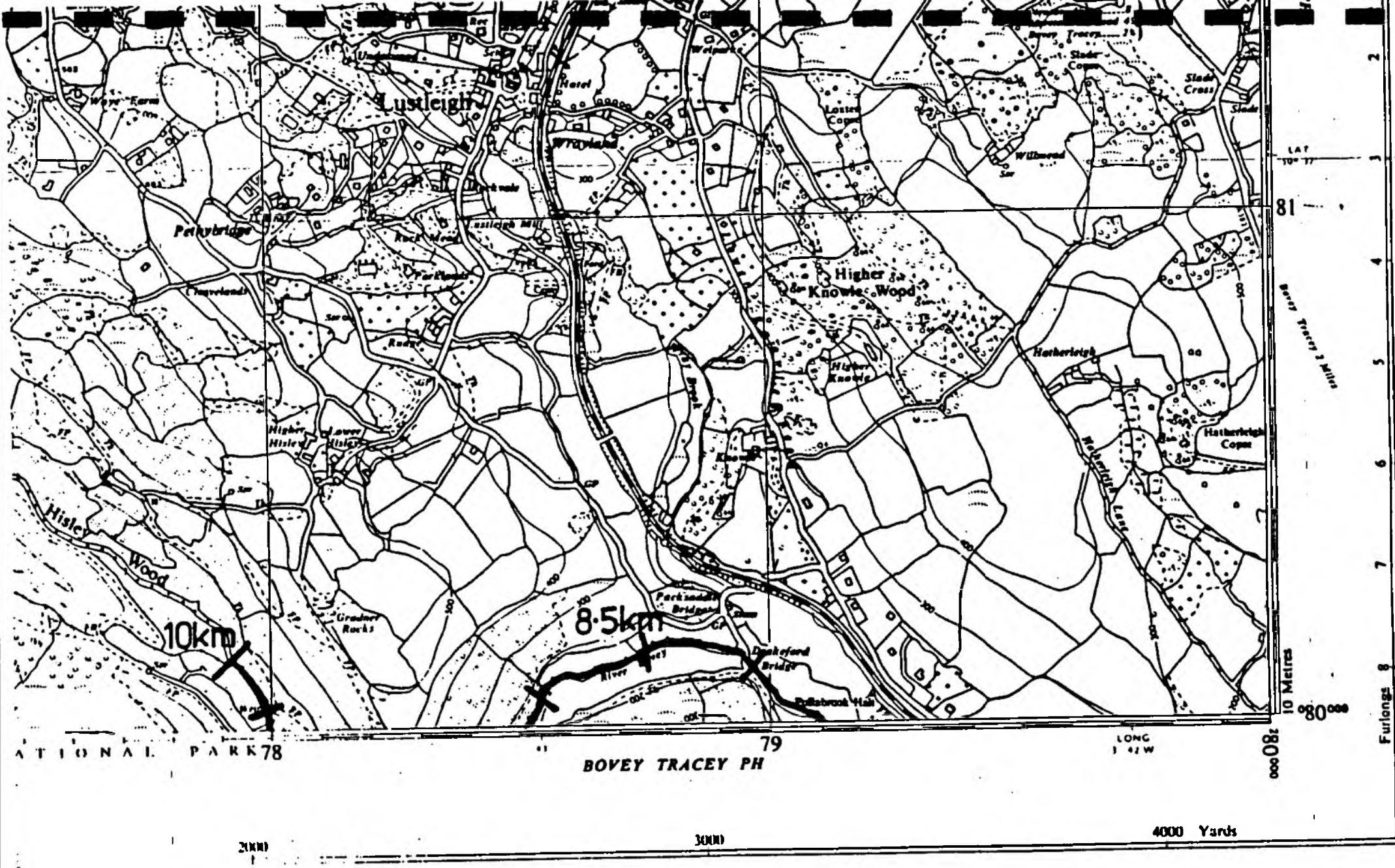
LAT
40°W

79

Berry Ferry
1 Mile

BOVEY TRACEY PH





LAT
53° 10' 11"
81
BOVEY TRACEY 2 Miles
10 Metres
80000
Furlongs 8
LONG
6° 14' W
000082

ATIONAL PARK 78

BOVEY TRACEY PH

4000 Yards

6. SURVEY - individual section maps and notes.

MAP 1 Chainage 0.0-0.5 Grid ref: SX 8482 7548 - 8460 7591

Gently winding unfrequented section to Teign confluence.

Banksides

Earth banks up to 2m, with frequent cliffs occasionally open, one with a recent sand martin colony and several potential kingfisher nest sites. Banksides are frequently vegetated with Indian balsam and other ruderals and brambles, with ivy and ferns under the trees. Inside the bends, banks are gently shelving and have shingle deposits. The west bank has a narrow strip of bracken along the banktop. Tree cover is continuous on the east bank, predominantly alders, including some very old coppice, providing a secluded shady channel for fish, insects, birds and otters. On the east bank, tree cover is intermittent, mainly mixed age coppiced alders including some new growth.

Channel

The channel is 8-10m wide, gently graded with long, slow-flowing slacks over substrates of sand and gravel, and occasional riffles over cobbles. There are some good stands of reed canary-grass and branched bur-reed, and a shelf on the west side mid-section with a variety of wetland plants. This section was surveyed after heavy rain, when any signs of otter activity may have been obscured.

Adjacent

Arable fields on the west are cultivated to the river bank. On the east, there are improved sheep pastures and some old hedges of coppiced hazel, field maple, bramble, etc.

Key sites and features

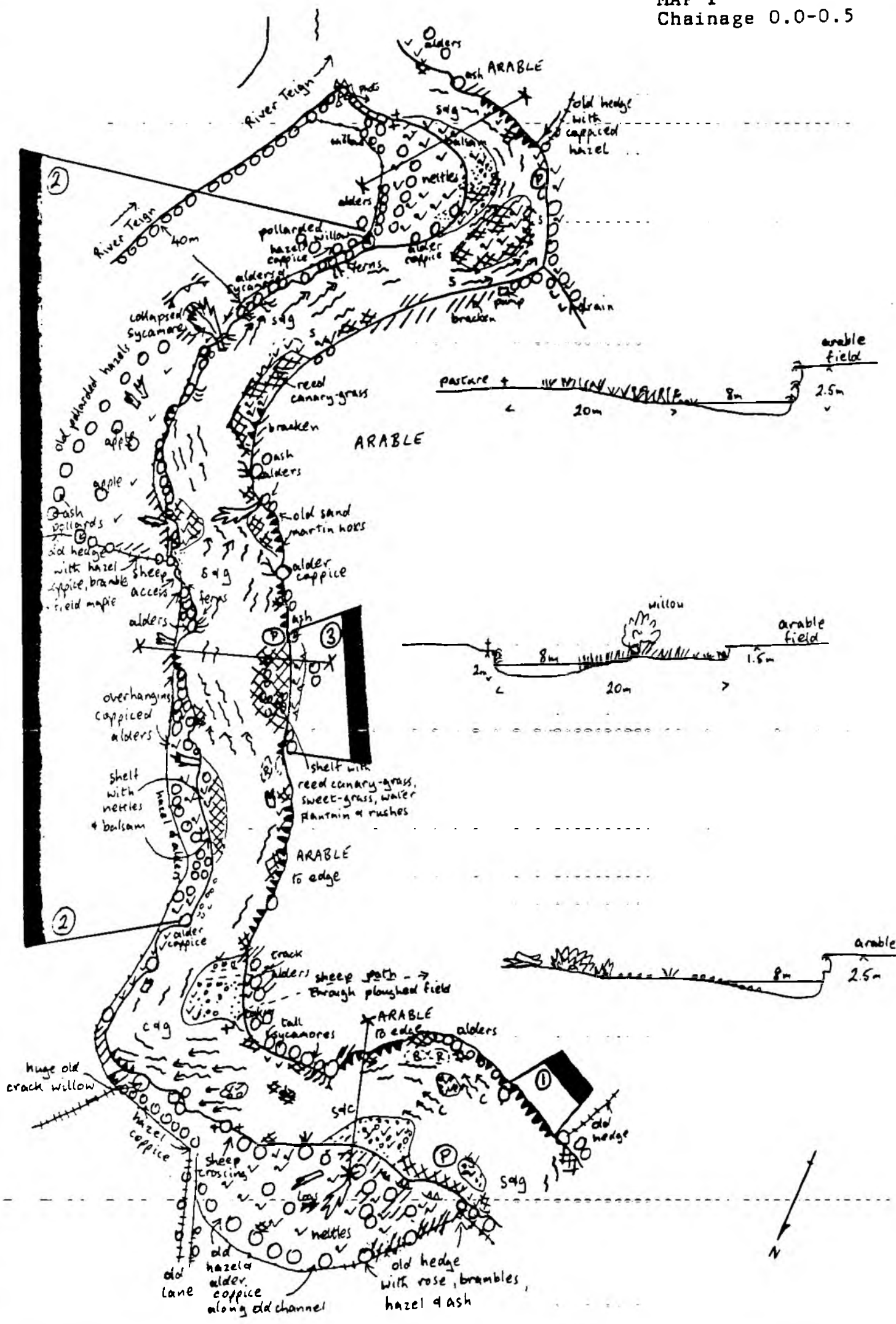
- 1 Sand martin colony in cliff.
- 2 Stretch with good variety of continuous bankside tree cover, ferns and well-vegetated secluded shelves.
- 3 Shelf with diverse wetland flora.

Summary

This section is valuable in being almost totally undisturbed and providing a variety of habitats, including mixed age bankside coppice overhanging the channel, pockets of bramble scrub, stands of emergent vegetation and cliffs, both open and vegetated.

Management

Minimum disturbance is recommended here, especially maintaining bankside trees, vegetated shelves and emergent vegetation.



Unfrequented section with bends and dense bankside vegetation.

Banksides

Banks vary from 0.5-3m in height. Artificial reinforcement with huge boulders is frequent. There are several short stretches of earth cliffs, often with exposed roots over deep water providing excellent kingfisher nest sites. There is at least one recent nest site here. Vegetation is generally dense, and includes Indian balsam and ruderals, together with pockets of bramble scrub. Developing ledges of shingle and sand on the outside of bends support a diverse annual flora. There are wetland species in the backwaters bordered by coppiced alder and willow. This, together with maturing alder and willow scrub and dead wood provides secluded lying-up cover for otters.

Channel

The channel is 8-12m wide, mostly slow-flowing with some long deep slacks over substrates of mud, sand and gravel, and occasional riffles over cobbles with some water-crowfoot and water-starwort. Where the channel is deep beside collapsing boulder reinforcement, valuable undisturbed habitat for otters is formed (spraints were found here). Marginal stands of reed canary-grass and branched bur-reed are frequent.

Adjacent

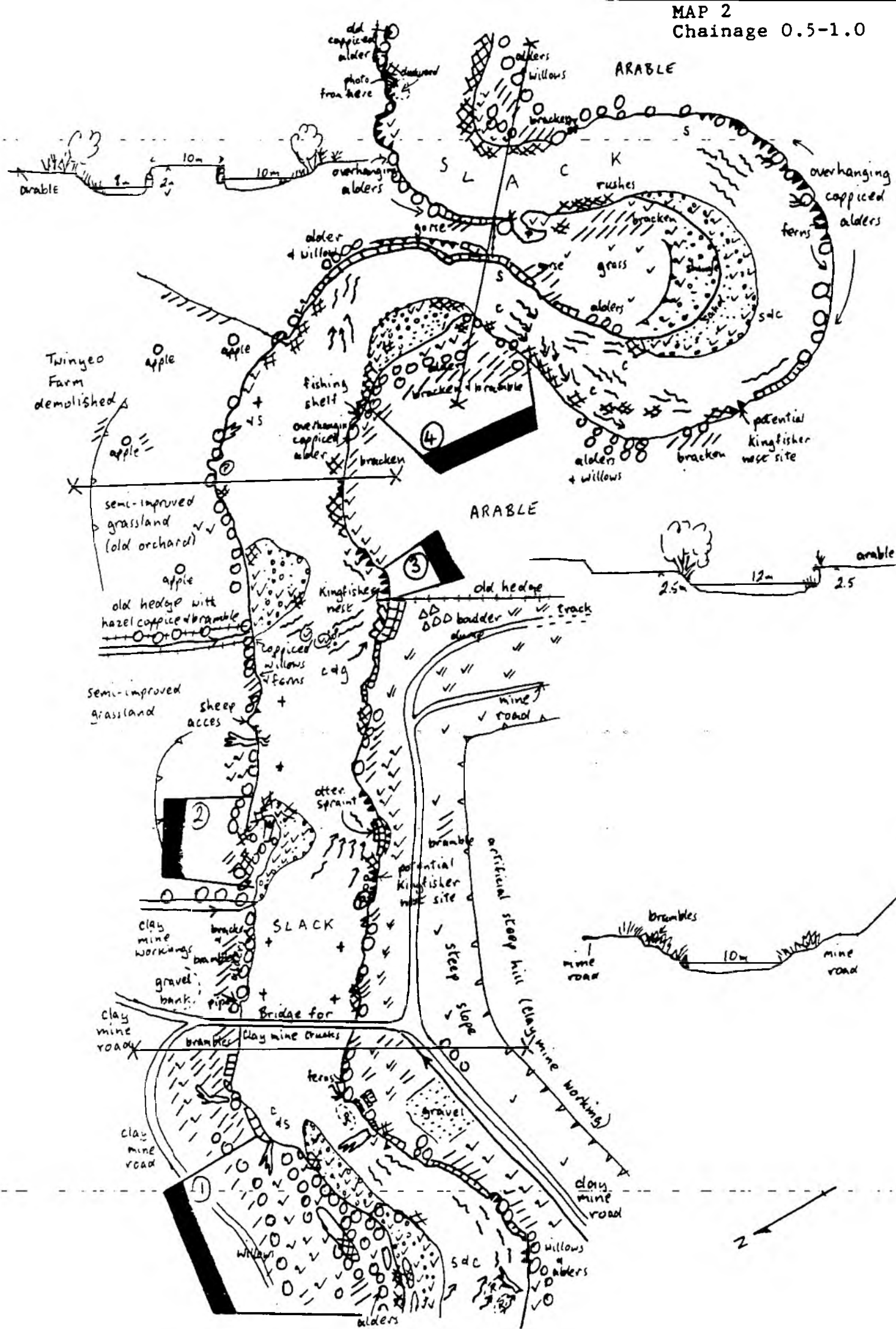
Upstream is the Clay Mine road, with trucks frequently using the bridge. Elsewhere there is improved grassland, and arable on the west downstream bordered by a thin strip of bracken along the banktop. There are occasional old hedges with brambles and coppiced hazel.

Key sites and features

- 1 Secluded shelf with variety of flora, scrub and pools.
- 2 Island and backwater with alders and rushes.
- 3 Kingfisher nest site.
- 4 Shelf with dense blocks of scrub and annual and ruderal vegetation.

Management

Minimum disturbance is recommended for this section, especially avoiding the vegetated shelves at Key sites 1 and 4, and the island at 2. The fenced bend at the extreme downstream section would benefit from tree or shrub planting.



Complex winding section through Clay Mines below A38 bridge.

Banksides

2-3m earth banks, mostly steep with occasional cliffs. There is frequent reinforcement with massive boulders on the bends, some collapsing into the channel. Banksides are densely vegetated with a variety of flora, including ivy, ferns, ruderals and areas of bracken. Tree cover is mostly continuous, predominantly coppiced alders with occasional willow, sycamore and ash.

Channel

Channel averages 8-10m wide with long slacks and substrates of mud, gravel and cobbles. There are some very deep stretches especially on the outside of bends, providing excellent otter cover amongst the collapsing boulders. Occasional short riffles over cobbles are favoured by grey wagtails and dippers. There are isolated marginal stands of reed canary-grass. There are several potential kingfisher nest sites, which together with the lack of disturbance makes this a valuable stretch for kingfishers, which were seen here.

Adjacent

The Clay Mine roads are quite close to both banks. There is a belt of scrub, gorse, brambles and bracken, which together with bankside trees provides a very secluded channel. There are no footpaths here, and the abundant scrubby cover provides good otter habitat. On the east bank downstream is a valuable variety of shrubs, including spindle and guelder rose.

Key sites and features

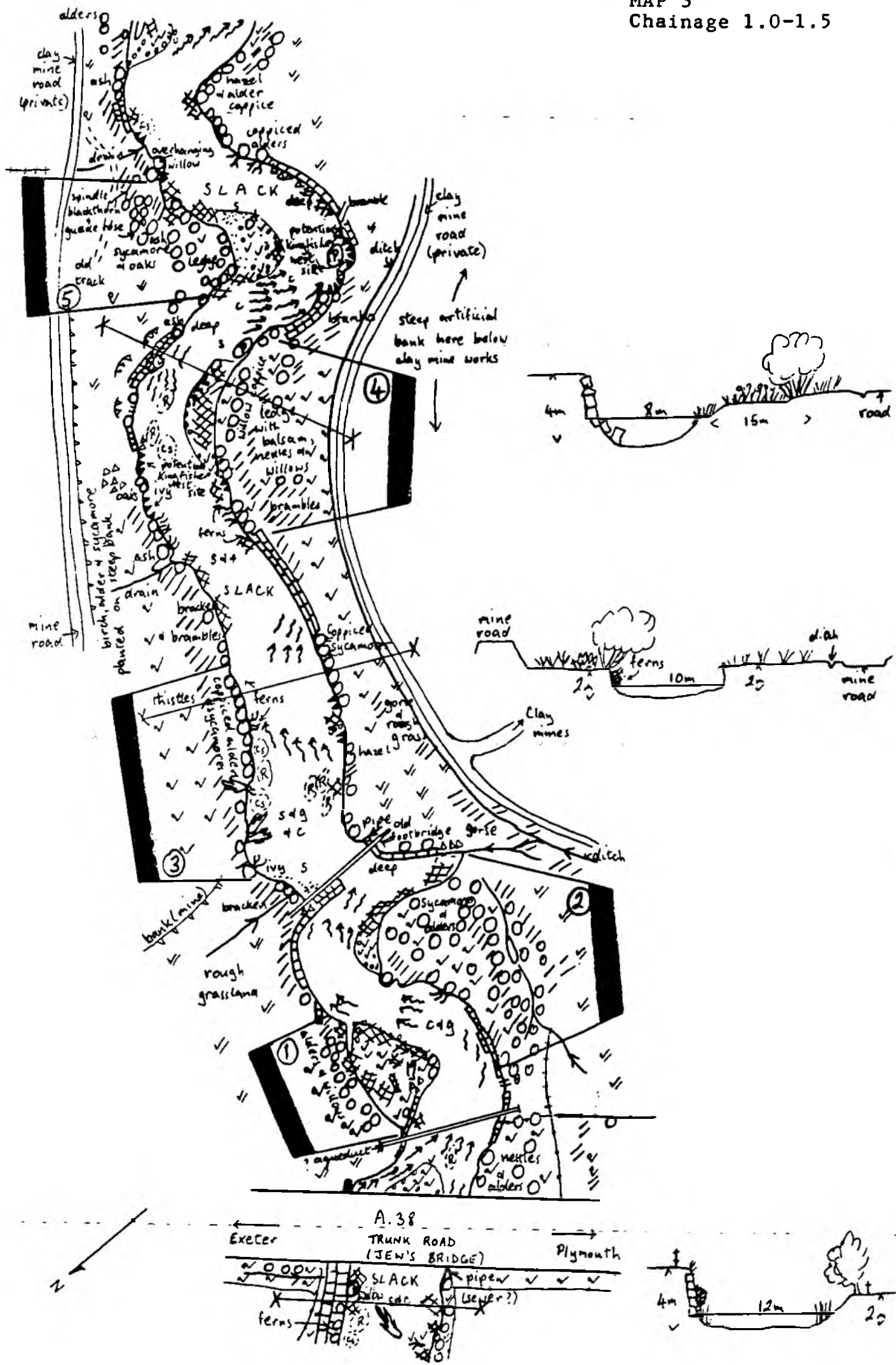
- 1 and 4 Pockets of scrubby cover and emergent vegetation.
- 2 Copse of mixed age trees, dead wood and dense brambles, habitat for small birds.
- 3 Strip of good bankside coppice cover and ferns.
- 5 Secluded backwater and copse with varied trees and shrubs.

Summary

This section is excellent otter habitat, although disturbance from mine trucks may not be tolerated. It is a valuable section for kingfishers. There is a good variety of flora and shrubs on and beside the developing shingle banks.

Management

Maintain bankside tree cover and pockets of shrubs and scrub.



An undisturbed winding section.

Banksides

Upstream, banks are steep 2m earth banks with occasional vegetated short cliffs, one with a kingfisher nest site. Cattle trampling causes erosion in several places. There are stretches with ferns, mosses and liverworts on the north bank. Tree cover is frequent, with some continuous strips, mostly coppiced alders. Mid-section and at the extreme downstream end, there is massive boulder reinforcement on the bends, where crevices over deep water are used by otters (spraints here). There are developing vegetated shingle banks on the inside of meanders.

Channel

The channel is 10m wide with several stretches of long slacks, with very deep water on the outside of bends, and occasional short riffles over cobbles with water-crowfoot and water-starwort.

Adjacent

The old railway provides good secluded overgrown habitat with mixed age broadleaved trees and old coppiced hazel, and a ground layer of ivy, ferns, etc.. Upstream, the fields are improved or semi-improved. Below the railway bridge on the south bank is an area with patches of bramble, and an old channel with wetland species, including greater tussock-sedge, bordered by alder and willow coppice. Downstream to the north there is unimproved herb-rich meadow and pockets of shrubs such as spindle, dog-rose and blackthorn.

Key sites and features

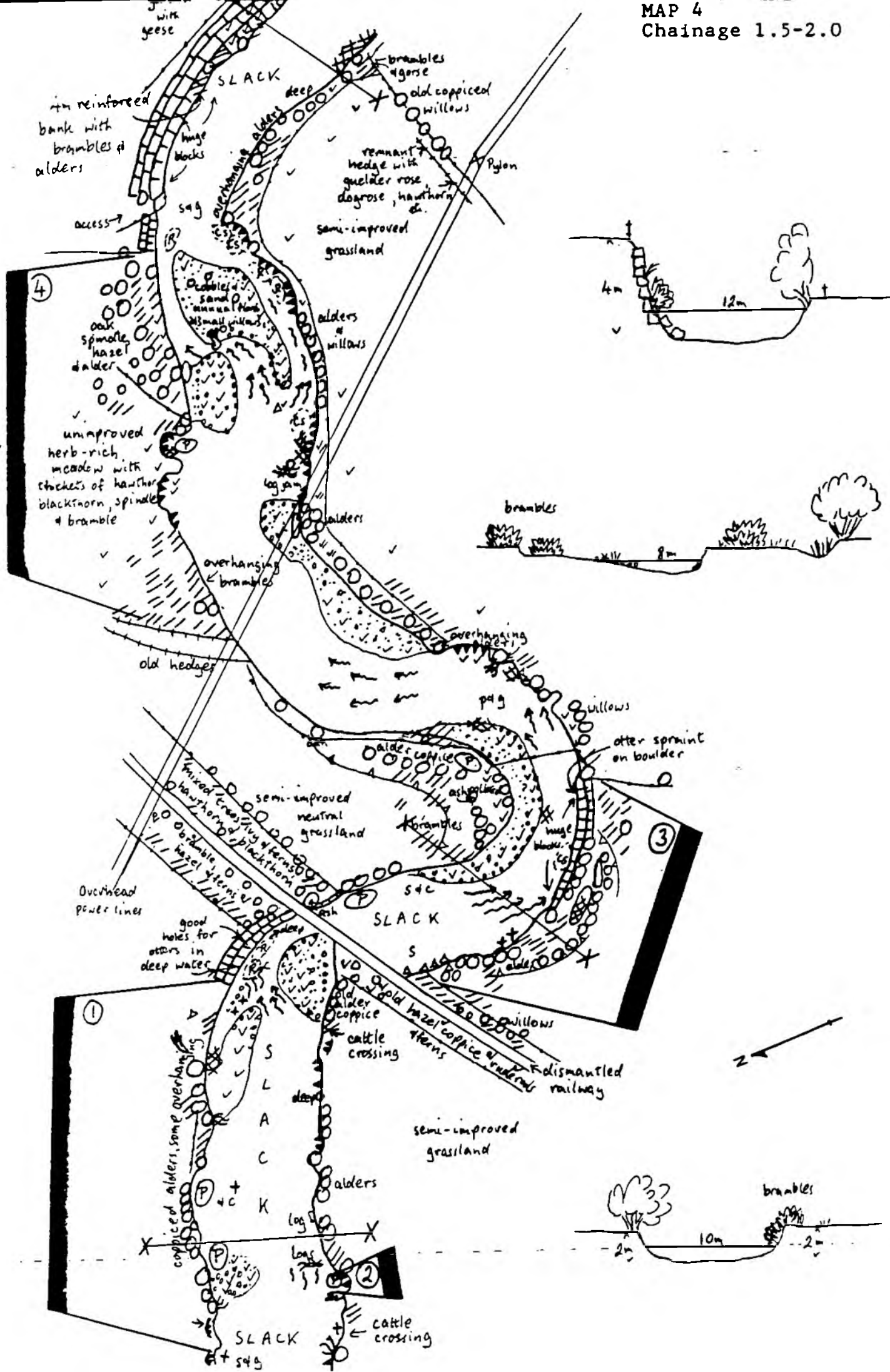
- 1 Continuous coppice cover, some overhanging the channel.
- 2 Kingfisher nest site.
- 3 Secluded pocket of scrub, and oxbow with wetland plants bordered by alders and willows.
- 4 Herb-rich meadow and shrubs.

Summary

Lack of disturbance and a variety of habitats are of value in this section. Habitats include some valuable scrub areas close to the river, possibly used by otters, together with crevices between collapsing reinforcement boulders. Kingfisher, dipper, grey wagtail and moorhen were all active here, and a variety of woodland birds, including sparrowhawk, treecreeper and nuthatch were seen in the vicinity of the old railway.

Management

Avoid disturbance to Key site 3 and 4. Any management work should be carried out from the south bank.



Section with tight bends and caravan field by Little Bovey Bridge.

Banksides

There is frequent artificial reinforcement with very large blocks on the outside of bends, some collapsed into the channel. Upstream on the inside of bends, shingle and sand banks support a diverse flora, including 4 species of rush, water-plantain, sedges and a variety of annual species. Tree cover is intermittent above the bridge with stretches of coppiced alders. Below the bridge, the north bank is a 2m earth bank, mostly steep with some good ferns, mosses and liverworts, and continuous tree cover, predominantly alders. The south bank below the bridge is graded, with shallow gravel shelves and occasional slumping earth cliffs.

Channel

Channel is 6-12m wide with some deep stretches on the outside of bends where gaps between the large blocks provide possible holt sites and cover for otters (spraints in 3 places here). Several stretches of shallow riffles over cobbles are used by dippers and grey wagtails. There is occasional water-crowfoot and stands of reed canary-grass.

Adjacent

A small caravan site on the north bank upstream causes some disturbance in summer. There are some valuable pockets of bramble, gorse and bracken scrub especially inside the bends, one of which is fenced providing secluded habitat.

Key sites and features

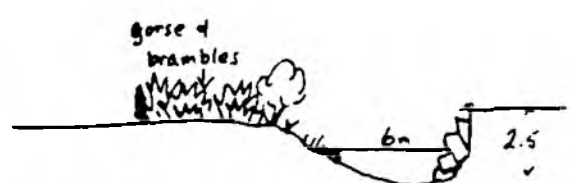
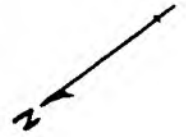
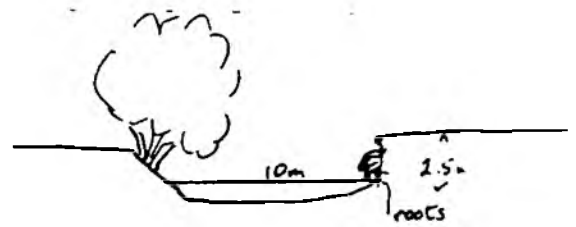
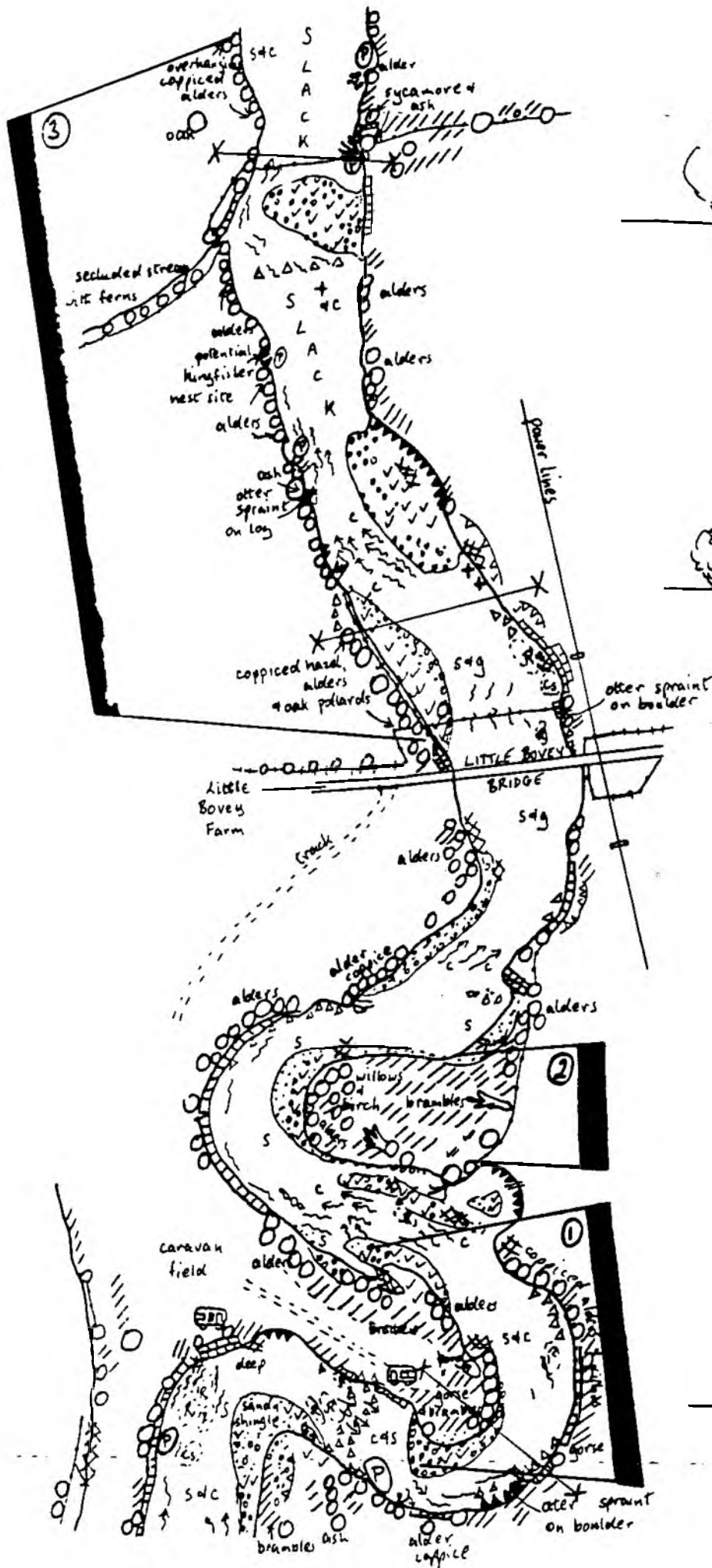
- 1 Pocket of dense scrub and diverse wetland flora.
- 2 Pocket of secluded scrubby cover.
- 3 Continuous bankside tree cover with ferns, mosses and liverworts (including stream).

Summary

The variety of channel morphology, pockets of scrub, shingle banks and downstream tree cover provide a valuable diversity of habitats. Dipper, grey wagtail, kingfisher and moorhen were seen here, along with signs of otters.

Management

Maintain variety of depth and flow within the channel. Avoid disturbance to secluded areas within the bends, especially Key site 1.



MAP 6 Chainage 2.5-3.0

Unfrequented stretch with tight bends enclosing scrubby cover.

Banksides

There are low sloping grassy banks on the inside of bends, and 2m cliffs with boulder reinforcement on the outside of bends. Crevices in the boulders provide valuable cover for otters, important as there is a lack of suitable mature trees in this section. Tree cover is frequently continuous, predominantly coppiced alders. Brambles cover the banks in many places. Winter flocks of siskins and redpolls were feeding in riverside alders.

Channel

Channel is 10-15m wide, fairly evenly graded apart from 2 boulder dams which create slacks and small waterfalls, providing feeding grounds for dipper and grey wagtail. Marginal vegetation is restricted to small stands of rushes, and annual flora is developing on the shingle banks and shoals. There is occasional water-crowfoot and water-starwort in the channel. It should be noted that this, and the following 3 sections were surveyed in late November, and any signs of otter activity were obscured by rain and falling leaves.

Adjacent

Inside the bends there are some dense and occasionally extensive patches of bramble and gorse with coppiced alder and willow, providing valuable lying-up cover for otters in this undisturbed section.

Key sites and features

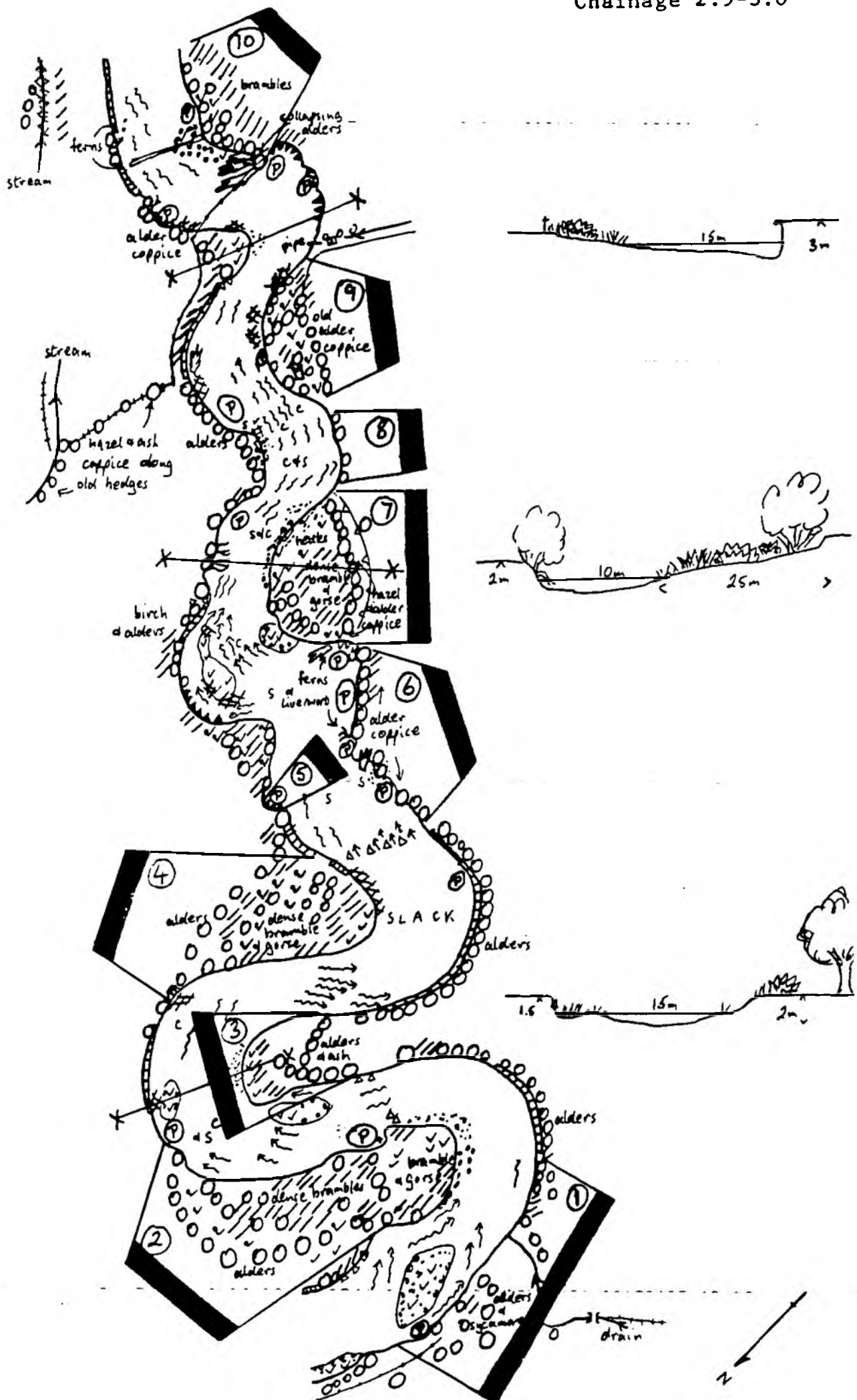
- 1 Strip of good coppice cover and scrub.
- 2, 3, 4, 7, 9 and 10 Pockets of dense bramble and gorse scrub and coppice enclosed within the loops of meanders.
- 5 Kingfisher nest site.
- 6 and 8 Mixed coppice cover with ferns and liverworts overhanging pools.

Summary

The combination of lack of disturbance, good bankside tree cover, large boulders with crevices, and pockets of scrub inside the bends make this a very valuable section.

Management

Do not disturb scrub habitats at all. Coppice in rotation if necessary, allowing mature trees to develop.



Undisturbed section with good bankside tree and scrub cover.

Banksides

Banks are low, gently sloping and often grassy. There are some earth and rock cliffs 3m high upstream on the west. There is boulder reinforcement on the bends. There are frequent stretches of valuable mixed age coppice cover of alders, willows and ash overhanging the channel, with ferns and liverworts on the bank.

Channel

The channel is 10-12m wide with some long, wide slow-flowing sections interspersed with fast-flowing rapids and riffles. The latter are valuable feeding grounds for grey wagtails and dippers. Pools in the channel are frequent, and fish were jumping here. Substrates are sand and cobbles. Downstream there are small colonies of reed canary-grass, and a secluded inlet with bulrush and rushes.

Adjacent

The east bank has an almost continuous strip of brambles between the pasture and bankside trees, providing a very secluded undisturbed channel. There is old coppice and variable patches of bramble scrub on the inside of bends. Downstream on the east there is an extensive area of very dense bramble and scrubby willow merging into a small reedbed, forming important secluded lying-up cover for otters.

Key sites and features

- 1 Coppiced alder and ash, and ferns overhanging pool.
- 2 Strip of continuous overhanging coppiced alders.
- 3 Good mature coppice cover with ferns and liverworts by pools.
- 4 Mixed overhanging coppice cover and ferns.
- 5 Pocket of dense scrub and coppice.
- 6 Colonies of bulrush, rushes and reed canary-grass.

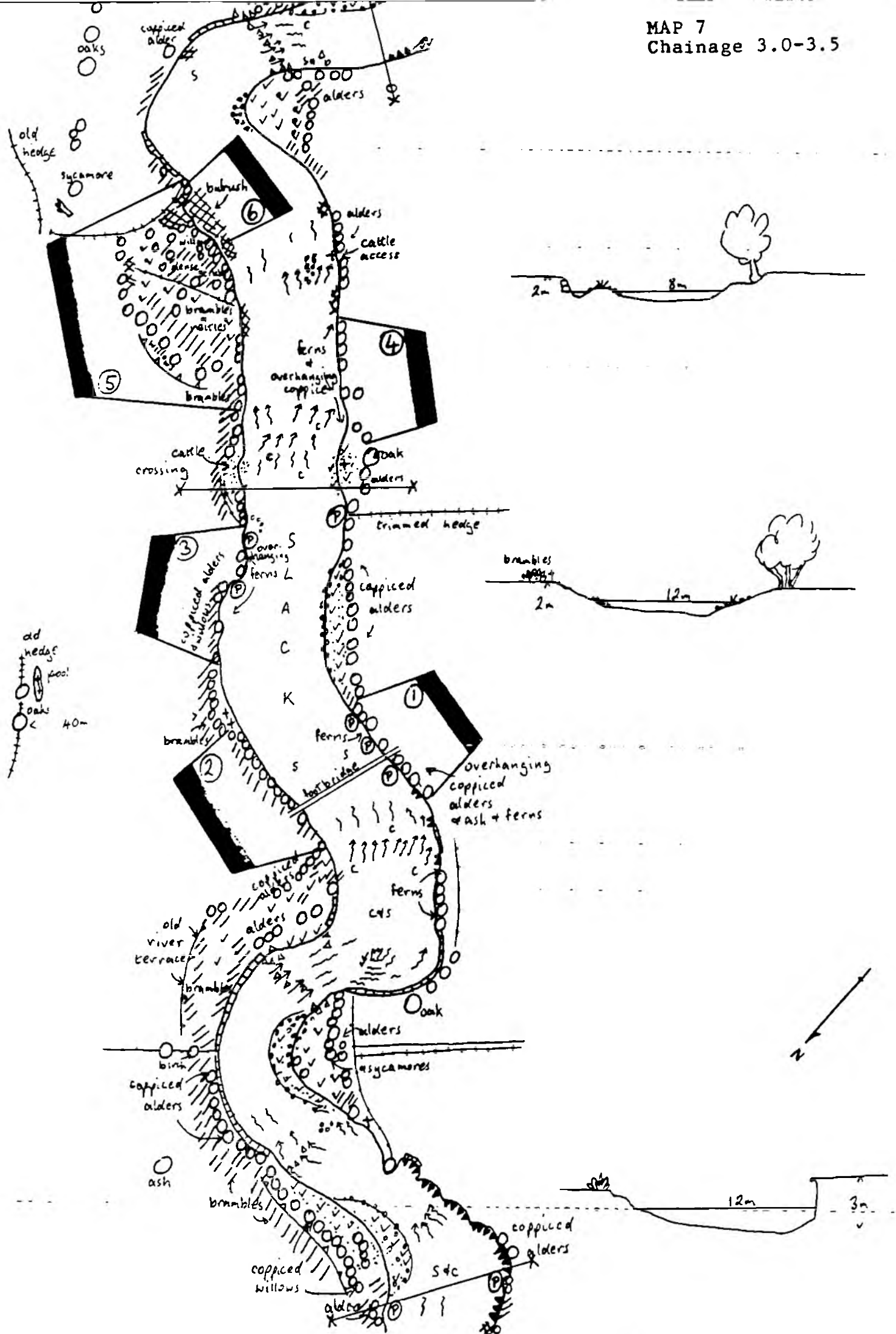
Summary

The bankside coppice cover and adjacent scrub, together with a complete lack of disturbance, make this an excellent section for wildlife.

Management

Maintain bankside tree cover, allowing mature trees to develop. Key sites 5 and 6 are very important and should remain intact. Maintain the variety of depth and flow within the channel.

MAP 7
Chainage 3.0-3.5



Undisturbed winding section with consistently good tree cover.

Banksides

0.5-1.5m earth banks, gently graded and with occasional cliffs. There is some valuable bramble cover, ivy and ferns. Tree cover is continuous, predominantly coppiced alder with occasional ash, sycamore and willow overhanging the channel. Upstream on the west there is old stonework with overhanging roots providing potential dipper or wagtail nest sites. Downstream on the east, large boulders provide potential otter cover.

Channel

Channel is 10m wide with a good variety of flow patterns and depths. There are frequent stretches of riffles and runs interspersed with slacks and deep pools. Substrates are sand, cobbles and boulders. Otter spraints and prints were found at the entrance to a storm pipe below the footbridge. Dippers were feeding in the riffles.

Adjacent

Inside the bends, and along the west bank downstream are valuable areas of old coppice and pockets of dense bramble and gorse scrub, nettles and rushes. This is excellent overgrown habitat for a variety of small birds. On the east there are valuable old hedgerows with mature oak standards, holly and dog-rose.

Key sites and features

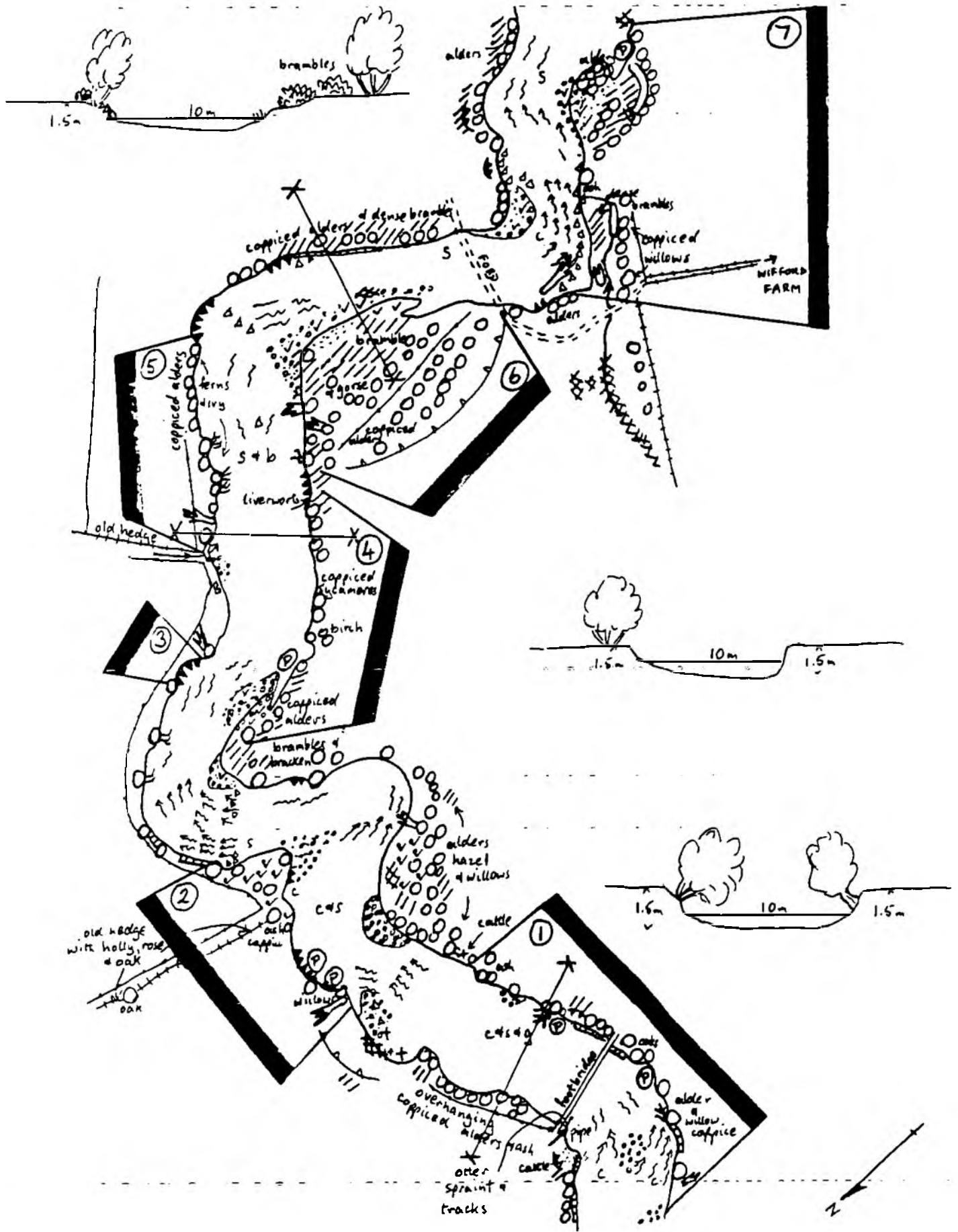
- 1 Valuable varied bankside and channel habitats.
- 2 Bankside coppice cover and cliffs with brambles and ferns over pool.
- 3 Cliff with liverworts and kingfisher nest site.
- 4 and 5 Good mixed coppice cover with ferns and liverworts.
- 6 Ledge with dense brambles.
- 7 Secluded backwater with scrub and coppice.

Summary

Some excellent habitats for wildlife here, with good bankside cover for otters and birds in an undisturbed section.

Management

Minimum disturbance to banksides, especially Key sites, is recommended. Allow mature trees to develop and maintain variety of channel flow. The tight bend in mid-section could be fenced to encourage dense scrub for otter lying-up cover. Any fallen trees which need to be moved could provide log piles.



Undisturbed section with continuous bankside tree cover.

Banksides

1.5m earth banks with occasional small cliffs showing exposed cobbles and pebbles, and gently graded elsewhere. Tree cover is continuous and overhanging with mixed age coppiced alders, willow, ash and sycamore providing a shady channel for insects, fish, birds and otters. Lack of disturbance (no footpaths) is important here. Ferns and liverworts are frequent along the shady banks.

Channel

There are long slacks of varying depth with substrates of sand, cobbles and boulders, interspersed with riffles over cobbles. Cormorant, heron and kingfisher were seen here, and otter spraints were found.

Adjacent

Improved pasture throughout, with a narrow strip of brambles on the south side, and occasional old hedges.

Key sites and features

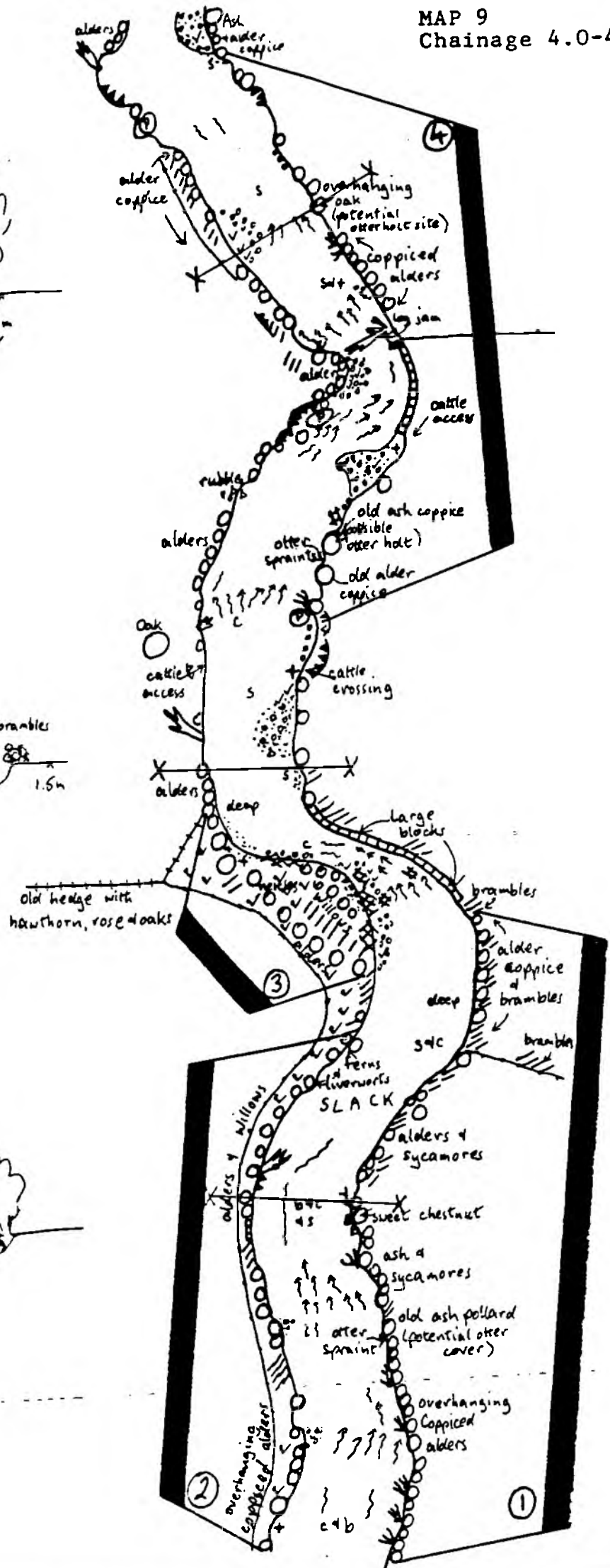
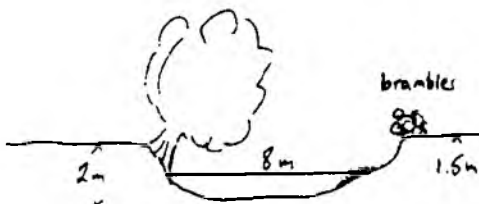
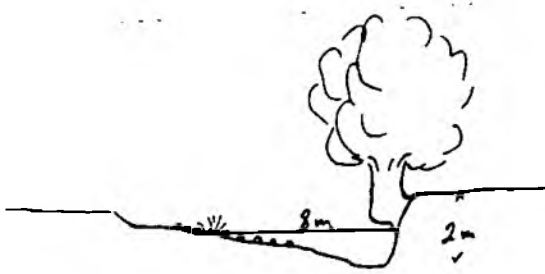
- 1, 2, and 4 Continuous overhanging coppice cover, including several possible otter holt sites (with spraints) beneath mature ash.
- 3 Shingle bar with willow and alder, bur-reed and adjacent blocks of nettles and brambles.

Summary

The lack of footpaths, together with good overhanging tree cover, contributes to the value for wildlife in this section, especially for otters and shy birds such as kingfisher.

Management

Maintain the level of bankside tree cover, and particularly avoid disturbance to mature ash trees.



Gently winding section through Bovey Tracey.

Banksides

Upstream there are 1.5-2m earth banks, steep with occasional access points. Tree cover is continuous and includes some excellent very old coppiced ash, oak and sycamore on the south bank, providing possible otter lying-up sites (a spraint was found by the bridge). Below the bridge there is bank reinforcement opposite the mill and on the lower bend. Elsewhere banks are gently sloping 0.5-1m with mixed age alder and willow coppice. Banktop vegetation consists of Indian balsam, hemlock water-dropwort and annuals, along with pockets of bramble and bracken.

Channel

Channel is 8-10m wide, gently graded with riffles and long slacks. Shingle banks with annual flora are developing on the bends. Water-starwort is frequent in the channel. Grey wagtail and dipper were feeding near the bridge.

Adjacent

Above the bridge there are playing and recreation fields with a well-used footpath along the banktop on the south, although the river is partly screened with bramble, bracken and trees. Below the bridge there are pastures of semi-improved grassland with less disturbance.

Key sites and features

- 1 Continuous bankside tree cover including mature ash and sycamore over deep water.

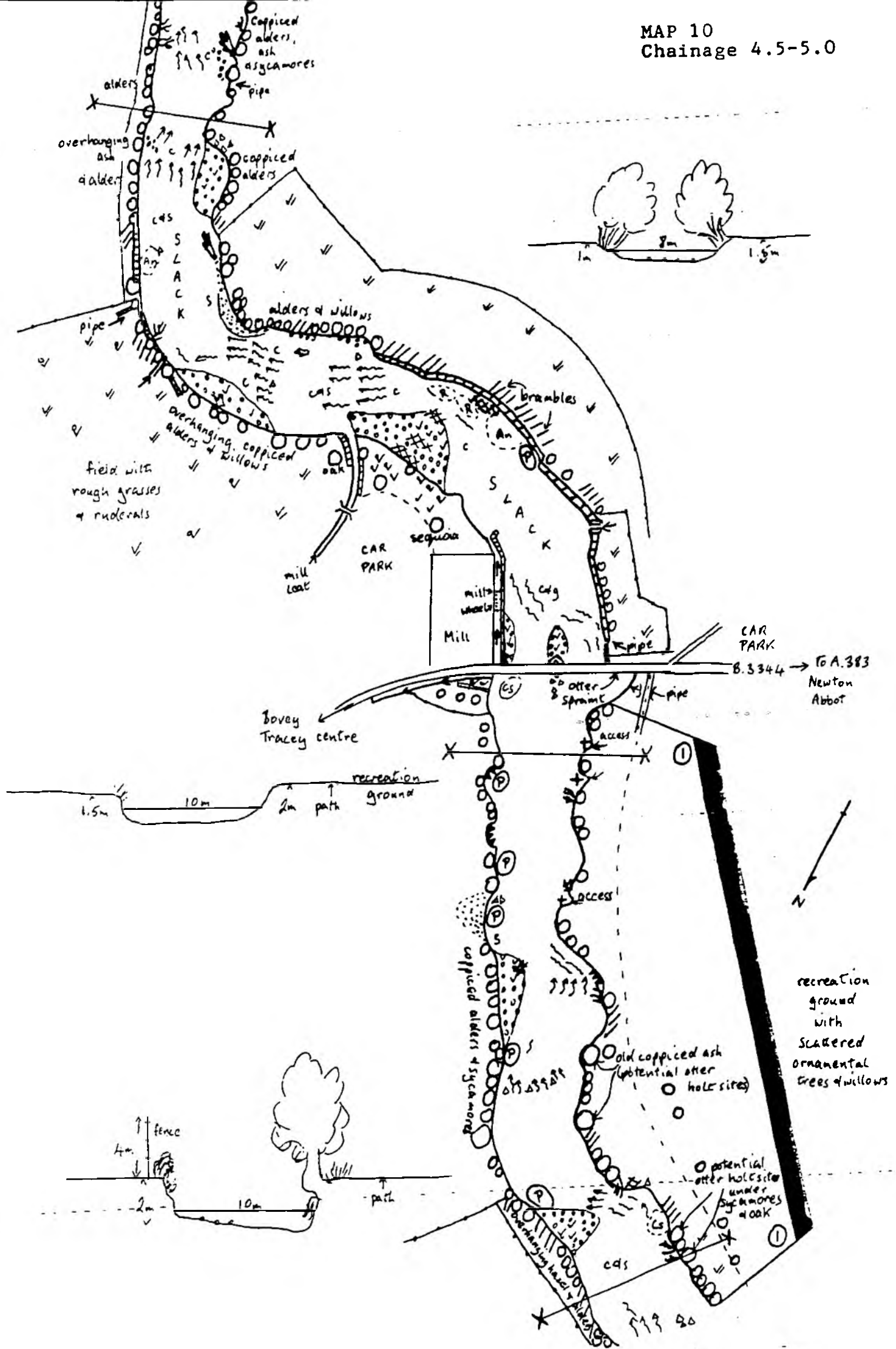
Summary

The very large coppiced ash and oaks especially on the south bank upstream are of value, and the continuous tree cover here provides a shady channel for insects and fish.

Management

Maintain bankside tree cover, especially mature ash, oak and sycamore.

MAP 10
Chainage 4.5-5.0



Section with bends under old railway bridge and new road bridge.

Banksides

Upstream, banks are mostly low, gently graded earth banks with exposures of cobbles and pebbles, and shingle deposits on the inside of bends. Downstream, banks are higher (2m) and steep. Upstream, tree cover is spaced out, with a mixture of sycamore, alder and hazel, mostly coppiced. There is some bramble and bracken on the banktop mid-section. Downstream, tree cover is closer spaced and continuous, the south bank having an especially valuable stretch with some very old coppiced oak, ash, hazel and alder providing several possible otter resting sites or holts beneath overhanging roots of ash, oak and sycamore. A spraint was found here.

Channel

The channel is gently graded in this section. There are riffles and several long slacks with substrates of cobbles and sand. Water-starwort is frequent where the flow is slack. There is a dipper's nest beside the old railway bridge, and grey wagtails were feeding nearby. A kingfisher was seen downstream.

Adjacent

The old railway line has developing trees and some new planting. Footpaths here are well used and there is disturbance from dogs. The playing field to the south is also used by people walking dogs, but is mostly screened from the river by bankside trees and bracken, and the bank is high and steep.

Key sites and features

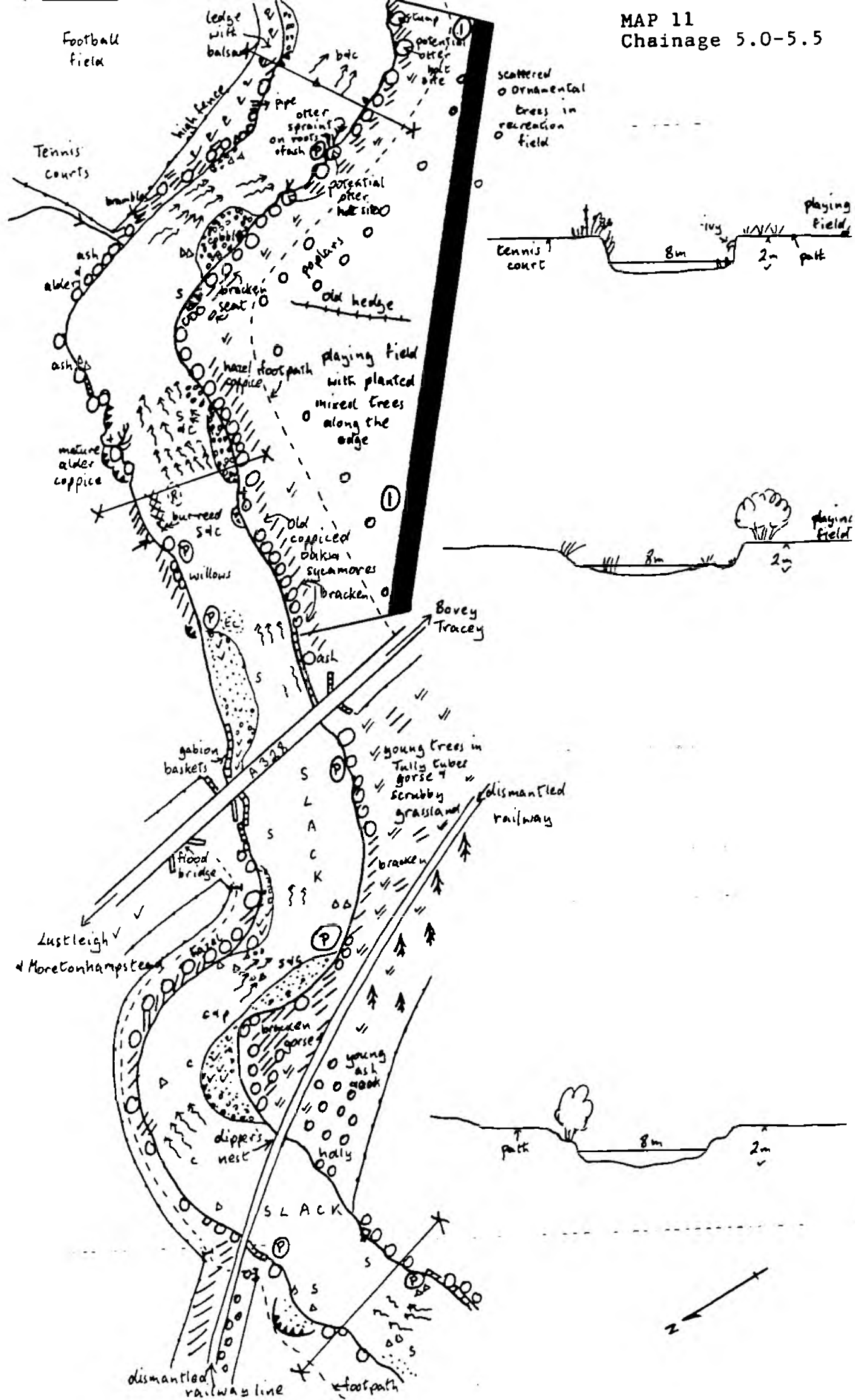
- 1 Continuous bankside tree cover, including several valuable mature coppiced oaks and ash.

Summary

The frequency of mature bankside trees in the downstream section provides very valuable otter habitat. There are dipper and wagtail nest sites near the old railway bridge.

Management

Maintain all mature bankside tree cover, especially on the south bank downstream. The new road bridge would be a very good site for a dipper nest box.



Gently winding section through National Trust Parke Estate.

Banksides

1.5-2m graded earth banks with cobbles and boulders and occasional rocky outcrops. There is a 2.5m earth cliff on the upstream bend with old exposed roots nearby providing kingfisher perches. Bankside tree cover is continuous, with a variety of ages and species. The south bank has several particularly valuable mature sycamores with roots overhanging the channel, providing potential otter lying-up sites.

Channel

The channel is 6-10m wide, a series of riffles and slower-flowing stretches, with substrates of cobbles and sand, and occasional bedrock. Downstream, the mill leat overflow enters the river as a small waterfall beside old reinforcements of large moss-covered blocks, a possible grey wagtail nest site.

Adjacent

The woods to the north (National Trust) are excellent mixed age broadleaved woodland with some dead standing and fallen trees, providing valuable habitat for insects and woodpeckers, along with recent coppice, new planting, bracken and woodland flora. The footpath along the north bank is frequently used.

Key sites and features

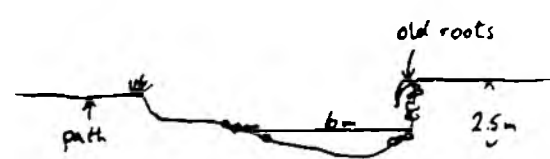
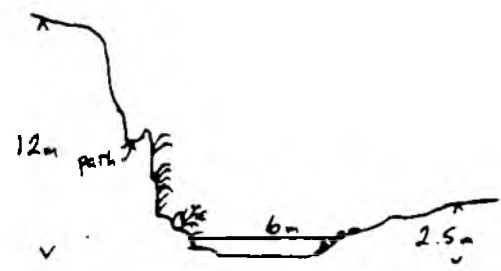
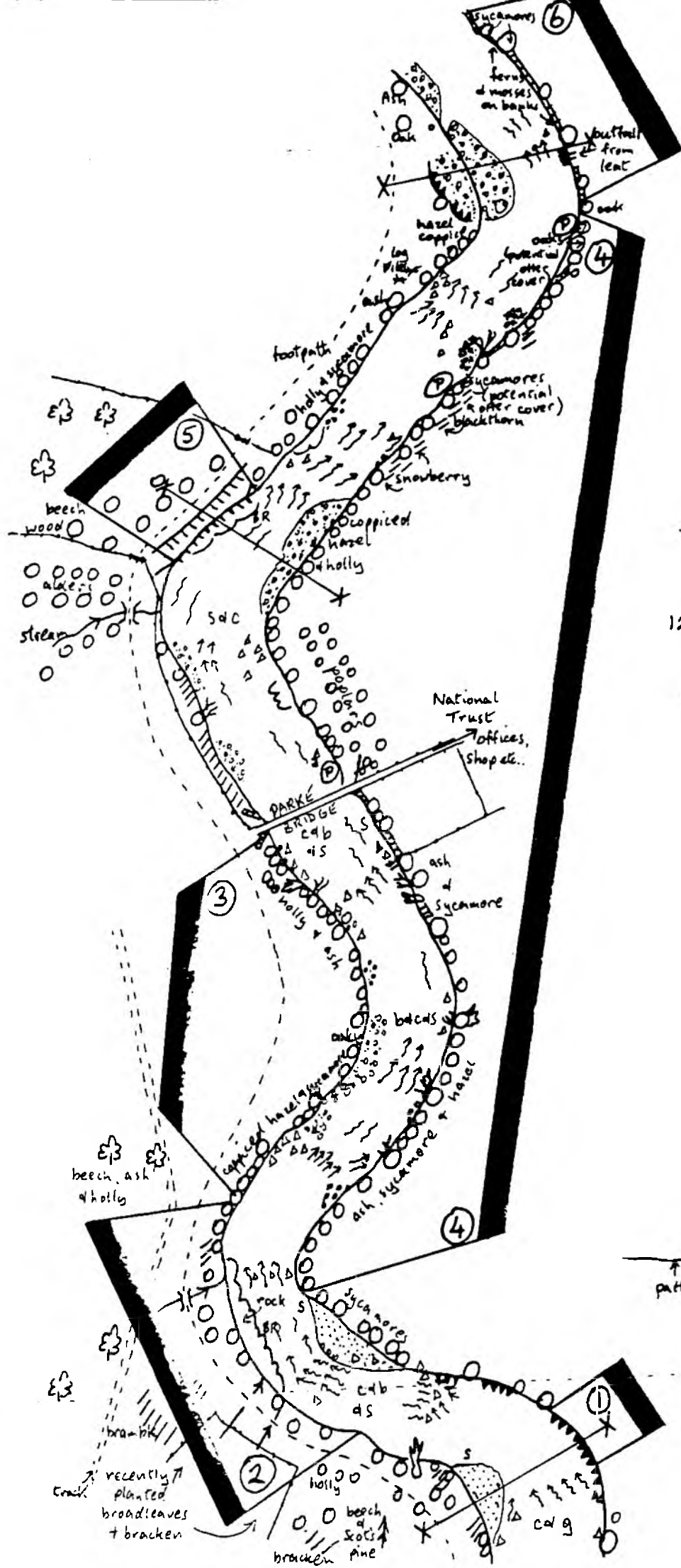
- 1 Possible kingfisher nest site.
- 2 Bedrock by the channel, and abundant ferns, mosses and woodland flora on the banks.
- 3 Continuous mixed bankside tree cover.
- 4 Valuable bankside trees, and a variety of ferns, mosses and liverworts.
- 5 Cliff with ferns, mosses and liverworts.
- 6 Ferns and mosses on bank.

Summary

The diversity of species, ages and management of trees lining both banks is exceptionally valuable for a variety of insects, fish, birds and otters. There is good development of mosses, ferns and woodland flora.

Management

Maintain the diversity of bankside tree cover and flora, especially avoiding disturbance to mature trees on the south bank.



Section with weir and mill leat through Parke Wood.

Banksides

1-3m banks, rocky in places, earth elsewhere, and some boulder reinforcement on the bends. There are stretches with excellent bankside flora including a variety of ferns, woodland herbs, mosses and liverworts, especially on the south bank. Tree cover is well spaced, and mostly continuous, with coppiced hazel and alder, and occasional sycamore, oak and ash.

Channel

The channel has a variety of flow patterns, with riffles and small rapids, and a long slack above the weir. Substrates are boulders and sand upstream, cobbles and sand downstream. Grey wagtail and dipper were feeding at the weir.

Adjacent

Species-rich woodlands, border both banks. The area between the mill leat and the river is especially valuable, being ungrazed and undisturbed and having a diverse woodland flora, bryophytes, ferns and fungi. The mill leat provides secluded undisturbed cover, especially for otters. Beyond the woods are unimproved grasslands. The footpath along the north bank is in frequent use and there is disturbance at access points to the river.

Key sites and features

- 1 Valuable undisturbed mixed broadleaved woodland.
- 2 Continuous diverse bankside tree cover, bryophytes and woodland flora.
- 3 Excellent ground flora of ferns, herbs and bryophytes.
- 4 Valuable strip of bankside ferns, mosses and liverworts.
- 5 Secluded cover and rich flora between mill leat and river.

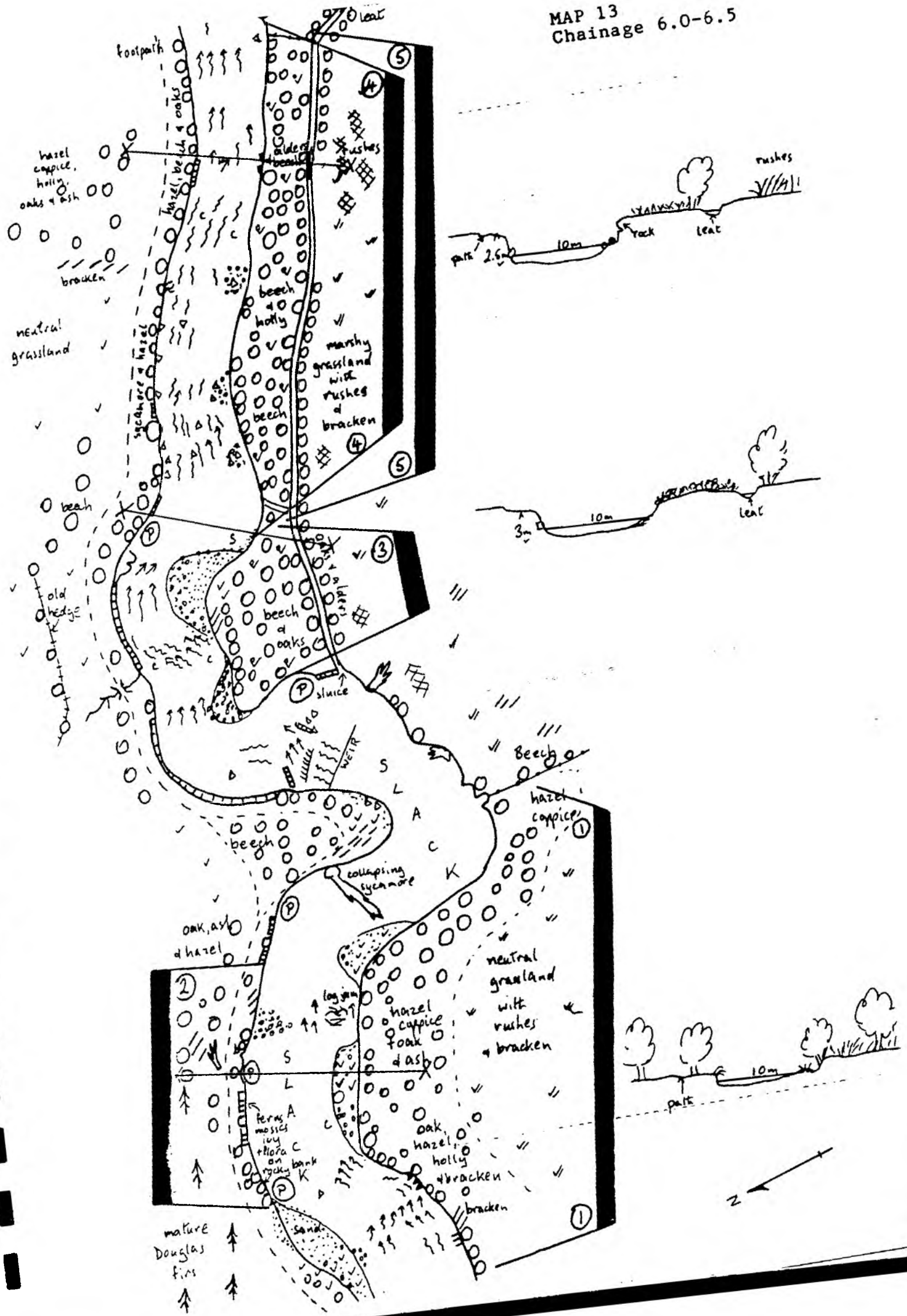
Summary

Excellent diverse bankside tree cover, flora and bryophytes, especially on the south bank, and a good variety of channel habitats make this section of great value. The adjacent woods and mill leat provide valuable undisturbed habitat for a variety of woodland birds and possibly for otters.

Management

Maintain bankside tree and herb cover, especially allowing oak, ash and sycamore to mature. Avoid disturbance to the entire south bank and mill leat.

MAP 13
Chainage 6.0-6.5



Section through National Trust Parke Wood.

Banksides

Rocky banks 1.5m with boulders. Banktop vegetation is a continuation of the diverse woodland flora, especially good on the south bank. Tree cover is continuous on both banks with an excellent variety of species throughout.

Channel

The channel is 4-10m wide with a series of riffles and small rapids over boulders, and occasional beaches of sand or cobbles. Substrates are sand, cobbles and boulders. Dipper and grey wagtail were feeding downstream.

Adjacent

To the south is excellent mixed broadleaved woodland with rich ground flora. A variety of woodland birds were seen here, including siskins, treecreeper, nuthatch, blue, great, marsh and long-tailed tits, jay, great spotted woodpecker, tawny owl and buzzard. A ledge with scrub and dead wood downstream provides otter lying-up cover. Downstream on the north are mature conifers, some fallen, and an unimproved meadow with a fringe of bracken.

Key sites and features

- 1 Good bankside cover and mixed broadleaved woodland with rich ground flora.
- 2 Continuous bankside coppice cover.
- 3 Valuable mixed broadleaved woodland coppice with standards and pockets of dense scrub.
- 4 Continuous diverse bankside tree cover with mosses and liverworts, backed by ledge with dense coppice and scrub.

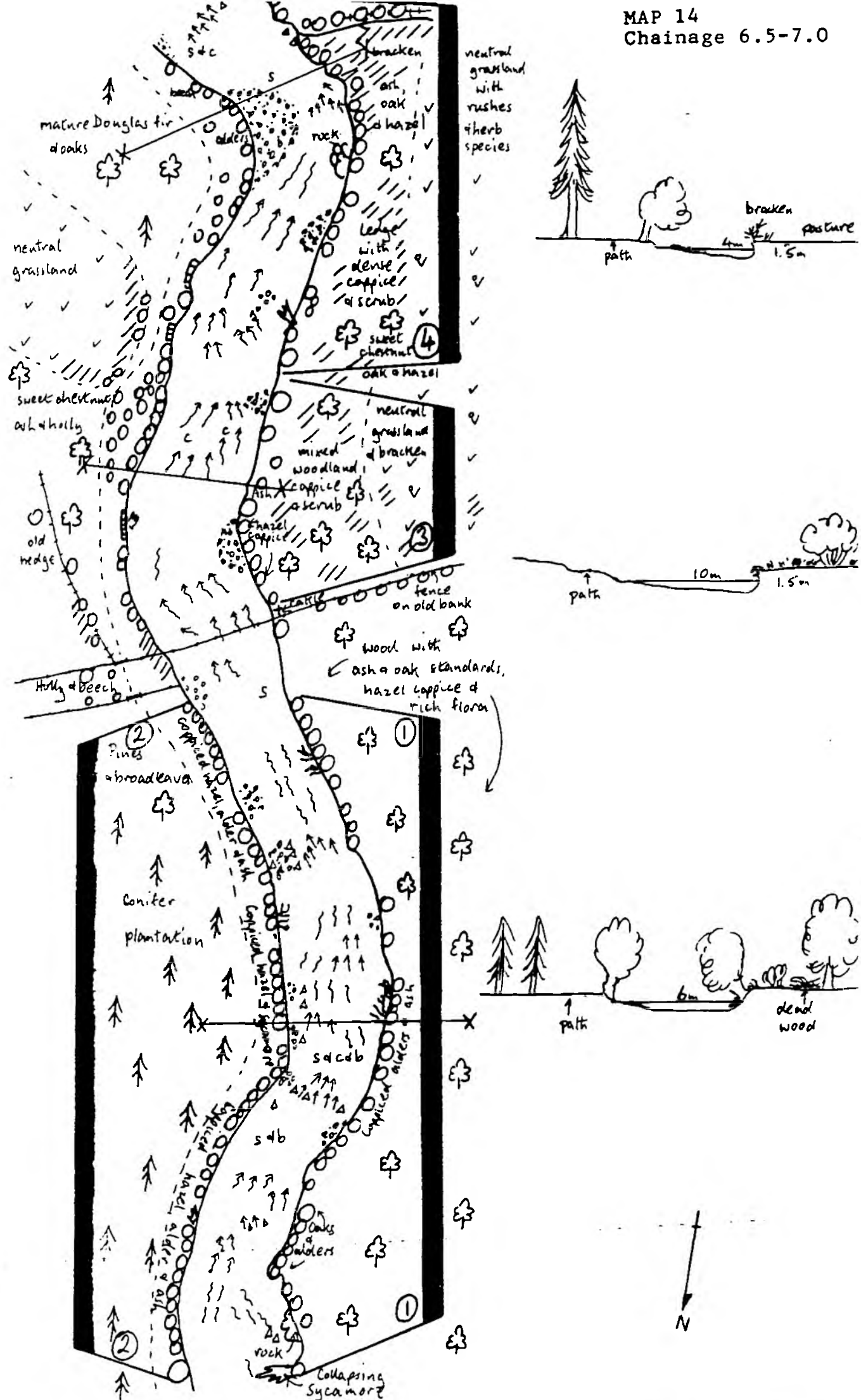
Summary

Valuable diverse and continuous tree cover on both banks, with some good bryophytes and ferns on the south bank downstream. The mosaic of adjacent unspoilt woodland, scrub and open habitats make this an excellent area botanically, and good habitat for a variety of woodland birds, and for otters.

Management

The absolute minimum of disturbance is recommended for this section, particularly maintaining the varied bankside tree cover.

MAP 14
Chainage 6.5-7.0



Section with diverse bankside tree cover by Wilford Bridge.

Banksides

Banks are up to 1.5m, rocky with boulders and occasional earth banks. There is some good banktop vegetation especially on the north bank, with a variety of ferns, ivy, honeysuckle and wood-rush. Tree cover is continuous on both banks. On the south bank coppiced hazel dominates upstream, with occasional spindle and birch, merging into alders and sycamores downstream, where there are some valuable mature oaks and sycamores. Tree cover on the north bank consists of a variety of mature alders, sycamores, ash and oaks.

Channel

The channel is 6-10m wide with a variety of small rapids, riffles and slower flowing, gently graded sections of variable depth. Substrates are boulders and sand, with occasional sandy beaches. A dipper was foraging upstream. Otter spraint was found in 2 places downstream where there are several possible holt sites beneath mature oak or sycamore.

Adjacent

To the north, a road and dismantled railway run parallel to the river through mixed broadleaved woodland with abundant ferns between the road and river. Below Wilford Bridge a footpath, partly screened by bankside trees, is frequented by walkers and dogs. The mixed age wood to the south at the extreme downstream section has a particularly rich flora including ferns, sedges, violet, mosses and liverworts. Elsewhere is improved grassland.

Key sites and features

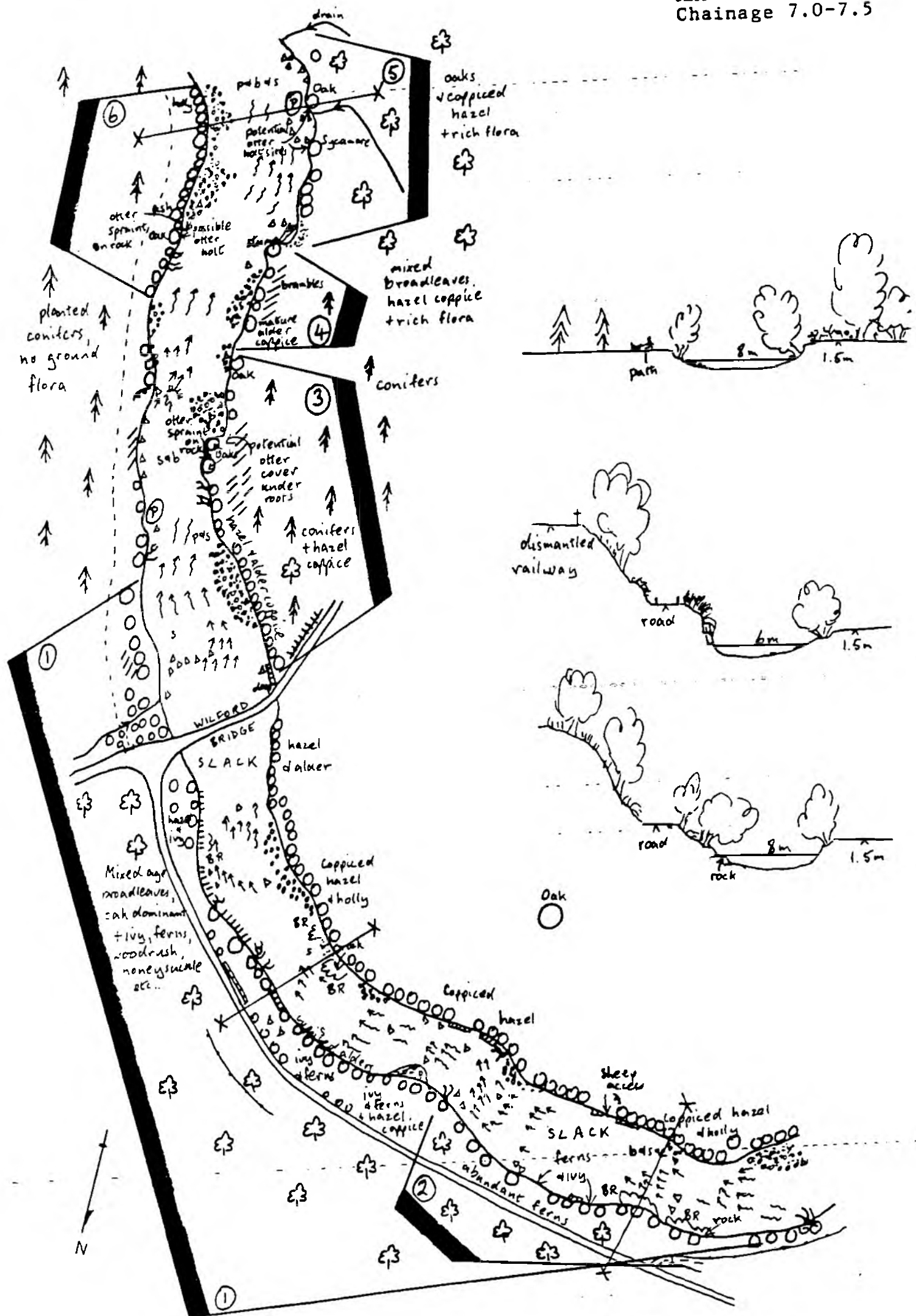
- 1 Valuable continuous mixed tree cover.
- 2 Mixed broadleaved woodland with abundant ferns.
- 3 Continuous bankside tree cover including mature oaks, good flora and bryophytes.
- 4 Excellent old alder and hazel coppice.
- 5 Valuable mixed woodland with rich flora, and mature bankside oaks and sycamores (overlaps previous section).
- 6 Strip of good bankside coppice cover with possible otter holt or lying-up site.

Summary

An excellent variety of continuous bankside tree cover, valuable woodland flora and diverse channel features in this section, which is frequented by otters.

Management

Maintain bankside tree cover with minimum disturbance, especially to mature oaks and sycamores.



Undisturbed stretch with continuous tree cover north of Pullabrook Farm.

Banksides

Banks are low and gently sloping with occasional boulders and gravel or sandy beaches. Tree cover is continuous and overhanging on both banks, providing patterns of light and shade valuable for insects and fish. Species are mainly coppiced alders and hazel, with occasional oak, sycamore, ash and holly. Downstream on the south bank there is a variety of ferns, mosses and liverworts and wood-rush on the banksides.

Channel

The channel averages 8m with slacks 12m wide beside both footbridges. There is a good variety of flow patterns, with small rapids and riffles and occasional slacks. Substrates are sand and boulders, with cobbles and gravel downstream. There is a dipper's nest beneath the footbridge upstream and a kingfisher was fishing here. An otter spraint was found beneath the lower footbridge.

Adjacent

Wray Brook joins the river at the extreme upstream section on the north. The brook has continuous coppiced hazel cover and sandy substrates, being good habitat for kingfishers. A stream which enters the river from the south downstream has a variety of ferns, mosses and liverworts. There is a small orchard and steep wooded bank in mid-section, and semi-improved pasture elsewhere.

Key sites and features

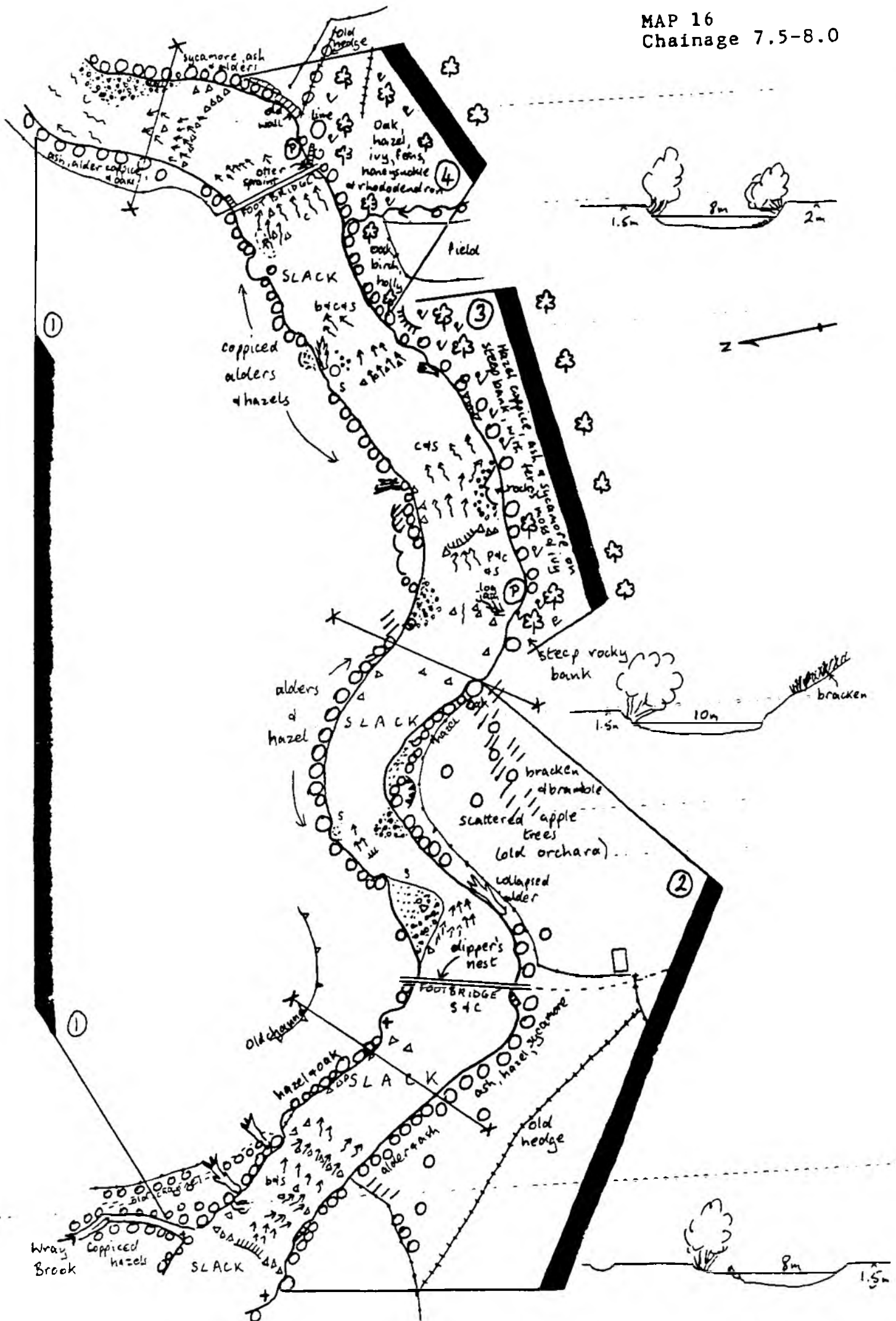
- 1 and 2 Continuous diverse bankside tree cover.
- 3 Mixed wood with ivy, ferns, moss and rock outcrops on steep bank.
- 4 Ferns, mosses and liverworts beside channel, and continuous tree cover.

Summary

The continuous and varied bankside tree cover is valuable in this undisturbed section, together with mixed woodland, ferns and bryophytes on the south side downstream.

Management

Maintain bankside tree cover, allowing mature trees to develop.



Section by Drakeford Bridge with continuous and varied bankside tree cover.

Banksides

Banks are low and gently sloping 1-1.5m with frequent boulders and cobbles. Mosses are plentiful on overhanging tree roots and rocky banks, together with some liverworts and ferns. Bankside tree cover is continuous, consisting of an excellent variety of species of mixed ages, including old pollarded sycamore and ash on the north bank, and old coppiced alders, hazel, oak and ash on the south. Downstream, holly is frequent and there are several very large oaks and sycamores.

Channel

The channel is 6-8m wide with a variety of riffles, rapids, small waterfalls and occasional slower-flowing stretches. There are moss-covered boulders in the channel. Substrates are boulders, sand and gravel. Dippers were active above the bridge, and a kingfisher downstream.

Adjacent

Semi-improved grassland (sheep pasture) and some old hedgerows. There is a footpath along the north bank upstream.

Key sites and features

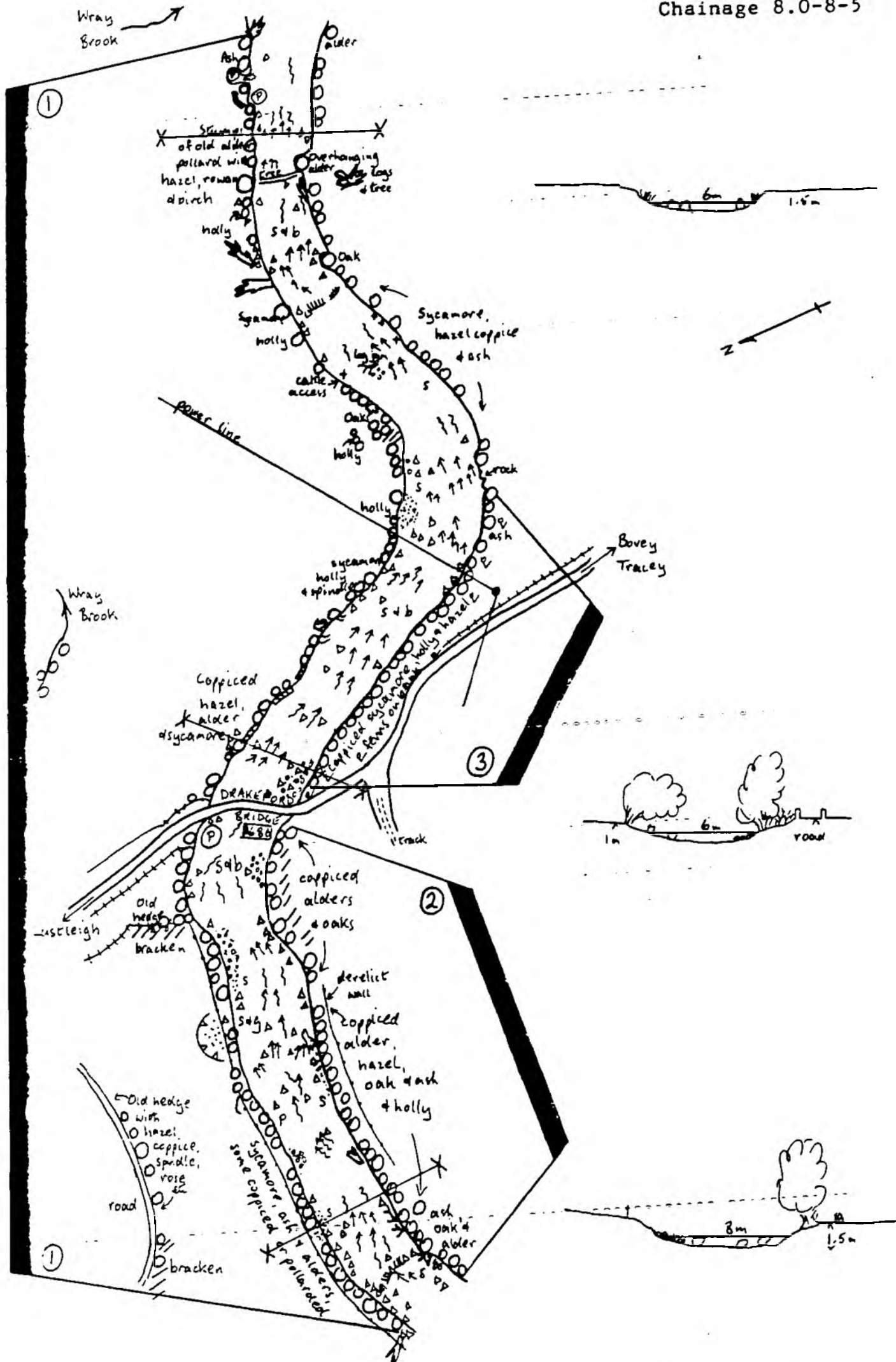
- 1 Continuous bankside tree cover including old pollarded sycamores and ash.
- 2 Valuable variety of bankside trees.
- 3 Old coppice and ferns on bank.

Summary

The variety of age, species, and management of bankside trees which form continuous cover is of value in this section.

Management

Careful and minimum management of bankside trees is recommended, maintaining the continuous cover and avoiding mature oak and ash if possible. Maintain flow pattern and moss-covered boulders in the channel.



Winding section with continuous diverse bankside tree cover. Wholly within the Bovey Valley Site of Special Scientific Interest and Bovey Valley National Nature Reserve.

Banksides

Upstream, banks are 1-1.5m, rocky with boulders and excellent cover of ferns, mosses and liverworts, and occasional gravel beaches. Downstream there are gently sloping pebbly banks with boulders and gravel beaches. Tree cover is continuous apart from a short stretch with bracken. Bankside trees are all old coppice, predominantly alder with a mixture of ash, sycamore, holly, etc. and a particularly rich stretch below the island with spindle and blackthorn.

Channel

Width varies from 5-12m, averaging about 8m. Substrates are sand and mossy boulders upstream, becoming more gravelly downstream with cobbles and boulders. There is an excellent variety of flow with rapids, riffles and slacks. The island provides secluded cover for otters, with maturing oaks, alders and a rich ground flora dominated by greater wood-rush. An otter spraint was found nearby, and dippers were feeding in the rapids.

Adjacent

Upstream on the north bank there is mixed broadleaved woodland including oak and ash standards and old coppiced hazel (Rudge Wood), and a good diversity of habitats valuable for a variety of woodland birds. The south bank has planted conifers (Woodland Trust) and some mixed woodland. Downstream there are semi-improved meadows with sheep.

Key sites and features

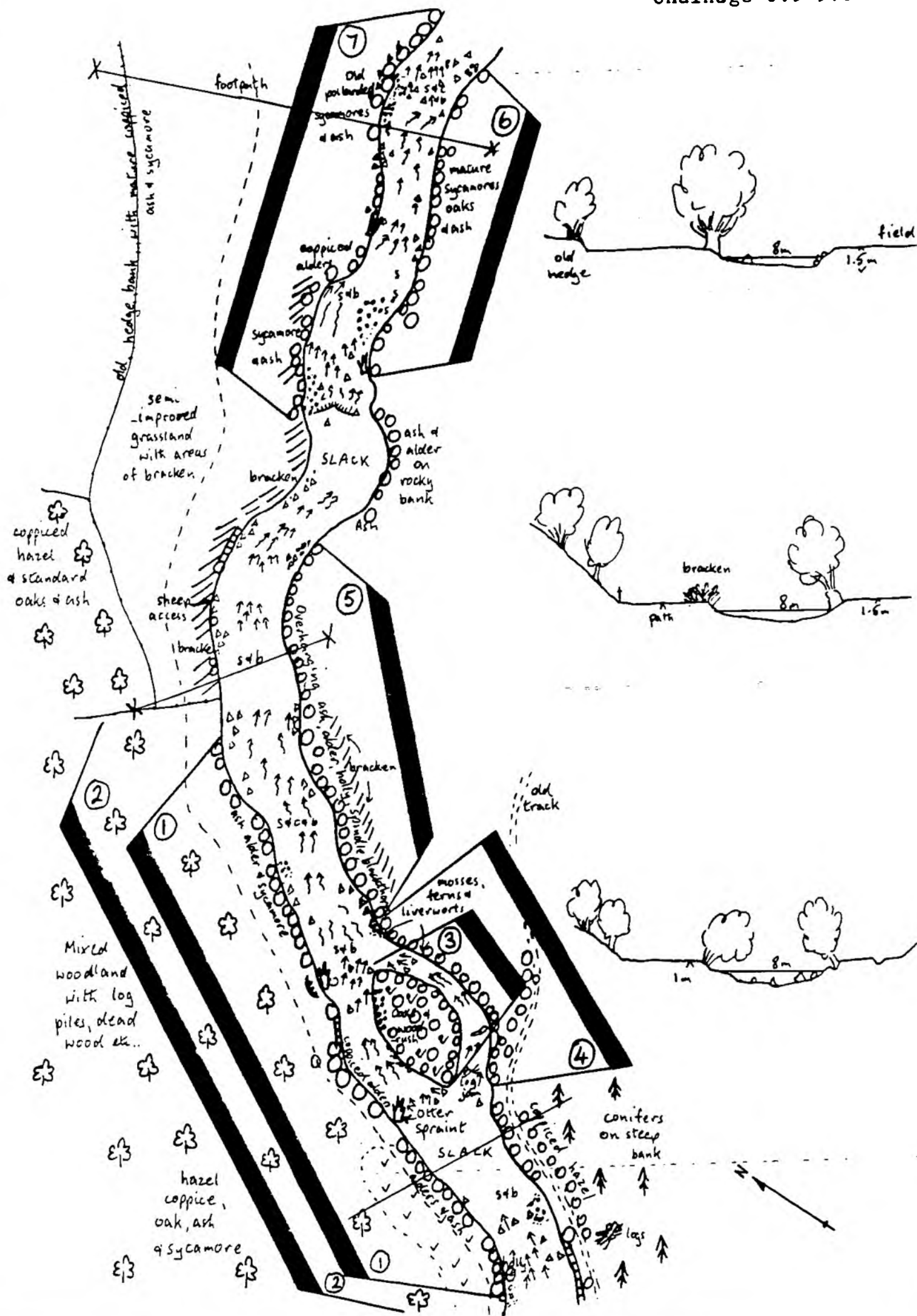
- 1 Continuous and varied bankside tree cover, ferns and ivy.
- 2 Varied woodland habitats with log piles, dead wood etc..
- 3 Island with mature oaks, wood-rush and ferns.
- 4 Rich mosses, liverworts and ferns on bankside rocks.
- 5 Overhanging diverse tree and shrub cover.
- 6 Mature bankside sycamores, oaks and ash.
- 7 Old pollarded sycamores and ash, and mature alders.

Summary

A valuable section with continuous varied bankside tree cover throughout, and an excellent variety of ferns, mosses, lichens and liverworts in the upstream section, and good adjacent woodland habitats.

Management

Avoid disturbing ferns and liverworts especially on the south bank. Retain the island and all bankside trees. Prior to any work being carried out in this section there must be formal consultation with the Nature Conservancy Council.



Section with tight bend through woodland with rich flora.
(NCC Bovey Valley Woodlands NNR and SSSI)

Banksides

Banks are rocky, up to 1.5m, with sand and gravel beaches and boulders. Tree cover is continuous,, coppiced alder, hazel and sycamore, and occasional mature oak and ash. Bankside vegetation is the same as adjacent woods, with a rich variety of herbs and ferns, and exceptional mosses, liverworts and lichens. Ferns and liverworts are outstanding on the south bank of the meander where there is seepage from the bog.

Channel

Channel is 5-8m wide with substrates of sand and boulders, and a variety of depths and flow with small waterfalls and rapids, where a dipper was feeding. There are several possible otter resting sites beneath tree roots. Spraints were found downstream.

Adjacent

Excellent mixed age broadleaved woodland with a wide variety of tree and shrub species and rich ground flora. The river bend encloses a meadow which is cut annually. South of the bend is an area of valley bog with purple moor- grass and bog myrtle, which together with bankside coppiced alders and bramble scrub provides valuable undisturbed cover for otters. There is a footpath along the north bank.

Key sites and features

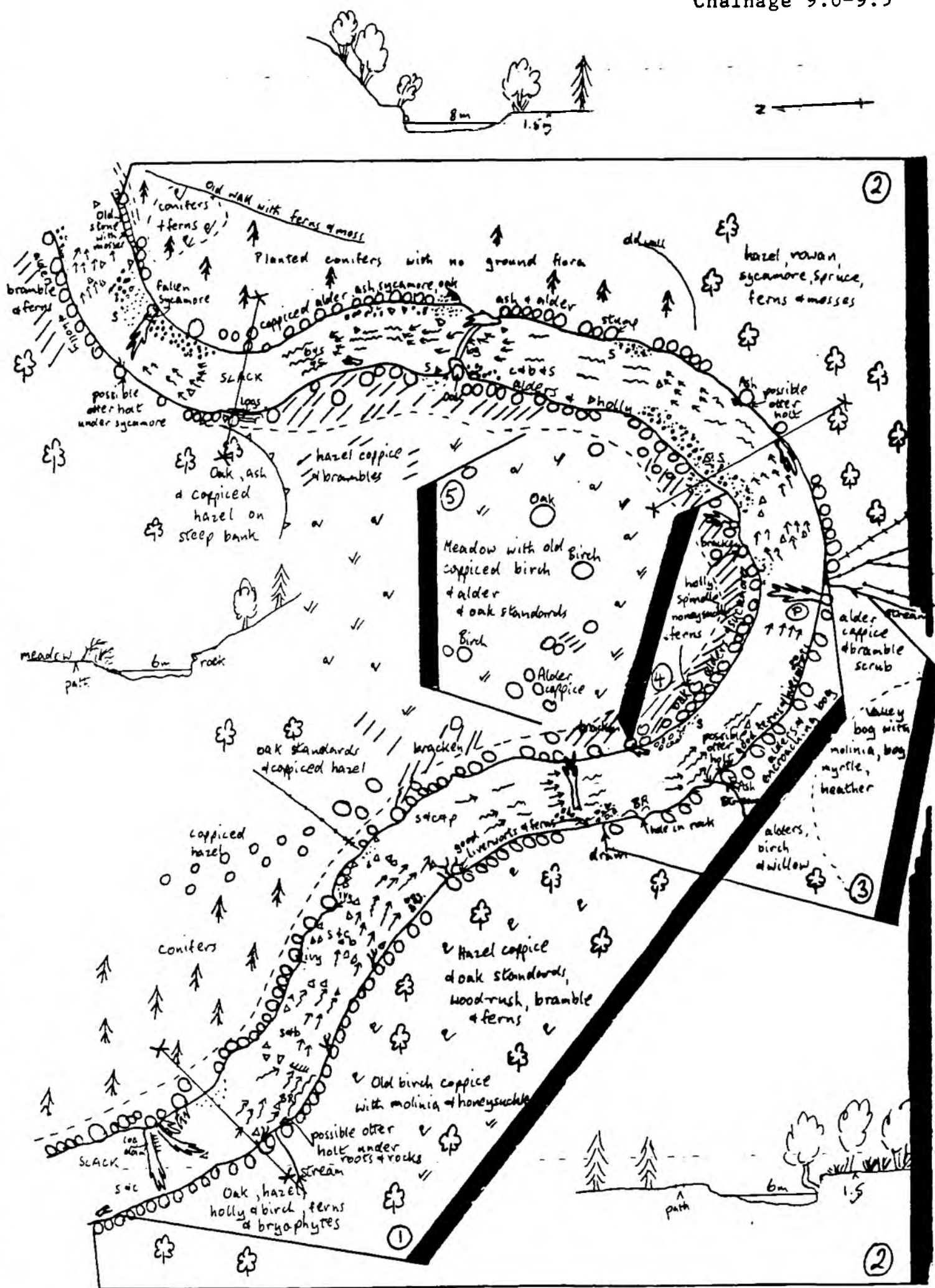
- 1 Excellent variety of ferns, mosses and liverworts beside channel and on banksides.
- 2 Continuous overhanging tree cover and rich flora.
- 3 Valley bog with valuable flora. Otter lying-up cover.
- 4 Good bankside flora and shrubs.
- 5 Meadow with rich flora and mature trees.

Summary

An extremely valuable section especially botanically for the variety and abundance of mosses, liverworts and ferns beside the channel and rich flora in the meadow and adjacent woods. There is valuable secluded cover for otters with continuous tree cover and many lying-up places. The woodlands support a good variety of birds.

Management

The absolute minimum of disturbance is recommended. Liverworts on the banksides on the south side are exceptionally important. Notify NCC before any management.



Undisturbed section through Bovey Valley Woodlands NNR and SSSI.

Banksides

Banks are rocky, up to 1.5m high with frequent boulders and beaches of sand and pebbles. The rich ground flora of the woodland extends to the edge of the channel and includes a variety of ferns, herbs and abundant mosses and lichens. Bankside tree cover is continuous, mostly coppiced alders and occasional mature oak and sycamore, often with exposed roots above water level. Many trees support a diversity of mosses, lichens and liverworts, including some rarities.

Channel

Average width is 4-8m, widening to 15m above the old bridge. There is an excellent variety of flow with rapids and small waterfalls upstream, a slack above the bridge, and rapids and boulders below the bridge. Substrates are sand and pebbles, with boulders supporting abundant mosses and lichens. Otter spraint was found where the Becka Brook joins the river, and a dipper's nest under the hump-back bridge.

Adjacent

The surrounding woods are excellent mixed- age broadleaved woodland with old coppice and standards of oak, ash and sycamore. The ground flora is very rich, with diverse and abundant ferns, herbs, mosses, lichens and fungi. Downstream on the north there are planted conifers.

Key sites and features

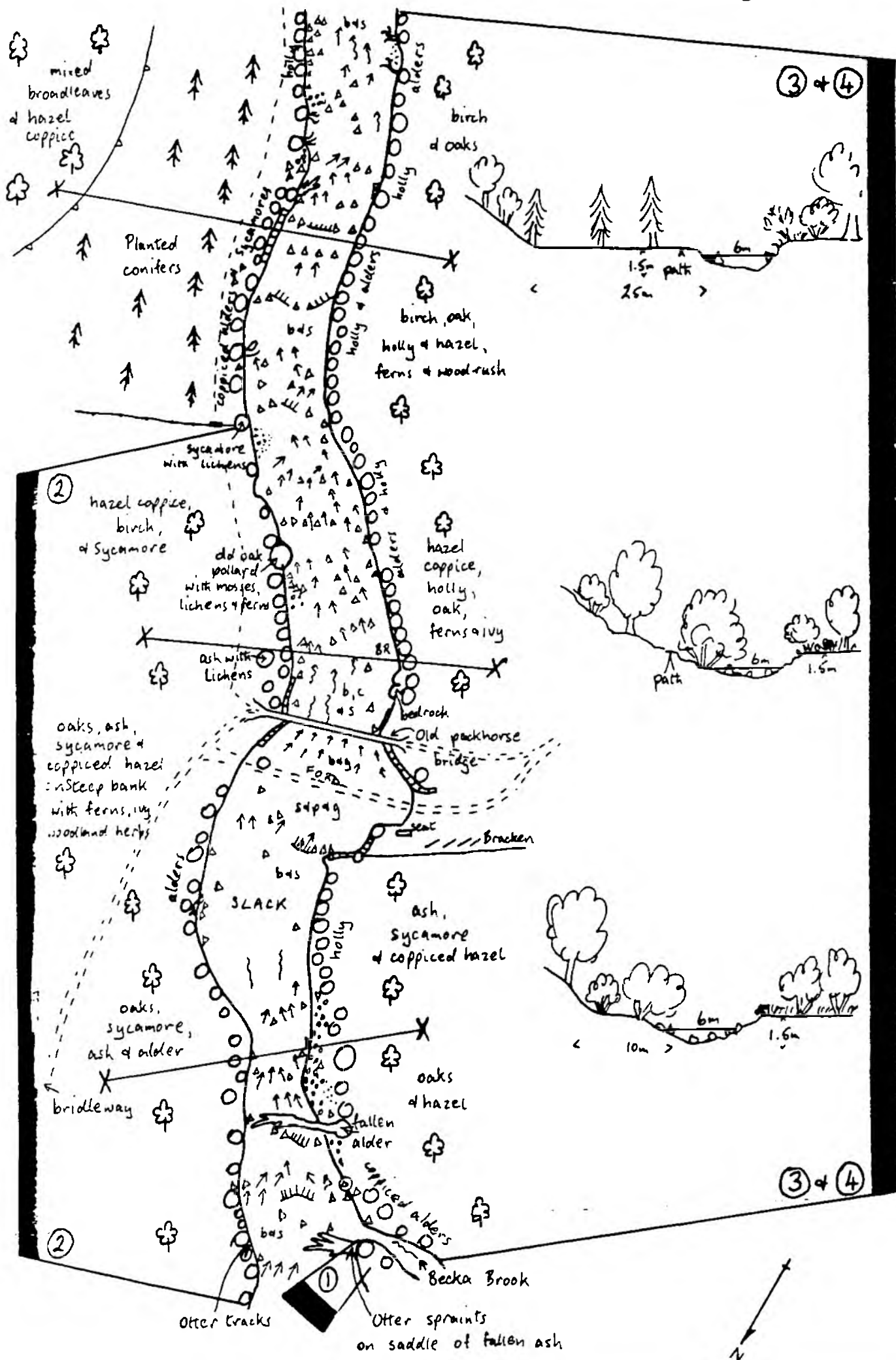
- 1 Otter resting site beneath roots of collapsed ash.
- 2 and 3 Mixed broadleaved woodland and bankside with rich ground flora, bryophytes and lichens.
- 4 Channel with variable depth and flow, abundant mosses and liverworts on boulders, and continuous overhanging trees.

Summary

This section is of outstanding botanical value. The variety and abundance of mosses, lichens and liverworts is exceptional and includes rare species. The woods are excellent habitat for a variety of birds, and lack of disturbance contributes to the suitability for otters.

Management

The absolute minimum of disturbance is recommended. Prior to management the NCC must be consulted.



BOVEY MINOR TRIBUTARIES

Introduction

The three tributaries are all identified by the National Rivers Authority as being within Main River limit. The survey was conducted in November 1990. The map showing the course of the three tributaries provided by the NRA were found to be inaccurate when surveyed on the ground.

Tributary A - follows more or less the route shown on the plan save for one small section along Station Road in Bovey Tracey.

Tributary B - no water course was found on the up-stream section though it was shown on the NRA map. Following a site visit with the River Warden the actual course was identified and the maps adjusted accordingly.

Bovey Pottery Leat - The NRA map showed the course of the leat to follow Ashburton Road and the line of the old railway (now the route of the A382). This was found not to be the case on the ground. The leat flows under Ashburton Road, then southwards.

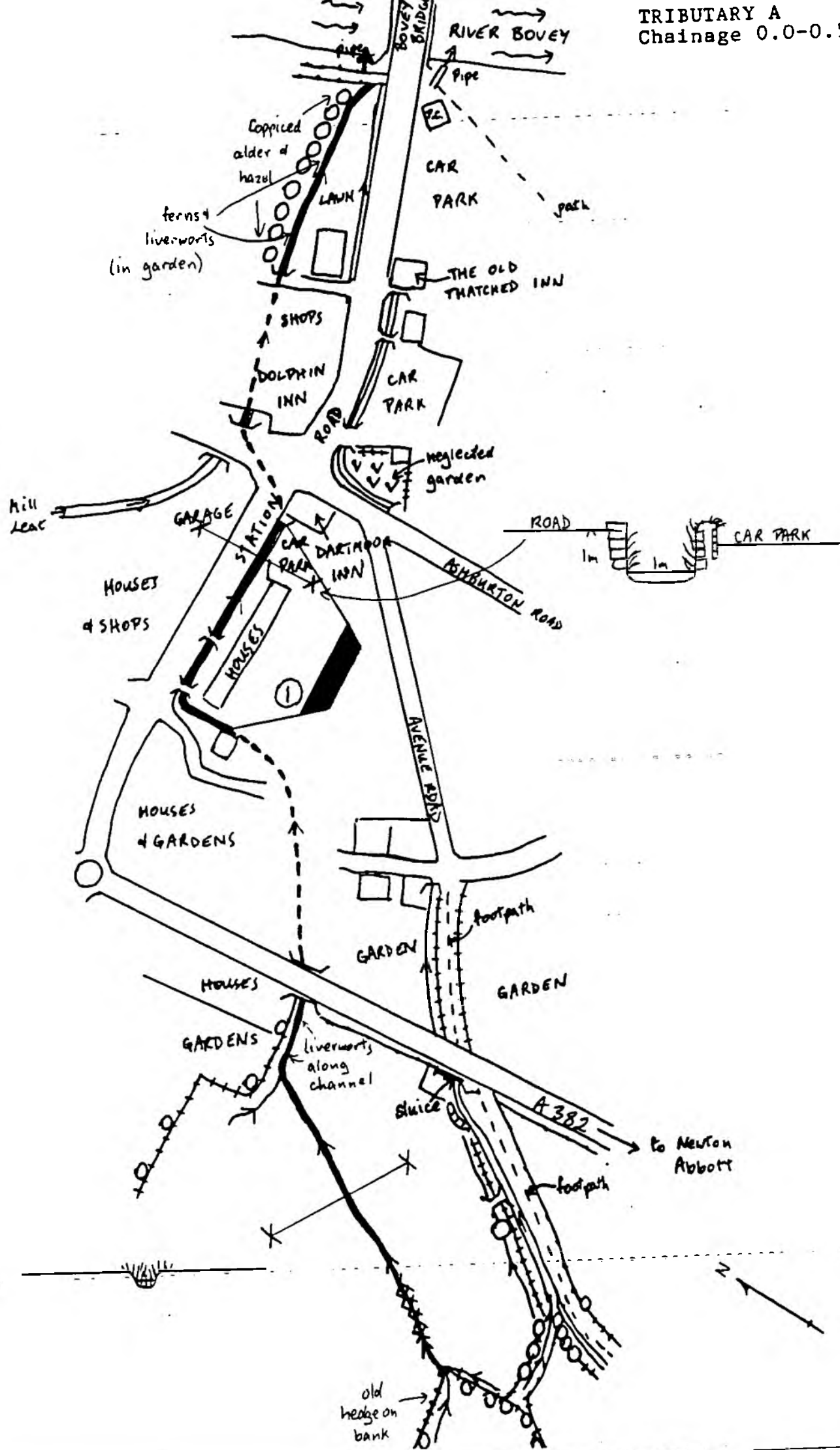
The survey was conducted using the same survey methodology as for the river Bovey. For the most part the water courses flow through private gardens, urban areas, beside roads or through culverts. It was not considered appropriate to lay out the descriptions and summaries as in the manner of a more conventional length of Main River.

TRIBUTARY A Chainage 0.0-0.5 Grid ref: SX 8145 7823-8102 7799

West of the A382 the channel is 0.5m wide, slow-flowing over sand and gravel through improved pastures. There are abundant rushes, water-cress and water-starwort in the channel.

East of the A 382 the stream disappears into gardens and reappears oppositr St. John's Lane. It flows between old stone walls 1m high beside the road. Ferns are abundant by the channel. The stream then flows under Station Road, is joined by the mill leat, and then goes under the Dolphin Inn and through a garden to join the Bovey.

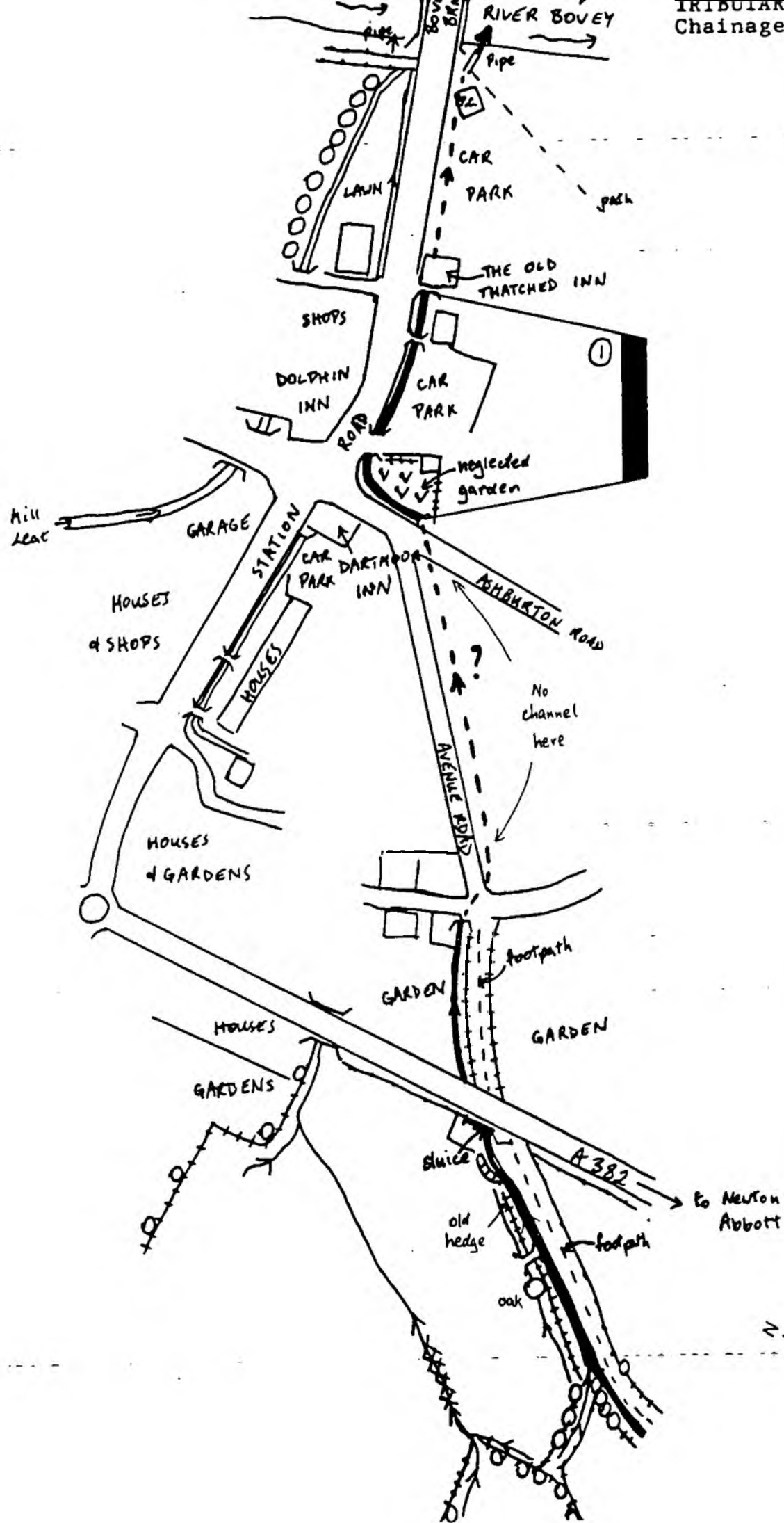
Key site 1 Abundant ferns and flora by the channel.



TRIBUTARY B Chainage 0.0-0.5 Grid ref: SX 8147 7820-8107 7798

The stream flows through gardens between old stone walls with ferns, then under Ashburton Road and in a narrow channel with old stone walls and abundant ferns beside Station Road, then under the car park to join the Bovey.

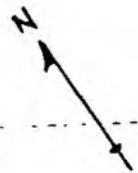
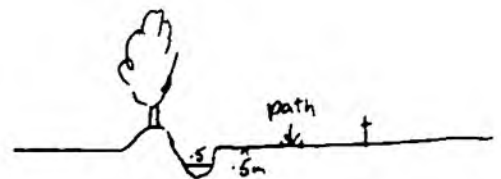
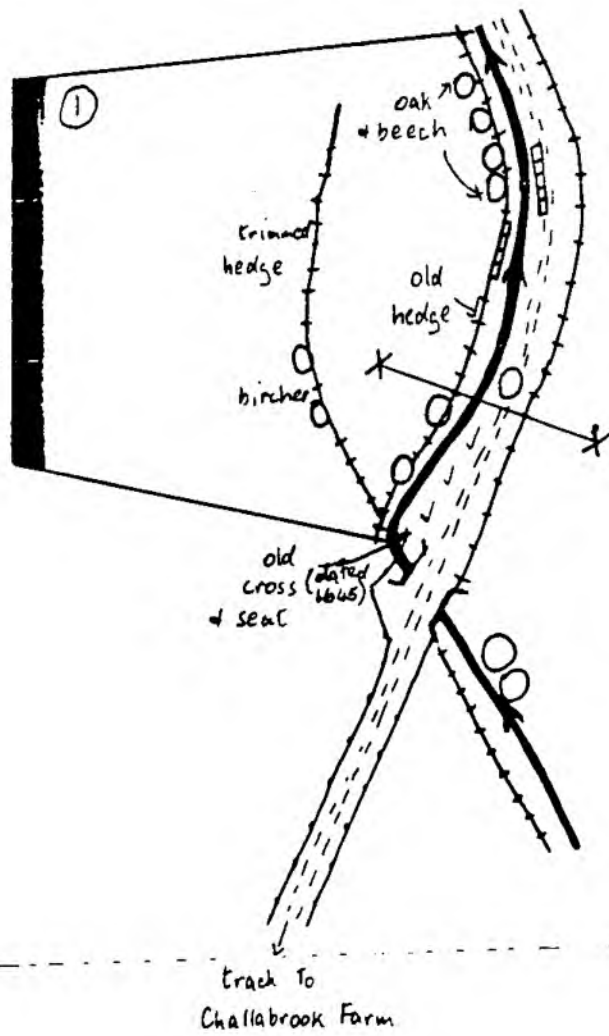
Key site 1 Abundant ferns, liverworts and flora on old stonework.



TRIBUTARY B Chainage 0.5-0.7 Grid ref: SX 8107 7798-8099 7783

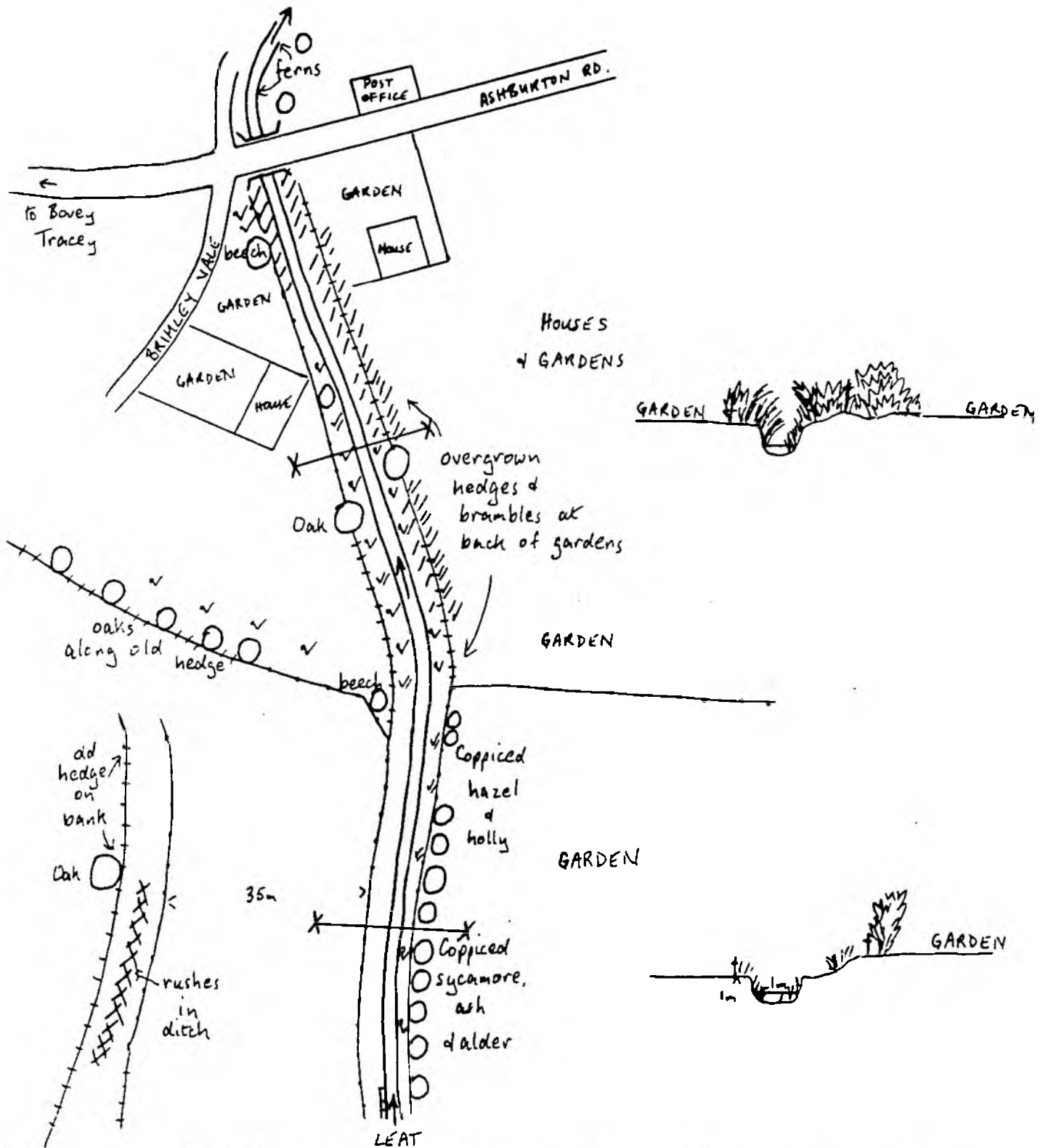
The stream flows in a channel 1m wide between banks 0.5-1m high, with abundant wetland species in the channel. To the north is an old hedge with ferns. A footpath runs alongside the stream on the south bordered by a variety of grass and herb species.

Key site 1 Valuable stretch with diverse grasses, ferns, wetland flora and hedge.



BOVEY POTTERY LEAT Chainage 0.7-1.0 Grid ref: SX 8117 7758-
8095 7753

The leat flows between gardens and is densely overgrown with brambles. Where the channel emerges beside Ashburton Road there are abundant ferns and brambles overhanging the channel. The leat goes under the road and then flows south. The seclusion and dense growth are of value to wildlife.



BOVEY POTTERY LEAT Chainage 1.0-1.3 Grid ref: SX 8095 7753-
8076 7754

Banksides

The leat is 1m wide with steep banks 1m high densely vegetated with a variety of ferns and woodland flora and abundant liverworts. Downstream the leat is lined with mature oaks, old coppiced hazel and alder on the north bank. In the mid-section there is a very secluded area with overhanging ivy.

Channel

The leat is 0.7-1m wide and very shallow. The upstream section is evenly graded with substrates of gravel and sand. Downstream, the flow is slower with muddy substrates. There are extensive beds of fool's water-cress and water-starwort. Kingfisher and grey wagtail were seen here.

Adjacent

The leat runs alongside Challabrook Lane which is bordered by an old hedge. Between the lane and the leat, under mature oaks, is a rich woodland flora. To the south downstream there are large gardens with lawns and trees.

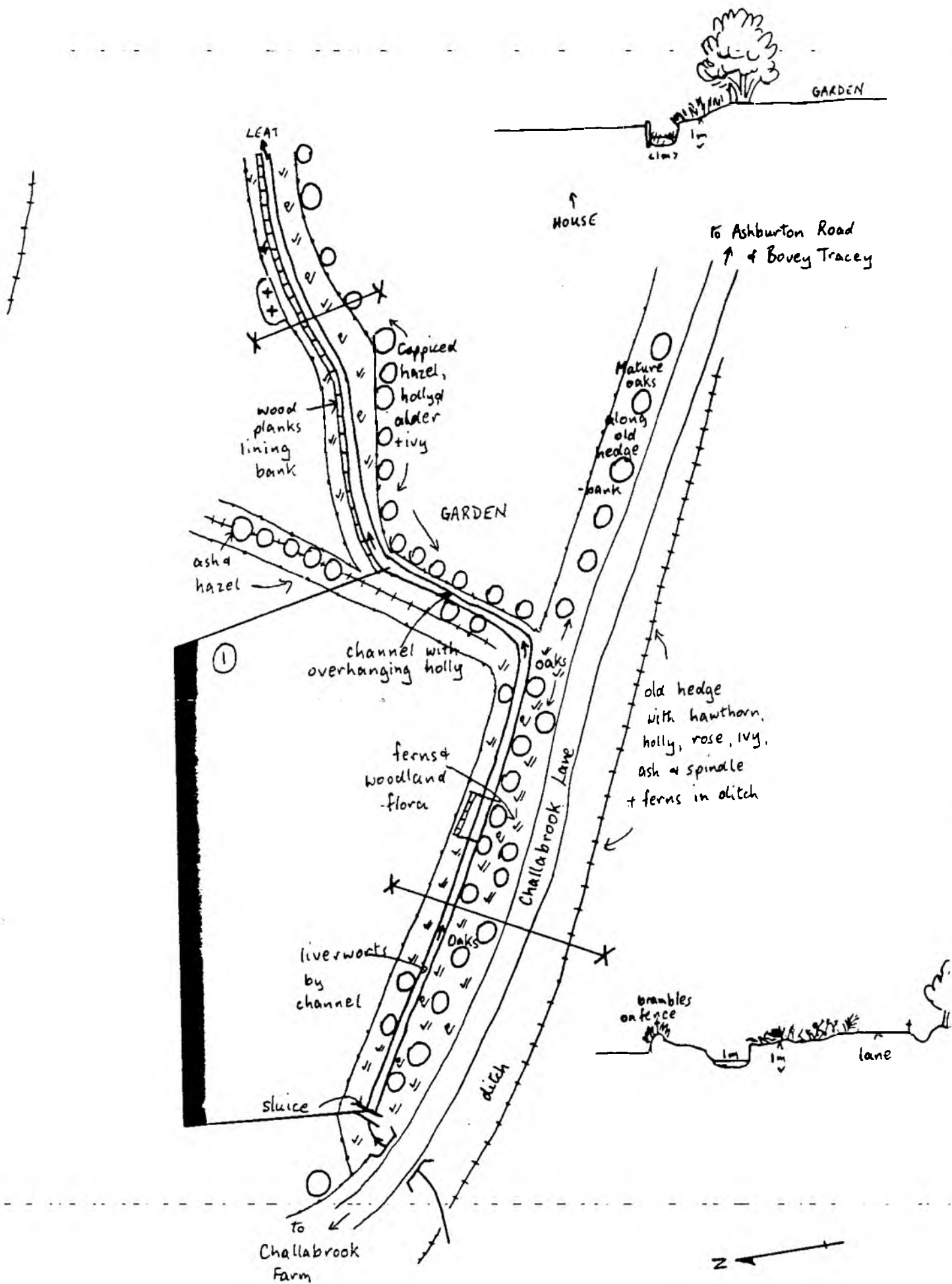
Key site 1 - rich flora, ferns and mature oaks.

Summary

A valuable section providing secluded habitats for woodland and garden birds. There is an excellent variety of ferns, liverworts and flora upstream.

Management

Avoid disturbance to Key site 1.



APPENDIX A : FLORA

Full species list of plants recorded during the survey.

A.1 Plants of the channel and margins

Water-plantain	<i>Alisma plantago-aquatica</i>
Fool's Water-cress	<i>Apium nodiflorum</i>
Common Water-starwort	<i>Callitriche stagnalis</i>
Lesser Swine-cress	<i>Coronopus didymus</i>
Galingale	<i>Cyperus longus</i>
Canadian Pondweed	<i>Elodea canadensis</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hemp-agrimony	<i>Eupatorium cannabinum</i>
Floating Sweet-grass	<i>Glyceria fluitans</i>
Indian Balsam	<i>Impatiens glandulifera</i>
Toad Rush	<i>Juncus bufonius</i>
Gipsywort	<i>Lycopus europaeus</i>
Water-purslane	<i>Lythrum portula</i>
Water Mint	<i>Mentha aquatica</i>
Blinks	<i>Montia fontana</i>
Water Forget-me-not	<i>Myosotis scorpioides</i>
Hemlock Water-dropwort	<i>Oenanthe crocata</i>
Reed Canary-grass	<i>Phalaris arundinacea</i>
Water-pepper	<i>Polygonum hydropiper</i>
Redshank	<i>Polygonum persicaria</i>
Broad-leaved Pondweed	<i>Potamogeton natans</i>
River Water-crowfoot	<i>Ranunculus fluitans</i>
Ivy-leaved Crowfoot	<i>Ranunculus hederaceus</i>
Round-leaved crowfoot	<i>Ranunculus omiophyllus</i>
Northern Yellow-cress	<i>Rorippa islandica</i>
Creeping Yellow-cress	<i>Rorippa sylvestris</i>
Branched bur-reed	<i>Sparganium erectum</i>
Bulrush	<i>Typha latifolia</i>

A.2 Plants of the banksides and adjacent land

Yarrow	<i>Achillea millefolium</i>
Common Bent	<i>Agrostis capillaris</i>
Bristle Bent	<i>Agrostis curtisii</i>
Bugle	<i>Ajuga reptans</i>
Wild Angelica	<i>Angelica sylvestris</i>
Lesser Burdock	<i>Arctium minus</i>
Mugwort	<i>Artemisia vulgaris</i>
Lords-and-ladies	<i>Arum maculatum</i>
Black Spleenwort	<i>Asplenium adiantum-nigrum</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Lady-fern	<i>Athyrium filix-femina</i>
Common Orache	<i>Atriplex patula</i>
Daisy	<i>Bellis perennis</i>
Hard Fern	<i>Blechnum spicant</i>
False Brome	<i>Brachypodium sylvaticum</i>
Hairy-brome	<i>Bromus ramosus</i>
Heather	<i>Calluna vulgaris</i>
Shepherd's-purse	<i>Capsella bursa-pastoris</i>
Wavy Bitter-cress	<i>Cardamine flexuosa</i>
Hairy Bitter-cress	<i>Cardamine hirsuta</i>
Greater Tussock-sedge	<i>Carex paniculata</i>
Pendulous Sedge	<i>Carex pendula</i>
Remote Sedge	<i>Carex remota</i>
Common Knapweed	<i>Centaurea nigra</i>
Greater knapweed	<i>Centaurea scabiosa</i>
Common Mouse-ear	<i>Cerastium fontanum</i>
Rosebay Willowherb	<i>Chamerion angustifolium</i>
Enchanter's-nightshade	<i>Circaea lutetiana</i>
Creeping Thistle	<i>Cirsium arvense</i>
Spear thistle	<i>Cirsium vulgare</i>
Pink Purslane	<i>Claytonia alsinoides</i>
Hemlock	<i>Conium maculatum</i>
Pignut	<i>Conopodium majus</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Tufted hair-grass	<i>Deschampsia caespitosa</i>
Foxglove	<i>Digitalis purpurea</i>
Scaly male-fern	<i>Dryopteris affinis</i>
Common Buckler-fern	<i>Dryopteris dilatata</i>
Male-fern	<i>Dryopteris filix-mas</i>
Bearded Couch	<i>Elymus caninus</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Giant Fescue	<i>Festuca gigantea</i>
Red Fescue	<i>Festuca rubra</i>
Meadow Fescue	<i>Festuca pratensis</i>
Common Cudweed	<i>Filago vulgaris</i>
Wild Strawberry	<i>Fragaria vesca</i>
Common Fumitory	<i>Fumaria officinalis</i>
Common Marsh-bedstraw	<i>Galium palustre</i>
Dove's-foot Crane's-bill	<i>Geranium molle</i>
Herb-Robert	<i>Geranium robertianum</i>
Wood Avens	<i>Geum urbanum</i>

Ground-ivy
Ivy
Hogweed
Yorkshire-fog
Bluebell
Tutsan
Jointed Rush
Soft-rush
Hard Rush
Perennial Ryegrass
Honeysuckle
Common Bird's-foot-trefoil
Greater Bird's-foot-trefoil
Hairy Wood-rush
Great Wood-rush
Creeping-Jenny
Pineappleweed
Wood Melick
Dog's Mercury
Purple Moor-grass
Bog-myrtle
Wood-sorrel
Butterbur
Timothy
Hart's-tongue
Bristly Oxtongue
Burnet-saxifrage
Ribwort Plantain
Annual Meadow-grass
Rough Meadow-grass
Polypody
Soft Shield-fern
Silverweed
Creeping Cinquefoil
Primrose
Selfheal
Bracken
Meadow Buttercup
Creeping Buttercup
Common Sorrel
Sanicle
Common Figwort
English Stonecrop
Groundsel
Red Campion
Bittersweet
Goldenrod
Perennial Sow-thistle
Betony
Marsh woundwort
Greater Stitchwort
Common Chickweed
Dandelion
Wood Sage

Glechoma hederacea
Hedera helix
Heracleum sphondylium
Holcus lanatus
Hyacinthoides non-scripta
Hypericum androsaemum
Juncus articulatus
Juncus effusus
Juncus inflexus
Lolium perenne
Lonicera periclymenum
Lotus corniculatus
Lotus uliginosus
Luzula pilosa
Luzula sylvatica
Lysimachia nummularia
Matricaria matricarioides
Melica uniflora
Mercurialis perennis
Molinia caerulea
Myrica gale
Oxalis acetosella
Petasites hybridus
Phleum pratense
Phyllitis scolopendrium
Picris echioides
Pimpinella saxifraga
Plantago lanceolata
Poa annua
Poa trivialis
Polypodium vulgare
Polystichum setiferum
Potentilla anserina
Potentilla reptans
Primula vulgaris
Prunella vulgaris
Pteridium aquilinum
Ranunculus acris
Ranunculus repens
Rumex acetosa
Sanicula europaea
Scrophularia nodosa
Sedum anglicum
Senecio vulgaris
Silene dioica
Solanum dulcamara
Solidago virgaurea
Sonchus arvensis
Stachys officinalis
Stachys palustris
Stellaria holostea
Stellaria media
Taraxacum officinale
Teucrium scorodonia

White Clover
Colt's-foot
Navelwort
Common Nettle
Wood Speedwell
Tufted Vetch
Common Vetch
Marsh Violet
Common Dog-violet

Trifolium repens
Tussilago farfara
Umbilicus rupestris
Urtica dioica
Veronica montana
Vicia cracca
Vicia sativa
Viola palustris
Viola riviniana

A.3 Trees and shrubs

Field Maple
Sycamore
Alder
Silver Birch
Downy Birch
Hazel
Hawthorn
Broom
Spindle
Beech
Ash
Holly
European Larch
Scots Pine
Blackthorn
Douglas Fir
Sessile Oak
Pedunculate Oak
Dog-rose
Bramble
Goat Willow
Grey Willow
Elder
Rowan
Common Lime
Gorse
English Elm

Acer campestre
Acer pseudoplatanus
Alnus glutinosa
Betula pendula
Betula pubescens
Corylus avellana
Crataegus monogyna
Cytisus scoparius
Euonymus europaeus
Fagus sylvatica
Fraxinus excelsior
Ilex aquifolium
Larix decidua
Pinus sylvestris
Prunus spinosa
Pseudotsuga menziesii
Quercus petraea
Quercus robur
Rosa canina
Rubus fruticosus
Salix caprea
Salix cinerea
Sambucus nigra
Sorbus aucuparia
Tilia x vulgaris
Ulex europaeus
Ulmus procera

APPENDIX B : FAUNA

Species list of animals recorded during the survey.

B.1 Birds (in taxonomic order)

Cormorant
Grey Heron
Mallard
Sparrowhawk
Buzzard
Kestrel
Pheasant
Moorhen
Black-headed Gull
Woodpigeon
Tawny Owl
Kingfisher
Green Woodpecker
Great Spotted Woodpecker
Skylark
Meadow Pipit
Grey Wagtail
Pied Wagtail
Wren
Dipper
Dunnock
Robin
Blackbird
Song Thrush
Mistle Thrush
Goldcrest
Long-tailed Tit
Marsh Tit
Coal Tit
Blue Tit
Great Tit
Nuthatch
Treecreeper
Jay
Magpie
Jackdaw
Rook
Carrion Crow
Starling
Chaffinch
Bullfinch
Goldfinch
Siskin
Redpoll

B.2 Mammals

Badger
Fox
Grey squirrel
Mink
Otter
Rabbit

B.3 Invertebrates

Green-veined White
Large White
Red Admiral
Small Tortoiseshell
Speckled Wood

Sympetrum striolatum

Red damselfly

Water-boatman

APPENDIX C : SITES OF SPECIAL SCIENTIFIC INTEREST

- Citation sheets and lists of Potentially Damaging Operations

NATURE CONSERVANCY COUNCIL

Site boundary thus 

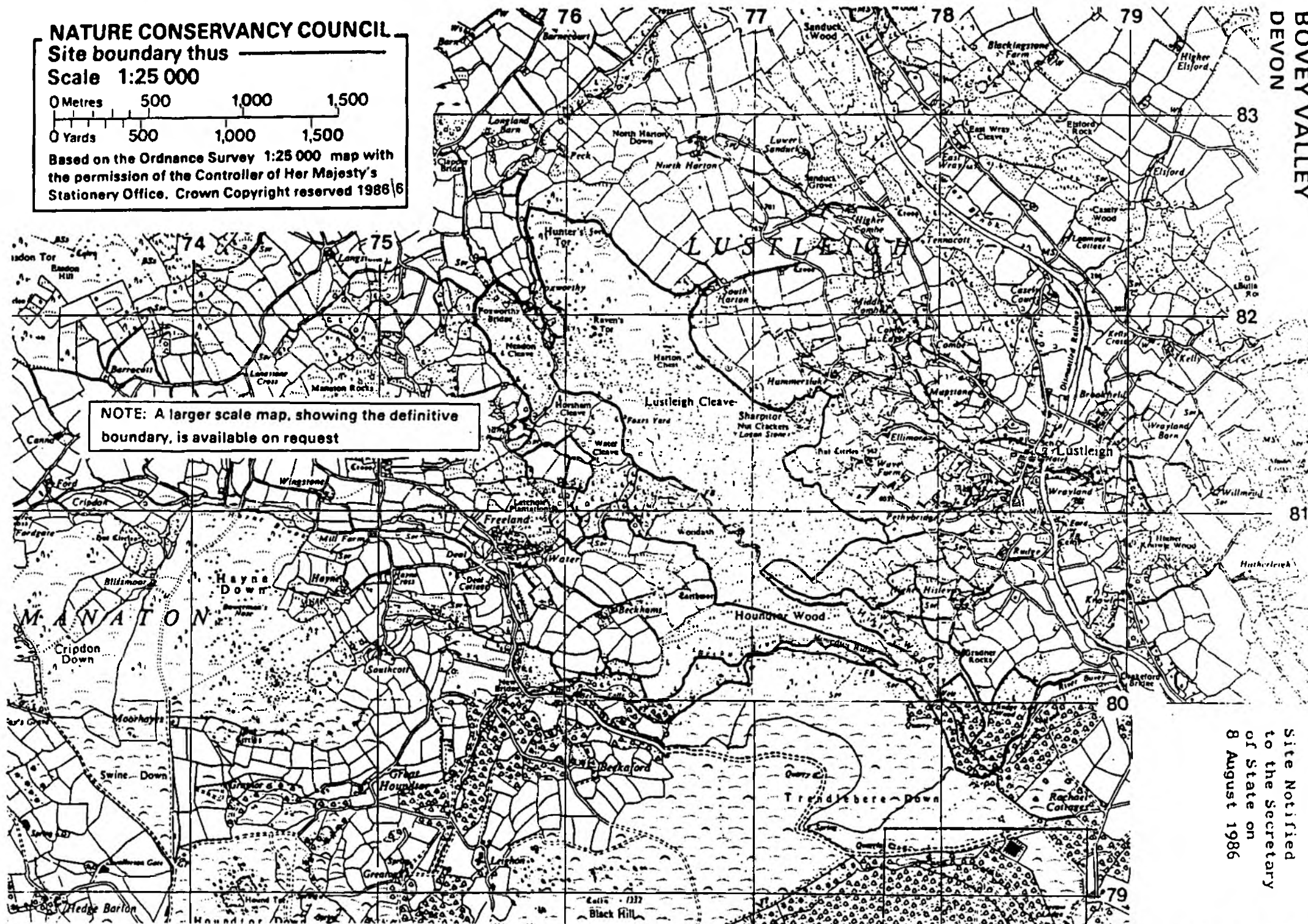
Scale 1:25 000

0 Metres 500 1,000 1,500

0 Yards 500 1,000 1,500

Based on the Ordnance Survey 1:25 000 map with
the permission of the Controller of Her Majesty's
Stationary Office. Crown Copyright reserved 1986/6

NOTE: A larger scale map, showing the definitive
boundary, is available on request



Site Notified
to the Secretary
of State on
8 August 1986

COUNTY: DEVON

SITE NAME:

BOVEY VALLEY

DISTRICT: TEIGNBRIDGE

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981 (as amended). Most of the site is declared as a National Nature Reserve (NNR) under Section 19 of the National Parks and Access to the Countryside Act 1949.

Local Planning Authority: DEVON COUNTY COUNCIL, TEIGNBRIDGE DISTRICT COUNCIL, DARTMOOR NATIONAL PARK AUTHORITY

National Grid Reference: SX 770810 Area: 261.5 (ha) 646.1 (ac)

Ordnance Survey Sheet 1:50,000: 191

1:10,000: SX 77 NE, SX 78 SE

Date Notified (Under 1949 Act): 1963

Date of Last Revision: 1976

Date Notified (Under 1981 Act): 1986

Date of Last Revision:

Other Information: The site boundary has been amended by extension and deletion. The site includes most of the Bovey Valley NNR (excluding Higher Knowle Wood). It is wholly within the Dartmoor National Park and the Devon County Structure Plan Dartmoor Conservation Zone. It is part of the Nature Conservation Review Site which also includes Yarner Wood NNR.

Description and Reasons for Notification:

This site comprises a large area of semi-natural broadleaved woodland composed of various stand types, and Lustleigh Cleave which adds a variety of habitats. The lichen flora is of national importance and the bryophyte flora of regional importance.

The site lies between 100-300m in altitude, within the valley of the River Bovey which flows in a south-easterly direction at this point. Part of the site extends up the Becka Brook valley to beyond the Becka Falls.

Much of the site lies over granite on loamy, acid brown earth soils with many granite boulders at the surface. Some of the woodland grows on similar soils derived from Carboniferous slates. In the river valley bottoms, gleyed, humic soils with various textures have developed in alluvium derived from the granite and the slates.

Much of the woodland is comparatively recent in origin. The wide range of relief, aspect, soil conditions and management history has resulted in different types of woodland developing. Generally a mixture of Sessile Oak (Quercus petraea), Pedunculate Oak (Q. robur) and Silver Birch (Betula pendula) has colonised well drained ground, whilst Alder (Alnus glutinosa), Ash (Fraxinus excelsior), Aspen (Populus tremula) and Willow (Salix sp) grow with Pedunculate Oak and Birch on wetter ground. These stand types have developed as a result of a cessation in management of old field systems and common ground. Other areas have Pedunculate Oak/Ash stands with a Hazel (Corylus avellana) understorey; these are probably remnants of a coppice-with-standard system. There are also areas of neglected Oak coppice which now have a Holly (Ilex aquifolium) and Rowan (Sorbus aucuparia) understorey. Sycamore (Acer pseudoplatanus) is locally dominant in places and invasive in others.

The ground flora varies from a dense cover of Bracken (Pteridium aquilinum) and Bramble (Rubus fruticosus) with a few calcifuge herbs such as Cow-wheat (Melampyrum pratense) and Wood Sorrel (Oxalis acetosella) to a herb rich flora including Sanicle (Sanicula europaea), Primrose (Primula vulgaris) and Dog's Mercury (Mercurialis perennis). There is an area of marshy grassland dominated by Purple Moor-grass (Molinia caerulea) but including Bog Myrtle (Myrica gale), Royal Fern (Osmunda regalis), Alder Buckthorn (Frangula alnus), Lemon-scented Fern (Thelypteris oreopteris) and Bog Mosses (Sphagnum spp).

Older trees and the boulders especially those nearer to the two rivers are exceptionally rich in lichens and bryophytes. There are many rare and notable lichens including: Lobaria amplissima, L. laetivirens, L. pulmonaria, Catillaria pulverea, Nephroma parile, Lecanora piniperda and Thrombium epigaeum (growing on soil). Bryophytes include Trichocolea tomentella and Hookeria lucens. The Teignbridge filmy-fern (Hymenophyllum tunbrigense) grows on streamside boulders.

Lustleigh Cleave occupies the south-west facing side of the Bovey Valley. It supports a mixture of Birch and Oak woodland and older Oak woodland on granite clitter, together with large areas of Bracken with scattered trees and Gorse (Ulex europaeus). Part of the Cleave is an acid grassland/dry heath mosaic and there are several acidic flushes. The most notable plants are Moonwort (Botrychium lunaria) and Adder-tongue Fern (Ophioglossum vulgatum). The granite boulders support a rich saxicolous lichen flora including Cetraria hepatica and Massalongia carnea.

The breeding bird community is typical of western woodland, with Buzzard (Buteo buteo), Redstart (Phoenicurus phoenicurus), Wood Warbler (Phylloscopus sibilatrix), Lesser Spotted Woodpecker (Dendrocopos minor), Pied Flycatcher (Ficedula hypoleuca) and Heron (Ardea cinerea).

Dormice (Muscardinus avellanarius) are common and the butterflies include scarce species like the Purple Emperor (Apatura iris) and Brown Hairstreak (Thecla betulae).

OPERATIONS LIKELY TO DAMAGE THE FEATURES OF SPECIAL INTEREST

Site Notified to the
Secretary of State on
8 August 1986

<u>Standard Ref No</u>	<u>Type of Operation</u>
1	Cultivation, including ploughing, rotovating, harrowing and reseedling.
2	Changes in the grazing regime (including type of stock or intensity or seasonal pattern of grazing and cessation of grazing).
3	Changes in stock feeding practice.
4	Mowing or other methods of cutting vegetation.
5	Application of manure, fertilisers and lime.
6	Application of pesticides, including herbicides (weedkillers).
7	Dumping, spreading or discharge of any materials.
8	Burning and changes in the pattern or frequency of burning.
9	The release into the site of any wild, feral or domestic animal*, plant or seed.
10	The killing or removal of any wild animal*, including pest control.
11	The destruction, displacement, removal or cutting of any plant or plant remains, including tree, shrub, herb, hedge, dead or decaying wood, moss, lichen, fungus, leaf-mould or turf.
12	Tree and/or woodland management including afforestation, planting, clear and selective felling, thinning, coppicing, modification of the stand or underwood, changes in species composition, cessation of management.
13a	Drainage (including moor-gripping and the use of mole, tile, tunnel or artificial drains).
13b	Modification of the structure of water courses eg rivers, streams, springs, ditches, dykes, drains, including their banks and beds, as by re-alignment, regrading and dredging.
13c	Management of aquatic and bank vegetation for drainage purposes.
14	The changing of water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes).
15	Infilling of ditches, dykes, drains, ponds, pools, marshes or pits.
16a	The introduction of freshwater fishery production and/or management including sporting fishing and angling.
20	Extraction of minerals, including peat, sand and gravel, topsoil and sub-soil.
21	Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, or the laying, maintenance or removal of pipelines and cables, above or below ground.
22	Storage of materials.
23	Erection of permanent or temporary structures, or the undertaking of engineering works, including drilling.
24	Clearance of boulders, large stones, loose rock or scree and battering, buttressing or grading rock-faces.
26	Use of vehicles or craft likely to damage or disturb features of interest.
27	Recreational or other activities likely to damage features of interest.
28	The introduction of game or waterfowl management.

* "animal" includes any mammal, reptile, amphibian, bird, fish or invertebrate.

APPENDIX D : BIBLIOGRAPHY

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