ECOLOGICAL SURVEY

OF THE

BARROW NAVIGATION

Part 2

Conservation
Management Plan

Phragmites communis

OPW
Oifig na nOibreacha Poiblí
The Office of Public Works

1994

ECOLOGICAL SURVEY OF THE BARROW NAVIGATION

PART 2: Conservation Management Plan 1992/93.

Prepared for:
The Waterways Division
and
The National Parks and Wildlife Service
of The Office of Public Works.

1994.

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CONTENTS

MANAGEMENT OBJECTIVES

1.1 To ensure that nature conservation requirements are fully integrated into the maintenance and development of the waterways network.

1.2 To maintain the habitat diversity of the waterways system, and to increase it where possible.

1.3 To highlight the contribution of different management practices in maintaining habitat diversity on the waterways system.

GENERAL GUIDELINES FOR CONSERVATION MANAGEMENT

2.1 MAINTENANCE

2.1.1 General

. Because of the conservation value of the waterways a full-time ecologist should be employed by the Waterways Section of The Office of Public Works.

2.1.2 Dredging

General

. The river channel should only be dredged in short sections (of not more than 5 km) to allow the vegetation to recolonise from adjacent lengths.

. Hydraulic machinery should be used where possible - i.e. where wide bank verges exist along the river and in the canal cuts - as it is more selective and flexible than drag-line dredgers.

. Spoil deposited between the bank and the towpath should be spread evenly over the bank verge vegetation as soon as it has dried out.

. Where possible - i.e. where wide bank verges exist along the river - the floating dredger should deposit the spoil on these banks.

. Dredging should be minimised during the months March to May to avoid the main growing season and to reduce disturbance to nesting birds of the banks and hedgerow.

. Natural revegetation of dredging spoil should be monitored annually to decide the best form of management.

Protection of reed fringe

. When dredging the boundary drain (which contains fish as well as many species of invertebrates) ensure that reed fringe remains along one bank.

. Dredging of the canal cuts should be carried out from one bank only leaving a wide band of marginal vegetation on the offside.

. In sections where the only surviving reedbeds are on the towpath side of the canal cuts the floating dredger should be used to avoid damaging the marginal vegetation.

Spoil deposition

. All spoil should be deposited on the bank verge and levelled.

. Spoil rich in nutrients should not be dumped on the small areas of unimproved grasslands along the canal banks and Barrow trackway as these sites are botanically the rarest and most diverse.

. Nutrient-rich spoil should be deposited on the wide bank verges which are found along much of the river. The floating dredger is suited to this type of work.

. Nutrient-poor gravelly spoil from the fast-flowing river may be spread thinly and evenly on the towpath.

. Spoil from the canal cuts should be deposited on the islands and island embankments especially where there is scrub present.

Control of plant growth on spoil

. The growth of coarse vegetation is quite vigorous on spoil deposition sites and often extends out on to the towpath. In these areas the early colonising plants should be mowed at least twice in the first year and the cuttings removed. In subsequent years, provided there is no further deposition of spoil, a single late summer mowing should be sufficient.

. In areas where scrub is desirable no management is necessary.

2.1.3 Control of plant growth along banks which are liable to flooding.

. The deposition of silt (nutrient-rich) as a result of flooding encourages vigorous growth of coarse vegetation.

Along the trackway this vegetation can be cut twice a year, and the cuttings removed. The bank and boundary verges should be mowed once a year and the cuttings removed. This will remove nutrients from the system.

. Giant Hogweed has been spreading along the banks of the Barrow Navigation in recent years, in particular along low banks liable to flooding. Vegetation is washed away at times of flood, especially where the water swirls about under saplings. When it dries out this bare ground is readily colonised by Giant Hogweed, the seeds of which are often carried in the water. Spray treatment using a solution of Roundup has been shown to be the most effective method of control, and the spraying programme should be continued. These plants are not to be cut as they will sprout new shoots.

2.1.4 Bankside trees

Trimming

. Tree cutting should be avoided during the months of March to July to reduce disturbance to nesting birds and damage during the main growing season.

. Removal of overhanging branches should be confined to those which obstruct navigation and walking.

. Pollarding is a suitable management method for Willows along the river bank. Young growth is trimmed each year at a height of 2m from the ground producing a solid stem and a crown of young growth.

. Coppicing is suitable for management of shrubs or young Hazel, Willow and Alder trees where access for machinery is necessary. Trunks are cut close to the ground using a slanting cut which sheds rainwater. Branches regenerate from the base or stool.

Selective removal of trees

. Removal of trees should be confined to the winter months to minimise disruption of plant communities and disturbance to nesting birds.

. Priority should be given to removal of exotic or introduced species such as conifers or Sycamore. Native species such as Alder, Willow, Ash etc. should be retained where possible.

. Cut stumps may need to be spot-treated with herbicide to prevent re-growth where tree or shrubs are to be removed from the system altogether.

2.1.5 Scrub

. Scrub clearance should not be carried out as a matter of course, but only where necessary for maintenance.

. Clearance of scrub should be avoided during the months of March to July to reduce disturbance to nesting birds.

. Scrub along the canal cuts should not be cleared from both banks at the same time. Instead the vegetation on the first bank should be allowed to stabilise before any work is carried out on the second bank.

2.1.6 Hedgerows

Management methods

. Hedgerows should be trimmed in short lengths on a two to three year rotation.

. Trimming should be carried out in the months of October to February to avoid damage to growing shrubs and disturbance of nesting birds.

. Hedgerow trees should be protected from damage during trimming and some young saplings should be allowed to grow to maturity.

. If using a flail cutter care should be taken to direct it at young growth. If used on thick old branches it will shred and tear them leaving branches that are susceptible to dieback and fungal attack.

Replanting

. Preference should be given in replanting programmes to the use of native tree and shrub species such as those which grow naturally in the surrounding countryside.

. Planting of shrubs and trees should be done in autumn or spring, but not during severe frosts.

2.1.7 Grassland

Mowing

. Mowing can be used to maintain grassland on the towpath and verges.

. A footpath 1.5m wide can be cut through grasslands in May/June if necessary to provide pedestrian access. A

wider band (2-3m) consisting of towpath, bank and boundary verges should be cut in August/September.

. All hay or other cut vegetation should be removed from the towpath to maintain the low nutrient status of the grassland. Methods/machinery for combined cutting and removal should be investigated and experimental trials carried out.

. Plant species colonising bare ground after disturbance of the towpath may need to be controlled by more frequent mowing during the first 2 to 3 years.

. Recommendations for the management of grasslands on nutrient-rich spoil are in Sections 2.1.2 and 2.1.3

Herbicides

. In general, herbicides should not be used as these may damage non-target grassland species. Spot treatment of woody plants and Giant Hogweed may be used as necessary.

2.1.8 Aquatic vegetation

Environmental control

. The level of boat traffic is likely to increase, and this will help to keep the navigation channel clear of plant growth.

. Reducing to the minimum the input of plant nutrients by controlling/monitoring all possible sources of pollution will help to control the spread of invasive plant species.

Mechanical cutting

. Cutting in the canal cuts should be carried out early in the year using a boat-mounted cutter.

. Cutting should be limited to the central navigation channel leaving marginal vegetation fringes as intact as possible.

. Decomposing aquatic plants can release a very unpleasant odour and should be disposed of away from the canal and used as compost.

Herbicides

. Herbicides should only be used where all other methods of controlling plant growth have been tried and have failed.

. Herbicides must not be used on stretches of the canal that support protected plant or animal species, or in those areas which have been identified as containing a high diversity of aquatic life.

. Herbicides must be used early in the growing season, as the decomposition of a large amount of vegetation in the channel could result in serious deoxygenation of the water.

Biological control

. The introduction of herbivorous fish such as Grass Carp (Ctenopharyngodon idella) is not allowed in this country.

. The use of Barley Straw on the Grand and Royal Canals has proved successful in the treatment of algae. This method could not be used on the river channel of the Barrow, where the fluctuating water levels and increased flows would limit its success. Trials could however be carried out on the canal cuts of the Barrow Navigation.

2.1.9 Masonry

. The vegetation growing on stone walls and similar structures adds to the diversity of the system. Plants which could damage the structures (eg Ivy, Ash, Sycamore or Bramble) should be removed. Smaller, less vigorous plants typical of stone walls should not be removed.

. Use only mechanical methods to clean and maintain stonework. Herbicides should not be used as they may enter the water and have damaging effects of aquatic plants.

2.1.10 Water quality

. All direct discharges to the system should be monitored to ensure early detection of pollution incidents.

. An effort should be made to ensure that all towns discharging domestic and industrial waste to the Barrow River should have secondary or tertiary treatment plants installed.

. Regulations should be drafted to ensure that boats use the pump-out facilities at Athy, Carlow and Graiguenamanagh.

2.2 RECREATIONAL MANAGEMENT

2.2.1 Boat traffic

. Speed limits should be strictly enforced for all boat traffic to prevent damage to the banks of canal cuts from wash.

. Regulations regarding permits and mooring must be strictly enforced to prevent ecological damage at sites where large numbers of boats are found in a small area.

. Regulations should be drafted to ensure that boats use the pump-out facilities at Athy, Carlow and Graiguenamanagh.

2.2.2 Angling

. The OPW do not own or manage the fishery on the Barrow Navigation. However the OPW does assist with the provision of easy access to the water for the fishermen by cutting swims. Limits should be placed on the interference with bank vegetation to facilitate anglers.

. Weirs should be kept clear of excess vegetation so as not to hinder salmon in their movements upstream.

. Herbicide spraying should not be used as a fisheries management method.

. Angling may need to restricted in certain ecologically sensitive areas or at certain times of year to avoid disturbance to birds.

METHODS

The river corridor was surveyed in 1km stretches using the same methods that were used in the surveys of the Grand and Royal Canals (Dromey et al., 1991 and 1992), based on the method devised by the British Waterways Board (Tandy, 1989) which was in turn based on techniques developed by the Nature Conservancy Council (NCC, 1985).

DEFINITIONS

Bank Verge (bkv)	The strip of land between the trackway and the channel.
Boundary Verge (bdv)	The strip of land between the trackway and the boundary.
Boundary (bd)	Hedgerow (hg) Fence (fc) Wall Ditch Stream / drain
Nearside	The bank of the navigation which carries the trackway.
Offside	The bank opposite the trackway, not OPW property along the Barrow Navigation.

INDEX FOR 25 INCH MAPS OF THE BARROW NAVIGATION

INDEX FOR 6 INCH MAPS OF THE BARROW NAVIGATION

CONSERVATION AND MANAGEMENT GUIDELINES

ALONG EACH STRETCH OF THE BARROW NAVIGATION

with 25 inch maps

of each kilometre section

BARROW NAVIGATION

ATHY - ARDREIGH LOCK **KM SECTIONS B46-BN 2**
approx. 1km on east bank

OBSERVATIONS:

- A natural rural aspect achieved by the presence of a variety of habitats.
- Dredging of the opposite (west) bank by Barrow Drainage (1992).

GOOD FEATURES:

- Very high species diversity in the river.
- Very high species diversity in the boundary drain which is in water throughout the year (1992).
- Species-rich boundary hedge including Spindle, Willow, Alder and Oak saplings.
- Bankside trees near Horse Bridge add to the diversity.
- The island (not OPW property) is dominated by scrub at the north end. The remaining fields, which are liable to flood are lightly grazed during the summer. Wet meadow species grow on these sections and add to the overall ecological diversity of the area.

BAD FEATURES:

- Boundary drain cleared and the spoil deposited on the boundary verge.
- Presence of Giant Hogweed in the boundary verge just south of Horse Bridge in 1993 and north of Ardreigh Lock in 1992 (BN1).
- All trees removed from the bankverge along the canalised stretch.
- A wide strip of grass is cut along the both sides of the surfaced towpath.
- The weir to the north of the island is becoming heavily overgrown making it difficult for salmon to pass upriver.
- Abundant growths of Sparganium emersum in the canal.
- Oil on the water of the canal.

OBJECTIVES:

- To encourage and maintain wildlife diversity
- To eliminate, in so far as is possible, the Giant Hogweed from the system.

RECOMMENDATIONS:

- Ensure that the diverse boundary hedgerow is not damaged.
- Reduce both the width and number of cuttings of grasses and flowering species on either side of the surfaced towpath. A narrow strip (0.5m) can be frequently cut on either side of the path. The remainder of the bank and boundary verges can be cut omce, late in the year. Cutting late in the year allows

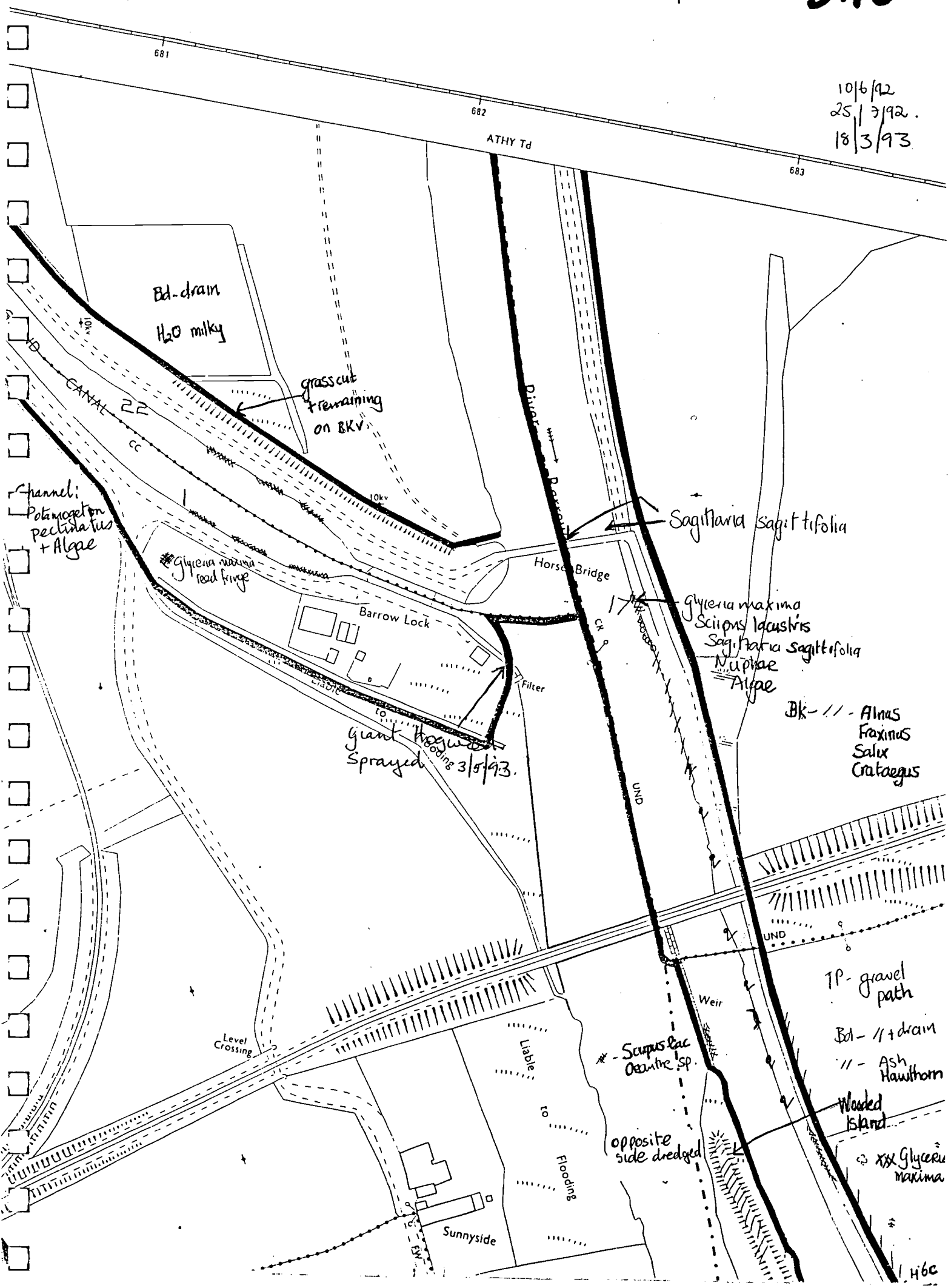
the plants to grow, flower and set seed. The advantages of this from a wildlife point of view are many. The diversity of the seed bank is maintained. Insects can pupate and feed off their host plant and move around the general area. These in turn become a food source for birds and other small mammals. There is also the aesthetic value which attaches to the presence of a herb layer of medium height contrasting with both the taller tree and shrub layer and the low ground layer of the towpath.

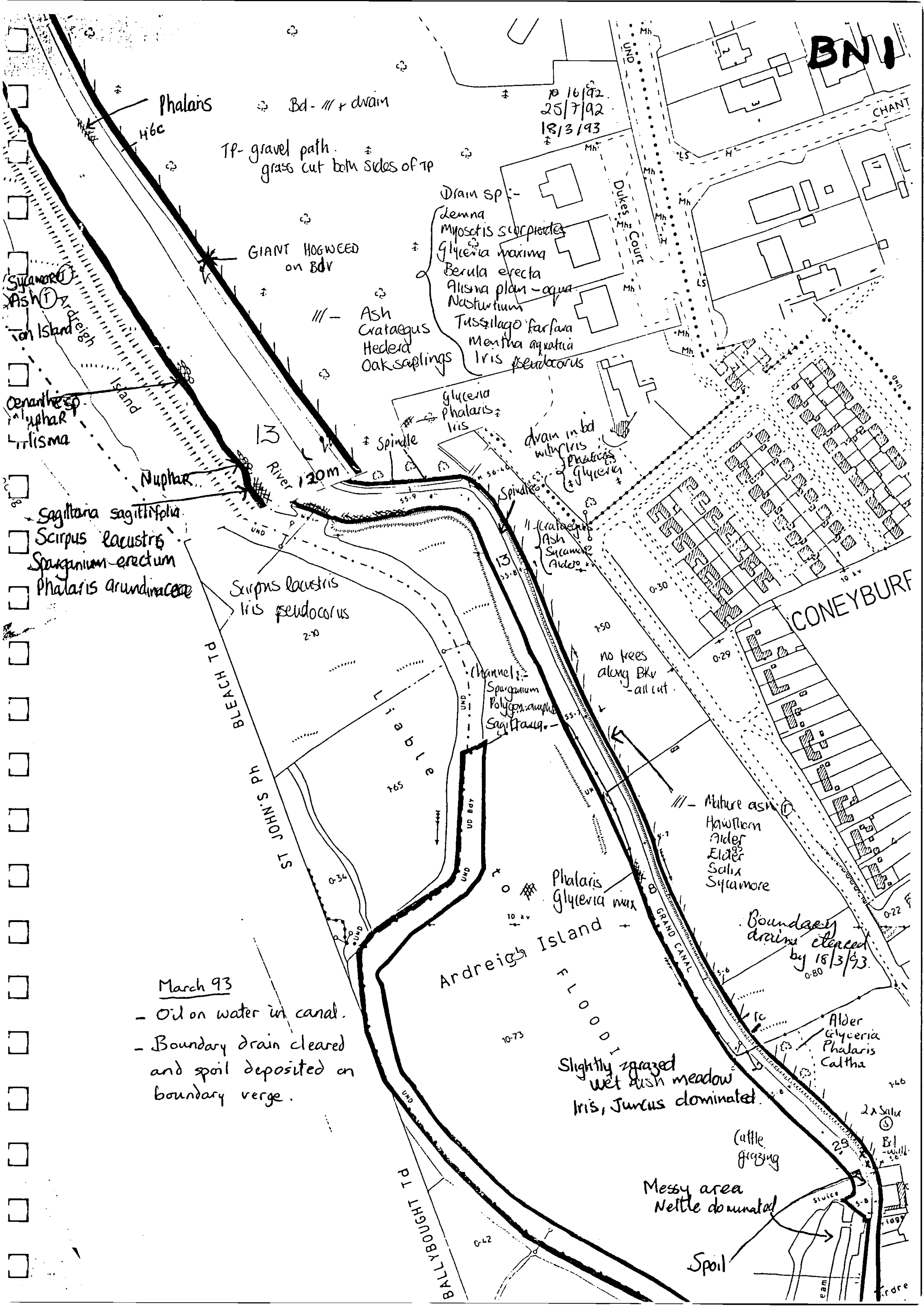
- Cut the aquatic vegetation of the canal early in the year, cutting them as close as is possible to the canal bed.
- Clear the weir of vegetation otherwise there is the danger that the salmon will not be able to pass upstream (See Plate 26).
- The location of the Giant Hogweed has been mapped and the plants sprayed in 1992 and 1993 according to the guidelines in Part 1 of this report. The area should be monitored in April/May 1994 and sprayed if necessary.

10/6/92
25/7/92.

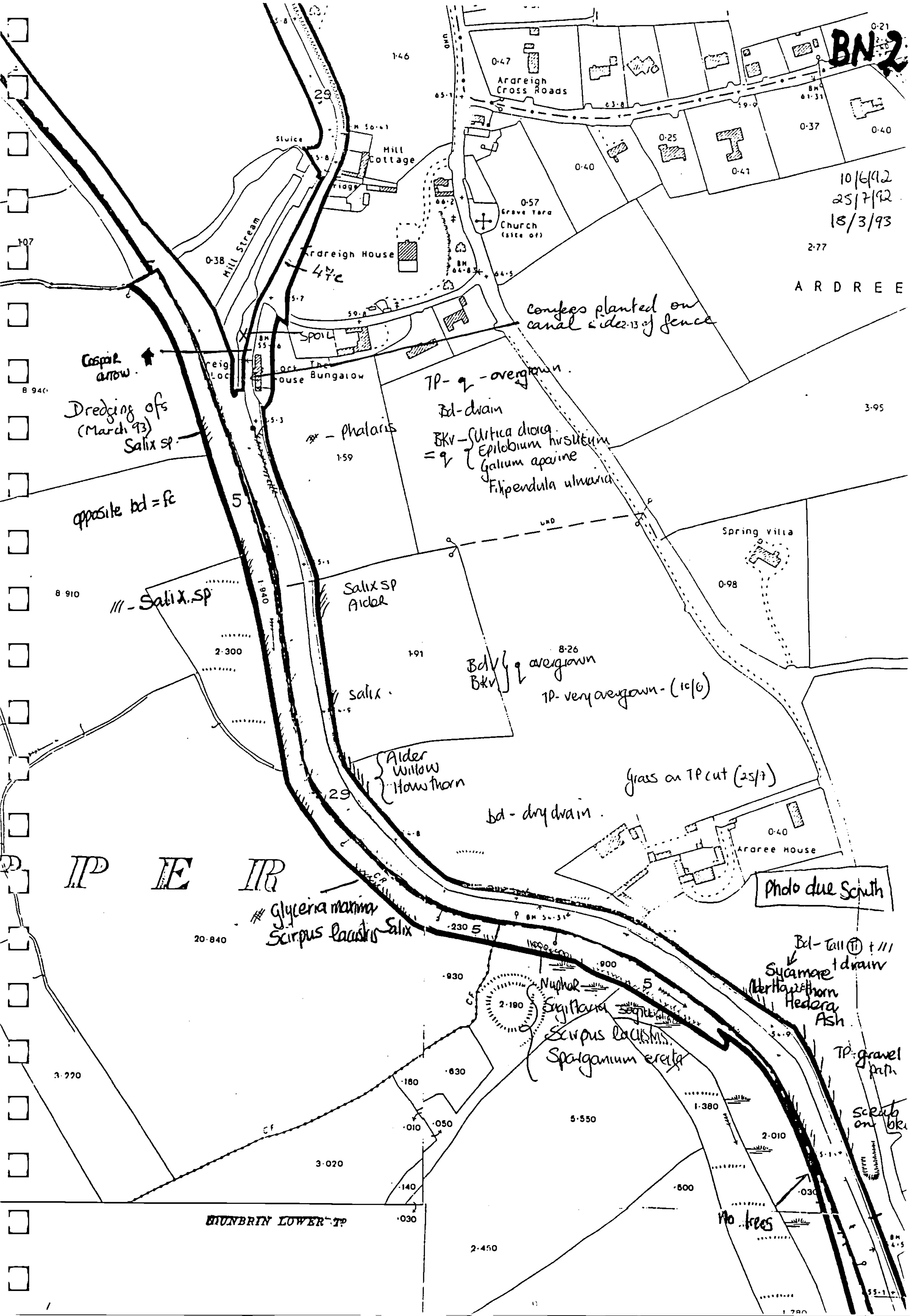
B46

10/6/92
25/7/92.
18/3/93





BN1
Phalaris
Bd - /// + drain
H6C
10/16/92
25/7/92
18/3/93
TP - gravel path
grass cut both sides of TP
CHANT
Drain sp :-
Lemna
Myosotis scorpioides
Glyceria maxima
Berula erecta
Alisma plan-aqua
Nasturtium
Tussilago farfara
Mentha aquatica
Iris pseudocorus
Dukes Court
GIANT HOGWEED
on Bdr
Sycamore (T)
Ash (T)
Ardreigh
Island
/// - Ash
Crataegus
Hedera
Oak saplings
Oenanthe sp
Nuphar
Alisma
Glyceria
Phalaris
Iris
Spindle
drain in bd
with Iris
Phalaris
Glyceria
13
River
120m
Nuphar
Sagittaria sagittifolia
Scirpus lacustris
Sparganium erectum
Phalaris arundinacea
Spindle
/// Crataegus
Ash
Sycamore
Alders
Scirpus lacustris
Iris pseudocorus
CONEYBURROW
no trees
along Bkr
- all cut
BLEACH Td
Channel :-
Sparganium
Polygon. amphib
Sagittaria
Liable
UD Bdy
ST JOHN'S Ph
/// - Mature ash (T)
Hawthorn
Alder
Elder
Salix
Sycamore
Phalaris
Glyceria max
to Flood
Ardreigh Island
GRAND CANAL
Boundary
drain cleared
by 18/3/93
March 93
- Oil on water in canal.
- Boundary drain cleared
and spoil deposited on
boundary verge.
Alder
Glyceria
Phalaris
Caltha
Slightly grazed
wet rush meadow
Iris, Juncus dominated
2 x Salix (S)
Cattle
grazing
Messy area
Nettle dominated
Sluice
Spoil
BALLYBOUGHT Td


BN2
10/6/92
25/7/92
18/3/93
Ardreigh Cross Roads
Sluice
Mill Cottage
Mill Stream
Ardreigh House
47c
Grave Yard
Church (site of)
ARDREE
Conifers planted on canal side of fence
Spoil
Cospoir arrow
The Bungalow
TP - q - overgrown.
Bd - drain
BKv - q
Urtica dioica
Epilobium hirsutum
Galium aparine
Filipendula ulmaria
Dredging ofs (March 93)
Salix sp
Phalaris
opposite bd = fc
Spring Villa
/// - Salix sp
Salix sp
Alder
Bd
Bkv
q overgrown
TP - very overgrown - (10/6)
salix.
Alder
Willow
Hawthorn
Grass on TP cut (25/7)
bd - dry drain.
Ardree House
Photo due South
P E R
Glyceria maxima
Scirpus lacustris
Salix
Nuphar
Sagittaria
Scirpus lacustris
Sparganium erecta
Bd - Tall T + ///
+ drain
Sycamore
Alder Hawthorn
Hedera
Ash
TP: gravel path
scrub on bk
No trees
BLUNBRIN LOWER TD

ARDREIGH LOCK - BUNBERRY'S BRIDGE **KM SECTIONS BN2 - BN4**
approx. 2km on east bank

OBSERVATIONS:

Open aspect immediately south of Ardreigh Lock. There is a rural scene in the vicinity of the island where unimproved wet meadows support Orchids, Irises, Rushes and many more wildflowers and are lightly grazed during the summer.

GOOD FEATURES:

- Vegetated track as the towpath
- A diverse range of trees form the boundary hedgerow including Ash, Hazel, Beech, Guelder-rose, Alder and Spindle.
- A species-rich wet boundary drain adds to the overall diversity of the area.
- Dragonflies are attracted to the area because of the extensive reed growth, and are abundant.
- Large island of species-rich wet meadows. The island is lightly grazed during the summer. Invertebrates abound in the tall vegetation of the wet meadows. The management option of grazing on this island adds to the overall ecological diversity of the area. The island is not part of OPW property.
- The vegetation of the canal bank, unlike that of the river bank, is not dominated by coarse rank vegetation.

BAD FEATURES:

- Trees have been removed from the bank to facilitate spoil disposal.
- Spoil has been deposited along the river bank and the vegetation is now dominated by coarse, tall herbaceous species such as Nettles, Docks, Hogweed and Cleavers. These competitive species thrive in the nutrient-rich conditions (supplied by spoil) and their growth extends across the towpath. This path between Ardreigh Lock and Bunberry's Bridge was not passable in June 1992 prior to cutting (Plate 2).
- When the vegetation of the towpath was cut in early July 1992, the cuttings were not removed. The width of the cut towpath is too great.
- The bankverge at the southern end of BN3 is up to 5m wide and also dominated by tall, coarse herbaceous species. As a result, a view to the river from the towpath is hindered.
- Giant Hogweed on the west bank in km BN3 during '92 and '93 and on the west bank immediately north of the weir in BN4 during 1992.
- The weir is becoming overgrown (Plate 26).

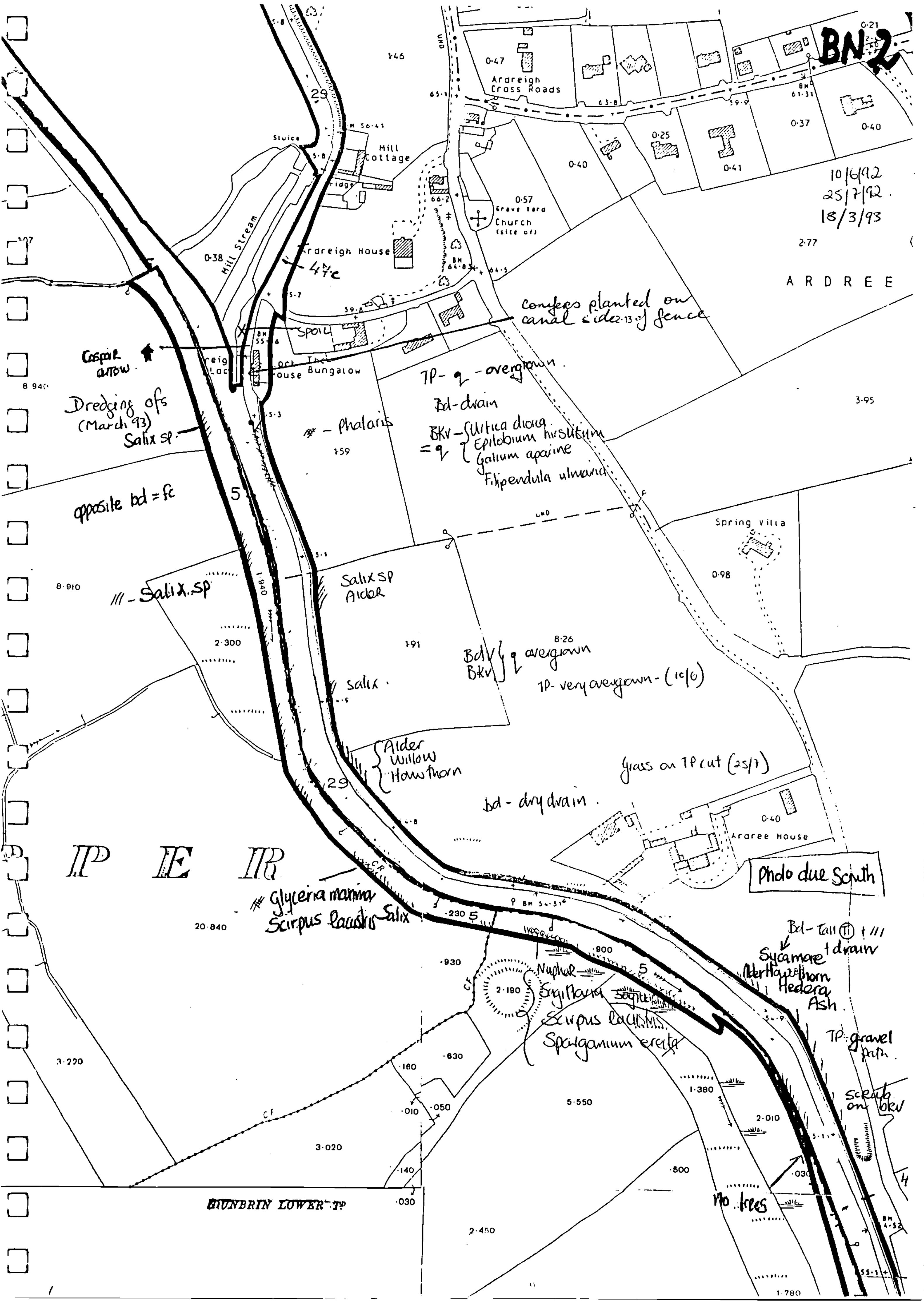
OBJECTIVES:

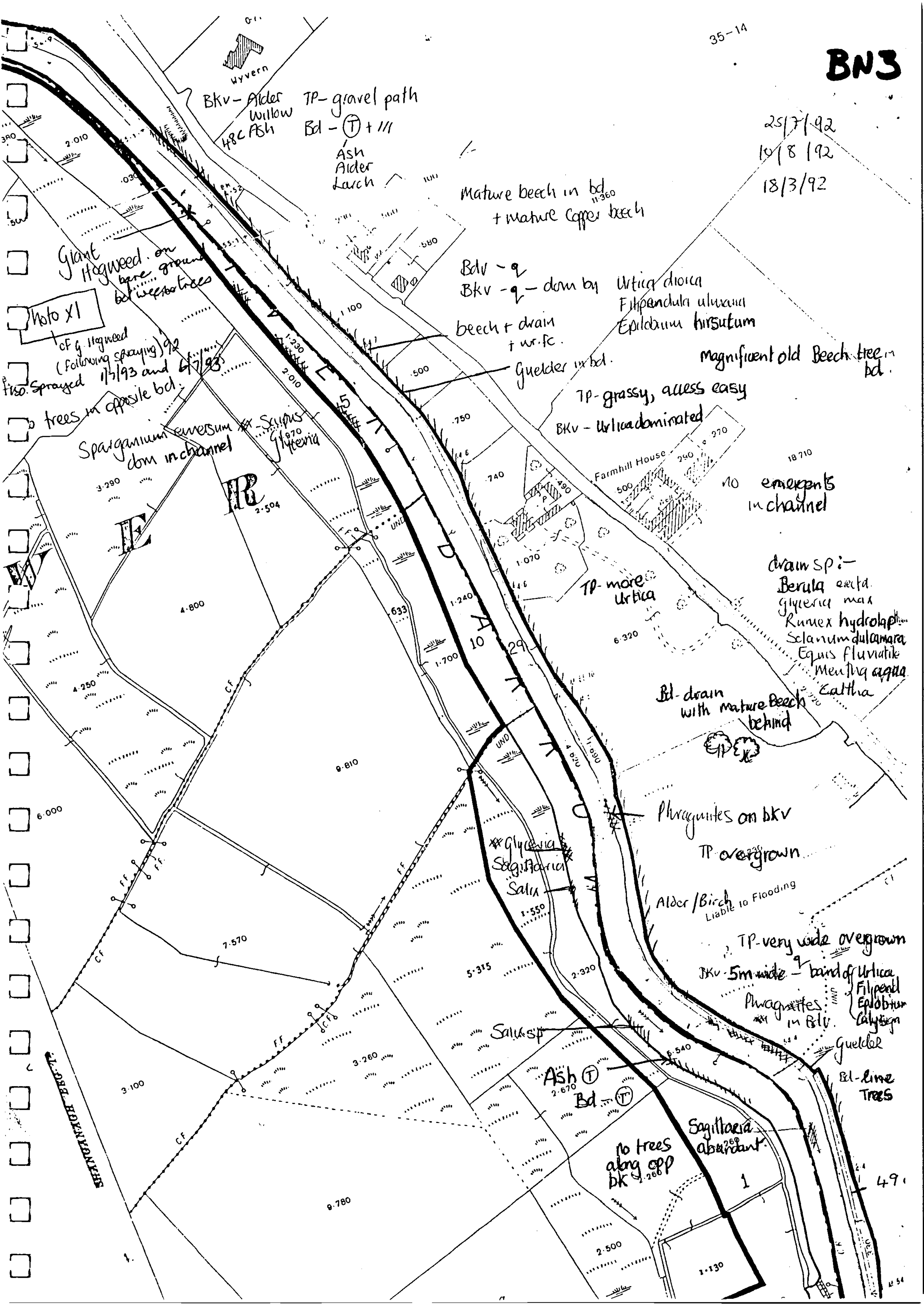
- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.
- To prevent soil enrichment as a result of vegetation cuttings remaining.
- To eliminate, in so far as is possible, Giant Hogweed from the system.

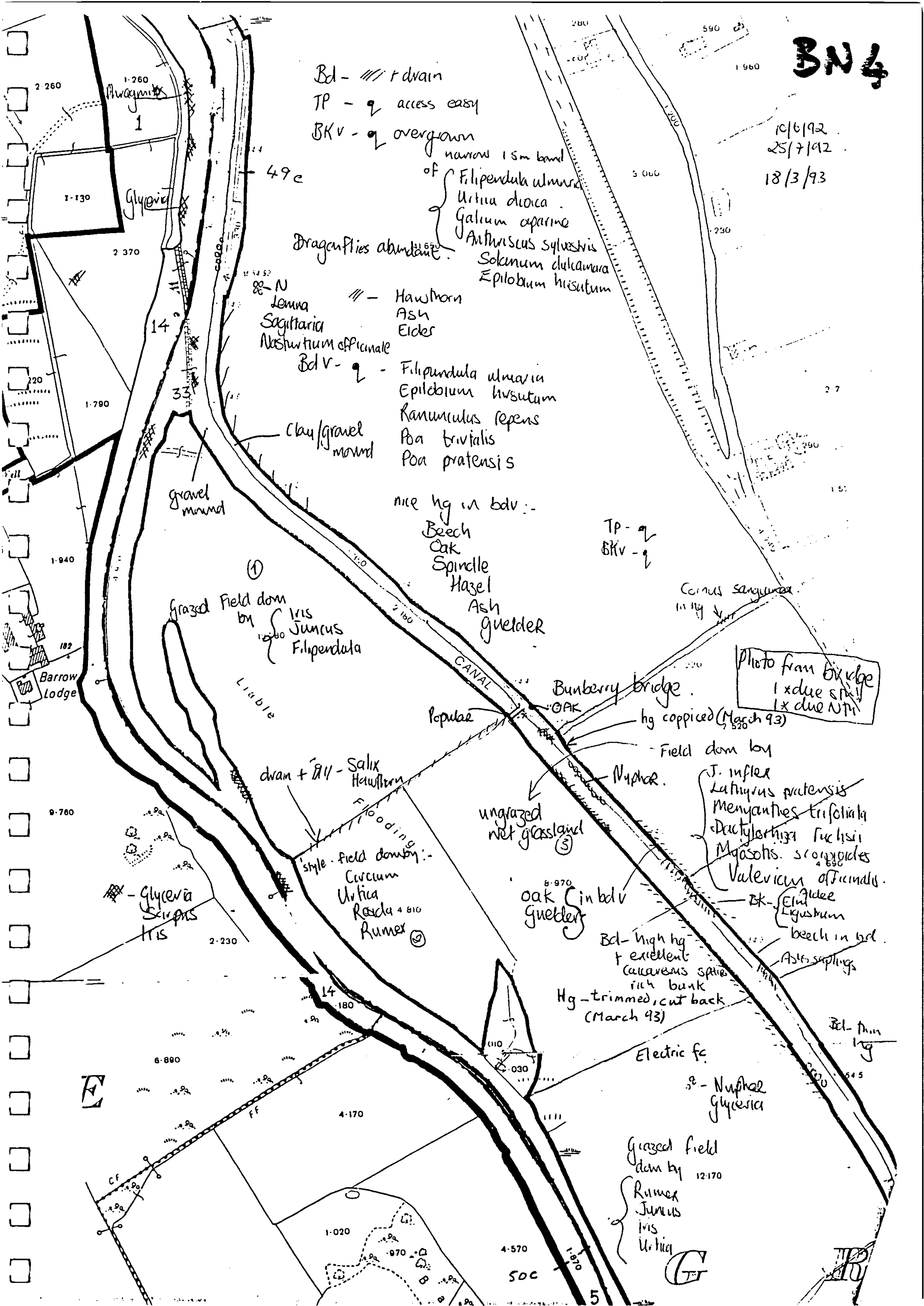
RECOMMENDATIONS:

- The vegetation on the nutrient-rich spoil deposited on the banks should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from the soil. As a result there will be an increase in non-competitive species and diversity (See Plates 21-23). Where the bankverge is sufficiently wide a band of the coarse, rank vegetation can remain, provided it is not near the towpath and does not interfere with views of the river. This vegetation attracts its own range of insects.
- Where the spoil has fallen on the towpath, a similar vegetation cutting regime should be put into operation as outlined for the banks. In the following year, the vegetation will be more diverse and not so vigorous. The number of cuttings can then be reduced. All cuttings must be removed.
- When the rank, coarse, competitive vegetation has been removed through frequent cutting in one year a single cut at the end of each year should then suffice to maintain ecological diversity. A single cut ensures that scrub species do not colonise the towpath and will also ensure that the diversity of the seed bank will not be reduced. Cutting of species before they set seed eliminates the seeds of that particular plant, thus reducing ecological diversity. If, for amenity purposes, it is necessary to maintain a short vegetation sward for walkers, then a strip of 1-1.5m wide has been researched as being wide enough. This strip may then be subjected to frequent cuts, ensuring always that the cuttings are collected. In this way the only reduction in the seed bank will occur in this narrow strip. The seeds of the plants at the edge of the 1-1.5m strip will ensure that ecological diversity will be maintained.
- At present a tractor with flail cutters cuts the towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil leading to the growth of competitive species. For conservation purposes it is most important that the cuttings are collected so that this soil

enrichment does not take place (Contrast Plates 5 and 21).
- Giant Hogweed sites were sprayed in '92 and '93 (see Part 1 Ch 3) and location mapped. The area should be monitored in April/May 1994 to ascertain if further spraying will be necessary.
- Clear the weir of excess vegetation. As each year passes, more vegetation becomes established, making it increasingly difficult for salmon to move upstream.

 BN2
10/6/92
25/7/92
18/3/93
Ardreigh Cross Roads
Mill Cottage
Sluice
Mill Stream
Ardreigh House
Church (site of)
Grave Yard
47c
Spoil
Conifers planted on canal side of fence
Cospoir arrow
The Bungalow
Lock House
Dredging ofs (March 93)
Salix sp.
ARDREE
TP - q - overgrown.
Bd - drain
Bkv - Urtica dioica
Epilobium hirsutum
Galium aparine
Filipendula ulmaria
= q
Phalaris
opposite bd = fc
Spring Villa
Salix sp
Alder
/// - Salix sp
Bd
Bkv
q overgrown
TP - very overgrown - (10/6)
salix.
Alder
Willow
Hawthorn
Grass on TP cut (25/7)
bd - dry drain.
Ardree House
Photo due South
P E R
Glyceria maxima
Scirpus lacustris
Salix
Nuphar
Sagittaria
Sagittaria
Scirpus lacustris
Sparganium erecta
Bd - Tall (Ti) + /// + drain
Sycamore
Alder Hawthorn
Hedera
Ash.
TP - gravel path.
Scrub on bkv
No trees
DUNBRIN LOWER TD
ARDREE


35-14
BN3
25/7/92
10/8/92
18/3/92
Wyvern
BKv – Alder
Willow
48c Ash
TP – gravel path
Bd – (T) + ///
Ash
Alder
Larch
Mature beech in bd
+ Mature Copper beech
Giant Hogweed on bare ground between trees
Photo X1
cf g. Hogweed
(following spraying) 92
Also sprayed 1/7/93 and 6/7/93
no trees in opposite bd.
Bdv – q
BKv – q – dom by Urtica dioica
Filipendula ulmaria
Epilobium hirsutum
beech + drain
+ wr. fc.
Guelder in bd.
Magnificent old Beech tree in bd.
TP – grassy, access easy
BKv – Urtica dominated
Sparganium erectum + Scirpus
Glyceria
dom in channel
Farmhill House
no emergents in channel
TP – more Urtica
drain sp:–
Berula erecta
Glyceria max
Rumex hydrolap.
Solanum dulcamara
Equis fluviatile
Mentha aqua
Caltha
Bd – drain with mature Beech behind
Phragmites on bkv
TP overgrown
Glyceria
Sagittaria
Salix
Alder/Birch
Liable to Flooding
TP – very wide overgrown
BKv 5m wide – q – band of Urtica
Filipend.
Epilobium
Calystegia
Phragmites in Bdv.
Guelder
Salix sp
Ash (T)
Bd – (T)
Bd – line Trees
Sagittaria abundant
No trees along opp bk
SHANNONBRIDGE
FEEDER



BN4
10/6/92
25/7/92
18/3/93
Bd - //// + drain
TP - q access easy
BKv - q overgrown
narrow 1.5m band of
Filipendula ulmaria
Urtica dioica
Galium aparine
Anthriscus sylvestris
Solanum dulcamara
Epilobium hirsutum
49c
Phragmites
Glyceria
Dragonflies abundant
N
Lemna
Sagittaria
Nasturtium officinale
/// - Hawthorn
Ash
Elder
Bd v - q - Filipendula ulmaria
Epilobium hirsutum
Ranunculus repens
Poa trivialis
Poa pratensis
Clay/gravel mound
gravel mound
nice hg in bdv:-
Beech
Oak
Spindle
Hazel
Ash
guelder
TP - q
BKv - q
Cornus sanguinea in hg
Grazed Field dom by
Iris
Juncus
Filipendula
Liable
CANAL
Photo from bridge
1 x due S
1 x due N
Bunberry bridge
OAK
Populus
hg coppiced (March 93)
Field dom by
J. inflex
Lathyrus pratensis
Menyanthes trifoliata
Dactylorhiza fuchsii
Myosotis scorpioides
Valeriana officinalis
Nuphar
ungrazed wet grassland
drain + /// - Salix
Hawthorn
Flooding
style
field dom by:-
Circium
Urtica
Rumex
Glyceria
Scirpus
Iris
oak
guelder
in bdv
BK - Elm
Alder
Ligustrum
beech in bd
Ash saplings
Bd - high hg + excellent calcareous species rich bank
Hg - trimmed, cut back (March 93)
Bd - thin hg
Electric fc
Nuphar
Glyceria
Grazed field dom by
Rumex
Juncus
Iris
Urtica
Barrow Lodge
14
33
50c

BARROW NAVIGATION

BUNBERRY'S BRIDGE - TANKARDSTOWN BRIDGE

KM SECTIONS BN4 - BN6
approx. 2km on east bank

OBSERVATIONS:

- Very attractive rural setting brought about by the presence of wet meadows and grazing cattle on the islands ad also by the diverse range of flowers and tall trees along the bank and boundary. South of Fenton Bridge, the vegetation is coarse and rank resulting in an overgrown towpath.

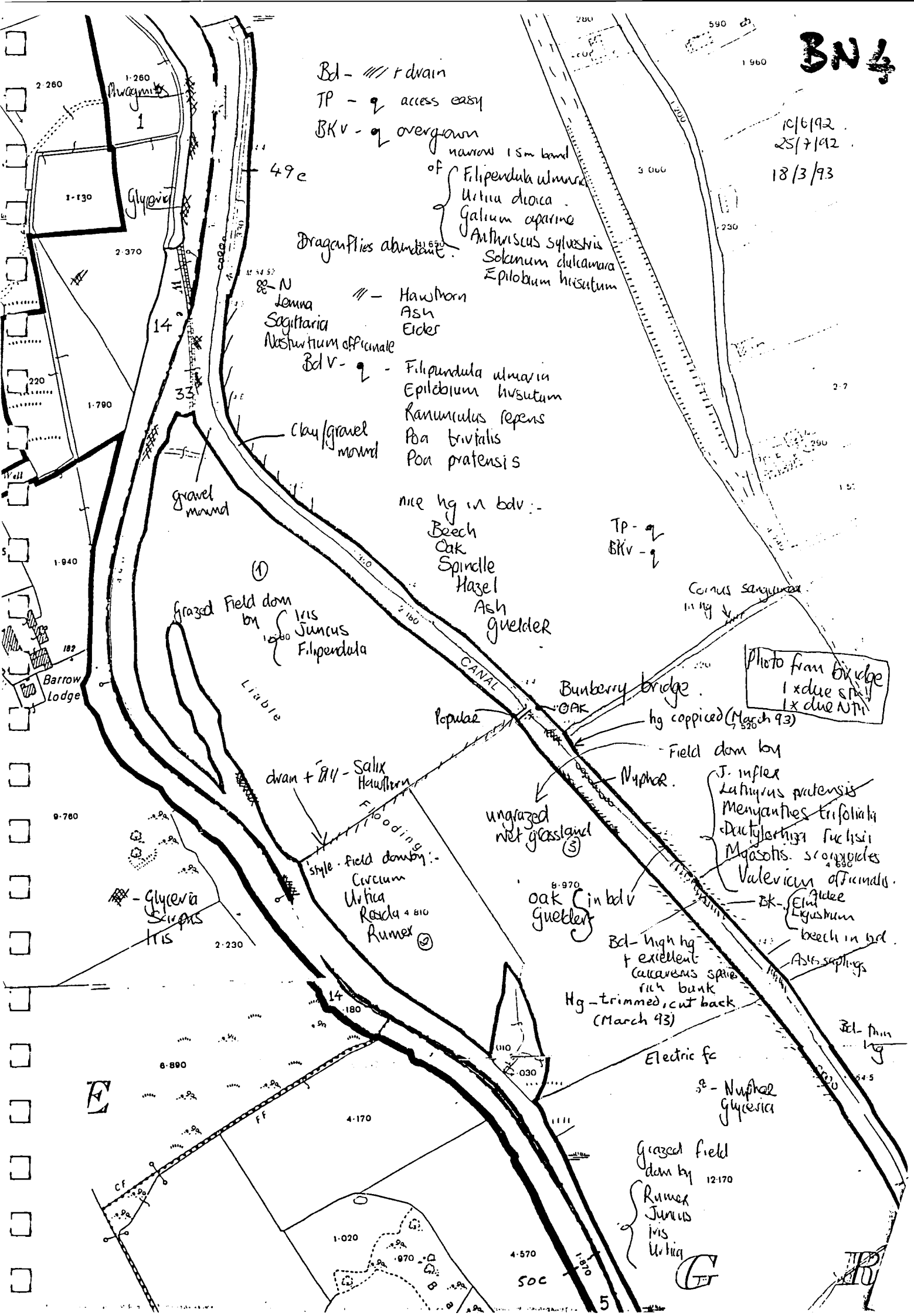
GOOD FEATURES:

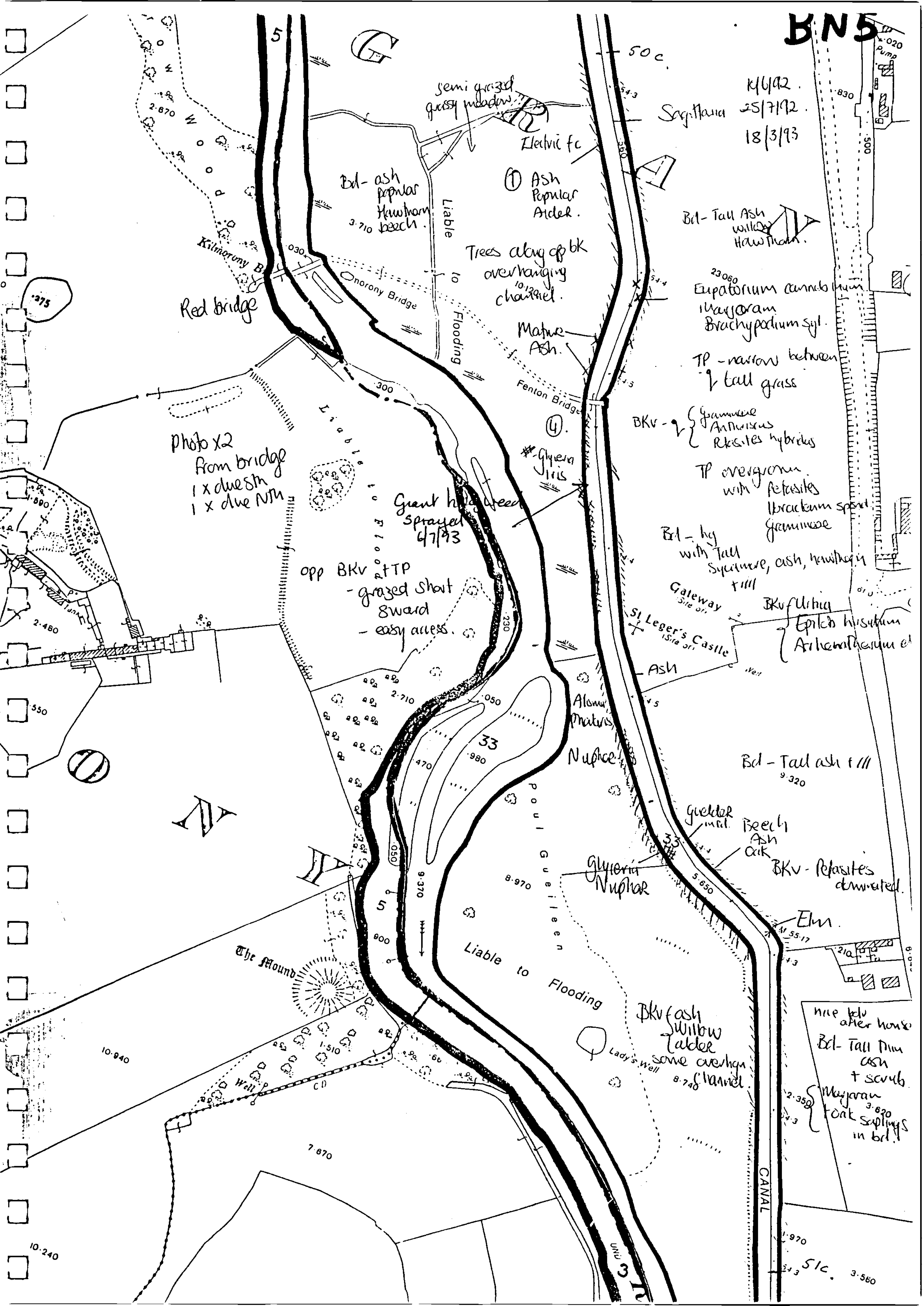
- Large island of species-rich wet meadows. The island is lightly grazed during the summer. Invertebrates abound in the tall vegetation of the wet meadows. The management option of grazing on this island adds to the overall ecological diversity of the area. The west bank of the river is also liable to flooding and is an ASI. There is a diversity of species including the Fly Orchid which is on the decline. The island is not part of OPW property.
- The towpath, between Bunberry's and Fenton Bridges supports a diverse, nutrient-poor flora including Yellow Wort (Blackstonia perfoliata) and Marjoram (Origanum vulgare) (Plate 1).
- The boundary along this stretch also supports a diverse range of nutrient-poor vegetation.
- A diverse range of trees including Beech, Spindle, Oak, Ash and Guelder-rose grow in the boundary between Fenton and Tankardstown Bridges.
- The boundary hedge was trimmed late in 1992 before the 1993 bird-nesting season.
- Good aquatic diversity in the canal with some good examples of reed fringe.
- Sparganium emersum (Unbranched Bur-reed), an invasive aquatic "weed" which is resistant to herbicides does not thrive in the canal along this stretch. Direct sunlight, which supplies the energy to encourage this plant to grow, is prevented from having too strong an impact due to the shading which is brought about by the tall trees along the eastern bank.

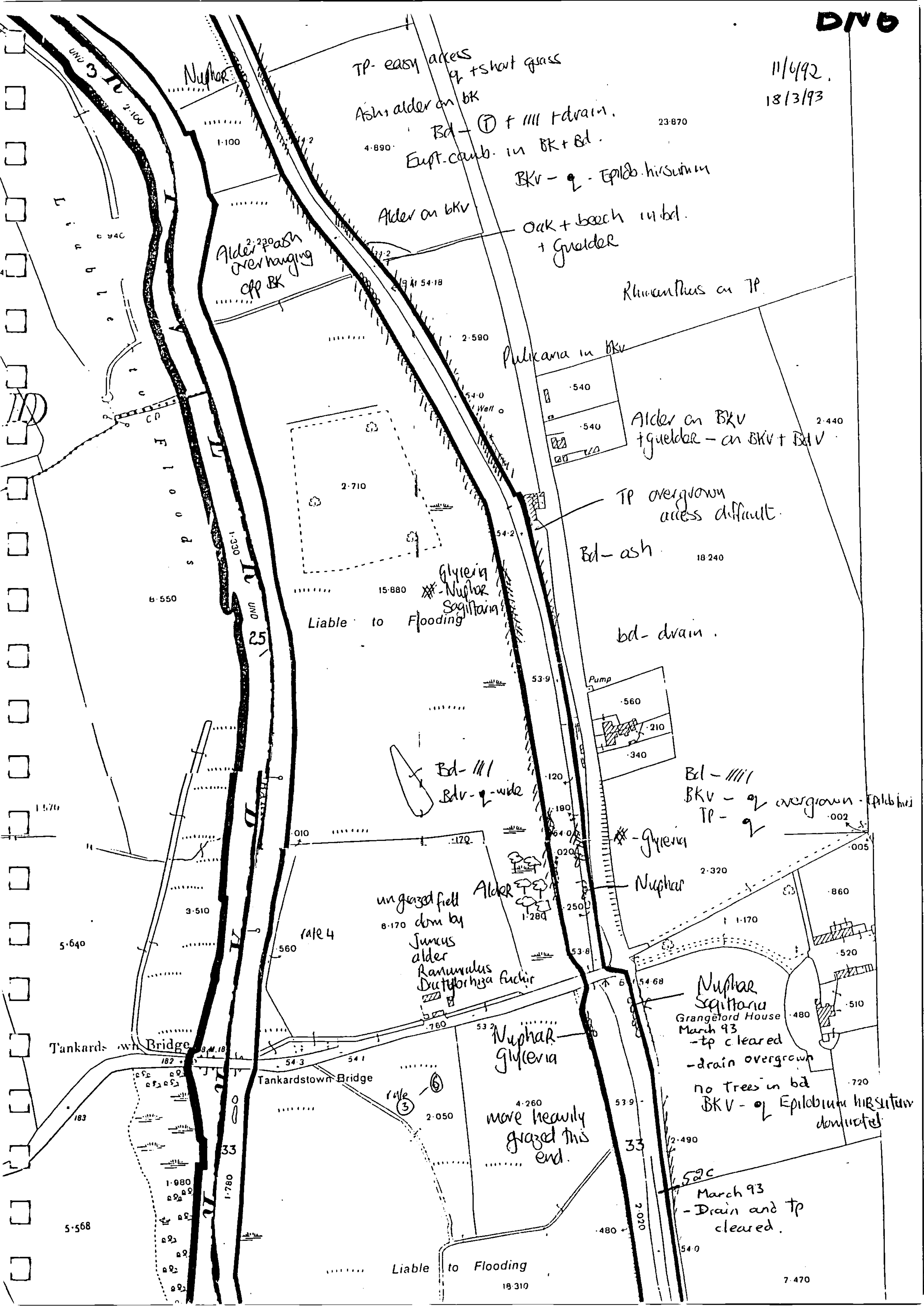
BAD FEATURES:

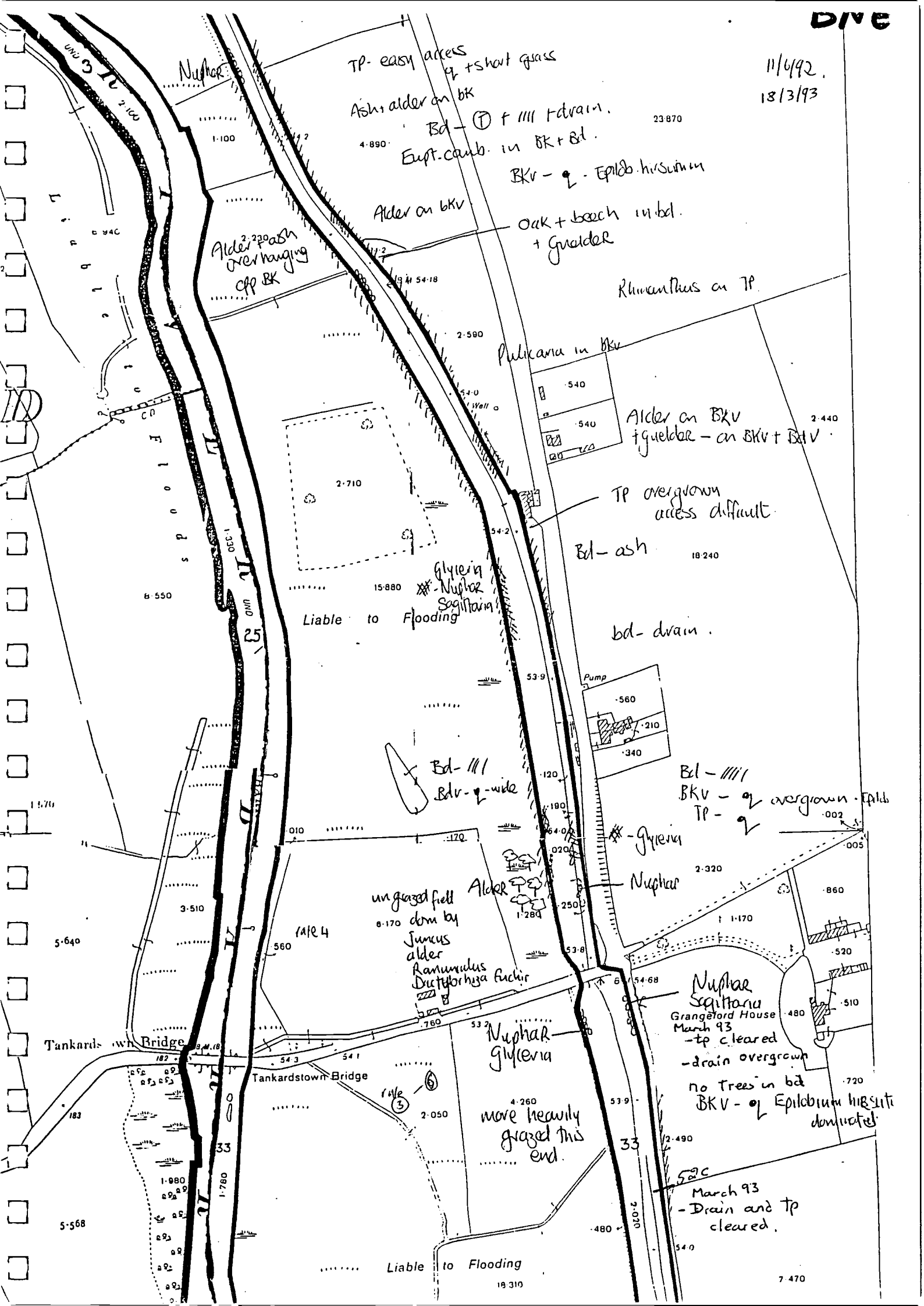
- Spoil has been deposited along the river bank and the vegetation is now dominated by coarse, tall herbaceous species such as Nettles, Docks, Hogweed and Cleavers. These competitive species thrive in the nutrient-rich conditions (supplied by spoil) and their growth extends across the towpath. The path between Fenton and Tankardstown Bridges was not passable in June 1992 - prior to cutting.
- When the vegetation of the towpath was cut in early

seeds of the plants at the edge of the 1-1.5m strip will ensure that ecological diversity will be maintained.
- At present a tractor with flail cutters cuts the towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil, leading to the growth of competitive species. For conservation purposes it is most important that the cuttings are collected so that this soil enrichment does not take place (Contrast Plates 5 and 21).
- Remove some of the branches which overhang the west bank of the canal.
- Giant Hogweed leaves were sprayed in 1993 according to the guidelines laid down in Part 1 of this report. It will be necessary to monitor the area in April/May of 1994 to ascertain if further spraying will be necessary.


BN4
Bd - r drain
TP - access easy
BKv - overgrown
narrow 1 sm band of
Filipendula ulmaria
Urtica dioica
Galium aparine
Anthriscus sylvestris
Solanum dulcamara
Epilobium hirsutum
Dragonflies abundant
49c
N
Lemna
Sagittaria
Nasturtium officinale
Hawthorn
Ash
Elder
Bd V - Filipendula ulmaria
Epilobium hirsutum
Ranunculus repens
Poa trivialis
Poa pratensis
Clay/gravel mound
gravel mound
nice hg in bdv :-
Beech
Oak
Spindle
Hazel
Ash
Guelder
TP -
BKv -
Grazed Field dom by
Iris
Juncus
Filipendula
Barrow Lodge
CANAL
Liable
Cornus sanguinea in hg
Photo from bridge
1 x due S
1 x due NW
Bunberry bridge
OAK
Popular
hg coppiced (March 93)
Field dom by
Nuphar
J. inflex
Lathyrus pratensis
Menyanthes trifoliata
Dactylorhiza fuchsii
Myosotis scorpioides
Valeriana officinalis
BK - Elm
Guelder
Ligustrum
beech in bdv
Ash saplings
ungrazed wet grassland
3
oak in bdv
Guelder
Bd - high hg
+ excellent
calcareous spoil
rich bank
Hg - trimmed, cut back
(March 93)
dram + Bd - Salix
Hawthorn
Flooding
style. Field dom by :-
Cirsium
Urtica
Rosa
Rumex
4
Glyceria
Sparg
Iris
Electric fc
st - Nuphar
Glyceria
Grazed field dom by
Rumex
Juncus
Iris
Urtica
10/6/92
25/7/92
18/3/93
E
G
5


BN5
16/6/92.
25/7/92.
18/3/93
Sagittaria
50c.
51c.
semi grazed grassy meadow
Electric fc
Bd - ash Poplar Hawthorn beech.
① Ash Poplar Alder.
Liable to Flooding
Trees along opp bk overhanging channel.
Bd - Tall Ash willow Hawthorn.
Eupatorium cannabinum Marjoram Brachypodium syl.
TP - narrow between & tall grass
Kilmorony Bridge
Red bridge
Mature Ash.
Fenton Bridge
④.
BKv - Gramineae Anthriscus Petasites hybridus
TP overgrown with Petasites Bracken spread Gramineae
Glyceria Iris
Photo x2 from bridge 1 x due Sth 1 x due Nth
Liable to Flooding
Giant hogweed sprayed 6/7/93
opp BKv & TP - grazed short sward - easy access.
Bd - hg with Tall Sycamore, ash, hawthorn + m
Gateway Site of
St Leger's Castle Site of
BKv Urtica Epilob hirsutum Arrhenatherum el
Ash
Alnus Mature
Nuphar
Bd - Tall ash + m
Guelder ros.
Beech Ash Oak
BKv - Petasites dominated.
Glyceria Nuphar
Elm.
Poul Gueileen
The Mound
Liable to Flooding
BKv ash Willow Alder some overhanging channel.
Lady's Well
Well
nice bdu after house
Bd - Tall Elm ash + scrub
Marjoram Oak saplings in bd.
CANAL
Pump
Tank
2·870
3·710
2·480
2·710
·550
·470
·980
9·370
8·970
10·940
1·510
7·870
10·240
8·740
23·060
9·320
5·650
2·350
3·620
1·970
3·560
·275
·030
·300
·050
·230
·900
·830
·020
·500
·210
33
5
3


DNB
11/6/92.
18/3/93
Nuphar
TP- easy access
q +short grass
Ash, alder on bK
Bd - (T) + //// +drain.
Bd - (T) + //// +drain.
Eupt. canab. in BK + Bd.
BKv - q - Epilob. hirsutum
Alder on bKv
Oak + beech in bd.
+ Guelder
Alder + ash overhanging opp BK
Rhinanthus on TP
Pulicaria in BKv
Alder on BKV
+guelder - on BKV + BdV
TP overgrown access difficult.
Bd - ash
Glyceria
Nuphar
Sagittaria
Liable to Flooding
bd - drain.
Pump
Well
Bd - ////
Bdv - q - wide
Bd - ////
BKV - q overgrown - Epilob hirs
TP - q
Glyceria
Nuphar
Alder
ungrazed field dom by
Juncus
alder
Ranunculus
Dactylorhiza fuchsii
rale 4
Nuphar
Sagittaria
Grangeford House
March 93
-tp cleared
-drain overgrown
no Trees in bd
BKV - q Epilobium hirsutum dominated
Tankardstown Bridge
Tankardstown Bridge
Nuphar
Glyceria
rale (3)
(6)
more heavily grazed this end.
March 93
- Drain and tp cleared.
Liable to Flooding
Floods
25
33
33


DIVE
11/6/92.
18/3/93
TP- easy access & short grass
Ash + alder on bk
Bd - (T) + IIII + drain.
Expt. comb. in BK + Bd.
BKv - ♀ - Epilob. hirsutum
Alder on bKv
Oak + beech in bd.
+ Guelder
Alder + ash overhanging opp BK
Rhinanthus on TP
Pulicaria in BKv
Alder on BKV
+ guelder - on BKV + BdV
TP overgrown
access difficult
Bd - ash
Glyceria
Nuphar
Sagittaria
Liable to Flooding
bd - drain.
Pump
Bd - IIII
BdV - ♀ wide
Bd - IIII
BKV - ♀ overgrown - Epilob
TP - ♀
Glyceria
Nuphar
Alder
ungrazed field
Juncus
alder
Ranunculus
Dactylorhiza fuchsii
Nuphar
Sagittaria
Grangeford House
March 93
-tp cleared
-drain overgrown
no trees in bd
BKV - ♀ Epilobium hirsutum
dominated
Nuphar
Glyceria
Tankardstown Bridge
Tankardstown Bridge
more heavily
grazed this
end.
March 93
- Drain and tp
cleared.
Liable to Flooding

TANKARDSTOWN BR. - MAGANEY BR. **KM SECTIONS BN 6-BN10**
approx. 4km on east bank

OBSERVATIONS:

The river runs parallel to the road between Tankardstown and Levitstown. There is an enclosed aspect to the river south of Levitstown and at one point in BN8 there is a sequence of rising steps extending to approximately 6m above river level on the west bank (Plate 3). The towpath on the east bank is also enclosed as the trees of the bank arch to meet those of the boundary.

GOOD FEATURES:

- Large island of species-rich wet meadows. The island is lightly grazed during the summer. Invertebrates abound in the tall vegetation of the wet meadows. The management option of grazing on this island adds to the overall ecological diversity of the area. Trees/scrub which provide another habitat are found on a strip of land at the canal edge of the island. The ecology of the island is similar to that found in the ASI along the west bank of the river just north of here.
- A diverse range of trees present along all of the boundary and much of the bank with a rich diversity of flowering species in the ground layer (Plate 4).
- There is a stretch of towpath which is covered in gravel from nutrient-poor spoil. Species characteristic of nutrient-poor conditions grow here. In June this stretch was dominated by Oxeye Daisy (Leucanthemum vulgare) (Plate 4).
- A vegetation tunnel forms over the towpath along part of the stretch where trees of the bank and boundary meet (Plate 4).
- Good aquatic diversity in the river
- Boundary drain rich in species adds to the overall ecology and diversity of the area.
- Two small islands (OPW property) are dominated by scrub. These scrub-covered islands in this undisturbed area provide ideal cover and refuge for otters.

BAD FEATURES:

- Giant Hogweed was found on the east bank of BN9 in 1993; on the west bank of BN10 in 1993 and at three locations on Maganey Island immediately north of Maganey Bridge (BN10) during both 1992 and 1993.
- Spoil has been deposited along the river bank and the vegetation is now dominated by coarse, tall herbaceous species such as Nettles, Docks, Hogweed and Cleavers. These competitive species thrive in the nutrient-rich conditions (supplied by spoil) and their growth extends across the towpath. In sections the coarse, rank vegetation is interspersed with nutrient-poor vegetation

(as mentioned above).
- The bankverge in BN9 and BN10 is quite wide and also dominated by tall, coarse herbaceous species. As a result, a view of the river from the towpath is hindered.
- When the vegetation of the towpath was cut in early July 1992, the cuttings were not removed (Plate 5). The width of maintained/cut towpath is too great.
- The towpath at the back of a house which is being restored (immediately north east of the lifting bridge) was impassable in 1992 but cleared during early 1993.

OBJECTIVES:

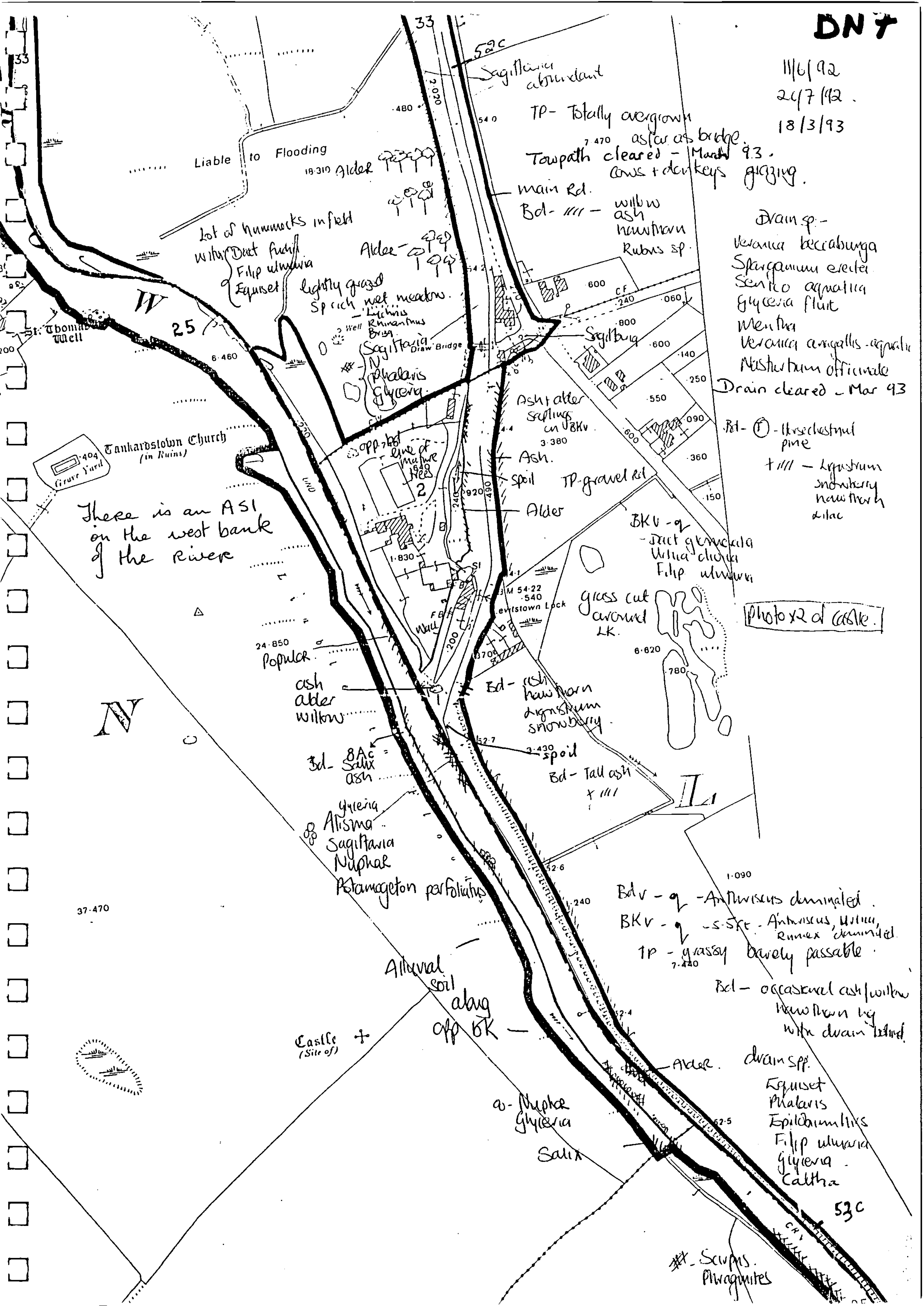
- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.
- To eliminate, in so far as is possible, Giant Hogweed from the system.

RECOMMENDATIONS:

- The vegetation on the nutrient-rich spoil deposited on the river bank, should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from the soil. As a result there will be an increase in non-competitive species and diversity. Where the bankverge is sufficiently wide a band of the coarse, rank vegetation can remain, provided it is not near the towpath and does not interfere with views of the river. This vegetation attracts its own range of insects.
- Where the spoil has fallen on the towpath, a similar vegetation cutting regime should be put into operation as outlined for the banks. In the following year, the vegetation will be more diverse and not so vigorous. The number of cuttings can then be reduced. All cuttings must be removed.
- When the rank, coarse, competitive vegetation has been removed through frequent cutting in one year a single cut at the end of each year should then suffice to maintain ecological diversity. A single cut ensures that scrub species do not colonise the towpath and will also ensure that the diversity of the seed bank will not be reduced. Cutting of species before they set seed eliminates the seeds of that particular plant, thus reducing ecological diversity. If, for amenity purposes, it is necessary to maintain a short vegetation sward for walkers, then a strip of 1-1.5m wide has been researched as being wide enough. This strip may then be subjected to frequent cuts, ensuring always that the cuttings are collected. In this way the only reduction

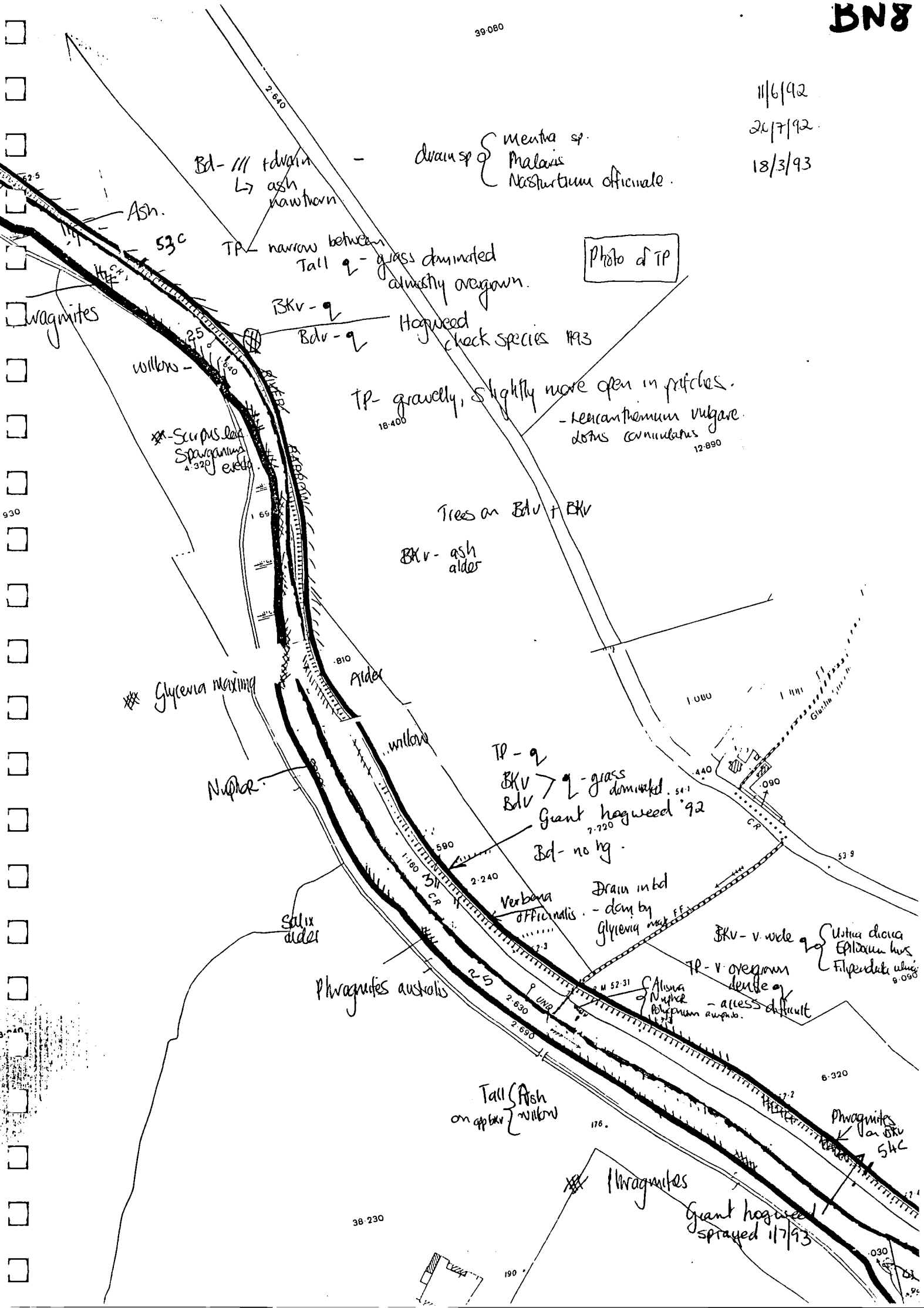
in the seed bank will occur in this narrow strip. The seeds of the plants at the edge of the 1-1.5m strip will ensure that ecological diversity will be maintained (Contrast Plates 5 and 21).

- At present a tractor with flail cutters cuts the towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil, leading to the growth of competitive species. For conservation purposes it is most important that the cuttings are collected so that this soil enrichment does not take place (Contrast Plates 5 and 21).
- The Giant Hogweed was sprayed in 1992 and 1993 (see Part 1 Ch 3) and its location mapped. Sites should be monitored in April/May 1994 to ascertain if further spraying will be necessary.


DN7
11/6/92
24/7/92
18/3/93
52C
Sagittaria abundant
TP - Totally overgrown as far as bridge.
Towpath cleared - March 93.
Cows + donkeys grazing.
Liable to Flooding
Alder
main Rd.
Bd - //// - willow ash hawthorn Rubus sp.
Drain sp. -
Veronica beccabunga
Sparganium erectum
Senecio aquatica
Glyceria fluit
Mentha
Veronica anagallis-aquatica
Nasturtium officinale
Drain cleared - Mar 93
Lot of hummocks in field with Dact fuchsii, Filip ulmaria, Equiset
lightly grazed Sp rich wet meadow.
Lychnis
Rhinanthus
Briza
Sagittaria
Phalaris
Glyceria
Well
Draw Bridge
Sagittaria
W
25
St. Thomas's Well
Tankardstown Church (in Ruins)
Grave Yard
Ash + alder sapling on BKv
line of mature trees
Ash.
spoil
TP - gravel Rd
Alder
Bd - (T) - Horsechestnut pine
+ //// - Ligustrum snowberry hawthorn Lilac
There is an ASI on the west bank of the River
BKv - q - Dact fuchsii, Urtica dioica, Filip ulmaria
grass cut around LK.
Levitstown Lock
Photo x2 of castle.
Well
Popular
ash alder willow
Bd - ash hawthorn Ligustrum snowberry.
N
Bd - Salix ash
spoil
Bd - Tall ash + ////
Glyceria
Alisma
Sagittaria
Nuphar
Potamogeton perfoliatus
Bdv - q - Anthriscus dominated.
BKv - q - S.Sft - Anthriscus, Urtica, Rumex dominated.
TP - grassy barely passable.
Bd - occasional ash/willow hawthorn hg with drain behind.
Alluvial soil along opp BK
Castle (Site of)
Alder.
drain spp.
Equiset
Phalaris
Epilobium hirs
Filip ulmaria
Glyceria
Caltha
q - Nuphar Glyceria
Salix
52C
Scirpus.
Phragmites

BN8

11/6/92
22/7/92
18/3/93

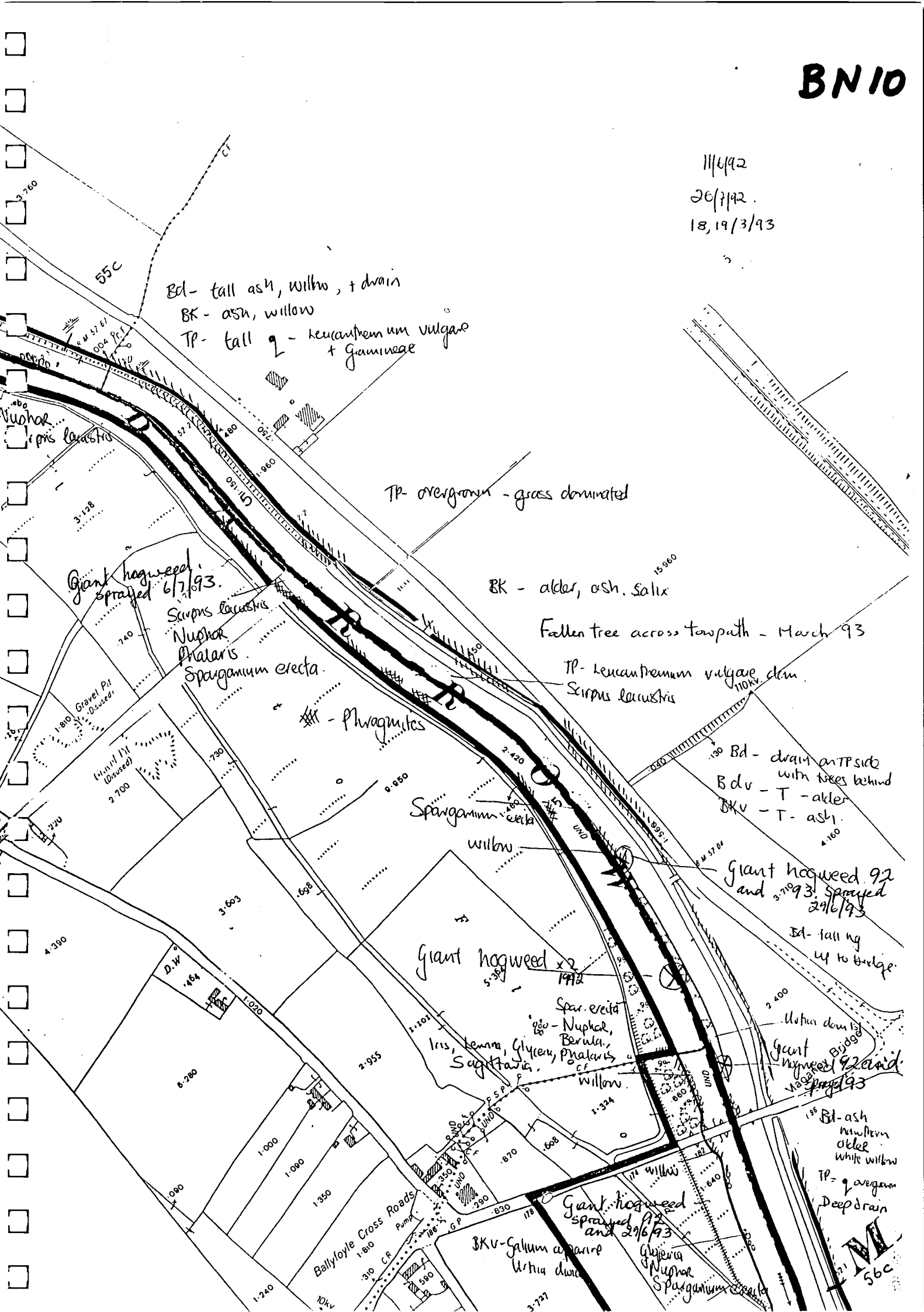


BN10

11/6/92

26/7/92.

18, 19/3/93



MAGANEY BR. - BESTFIELD LOCK **KM SECTIONS BN10-BN16**
approx. 6km on east bank

OBSERVATIONS:

The overall impression along this stretch is of wooded countryside. There are lovely views of very fine majestic trees sweeping down to the river edge along the west bank. There is also the wooded east bank in the vicinity of Bella Vista Estate. There is an enclosed aspect along this stretch. The people of Carlow town swim in the pool-like area immediately downstream of Bestfield Weir. The towpath between the two locks - north of the swimming area - becomes overgrown with coarse vegetation which makes access difficult.

GOOD FEATURES:

- Good aquatic diversity with good stands of fringing vegetation of Reeds, Rushes and Bur-reeds along both the river and canal sections (Plate 7).
- Diverse boundary hedge including an abundance of Spindle, Guelder-rose, Alder Buckthorn and Hazel. There is also a diverse ground flora to add to the diversity.
- Species-rich boundary drain.
- Many mature trees on the offside including the majestic White Willow (BN13-16 west bank).
- Small wooded island (BN14) provides good cover for otters.
- Wooded areas around Bella Vista Estate (not OPW property, on the east bank BN15) adds further to the overall ecological diversity of the area.
- A vegetation tunnel forms over the towpath along part of the stretch where trees of the bank and boundary meet.

BAD FEATURES:

- Giant Hogweed as found immediately south of Maganey Bridge (BN10) on the west bank in 1992; in two locations in the wide east bank verge in 1992; on the west bank of BN11 in 1992 and 1993; at the west bank at the lock in BN12 during 1993: at a location immediately south of Maganey Lock (BN12) on the east bank during 1992 and at another larger stand in the same area during both 1992 and 1993 and on the west bank at the weir in BN16 in 1993.
- Spoil has been deposited along the river bank and the vegetation here and along much of the towpath is now dominated by coarse, tall herbaceous species such as Nettles, Docks, Hogweed and Cleavers. These competitive species thrive in the nutrient-rich conditions (supplied by spoil) and their growth extends across the towpath. In sections the coarse, rank vegetation is interspersed with nutrient-poor vegetation (as mentioned above). The

path between the two locks was not passable in June 1992 prior to cutting (Plate 8).
- The bankverge (BN12 and BN13) is quite wide and also dominated by tall, coarse herbaceous species. As a result, a view of the river from the towpath is hindered.
- When the vegetation of the towpath was cut in early July 1992, the cuttings were not collected. The width of maintained/cut towpath is too great.
- Sportsmen with guns seen on the towpath in the vicinity of Bella Vista Estate.
- Weir overgrown (Plate 26).

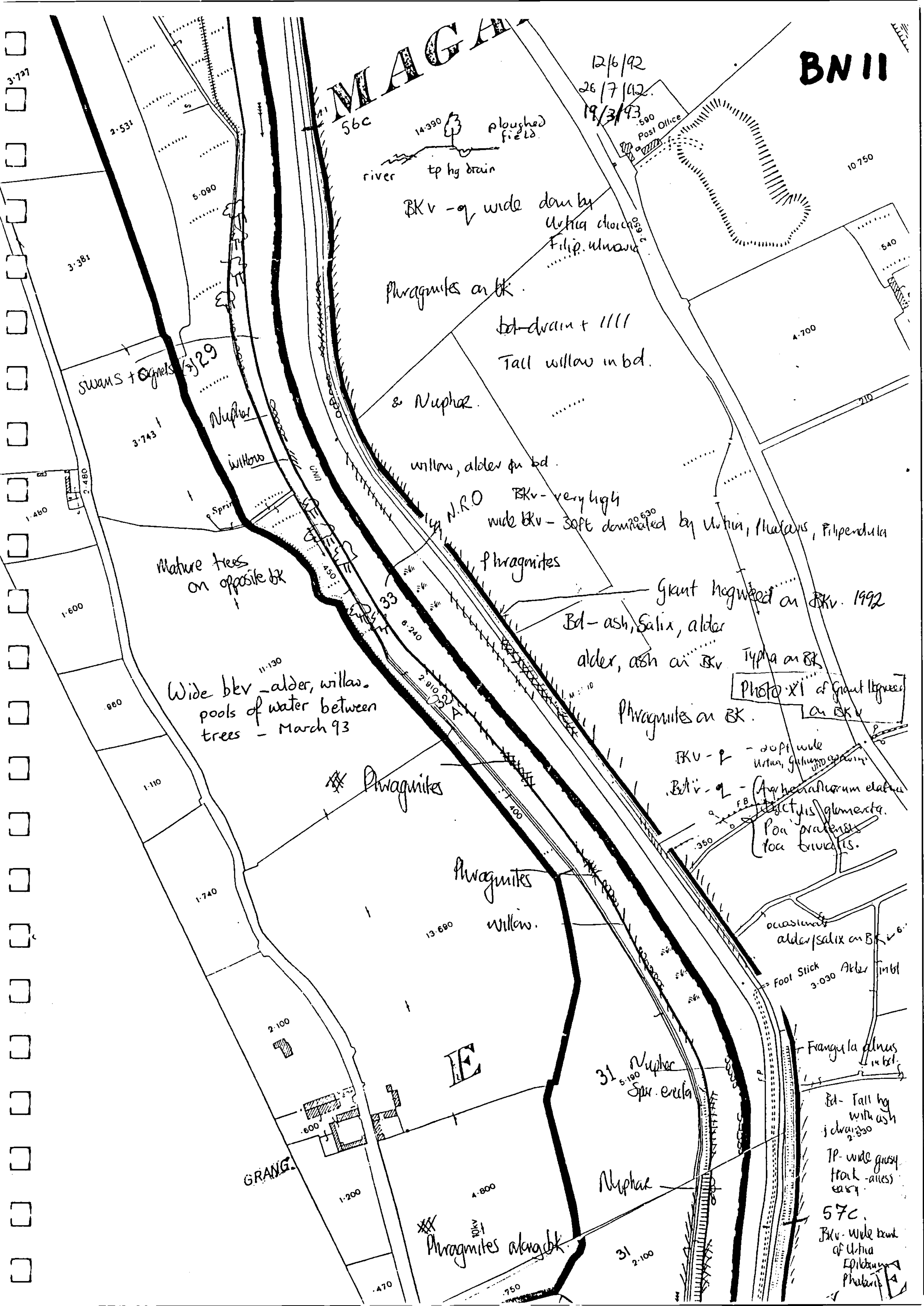
OBJECTIVES:

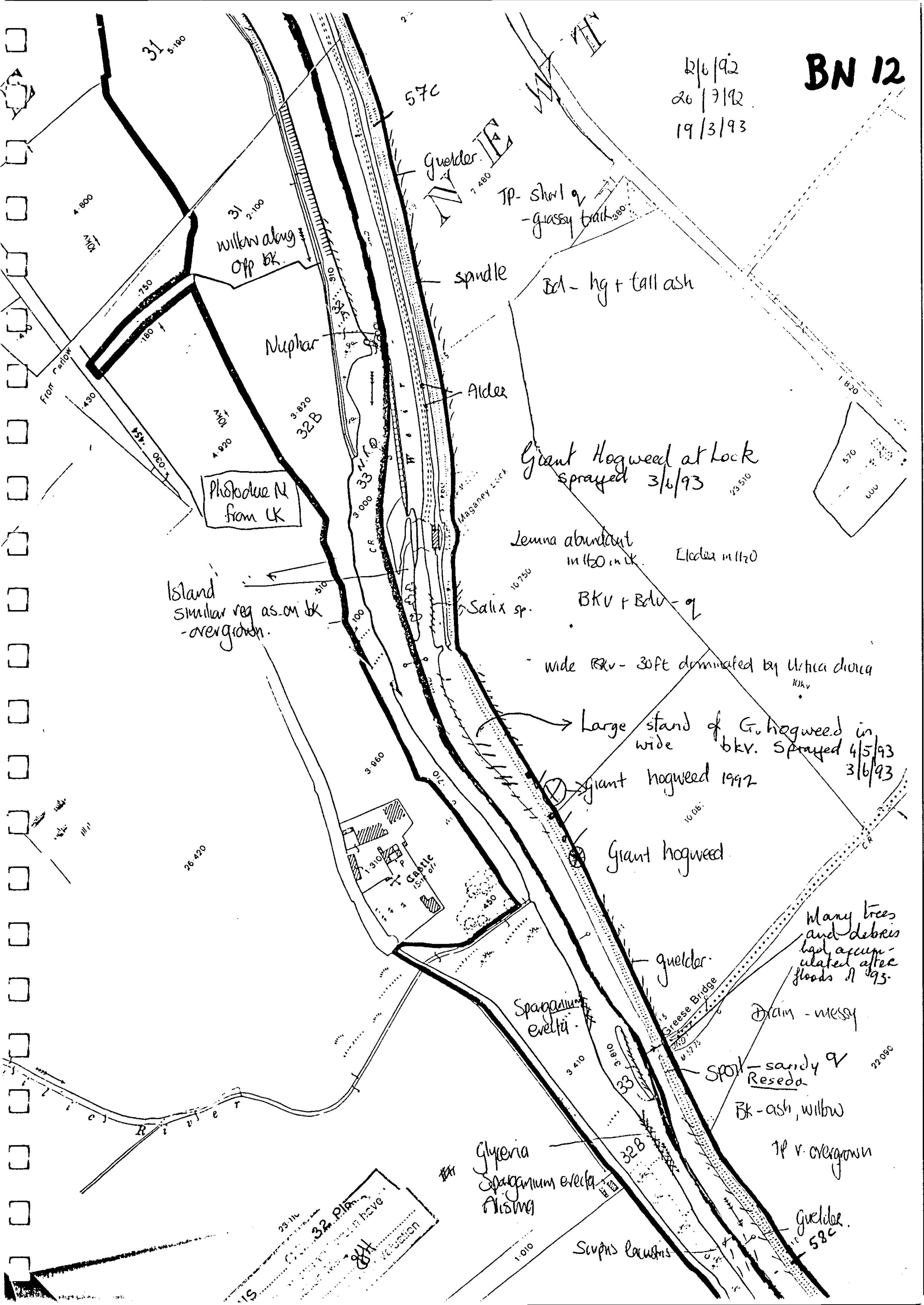
- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.
- To eliminate, in so far as is possible, Giant Hogweed from the system.

RECOMMENDATIONS:

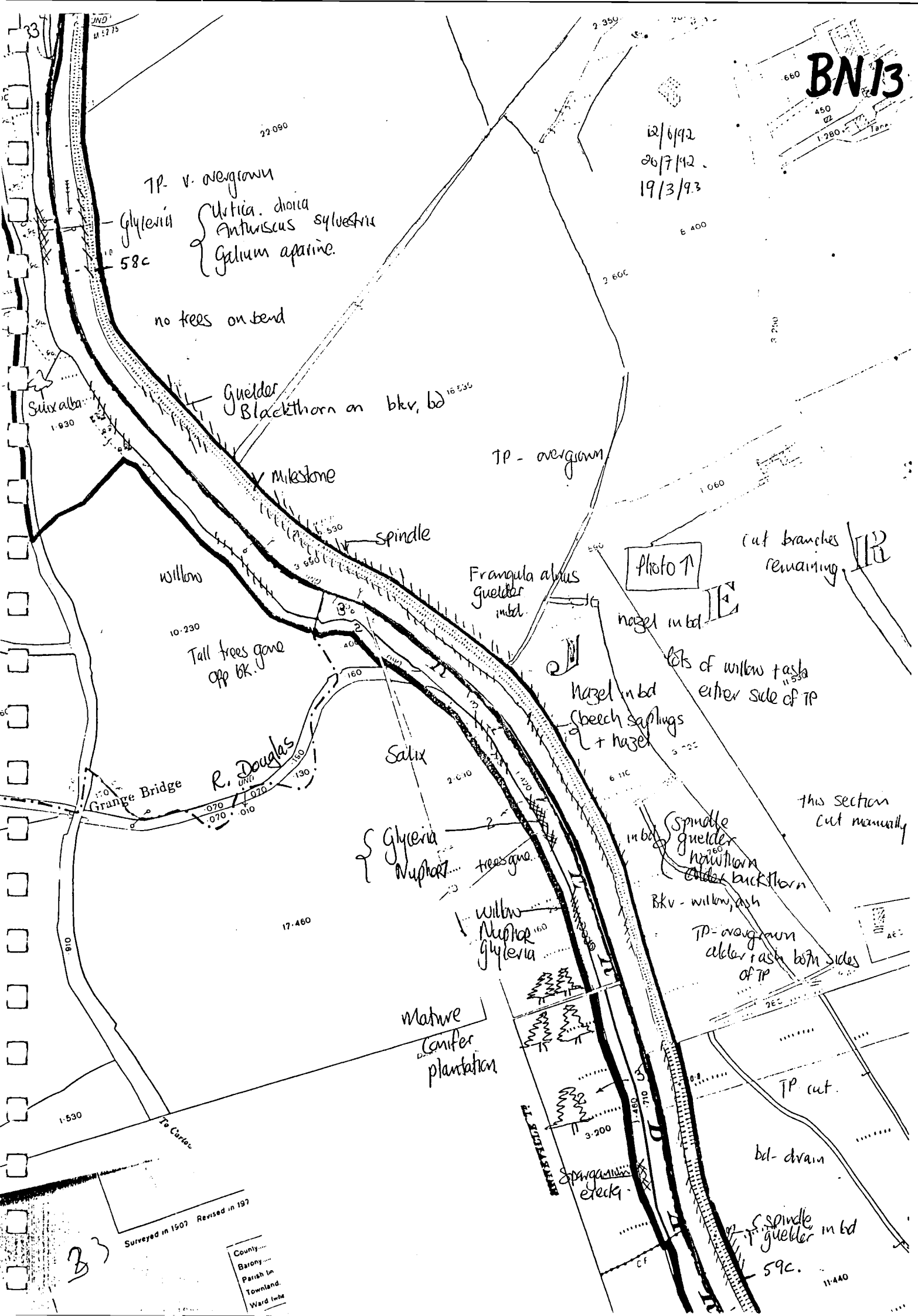
- Protect the island, boundary hedge and boundary drain in future canal operations.
- The vegetation on the nutrient-rich spoil deposited on the river bank, should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from the soil. As a result there will be an increase in non-competitive species and diversity (Contrast Plates 5 and 21). Where the bankverge is sufficiently wide a band of the coarse, rank vegetation can remain, provided it is not near the towpath and does not interfere with views of the river. This vegetation attracts its own range of insects.
- Where the spoil has fallen on the towpath, a similar vegetation cutting regime should be put into operation as outlined for the banks. In the following year, the vegetation will be more diverse and not so vigorous. The number of cuttings can then be reduced. All cuttings must be removed.
- When the rank, coarse, competitive vegetation has been removed through frequent cutting in one year a single cut at the end of each year should then suffice to maintain ecological diversity. A single cut ensures that scrub species do not colonise the towpath and will also ensure that the diversity of the seed bank will not be reduced. Cutting of species before they set seed eliminates the seeds of that particular plant, thus reducing ecological diversity. If, for amenity purposes, it is necessary to maintain a short vegetation

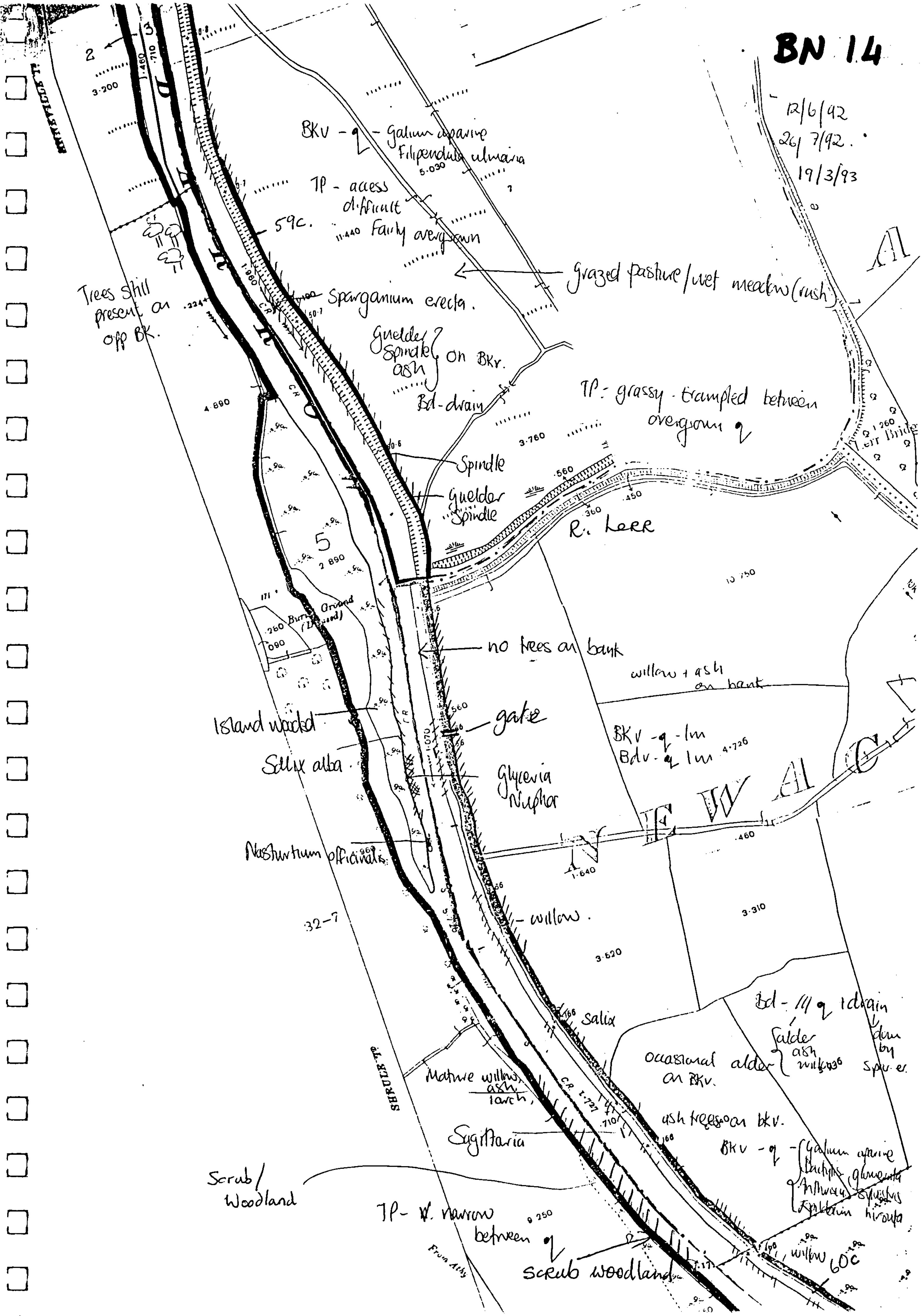
sward for walkers, then a strip of 1-1.5m wide has been researched as being wide enough. This strip may then be subjected to frequent cuts, ensuring always that the cuttings are collected. In this way the only reduction in the seed bank will occur in this narrow strip. The seeds of the plants at the edge of the 1-1.5m strip will ensure that ecological diversity will be maintained.
- At present a tractor with flail cutters cuts the towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil, leading to the growth of competitive species. For conservation purposes it is most important that the cuttings are collected so that this soil enrichment does not take place (Contrast Plates 5 and 21).
- Bankside trees remain along some of this stretch. These should not be removed unnecessarily. Spoil may be deposited between them.
- The Giant Hogweed was sprayed in 1992 and 1993 (see Part 1 Ch 3) and its location mapped. The site should be monitored in April/May 1994 to ascertain if further spraying is necessary.
- Enlist the co-operation of the landowner of the woodland at Bella Vista Estate in preserving the overall ecological diversity of the area.
- Clear the weir of excess vegetation. As each year passes, more vegetation becomes established, making it increasingly difficult for salmon to move upstream (Plate 26).

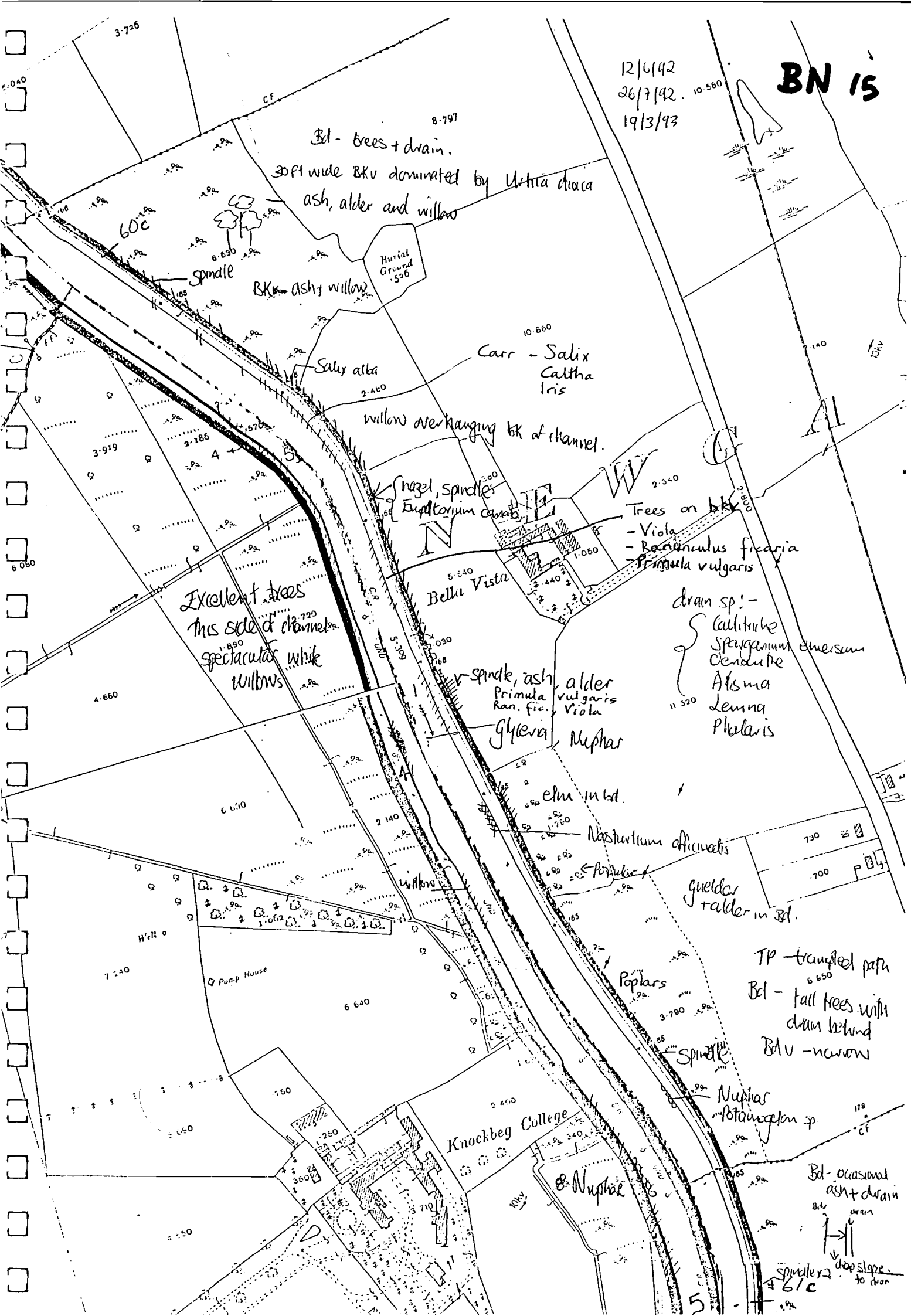

BN11
12/6/92
26/7/92
19/3/93
MAGA
56c
ploughed field
river
tp hg drain
Post Office
BKv - q wide dom by Urtica dioica Filip. ulmaria
Phragmites on bk.
bd-drain + ////
Tall willow in bd.
& Nuphar
Swans + Cygnets (x) 29
Nuphar
willow
willow, alder on bd
N.R.O
BKv - very high
wide BKv - soft dominated by Urtica, Phalaris, Filipendula
Phragmites
Mature trees on opposite bk
Giant hogweed on BKv 1992
Bd - ash, Salix, alder
alder, ash on BKv
Typha on BK
Photo X1 of Giant Hogweed on BKv
Wide bkv - alder, willow. pools of water between trees - March 93
Phragmites on BK.
Phragmites
Phragmites
willow.
occasional alder/salix on BKv
Foot Stick
Alder in bl
Frangula alnus in bd.
31 Nuphar
Spr. erecta
Bd - Tall hg with ash
TP - wide grassy track - access easy
57c.
BKv - wide band of Urtica Epilobium Phalaris
GRANG.
Nuphar
Phragmites along bk.
E

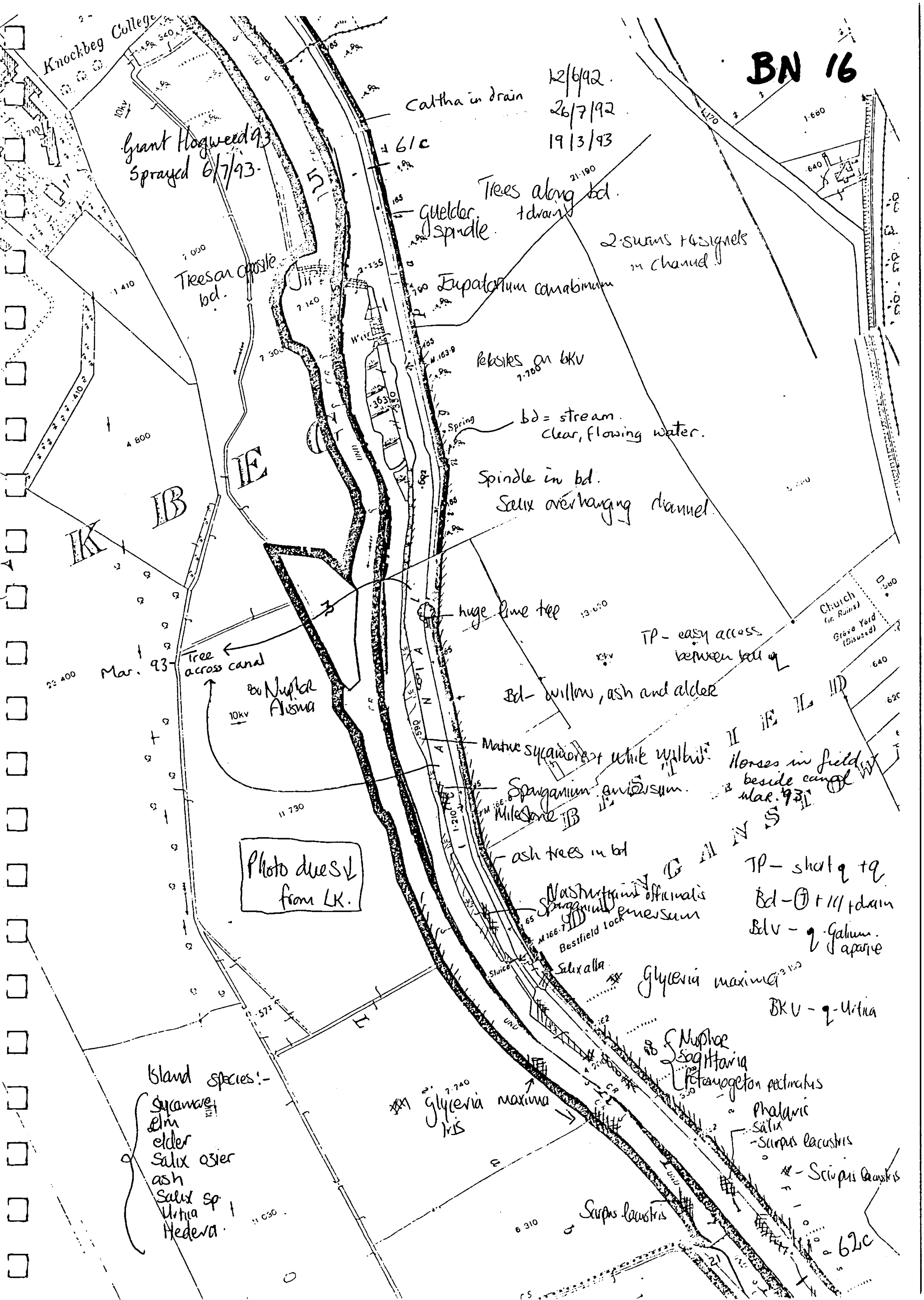


BN 12
2/6/92
26/7/92
19/3/93
57c
Guelder
JP - short q - grassy track
Willow along opp bk
spindle
Bd - hg + tall ash
Nuphar
Alder
32B
Giant Hogweed at Lock sprayed 3/6/93
Photodue N from LK
33
Maganey Lock
Lemna abundant in H2O in LK.
Elodea in H2O
Island similar veg as on bk - overgrown.
Salix sp.
BKV + Bdv - q
wide BKv - 30ft dominated by Urtica dioica
Large stand of G. hogweed in wide bkv. Sprayed 4/5/93 3/6/93
Giant hogweed 1992
Giant hogweed
Castle
guelder.
Many trees and debris had accumulated after floods Jan 93.
Sparganium erectum.
Greese Bridge
Drain - messy
Spoil - sandy q
Reseda
Bk - ash, willow
JP v. overgrown
River
Glyceria
Sparganium erecta
Alisma
Guelder
58c
Scirpus lacustris


BN13
12/6/92
26/7/92
19/3/93
TP- v. overgrown
Glyceria
Urtica. dioica
Anthriscus sylvestris
Galium aparine.
58c
no trees on bend
Guelder
Blackthorn on bkv, bd
Salix alba
milestone
TP - overgrown
spindle
willow
Tall trees gone opp BK.
Frangula alnus
Guelder
in bd
Photo ↑
cut branches remaining
hazel in bd
lots of willow ash either side of TP
hazel in bd
beech saplings
+ hazel
Salix
Glyceria
Nuphar.... trees gone
R. Douglas
Grange Bridge
this section cut manually
Spindle
guelder
hawthorn
elder buckthorn
in bd
Bkv - willow, ash
willow
Nuphar
Glyceria
TP- overgrown
elder ash both sides of TP
Mature
Conifer
plantation
TP cut.
bd- drain
Sparganium
erectum
spindle
guelder in bd
59c.
To Carlow
Surveyed in 1907 Revised in 197
County.....
Barony.....
Parish in
Townland.
Ward in


BN 14
12/6/92
26/7/92
19/3/93
BKv - q - Galium aparine
Filipendula ulmaria
TP - access difficult
Fairly overgrown
59c.
Grazed pasture / wet meadow (rush)
Trees still present on off BK.
Sparganium erecta.
Guelder Spindle ash } on BKr.
Bd-drain
TP - grassy. trampled between overgrown q
Spindle
Guelder Spindle
R. Leer
Burial Ground (Disused)
no trees on bank
willow + ash on bank
Island wooded
gate
Salix alba
BKv - q - 1m
Bdv. q 1m
Glyceria
Nuphar
Nasturtium officinalis
- willow.
Salix
Bd - /// q 1 drain
alder ash willow
Occasional alder on BKv.
drain by Spur er.
Mature willow, ash larch,
ash trees on bkv.
BKv - q - Galium aparine
Dactylis glomerata
Anthriscus sylvestris
Epilobium hirsuta
Sagittaria
Scrub / Woodland
TP - v. narrow between q
Scrub woodland
willow 60c
NEWAC
SHRULE Tᴰ
3·200
4·890
5
2 890
32-7
3·760
3·620
3·310
4·726
9·250
1·640
5·030
11·440
Leer Bridge
From Athy


BN 15
12/6/92
26/7/92.
19/3/93
Bd - trees + drain.
30ft wide BKv dominated by Urtica dioica
ash, alder and willow
60c
Spindle
BKv - ash, willow
Burial Ground
Salix alba
Carr - Salix
Caltha
Iris
willow overhanging bk of channel.
hazel, spindle
Eupatorium cann.
Trees on bkv
- Viola
- Ranunculus ficaria
- Primula vulgaris
Bellu Vista
drain sp:-
Callitriche
Sparganium emersum
Oenanthe
Alisma
Lemna
Phalaris
Excellent trees
this side of channel
spectacular white
willows
spindle, ash
Primula
Ran. fic.
alder
vulgaris
Viola
Glyceria
Nuphar
elm in bd.
Nasturtium officinalis
Populus
willow
Guelder
alder in Bd.
Well
Pump House
TP - trampled path
Bd - tall trees with
drain behind
BAv - narrow
Poplars
Spindle
Nuphar
Potamogeton sp.
Knockbeg College
Nuphar
Bd - occasional
ash + drain
drain
drop slope
to drain
spindle x2
6/c



BN 16
Knockbeg College
12/6/92.
26/7/92
19/3/93
Caltha in drain
61c
Giant Hogweed 93
Sprayed 6/7/93.
Trees along bd.
+ drain
Guelder
Spindle
2 swans + 4 signets
in channel
Trees on opposite bd.
Eupatorium cannabinum
Petasites on bKv
bd = stream.
Clear, flowing water.
Spindle in bd.
Salix overhanging channel
huge lime tree
Church (in Ruins)
Grave Yard (Disused)
TP - easy access
Mar. 93
Tree across canal
Nuphar
Alisma
Bd - willow, ash and alder
Mature sycamore + white willow
Horses in field beside canal
Mar. 93
Sparganium emersum.
Milestone
ash trees in bd
Photo dues↓
from LK.
TP - short q + q
Bd - + /// + drain
Nasturtium officinalis
Sparganium emersum
Bestfield Lock
Bdv - q Galium aparine
Sluice
Salix alba
Glyceria maxima
BKv - q - Urtica
Nuphar
Sagittaria
Potamogeton pectinatus
Island species:-
Sycamore
elm
elder
Salix osier
ash
Salix sp.
Urtica
Hedera.
Glyceria maxima
Iris
Phalaris
Salix
- Scirpus lacustris
- Scirpus lacustris
Scirpus lacustris
62c

BESTFIELD LOCK - CARLOW LOCK **KM SECTIONS BN16-BN19**
approx. 3.5km on east bank

OBSERVATIONS:

- Immediately south of the lock is an urban stretch of river and this contrasts greatly with the preceeding section. There is the sugar factory, the high spoil heaps and settling ponds on the west bank, stagnant foul-smelling ponding areas along by the towpath on the east bank and the hustle and bustle of Carlow town. The towpath has been widened to 2m in early 1993 and bordered by coping stones.

GOOD FEATURES:

- The towpath along this stretch, unlike that between Maganey and Bestfield Locks, is pleasant underfoot though uncut. The vegetation of the towpath consists of trample-resistant and low growing meadow species which do not pose a problem for the walker (Plate 10). This stretch of towpath is frequently used both by workers from the sugar factory and by those swimming at Bestfield Weir. The stretch between the sugar factory and Carlow is surfaced.
- Approaching the sugar factory from the north (along the east bank) there is a wide band of meadow grasses contrasting with the vegetation of the towpath. There was an abundance of moths, butterflies and other insects along this stretch.
- Very mature trees along the boundary with a layer of lower growing flowering species in the bankverge.
- Species-rich boundary drain for most of the length.
- A wide range of undisturbed habitats in the vicinity of the lock and weir south of Graiguecullen Bridge (Plate 12).

BAD FEATURES:

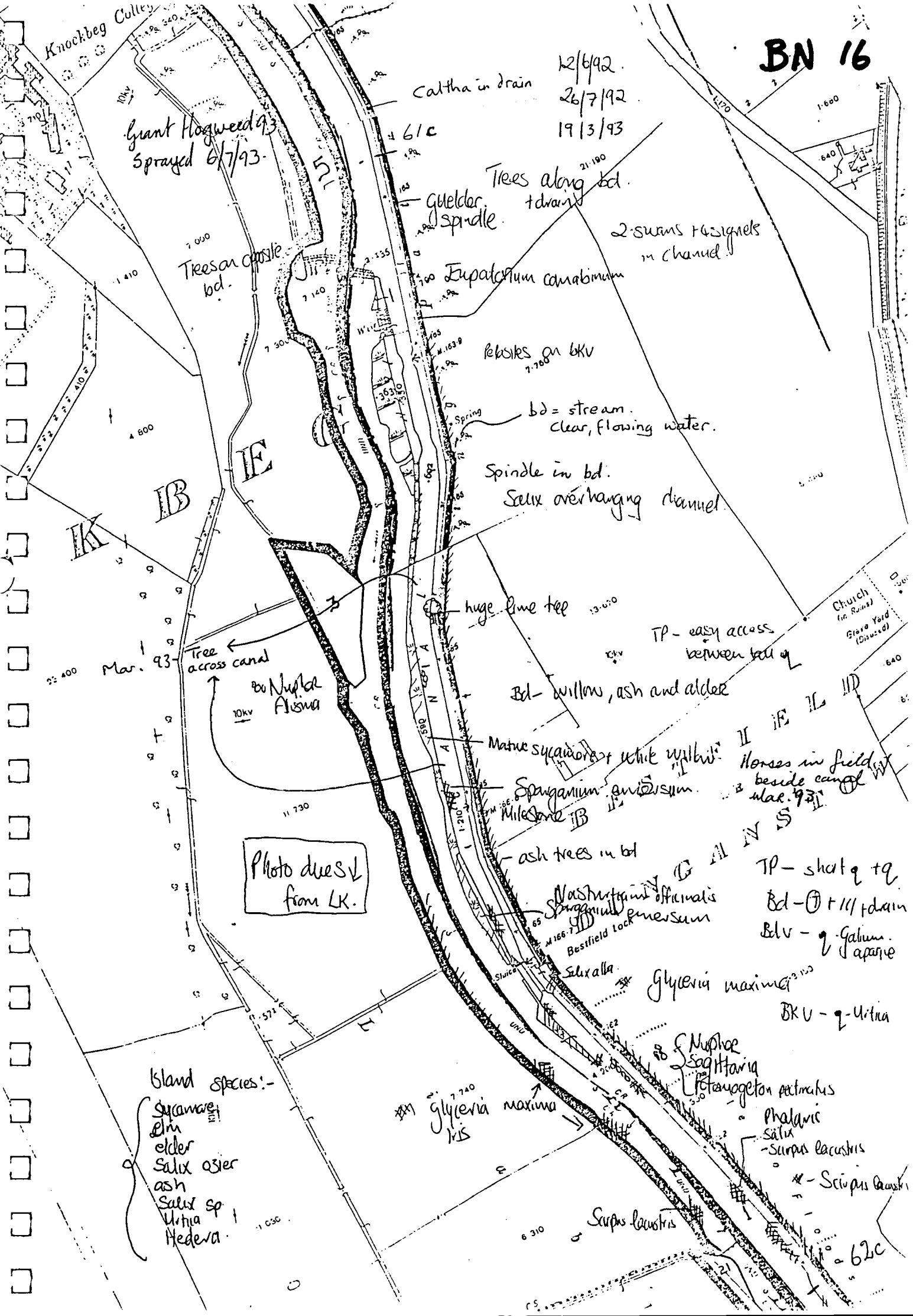
- Giant Hogweed (Plates 9 and 11) along most of the west bank opposite the sugar factory and immediately south of the sugar factory settling ponds (BN17-19) during 1992 and 1993; on the island immediately north of Carlow (Graiguecullen) Bridge (BN19) during 1992 and 1993 and on the west bank immediately south of Carlow Lock (BN19) during 1992.
- When the vegetation of the towpath was cut in early July 1992, the cuttings were not removed.
- The buildings on the west bank south of Graiguecullen Bridge (not OPW property) need a facelift to improve the amenity value of the area (Plate 12). Brady, Shipman and Martin (1992) recommend likewise.
- Much refuse accumulating (including cider bottles) along two short stretches of the east bank - at the Old Graves and immediately north of the bridge.

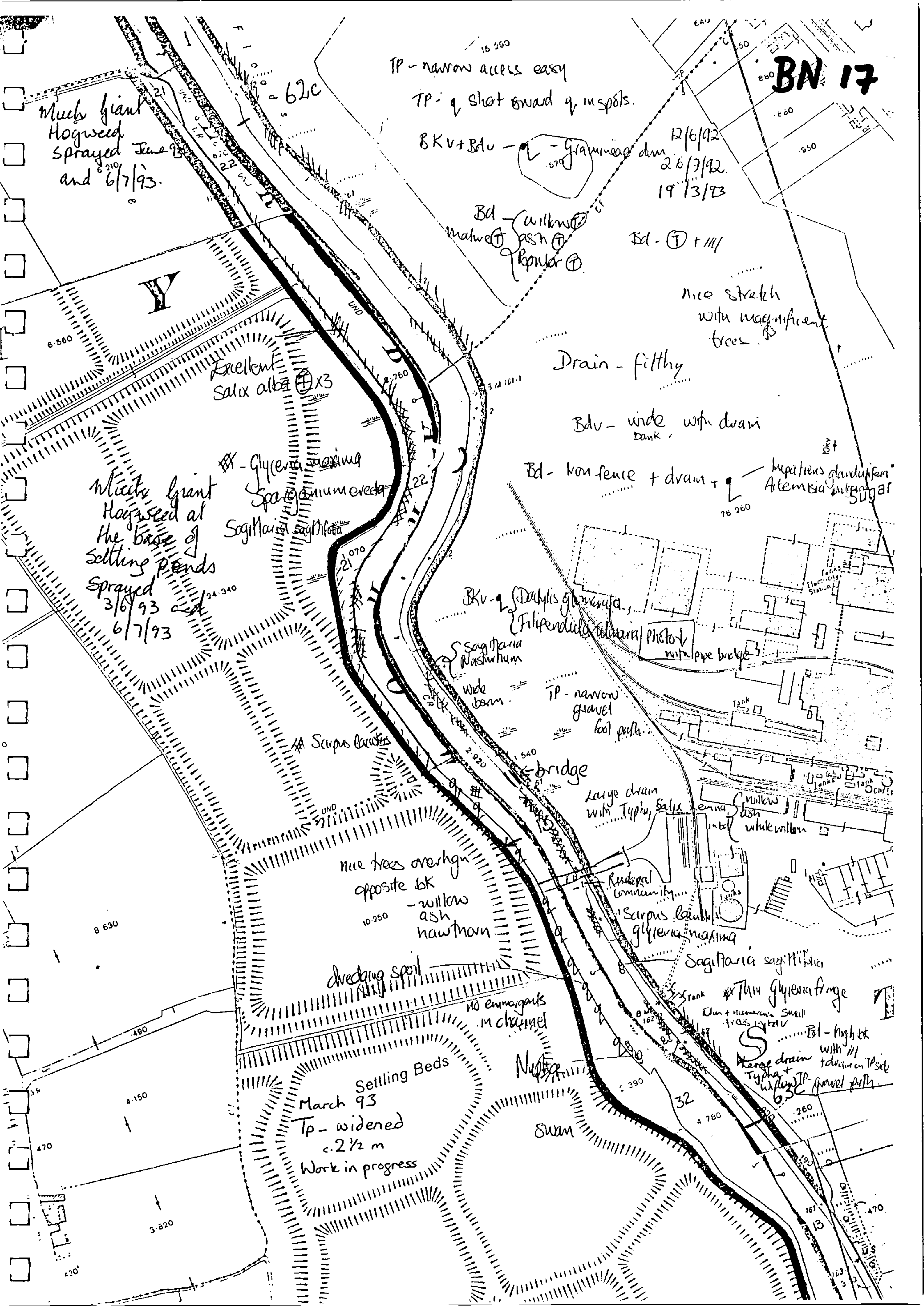
OBJECTIVES:

- To encourage and maintain ecological diversity.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.
- To eliminate, in so far as is possible, Giant Hogweed from the system.
- To improve the amenity and ecological value of all of the east bank north of the bridge.

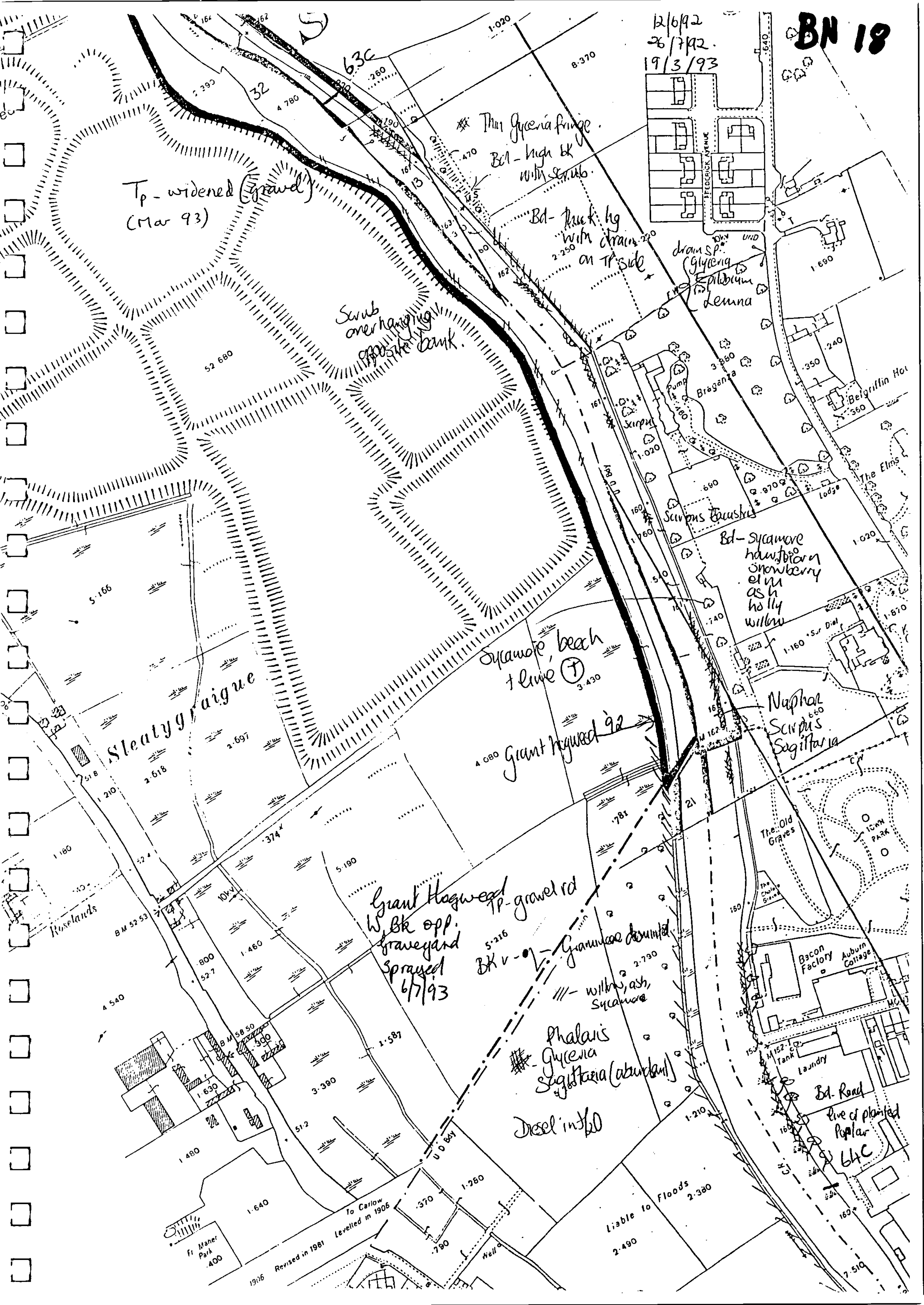
RECOMMENDATIONS:

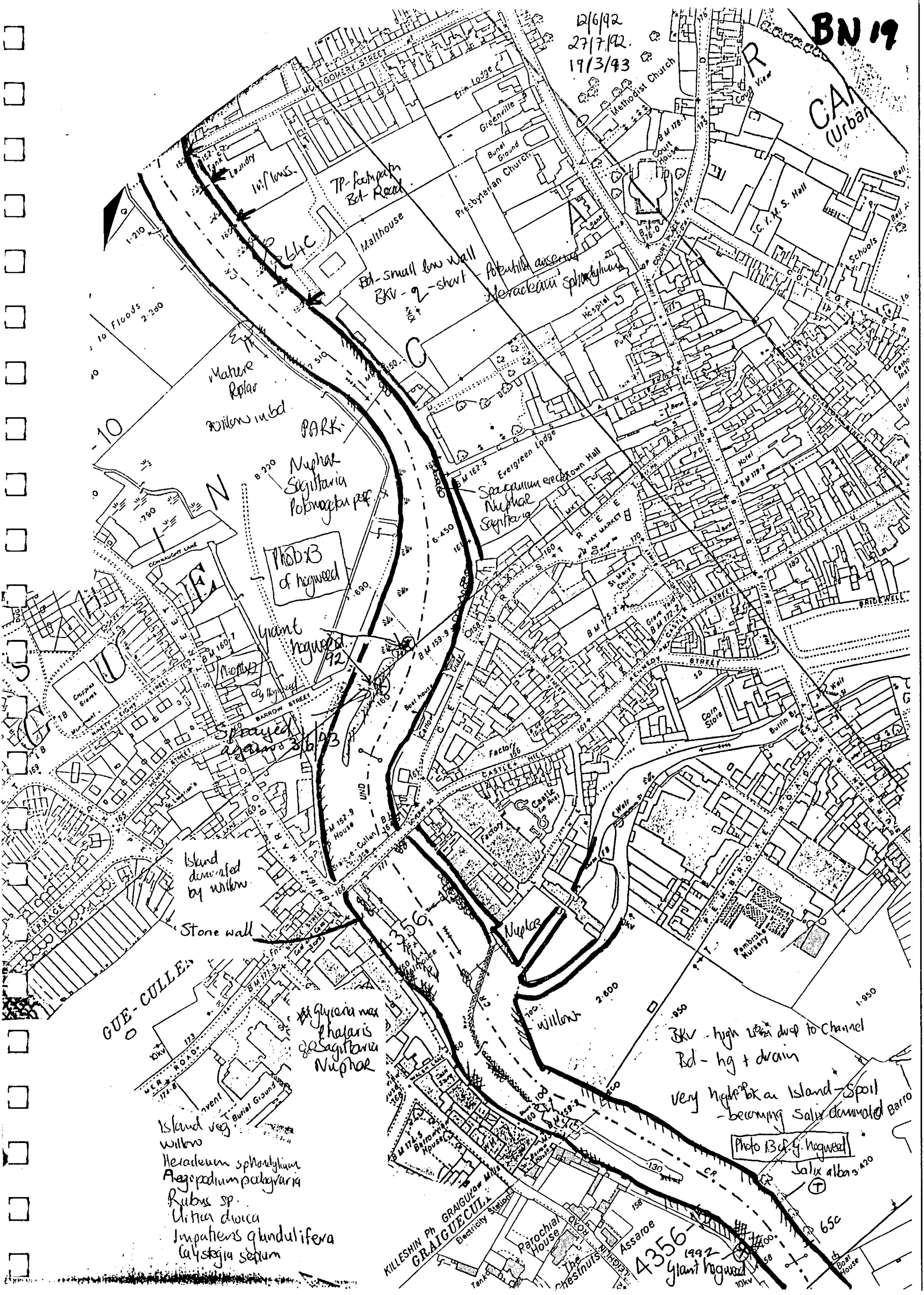
- Protect the island, boundary hedge, boundary drain and the undisturbed habitats south of Graiguecullen Bridge in future canal operations.
- Reduce both the width and number of cuttings of grasses and flowering species on either side of the surfaced towpath - provided no nutrient-rich spoil is deposited there. A narrow strip (0.5m) can be frequently cut on either side of the path. The remainder of the bank and boundary verges can be cut late in the year. Cutting late in the year allows the plants to grow, flower and set seed. The advantages of this from a wildlife point of view are many. The diversity of the seed bank is maintained. Insects can pupate and feed off their host plant and move around the general area. These in turn become a food source for birds and other small mammals. There is also the aesthetic value which attaches to the presence of a herb layer of medium height contrasting with both the taller tree and shrub layer and the low ground layer of the towpath.
- The Giant Hogweed on the island was sprayed in 1992 (see Part 1 Ch 3) and its location mapped. All known locations were sprayed and mapped during 1993. Sites should be monitored in April/May 1994 to ascertain if further spraying will be necessary.
- Clear the weir of excess vegetation. As each year passes, more vegetation becomes established, making it increasingly difficult for salmon to move upstream.
- Plant some native thorny shrubs such as Gorse, Holly and/or Hawthorn along the two areas of the east bank which require up-grading.


BN 16
12/6/92.
26/7/92.
19/3/93
Caltha in drain
Knockbeg Culley
Grant Hogweed 93
Sprayed 6/7/93.
61c
Trees along bd.
guelder
spindle
tdrain
2 swans + 4 signets in channel
Trees on opposite bd.
Eupatorium cannabinum
Pebbles on bKV
bd = stream. clear, flowing water.
Spindle in bd.
Salix overhanging channel
huge lime tree
TP - easy access between bdl
Bd - willow, ash and alder
Tree across canal
Mar. 93
Nuphar
Alisma
Mature sycamore + white willow
Sparganium erectum
Milestone
ash trees in bd
Horses in field beside canal Mar. 93
Photo dues from LK.
TP - short q + q
Bd - O + III + drain
Bdv - q Galium aparine
Nasturtium officinale
Sparganium erectum
Bestfield Lock
Salix alba
Glyceria maxima
BKV - q Urtica
Nuphar
Sagittaria
Potamogeton natans
Phalaris
Salix
Scirpus lacustris
Island species:-
Sycamore
Elm
elder
Salix aster
ash
Salix sp
Urtica
Hedera.
Glyceria maxima
Iris
Scirpus lacustris
62c
Church (in Ruins)
Grave Yard (Disused)



BN 17
TP - narrow access easy
TP - q short sward q in spots.
BKv + BAu - q - Gramineae dom
12/6/92
26/7/92
19/3/93
Much giant Hogweed sprayed June 93 and 6/7/93.
Bd - willow T, mature T, ash T, Poplar T
Bd - T + ////
Nice stretch with magnificent trees.
Drain - filthy
Excellent Salix alba T x3
Bdv - wide bank, with drain
Bd - Iron fence + drain + q - Impatiens glandulifera, Artemisia
Sugar
Glyceria maxima
Sparganium erectum
Much giant Hogweed at the base of Settling ponds Sprayed 3/6/93 and 6/7/93
Sagittaria sagittifolia
BKv - q Dactylis glomerata, Filipendula ulmaria
Photo with pipe bridge
Sagittaria, Nasturtium
Wide berm.
TP - narrow gravel foot path.
Scirpus lacustris
bridge
Large drain with Typha, Salix, willow, ash, white willow
nice trees overhang opposite bk - willow ash hawthorn
Ruderal community
Scirpus lacustris
glyceria maxima
Sagittaria sagittifolia
dredging spoil
Thin Glyceria fringe
no emmergents in channel
Bd - high bk with TP
Large drain Typha + willow
TP - gravel path
Settling Beds
March 93
Tp - widened c.2½ m
Work in progress
Swan
Y
S
T
Electricity Station
Tanks
Tank
63C
62C
6·560
8 630
10·250
4·150
3·620
4 780
24·340
1·070
2·920
1·540
2·390


BN 18
12/6/92
26/7/92
19/3/93
63C
32
Thin Glyceria fringe
Bd - high bk with scrub
Tp - widened (gravel) (Mar 93)
Bd - thick hg with drain on TP side
drain sp. Glyceria Epilobium Lemna
Scrub overhanging opposite bank
Scirpus
Scirpus lacustris
Braganza
Pump
Belgriffin Ho
The Elms
Lodge
Bd - sycamore hawthorn snowberry elm ash holly willow
Sun Dial
Sycamore, beech + lime (T)
Nuphar Scirpus Sagittaria
Giant Hogweed '92
Sleatygraigue
Fedrick Avenue
U D Bdy
21
The Old Graves
Town Park
Giant Hogweed W Bk opp. graveyard sprayed 6/7/93
Tp - gravel rd
Bk v - g - Gramineae dominated
/// - willow, ash, sycamore
Phalaris Glyceria Sagittaria (abundant)
Diesel in H₂O
Roselands
Bacon Factory
Auburn Cottage
Laundry
Tank
Bd - Road
line of planted Poplar
64C
Liable to Floods
To Carlow
Levelled in 1906
Revised in 1981
Ft Maher Park
Well


BN 19
12/6/92
27/7/92
19/3/93
TP - footpath
Bd - Road
Willows
Bd - small low wall
BKv - 9 - short
Potentilla anserina
Heracleum sphondylium
Mature Poplar
Willow in bd
PARK
Nuphar
Sagittaria
Potamogeton pect
Sparganium erectum
Nuphar
Sagittaria
Photo x3 of hogweed
Giant hogweed 92
Sprayed again 3/6/93
Island dominated by willow
Stone wall
Glyceria max
Phalaris
Sagittaria
Nuphar
Nuphar
Willow
BKv - high bank drop to Channel
Bd - hg + drain
Very high bk on Island - Spoil - becoming Salix dominated Barrow
Photo 13 of G. hogweed
Salix alba
1992 Giant hogweed
Island veg:
Willow
Heracleum sphondylium
Aegopodium podagraria
Rubus sp.
Urtica dioica
Impatiens glandulifera
Calystegia sepium
MONTGOMERY STREET
Erin Lodge
Greenville
Methodist Church
Court View
Court House
Presbyterian Church
Burial Ground
Malthouse
Laundry
Tank
Floods
Hospital
Evergreen Lodge
Town Hall
HAY MARKET
St Mary's Church
Grave Yard
Hotel
Schools
C.Y.M.S. Hall
JOHN STREET
KENNEDY STREET
BRIDEWELL
Corn Store
CASTLE HILL
Castle (in Ruin)
Factory
Boat house
Burrin St.
Wall
Pembroke Nursery
BARROW STREET
NINETY-EIGHT STREET
Croppies Graves
HENRY STREET
GRAIGUECULLEN
Burial Ground
Barrow House
Electricity Station
Parochial House
Assaroe
The Chestnuts
KILLESHIN ROAD
Boat House
CONNAUGHT LANE
4356

CARLOW LOCK - FUSHOGE RIVER **KM SECTIONS BN19-BN23**
approx. 3.5km west bank

OBSERVATIONS:

Wide open views of undulating countryside immediately south of Carlow. The lock-house at Clogrenan is brightly coloured and attractive. The river widens out south of the lock and supports reed beds in the centre channel.

GOOD FEATURES:

- Stark contrast immediately south of Carlow Lock between town and countryside (Plate 13).
- The towpath was accessible along the entire length throughout the year. Competitive species are not much in evidence on it.
- Good aquatic diversity including good patches of reed fringe.
- Wide diversity of mature trees in the vicinity of Erindale House (east bank, not OPW property).
- Diversity of trees along the west bank including Oak, Spindle and Guelder-rose.
- On the approach to Clogrenan Lock and island, the boundary is an embanked woodland of Oak, Ash, Elder, and White Willow.
- The island is heavily wooded with much mature Oak (Plates 15 and 16).
- Towpath a pleasant vegetated track dominated by meadow grasses and flowers (Plates 13 and 14). It also affords wide views to the low hills of the west of the Barrow Valley.
- South of Clogrenan Lock there is a rich floral diversity on the bank, towpath and boundary verge. The towpath is dominated by trample resistant species. It is used quite frequently by those swimming at a point in the river immediately south of the lock.
- Many damselflies and dragonflies along the stretch.

BAD FEATURES:

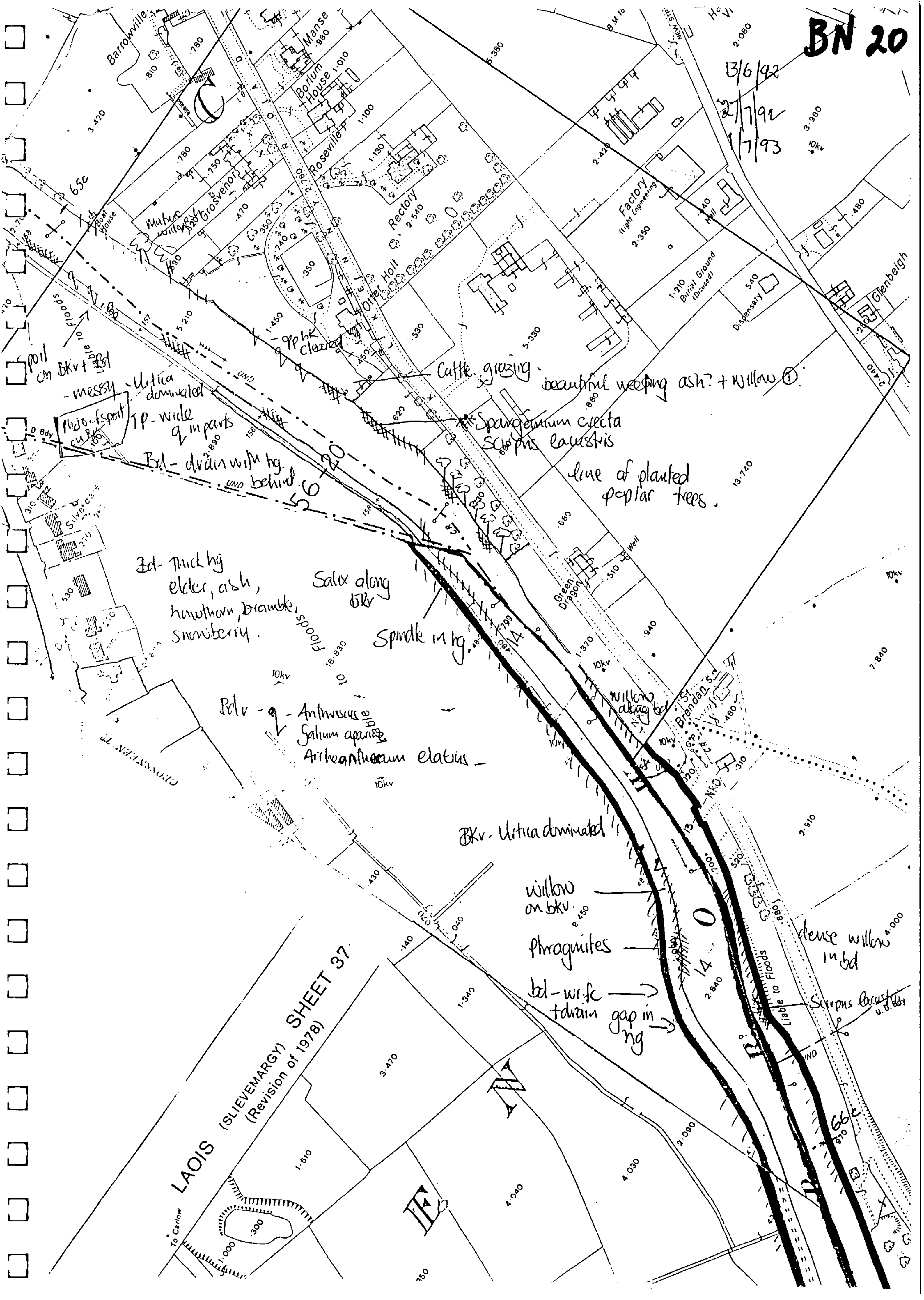
- Giant Hogweed was found in the boundary verge along the west bank (BN19) in 1992 and on Clogrennan Island in 1993 (BN22).
- Spoil has been deposited in mounds along the banks of the canal cuts and on the island (Plates 13-16) and the vegetation is now dominated by coarse, tall herbaceous species such as Nettles, Docks, Hogweed and Cleavers. These competitive species thrive in the nutrient-rich conditions (supplied by spoil).
- The vegetation of the towpath was cut in July 1992 and the cuttings not collected. The width of cut/maintained path is too great.

OBJECTIVES:

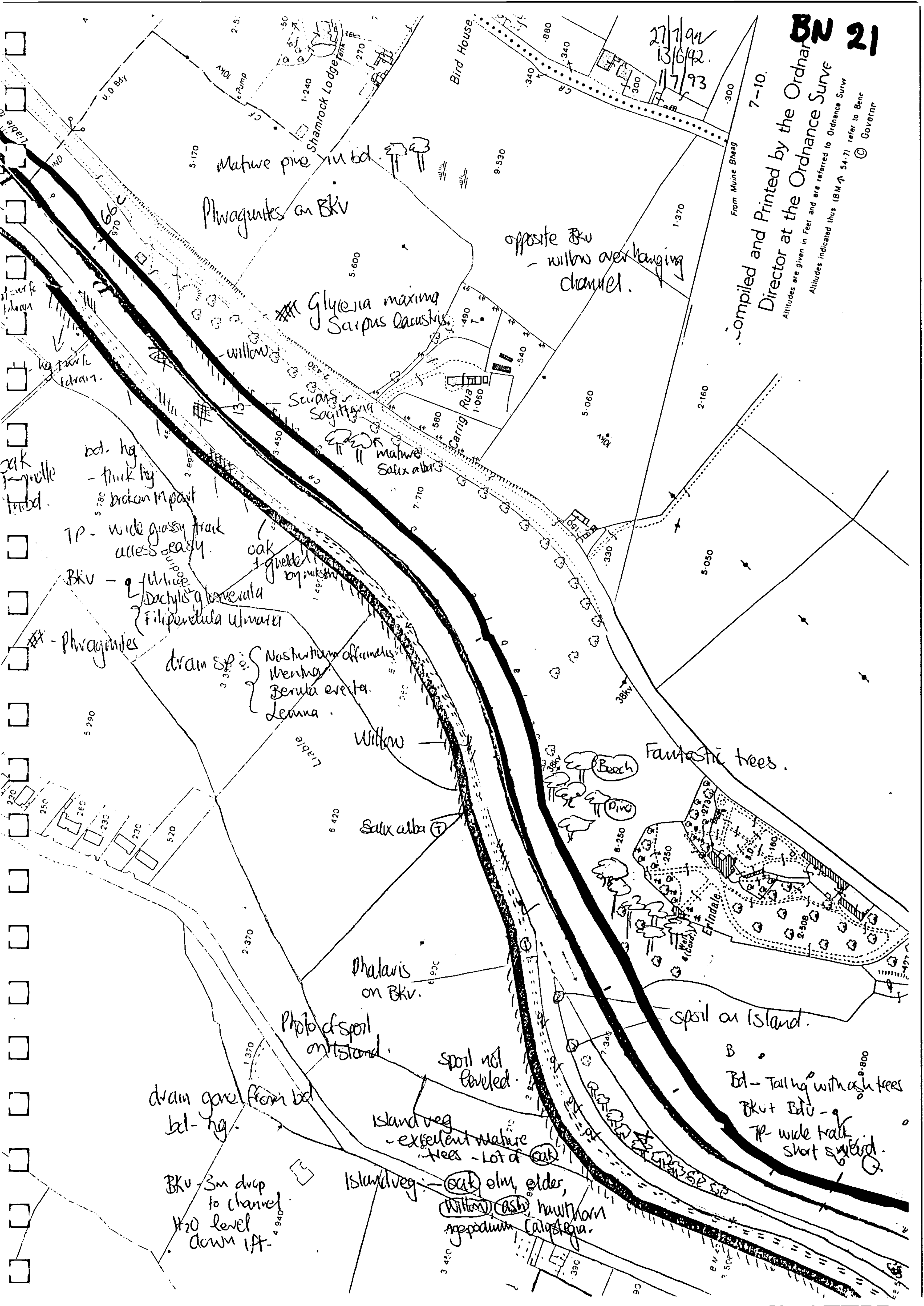
- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.
- To eliminate, in so far as is possible, Giant Hogweed from the system.

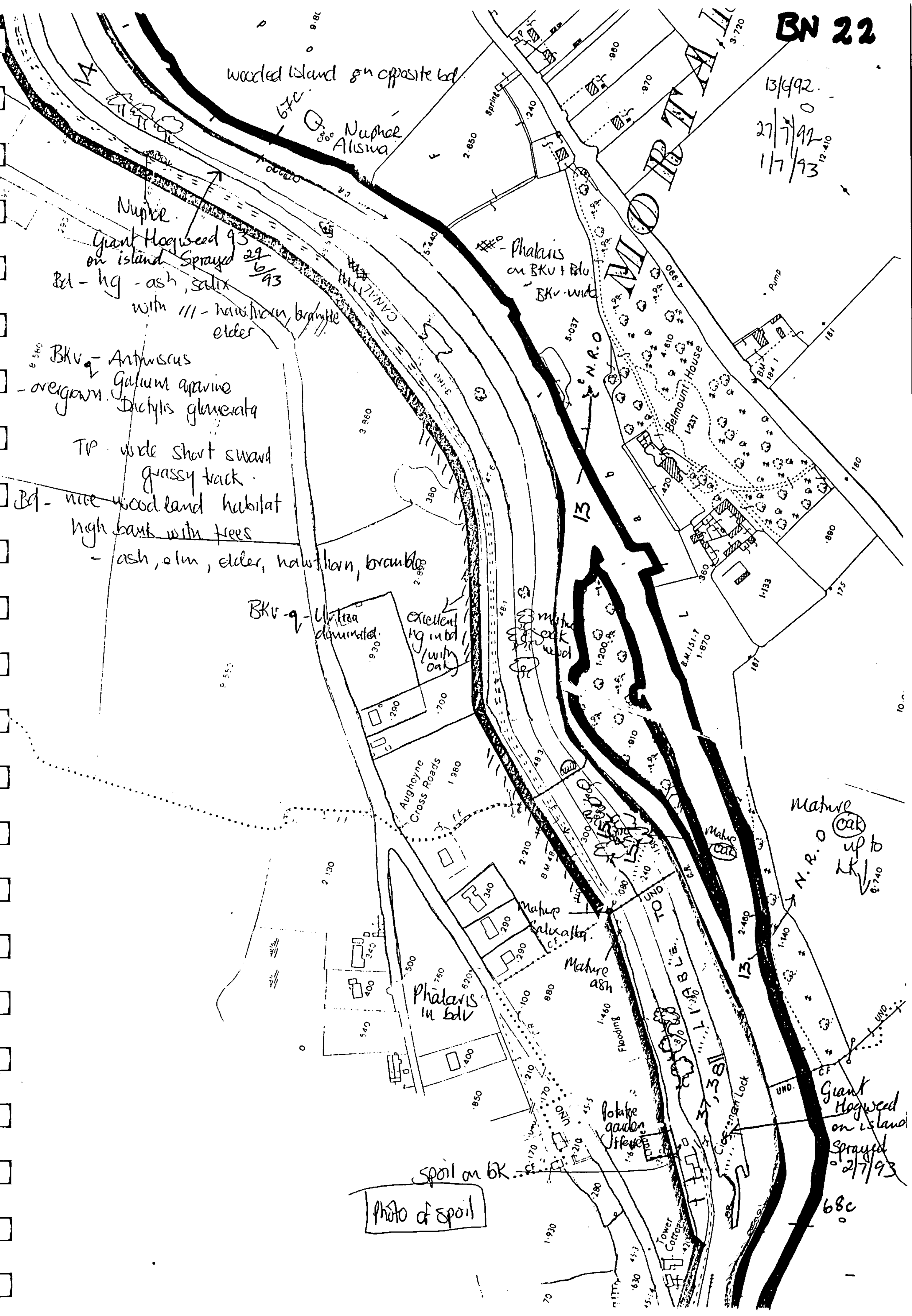
RECOMMENDATIONS:

- Protect the island, boundary hedge and trees in future canal operations.
- Spoil heaps should be levelled.
- The vegetation on the nutrient-rich spoil deposited on the river bank, should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from the soil. As a result there will be an increase in non-competitive species and diversity (Contrast Plates 5 and 21).
- When the rank, coarse, competitive vegetation has been removed through frequent cutting in one year a single cut at the end of each year should then suffice to maintain ecological diversity. A single cut ensures that scrub species do not colonise the towpath and will also ensure that the diversity of the seed bank will not be reduced. Cutting of species before they set seed eliminates the seeds of that particular plant, thus reducing ecological diversity. If, for amenity purposes, it is necessary to maintain a short vegetation sward for walkers, then a strip of 1-1.5m wide has been researched as being wide enough. This strip may then be subjected to frequent cuts, ensuring always that the cuttings are collected. In this way the only reduction in the seed bank will occur in this narrow strip. The seeds of the plants at the edge of the 1-1.5m strip will ensure that ecological diversity will be maintained.
- At present a tractor with flail cutters cuts the towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil, leading to the growth of competitive species. For conservation purposes it is most important that the cuttings are collected so that this soil enrichment does not take place (Contrast Plates 5 and 21).
- The Giant Hogweed was sprayed in 1992 and 1993 (see Part 1 Ch 3) and its location mapped. Sites should be monitored in April/May 1994 to ascertain if further spraying will be necessary.

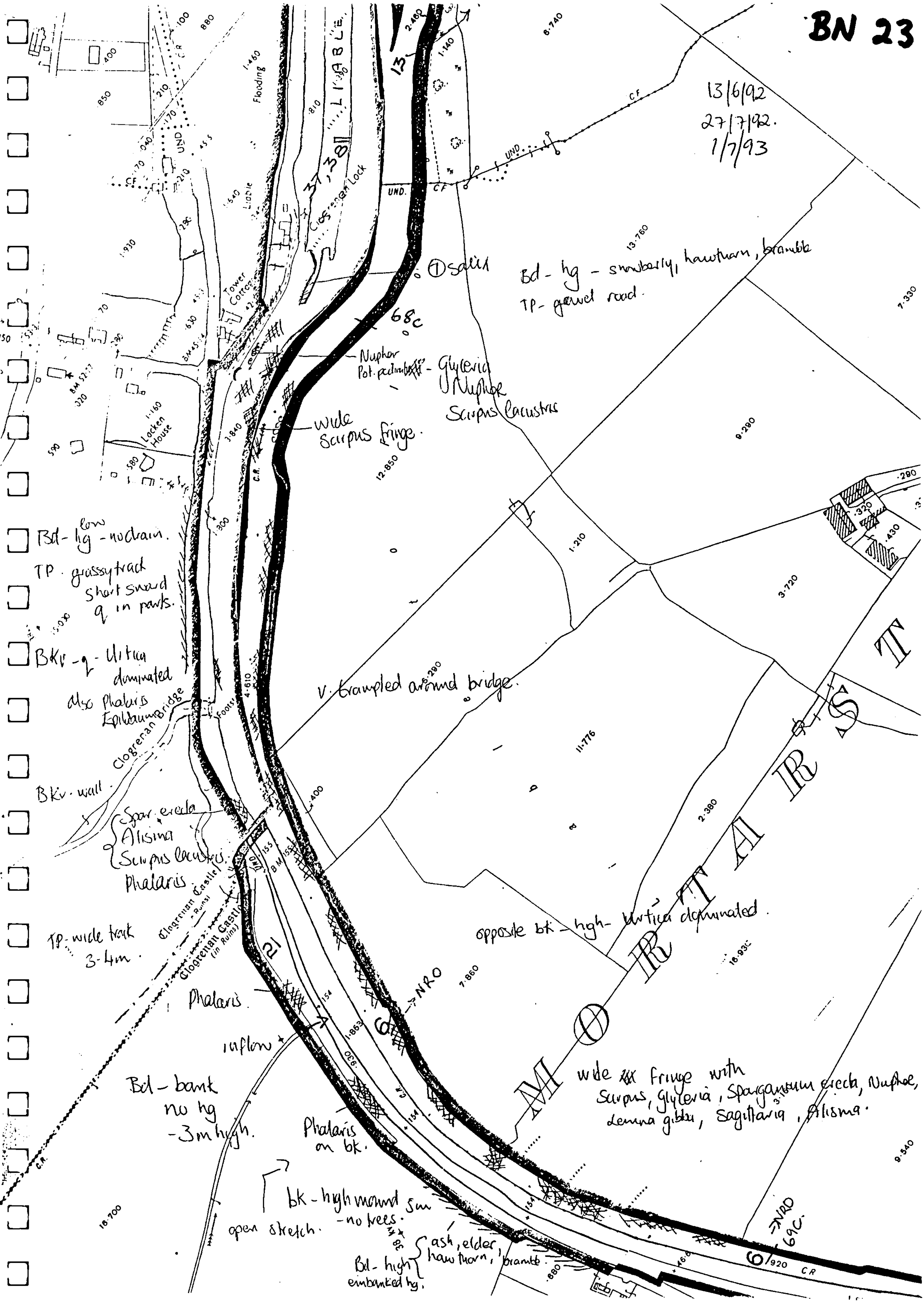


BN 20
13/6/92
27/7/92
1/7/93
Barrowville
Manse
Borlum House
Roseville
Grosvenor
Boat House
Rectory
Otter Holt
Factory (Light Engineering)
Hall
Burial Ground (Disused)
Dispensary
Glenbeigh
Green Dragon
Well
St Brendan's
Silvercas
Liable to Floods
65c
66c
56-20
14
UND
D Bdy
U.D. Bdy
10kv
LAOIS (SLIEVEMARGY) SHEET 37
(Revision of 1978)
To Carlow
Mature willows
Spoil on Bkv + Bd
- messy - Urtica dominated
Photo - spoil on Bk
TP - wide
q in parts
Bd - drain with hg. UND behind
- gp bk cleared
Cattle grazing
beautiful weeping ash? + willow
Sparganium erecta
Scirpus lacustris
line of planted poplar trees.
Bd - Thick hg
elder, ash,
hawthorn, bramble,
snowberry.
Salix along bkr
Spindle in hg.
Bdv - q - Anthriscus
Galium aparine
Arrhenatherum elatius
willow along bd
BKv. Urtica dominated
willow on bkv.
Phragmites
bd - w.f.c + drain
gap in hg
dense willow in bd
Scirpus lacustris


BN 21
27/7/92
13/6/92.
1/7/93
Compiled and Printed by the Ordnance Survey
Director at the Ordnance Survey
Altitudes are given in Feet and are referred to Ordnance Survey
Altitudes indicated thus (BM ↑ 54·7) refer to Bench
© Government
7–10.
From Muine Bheag
Bird House
Shamrock Lodge
U.D Bdy
Pump
Mature pine in bd.
Phragmites on BKv
opposite BKv
– willow overhanging channel.
Glyceria maxima
Scirpus lacustris.
willow
Scirpus
Sagittaria
mature Salix alba
Carrig Rua
bd. hg
– thick hg
broken in part
TP – wide grassy track
access easy.
oak
+ guelder
BKv – Urtica
Dactylis glomerata
Filipendula ulmaria
Phragmites
drain
Nasturtium officinalis
Mentha
Berula erecta.
Lemna.
Willow
Fantastic trees.
Beech
Pine
Salix alba
Erindale
Phalaris on BKv.
Photo of spoil on island
spoil on Island.
spoil not leveled.
Bd – Tall hg with ash trees
BKv + BdV –
TP – wide track
drain gone from bd
bd – hg.
Island veg
– excellent mature trees – Lot of oak
Island veg: – oak elm, elder, willow ash hawthorn
Aegopodium Calystegia.
BKv 3m drop to channel
H20 level down 1ft.
Liable
38kv


BN 22
13/6/92
27/7/92
1/7/93
Wooded island on opposite bd.
67C
Nuphar Alisma
Nuphar
Giant Hogweed 93 on island Sprayed 29/6/93
Bd - hg - ash, salix with /// - hawthorn, bramble elder
BKv - Anthriscus - overgrown. Galium aparine Dactylis glomerata
TP - wide short sward grassy track.
Bd - nice woodland habitat high bank with trees - ash, elm, elder, hawthorn, bramble
BKv - q - Urtica dominated.
excellent hg in bd (with oak)
mature oak wood
Phalaris on BKv + Bdo BKv - wide
N.R.O
Belmount House
Pump
Spring
CANAL
Aughoyne Cross Roads
Mature oak
Mature oak up to LK
Mature Salix alba
Mature ash
Phalaris in bdv
Flooding
Potato garden / fence
Clonony Lock
Tower Cottage
Spoil on bk
Photo of spoil
Giant Hogweed on island Sprayed 2/7/93
68c
13

BN 23



13/6/92
27/7/92.
1/7/93
Clogrenan Lock
Tower Cottage
Locken House
Clogrenan Bridge
Clogrenan Castle (in Ruins)
LIABLE
Flooding
① salix
Bd - hg - snowberry, hawthorn, bramble
TP - gravel road.
68c
Nuphor
Pot. pectinatus
Glyceria
Nuphor
Scirpus lacustris
wide Scirpus fringe.
Bd - low hg - no drain.
TP . grassy track Short sward q. in parts.
Bkr - q - Urtica dominated also Phalaris Epilobium
v. trampled around bridge.
Bkr. wall
Spar. erecta
Alisma
Scirpus lacustris
Phalaris
TP - wide track 3-4m.
opposite bk - hg - Urtica dominated.
Phalaris.
inflow
NRO
wide fringe with Scirpus, Glyceria, Sparganium erecta, Nuphor, Lemna gibba, Sagittaria, Alisma.
Bd - bank no hg - 3m high.
Phalaris on bk.
bk - high mound - no trees.
open stretch.
Bd - high embanked hg.
ash, elder, hawthorn, bramble
NRO 69c.
MORTARSTOWN

FUSHOGE RIVER - MILFORD LOCK **KM SECTIONS BN23-BN27**
approx. 3.5km on west bank

OBSERVATIONS:

A wide view of the countryside - the hills of the west of the valley and sweeping fields along the east - can be had along by the river. The canal stretch is enclosed by trees on both sides. The three bridges at Milford, large mill buildings, fast flowing river, weir, slow moving canal and the surrounding large wooded area make this a picturesque location with much wildlife interest.

GOOD FEATURES:

- Many fine examples of reed fringe and reed beds in centre channel offering a high diversity of aquatic plants.
- Abundance of dragonflies, damselflies and moorhens in the vicinity of the reedbeds, attracted to the area because of cover and food supply.
- Line of young Willow along the bankverge south of St. John's Church.
- Many mature trees along the boundary of the west bank especially in the vicinity of Milford including Holly, Oak, Hazel and Spindle (Plate 18).
- The island on the approach to Milford Bridge is dominated by scrub/woodland and provides good cover for otters.

BAD FEATURES:

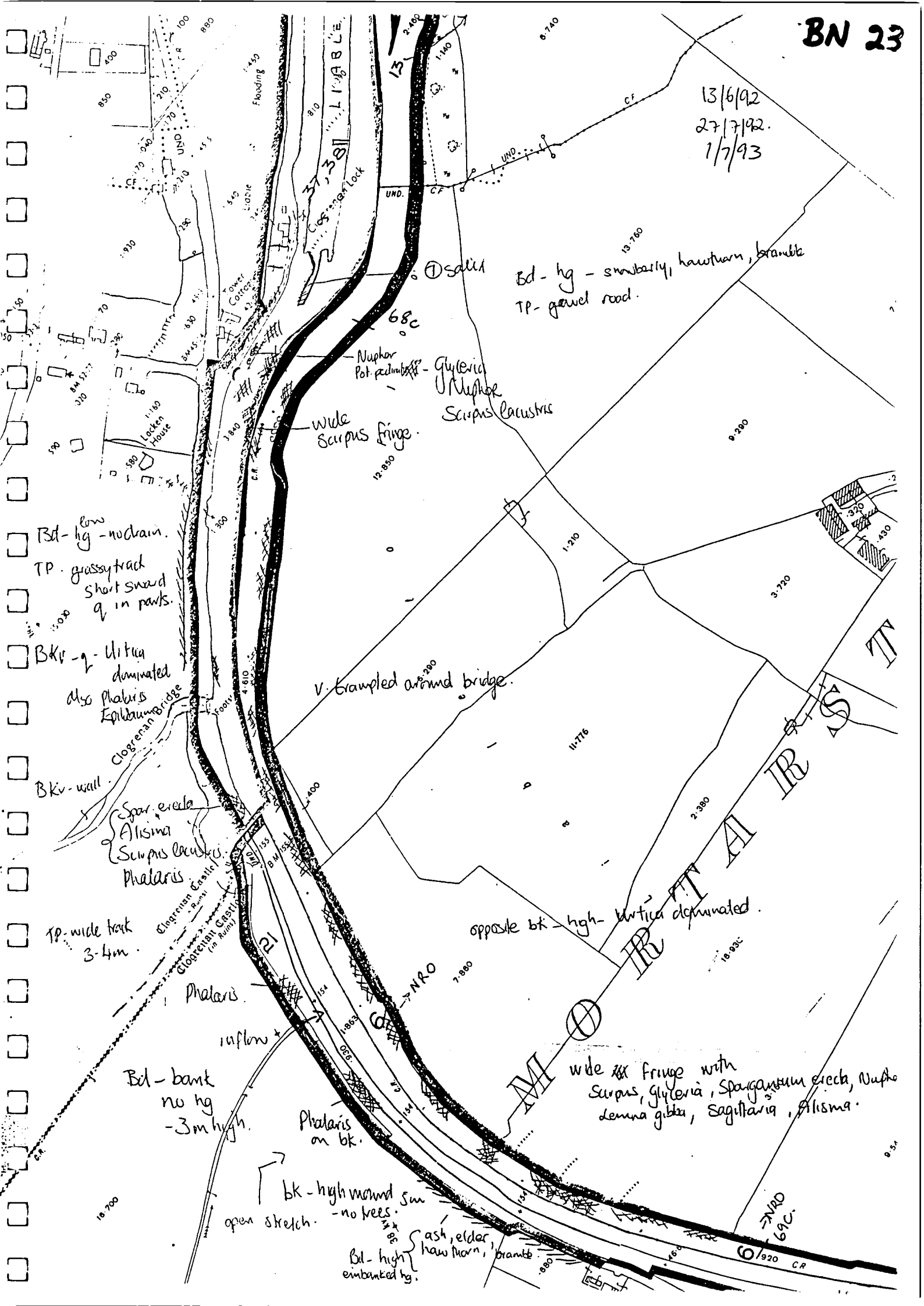
- The vegetation along the towpath south of Milford Bridge is dominated by coarse, tall herbaceous species such as Nettles, Docks, Hogweed and Cleavers. These competitive species thrive in the nutrient-rich conditions (probably supplied by spoil deposited here during the last few years) and their growth extends across the towpath. This stretch is manually cut (Plate 19).
- When the vegetation of the towpath was cut in early July 1992, the cuttings were not removed. The width of cut/maintained towpath is too great.
- Weir overgrown.

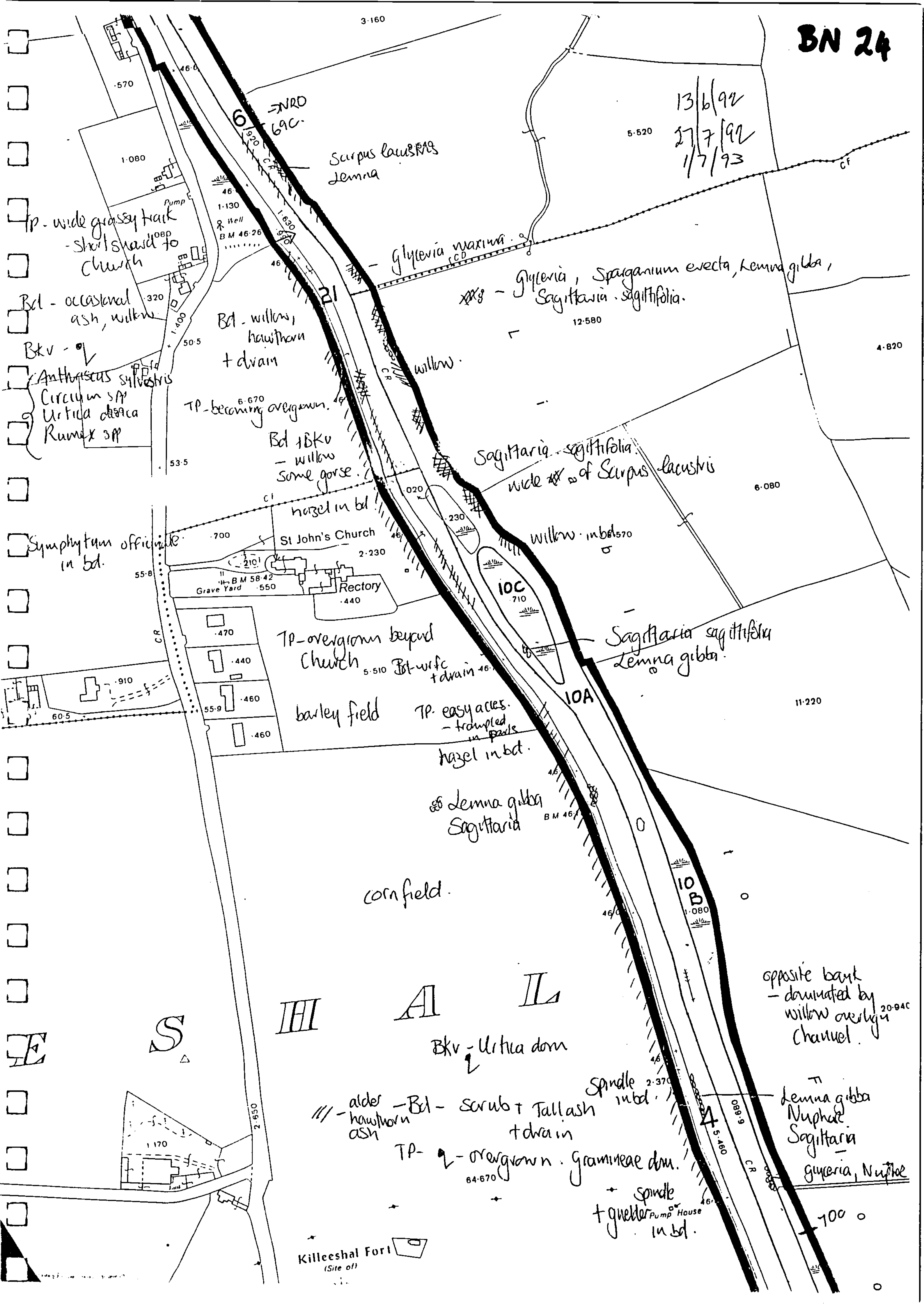
OBJECTIVES:

- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.

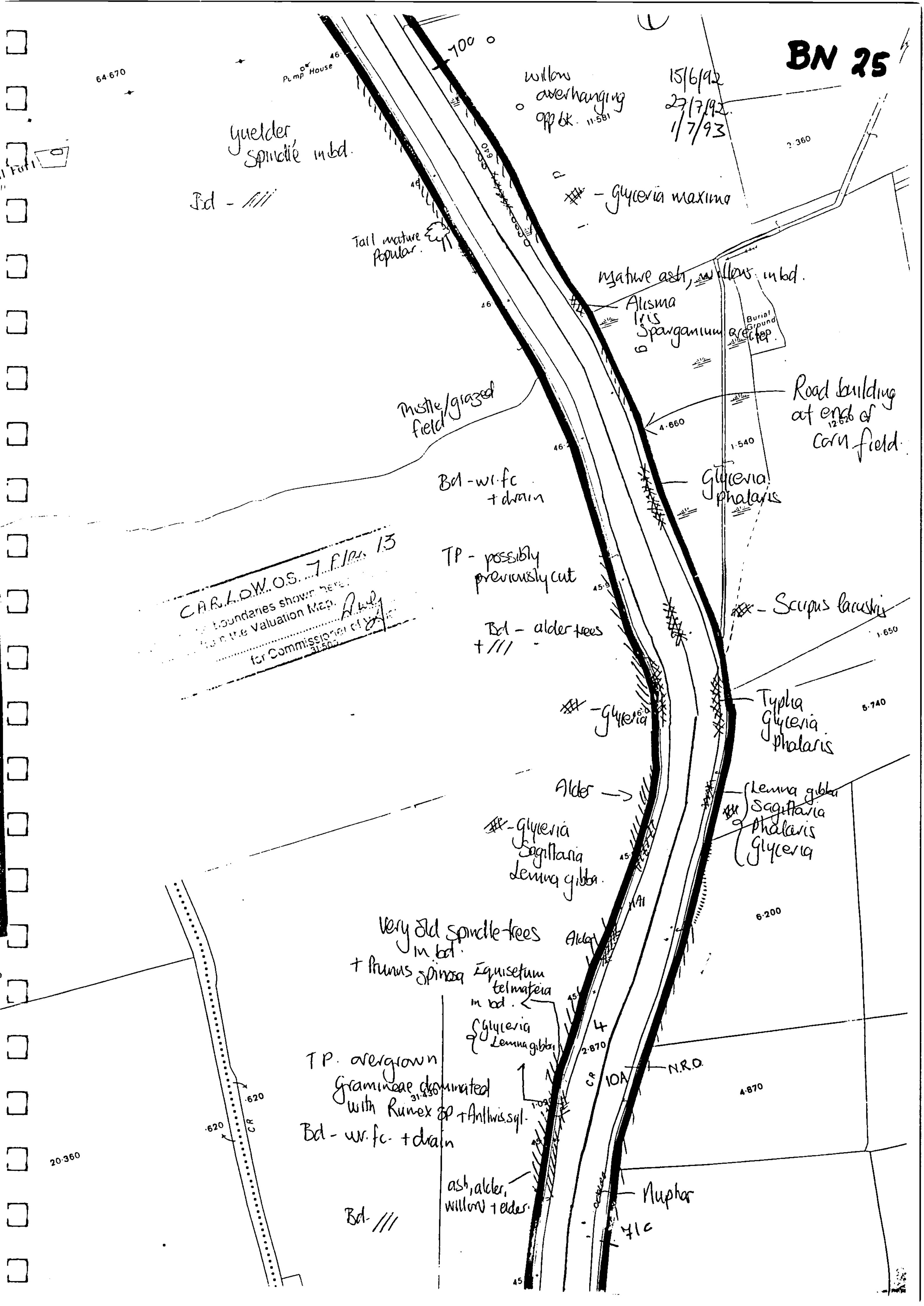
RECOMMENDATIONS:

- Protect the island, the reed beds, the young Willow and mature trees in future canal operations.
- The vegetation on the nutrient-rich spoil deposited on the river bank, should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from the soil. As a result there will be an increase in non-competitive species and diversity. Further cuts in the first year will be necessary.
- Where the spoil has fallen on the towpath, a similar vegetation cutting regime should be put into operation as outlined for the banks. In the following year, the vegetation will be more diverse and not so vigorous. The number of cuttings can then be reduced. All cuttings must be removed (Contrast Plates 5 and 21).
- When the rank, coarse, competitive vegetation has been removed through frequent cutting in one year a single cut at the end of each year should then suffice to maintain ecological diversity. A single cut ensures that scrub species do not colonise the towpath and will also ensure that the diversity of the seed bank will not be reduced. Cutting of species before they set seed eliminates the seeds of that particular plant, thus reducing ecological diversity. If, for amenity purposes, it is necessary to maintain a short vegetation sward for walkers, then a strip of 1-1.5m wide has been researched as being wide enough. This strip may then be subjected to frequent cuts, ensuring always that the cuttings are collected. In this way the only reduction in the seed bank will occur in this narrow strip. The seeds of the plants at the edge of the 1-1.5m strip will ensure that ecological diversity will be maintained.
- At present a tractor with flail cutters cuts the towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil, leading to the growth of competitive species. For conservation purposes it is most important that the cuttings are collected so that this soil enrichment does not take place (Contrast Plates 5 and 21).
- Clear the weir of excess vegetation. As each year passes, more vegetation becomes established, making it increasingly difficult for salmon to move upstream.

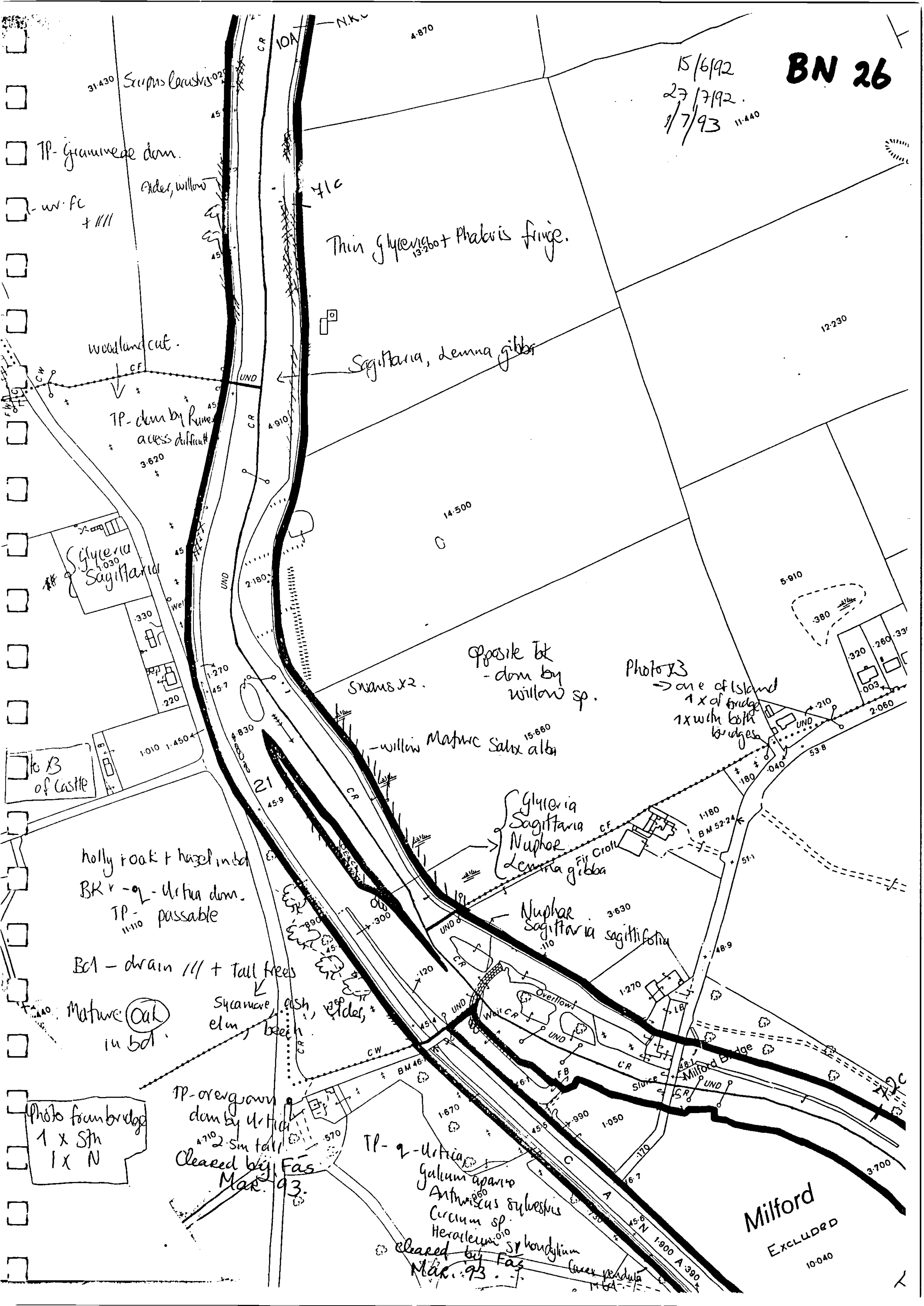

BN 23
13/6/92
27/7/92.
1/7/93
Bd - hg - snowberry, hawthorn, bramble
TP - gravel road.
Nuphar
Pot. pectinata - Glyceria
Nuphar
Scirpus lacustris
wide
Scirpus fringe.
Bd - hg - low - no drain.
TP. grassy track
short sward
& in parts.
BKr - & - Urtica
dominated
also Phalaris
Epilobium
Bridge
Clogrenan
Bk - wall.
Spar. erecta
Alisma
Scirpus lacustris.
Phalaris
Clogrenan Castle
(in Ruins)
TP - wide track
3-4m.
V. trampled around bridge.
opposite bk - hgh - Urtica dominated.
MORTARS
wide fringe with
Scirpus, Glyceria, Sparganium erecta, Nupho
Lemna gibba, Sagittaria, Alisma.
Phalaris
inflow
Bd - bank
no hg
- 3m high.
Phalaris
on bk.
bk - high mound 5m
- no trees.
open stretch.
Bd - high
embanked hg.
ash, elder,
hawthorn,
bramble
NRO
69C
C.R.



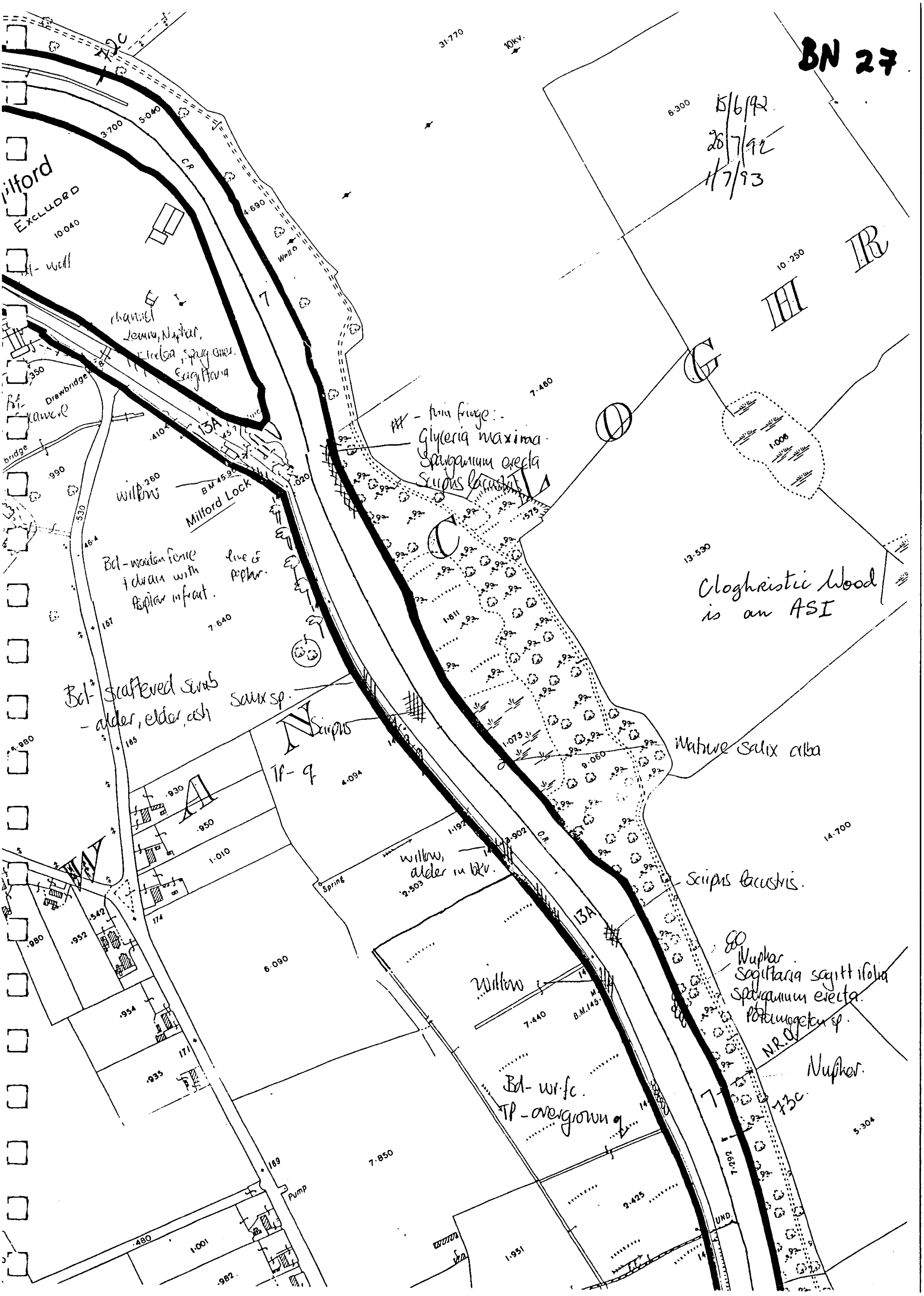
BN 24
13/6/92
27/7/92
1/7/93
Scirpus lacustris
Lemna
TP - wide grassy track - short shared to Church
Glyceria maxima
Glyceria, Sparganium erecta, Lemna gibba, Sagittaria sagittifolia.
Bd - occasional ash, willow
Bd - willow, hawthorn + drain
willow.
Bkv - Anthriscus sylvestris, Circium sp, Urtica dioica, Rumex spp
TP - becoming overgrown.
Bd + Bkv - willow some gorse.
Sagittaria sagittifolia
wide of Scirpus lacustris
hazel in bd
St John's Church
Symphytum officinale in bd.
willow in bd
Grave Yard
Rectory
10C
Sagittaria sagittifolia
Lemna gibba
TP - overgrown beyond Church
Bd - w + fc + drain
10A
barley field
TP. easy access. - trampled in parts
hazel in bd.
Lemna gibba
Sagittaria
corn field.
10 B
opposite bank - dominated by willow overlying channel.
Bkv - Urtica dom
Spindle in bd.
alder hawthorn ash - Bd - scrub + Tall ash + drain
TP - overgrown. Gramineae dom.
Lemna gibba
Nuphar
Sagittaria
Glyceria, Nuphar
Spindle + guelder in bd.
Pump House
Killeeshal Fort (Site of)



BN 25
15/6/92
27/7/92
1/7/93
willow overhanging opp bk.
Pump House
64·670
yuelder spindle in bd.
Bd - ///
Glyceria maxima
Tall mature Popular
mature ash, willow in bd.
Alisma
Iris
Sparganium ereftep.
Burial Ground
Road building at end of corn field.
Thistle/grazed field
4·660
12·620
1·540
2·360
Bd - wr. fc + drain
Glyceria
Phalaris
TP - possibly previously cut
CARLOW O.S. 7 FEB. 13
Boundaries shown here on the Valuation Map.
for Commissioner of Valuation
Scirpus lacustris
1·650
Bd - alder trees + ///
Glyceria
Typha
Glyceria
Phalaris
5·740
Alder
Lemna gibba
Sagittaria
Phalaris
Glyceria
Glyceria
Sagittaria
Lemna gibba.
6·200
Very old spindle trees in bd.
+ Prunus spinosa
Alder
Equisetum telmateia in bd.
Glyceria
Lemna gibba
TP. overgrown
Gramineae dominated with Rumex sp + Anthriscus syl.
Bd - wr. fc. + drain
31·430
CR 10A
N.R.O.
4·870
20·360
·620
ash, alder, willow + elder.
Nuphar
Bd. ///
71c



BN 26
15/6/92
27/7/92.
9/7/93
Scirpus lacustris
TP- Gramineae dom.
Alder, willow
- wr. fc + ////
71c
10A
Thin Glyceria + Phalaris fringe.
woodland cut.
Sagittaria, Lemna gibba
TP- dom by Rumex access difficult
Glyceria Sagittaria
Opposite bk - dom by willow sp.
Photo x3 -> one of Island 1 x of bridge 1 x with both bridges
Swans x2.
-willow Mature Salix alba
Photo x3 of Castle
21
Glyceria Sagittaria Nuphar Lemna gibba
Fir Croft
holly + oak + hazel in bd
Bk r - q - Urtica dom.
TP - passable
Nuphar Sagittaria sagittifolia
Bd - drain /// + Tall trees
Mature Oak in bd.
Sycamore, ash, Alder, elm, beech
Overflow
Weir
Milford Bridge
Sluice
TP- overgrown dom by Urtica 2-5m tall
Cleared by Fas Mar. 93.
Photo from bridge 1 x Sth 1 x N
TP- q - Urtica Galium aparine Anthriscus sylvestris Circium sp. Heracleum sphondylium Carex pendula
Cleared by Fas Mar. 93.
Milford
EXCLUDED


BN 27
15/6/92
28/7/92
1/7/93
Milford
EXCLUDED
Bd - well
channel
Lemna, Nuphar,
Elodea, Sparganium,
Sagittaria
Drawbridge
Bd - Sycamore
Milford Lock
willow
Bd - wooden fence
+ drain with
Poplar in front.
line of
poplar.
Bd - scattered scrub
- alder, elder, ash
Salix sp.
Scirpus
TP - 9
willow,
alder in bkr.
Spring
Willow
Bd - wr.fc.
TP - overgrown
Pump
- thin fringe:
Glyceria maxima
Sparganium erecta
Scirpus lacustris
Cloghristic Wood
is an ASI
Mature Salix alba
Scirpus lacustris.
Nuphar
Sagittaria sagittifolia
Sparganium erecta.
Potamogeton sp.
Nuphar.
73c
N.R.
BOG OF ALLEN
CANAL
WAY
13A
7
CR

MILFORD LOCK - RATHVINDON LOCK **KM SECTIONS BN27 - BN31**
approx. 4km west bank

OBSERVATIONS:

This is a wide river stretch bordered alternatively by woodland and open stretches. There is high ground of disused gravel pits along the east bank. This is part of an esker ridge which runs on to Leighlinbridge. The small fields along the west bank are grazed.

GOOD FEATURES:

- Cloughristic wood, an old woodland on the east bank immediately below Milford Lock, is an ASI of local importance (National Parks & Wildlife Service, 1992). The predominant tree species is Willow with Oak and Beech. Hazel is abundant and coniferous species occur. There is a rich herb flora characteristic of wetland and woodland habitats. It is not OPW property but nonetheless adds considerably to the wildlife value of the area.
- An esker along the east bank, runs parallel to the river. It has been declared an ASI because some protected flowering species have been found in the disused gravel pits. It is particularly close to the river in BN29 at a point where the protected Acinos arvensis (Basil-thyme) plant has been found. Again this esker is not OPW property. However, it adds to the wildlife value of the area and is part of the overall river system.
- The small island at Orchard Bridge is dominated by Willow scrub which offers good cover to otters.
- Otters were seen in the river along this stretch.
- There are large stands of reed fringe and reed/rush beds. There is also a diversity of aquatic and semi-aquatic flora in the boundary drain, all of which attract large numbers of dragonflies and damselflies.

BAD FEATURES:

- Giant Hogweed grows on the towpath of BN30.
- Spoil has been deposited along the river bank and the vegetation of the bank and along much of the towpath is now dominated by coarse, tall herbaceous species such as Nettles, Docks, Hogweed and Cleavers (Plate 20). These competitive species thrive in the nutrient-rich conditions (supplied by spoil) and their growth extends across the towpath. In sections the coarse, rank vegetation is interspersed with nutrient-poor vegetation (as mentioned above). This growth of rank vegetation is particularly in evidence for 2km west of Milford Lock.
- When the vegetation of the towpath was cut in early July 1992, the cuttings were not removed.

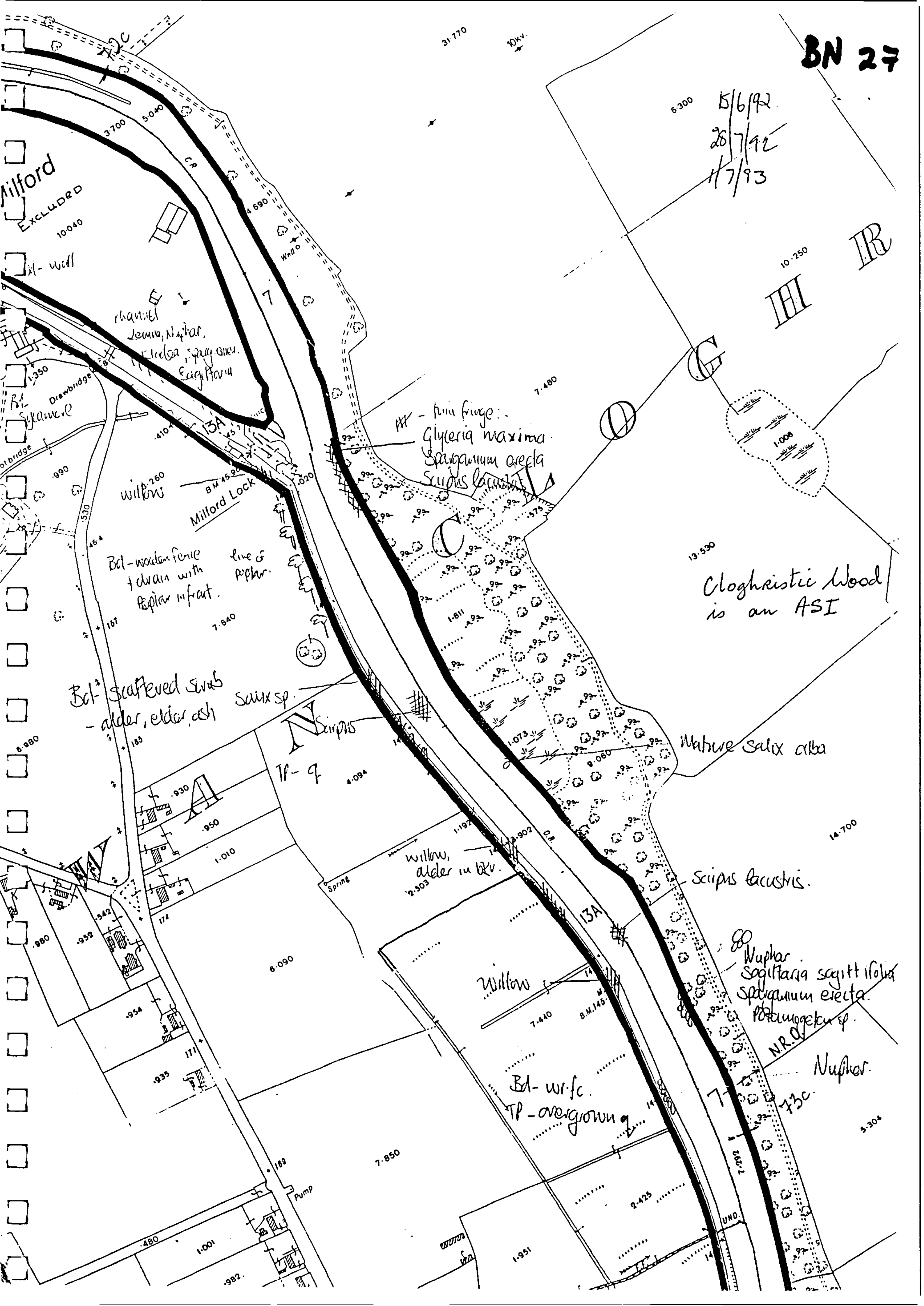
OBJECTIVES:

- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.
- To eliminate, in so far as is possible, Giant Hogweed from the system.

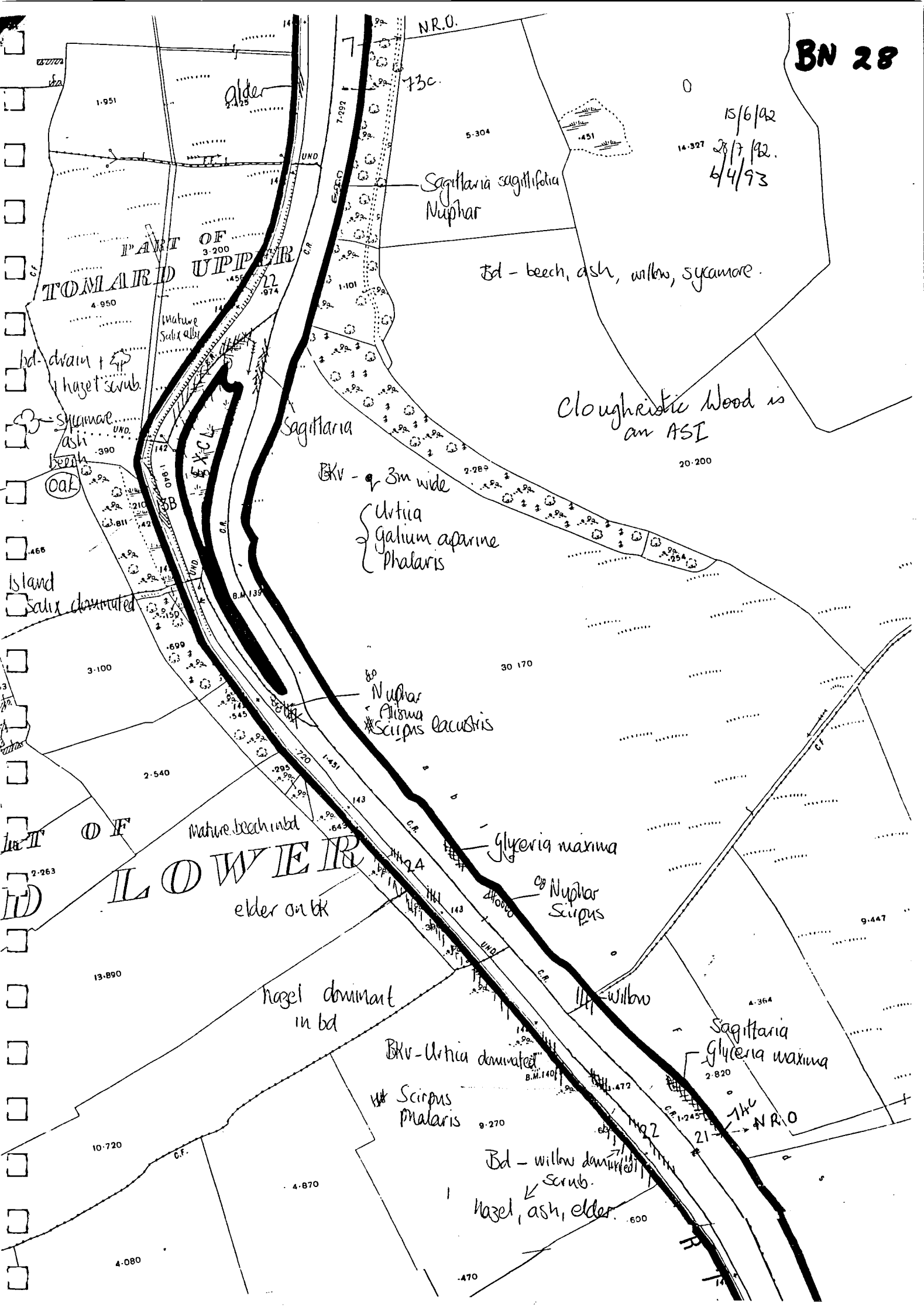
RECOMMENDATIONS:

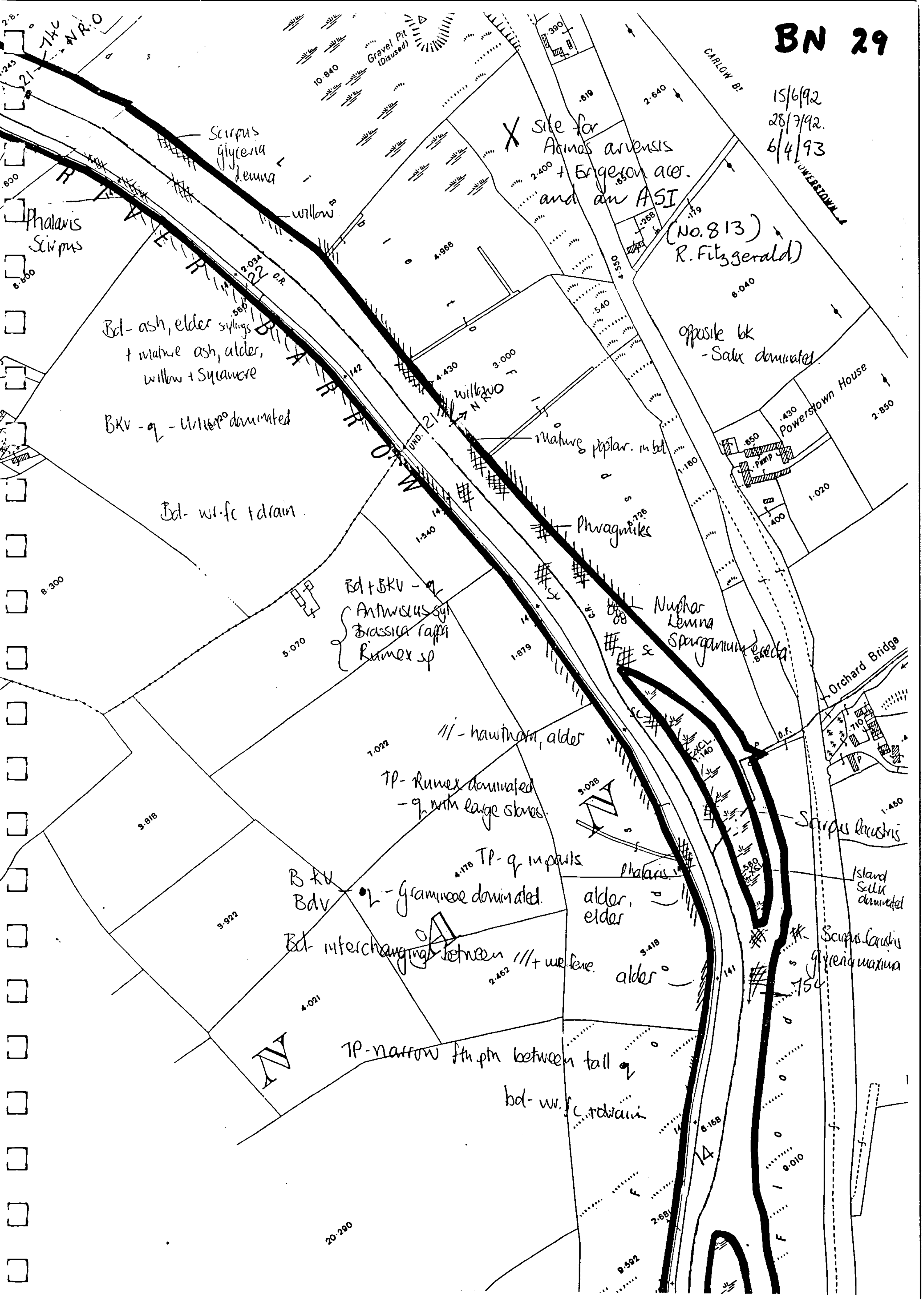
- Protect the island, woodland, reed/rush beds, boundary hedge and boundary drain in future canal operations.
- The vegetation on the nutrient-rich spoil deposited on the river bank, should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from the soil. As a result there will be an increase in non-competitive species and diversity. In the following years the vegetation of the bank should only be cut once, after flowering.
- Where the spoil has fallen on the towpath, a similar vegetation cutting regime should be put into operation as outlined for the banks. In the following year, the vegetation will be more diverse and not so vigorous. The number of cuttings can then be reduced. All cuttings must be removed (Contrast Plates 5 and 21).
- When the rank, coarse, competitive vegetation has been removed through frequent cutting in one year a single cut at the end of each year should then suffice to maintain ecological diversity. A single cut ensures that scrub species do not colonise the towpath and will also ensure that the diversity of the seed bank will not be reduced. Cutting of species before they set seed eliminates the seeds of that particular plant, thus reducing ecological diversity. If, for amenity purposes, it is necessary to maintain a short vegetation sward for walkers, then a strip of 1-1.5m wide has been researched as being wide enough. This strip may then be subjected to frequent cuts, ensuring always that the cuttings are collected. In this way the only reduction in the seed bank will occur in this narrow strip. The seeds of the plants at the edge of the 1-1.5m strip will ensure that ecological diversity will be maintained.
- At present a tractor with flail cutters cuts the towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil, leading to the growth of competitive species. For conservation purposes it is most important that the cuttings are collected so that this soil enrichment does not take place (Contrast Plates 5 and 21).

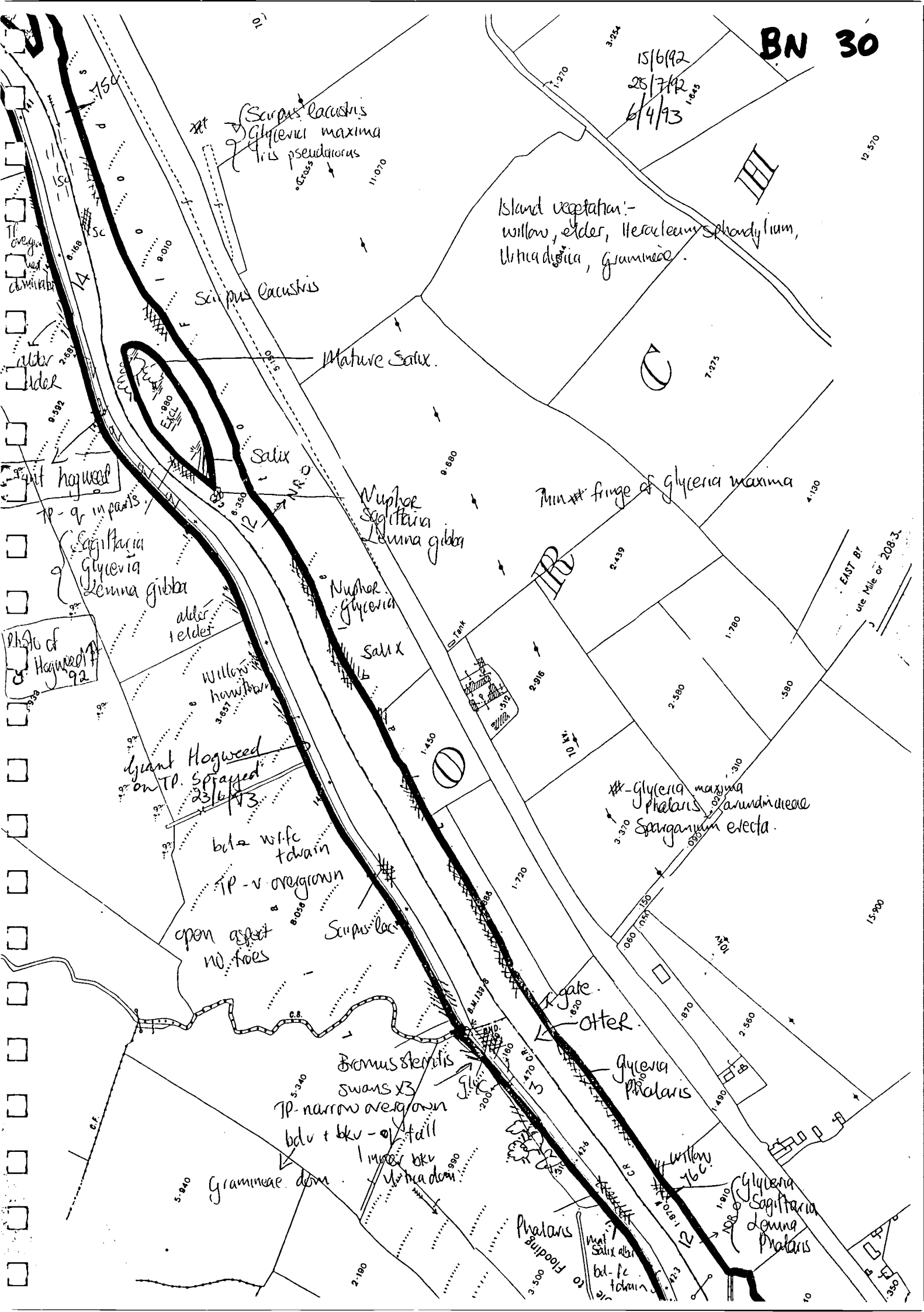
- The Giant Hogweed was sprayed in 1992 (see Part 1 Ch 3) and its location mapped. The site will be monitored in April/May 1993 to ascertain if further spraying is necessary.

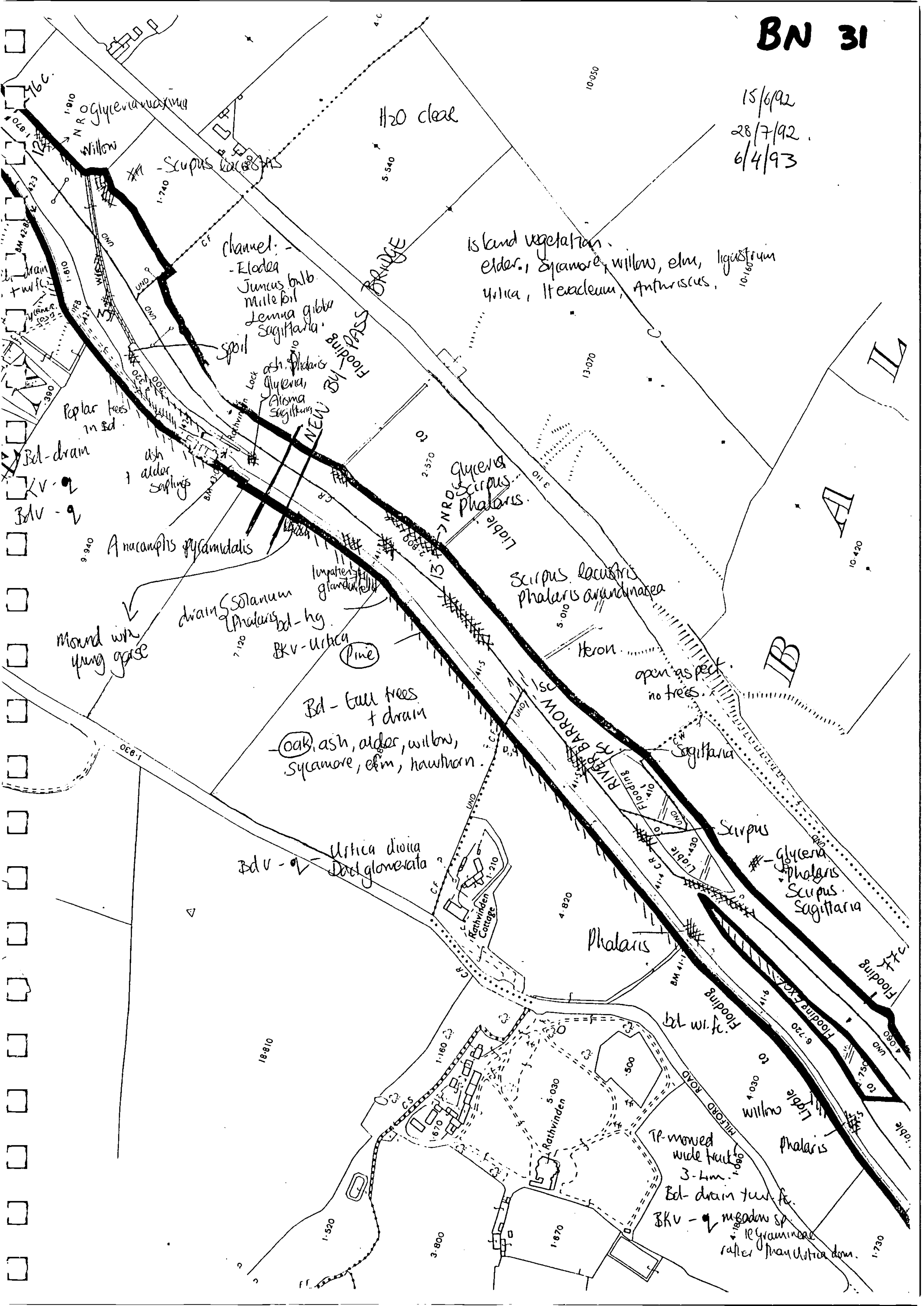


BN 27
15/6/92
28/7/92
1/7/93
Milford
EXCLUDED
Bd- wall
channel
Lemna, Nuphar,
Elodea, Sparg. emer.
Sagittaria
Drawbridge
Bd- Sycamore
Millford Lock
willows
Bd - wooden fence + drain with Poplar in front.
line of poplar.
Bd - scattered scrub - alder, elder, ash
Salix sp.
Scirpus
TP - q
fringe:
Glyceria maxima
Sparganium erecta
Scirpus lacustris
Cloghristic Wood is an ASI
Mature Salix alba
willow, alder in bkr.
Scirpus lacustris.
Spring
Nuphar
Sagittaria sagittifolia
Sparganium erecta
Potamogeton sp.
N.R.
Nuphar.
willow
Bd - wr.fc.
TP - overgrown q
Pump
13A
7
73c
UND.


BN 28
15/6/92
28/7/92.
6/4/93
N.R.O.
alder
Sagittaria sagittifolia
Nuphar
Bd - beech, ash, willow, sycamore.
PART OF
TOMARD UPPER
Mature Salix alba
bd - drain + hazel scrub.
sycamore
ash
beech
oak
Cloughriste Wood is an ASI
Sagittaria
BKv - 3m wide
Urtica
Galium aparine
Phalaris
Island
Salix dominated
Nuphar
Alisma
*Scirpus lacustris
Glyceria maxima
Nuphar
Scirpus
PART OF
LOWER
Mature beach inbd
elder on bk
hazel dominant in bd
willow
Sagittaria
Glyceria maxima
BKv - Urtica dominated
Scirpus
Phalaris
Bd - willow dominated scrub.
hazel, ash, elder
N.R.O


BN 29
15/6/92
28/7/92.
6/4/93
X site for Acinos arvensis + Erigeron acer. and an ASI (No. 813) R. Fitzgerald)
Gravel Pit (Disused)
CARLOW Rd
POWERSTOWN
Powerstown House
Orchard Bridge
RIVER BARROW
Scirpus Glyceria Lemna
Phalaris Scirpus
willow
Bd - ash, elder saplings + mature ash, alder, willow + Sycamore
Bd - wr. fc + drain
opposite bk - Salix dominated
Mature poplar in bd
Phragmites
Nuphar Lemna Sparganium erecta
Bd + BKV - q Anthriscus syl Brassica rapa Rumex sp
/// - hawthorn, alder
TP - Rumex dominated - q with large stones
TP - q in parts.
Phalaris
Scirpus lacustris
Island Salix dominated
B KV Bdv q - Gramineae dominated.
alder, elder
Bd - interchanging between /// + wr fence.
alder
Scirpus lacustris Glyceria maxima
TP - narrow fth. pth between tall q
bd - wr. fc + drain
Island
Pump
O.R.
C.R.
O.F.
UND.


BN 30
15/6/92
28/7/92
6/4/93
Scirpus lacustris
Glyceria maxima
Iris pseudacorus
Island vegetation:-
willow, elder, Heracleum sphondylium,
Urtica dioica, Gramineae.
Scirpus lacustris
Mature Salix.
Salix
Giant hogweed
TP - v. infants
Sagittaria
Glyceria
Lemna gibba
Nuphar
Sagittaria
Lemna gibba
Nuphar
Glyceria
Salix
alder
elder
Willow
hawthorn
Giant Hogweed
on TP. Sprayed
23/6/93
bda w.f.c
tdwain
TP - v. overgrown
open aspect
no foes
Scirpus lac
Fringe of Glyceria maxima
Glyceria maxima
Phalaris arundinacea
Sparganium erecta
gate.
otter.
Glyceria
Phalaris
Bromus sterilis
swans x3
TP - narrow overgrown
bdv + bkv - v. tall
Urtica dioica
Gramineae dom.
Phalaris
Flooding
Glyceria
Sagittaria
Lemna
Phalaris
EAST BY
ute Mile or 2083.
Tank

 BN 31
15/6/92
28/7/92.
6/4/93
H2O clear
Glyceria maxima
willow
Scirpus lacustris
channel:
- Elodea
Juncus bulb
Millefoil
Lemna gibba
Sagittaria.
spoil
NEW BY-PASS
BRIDGE
Flooding
Lock
Rathvinden
ash. Phalaris
Glyceria,
Alisma
Sagittaria
Island vegetation.
elder, Sycamore, willow, elm, ligustrum
urtica, Heracleum, Anthriscus.
Poplar trees in Bd
Bd-drain
KV - q
BdV - q
ash + alder saplings
Anacamptis pyramidalis
Mound with young gorse
Glyceria
Scirpus
Phalaris.
Liable
Impatiens glandulifera
drain { Solanum / Phalaris
Bd-hg
BKV-Urtica
Pine
Scirpus lacustris
Phalaris arundinacea
Heron
open aspect. no trees.
Bd - tall trees + drain
oak, ash, alder, willow, sycamore, elm, hawthorn.
RIVER BARROW
Sagittaria
Scirpus
Glyceria
Phalaris
Scirpus.
Sagittaria
Urtica dioica
BdV - q - Dactylis glomerata
Rathvinden Cottage
Phalaris
Bd wl. fc.
Flooding
MILFORD ROAD
Rathvinden
willow
Liable
Phalaris
TR-mowed wide track 3-4m.
Bd- drain turf fc.
BKV - q meadow sp. (Gramineae) rather than Urtica dom.

RATHVINDON LOCK - RATHELLIN LOCK **KM SECTIONS BN31-BN35**
approx. 4kms west and east bank

OBSERVATIONS:

Brady, Shipman and Martin, in their report to Carlow Co. Council, January 1992, note that Leighlinbridge is an attractive small settlement with an interesting history and that the surrounding landscape along this stretch has a parkland appearance with much mature timber. South of Leighlinbridge is a large tract of meadow which is liable to flooding in the winter and grazed during the summer. This rural scene contrasts with the urban setting of Leighlinbridge. Further south yet another image of the countryside is created by the presence of woodland in the boundary and a line of mature trees on Burgage Island. This island is grazed by cattle during the summer.

In February 1993 the Rathellin Canal was dredged, the spoil deposited on the wooded opposite bank and the footbridge at Burgage Weir replaced.

GOOD FEATURES:

- The towpath along this stretch is used quite often and does not require as much maintenance as a little-used vegetated path.
- The wide canal towpath both north and south of Leighlinbridge is well maintained by the local community. The vegetation of the central towpath is frequently cut and the cuttings removed. There is a narrow strip of flowering vegetation including Buttercups, Clover, Meadowsweet and meadow grasses at either side of the towpath which is not cut throughout the flowering period. This is visually attractive, while at the same time providing a source of food for the invertebrates and maintaining the diversity of the seed bank (Plates 21-23).
- There is a boundary drain rich in aquatic and semi-aquatic vegetation.
- There is an abundance of butterflies and dragonflies in the area immediately north and south of Leighlinbridge.
- Immediately north of Leighlinbridge is a long low island covered in scrub. This is another habitat in the vicinity.
- South of Leighlinbridge on the east bank are meadows which are liable to flooding (not OPW property). These meadows are lightly grazed during the summer and this option prevents scrub encroaching and dominating. There is a wide range of flowering species in the meadows.
- Further south is Burgage Island (most of it not OPW property) which was formed when the Rathellin Cut was

built. At the canal edge of this island (OPW property) is a mound upon which a line of mature Oak and Ash trees grow. These trees provide an ecological niche for a multitude of invertebrates which in turn are a good food source for birds and small mammals (Plate 24).
- An embanked Hazelwood along the east boundary (BN33/34) parallel to the canal and island adds to the overall ecological diversity of the area (Plate 24).

BAD FEATURES:

- Spoil deposited on the bank along the river stretch north of Burgage Island. The vegetation on the bank is now dominated by coarse, tall herbaceous species such as Nettles, Docks, Hogweed and Cleavers. These competitive species thrive in the nutrient-rich conditions (supplied by spoil).
- Spoil has been deposited at the north end of Burgage Island during the summer of 1992. Hopefully the grazing cattle on the island next summer will have an impact on this vegetation and be instrumental in getting rid of it.

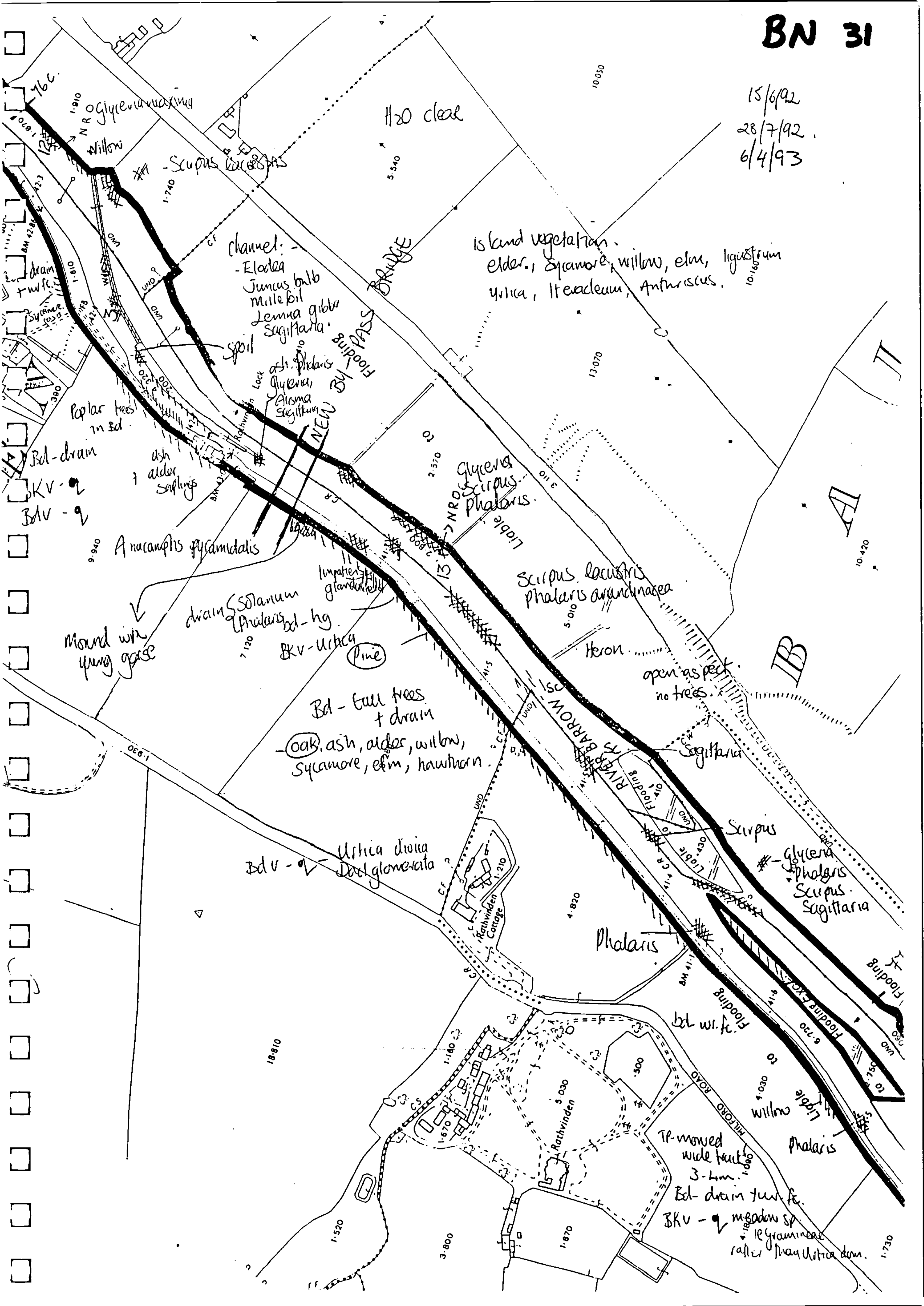
OBJECTIVES:

- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.

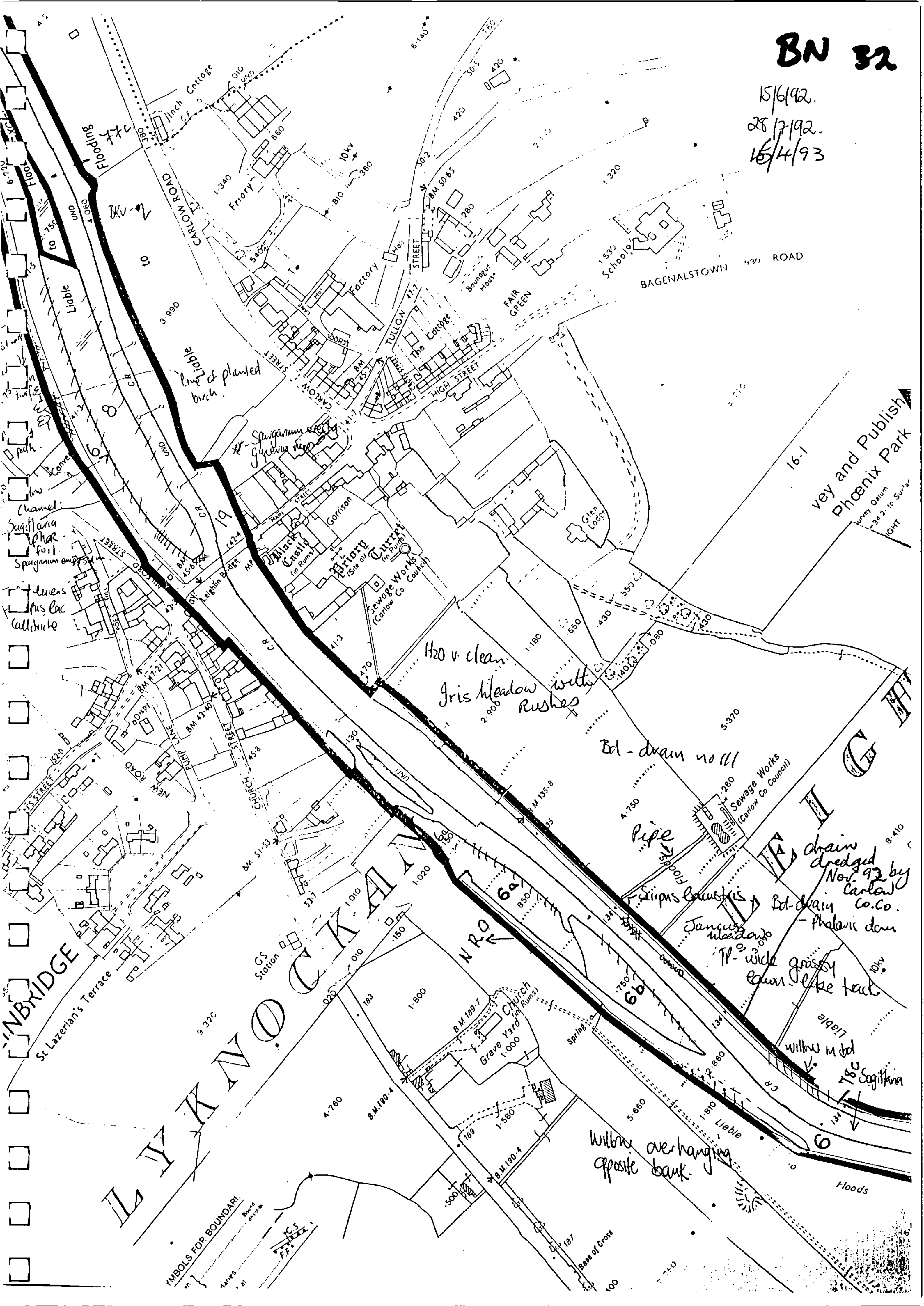
RECOMMENDATIONS:

- Protect the island, boundary drain, Hazelwood of the boundary and line of mature trees on the opposite canal bank on Burgage Island in future canal operations.
- Continue maintaining the towpath in Leighlinbridge as it was maintained in 1992 - central cut and collection allowing a strip either side of it to continue to grow and flower. This outer strip can be cut at the end of the year to prevent encroachment by bramble and scrub. It might be advisable, on ecological grounds, to reduce the width of the maintained/cut towpath. If, for amenity purposes, it is necessary to maintain a short vegetation sward for walkers, then a strip of 1-1.5m wide has been researched as being wide enough. This strip may then be subjected to frequent cuts, ensuring always that the cuttings are collected. In this way the only reduction in the seed bank will occur in this narrow strip. The seeds of the plants at the edge of the 1-1.5m strip will ensure that ecological diversity will be maintained.
- The vegetation on the nutrient-rich spoil deposited on the river bank, should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from the soil. As a result species diversity increases.

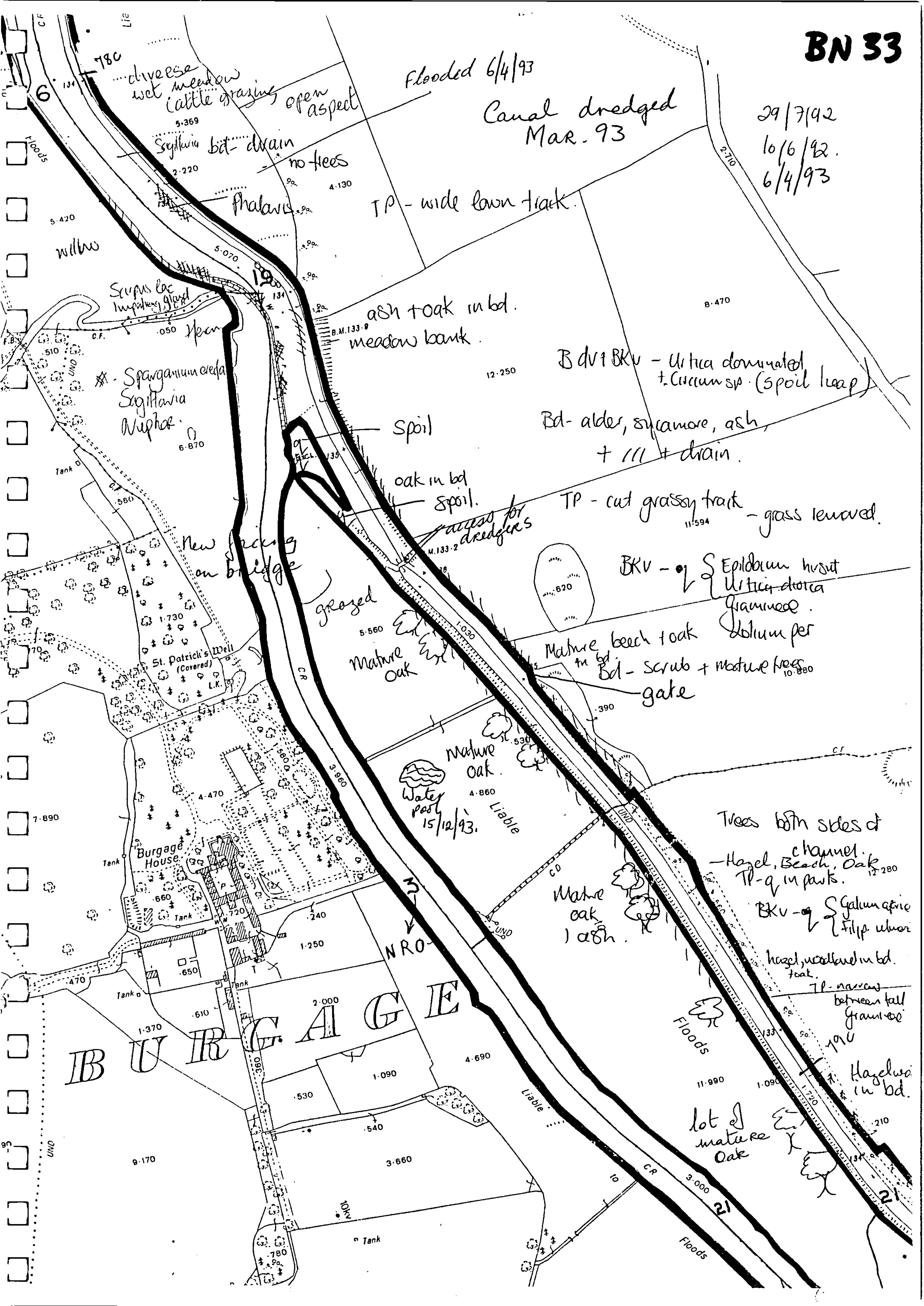
BN 31



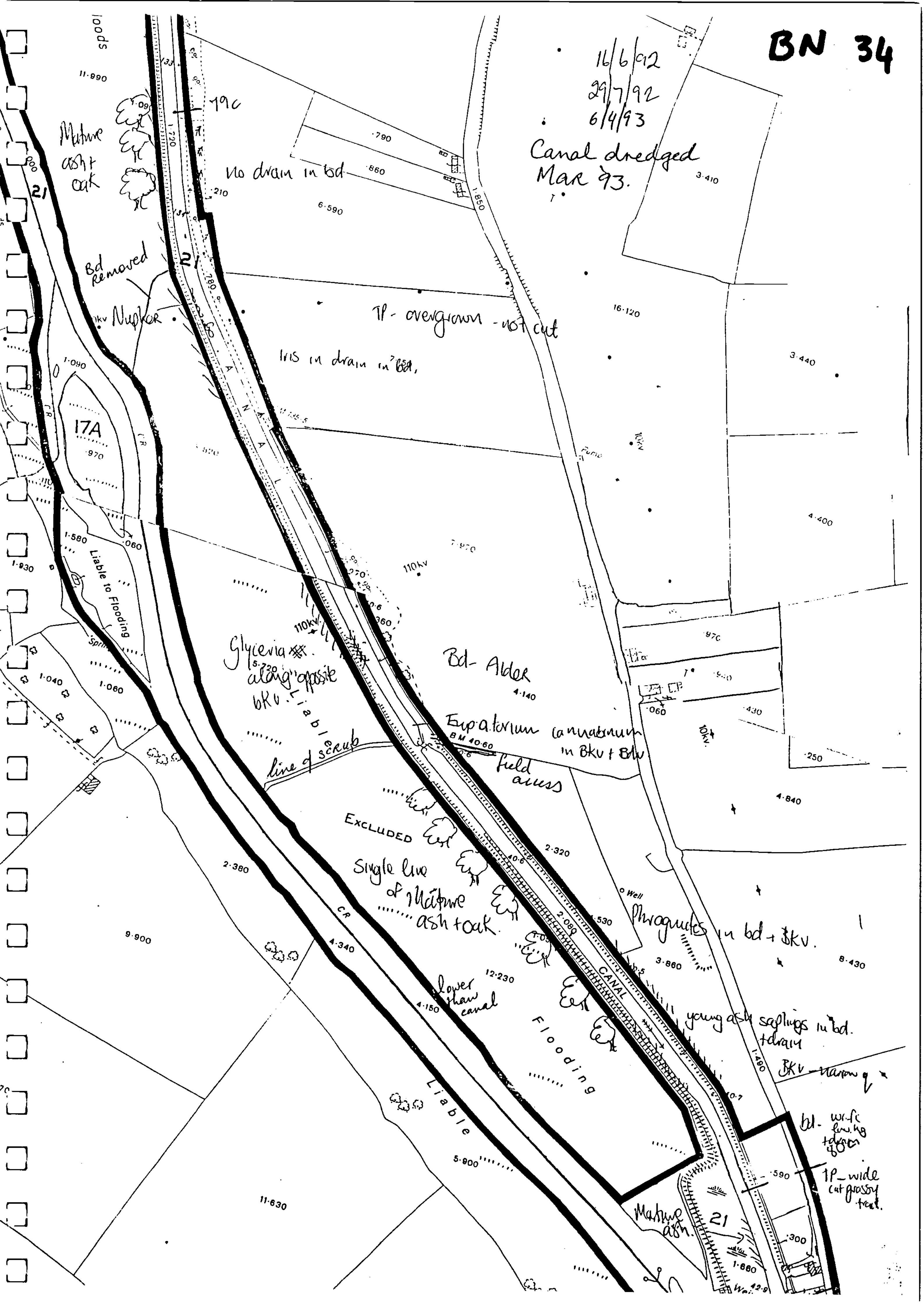
15/6/92
28/7/92.
6/4/93
H2O clear
Glyceria maxima
Willow
Scirpus lacustris
channel: -
- Elodea
Juncus bulb
Millefoil
Lemna gibba
Sagittaria
spoil
Lock ash. Phalaris
Glyceria
Alisma
Sagittaria
NEW BY-PASS BRIDGE
Flooding
Island vegetation.
elder, Sycamore, willow, elm, ligustrum
Urtica, Heracleum, Anthriscus.
Poplar trees in Bd.
Bd-drain
BKV - 9
BdV - 9
ash + alder saplings
Anacamptis pyramidalis
Mound with young gorse
drain Solanum Phalaris bd-hg
BKV-Urtica
Pine
Impatiens glandulifera
Glyceria Scirpus Phalaris.
Liable
Scirpus lacustris
Phalaris arundinacea
Heron
open aspect
no trees.
Bd - tall trees + drain
oak, ash, alder, willow, sycamore, elm, hawthorn.
RIVER BARROW
Sagittaria
Scirpus
Glyceria
Phalaris
Scirpus.
Sagittaria
Urtica dioica
BdV - 9
Dact glomerata
Rathvinden Cottage
Phalaris
Flooding
Bd. wl. fc.
Flooding
willow
Phalaris
Rathvinden
MILFORD ROAD
TP-mowed wide track 3-4m.
Bd- drain turf fc.
BKV - 9 meadow sp. le Gramineae rather than Urtica dom.



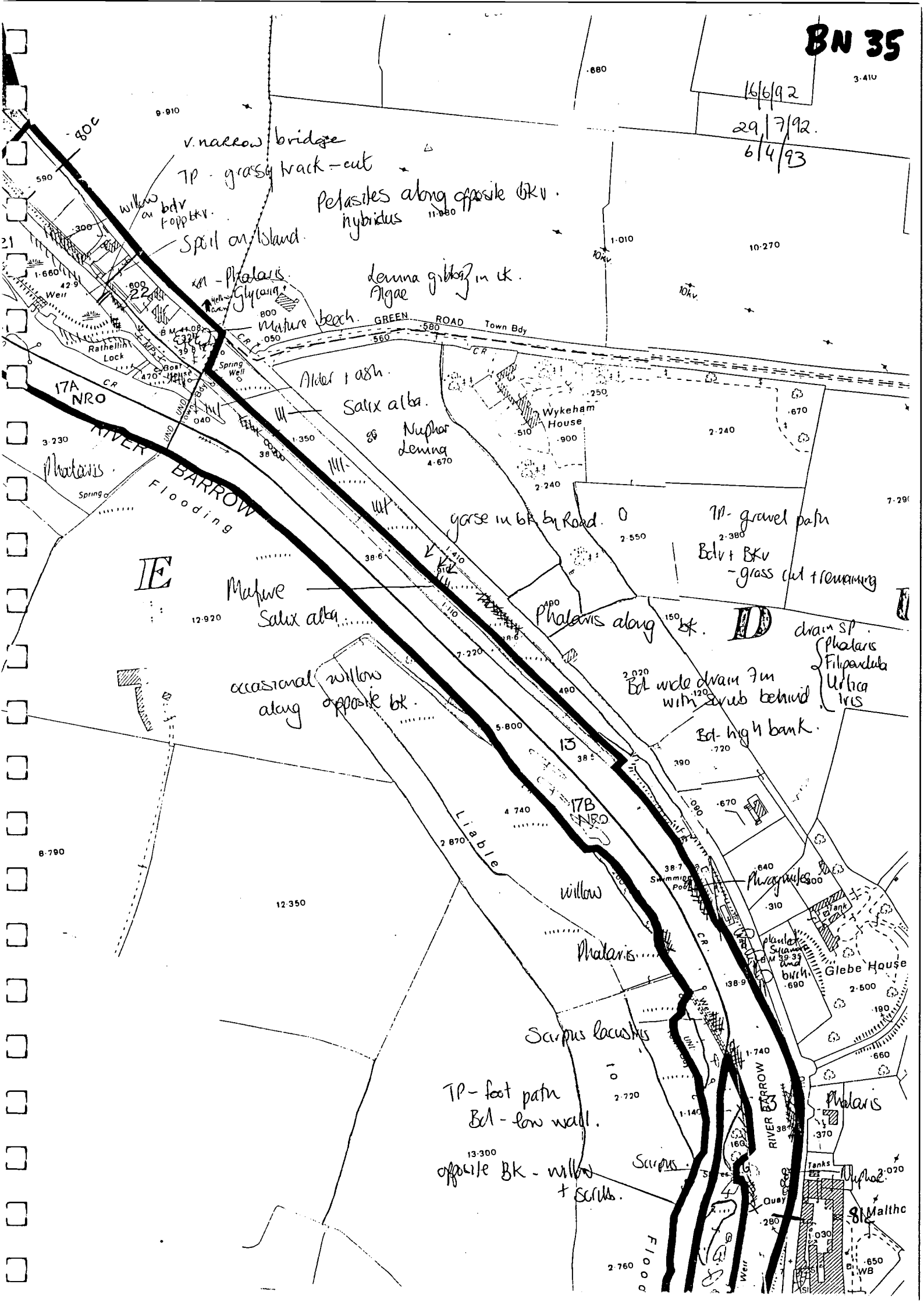
BN 32
15/6/92.
28/7/92.
15/4/93
Inch Cottage
Flooding
Friary
CARLOW ROAD
Liable
Line of planted birch
Factory
TULLOW STREET
HIGH STREET
FAIR GREEN
School
BAGENALSTOWN ROAD
The Cottage
Bounogue House
Garrison
Black Castle (in Ruins)
Priory (Site of)
Turret (in Ruins)
Sewage Works (Carlow Co Council)
Glen Lodge
Leighlin Bridge
H2O v. clean
Iris Meadow with Rushes
Bd - drain no 111
Pipe
drain dredged Nov. 92 by Carlow Co.Co.
Bd-drain
- Phalaris dom
Juncus Meadow
TP- wide grassy Equn. like tract
willow in bd
Sagittaria
willow overhanging opposite bank.
Liable
Floods
Channel
Sagittaria
PUMP LANE
CHURCH STREET
NEW ROAD
GS Station
St Lazerian's Terrace
LEIGHLINBRIDGE
LYKNOCKAN
Church (in Ruins)
Grave Yard
Spring
Base of Cross
SYMBOLS FOR BOUNDARI
vey and Publish
Phœnix Park



BN 33
Flooded 6/4/93
Canal dredged Mar. 93
29/7/92
16/6/92.
6/4/93
chweese wet meadow
cattle grazing
open aspect
Sagittaria bd-drain
no trees
Phalaris
TP - wide lawn track
willow
Scirpus lac
ash + oak in bd.
meadow bank
B dv1 BKv - Urtica dominated + Circium sp. (spoil heap)
Sparganium erectum
Sagittaria
Nuphar
Spoil
Bd - alder, sycamore, ash, + /// + drain.
oak in bd
spoil.
access for dredgers
TP - cut grassy track - grass removed.
New fencing on bridge
grazed
BKV - Epilobium hirsut, Urtica dioica, Gramineae, Lolium per
Mature oak
Mature beech + oak in bd
Bd - Scrub + mature trees
gate
St. Patrick's Well (Covered)
Mature oak.
Water post 15/12/93.
Liable
Trees both sides of channel.
- Hazel, Beech, Oak
TP - q in parts.
BKv - Galium aparine, Filip. ulmar
hazel, woodland in bd. + oak.
TP - narrow between tall Gramineae
Burgage House
NRO
BURGAGE
Mature oak + ash.
Floods
Hazelwood in bd.
lot of mature Oak
CR
Tank



BN 34
16/6/92
29/7/92
6/4/93
Canal dredged Mar 93.
Mature ash + oak
No drain in bd
Bd removed
Nuphar
TP - overgrown - not cut
Iris in drain in bd.
17A
Liable to Flooding
CANAL
Glyceria along opposite bkv.
Bd - Alder
Eupatorium cannabinum in Bkv + Bd
BM 40.60
line of scrub
field access
EXCLUDED
Single line of Mature ash + oak
Phragmites in bd + Bkv.
lower than canal
Liable to Flooding
young ash saplings in bd. + drain
Bkv - narrow
TP - wide cut grassy track.
Mature ash.
21
Well
110kv
10kv


BN 35
16/6/92
29/7/92.
6/4/93
V. narrow bridge
TP - grassy track - cut
willow on bdy + opp BKv.
Spoil on Island.
Potasites along opposite BKv.
hybridus
Phalaris
Glyceria
Lemna gibba in ck.
Algae
Mature beach.
GREEN ROAD
Town Bdy
Rathellin Lock
Spring Well
Alder + ash.
Salix alba.
Nuphar
Lemna
Wykeham House
17A NRO
RIVER BARROW
Flooding
Phalaris.
Spring
gorse in bk by Road.
TP - gravel path
Bdy + BKv - grass cut + remaining
Mature
Salix alba
Phalaris along bk.
drain sp.
Phalaris
Filipendula
Urtica
Iris
occasional willow along opposite bk.
2.020 Bd wide drain 7m with scrub behind
Bd - high bank.
17B NRO
Liable
willow
Phalaris
Scirpus lacustris
Glebe House
Swimming Pool
Tank
TP - foot path
Bd - low wall.
opposite BK - willow + scrubs.
Scirpus
Tenks
Quay
Malthc
RIVER BARROW
FLOOD
Weir
WB

RATHELLIN LOCK - BAGENALSTOWN LOCK **KM SECTIONS BN35-BN37**
approx. 2.5km east bank

OBSERVATIONS:

The town of Bagenalstown lies entirely on the east bank of the river and on the west bank large meadows slope down to the water. This, combined with the number of industrial buildings, mills and maltings along the waterfront significantly contribute to the town's particular charm and attraction. Brady, Shipman and Martin (1992) recommend a general tidy-up and clean-up for many buildings and walls addressing the waterfront. They also identify Bagenalstown as the most suitable location for a major visitor centre which will provide a positive focus for tourism within the county.

In late 1993 Carlow Co. Council extended a storm-water pipe underneath the canal with the outfall into the river near the weir. The canal was dammed with gravel based material during this operation. It is intended to raise the freeboard of the osiary (island between the canal and river) with the materials used in building the dam when the pipe-laying is complete. Soil status and plant growth should not be greatly affected by this for two reasons. The gravel material is nutrient-poor and any disturbance will occur during the dormancy period.

The west side of the weir and much of the debris and soil which had accumulated on that side of the extended island was also cleared late in 1993. It was intended that this material be deposited on the slope on the river side of the island.

There is a sewage improvement scheme - secondary treatment - being built below the lock on the west bank. (See Joe Caffrey's Report on Bagenalstown (Muinebheag) Sewage Improvement Scheme which is an internal report written in 1993).

GOOD FEATURES:

- No evidence of spoil having been deposited along this length in the recent past.
- Wide species-rich boundary drain south of Rathellin Lock as far as the swimming-pool on the east bank. Many Alder (trees of wetlands) grow in the area.
- The island between the canal and river at Bagenalstown Lock is OPW property and is designated a bird sanctuary.
- A diverse range of trees on the island.
- High aquatic plant diversity in the canal stretch.
- Many ducks swim in the canal stretch and roost on the long, narrow island.

BAD FEATURES:

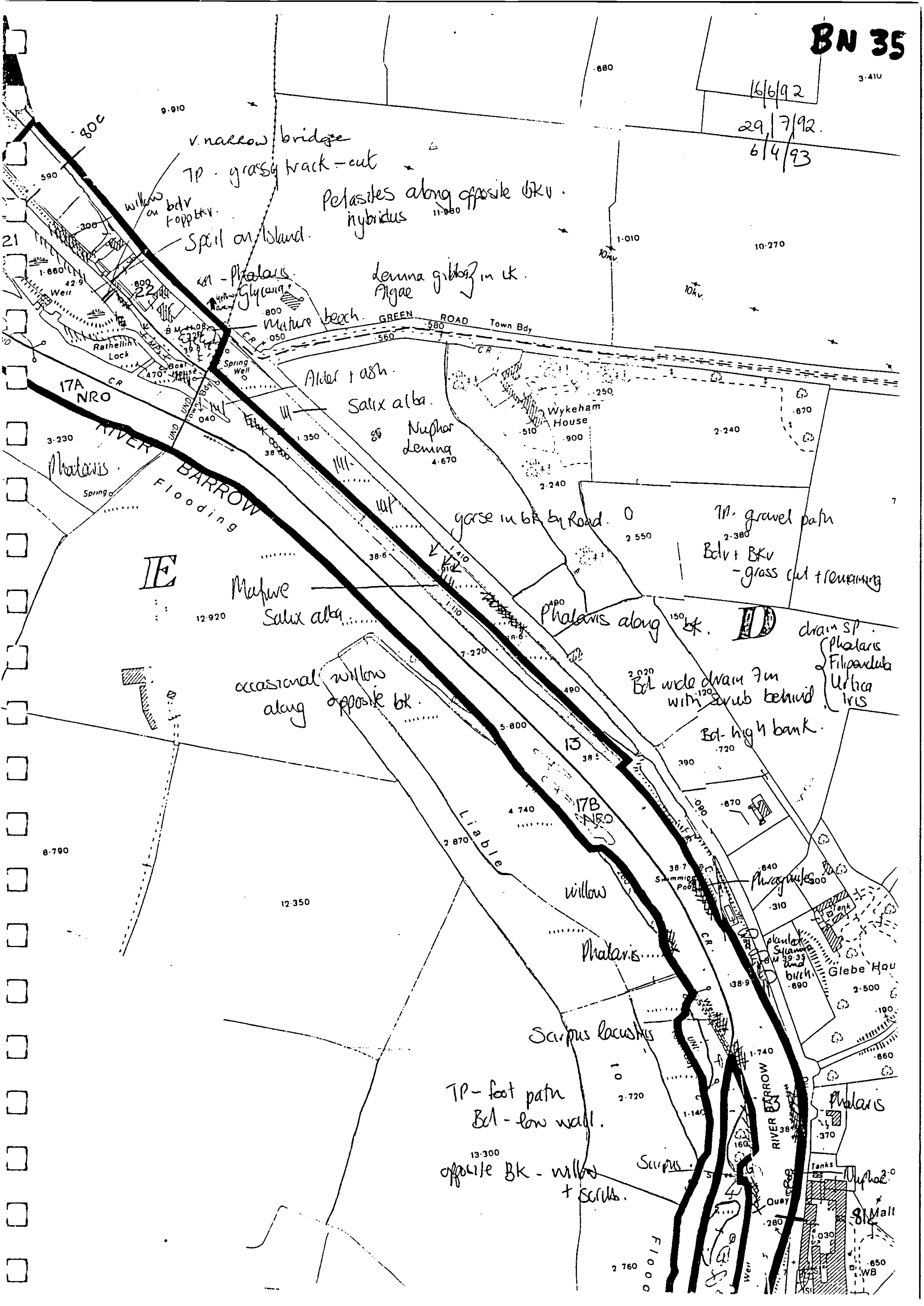
- There is too much vegetation growing on Burgage weir.
- Grass cuttings remain along the bank verge south of Rathellin Lock.
- The freeboard on the island at Bagenalstown was very low (1992).
- Much algae in the canal channel.
- The cement wall supporting the swimming pool should be screened.

OBJECTIVES:

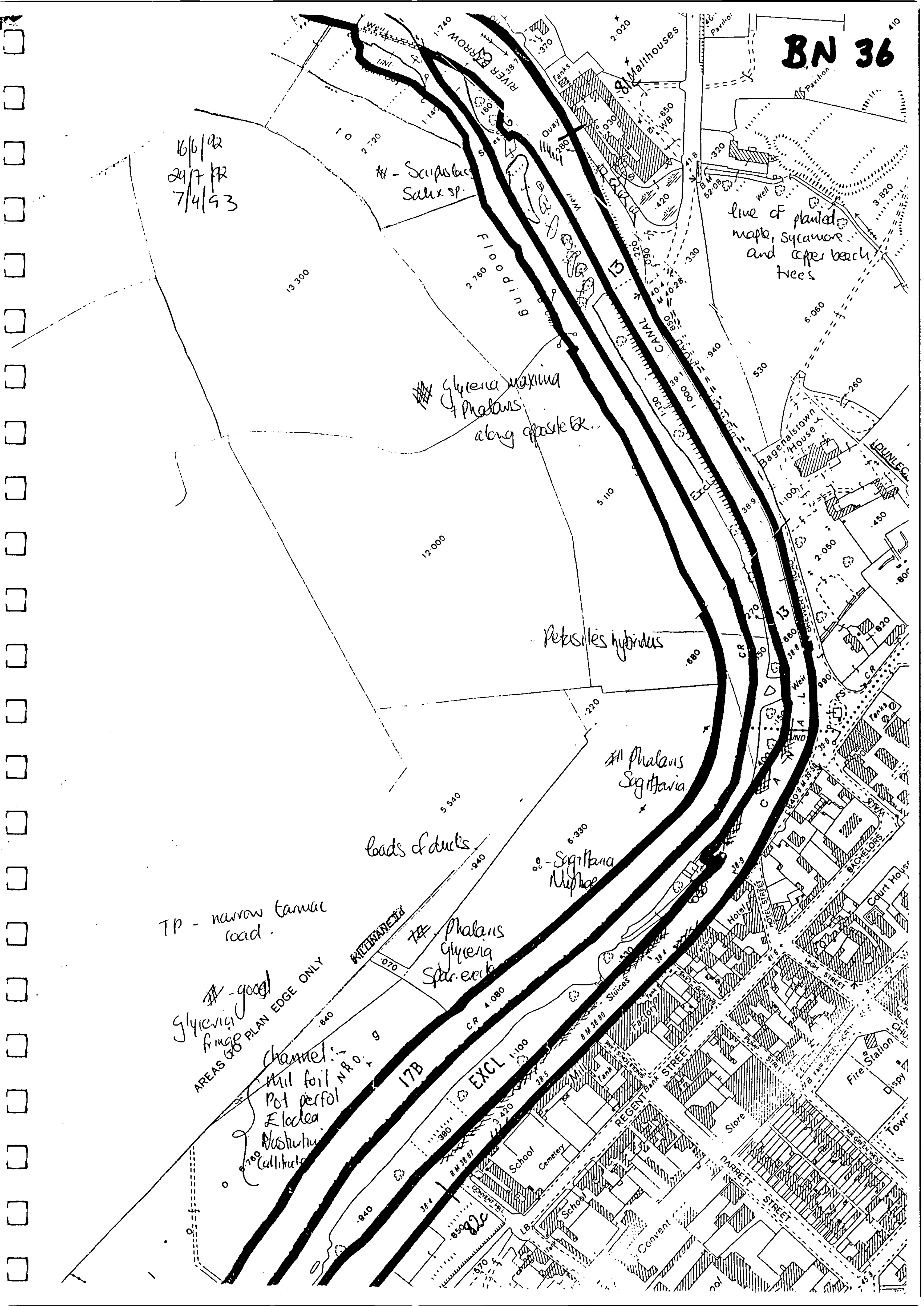
- To encourage and maintain ecological diversity.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.

RECOMMENDATIONS:

- Protect the osiary (island), the trees on it and boundary drain in future canal operations.
- When the vegetation along the towpath is cut the cuttings must be removed otherwise they form a mulch which will act as a soil fertiliser which in turn will encourage coarse, tough and rank vegetation to thrive. These types of species require soil rich in nutrients.
- Reduce both the width and number of cuttings of grasses and flowering species on either side of the surfaced towpath. A narrow strip (0.5m) can be frequently cut on either side of the path. The remainder of the bank and boundary verges should be cut late in the year. Cutting late in the year allows the plants to grow, flower and set seed. The advantages of this from a wildlife point of view are many. The diversity of the seed bank is not reduced. Insects can pupate and feed off their host plant and move around the general area. These in turn become a food source for birds and other small mammals. There is also the aesthetic value which attaches to the presence of a herb layer of medium height contrasting with both the taller tree and shrub layer and the low ground layer of the towpath.
- Screen the supporting structures of the swimming pool with vegetation such as Ivy.
- If it is decided to create a path from the swimming pool car-park down to the lower level towpath it should follow the most gradual gradient. Otherwise a steep path will allow run-off proceed at such a rate as to cause erosion at the base.



BN 35
16/6/92
29/7/92.
6/4/93
v. narrow bridge
TP - grassy track - cut
Petasites along opposite BKv.
hybridus
willow on bdv. + opp BKv.
Spoil on Island
Lemna gibba in ck.
Algae
Phalaris
Glyceria
Mature beech
GREEN ROAD Town Bdy
Rathellin Lock
Boat House
Spring Well
17A NRO
RIVER BARROW
Flooding
Alder + ash.
Salix alba.
Nuphar
Lemna
Wykeham House
Phalaris.
gorse in bk by Road.
TP. gravel path
Bdv + BKv
- grass cut + remaining
E
Mature
Salix alba
Phalaris along bk.
D
drain sp.
Phalaris
Filipendula
Urtica
Iris
Bd wide drain 7m with scrub behind
Bd - high bank.
occasional willow along opposite bk.
13
17B NRO
Liable
willow
Phragmites
Swimming Pool
planted Sycamore and birch.
Glebe House
Phalaris
Scirpus lacustris
TP - foot path
Bd - low wall.
RIVER BARROW
Phalaris
opposite Bk - willow + scrub.
Scirpus
Quay
Tanks
Nuphar
Mall
Flooo
Well


BN 36
16/6/92
24/7/92
7/4/93
- Scirpus lacus Salix sp.
Malthouses
Quay
RIVER BARROW
Flooding
line of planted maple, sycamore and copper beech trees
Bagenalstown House
Glyceria maxima + Phalaris along opposite bk.
CANAL
Excl
Petasites hybridus
Phalaris Sagittaria
loads of ducks
Sagittaria Nuphar
TP - narrow tarmac road.
KILLINANE Td
Phalaris Glyceria Spar. erect
- good Glyceria fringe
AREAS OF PLAN EDGE ONLY
Channel: Mil foil Pot perfol Elodea Nasturtium Callitriche
17B
EXCL
Sluices
Factory
Mill
School
Cemetery
REGENT STREET
Bank STREET
HOTEL STREET
Hotel
BACHELORS WALK
Court House
HIGH STREET
Fire Station
Dispy
Convent
Store
BARRETT STREET
Town

BN 37
16/4/92
29/7/92.
7/4/93
AREAS TO PLAN EDGE ONLY
HOLLOWELL RESERVOIR
BHEAG MUINE
Sewage Works (Carlow Co Council)
Mills
Store
Eastwood
West House
Holyoden
Glyceria + Phalaris
Impatiens glandulifera in bdw - drain
Bd - Scrub + drain on TP side
Glyceria
oak in bd
willow, some branches dumped on bd - messy
Salix scrub.
Island veg:-
Urtica
Impatiens glandulifera
Scirpus lac.
Scirpus lacustris
Glyceria
Sagittaria.
Sparganium er.
Iris
Phalaris
Glyceria
Bd - scrub + drain
TP - wide grassy bank
Bd - ash, elder elm
Scirpus lacustris
under Glyceria
Phalaris
Sparganium erecta
willow
Typha
Phragmites
Nuphar
willow
17B
16-5
1C
1D
2C
2D
BK v - column per line dominated.
TP - narrow Road
Bd - wall
Pot-pectinates
channel - choked with type + some rubbish
Scrub
Bd - Scrub + drain on TP side
Island veg:-
Urtica
Impatiens glandulifera
Scirpus lac.
Scirpus lacustris
Glyceria
Sagittaria.
Sparganium er.
Iris
Phalaris
Glyceria
under Glyceria
Phalaris
Sparganium erecta
willow

BAGENALSTOWN LOCK - FENNISCOURT **KM SECTIONS BN37-BN40**
approx. 3.5km east bank

OBSERVATIONS:

This stretch of river is in a predominantly rural setting. South of Royal Oak Bridge are the Bagenalstown gravel eskers (Plate 25). Those on the north bank are grazed by a large flock of sheep and those on the south bank - screened by trees - are being excavated.

GOOD FEATURES:

- Good examples of reed and rush stands along the stretch.
- Many dragonflies present.
- Species-rich boundary drain of aquatic and semi-aquatic species with large numbers of butterflies on the extensive growths of Hemp Agrimony (Eupatorium cannabinum).
- Scrub/woodland also forms the boundary and consists of a diverse range of tree species.
- Towpath a wide grassy track as far as Royal Oak Bridge and south of the railway bridge.
- Mature woodland in the vicinity of Glebe House (not OPW property on the east bank) which adds to the overall ecological diversity of the area.
- Mature trees in the vicinity of Holloden House on west bank. In addition to adding to the ecological diversity, they also act as a screen between river and meat factory.
- Small scrub-covered islands provide a habitat for otters.
- Extending from immediately south of Royal Oak Bridge beyond Fenniscourt Lock on the west bank is an extensive area of disused quarries and gravel pits which is now grazed by sheep and which can be viewed from the towpath. It is also an ASI. Many rare flowering species are found here. It is not OPW property. However, it forms part of the river valley system and adds to the overall ecology of the area (Plate 25).
- Similar habitat on the east bank curently under excavation - again not OPW property.

BAD FEATURES:

- There is a meat factory at the east side of the river which is visible from the towpath.
- There is a notable presence of non-native Indian Balsam (Impatiens glandulifera) (Plate 38) on the small islands in the centre of the channel and in the boundary drain.
- The towpath south of Royal Oak bridge and extending as far as the railway bridge was impassable in 1992. The towpath, under the railway bridge was damaged throughout

1992. This prevented the machinery used to cut vegetation from accessing the towpath between the two bridges. The path was impassable. The area was repaired in 1993.
- In places, between these two bridges, the bank verge is very wide and supports a tall, rank vegetation of Hogweed, Cleavers, Docks and coarse grasses. These plants spread on to the towpath if not kept in check.
- Where the towpath vegetation along this stretch was cut it was not collected. The width of maintained/cut towpath is too great.
- The weir at Fenniscourt is over vegetated during the growing season (Plate 26).

OBJECTIVES:
- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.

RECOMMENDATIONS:
- Protect the islands, boundary hedge and boundary drain in future canal operations.
- Where nutrient-rich spoil has been deposited on the river bank, the vegetation should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from the soil. As a result there will be an increase in non-competitive species and diversity.
- Where the bankverge is sufficiently wide a band of the coarse, rank vegetation can remain, provided it is not too near the towpath and in danger of spreading on to it and provided it does not interfere with views of the river. This vegetation attracts its own range of insects and where it does not interfere with the amenity value of the river towpath, should be allowed to grow.
- Where the spoil has fallen on the towpath, a similar vegetation cutting regime should be put into operation as outlined for the banks. In the following year, the vegetation will be more diverse and not so vigorous. The number of cuttings can then be reduced. All cuttings must be removed.
- When the rank, coarse, competitive vegetation has been removed through frequent cutting in one year a single cut at the end of each year should then suffice to maintain ecological diversity. A single cut ensures that scrub species do not colonise the towpath and will also ensure that the diversity of the seed bank will not be reduced. Cutting of species before they set seed eliminates the seeds of that particular plant, thus reducing ecological diversity. If, for amenity

purposes, it is necessary to maintain a short vegetation sward for walkers, then a strip of 1-1.5m wide has been researched as being wide enough. This strip may then be subjected to frequent cuts, ensuring always that the cuttings are collected. In this way the only reduction in the seed bank will occur in this narrow strip. The seeds of the plants at the edge of the 1-1.5m strip will ensure that ecological diversity will be maintained.
- At present a tractor with flail cutters cuts the towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil, leading to the growth of competitive species. For conservation purposes it is most important that the cuttings are collected so that this soil enrichment does not take place (Contrast Plates 5 and 21).
- Enlist the co-operation of the landowner of the woodland at Holloden House in preserving the overall ecological diversity of the area.
- Clear the weir of excess vegetation (Plate 26). As each year passes, more vegetation becomes established, making it increasingly difficult for salmon to move upstream.

BN 37

16/6/92
29/7/92.
7/4/93

AREAS TO PLAN EDGE ONLY

WOLVERHAMPTON

BHEAG MUINE

Bkv - 2 lohum per une dominated.

narrow Road Bd-wall

Pot-pectinatus

channel:- choked with type + lemna. some rubbish

Impatiens glandulifera in bdy-drain

Bd - Scrub + drain on TP side

Glycera

Oak in bd

Willow, some branches dumped on rd - messy

Salix scrub.

Bd - scrub + drain

TP - wide grassy kerb

Bd - ash, elder elm.

Scirpus lacustris

Islands veg:-

Urtica

Impatiens glandulifera

Scirpus lac.

Scirpus lacustris

Glyceria

Sagittaria.

Sparganium sp.

Iris Phalaris Glyceria

wide Glyceria Phalaris Sparganium erecta

Glyceria Phalaris

Willow

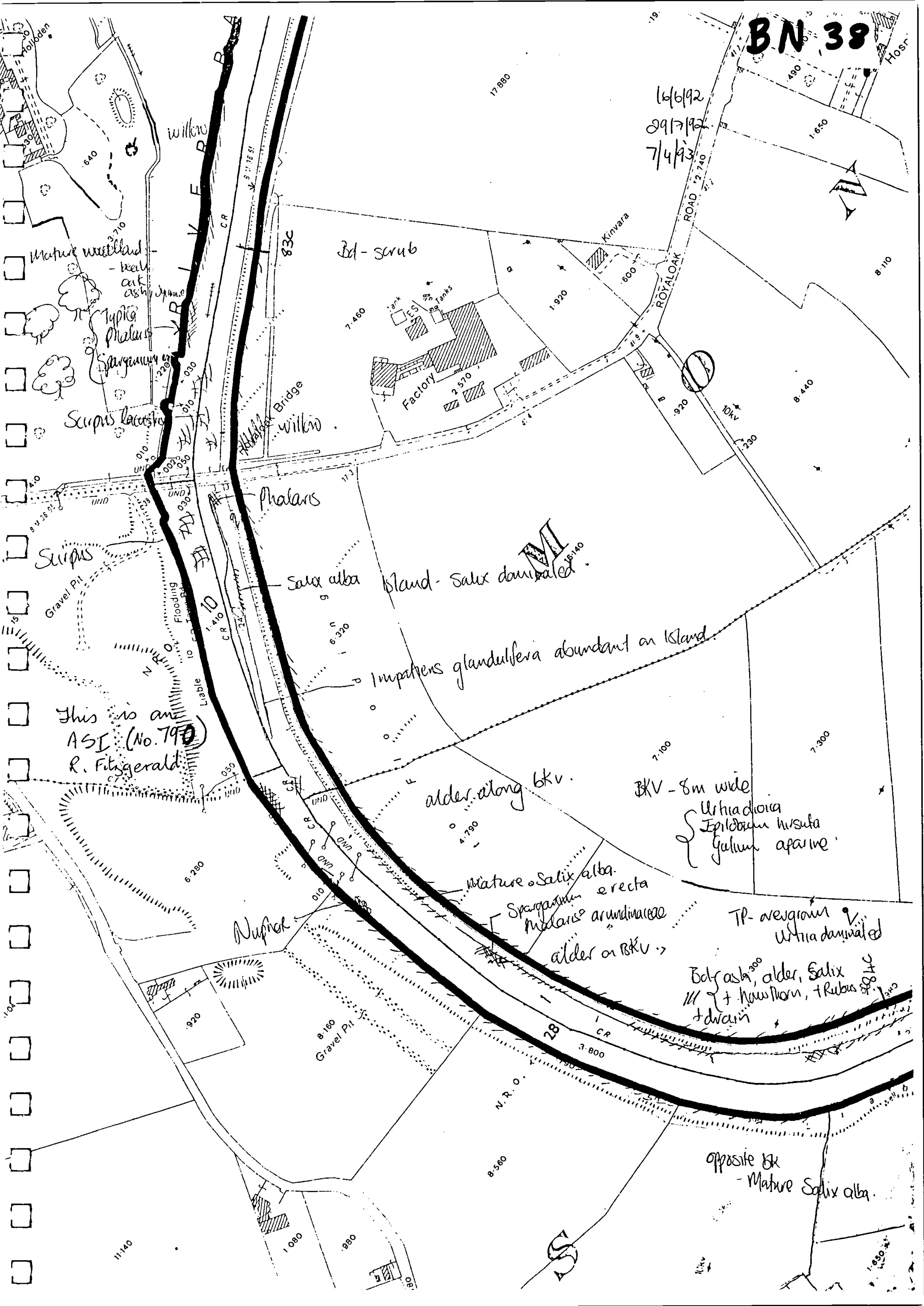
Sewage Works (Carlow Co Council)

Eastwood

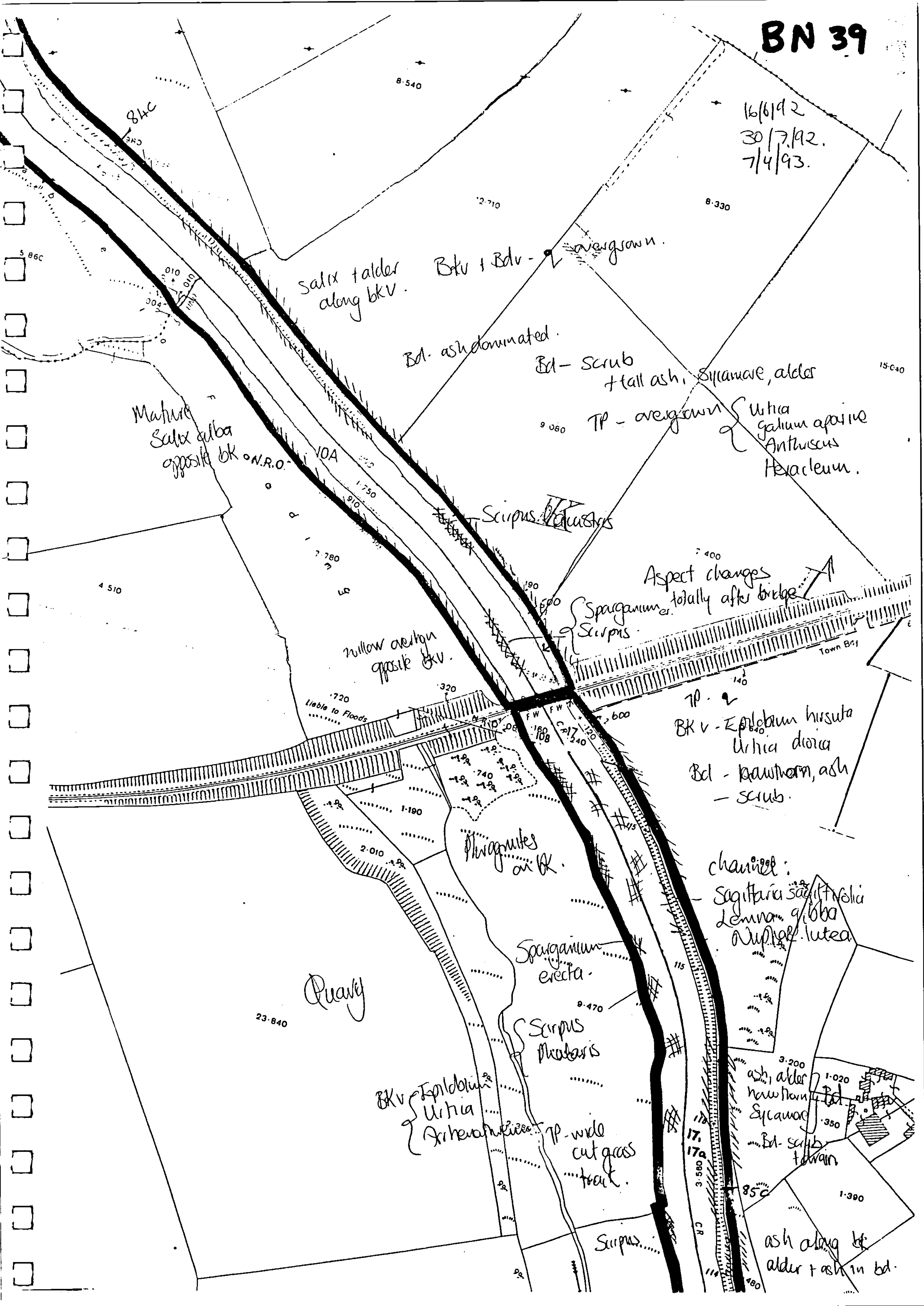
Holloden

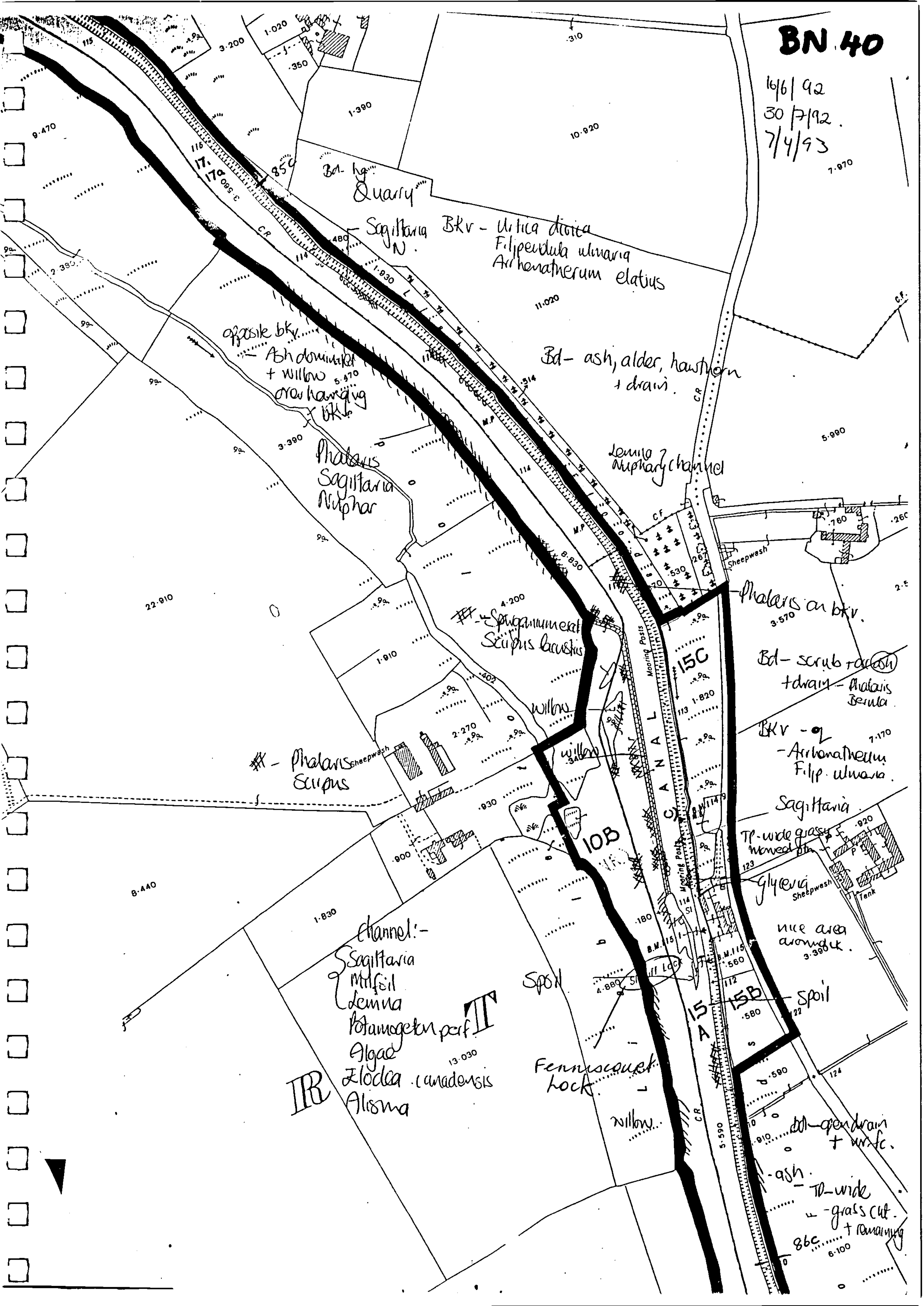
STBJ

West House



BN 38
16/6/92
29/7/92
7/4/93
ROYALOAK ROAD
Kinvara
Factory
Tanks
Bridge
Bd - scrub
83C
willow
Mature woodland - beech, oak, ash, sycamore
Typha
Phalaris
Sparganium
Scirpus lacustris
willow
Phalaris
Scirpus
Gravel Pit
Salix alba
Island - Salix dominated
Impatiens glandulifera abundant on Island
This is an ASI (No. 790) R. Fitzgerald
Liable to Flooding
alder along BKV
BKV - 8m wide
Urtica dioica
Epilobium hirsuta
Galium aparine
Mature Salix alba
Sparganium erecta
Phalaris arundinaceae
alder on BKV
Nuphar
TP - overgrown
Urtica dominated
Bd - ash, alder, Salix + hawthorn, + Rubus sp. + drain
84C
28
Gravel Pit
opposite BK - Mature Salix alba


BN 39
16/6/92
30/7/92.
7/4/93.
84C
8·540
8·330
Salix + alder along bkV.
Bkv + Bdv - overgrown.
Bd. ash dominated.
Bd — Scrub + tall ash, Sycamore, alder
TP - overgrown { Urtica, Galium aparine, Anthriscus, Heracleum.
Mature Salix alba opposite bk
N.R.O.
10A
Scirpus lacustris
Aspect changes totally after bridge
Sparganium er. Scirpus.
willow overhang opposite bkv.
Liable to Floods
Town Bay
TP.
BK v - Epilobium hirsuta, Urtica dioica
Bd - hawthorn, ash - scrub.
Phragmites on bk.
channel: Sagittaria sagittifolia, Lemna gibba, Nuphar lutea
Sparganium erecta.
Quarry
Scirpus, Phalaris
BKv - Epilobium, Urtica, Arrhenatherum
TP - wide cut grass track.
ash, alder hawthorn Bd. Sycamore
Bd - scrub + drain
85C
Scirpus
ash along bk alder + ash in bd.
23·840
9·470
4 510
15·040



BN 40
16/6/92
30/7/92.
7/4/93
Quarry
Sagittaria N.
BKv - Urtica dioica
Filipendula ulmaria
Arrhenatherum elatius
Bd - ash, alder, hawthorn + drain.
Opposite bkv. - Ash dominant + willow overhanging bkb
Phalaris
Sagittaria
Nuphar
Lemna
Nuphar channel
Phalaris on bkv.
Sparganium erect.
Scirpus lacustris
Bd - scrub + ash + drain - Phalaris Berula
willow
BKv - Arrhenatherum Filip. ulmaria.
Phalaris
Scirpus
Sagittaria
TP - wide grass mowed
Glyceria
nice area around lock.
Channel:-
Sagittaria
Milfoil
Lemna
Potamogeton perf.
Algae
Elodea canadensis
Alisma
Spoil
Spoil
Fenniscourt Lock
willow
Bd - open drain + wr. fc.
- ash.
- TP - wide
- grass cut + remaining
CANAL
CR
Mooring Posts
Sheepwash
Tank
Lock
15C
15B
15A
10B
17.
17a
85c
86c
IR
T

FENNISCOURT - UPPER BALLYELLLIN LOCK **KM SECTIONS BN40-BN45**
approx. 5kms east bank

OBSERVATIONS:

This is a stretch of river running through rural terrain. There is an open aspect to the river. There is a very large quarry, presently worked, at Ballyellin Lock on the east bank. Parts of it are an ASI because of the presence of rare and protected species.

GOOD FEATURES:

- Ballyellin Quarry at Ballyellin Lock (non OPW property), is an ASI of local importance (National Parks & Wildlife Service, 1992) because of the presence of many rare and protected species. Included among these are Erigeron acer and Carduus nutans.
- The vegetation on the towpath in the vicinity of Upper Ballyellin Lock is characterised by a calcareous sward including Pyramidal Orchid. Much dust from the limeworks falls on to the towpath and this changes the soil status. Erigeron acer (Blue Fleabane) was also found on the towpath.
- Spoil from the fast-flowing river stretches near Lock 45 consists mostly of gravel and is nutrient-poor. A diverse range of low growing plant species colonise such areas (Plate 28).
- Wide range of diversity in the channel and good examples of reed fringe and reed beds (Plate 28).
- Diverse range of mature trees along the west bank including White Willow overhanging it.
- Boundary drain rich in species. Diversity along this stretch is enhanced by the presence of a rich boundary hedge including Spindle, Willow, Alder and Oak.
- Scrub dominated small islands in the channel with some rank vegetation also present. These islands provide good cover for otters if in undisturbed areas.
- Stand of mature trees on the east bank immediately north of Sliguff Lock.
- South of Sliguff Lock on the west bank is a large stand of mature Beech trees - on land belonging to Barraghcore House.
- Many ducks using the stretch of river immediately south of Sliguff Lock. It is enclosed on both sides by tall trees.

BAD FEATURES:

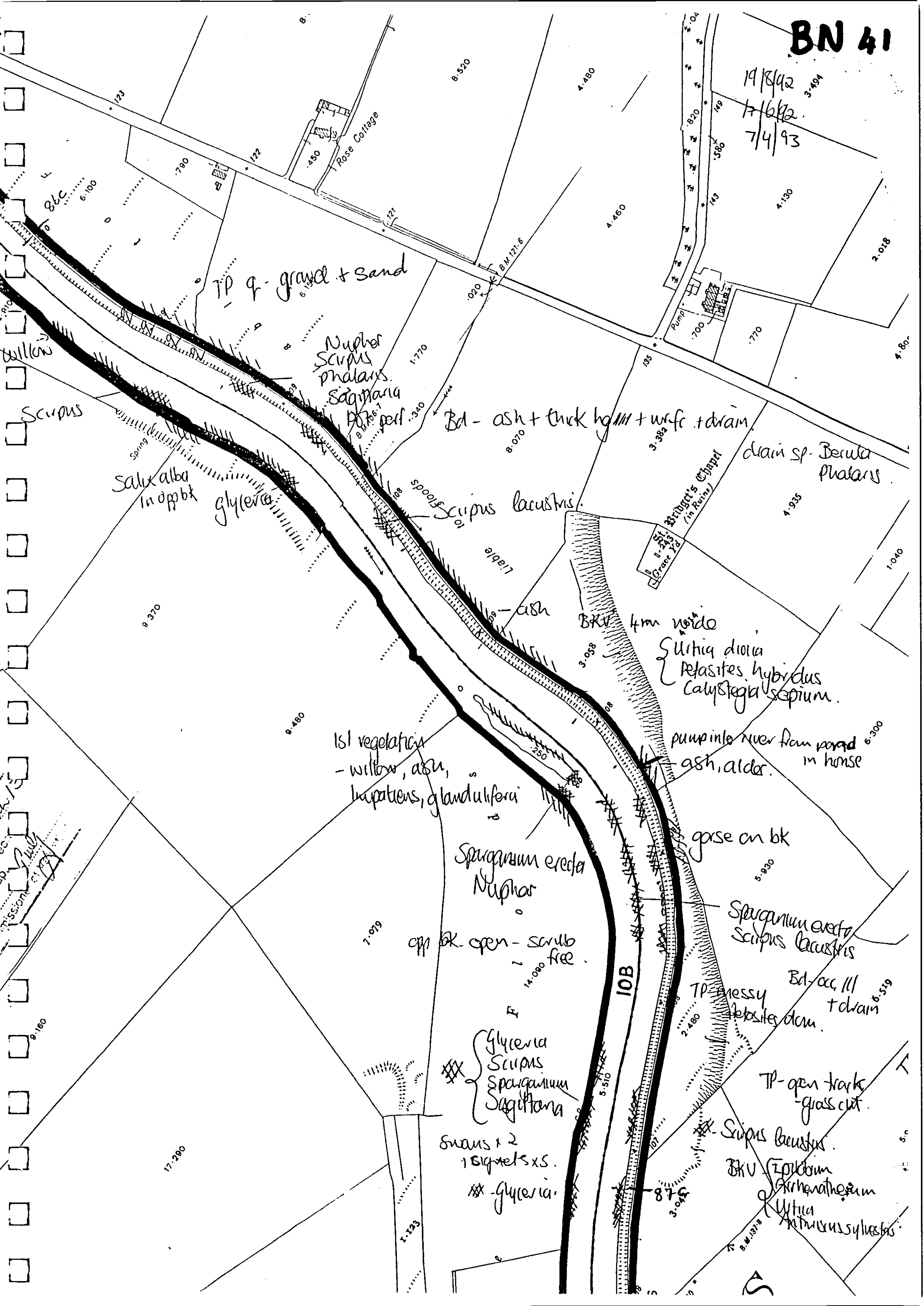
- Indian balsam (Impatiens glandulifera), a non-native plant, grows profusely along the boundary drain and on the small islands (Plate 38). It colonises those areas along river banks which have recently been disturbed or had spoil deposited on them.
- At the height of the summer, the towpath is impassable

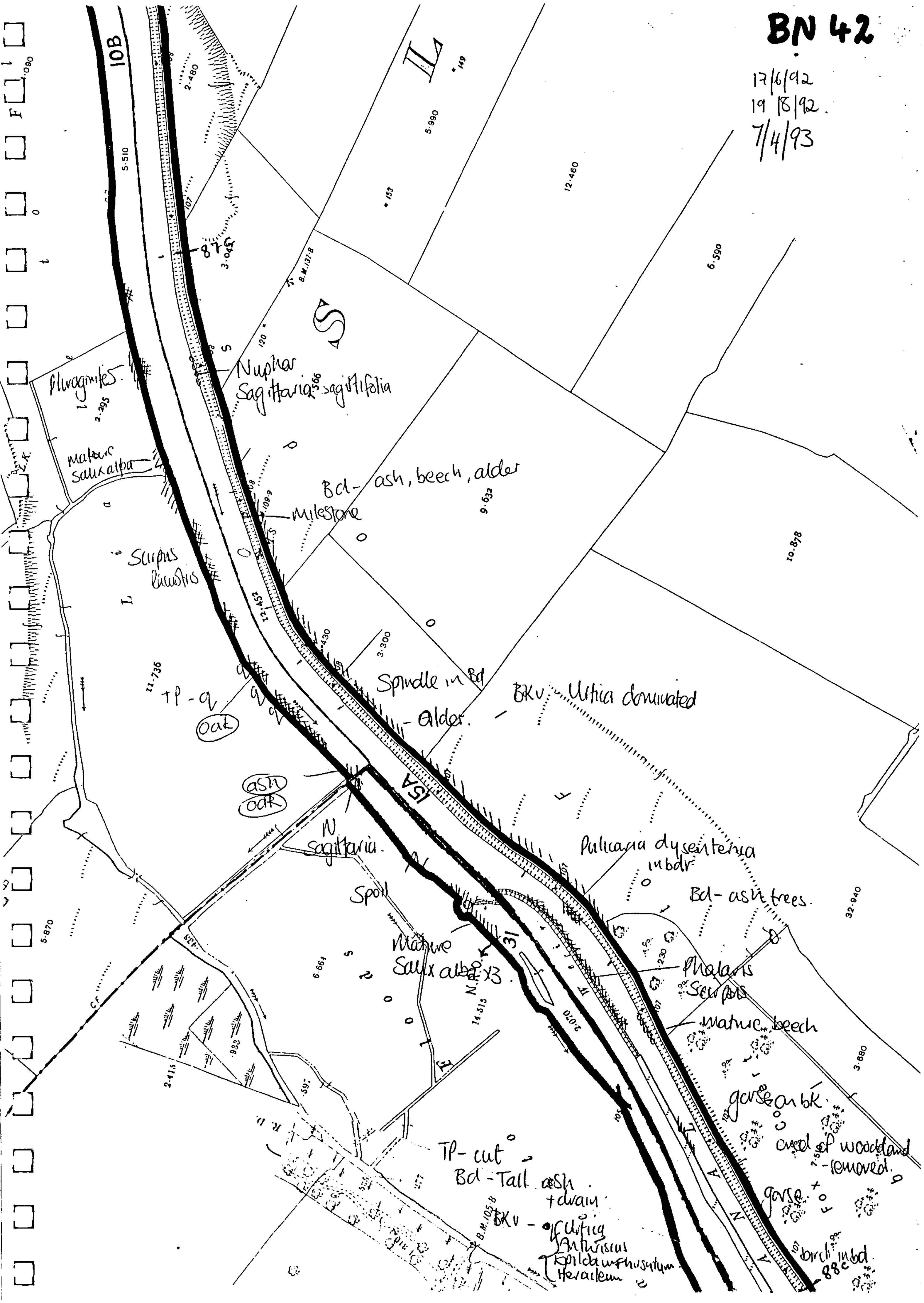
between Sliguff and Upper Ballyellin Lock. The soil here is nutrient-rich as a result of spoil deposition. It is dominated by coarse, tall herb species - Nettles, Docks, Hogweed, Cleavers and Thistles (Plate 27).
- When the vegetation of the towpath was cut in early July 1992, the cuttings were not removed. The width of the maintained/cut towpath is too great.

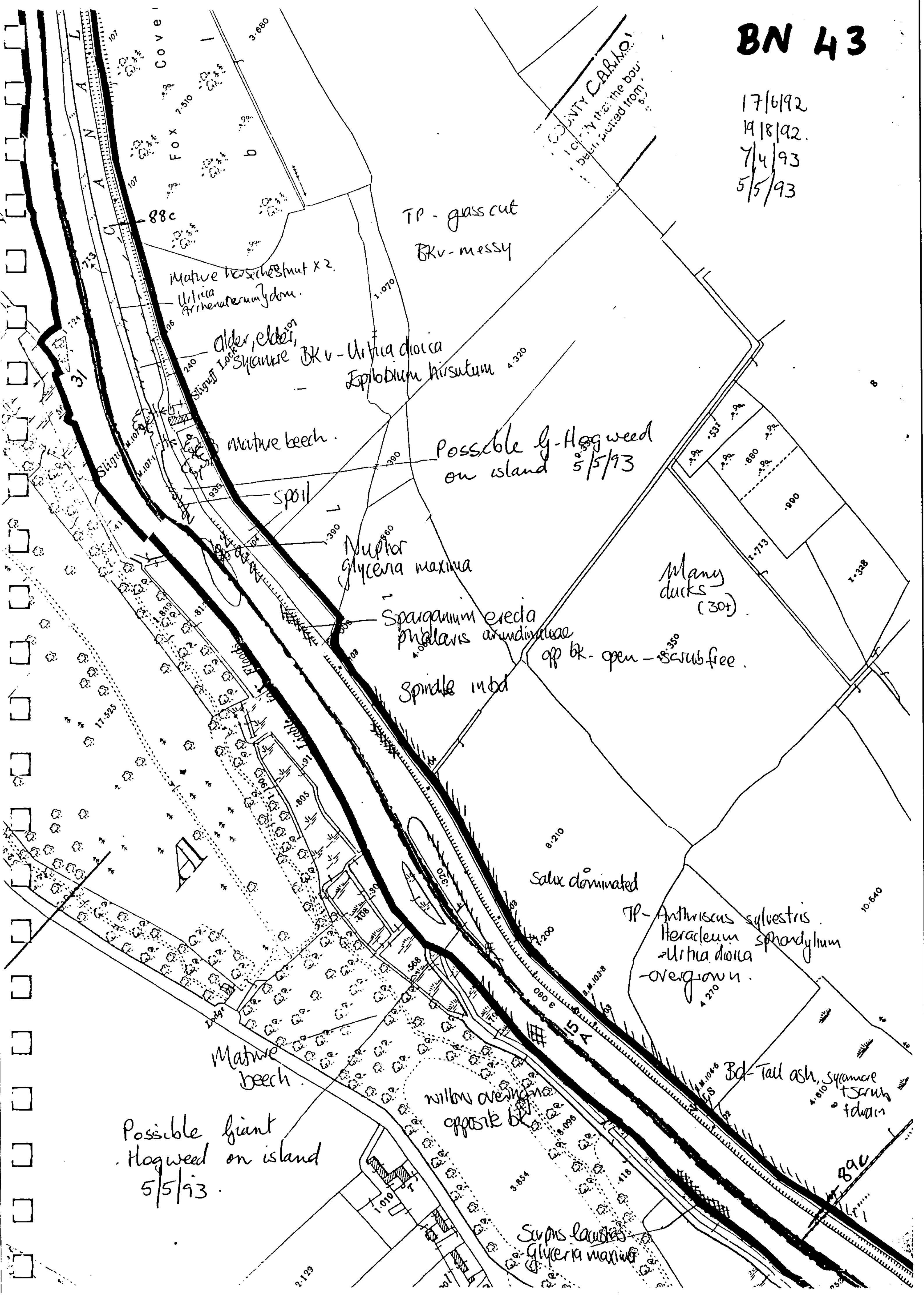
OBJECTIVES:
- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.

RECOMMENDATIONS:
- Protect the islands, boundary hedge, boundary drain and towpath in the vicinity of Ballyellin Lock in future canal operations.
- The vegetation on the nutrient-rich spoil deposited on the river bank and spilling over on to the towpath, should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from the soil. As a result there will be an increase in non-competitive species and diversity. Where the bankverge is sufficiently wide a band of the coarse, rank vegetation can remain, provided it is not near the towpath and does not interfere with views of the river. This vegetation attracts its own range of insects.
- When the rank, coarse, competitive vegetation has been removed through frequent cutting in one year a single cut at the end of each year should then suffice to maintain ecological diversity. A single cut ensures that scrub species do not colonise the towpath and will also ensure that the diversity of the seed bank will not be reduced. Cutting of species before they set seed eliminates the seeds of that particular plant, thus reducing ecological diversity. If, for amenity purposes, it is necessary to maintain a short vegetation sward for walkers, then a strip of 1-1.5m wide has been researched as being wide enough. This strip may then be subjected to frequent cuts, ensuring always that the cuttings are collected. In this way the only reduction in the seed bank will occur in this narrow strip. The seeds of the plants at the edge of the 1-1.5m strip will ensure that ecological diversity will be maintained.
- At present a tractor with flail cutters cuts the towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil, leading to the growth of competitive

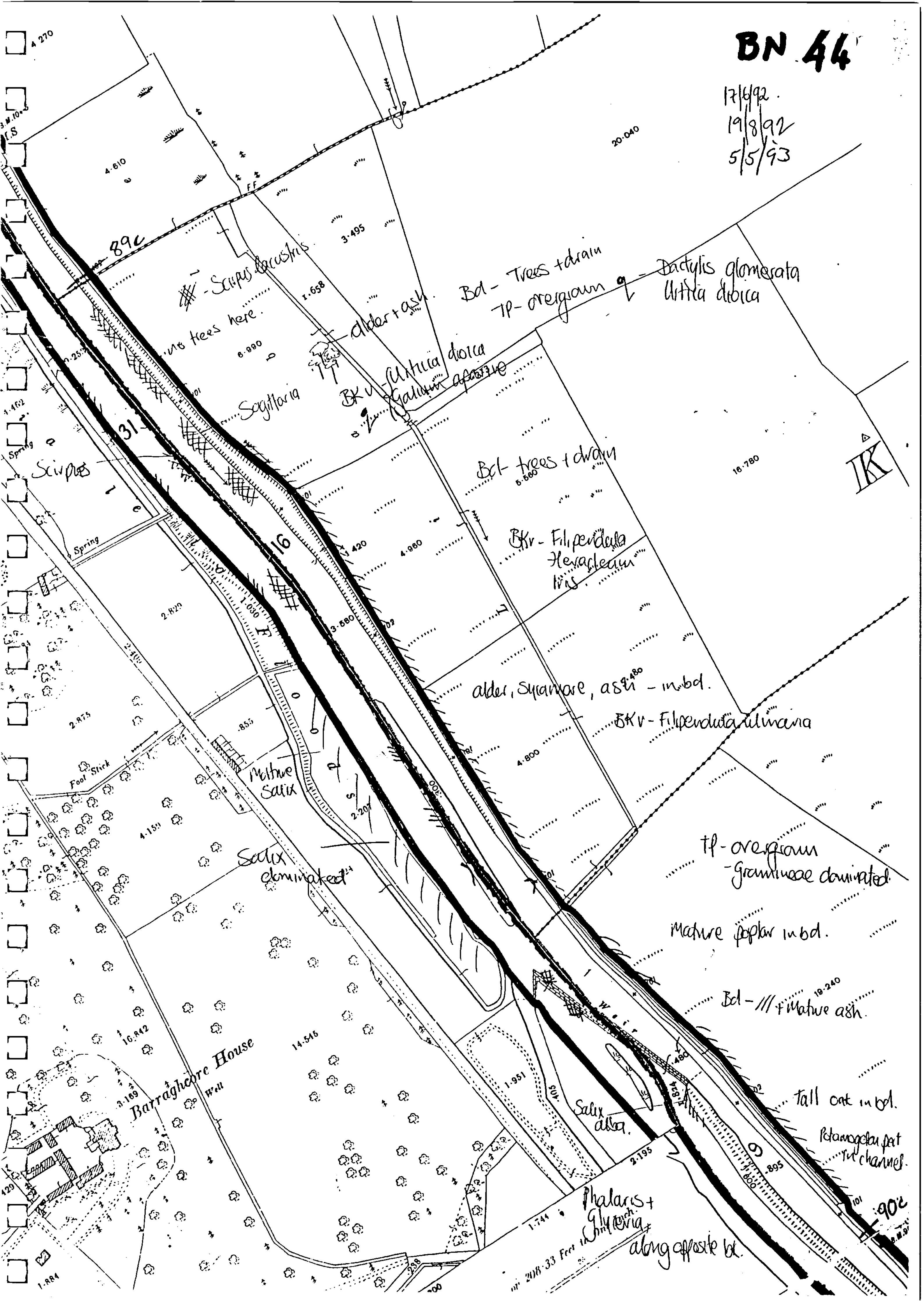
species. For conservation purposes it is most important that the cuttings are collected so that this soil enrichment does not take place (Contrast Plates 5 and 21).
- Bankside trees remain along some of this stretch. These should not be removed unnecessarily. Spoil may be deposited between them.

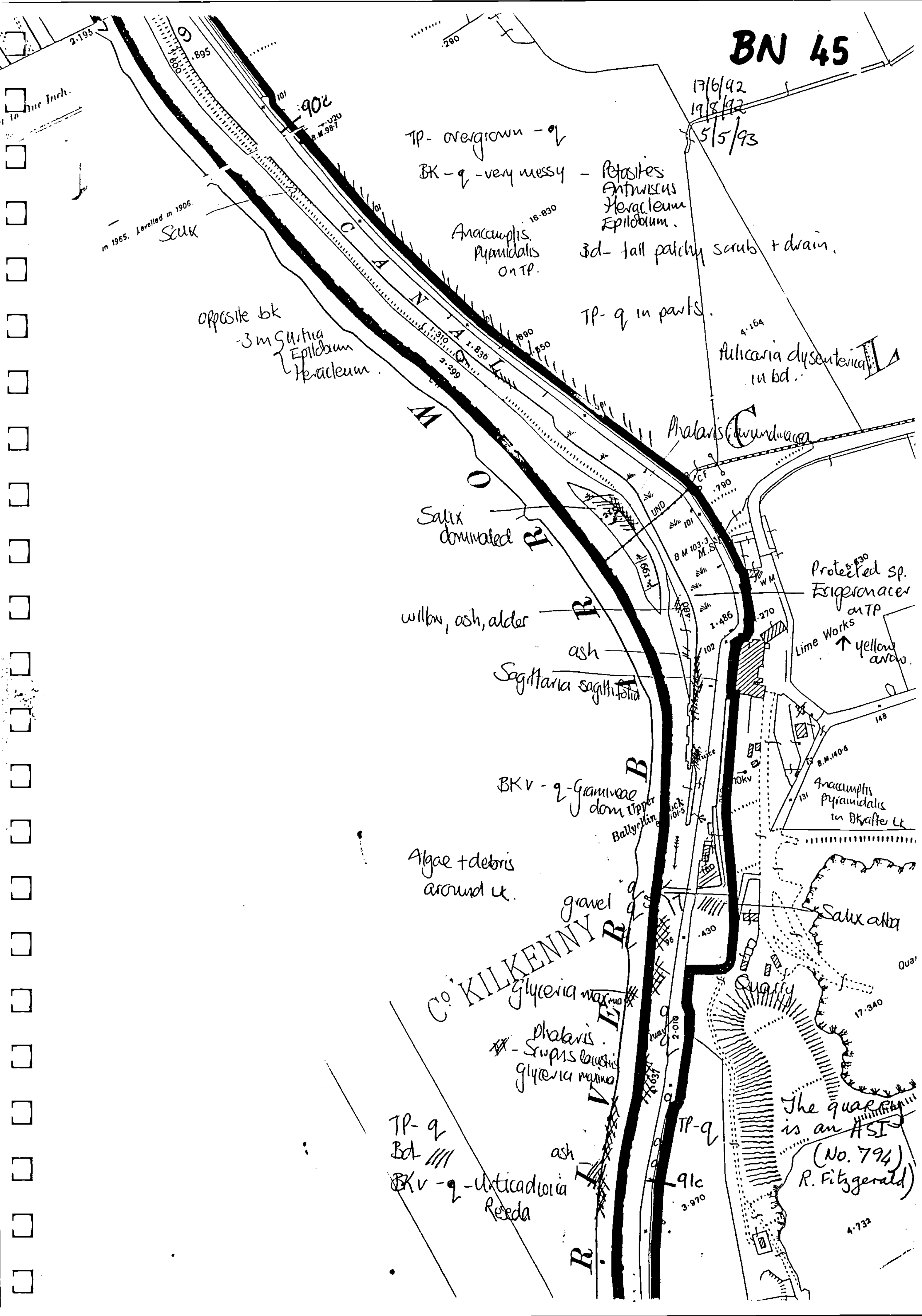

BN 41
19/8/92
17/6/92
7/4/93
Rose Cottage
B.M. 121.6
Pump
St. Bridget's Chapel (in Ruins)
Grave Yd
Spring
Liable to floods
10B
TP q - gravel + sand
Nupher
Scirpus
Phalaris
Sagittaria
Pot. perf.
Bd - ash + thick hg + wfc + drain
drain sp. Berula
Phalaris
willow
Scirpus
Salix alba in opp bk
glyceria
Scirpus lacustris
ash
BKV 4m wide
Urtica dioica
Petasites hybridus
Calystegia sepium
pump into river from pond in horse
ash, alder
Isl vegetation - willow, ash, Impatiens glandulifera
gorse on bk
Sparganium erecta
Nuphar
Sparganium erecta
Scirpus lacustris
opp bk. open - scrub free
TP messy
Petasites dom.
Bd / acc
+ drain
Glyceria
Scirpus
Sparganium
Sagittaria
TP - open track - grass cut
Scirpus lacustris
Swans x 2
1 Cygnets x 5
Glyceria
BKV Epilobium
Arrhenatherum
Urtica
Anthriscus sylvestris
876


BN 42
17/6/92
19/8/92.
7/4/93
10B
15A
31
Nuphar
Sagittaria sagittifolia
Phragmites
Mature salix alba
Scirpus lacustris
Bd - ash, beech, alder
Milestone
Spindle in Bd
- Alder.
BKv - Urtica dominated
TP - q
Oak
ash
oak
N
Sagittaria
Spoil
Mature Salix alba X3
Pulicaria dysenterica inbdr
Bd - ash trees.
Phalaris
Scirpus
mature beech
gorse on bk.
cnd of woodland removed.
gorse.
TP - cut
Bd - Tall ash + drain
BKv - Urtica
Anthriscus
Epilobium hirsutum
Heracleum
birch inbd
88



BN 43
17/6/92
19/8/92.
7/4/93
5/5/93
CANAL
Fox Cove
COUNTY CARLOW
88c
TP - grass cut
BKv - messy
Mature horsechestnut x 2
Urtica Arrhenaterum Thorn.
Alder, elder, Sycamore
BKv - Urtica dioica
Epilobium hirsutum
Sligo Lock
Mature beech
Possible G-Hogweed on island 5/5/93
Spoil
Nuphar Glyceria maxima
Sparganium erecta Phalaris arundinaceae
Many ducks (30+)
opp bk. open - scrub free.
Spindle in bd
Salix dominated
TP - Anthriscus sylvestris Heracleum sphondylium - Urtica dioica - overgrown.
Bd - Tall ash, sycamore + scrub + drain
Mature beech
willow overhanging opposite bk
Possible giant Hogweed on island 5/5/93.
Scirpus lacustris Glyceria maxima
Lodge
89c


BN 44
17/6/92
19/8/92
5/5/93
89c
Scirpus lacustris
no trees here
alder + ash
Bd - Trees + drain
TP - overgrown
Dactylis glomerata
Urtica dioica
Sagittaria
BKv - Urtica dioica
Galium aparine
Scirpus
Bd - trees + drain
BKr - Filipendula
Heracleum
Iris
alder, sycamore, ash - in bd.
BKv - Filipendula ulmaria
Mature Salix
Salix dominated
TP - overgrown
- Gramineae dominated
Mature poplar in bd.
Bd - /// + Mature ash
tall oat in bd.
Potamogeton pect in channel
Salix alba
Phalaris + Glyceria
along opposite bk.
90c
Spring
Foot Stick
Barraghcore House
Well
Weir
20·040
16·780
19·240
4·610
3·495
1·658
6·990
6·660
4·980
4·800
2·820
2·875
4·151
16·842
14·545
3·189
1·951
2·195
1·744
1·884
2·207
208·33 Feet



BN 45
17/6/92
19/8/92
5/5/93
90c
TP- overgrown - q
BK - q - very messy - Petasites Anthriscus Heracleum Epilobium.
Anacamptis pyramidalis on TP.
3d - tall patchy scrub + drain.
TP- q in parts.
Pulicaria dysenterica in bd.
Salix
in 1965. Levelled in 1906.
Opposite bk -3 m Urtica Epilobium Heracleum.
C A N A L
Phalaris arundinacea
Salix dominated
Protected sp. Erigeron acer on TP
Lime Works
↑ yellow arch.
willow, ash, alder
ash
Sagittaria sagittifolia
BKv - q - Gramineae dom
Upper Ballyellin Lock
Anacamptis pyramidalis in bk after Lk
Algae + debris around Lk.
gravel
Salix alba
Co. KILKENNY
R I V E R B A R R O W
Glyceria maxima
Phalaris - Scirpus lacustris Glyceria maxima
Quarry
Quay
The quarry is an ASI (No. 794) R. Fitzgerald
TP- q
Bd ////
BKv - q - Urtica dioica Reseda
ash
TP-q
91c

UPR. BALLYELLLIN LOCK - LR. BALLYELLIN LOCK
KM SECTIONS BN45-BN48
approx. 2.5kms east bank

OBSERVATIONS:

There is an open aspect to this stretch of river which passes through Goresbridge. South of the town, the river and towpath become somewhat enclosed. This is due to the presence of some trees on the bank and woodland along the boundary.

GOOD FEATURES:

- Good examples of reed beds and fringing vegetation.
- Many dragonflies attracted to the area because of the amount of fringing vegetation.
- Many ducks and swans in the area feeding in the reed beds.
- Small island covered with trees immediately south of Goresbridge provides a roosting area for the many ducks in the vicinity.
- Species-rich boundary drain in association with a species-rich hedge including Spindle.
- Large fields - grazed - sloping down to the west river bank just north of Goresbridge form another habitat in the area (non OPW property).
- Spoil has been deposited along the stretch. Not all of it is nutrient-rich. Some of it is gravel which comes from the fast-flowing stretches of river. This gravel on the towpath is another habitat which adds to the overall diversity of the area (Plate 28).
- Extensive woodland area in the vicinity of Lr. Ballyellin Lock (non OPW property), again adds to the overall diversity of the area.

BAD FEATURES:

- When the vegetation of the towpath was cut in early July 1992, the cuttings were not removed. The width of maintained/cut towpath is too great.

OBJECTIVES:

- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.

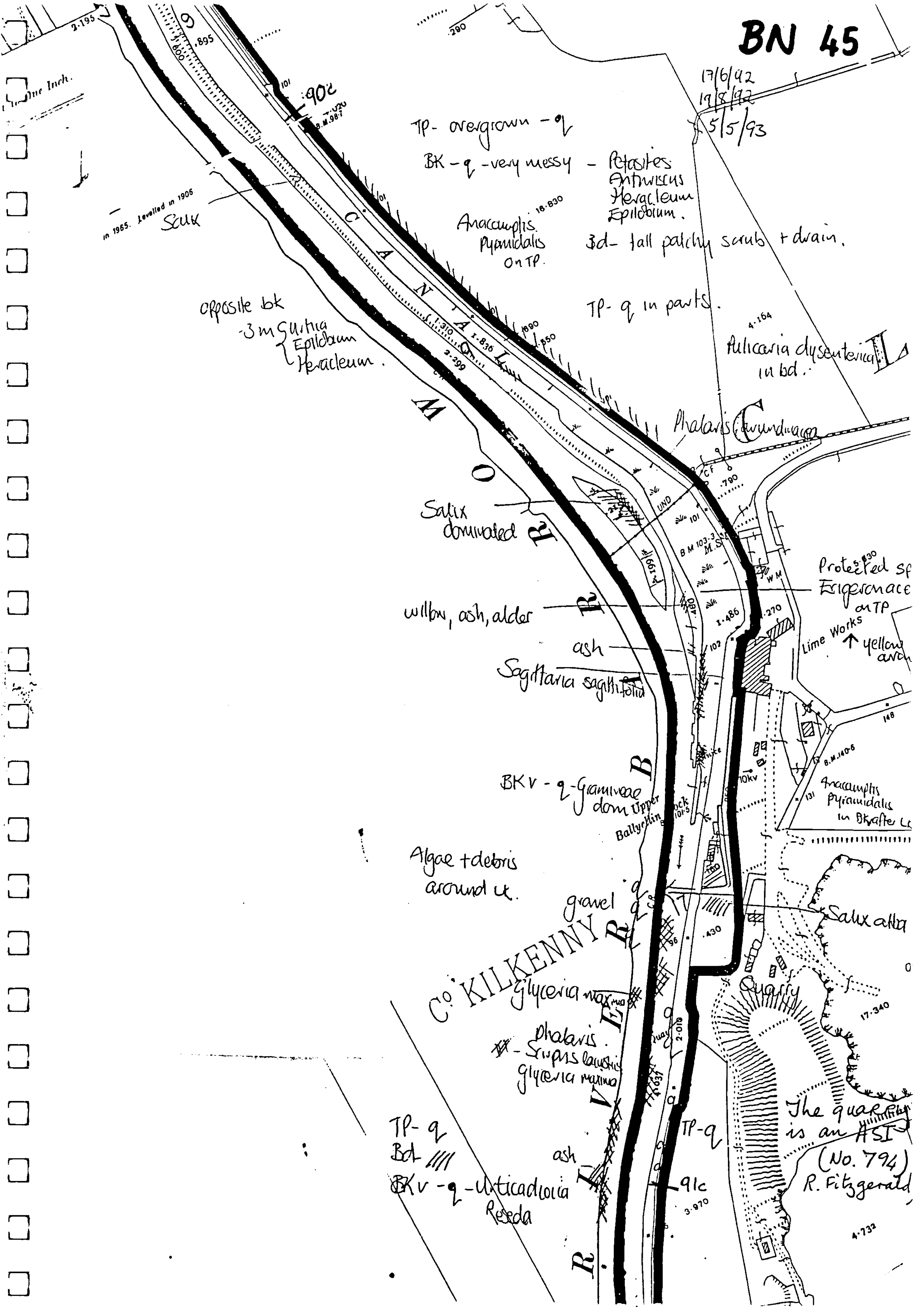
RECOMMENDATIONS:

- Protect the island, boundary hedge and boundary drain in future canal operations.
- Cuttings of all vegetation on the bank and towpath must be removed. The cutting and removal of the first growths of rank vegetation hastens the process whereby

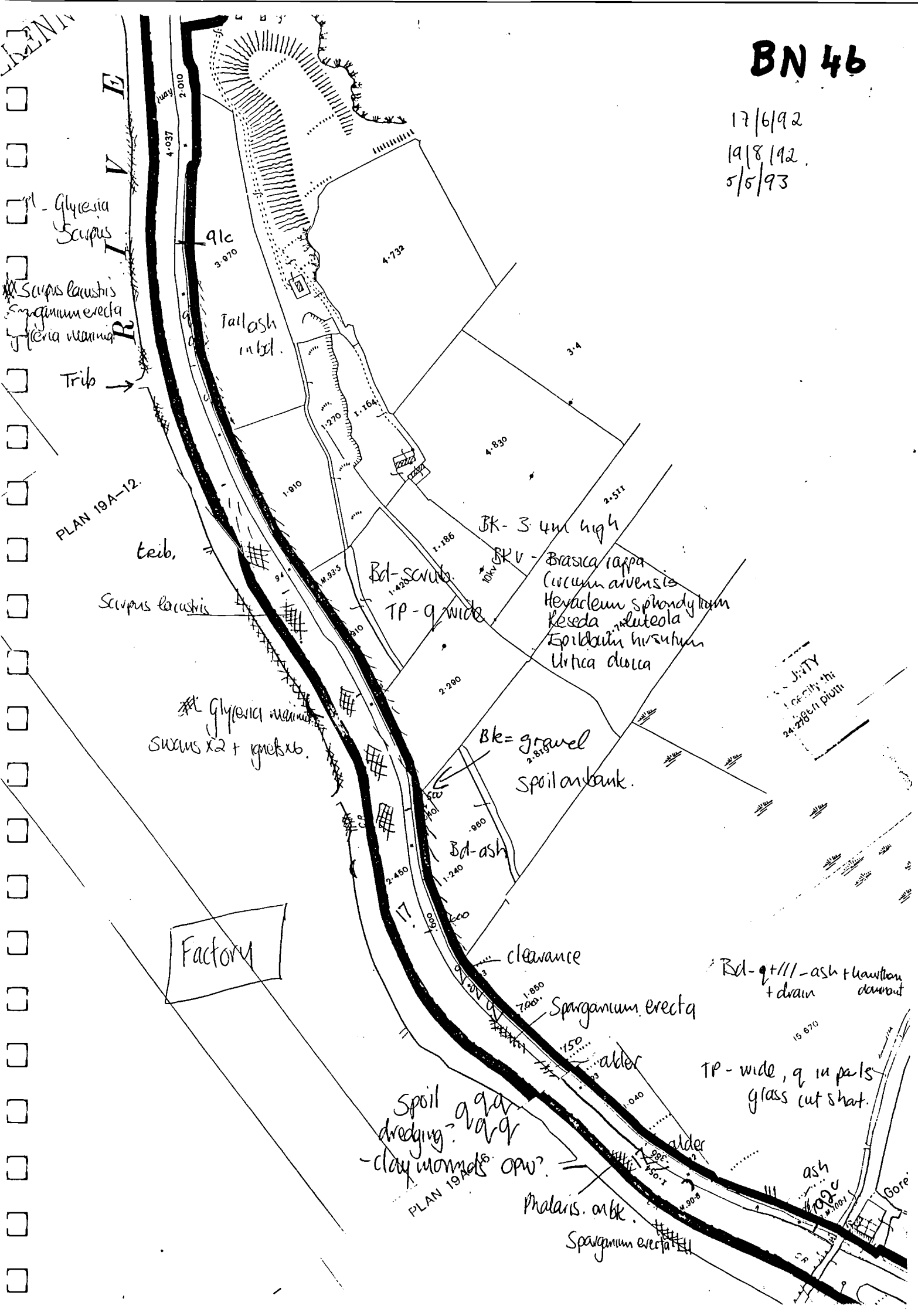
nutrients are removed from the soil. As a result there will be an increase in non-competitive species and diversity. Further cuts in the first year will be necessary. Where the bankverge is sufficiently wide a band of the coarse, rank vegetation can remain, provided it is not near the towpath and does not interfere with views of the river. This vegetation attracts its own range of insects.

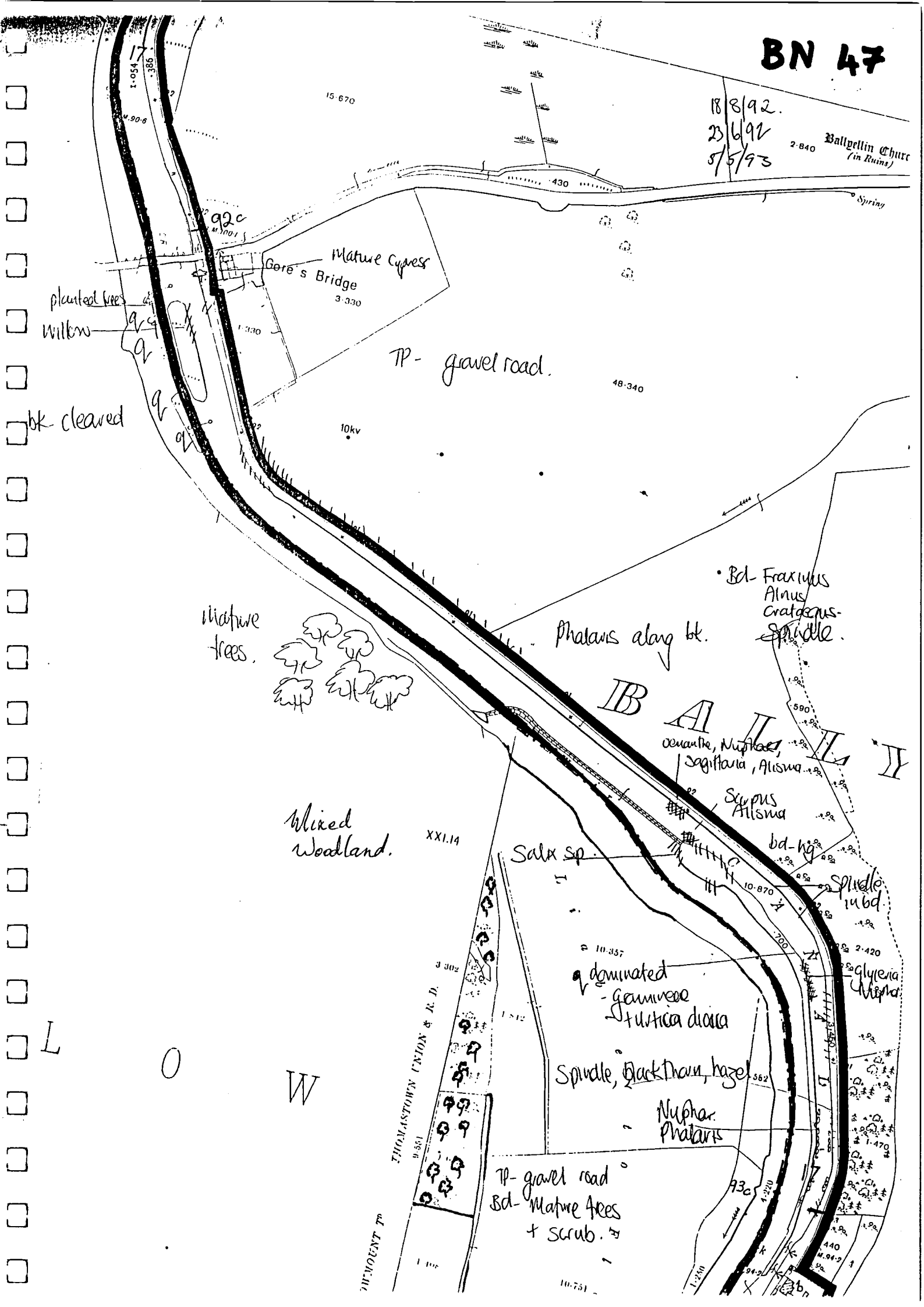
- Bankside trees remain along some of this stretch. These should not be removed unnecessarily. Spoil may be deposited between them.
- When coarse, competitive vegetation has been removed through frequent cutting in one year a single cut at the end of each year should then suffice to maintain ecological diversity. A single cut ensures that scrub species do not colonise the towpath and will also ensure that the diversity of the seed bank will not be reduced. Cutting of species before they set seed eliminates the seeds of that particular plant, thus reducing ecological diversity. If, for amenity purposes, it is necessary to maintain a short vegetation sward for walkers, then a strip of 1-1.5m wide has been researched as being wide enough. This strip may then be subjected to frequent cuts, ensuring always that the cuttings are collected. In this way the only reduction in the seed bank will occur in this narrow strip. The seeds of the plants at the edge of the 1-1.5m strip will ensure that ecological diversity will be maintained.
- At present a tractor with flail cutters cuts the towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil, leading to the growth of competitive species. For conservation purposes it is most important that the cuttings are collected so that this soil enrichment does not take place (Contrast Plates 5 and 21).

BN 45



17/6/92
19/8/92
5/5/93
TP- overgrown - q
BK - q - very messy - Petasites, Anthriscus, Heracleum, Epilobium.
Anacamptis pyramidalis on TP.
3d- tall patchy scrub + drain.
TP- q in parts.
Pulicaria dysenterica in bd.
Phalaris arundinacea
Salix
in 1965. Levelled in 1906
opposite bk -3m Urtica, Epilobium, Heracleum.
CANAL
MOORE
RIVER
Salix dominated
willow, ash, alder
ash
Sagittaria sagittifolia
Protected sp Erigeron acer on TP
Lime Works
yellow arch
BKv - q - Gramineae dom
Upper Ballyellin Lock
Anacamptis pyramidalis in BK after L
Algae + debris around it.
gravel
Salix alba
Co. KILKENNY
Glyceria max.
Phalaris.
Scirpus lacustris
Glyceria maxima
Quarry
TP- q
Bd ////
BKv - q - Urtica dioica Reseda
ash
TP-q
The quarry is an ASI (No. 794) R. Fitzgerald
90c
91c


BN 46
17/6/92
19/8/92.
5/5/93
Gl - Glyceria
Scirpus
Scirpus lacustris
Sparganium erecta
Glyceria maxima
Trib
91c
Tail ash in bd.
PLAN 19A-12.
Trib.
Scirpus lacustris
Bd-Scrub.
TP - q wide
BK - 3.4m high
BK v - Brassica rapa
Cirsium arvense
Heracleum sphondylium
Reseda luteola
Epilobium hirsutum
Urtica dioica
Glyceria maxima
Scirpus x2 + iris x6.
Bk = gravel
spoil on bank.
Bd-ash
Factory
clearance
Bd-q+///-ash + hawthorn + drain
Sparganium erecta
alder
TP - wide, q in parts
grass cut shat.
Spoil q q q
dredging?
- clay mounds opw?
PLAN 19A-12
Phalaris. on bk.
Sparganium erecta
ash
Gore


BN 47
18/8/92.
23/6/92
5/5/93
Ballygellin Churc
(in Ruins)
Spring
92c
Mature Cypress
Gore's Bridge
planted trees
willow
TP- gravel road.
bk- cleared
10kv
Bd- Fraxinus
Alnus
Crataegus-
Spindle.
Phalaris along bk.
Mature
trees.
BALLY
oenanthe, Nuphar,
Sagittaria, Alisma
Sparganium
Alisma
Mixed
Woodland.
XXI.14
Salix sp.
bd-hg
Spindle
in bd
dominated
- Gramineae
Urtica dioica
Glyceria
maxima
Spindle, Blackthorn, hazel
Nuphar.
Phalaris
LOW
THOMASTOWN UNION & R. D.
TP- gravel road
Bd- Mature trees
+ scrub.
93c
93b

LR. BALLYELLLIN LOCK - BALLYNAGRANE LOCK

KM SECTIONS BN48-BN55
approx. 8kms east bank

OBSERVATIONS:

This is a wonderful rural stretch of river enclosed along some sections on both sides by steep, rocky and forested hills. Borris Demesne - a large wooded estate - is on the east bank south of Ballytiglea Bridge.

GOOD FEATURES:

- Old mixed deciduous woodland of Larch, Beech, Spindle, Oak, Hazel, Alder and Willow along the stretch between Lr. Ballyellin and Ballytiglea Locks (east bank, not OPW property).
- Species-rich boundary drain in association with a diverse hedgerow including Spindle, Oak and Hazel adds to the ecological diversity of the area.
- Small islands (OPW property), covered in scrub provide cover for otters (BN49, 50 and 52) and roosting ground for ducks.
- Mature mixed woodland along the west bank (BN51) on the approach to Ballytiglea Bridge and south of it (BN52-54).
- Many Herons and Swans in the area. The Herons roost in the tall trees.
- Species-rich pond on the boundary (east bank) immediately north of Ballytiglea Bridge (Plate 29) supports a wide range of aquatic species including plants rarely seen on navigable waterways. Such species include Oenanthe fistulosa (Tubular Water-dropwort) and Rumex hydrolopathum (Water Dock).
- The woodland at Borris Estate (not OPW property), which borders the Barrow Navigation (BN52-54) is and ASI of Regional Importance. It is one of the largest deciduous woods in the county and is predominantly of Oak with Hazel, Beech and Holly. It has a characteristic ground flora including elements from wet clay soils. It also supports a diversity of passerine birds with a typical woodland insect fauna (Plate 30).
- Species which are on the decline nationally - Geranium rotundifolium (Round-leaved Crane's-bill) and Carduus nutans (Musk Thistle) - grow on the lands of Borris Golf Club within Borris Estate.
- The towpath is a short grassy sward south of Borris Lock and is walkable.

BAD FEATURES:

- When the vegetation of the towpath was cut in early July 1992, the cuttings were not removed. The width of maintained/cut is too great.
- Spoil deposited on the bank and towpath. Spoil acts

as fertiliser which enriches the soil and encourages coarse, rank vegetation to thrive. This vegetation consists of Nettles, Cleavers, Hogweed, Docks and rough grasses.
- New house on the east river bank (not OPW property). There are no trees screening it from the towpath and it also detracts from the view north from the bridge.
- Horses using the towpath south of Borris Lock as far as Bunmahon River.

OBJECTIVES:

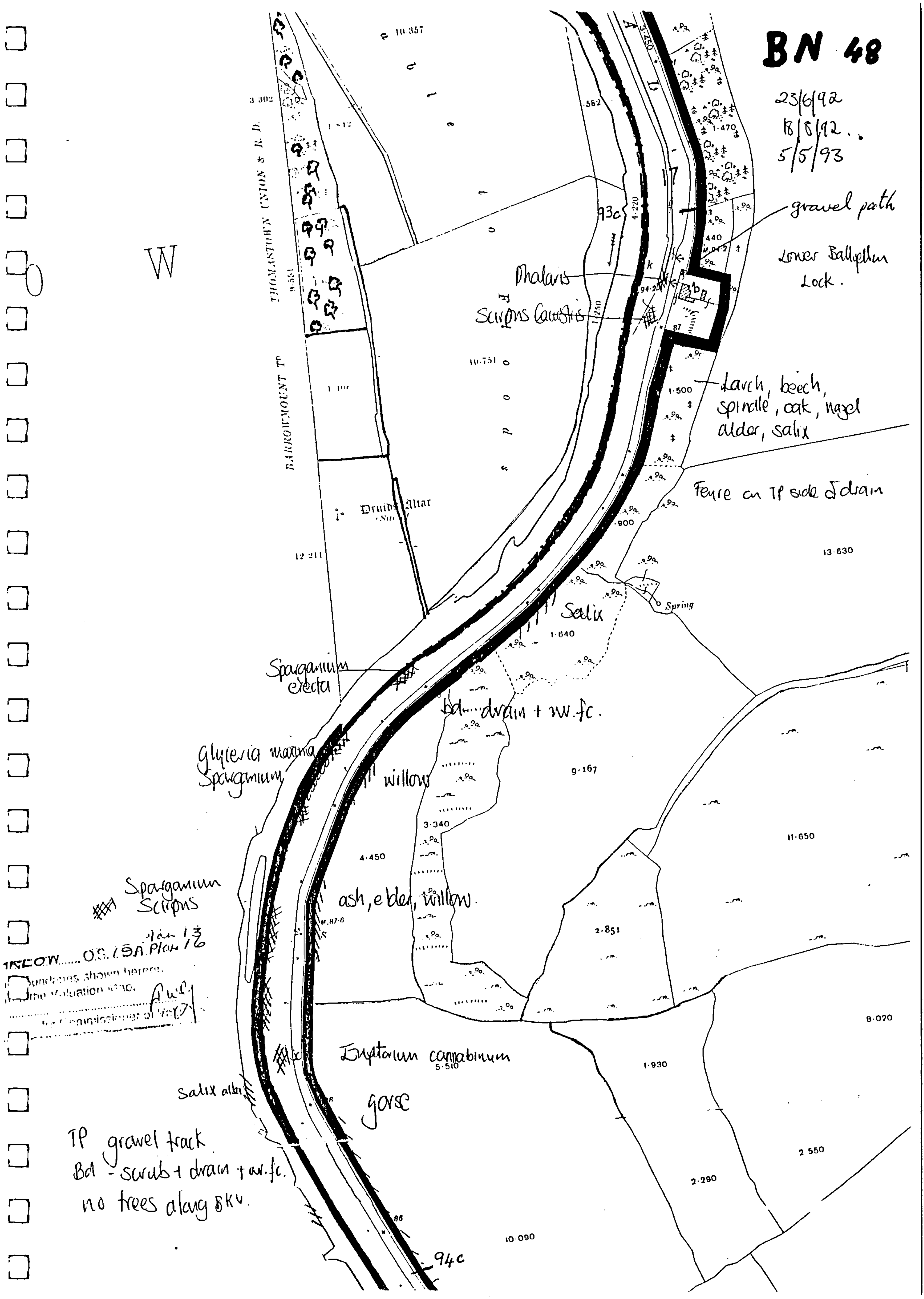
- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.
- To curb the use of the towpath by horses.

RECOMMENDATIONS:

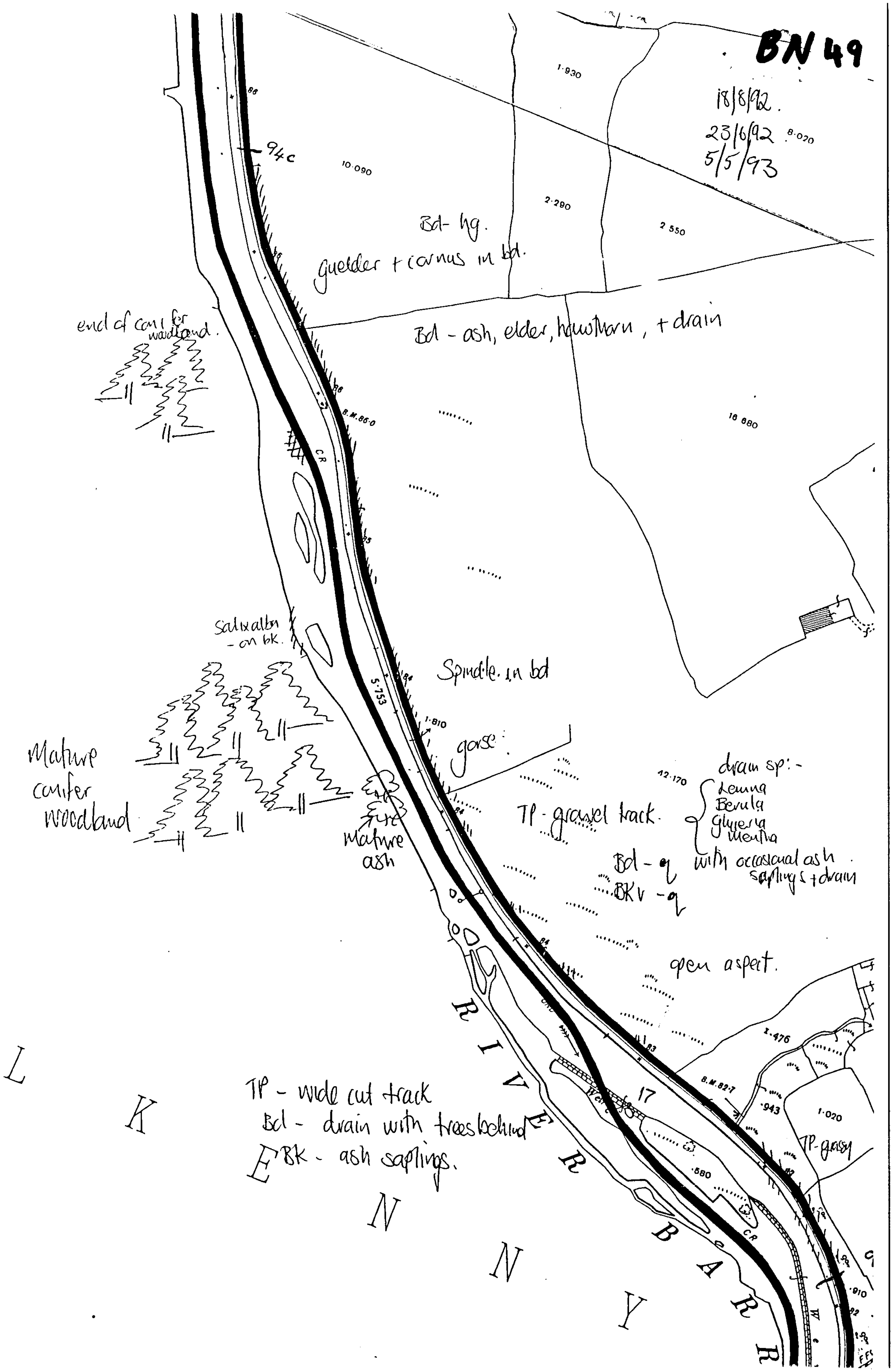
- Protect the islands, the pond at Ballytiglea Bridge, the boundary hedge and boundary drain in future canal operations.
- The vegetation on the nutrient-rich spoil deposited on the river bank (over flow on the towpath), should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from the soil. As a result there will be an increase in non-competitive species and diversity. Where the bankverge is sufficiently wide a band of the coarse, rank vegetation can remain, provided it is not near the towpath and does not interfere with views of the river. This vegetation attracts its own range of insects (Contrast Plates 5 and 21).
- When the rank, coarse, competitive vegetation has been removed through frequent cutting in one year a single cut at the end of each of the following years - provided there is no further deposition of spoil - should then suffice to maintain ecological diversity. A single cut ensures that scrub species do not colonise the towpath and will also ensure that the diversity of the seed bank will not be reduced. Cutting of species before they set seed eliminates the seeds of that particular plant, thus reducing ecological diversity. If, for amenity purposes, it is necessary to maintain a short vegetation sward for walkers, then a strip of 1-1.5m wide has been researched as being wide enough. This strip may then be subjected to frequent cuts, ensuring always that the cuttings are collected. In this way the only reduction in the seed bank will occur in this narrow strip. The seeds of the plants at the edge of the 1-1.5m strip will ensure that ecological diversity will be maintained.
- At present a tractor with flail cutters cuts the

towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil, leading to the growth of competitive species. For conservation purposes it is most important that the cuttings are collected so that this soil enrichment does not take place (Contrast Plates 5 and 21).

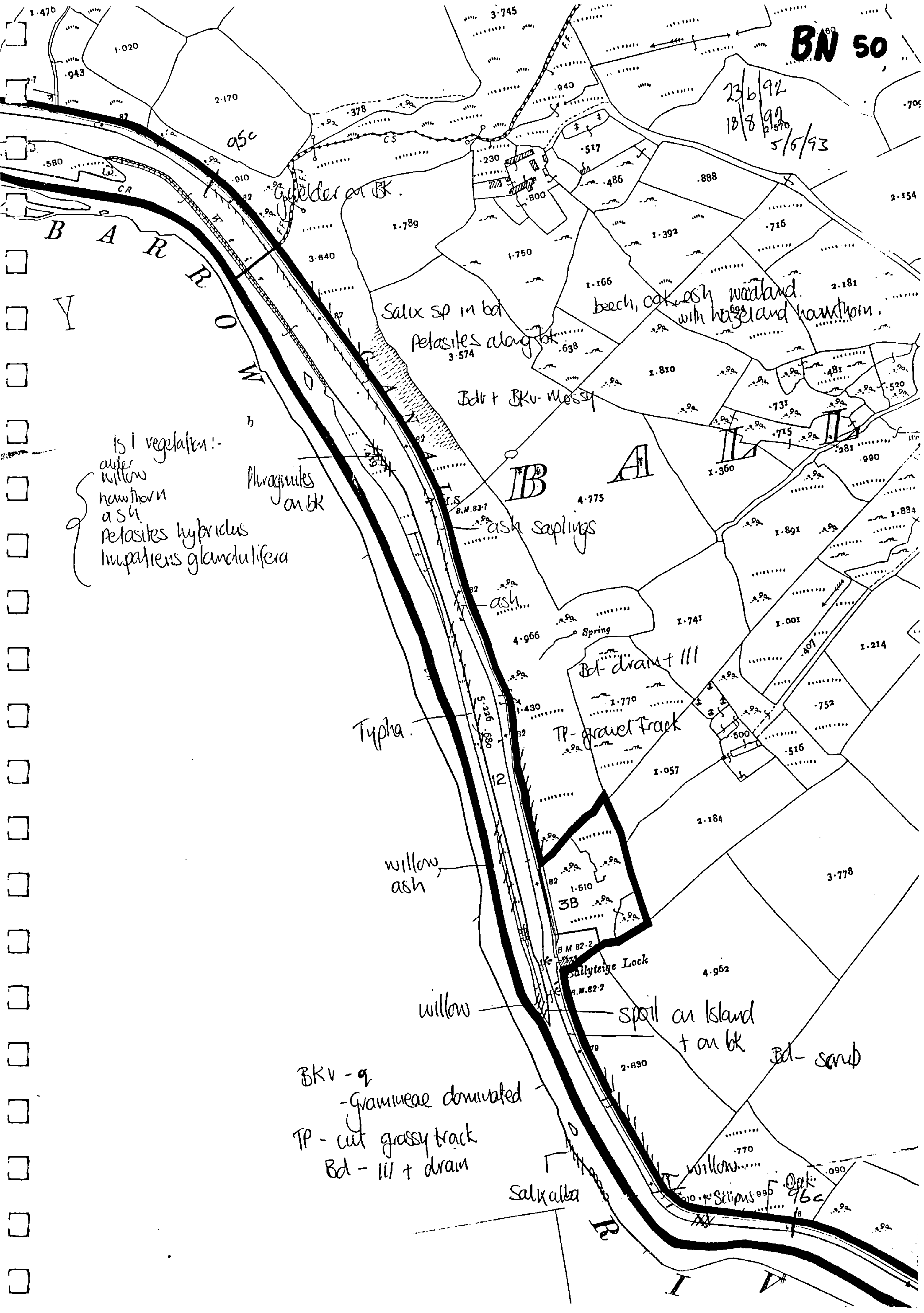
- Enlist the co-operation of the landowner of the woodland of Borris Estate in preserving the overall ecological diversity of the area.
- Determine who the owner of the horse/s is and prohibit access on to OPW property. There may be a need to enter into negotiations with the owner/s of the adjacent property as it may be necessary to erect a fence between OPW and private property and so prevent access by the horses.



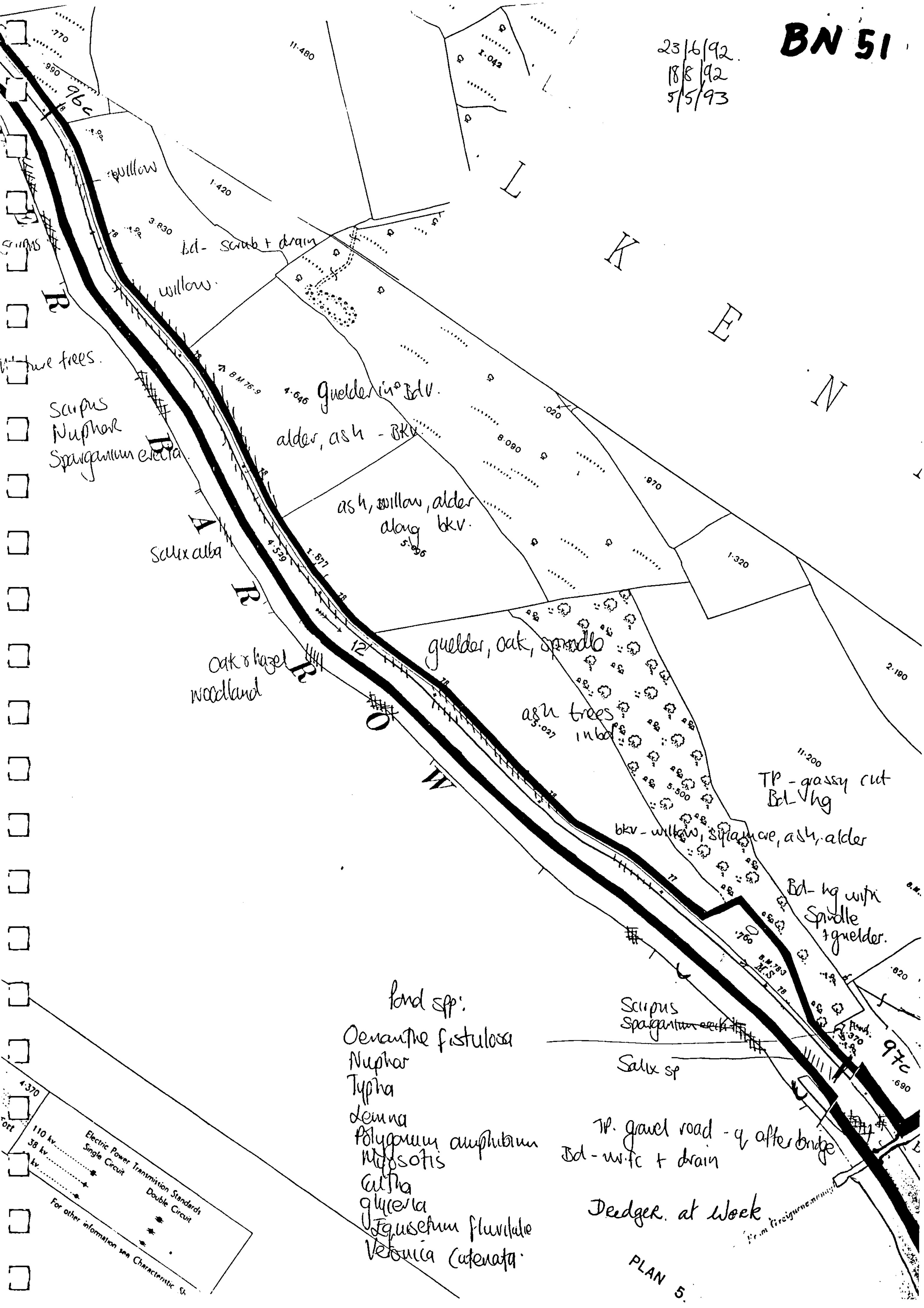
BN 48
23/6/92
18/8/92
5/5/93
gravel path
Lower Ballyellen Lock.
Phalaris
Scirpus Lacustris
Larch, beech, spindle, oak, hazel alder, salix
Fence on TP side of drain
Spring
Salix
Sparganium erecta
bd - drain + rw.fc.
Glyceria maxima
Sparganium
willow
ash, elder, willow.
Sparganium
Scirpus
Eupatorium cannabinum
Salix alba
gorse
TP gravel track
Bd - scrub + drain + rw. fc.
no trees along BKV.
93c
94c
W
THOMASTOWN UNION & R.D.
BARROWMOUNT T.
Druids Altar
10·857
3·302
10·751
12·211
1·500
1·640
13·630
9·167
3·340
4·450
11·650
2·851
8·020
5·510
1·930
2 550
2·290
10·090



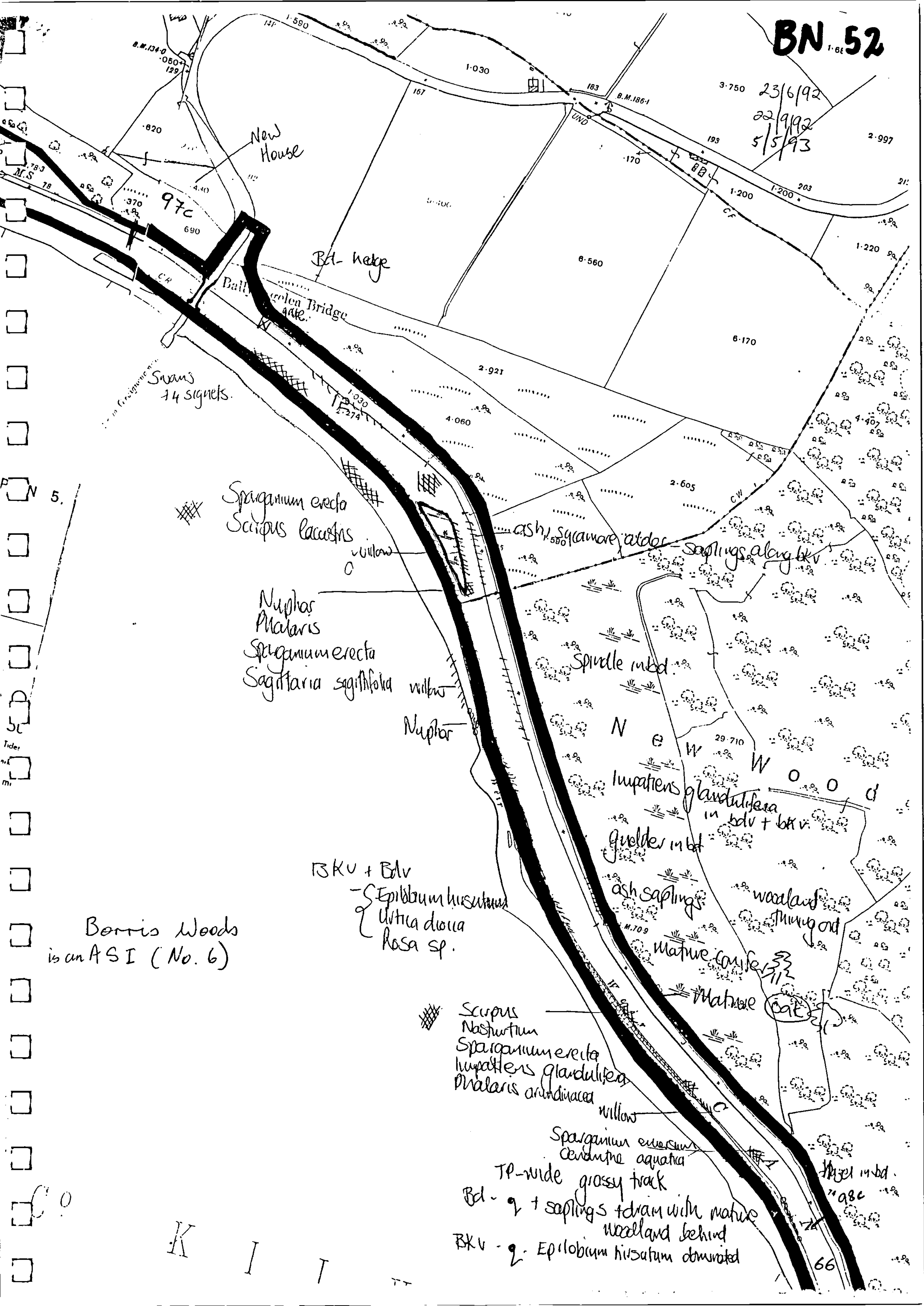
BN 49
18/8/92.
23/6/92
5/5/93
94c
Bd- hg.
guelder + cornus in bd.
Bd - ash, elder, hawthorn, + drain
end of conifer woodland.
Salix alba - on bk.
Spindle in bd
gorse.
Mature conifer woodland
Mature ash
TP - gravel track.
drain sp:- Lemna Berula Glyceria Mentha
with occasional ash saplings + drain
Bd - q
BK v - q
open aspect.
TP - wide cut track
Bd - drain with trees behind
BK - ash saplings.
TP - grassy
B.M. 86·0
B.M. 82·7
CR
5·753
1·930
10·090
2·290
2 550
8·020
16 680
1·810
12·170
1·476
·943
1·020
·580
·910
Weir
17
RIVER BARR
L K E N N Y



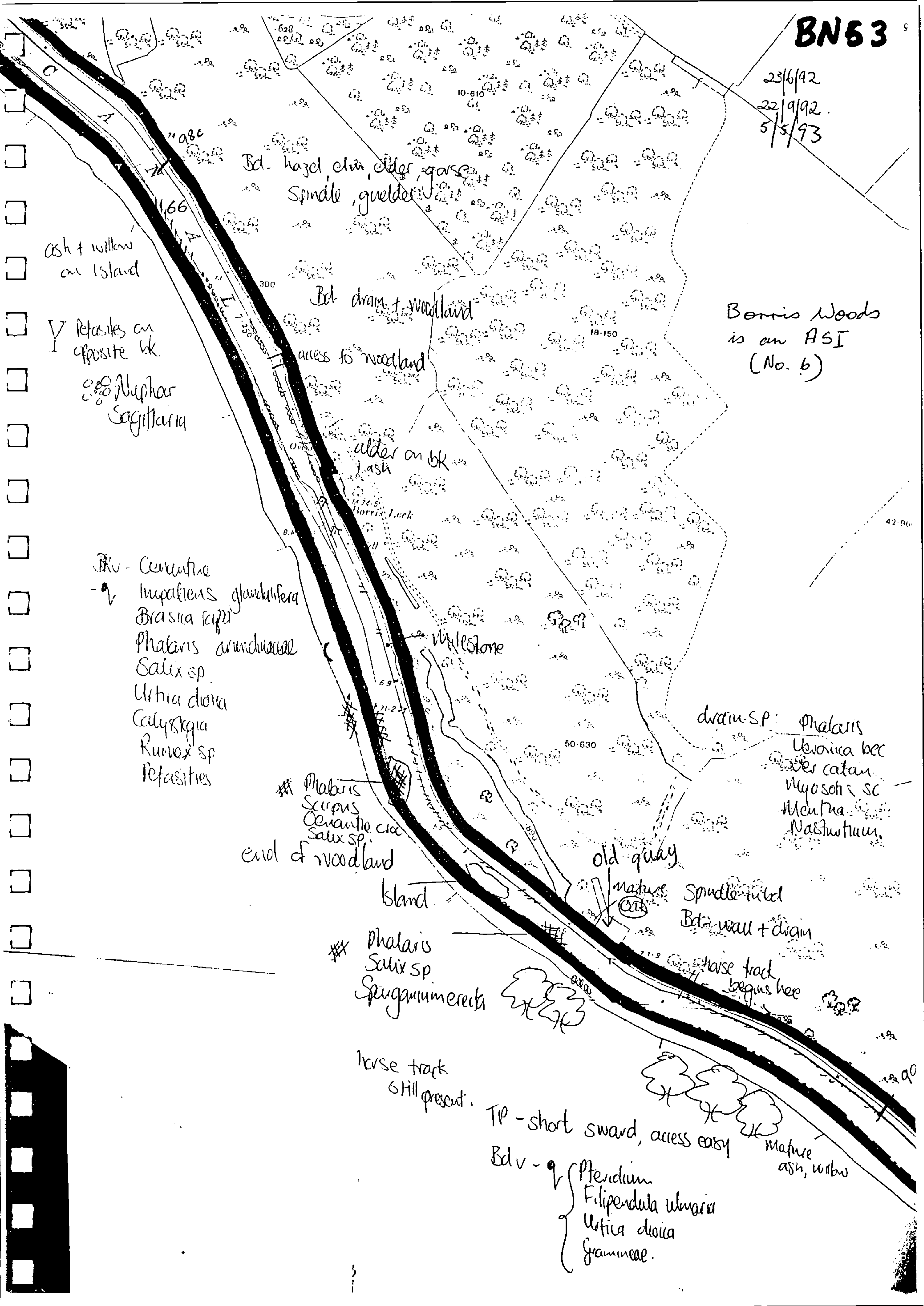
BN 50
23/6/92
18/8/92
5/5/93
95c
Guelder on Bk.
BARROW
Y
Salix sp in bd
petasites along bk
beech, oak, ash woodland with hazel and hawthorn.
Bd + Bkv - Messy
BALLY
Isl vegetation:-
alder
willow
hawthorn
ash
petasites hybridus
Impatiens glandulifera
Phragmites on bk
ash saplings
ash
Spring
Bd - drain + lll
Typha.
TP - gravel track
12
willow, ash
3B
Ballyteige Lock
willow
spoil on Island + on bk
Bd - scrub
BKv - q
- Gramineae dominated
TP - cut grassy track
Bd - lll + drain
Salix alba
willow
Scirpus
Oak
96c
B.M. 83·7
B M 82·2



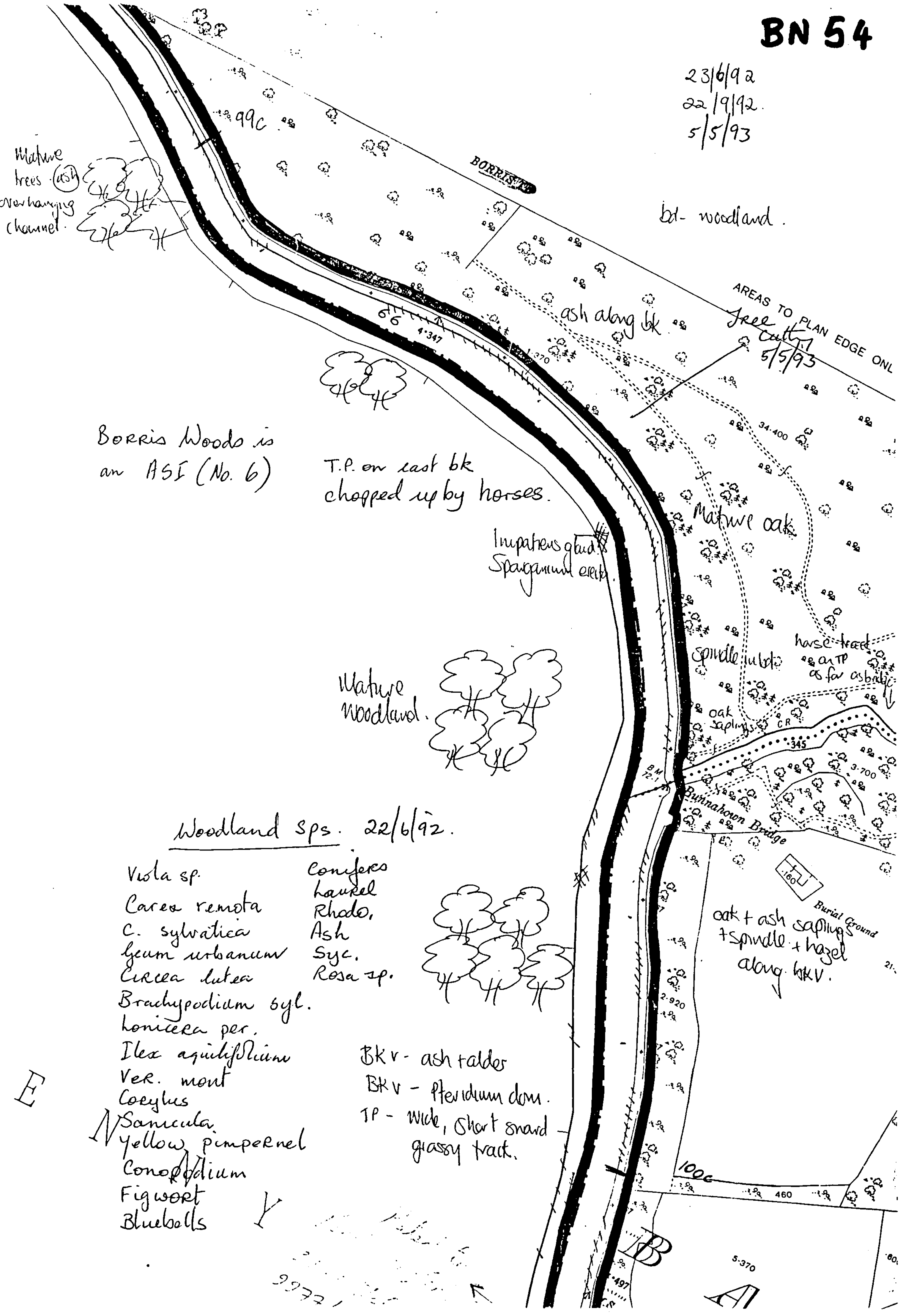
BN 51
23/6/92
18/8/92
5/5/93
96c
97c
willow
Bd- scrub + drain
willow.
Scirpus
Nuphar
Sparganium erectum
Salix alba
Oak & hazel woodland
guelder in Bdv.
alder, ash - Bkv
ash, willow, alder along bkv.
guelder, oak, spindle
ash trees in bd
TP - grassy cut
Bd - hg
bkv - willow, sycamore, ash, alder
Bd - hg with spindle + guelder.
Pond spp:
Oenanthe fistulosa
Nuphar
Typha
Lemna
Polygonum amphibium
Myosotis
Caltha
Glyceria
Equisetum fluviatile
Veronica catenata
Scirpus
Sparganium
Salix sp
TP. gravel road - q after bridge
Bd - m.fc + drain
Dredger at Work
L K E N N
B A R R O W
PLAN 5.
Electric Power Transmission Standards
Single Circuit
Double Circuit
110 kv.
38 kv.
For other information see Characteristic S.



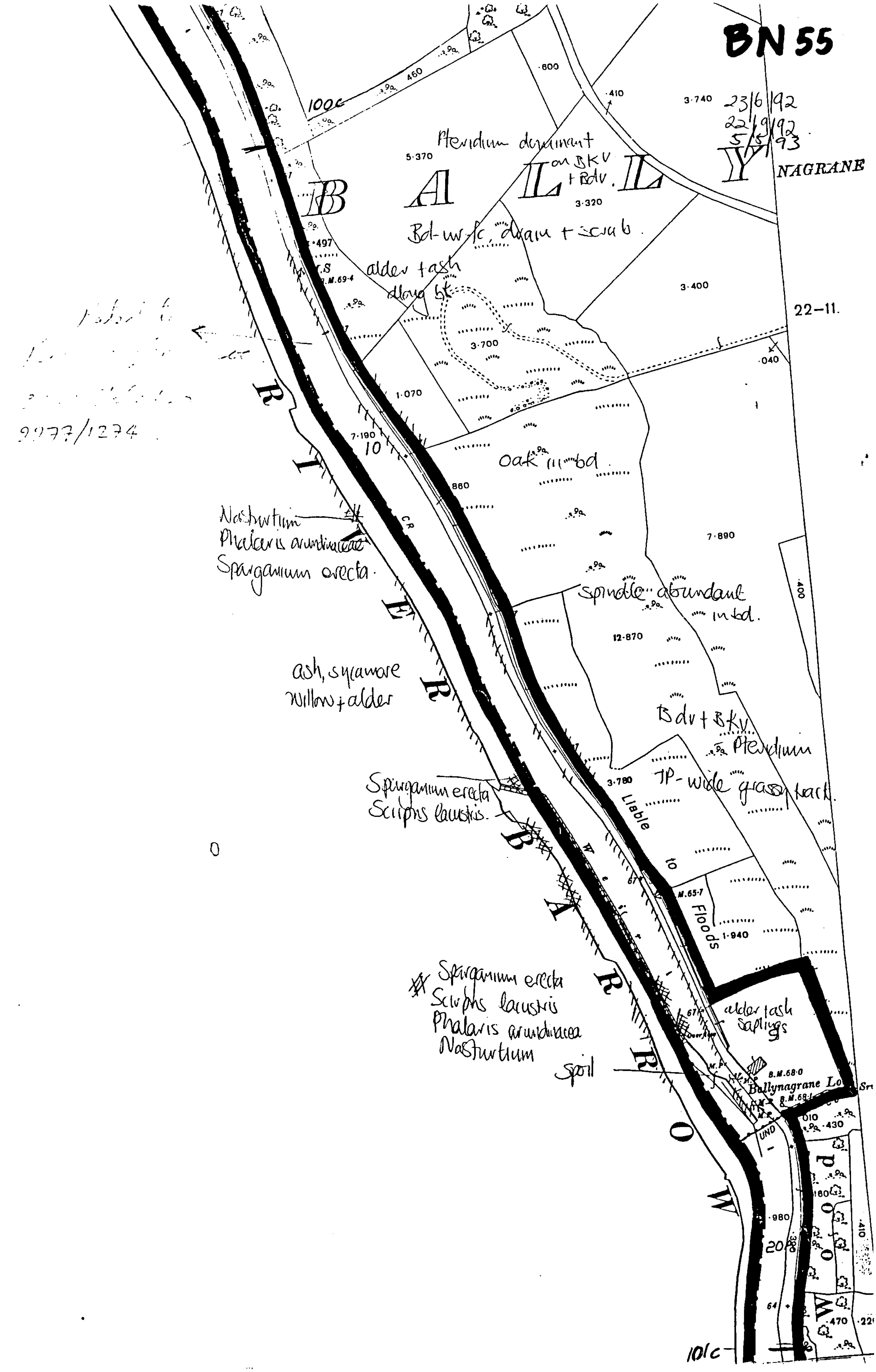
BN.52
23/6/92
22/9/92
5/5/93
New House
97c
Bd- hedge
Ballygeelen Bridge
gate.
Swans
+ 4 signets.
Sparganium erecta
Scirpus lacustris
willow
ash, sycamore, alder
saplings along bkv
Nuphar
Phalaris
Sparganium erecta
Sagittaria sagittifolia
willow
Nuphar
Spindle in bd.
New Wood
Impatiens glandulifera in bdv + bkv.
guelder in bd
ash saplings
woodland thinning out
BKV + Bdv
- Epilobium hirsutum
Urtica dioica
Rosa sp.
Mature conifers
Mature oak
Borris Woods is an ASI (No. 6)
Scirpus
Nasturtium
Sparganium erecta
Impatiens glandulifera
Phalaris arundinacea
willow
Sparganium emersum
Oenanthe aquatica
TP-wide grassy track
Bd - q + saplings + drain with mature woodland behind
BKV - q. Epilobium hirsutum dominated
Hazel in bd.
98c
66
Co. KILK


BN53
23/6/92
22/9/92.
5/5/93
Bd- hazel elm, alder, gorse
Spindle, guelder
ash + willow on Island
Y Petasites on opposite bk.
Nuphar
Sagittaria
Bd drain + woodland
access to woodland
alder on bk
+ ash
Borris Woods is an ASI (No. 6)
Bk - Oenanthe
Impatiens glandulifera
Brassica rapa
Phalaris arundinacea
Salix sp
Urtica dioica
Calystegia
Rumex sp
Petasities
Milestone
drain sp: Phalaris
Veronica bec
Ver catan
Myosotis sc
Mentha
Nasturtium
Phalaris
Scirpus
Oenanthe croc
Salix sp.
end of woodland
Island
old quay
mature Oak
Spindle-tubed
Bd - wall + drain
Phalaris
Salix sp
Sparganium erecta
horse track begins here
horse track still present.
TP - short sward, access easy
Bd v -
Pteridium
Filipendula ulmaria
Urtica dioica
Gramineae.
Mature ash, willow
Borris Lock
M 74.5
CANAL

BN 54



23/6/92
22/9/92
5/5/93
99c
Mature trees (ash) overhanging channel
BORRIS
bd- woodland
ash along bk
AREAS TO PLAN EDGE ONL
Tree Cutt 5/5/93
4·347
34·400
Borris Woods is an ASI (No. 6)
T.P. on east bk chopped up by horses.
Mature oak
Impatiens glad. Sparganium erect.
spindle in bk
horse track on TP as far as bridge
Mature woodland.
oak saplings
345
3·700
Bunnahown Bridge
Burial Ground
oak + ash saplings + spindle + hazel along bk V.
Woodland sps. 22/6/92.
Viola sp.
Carex remota
C. sylvatica
Geum urbanum
Circea lutea
Brachypodium syl.
Lonicera per.
Ilex aquifolium
Ver. mont
Corylus
Sanicula
Yellow pimpernel
Conopodium
Figwort
Bluebells
Conifers
Laurel
Rhodo.
Ash
Syc.
Rosa sp.
Bk v - ash + alder
Bk v - Pteridium aqu.
TP - wide, short sward grassy track.
2·920
100c
460
5·370



BN 55
23/6/92
22/9/92
5/5/93
NAGRANE
B A L L Y
Pteridium dominant on BKV + Bdv.
Bd-w/fc, drain + scrub.
alder + ash along bt
Oak in bd.
spindle abundant in bd.
Bdr + BKV
Pteridium
TP - wide grassy track.
Nasturtium
Phalaris arundinacea
Sparganium erecta.
ash, sycamore willow + alder
Sparganium erecta
Scirpus lacustris.
Sparganium erecta
Scirpus lacustris
Phalaris arundinacea
Nasturtium
spoil
alder + ash saplings
R I V E R
B A R R O W
Liable to Floods
Ballynagrane Lo
22-11.
9977/1274
100c
101c

BALLYNAGRANE LOCK - GRAIGUENAMANAGH **KM SECTIONS BN55-BN61**
approx. 6kms east bank

OBSERVATIONS:

This is another wonderful rural stretch of river enclosed along some sections on both sides by steep, rocky and forested hills. There are also interesting views to the Blackstairs Mountains and Brandon Hill.

GOOD FEATURES:

- A large woodland - mature and mixed - along the east bank as far as Cournellan House (end BN56) and south of Cournellan Lock (Clashganna) extending for three kms (BN58-BN60) (Plates 31 and 32), both non OPW property. There is an abundance of Oak, Hazel, Beech, and Spindle with some conifers. These trees add to the overall ecological value of the area. Remarkably, there are very few Sycamores present.
- This woodland is steeply embanked with many large rock formations evident at Clashganna and on the north eastern approach to Graiguenamanagh. The crevices between the rocks are damp and shaded and provide an ecological niche for rare ferns, and mountainous grasses, rushes and sedges (Plate 34).
- Mature trees on offside (west bank) as far as Cournellan Lock and for a short stretch just north of Graiguenamanagh. They are right down to the river edge and include such species as Alder and White Willow.
- Small islands (BN56, OPW property) are dominated by scrub.
- The island at Ballykeenan Cut (Plates 31 and 32) (not OPW property) supports a diversity of habitats - wet meadow which is grazed during the summer, a gradually sloping river edge and scrub.
- Species-rich boundary drain.
- Good aquatic diversity in the river and canal (Plate 31).
- Trees along the bankverge in BN60.

BAD FEATURES:

- Spoil deposited on the bank. Spoil acts as fertiliser which enriches the soil and encourages coarse, rank vegetation to thrive. This vegetation consists of Nettles, Cleavers, Hogweed, Docks and rough grasses.
- The wide towpath has been cut too frequently and the cuttings not removed. The frequent cutting has led to a reduction in flowers during the summer. Uncollected cuttings create a mulch which gradually builds up the soil fertility to the stage where competitive, coarse species will dominate. The width of maintained/cut towpath is too great.
- There are old forestry tracks criss-crossing the steep

slopes of the woodland and allowing vehicular access on to the towpath. There is also the possibility of erosion due to increased run-off from these tracks.
- Repair work to the accommodation bridge at Ballykeenan Lock has not yet been completed (commenced in Jan. '93). This bridge is used by cattle to gain access to the island. It has been raised but the soil not built up around it. It may be difficult for the cattle to actually get up on to it. Discussions with the landowner are ongoing at the time of going to press. The bridge also needs to be finished off with natural stone.

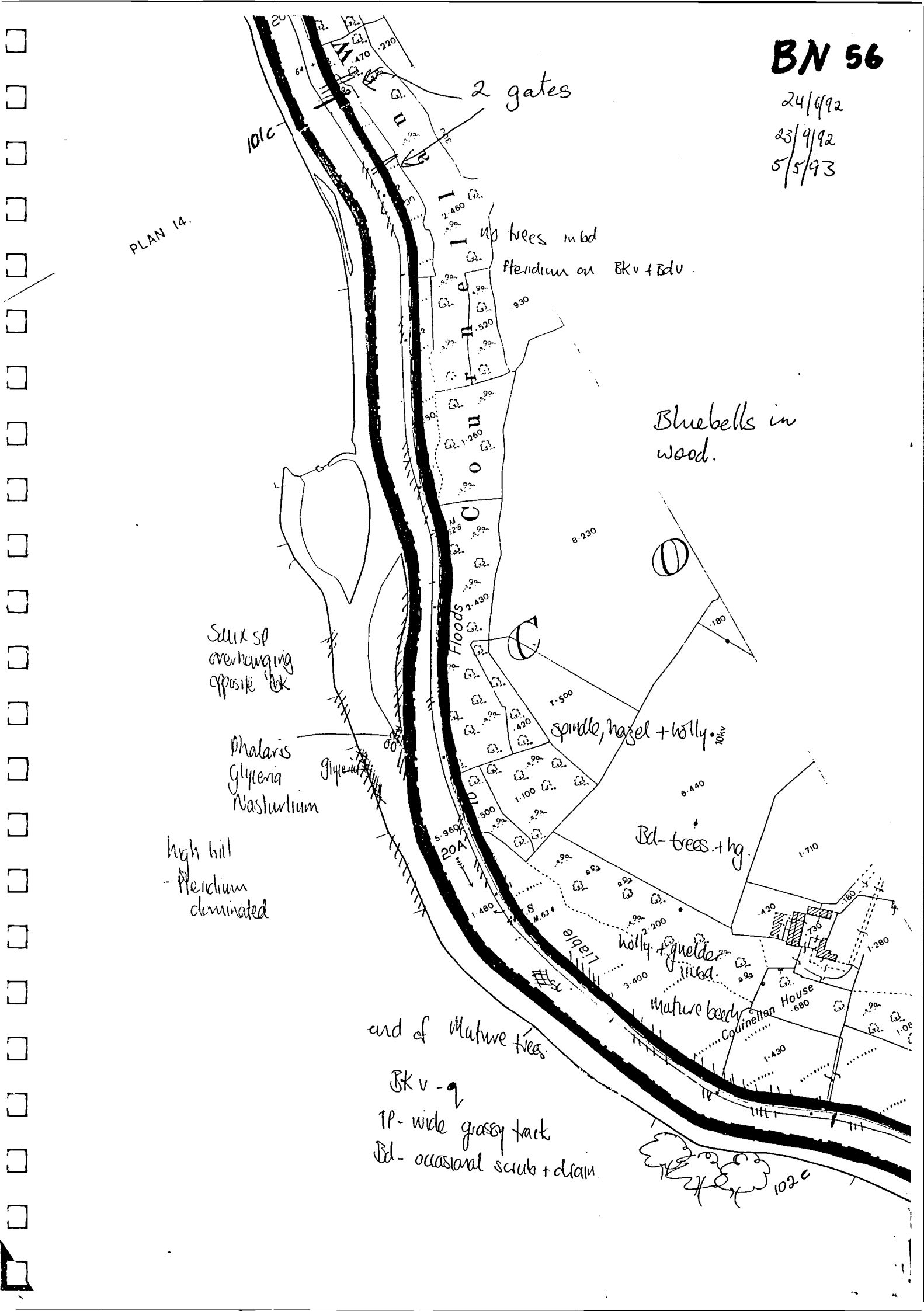
OBJECTIVES:

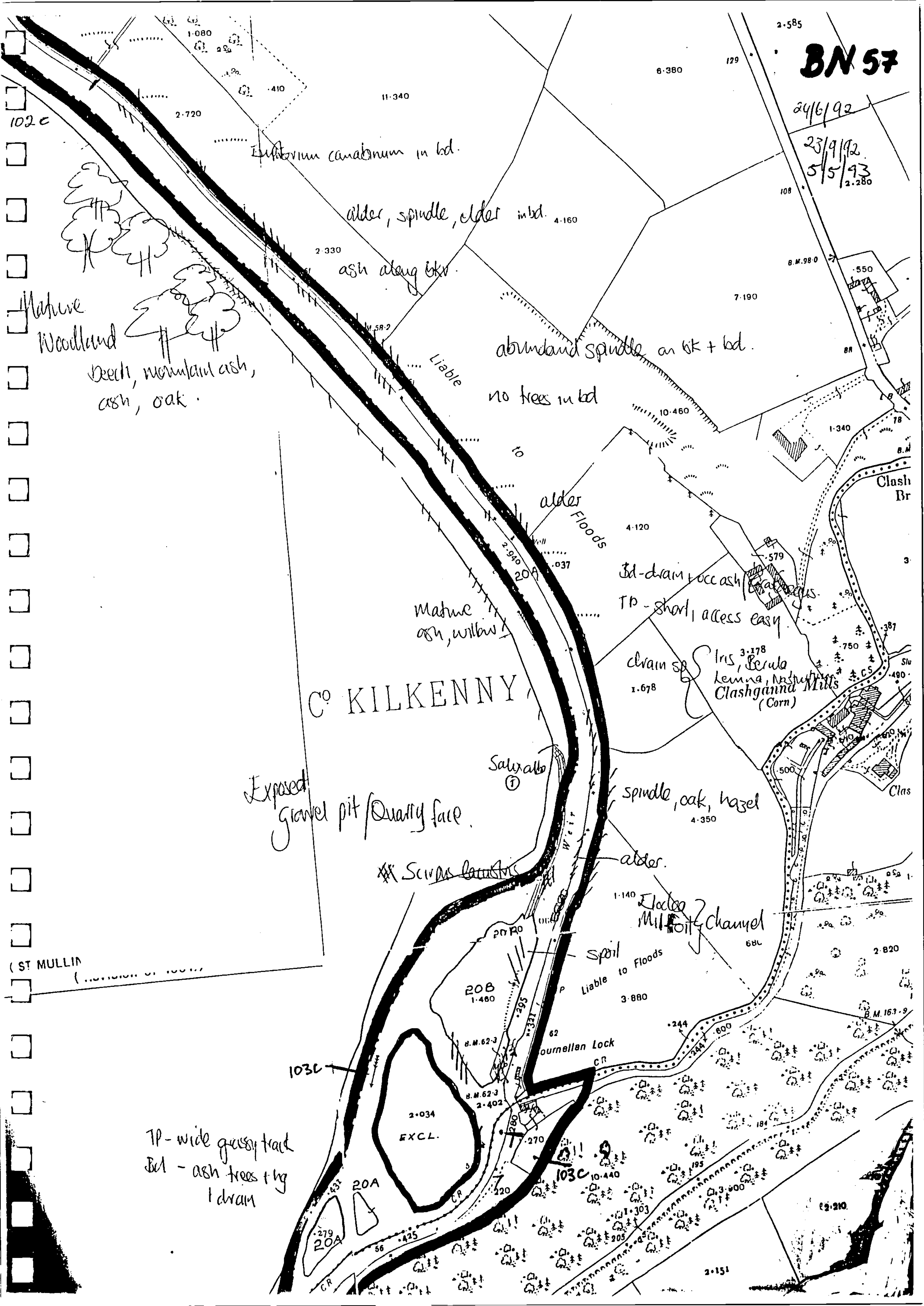
- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.
- To erect barriers where old forestry tracks provide vehicular access to the towpath.

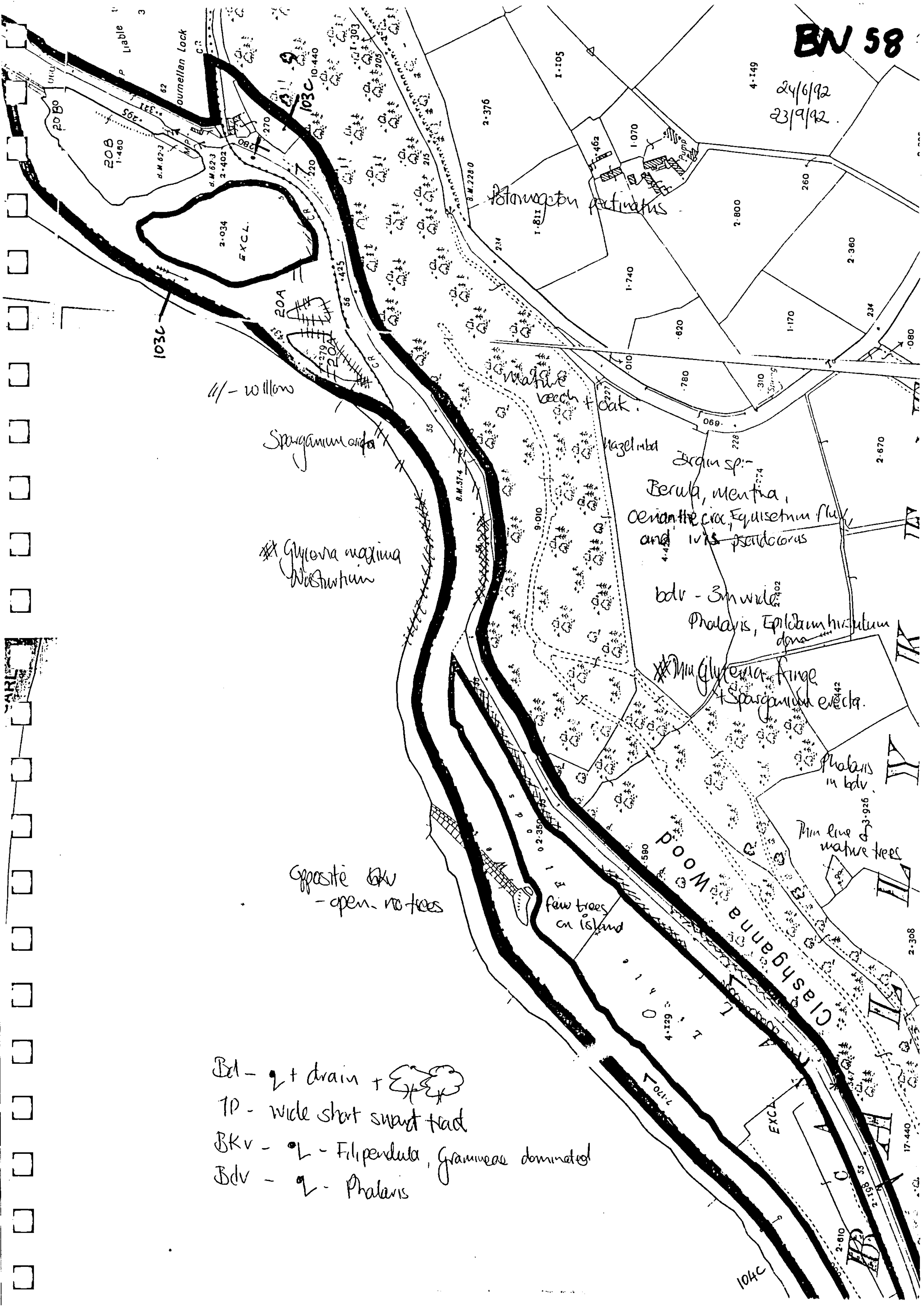
RECOMMENDATIONS:

- Protect the islands, boundary hedge and boundary drain in future canal operations.
- The vegetation on the nutrient-rich spoil deposited on the river bank, should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from the soil. As a result there will be an increase in non-competitive species and diversity. Where the bankverge is sufficiently wide a band of the coarse, rank vegetation can remain, provided it is not near the towpath and does not interfere with views of the river. This vegetation attracts its own range of insects.
- Enlist the co-operation of the landowner of the woodlands in preserving the overall ecological diversity of the area. It might also be useful to discuss the possibility of allowing the old tracks revert to woodland. This would go some way towards reducing run-off and lessening the amount of slope erosion.
- Erect barriers where the old forestry tracks lead on to the towpath in order to prevent vehicular access.
- At present a tractor with flail cutters cuts the towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil, leading to the growth of competitive species. For conservation purposes it is most important that the cuttings are collected so that this soil enrichment does not take place.
- Reduce both the width and number of cuttings of

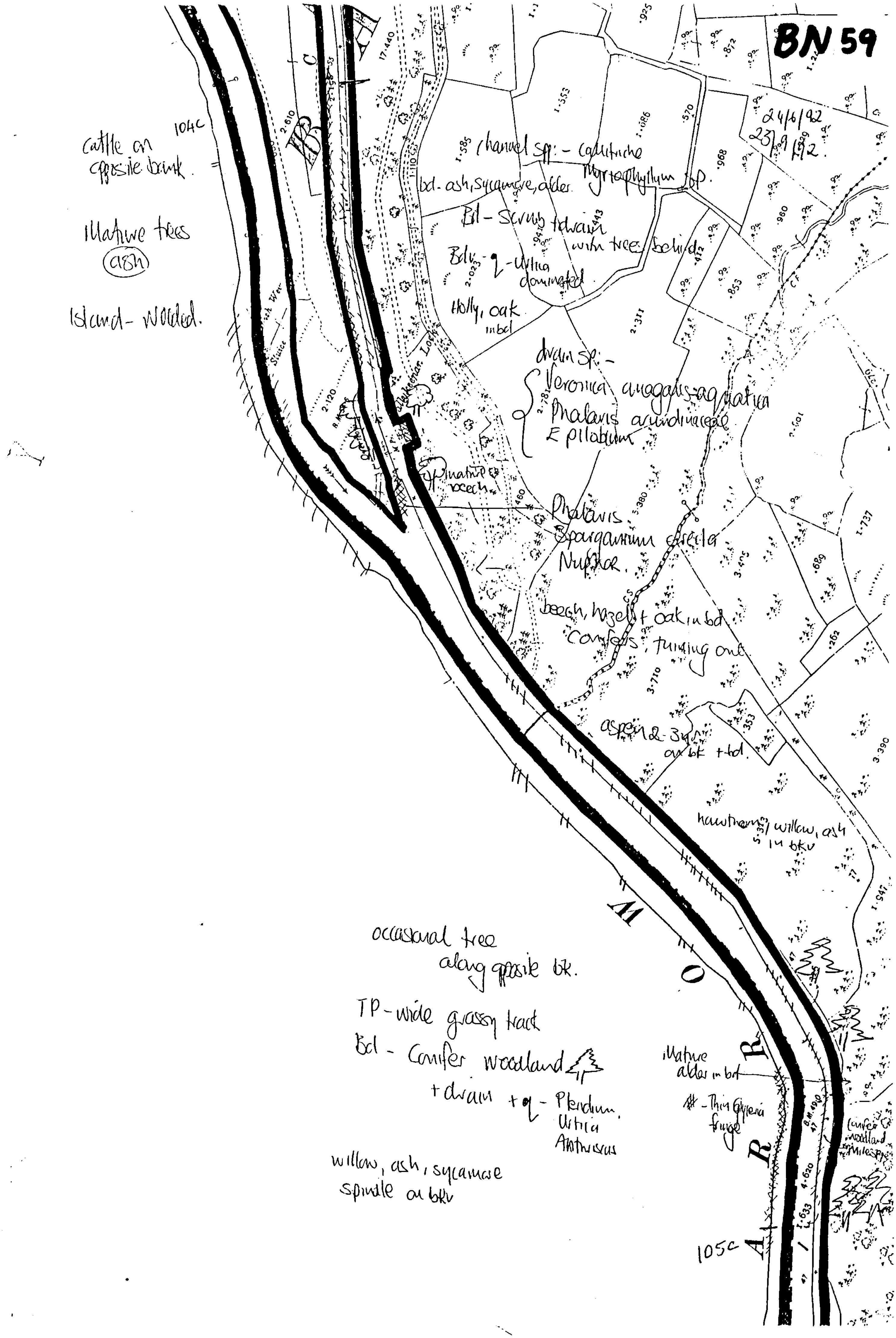
grasses and flowering species on either side of the surfaced towpath. A narrow strip (1m) can be frequently cut. The remainder of the bank and boundary verges can be cut late in the year. Cutting late in the year allows the plants to grow, flower and set seed. The advantages of this from a wildlife point of view are many. Insects can pupate and feed off their host plant and move around the general area. These in turn become a food source for birds and other small mammals. There is also the aesthetic value which attaches to the presence of a herb layer of medium height contrasting with both the taller tree and shrub layer and the low ground layer of the towpath.


BN 56
24/6/92
23/9/92
5/5/93
PLAN 14.
2 gates
101c
up trees in bd
Pteridium on BKv + Bdv
Bluebells in wood.
Salix sp overhanging opposite BK
Phalaris
Glyceria
Glyceria
Nasturtium
high hill
- Pteridium dominated
spindle, hazel + holly
Bd - trees + hg.
holly + guelder
mature beech
Coulmelton House
end of Mature trees
BKv - g
TP - wide grassy track
Bd - occasional scrub + drain
102c
Hoods
Coulmelton
Arable

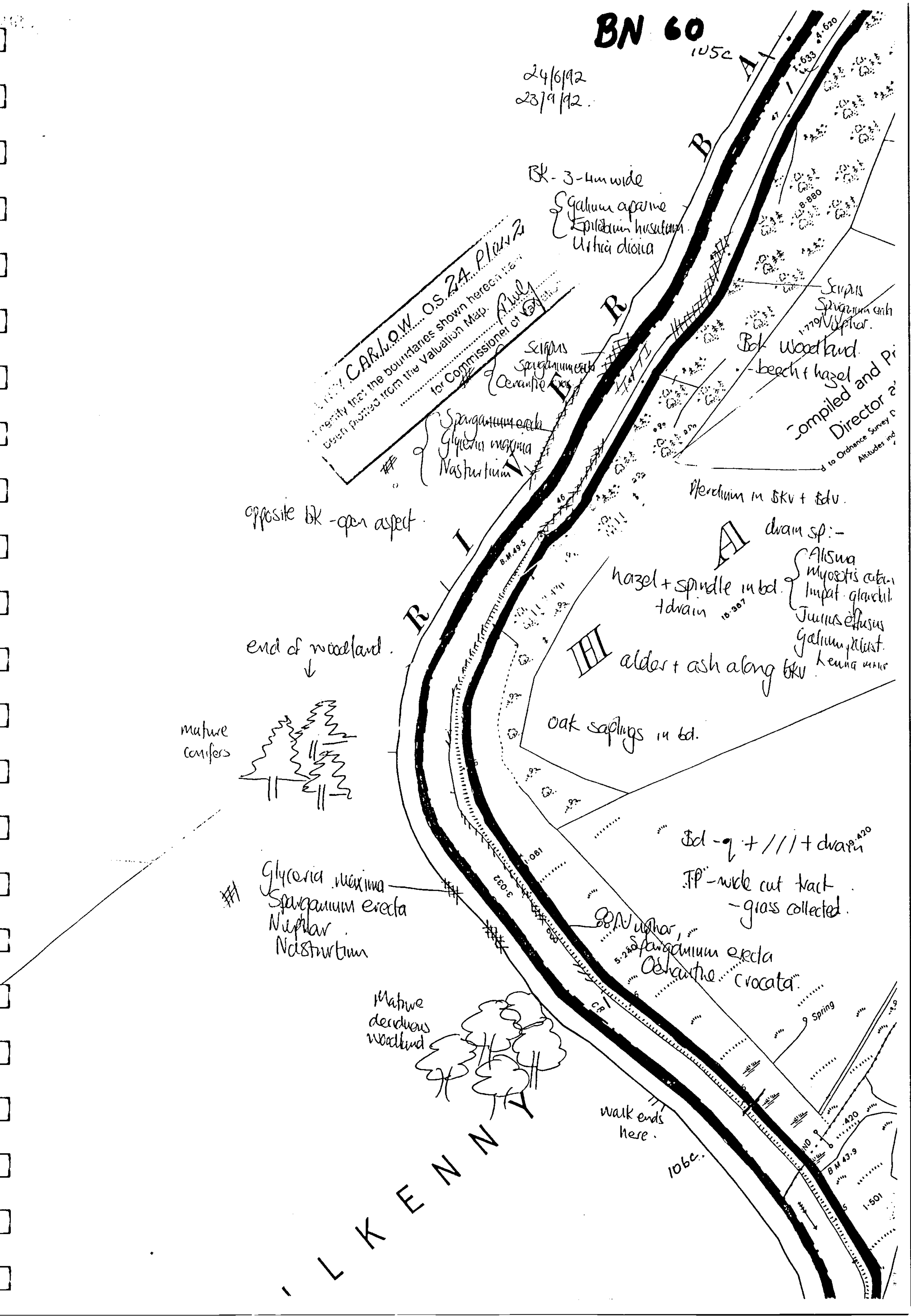

BN 57
24/6/92
23/9/92
5/5/93
102c
Eupatorium canabinum in bd.
alder, spindle, alder in bd.
ash along bk.
Mature Woodland
beech, mountain ash, ash, oak.
abundant spindle on bk + bd.
no trees in bd
Liable to Floods
alder
Bd-drain, occ ash
TP - short, access easy
Mature ash, willow
drain
Iris, Berula, Lemna, Nasturtium
Clashganna Mills (Corn)
Co KILKENNY
Salix alba
Exposed Gravel pit/Quarry face
spindle, oak, hazel
Weir
alder.
Scirpus lacustris
Elodea? Mill tail channel
spoil
Liable to Floods
20A
20B
Gournellan Lock
103c
EXCL.
TP - wide grassy track
Bd - ash trees + hg / drain
ST MULLIN
Clash Br

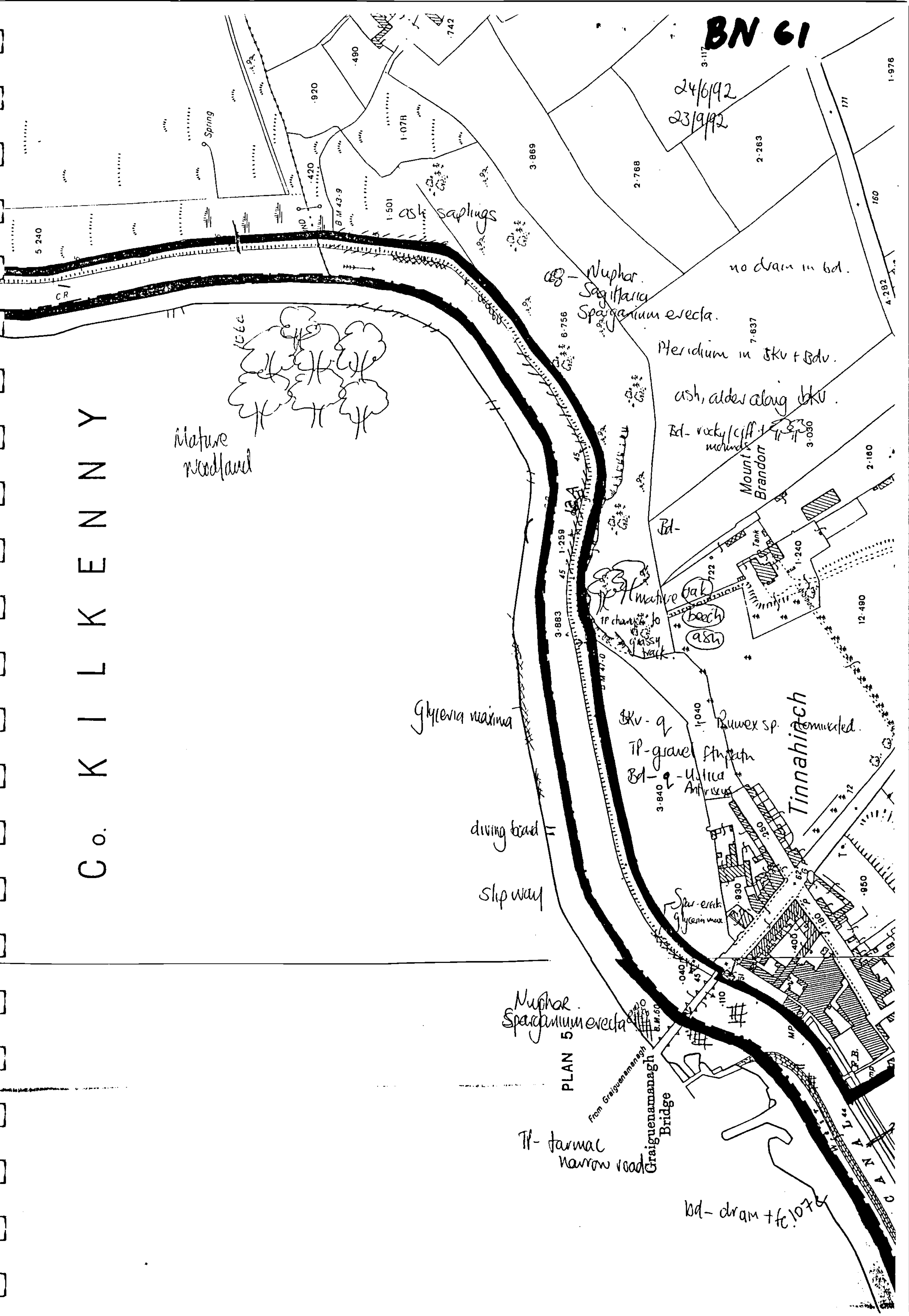


BN 58
24/6/92
23/9/92
Liable
ournellan Lock
103C
20B
EXCL.
20A
Potamogeton pectinatus
Mature beech + oak
willow
Drain sp:- Berula, Mentha, Oenanthe croc, Equisetum fluv, and Iris pseudacorus
bdv - 3m wide Phalaris, Epilobium hirsutum dom
Glyceria maxima Nasturtium
Glyceria fringe + Sparganium erecta
Phalaris in bdv.
Thin line of mature trees
Clashganna Wood
Opposite bkv - open. no trees
few trees on island
EXC
Bd - L + drain + trees
TP - wide short sward track
Bkv - L - Filipendula, Gramineae dominated
Bdv - L - Phalaris
104C



BN 59
24/6/92
23/9/92
104C
cattle on opposite bank
Mature trees (1987)
Island - wooded.
channel sp. - Callitriche, Myriophyllum sp.
bd - ash, sycamore, alder
Bd - scrub to drain with trees behind
Bdr - q - Urtica dominated
Holly, oak in bd
drain sp. - Veronica anagallis-aquatica, Phalaris arundinacea, Epilobium
mature beech
Phalaris, Sparganium erectum, Nuphar.
beech, hazel + oak in bd, Conifers, turning out
aspen & -3 on bk + bd.
hawthorn, willow, ash in bkr
occasional tree along opposite bk.
TP - wide grassy track
Bd - Conifer woodland + drain + q - Pteridium, Urtica, Anthriscus
willow, ash, sycamore, spindle on bkr
Mature alder in bd
Thin Glyceria fringe
Conifer woodland
105C
M O R R A


BN 60
105c
24/6/92
23/9/92.
BK - 3-4m wide
Galium aparine
Epilobium hirsutum
Urtica dioica
CARLOW O.S. 24 plan 2
I certify that the boundaries shown hereon have been plotted from the Valuation Map.
for Commissioner of Valuation
Scirpus
Sparganium erecta
Oenanthe
Sparganium erecta
Glyceria maxima
Nasturtium
Scirpus
Sparganium erect
Nuphar.
Bdr woodland
- beech + hazel
Compiled and P
Director
to Ordnance Survey
Altitudes
Pteridium in BKV + Bdr.
opposite BK - open aspect
drain sp:-
Alisma
Myosotis
Impat. glandul.
Juncus effusus
Galium palust.
Lemna minor
hazel + spindle in bdr. + drain
alder + ash along BKV
end of woodland
mature conifers
oak saplings in bdr.
Bdr - q + /// + drain
TP - wide cut track
- grass collected.
Glyceria maxima
Sparganium erecta
Nuphar
Nasturtium
Nuphar,
Sparganium erecta
Oenanthe crocata.
Mature deciduous woodland
walk ends here.
106c.
Spring
B.M. 49.5
BM 43.9
RIVER BARROW
KILKENNY



BN 61
24/6/92
23/9/92
Co. KILKENNY
Tinnahinch
Mount Brandon
Graiguenamanagh Bridge
From Graiguenamanagh
PLAN 5
CANAL
Spring
ash saplings
Nuphar
Sagittaria
Sparganium erecta.
no drain in bd.
Pteridium in Bkv + Bdv.
ash, alder along Bkv.
Mature woodland
mature oak
beech
ash
Glyceria maxima
diving board
slip way
Nuphar.
Sparganium erecta
Tl- tarmac
narrow road
bd- drain + fc 1070

GRAIGUENAMANAGH - LR. TINNAHINCH LOCK

KM SECTIONS BN61-BN63
approx. 2kms east bank

OBSERVATIONS:

The town of Graiguenamanagh, nestled as it is in the river valley, is most picturesque. The wide, many arched bridge, the weir and the quaint lock houses afford an added attraction. Again there are views to the mountains.

GOOD FEATURES:

- Rich aquatic diversity in the river and canal.
- The island cut at Lower Tinnahinch Lock is dominated by scrub which provides good cover for otters and a roosting ground for wildfowl.
- Dense mature woodland on the west bank BN62/63 adds to the ecological diversity of the area.
- Graiguenamanagh Bridge is an old bridge of 7 arches. This extensive area of stonework provides an ecological niche for many wall plants.

BAD FEATURES:

- Spoil deposited on the bank. Spoil acts as fertiliser which enriches the soil and encourages coarse, rank vegetation to thrive. This vegetation consists of Nettles, Cleavers, Hogweed, Docks and rough grasses.
- The wide towpath has been cut too frequently and the cuttings not removed. The frequent cutting has led to a reduction in flowers during the summer. Uncollected cuttings create a mulch which gradually builds up the soil fertility to the stage where competitive, coarse species will dominate.
- Weir overgrown.

OBJECTIVES:

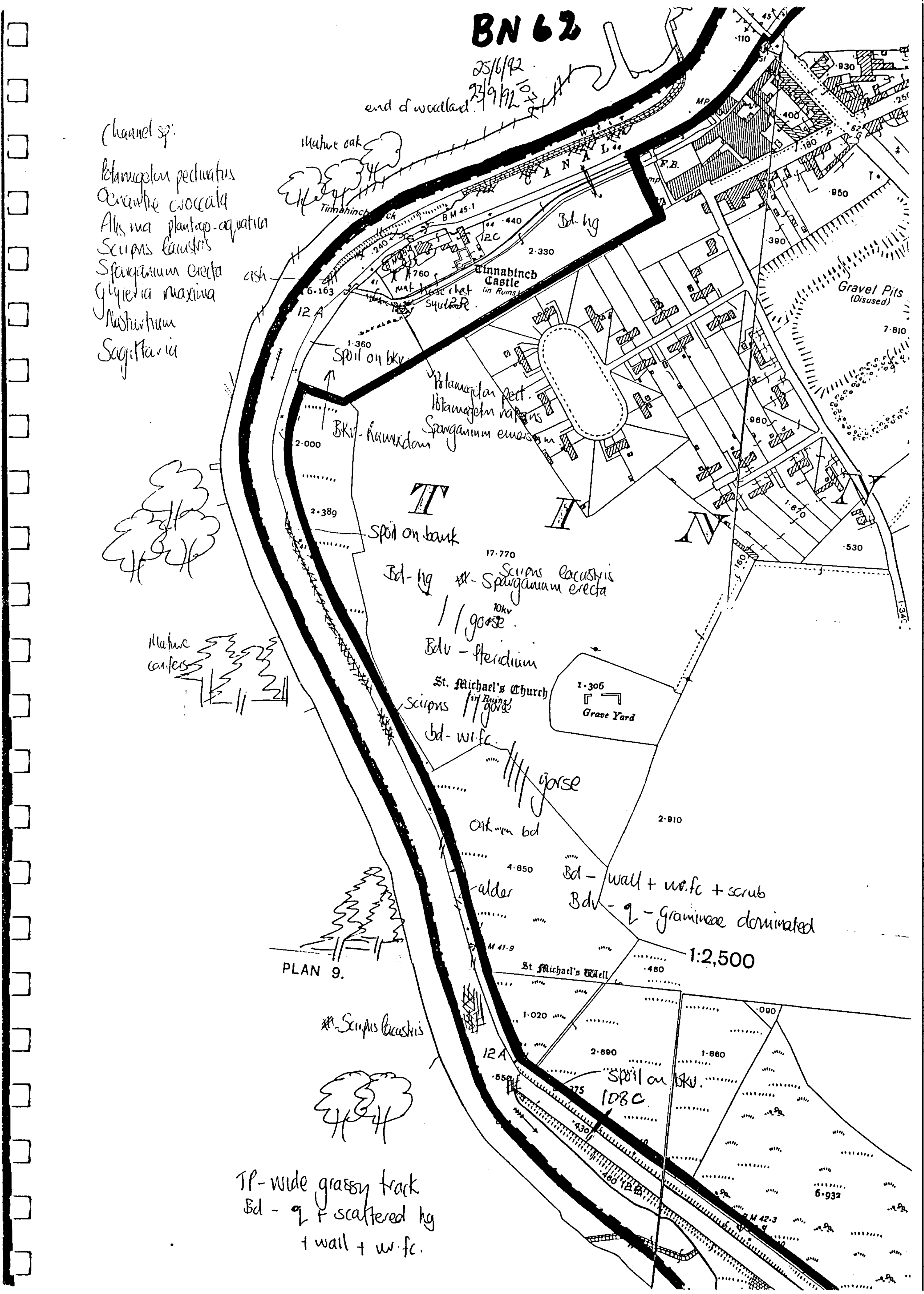
- To encourage and maintain ecological diversity.
- To reduce, as quickly as possible, the effects which nutrient-rich spoil can have on vegetation.
- To prevent soil enrichment as a result of vegetation cuttings remaining on the towpath.

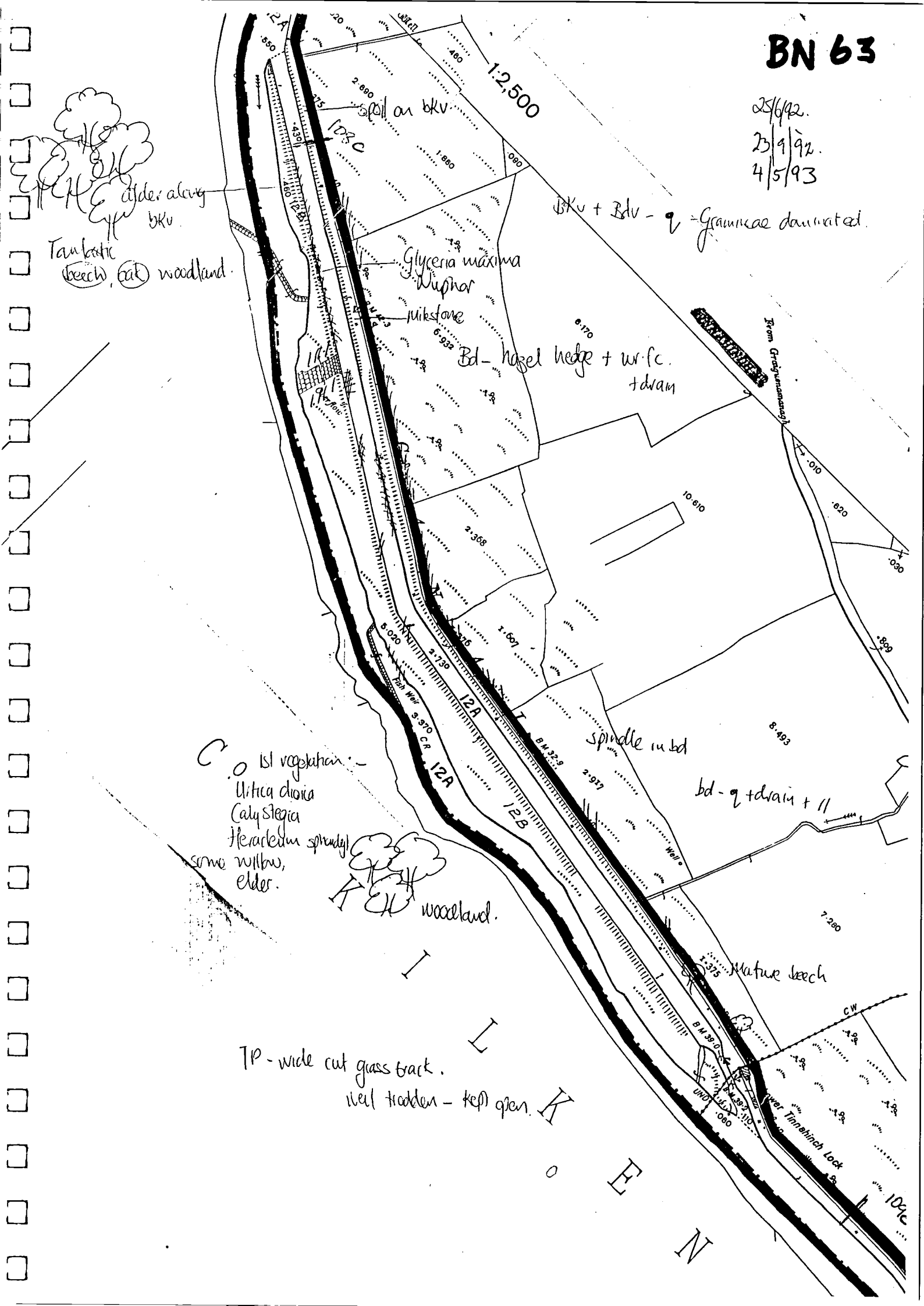
RECOMMENDATIONS:

- Protect the island in future canal operations.
- The vegetation on the nutrient-rich spoil deposited on the river bank, should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from the soil. As a result there will be an increase in non-competitive species and diversity. Where the

bankverge is sufficiently wide a band of the coarse, rank vegetation can remain, provided it is not near the towpath and does not interfere with views of the river. This vegetation attracts its own range of insects.

- At present a tractor with flail cutters cuts the towpath vegetation to a width of 2.75m. Neither this machine nor another is employed to collect the cuttings. Instead they remain on the path and form a mulch which enriches the soil, leading to the growth of competitive species. For conservation purposes it is most important that the cuttings are collected so that this soil enrichment does not take place. (Contrast Plates 5 and 21).
- Reduce both the width and number of cuttings of grasses and flowering species on either side of the surfaced towpath. A narrow strip (1m) can be frequently cut. The remainder of the bank and boundary verges can be cut late in the year. Cutting late in the year allows the plants to grow, flower and set seed. The advantages of this from a wildlife point of view are many. Insects can pupate and feed off their host plant and move around the general area. These in turn become a food source for birds and other small mammals. There is also the aesthetic value which attaches to the presence of a herb layer of medium height contrasting with both the taller tree and shrub layer and the low ground layer of the towpath.
- Clear the weir of excess vegetation which otherwise might prevent salmon moving upstream.


BN 62
25/6/92
23/9/92
end of woodland
Channel sp:
Potamogeton pectinatus
Oenanthe crocata
Alisma plantago-aquatica
Scirpus lacustris
Sparganium erecta
Glyceria maxima
Nasturtium
Sagittaria
Mature oak
Timahinch
CANAL
BM 45.1
Bd - hg
Tinnahinch Castle (in Ruins)
ash
12 A
12C
Spoil on bkv
Bkv - Ranunculus
Potamogeton pect.
Potamogeton natans
Sparganium emersum
Spoil on bank
Bd - hg
Scirpus lacustris
Sparganium erecta
gorse
Bdv - Pteridium
Mature conifers
St. Michael's Church (in Ruins)
Scirpus
gorse
bd - wi.fc.
gorse
Grave Yard
Oak on bd
alder
Bd - wall + wi.fc + scrub
Bdv - g - Gramineae dominated
Gravel Pits (Disused)
1:2,500
PLAN 9.
St. Michael's Well
Scirpus lacustris
12 A
Spoil on bkv.
108C
12B
BM 42.3
TP - wide grassy track
Bd - g + scattered hg
+ wall + wi.fc.


BN 63
1:2,500
25/6/92.
23/9/92.
4/5/93
alder along bkv.
Tan bark beech, oak woodland.
spoil on bkv
Glyceria maxima
Wuphar
milkstone
bkv + bdv - q - Graminae dominated.
Bd - hazel hedge + wr fc. + drain
From Craigmanaugh
spindle in bd
bd - q + drain + 11
C.O ISI vegetation:-
Urtica dioica
Calystegia
Heracleum sphondyl
scrub willow, elder.
woodland.
Mature beech
TP - wide cut grass track.
well trodden - kept open.
Tan Well
Well
Lower Tinnahinch Lock
ILKEEN

LR. TINNAHINCH LOCK - ST. MULLINS

KM SECTIONS BN63-69
approx. 5.5km east bank

OBSERVATIONS:

The valley begins to open out but the imposing steep slopes on either bank still remain (Plates 35 and 36).

GOOD FEATURES:

- Bahana Wood along the east of the river is an ASI of Regional Importance (not OPW property) (Plate 37). It is an extensive deciduous woodland amongst coniferous plantations and consists of Oak, Holly, Beech, Elder, Spindle and Whitebeam (Sorbus devoniensis). The grass Milium effusum (Wood Millet) is also present. According to Webb (1977), this grass is rare in mountainous districts. The species Trichomanes speciosum (Killarney Fern) has also been found at the north end of this wood.
- Species-rich wide boundary drain along most of this stretch.
- Good aquatic diversity in the river and canal (Plates 35 and 37).
- The opposite bank (slopes of Brandon Hill) is wooded down to river level (Plate 38).
- Scrub and saltmarsh/meadow on the island at St. Mullin's Lock. It is not OPW property but adds to the overall ecology of the area.

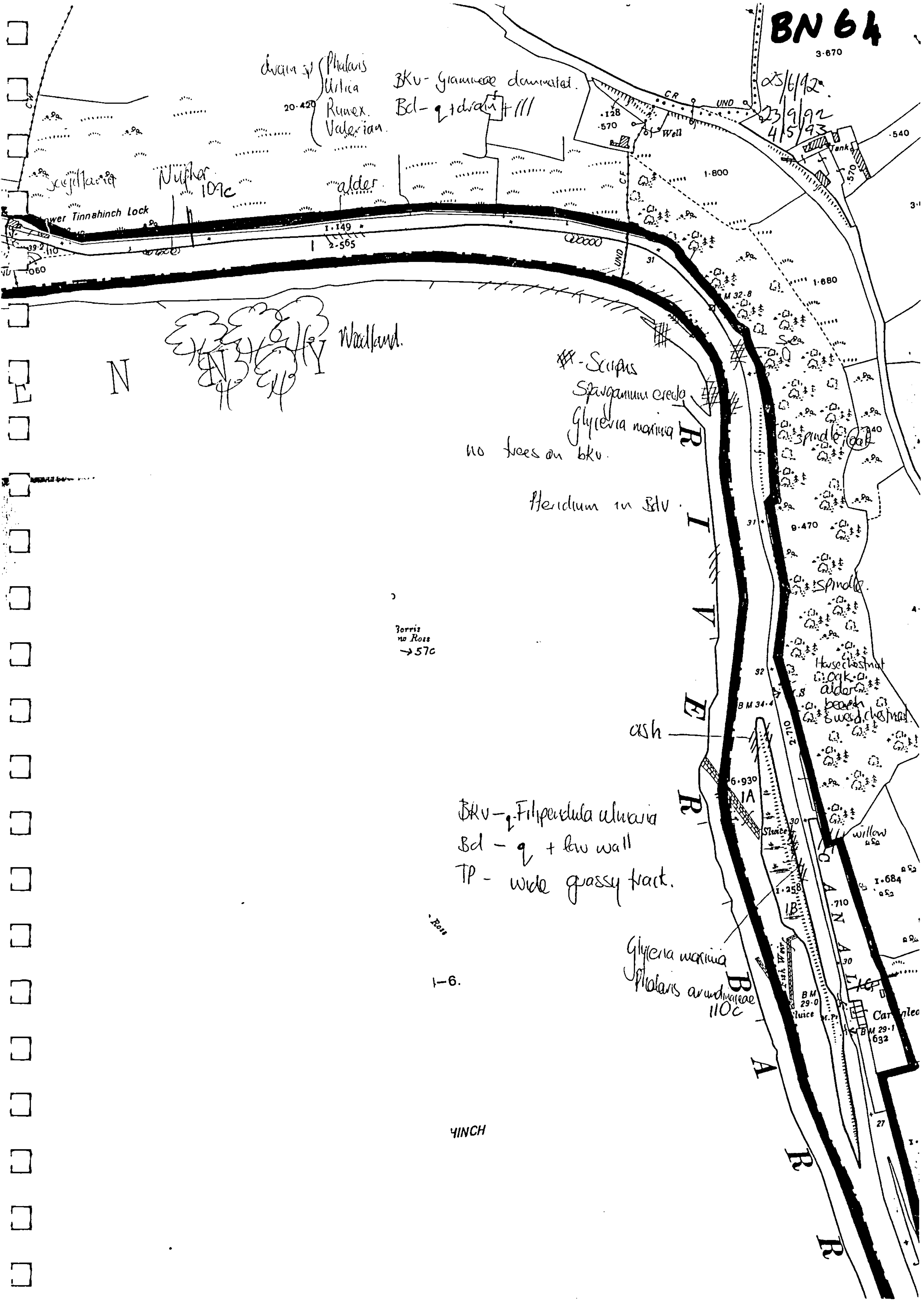
BAD FEATURES:

- Spoil deposited on the bank. Spoil acts as fertiliser which enriches the soil and encourages coarse, rank vegetation to thrive. This vegetation consists of Nettles, Cleavers, Hogweed, Docks and rough grasses.
- The wide towpath has been cut too frequently and the cuttings not removed. This frequent cutting has led to a reduction in flowering varieties during the summer. Uncollected cuttings create a mulch which gradually builds up the soil fertility to the stage where competitive, coarse species will dominate.
- The width of maintained/cut towpath is too great.
- There is an abundance of the non-native Impatiens glandulifera along the boundary verge and bank of this stretch (Plate 38).

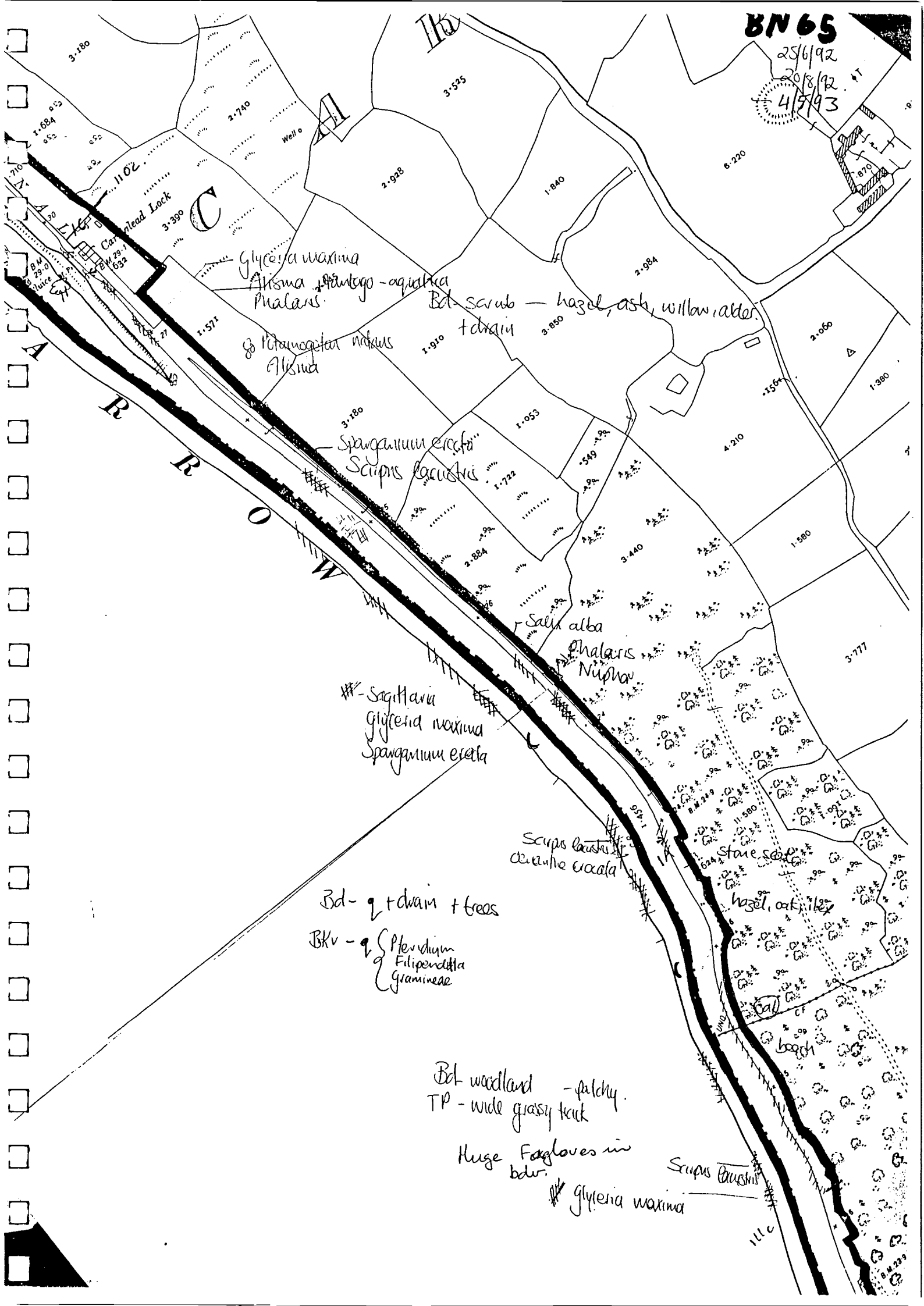
RECOMMENDATIONS:

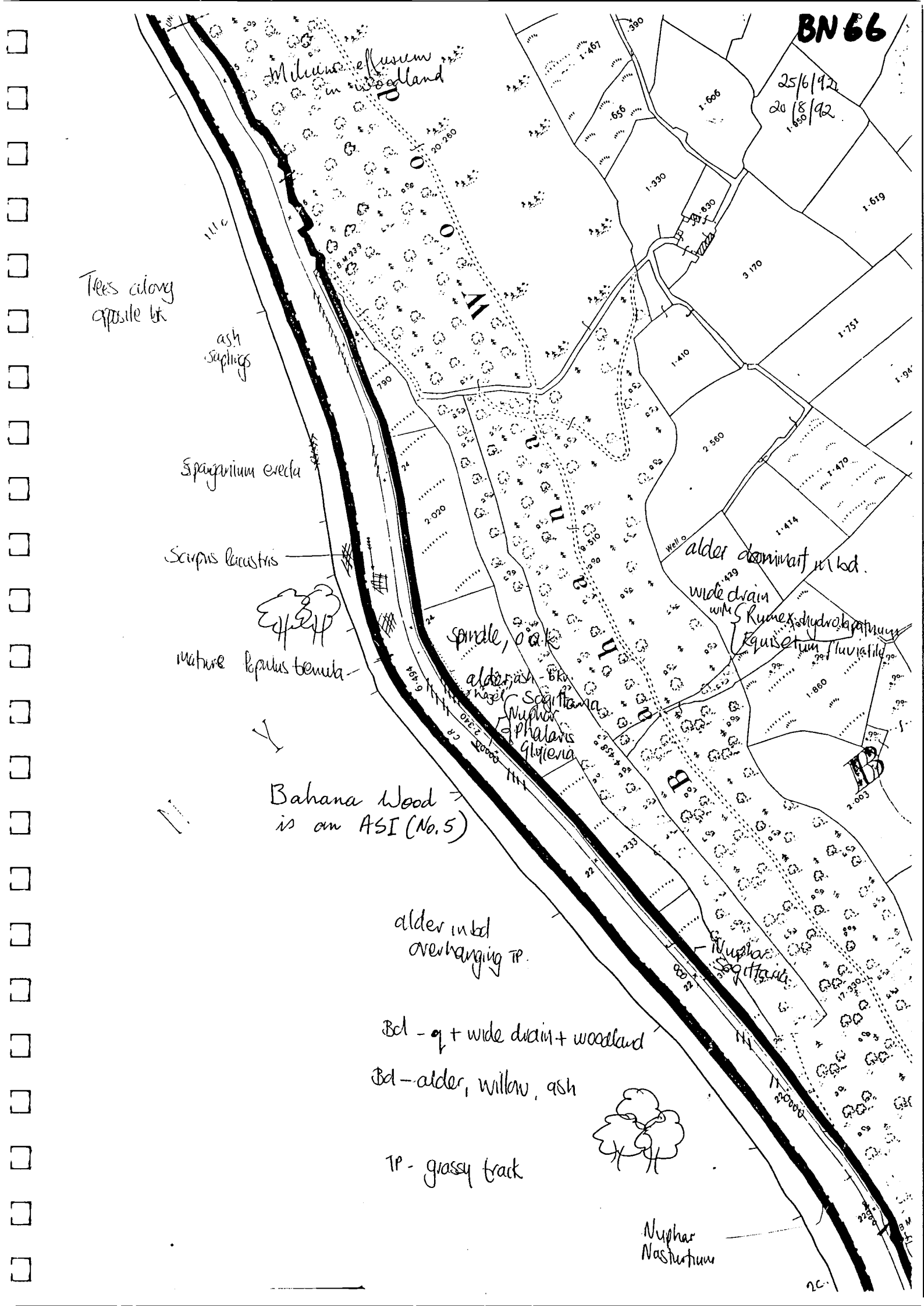
- Protect the island in future canal operations.
- The vegetation on the nutrient-rich spoil deposited on the river bank, should be cut early in the year and as frequently as possible during the first year. The cuttings must be removed. The cutting and removal of the first growths of rank vegetation on the spoil hastens the process whereby nutrients are removed from

the soil. As a result there will be an increase in non-competitive species and diversity. Where the bankverge is sufficiently wide a band of the coarse, rank vegetation can remain, provided it is not near the towpath and does not interfere with views of the river. This vegetation attracts its own range of insects.
- Reduce both the width and number of cuttings of grasses and flowering species along the towpath. A narrow strip (1 - 1.5m) can be frequently cut. The remainder of the bank and boundary verges can be cut once late in the year - provided there is no deposition of spoil. Cutting late in the year allows the plants to grow, flower and set seed. The advantages of this from a wildlife point of view are many. The diversity of the seed-bank is not reduced. Insects can pupate and feed off their host plant and move around the general area. These in turn become a food source for birds and other small mammals. There is also the aesthetic value which attaches to the presence of a herb layer of medium height contrasting with both the taller tree and shrub layer and the low ground layer of the towpath.



BN 64
25/6/92
23/9/92
4/5/93
drain w/ Phalaris
Urtica
Rumex.
Valerian.
BKv - Gramineae dominated.
Bd - q + drain + ///
Sagittaria
Nuphar
109c
alder
Lower Tinnahinch Lock
Woodland.
Scirpus
Sparganium erectum
Glyceria maxima
no trees on bkv.
Pteridium in Bdv.
spindle oak
spindle.
Horsechestnut
oak
alder
beech
sweet chestnut
willow
ash
BKv - q Filipendula ulmaria
Bd - q + low wall
TP - wide grassy tract.
Glyceria maxima
Phalaris arundinaceae
110c
1A
1B
Sluice
Well
Tank
RIVER BARROW
CANAL
Borris
Ross
→ 57c
1-6.
4INCH


BN65
25/6/92
20/8/92
4/9/93
Glyceria maxima
Phalaris
Bd- scrub — hazel, ash, willow, alder
+drain
Spargonium erecta
Scirpus lacustris
Salix alba
Phalaris
Nuphar
Sagittaria
Glyceria maxima
Spargonium erecta
Scirpus lacustris
Stone
hazel, oak, ilex
beach
Bd- g +drain +trees
BKv - g Pteridium
Filipendula
Graminae
Bd woodland - patchy.
TP - wide grassy track
Huge Foxgloves in bdy.
Scirpus lacustris
Glyceria maxima
Carnlead Lock
ARROW

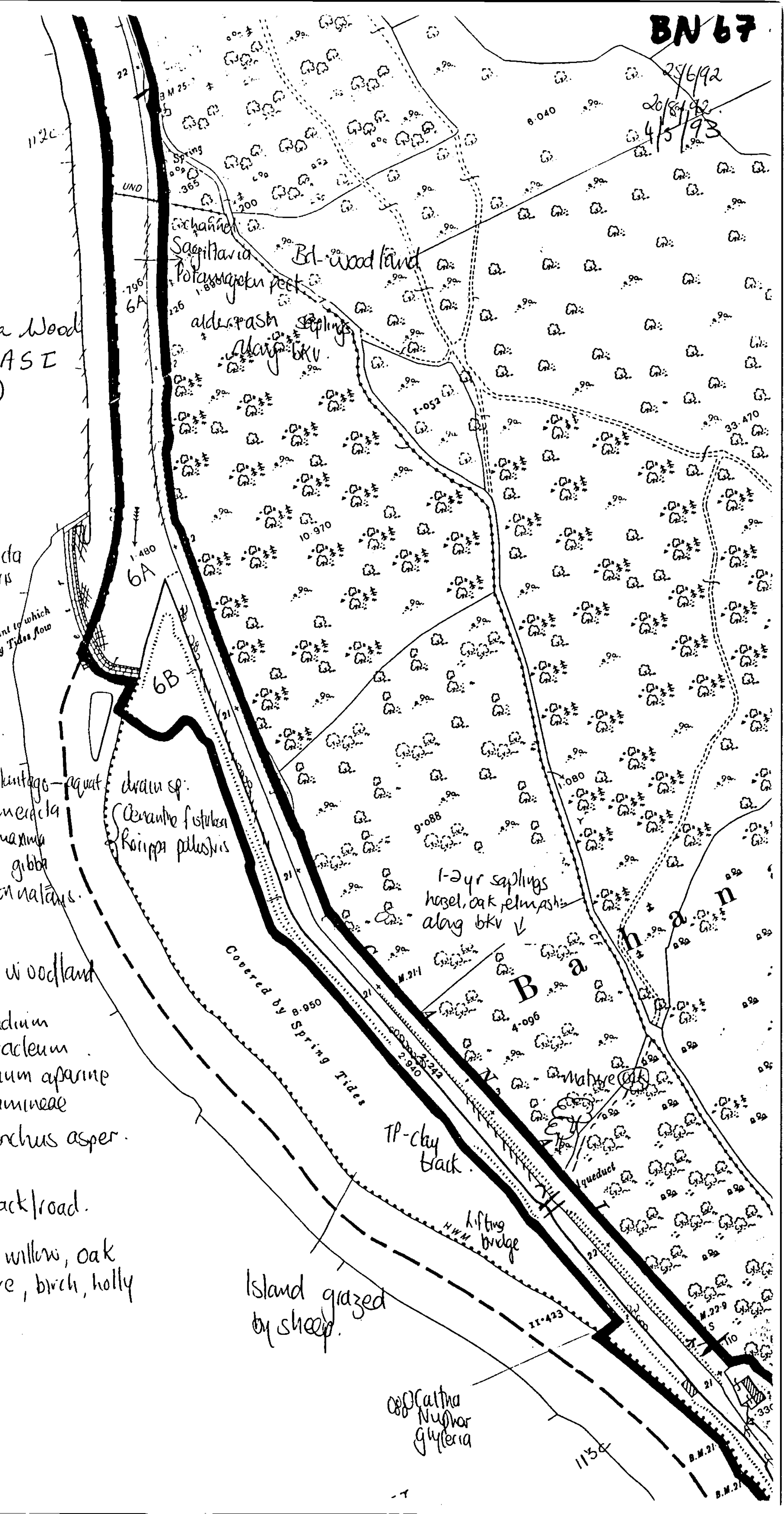

BN66
25/6/92
20/8/92
Mixed woodland
Trees along opposite bk
ash saplings
Sparganium erecta
Scirpus lacustris
mature Populus tremula
spindle, oak
alder, ash - bk
hazel
Scrophularia
Nuphar
Phalaris
Glyceria
Bahana Wood is an ASI (No. 5)
alder dominant wl bd.
wide drain with Rumex hydrolapathum
Equisetum fluviatile
alder in bd overhanging TP.
Nuphar
Bd - q + wide drain + woodland
Bd - alder, willow, ash
TP - grassy track
Nuphar
Nasturtium

25/6/92
20/8/92
4/5/93

Bahana Wood is an ASI (No. 5)

Sparganium erecta
H - Scirpus lacustris

ash + alder along opp bkv.



opp { Alisma plantago-aquat
Sparganium erecta
Glyceria maxima
Lemna gibba
Potamogeton natans.

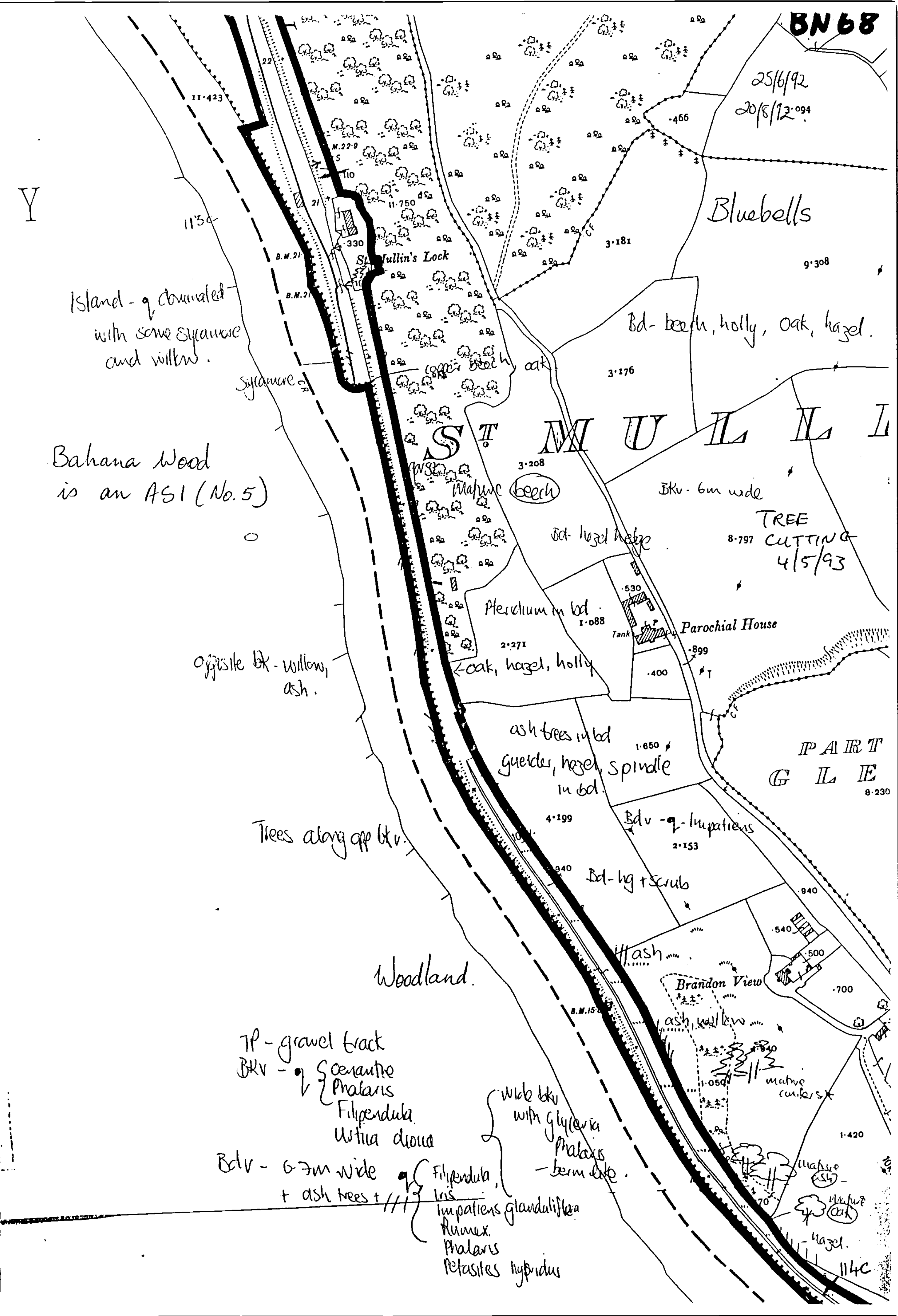
Bd - q + drain + woodland

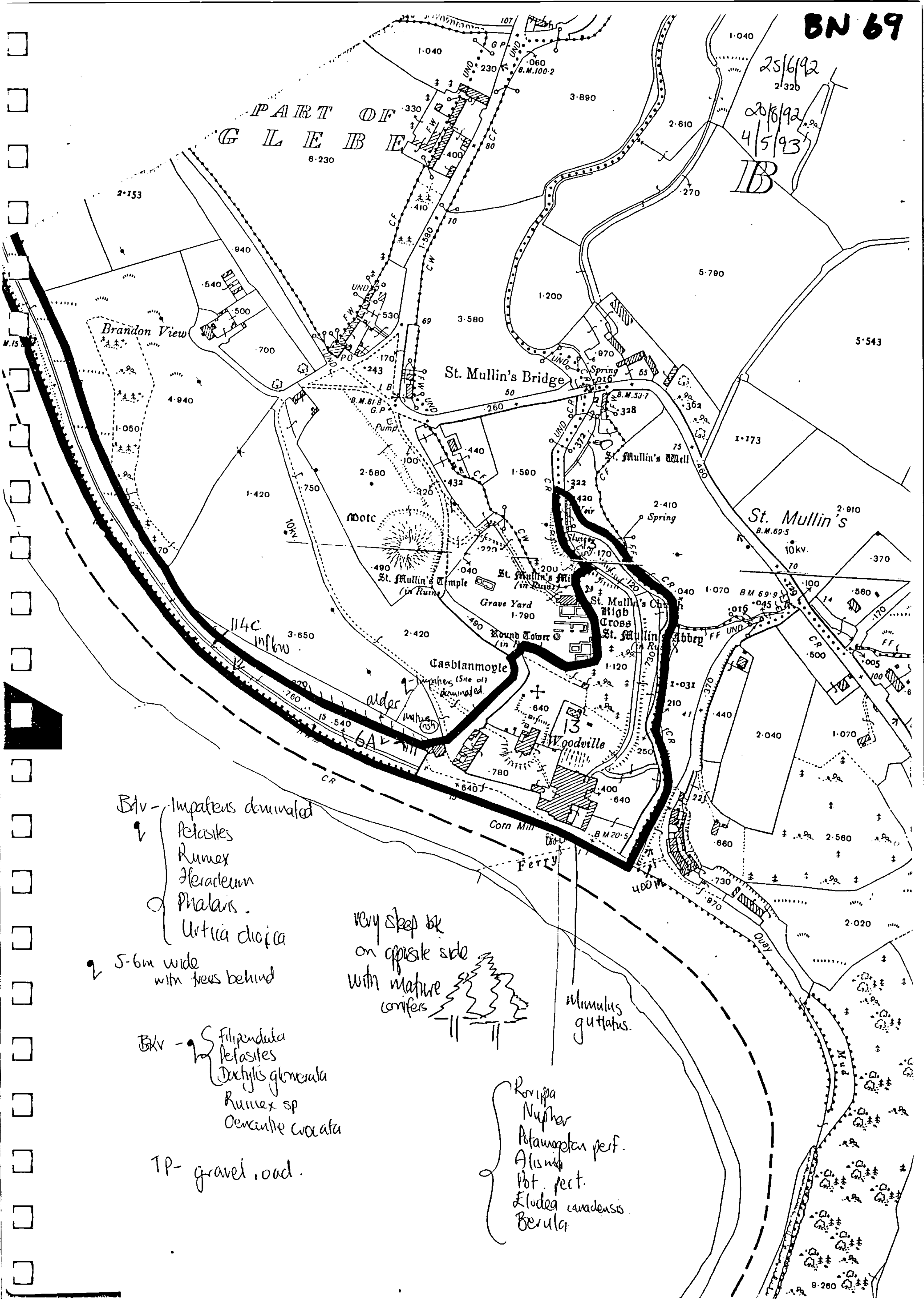
BKV - q { Pteridium
Heracleum
Galium aparine
Gramineae
Sonchus asper.

TP - gravel track/road.

Bd - hazel, willow, oak
Sycamore, birch, holly

opp Caltha
Nuphar
Glyceria


BN68
25/6/92
20/8/92
St Mullin's Lock
Parochial House
Brandon View
ST MULL
PART GLE
Bluebells
Bd- beech, holly, oak, hazel.
Island - q dominated with some sycamore and willow.
Sycamore
copper beech, oak
Bahana Wood is an ASI (No. 5)
Mature beech
Bkv - 6m wide
TREE CUTTING 4/5/93
Bd- hazel hedge
Pteridium in bd
oak, hazel, holly
Opposite bk - willow, ash.
ash trees in bd
guelder, hazel, spindle in bd.
Bdv - q - Impatiens
Trees along opp bkv.
Bd - hg + scrub
ash
Woodland.
ash, willow
mature conifers
TP - gravel track
Bkv - q Oenanthe Phalaris Filipendula Urtica dioica
Wide bkv with Glyceria Phalaris - berm lake.
Bdv - 6-7m wide + ash trees
Filipendula, Iris, Impatiens glandulifera, Rumex, Phalaris, Petasites hybridus
mature ash
mature oak
hazel.
114C
113

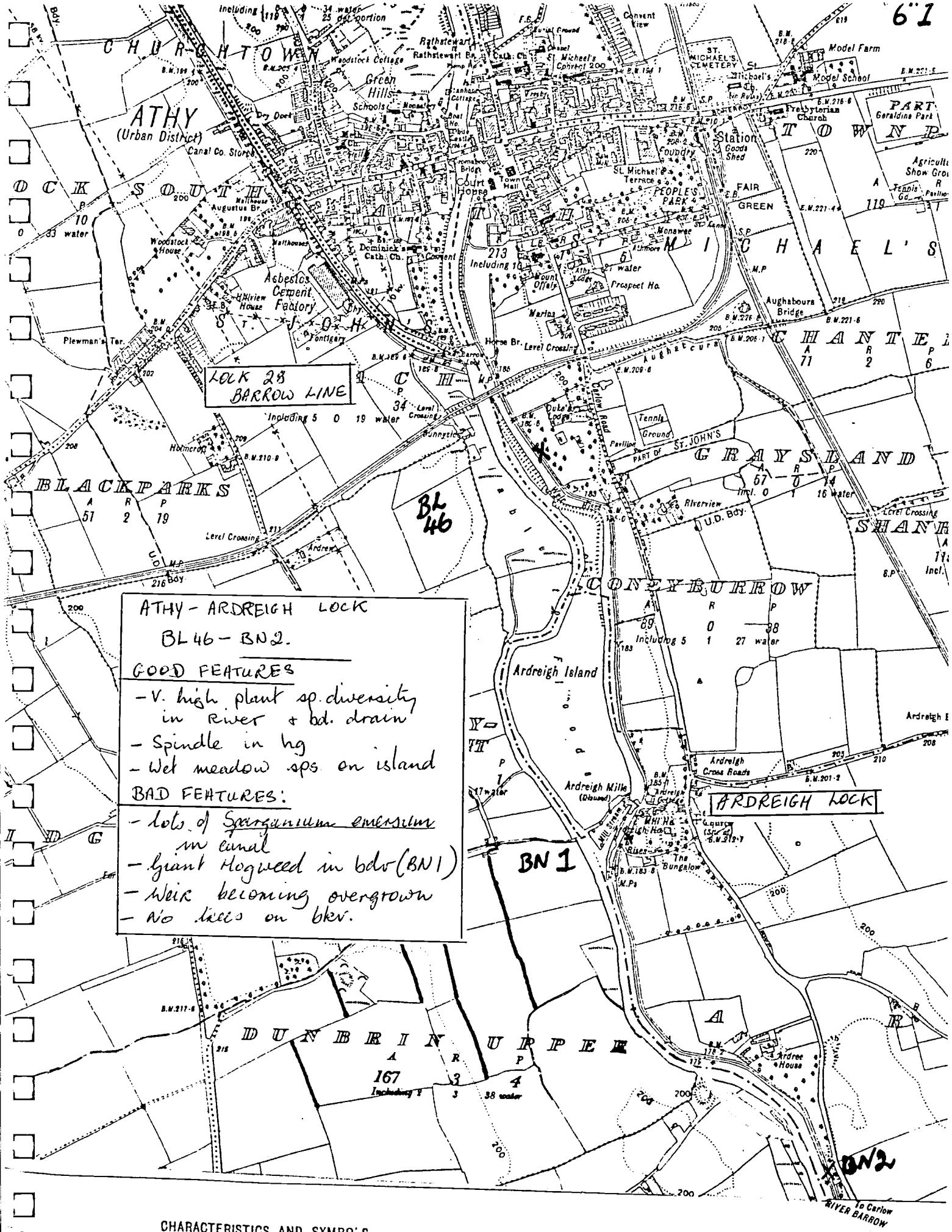


BN 69
25/6/92
20/8/92
4/5/93
B
PART OF
GLEBE
Brandon View
St. Mullin's Bridge
Spring
St. Mullin's Well
Mote
St. Mullin's Temple (in Ruins)
St. Mullin's Mill (in Ruins)
Grave Yard
Round Tower (in Ruins)
St. Mullin's Church
High Cross
St. Mullin's Abbey (in Ruins)
Casblanmoyle (Site of)
Woodville
St. Mullin's
Pump
Sluice
Weir
Corn Mill
Ferry
Quay
Mud
114C
Impatiens dominated
alder
mature
6A
13
400m
Bdv - Impatiens dominated
Petasites
Rumex
Heracleum
Phalaris
Urtica dioica
5-6m wide
with trees behind
very steep bk
on opposite side
with mature
conifers
Mimulus
guttatus
Bkv - Filipendula
Petasites
Dactylis glomerata
Rumex sp
Oenanthe crocata
TP- gravel road
Rorippa
Nuphar
Potamogeton perf.
Alisma
Pot. pect.
Elodea canadensis
Berula

6 INCH MAPS OF

THE BARROW NAVIGATION

INDEX FOR 6 INCH MAPS OF THE BARROW NAVIGATION



ATHY - ARDREIGH LOCK

BL 46 - BN 2.

GOOD FEATURES

- V. high plant sp. diversity in River & bd. drain
- Spindle in hg
- Wet meadow sps on island

BAD FEATURES:

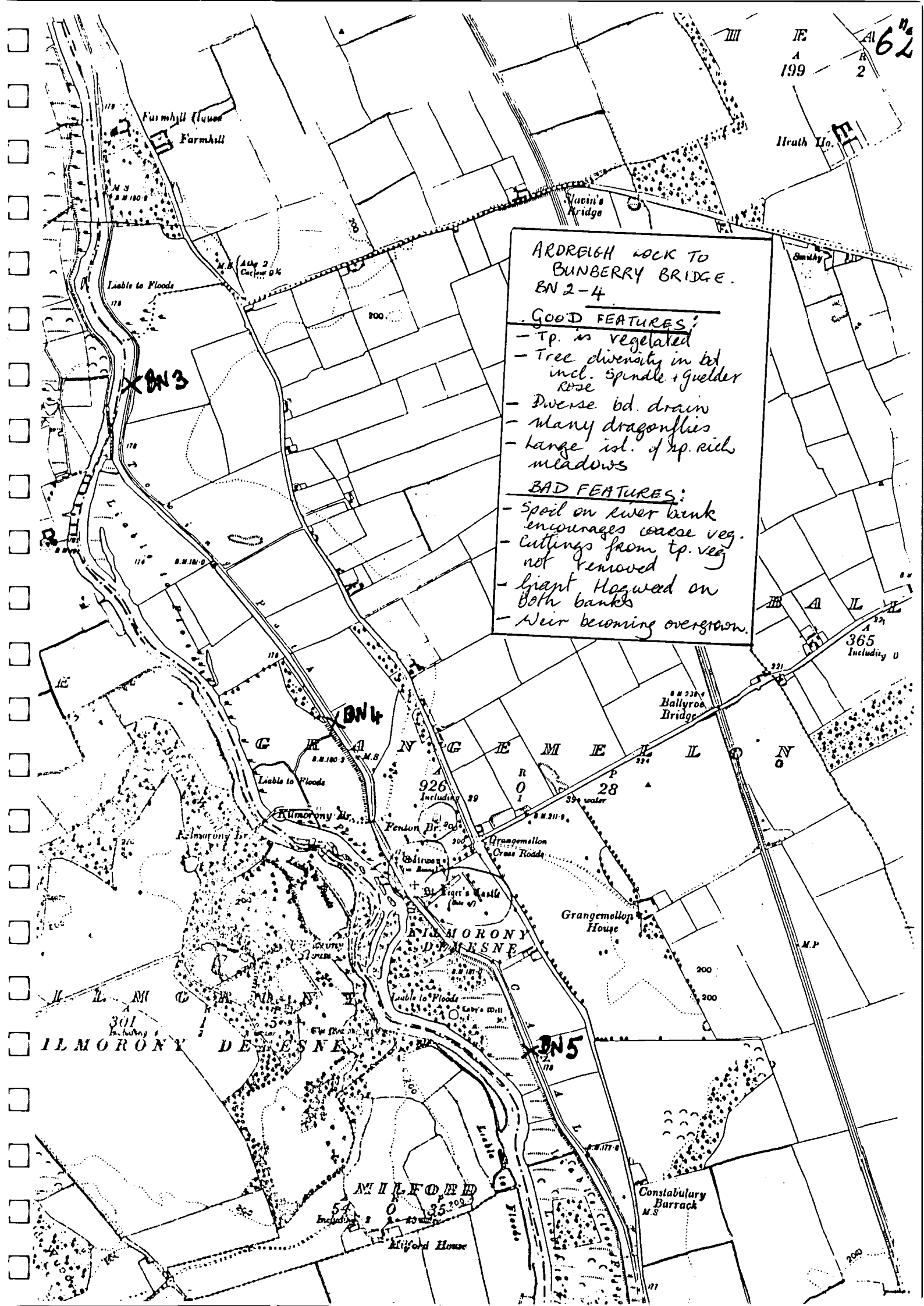
- lots of Sparganium emersum in canal
- Giant Hogweed in bdy (BN 1)
- Weir becoming overgrown
- No trees on bkr.

CHARACTERISTICS AND SYMBOLS

Townland	Trigonometrical Station
Municipal Wards	Antiquities
Contours 200	Antiquities (Site of)

...nook, or Footpath, is not evidence of the existence of a right of way. Electricity Transmission Lines. x------x------x

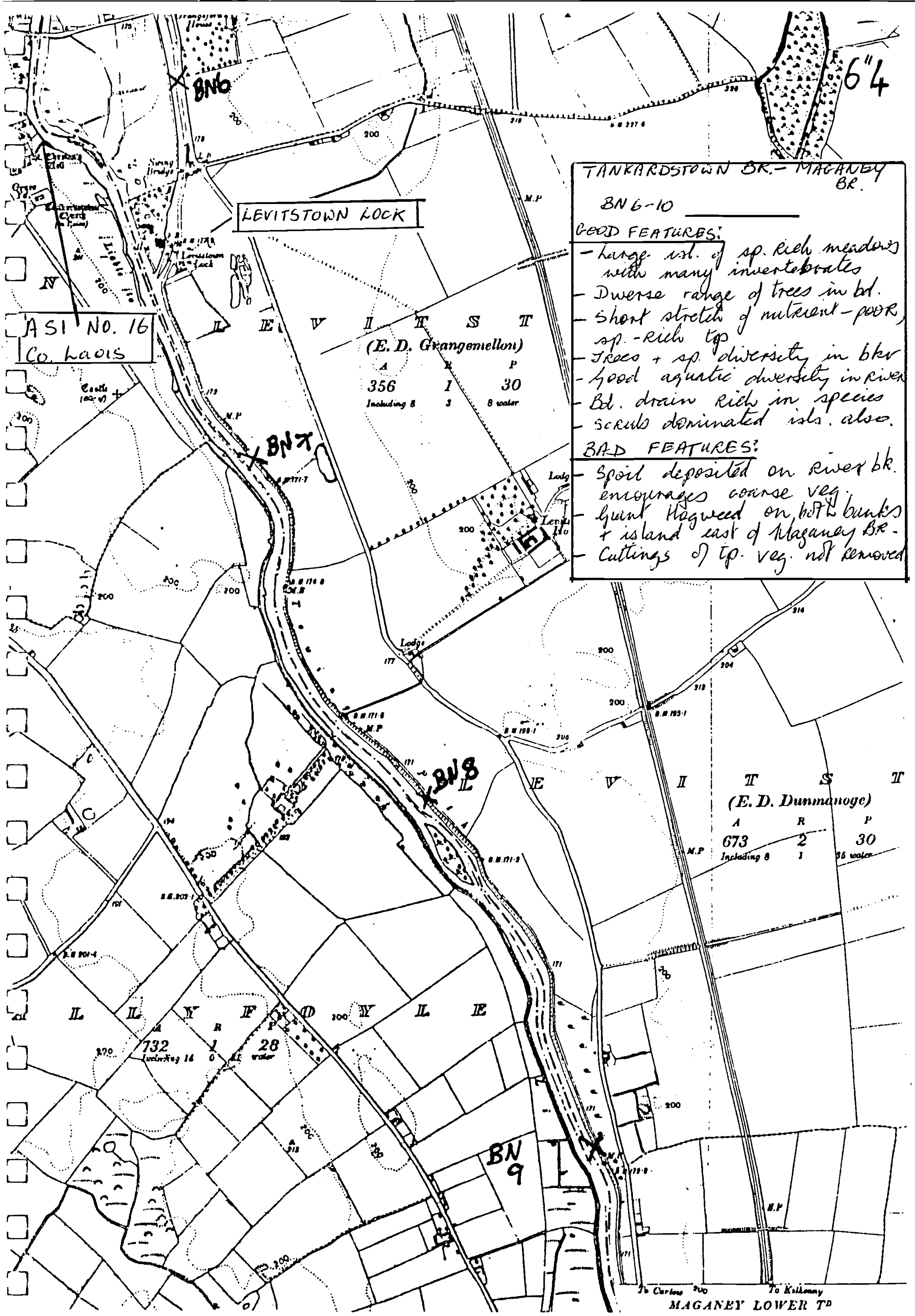
...1:10,560 scale.

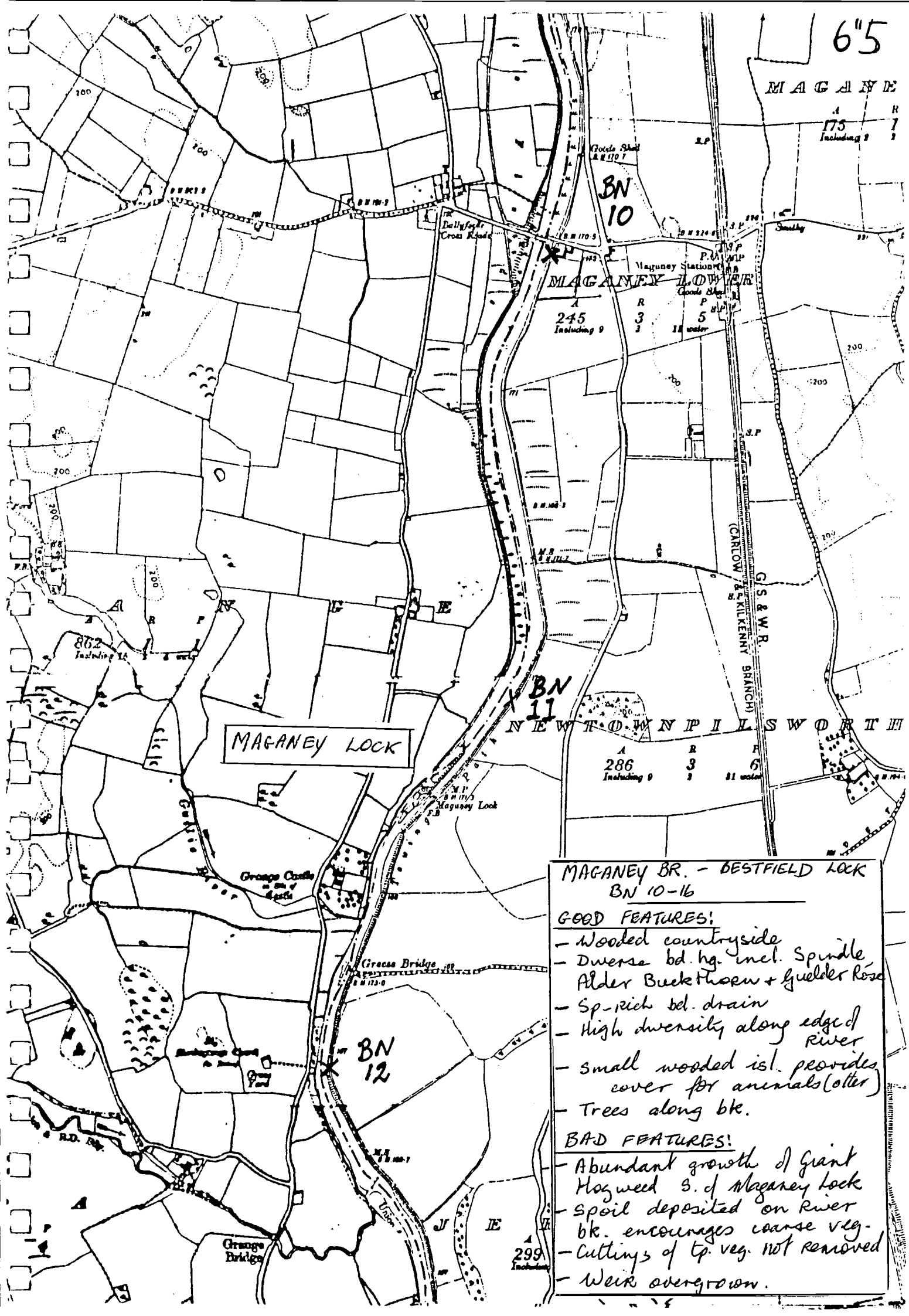

ARDREIGH LOCK TO BUNBERRY BRIDGE.
BN 2-4
GOOD FEATURES:
- Tp. is vegetated
- Tree diversity in bd incl. Spindle + Guelder Rose
- Dverse bd. drain
- Many dragonflies
- Large isl. of sp. rich meadows
BAD FEATURES:
- Spoil on river bank encourages coarse veg.
- Cuttings from tp. veg not removed
- Giant Hogweed on both banks
- Weir becoming overgrown.
BN2
BN3
BN4
BN5
Farmhill House
Farmhill
Heath Ho.
Liable to Floods
Kilmorony Br.
Fenton Br.
Grangemellon Cross Roads
Grangemellon House
Ballyroe Bridge
Constabulary Barrack
Milford House
KILMORONY DEMESNE
GRANGEMELLON
MILFORD
BALL

BUNBERRY BR. – TANKARDSTOWN BR.
BN4-6

GOOD FEATURES:
- Large isl. of sp. rich meadows
- Nutrient-poor veg. on tp. between the 2 footbridges
- Diverse trees incl. Spindle + Guelder Rose
- Hg trimmed before bird-nesting season
- Shading along the canal bk prevents proliferation of Sparganium emersum

BAD FEATURES:
- Spoil deposited on river bk encourages coarse veg.
- Too many branches extending over canal
- Cuttings of tp. veg. not removed
- Giant Hogweed west of Fenton's Br.


6"4
BN6
LEVITSTOWN LOCK
ASI NO. 16
Co. Laois
TANKARDSTOWN BR. - MAGANEY BR.
BN 6-10
GOOD FEATURES:
- Large isl. of sp. rich meadows with many invertebrates
- Diverse range of trees in bd.
- Short stretch of nutrient-poor, sp.-rich tp
- Trees + sp. diversity in bkr
- Good aquatic diversity in river
- Bd. drain rich in species
- Scrub dominated isls. also.
BAD FEATURES:
- Spoil deposited on river bk. encourages coarse veg.
- Giant Hogweed on both banks + island east of Maganey Br.
- Cuttings of tp. veg. not removed
BN7
BN8
BN9
Levitstown Lock
L E V I T S T
(E.D. Grangemellon)
A R P
356 1 30
Including 8 3 8 water
E V I T S T
(E.D. Dunmanoge)
A R P
673 2 30
Including 8 1 35 water
L L Y F O Y L E
732 1 28
Lodge
To Carlow
To Kilkenny
MAGANEY LOWER TD



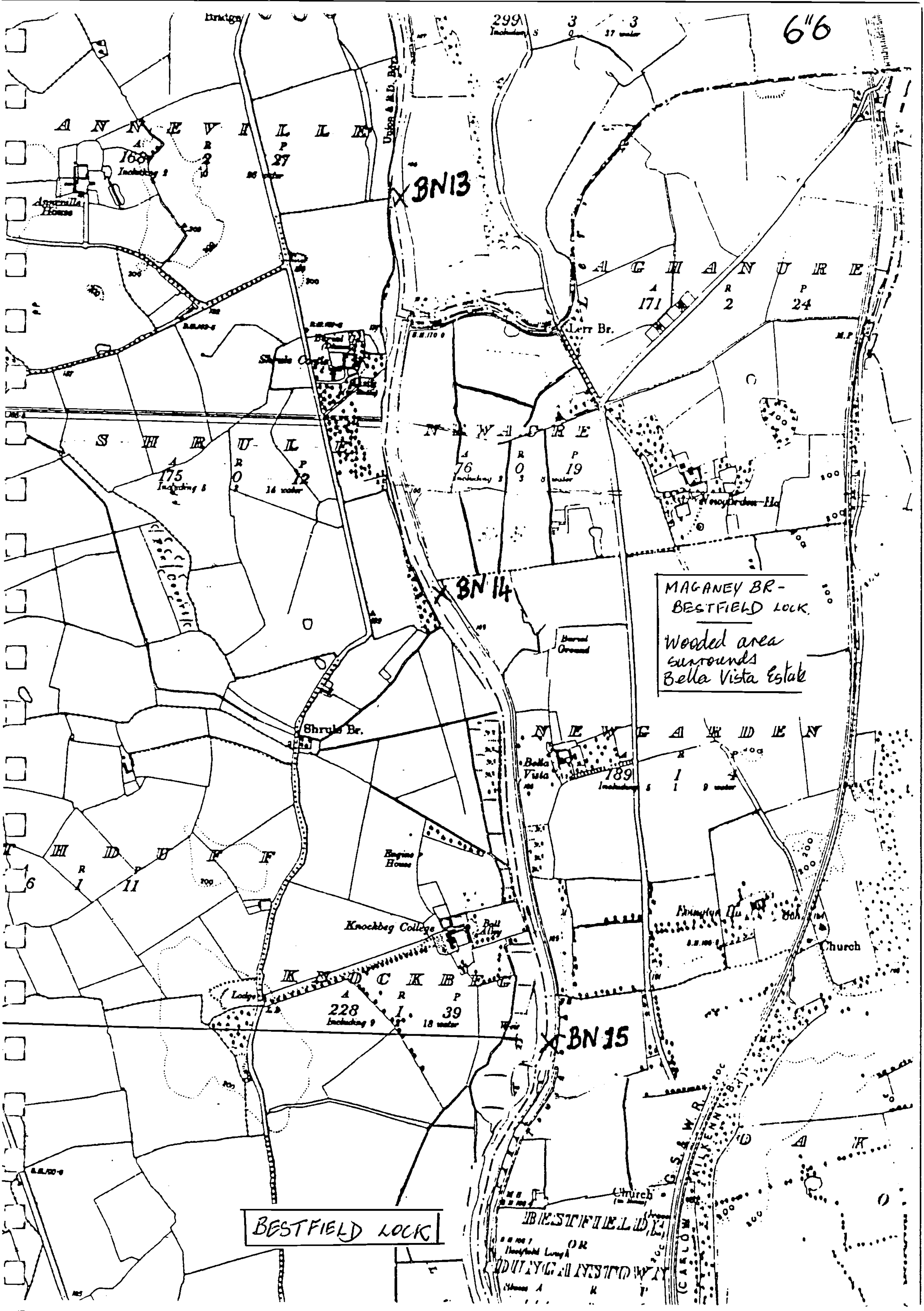
MAGANEY BR. - BESTFIELD LOCK
BN 10-16

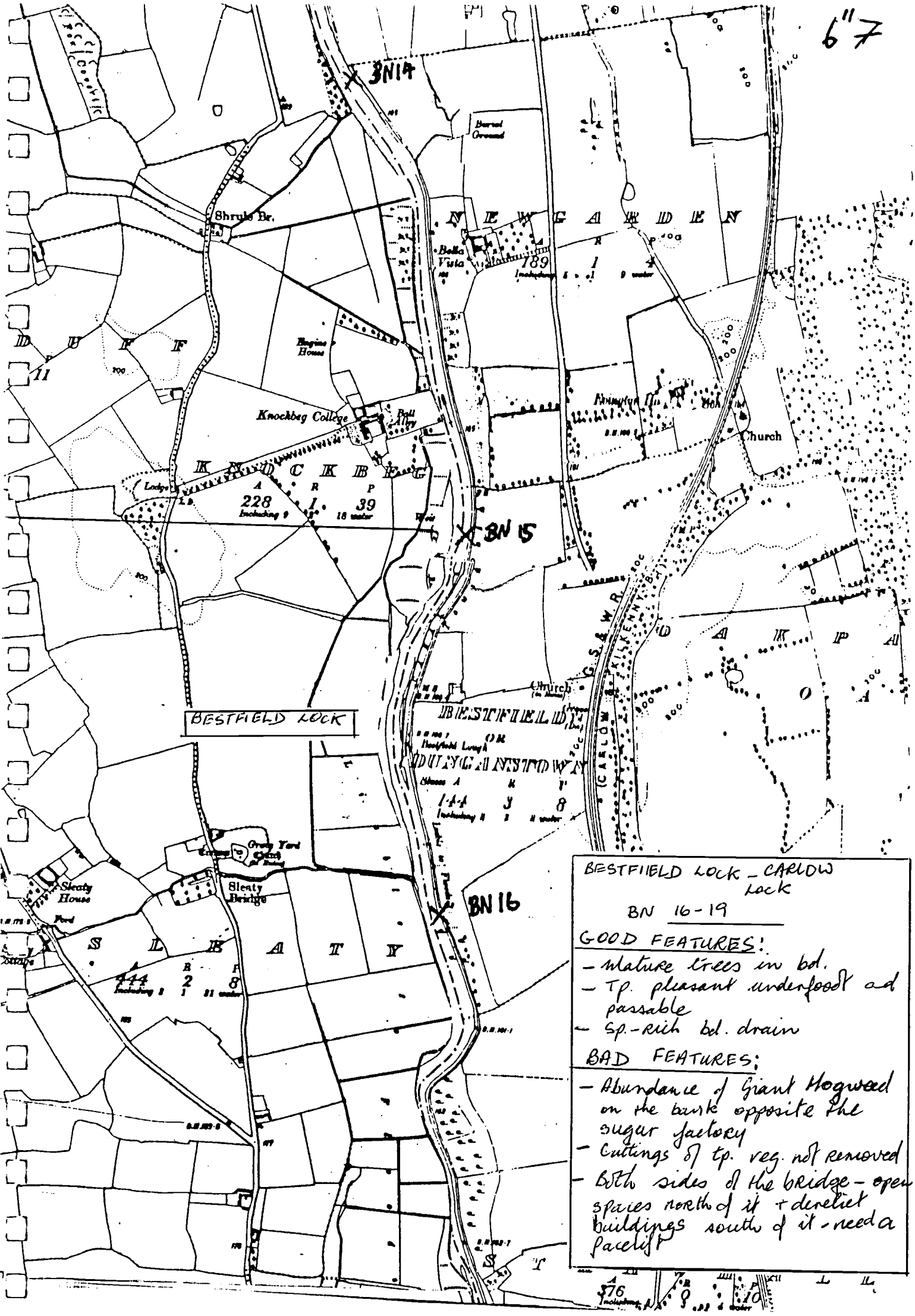
GOOD FEATURES!

- Wooded countryside
- Dwerse bd. hg. incl. Spindle Alder Buckthorn + Guelder Rose
- Sp-rich bd. drain
- High dwersity along edge of River
- small wooded isl. provides cover for animals (otter)
- Trees along bk.

BAD FEATURES!

- Abundant growth of Giant Hogweed S. of Maganey Lock
- Spoil deposited on River bk. encourages coarse veg.
- Cuttings of tp. veg. not removed
- Weir overgrown.


6"6
BN13
BN14
BN15
MAGANEY BR - BESTFIELD LOCK
Wooded area surrounds Bella Vista Estate
BESTFIELD LOCK
ANNEVILLE
Anneville House
SHRULE
Shrule Castle
Shrule Br.
AGHANURE
Lerr Br.
NEWACRE
NEWGARDEN
Bella Vista
Burial Ground
Engine House
Knockbeg College
Ball Alley
KNOCKBEG
Lodge
Weir
Church
BESTFIELD OR DUNGANSTOWN
Bestfield Lock
CARLOW & KILKENNY BY.
G.S.&W.R.
Union & Rd. Bdy.
Bridge



BESTFIELD LOCK – CARLOW LOCK

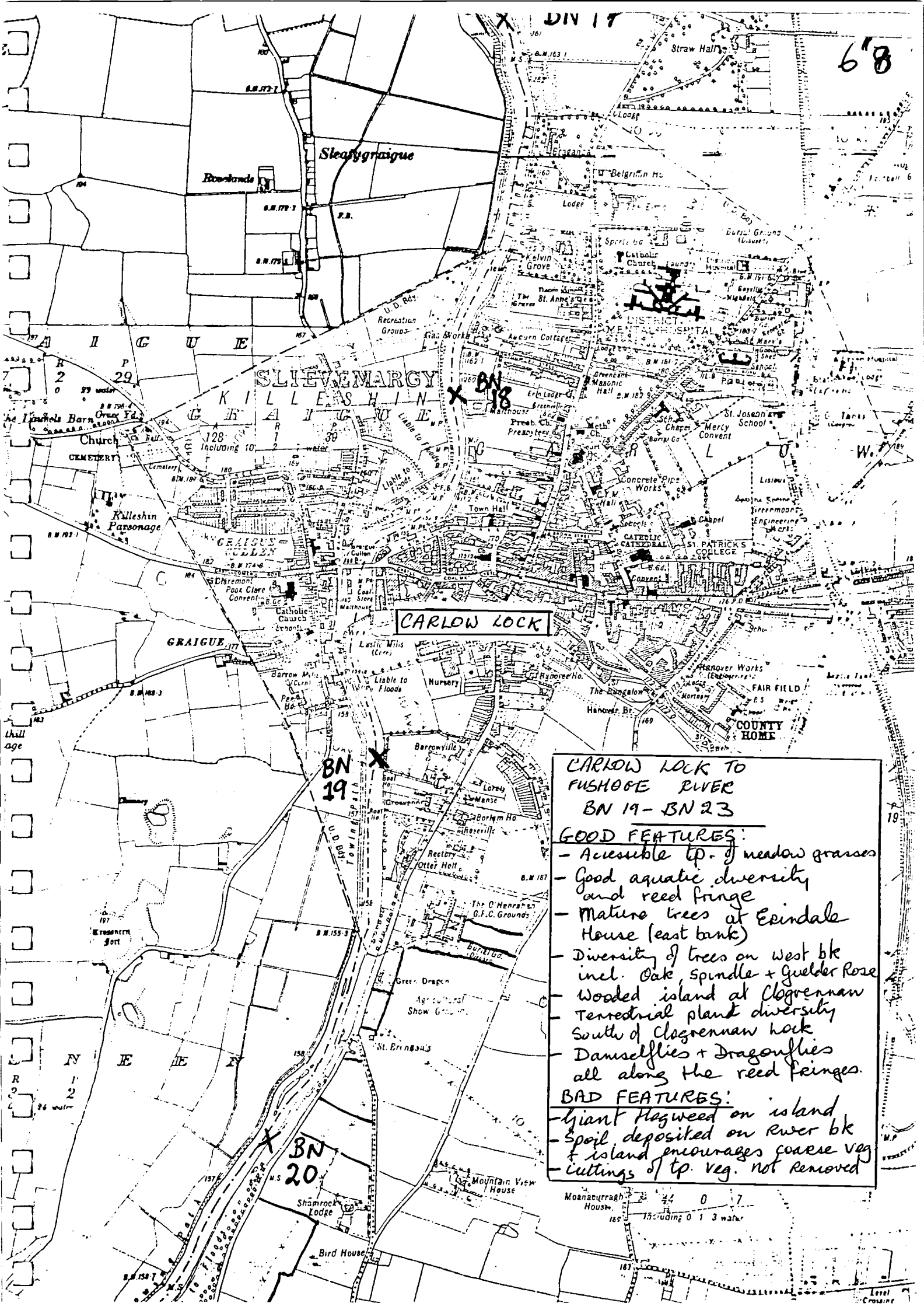
BN 16-19

GOOD FEATURES:

- Mature trees in bd.
- Tp. pleasant underfoot ad passable
- Sp.-Rich bd. drain

BAD FEATURES:

- Abundance of Giant Hogweed on the bank opposite the sugar factory
- Cuttings of tp. veg. not removed
- Both sides of the bridge – open spaces north of it + derelict buildings south of it – need a facelift



CARLOW LOCK TO FUSHOGE RIVER
BN 19 - BN 23

GOOD FEATURES:
- Accessible tp. & meadow grasses
- Good aquatic diversity and reed fringe
- Mature trees at Espindale House (east bank)
- Diversity of trees on west bk incl. Oak, Spindle + Guelder Rose
- Wooded island at Clogrennan
- Terrestrial plant diversity South of Clogrennan lock
- Damselflies + Dragonflies all along the reed fringes.

BAD FEATURES:
- Giant Hogweed on island
- Spoil deposited on river bk & island encourages coarse veg
- cuttings of tp. veg. not Removed

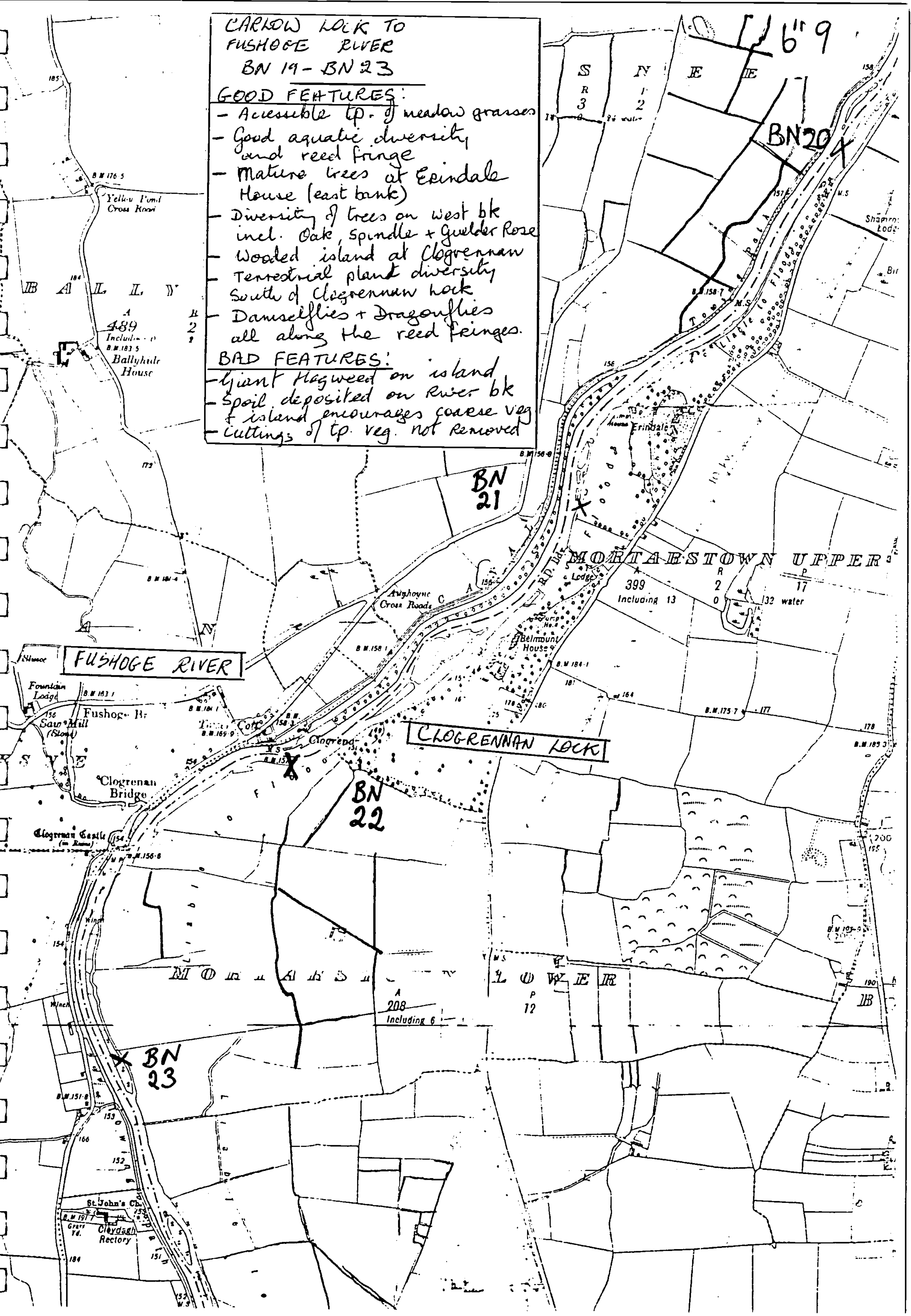
CARLOW LOCK TO FUSHOGE RIVER
BN 19 - BN 23

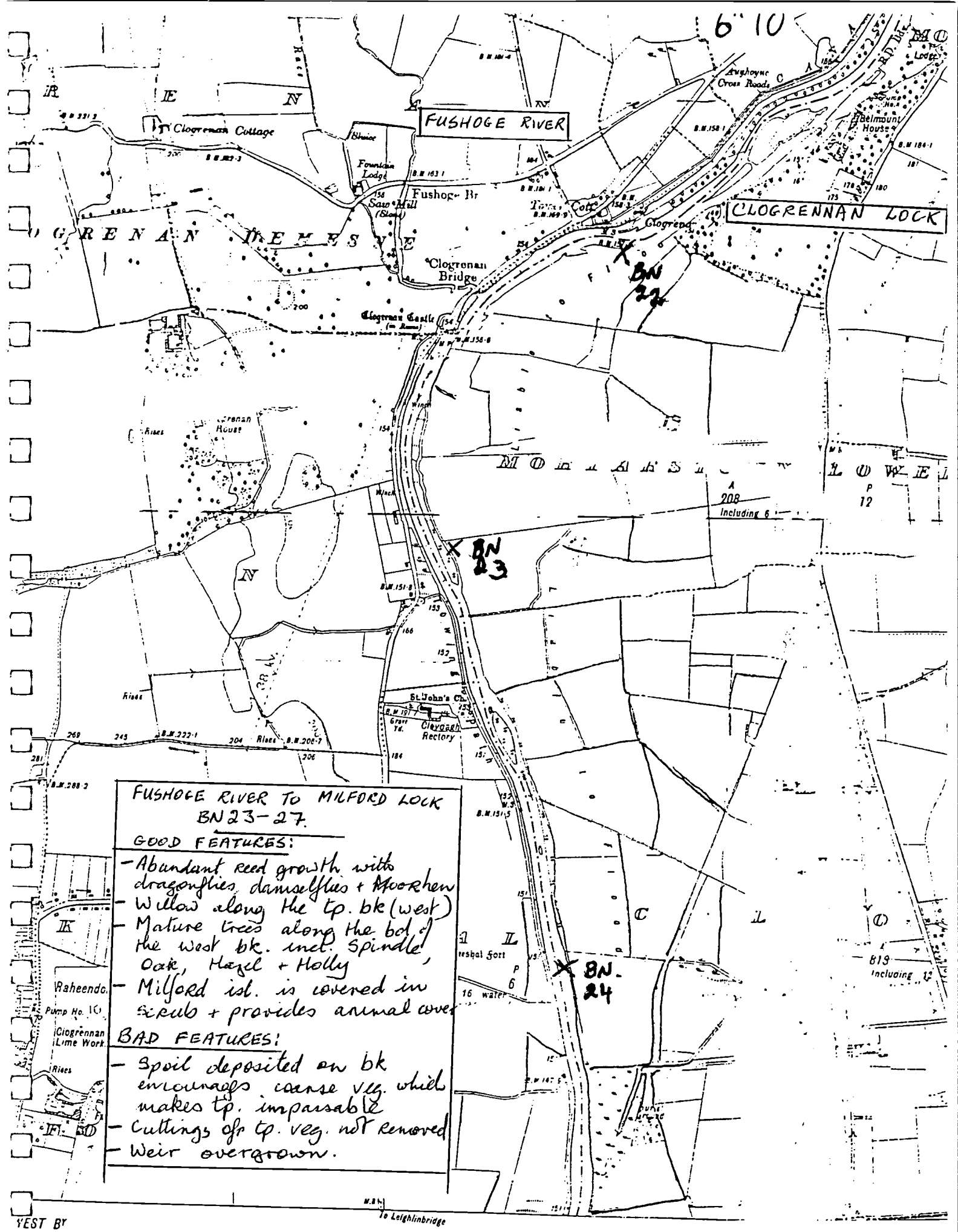
GOOD FEATURES:

- Accessible tp. of meadow grasses
- Good aquatic diversity and reed fringe
- Mature trees at Erindale House (east bank)
- Diversity of trees on west bk incl. Oak, Spindle + Guelder Rose
- Wooded island at Clogrennan
- Terrestrial plant diversity South of Clogrennan Lock
- Damselflies + Dragonflies all along the reed fringes.

BAD FEATURES:

- Giant Hogweed on island
- Spoil deposited on River bk + island encourages coarse veg
- Cuttings of tp. veg. not Removed





FUSHOGE RIVER TO MILFORD LOCK
BN 23–27.

GOOD FEATURES:

- Abundant reed growth with dragonflies, damselflies + Moorhen
- Willow along the tp. bk (west)
- Mature trees along the bd of the west bk. incl. Spindle, Oak, Hazel + Holly
- Milford ist. is covered in scrub + provides animal cover

BAD FEATURES:

- Spoil deposited on bk encourages coarse veg. which makes tp. impassable
- Cuttings off tp. veg. not removed
- Weir overgrown.

CHARACTERISTICS AND SYMBOLS

County
Barony
Parish
Townland
Municipal Wards
Contours
Trigonometrical Station
Antiquities
Antiquities (site of)

6" 11

FUSHOLE RIVER TO MILFORD LOCK
BN23-27.

GOOD FEATURES:

- Abundant reed growth with dragonflies, damselflies + Moorhen
- Willow along the tp. bk (west)
- Mature trees along the bd of the west bk. incl. Spindle, Oak, Hazel + Holly
- Milford isl. is covered in scrub + provides animal cover

BAD FEATURES:

- Spoil deposited on bk encourages coarse veg. which makes tp. impassable
- Cuttings off tp. veg. not removed
- Weir overgrown.

BN 25

BN 26

BN 27

MILFORD LOCK

ASI No. 11
Co. Carlow

Ballinabranna Schools

Catholic Church

Fir Croft

Lodge

Strong Stream Mills
(Electric Power)

Milford Bridge

Milford House

Milford

Lenham Lodge

Milford Maltings

Milford Lodge

Milford Lock

BALLYGOWAN

CLOGHRIST

A R P
498 0 16
Including 14 1 22 water

A R P
499 1 4
Including 13 3 6 water

Cloghrist

Fox Covert

Baunree Wood

PART OF TOMARD UPPER

PART OF ARD LOWER

A R P
37 2 12
Including 0 1 19 water

St. Bridget's Well

St. Bridget's Ch. (in Ruins)

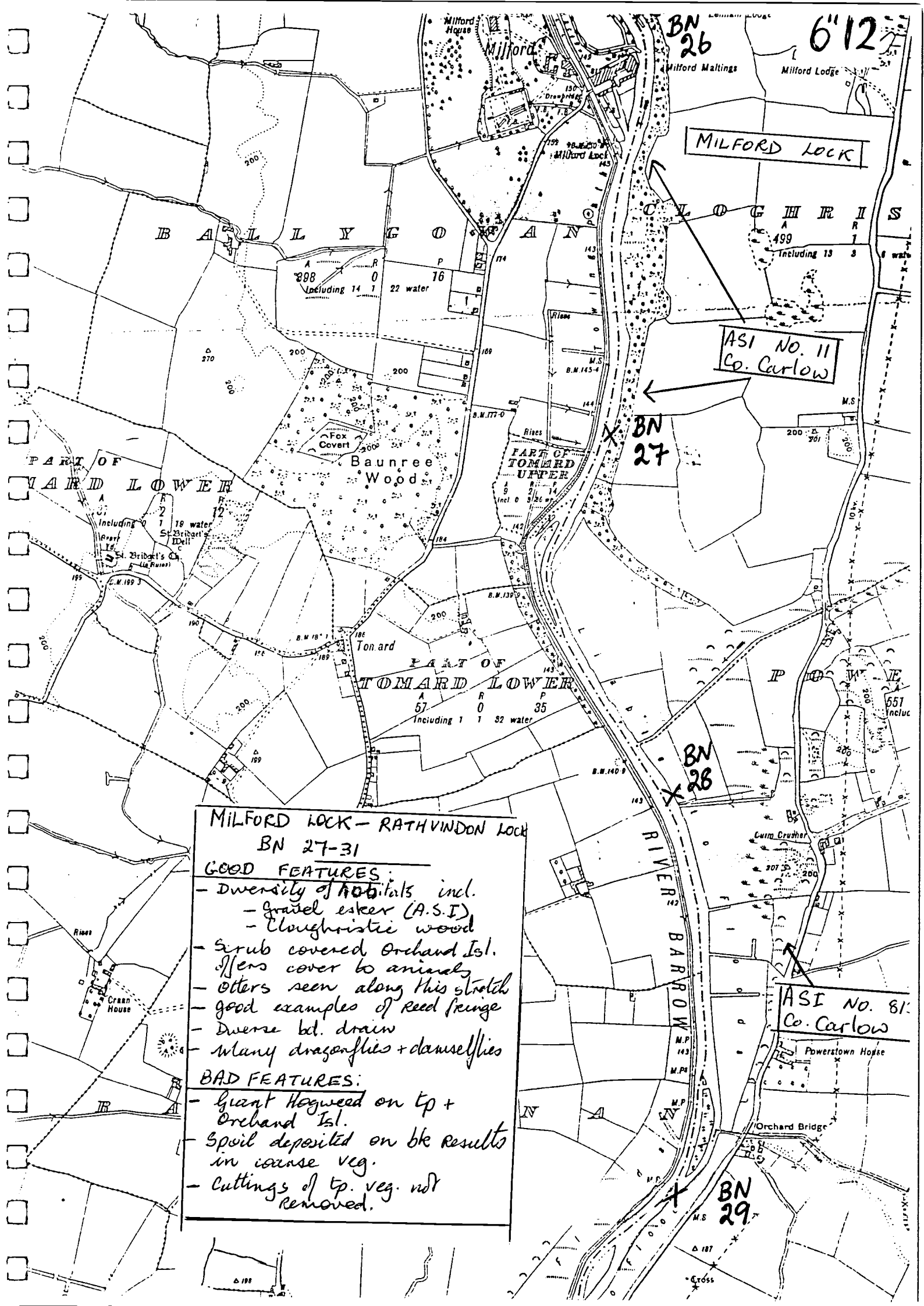
Tomard

PART OF TOMARD LOWER

A R P
67 0 35
Including 1 1 32 water

POWER

651
Including 7



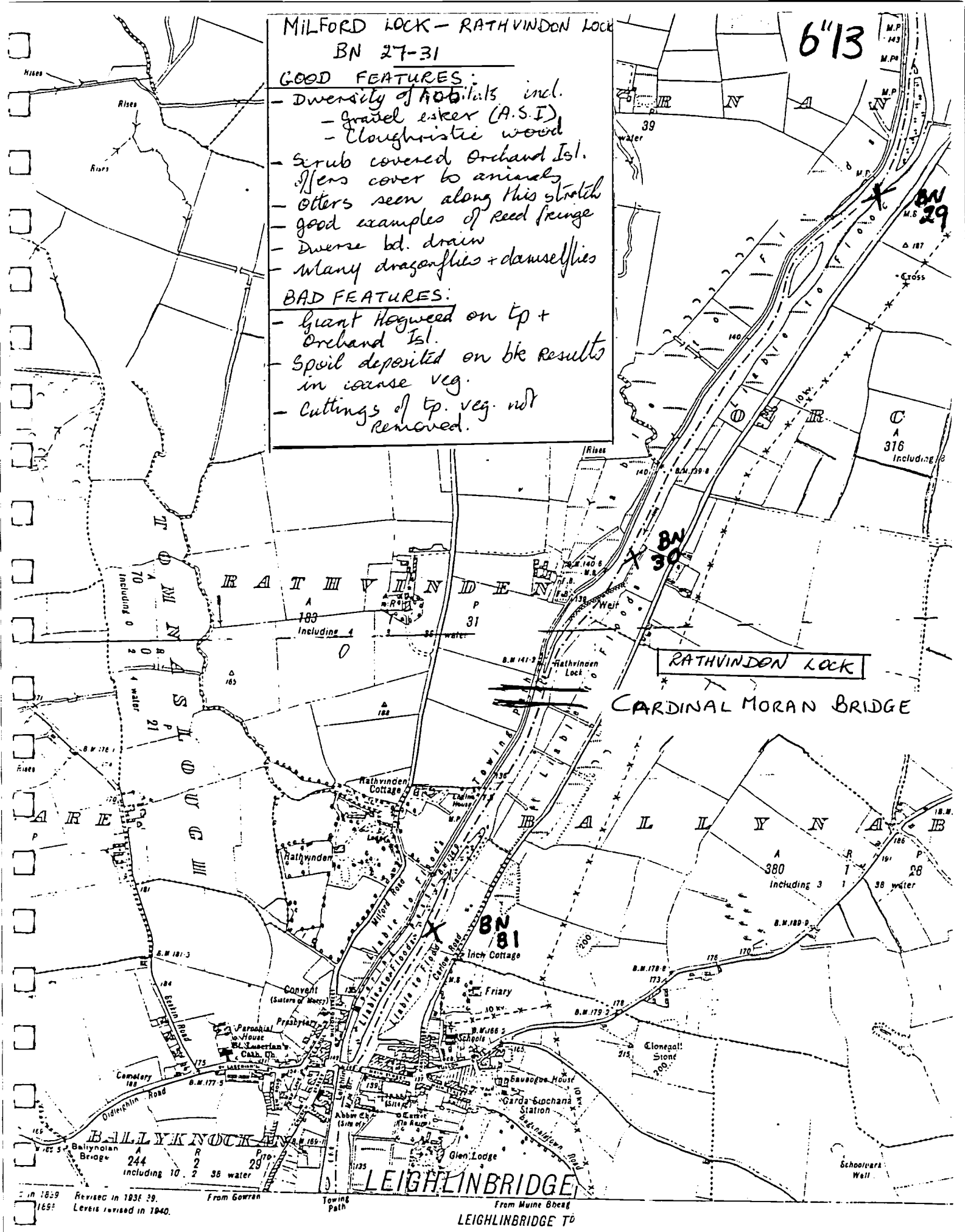
MILFORD LOCK – RATHVINDON LOCK
BN 27-31

GOOD FEATURES:

- Dwersity of habitats incl.
  - Gravel esker (A.S.I)
  - Cloughristie wood
- Scrub covered Orchard Isl. offers cover to animals
- Otters seen along this stretch
- good examples of Reed fringe
- Dwerse bd. drain
- Many dragonflies + damselflies

BAD FEATURES:

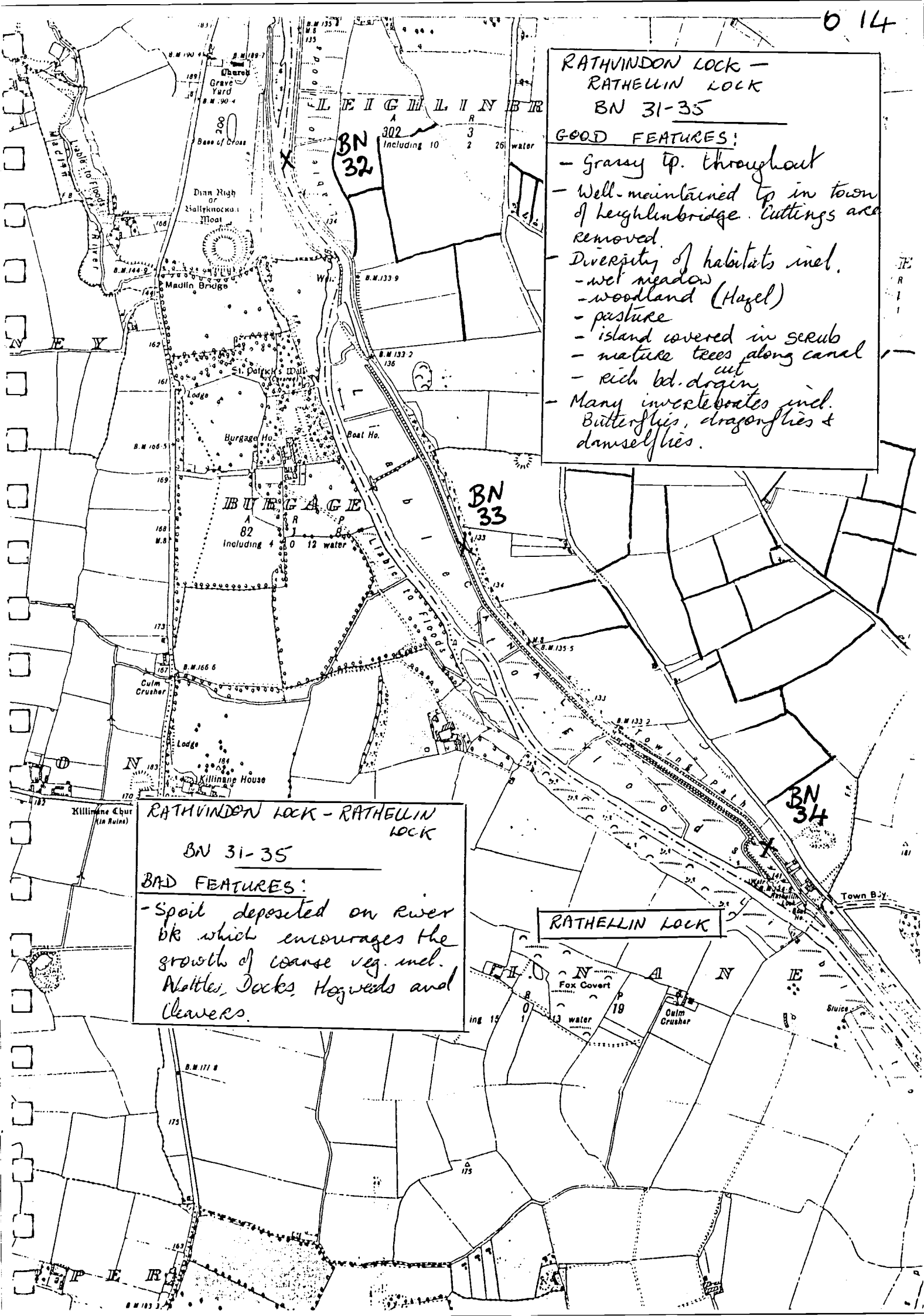
- Giant Hogweed on bp + Orchard Isl.
- Spoil deposited on bk results in coarse veg.
- Cuttings of bp. veg. not removed.



CHARACTERISTICS AND SYMBOLS

.....	Townland	Trigonometrical Station .....
.....	Municipal Wards	Antiquities .....
.....	Contours	Antiquities (Site of) .....

Representation on this Map of a Road, Track or Footpath is not evidence of the existence of a right of way.



RATHVINDON LOCK – RATHELLIN LOCK
BN 31-35

GOOD FEATURES:

- Grassy tp. throughout
- Well-maintained tp in town of Leighlinbridge. Cuttings are removed
- Diversity of habitats incl.
  - wet meadow
  - woodland (Hazel)
  - pasture
  - island covered in scrub
  - mature trees along canal
  - Rich bd. dug in cut
- Many invertebrates incl. Butterflies, dragonflies & damselflies.

RATHVINDON LOCK – RATHELLIN LOCK
BN 31-35

BAD FEATURES:

- Spoil deposited on river bk which encourages the growth of coarse veg. incl. Nettles, Docks, Hogweeds and Cleavers.

6"15

RATHELLIN LOCK

BAGENALSTOWN LOCK TO FENNISCOURT LOCK.

BN 37-40

GOOD FEATURES:

- Area rich in ecological diversity
  - mature woodland of Hollodon and Glebe Houses
- Bagenalstown esker on west bank at Royal Oak bridge supports many rare species
- Reed beds + reed fringe in River
- Scrub/woodland in bd.
- Tp. is grassy + walkable
- Many invertebrates along the stretch

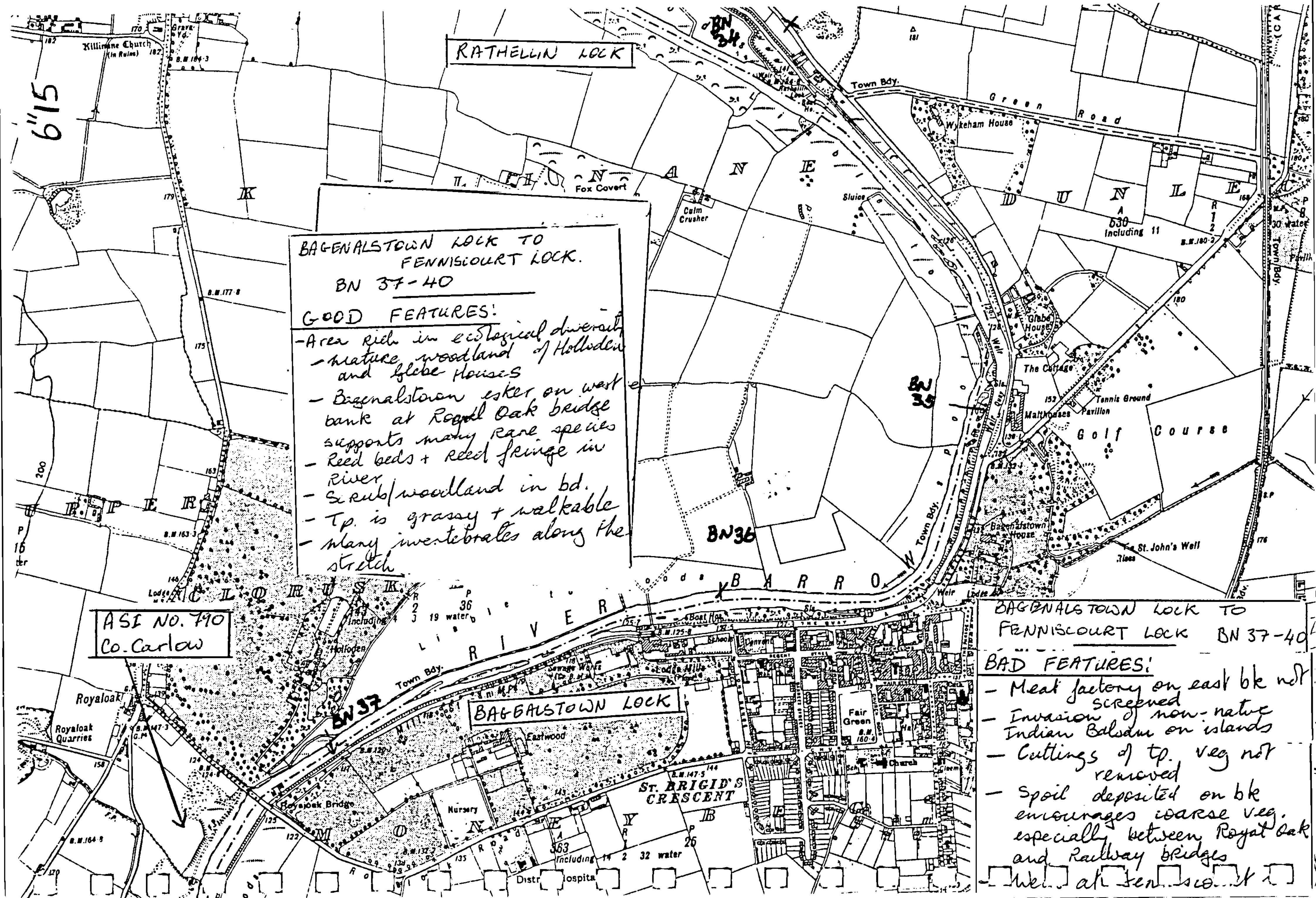
ASI NO. 790
Co. Carlow

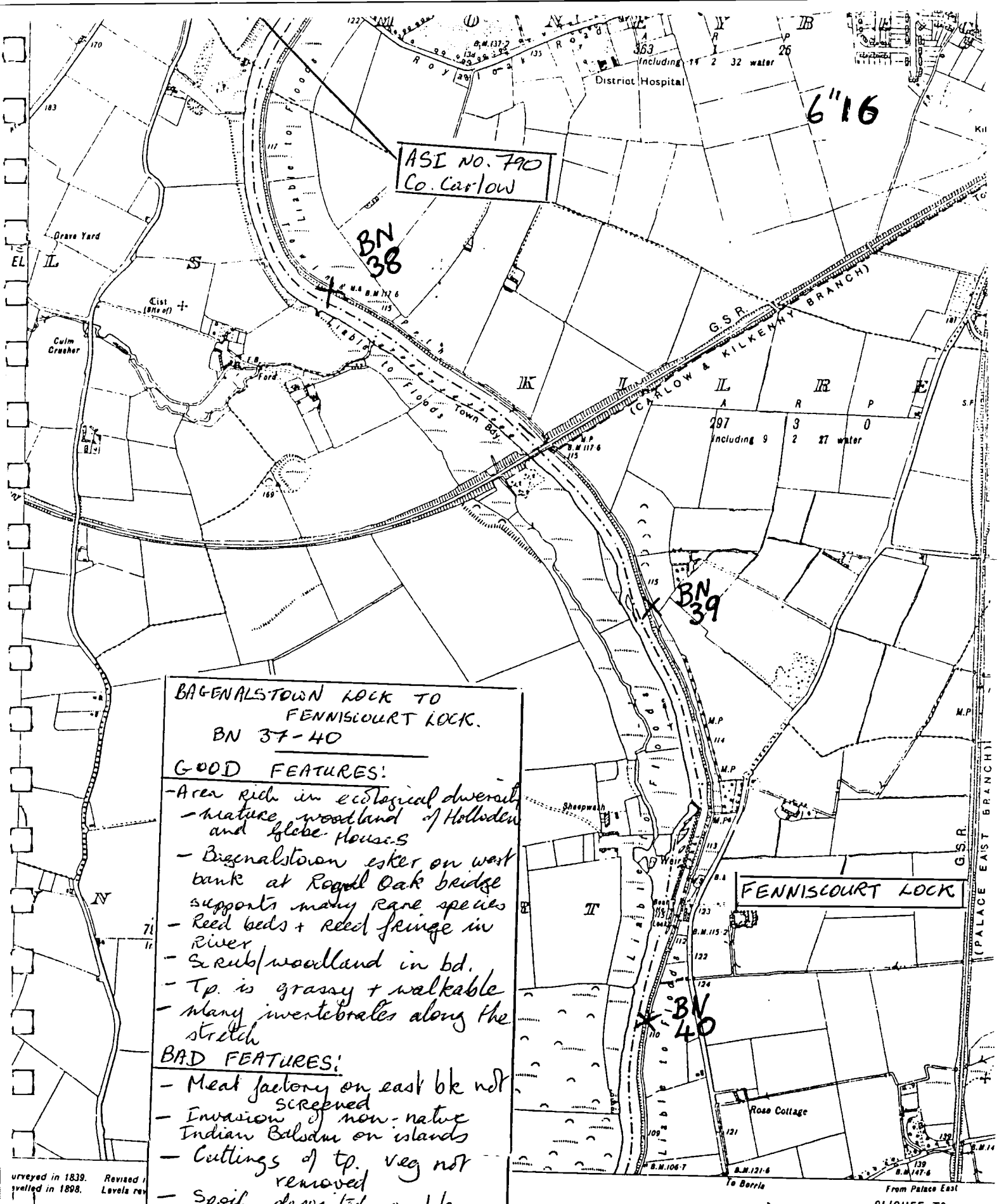
BAGENALSTOWN LOCK

BAGENALSTOWN LOCK TO FENNISCOURT LOCK BN 37-40

BAD FEATURES:

- Meat factory on east bk not screened
- Invasion of non-native Indian Balsam on islands
- Cuttings of tp. veg not removed
- Spoil deposited on bk encourages coarse veg. especially between Royal Oak and Railway bridges
- Wel at Fen sco





BAGENALSTOWN LOCK TO FENNISCOURT LOCK.

BN 37-40

GOOD FEATURES:

- Area rich in ecological diversity - mature woodland of Holloden and Globe House-S
- Bagenalstown esker on west bank at Royal Oak bridge supports many rare species
- Reed beds + Reed fringe in River
- Scrub/woodland in bd.
- Tp. is grassy + walkable
- Many invertebrates along the stretch

BAD FEATURES:

- Meat factory on east bk not screened
- Invasion of non-native Indian Balsam on islands
- Cuttings of tp. veg not removed
- Spoil deposited on bk encourages coarse veg. especially between Royal Oak and Railway bridges
- Weir at Fenniscourt is over vegetated.

CHARACTERISTICS AND SYMBOLS

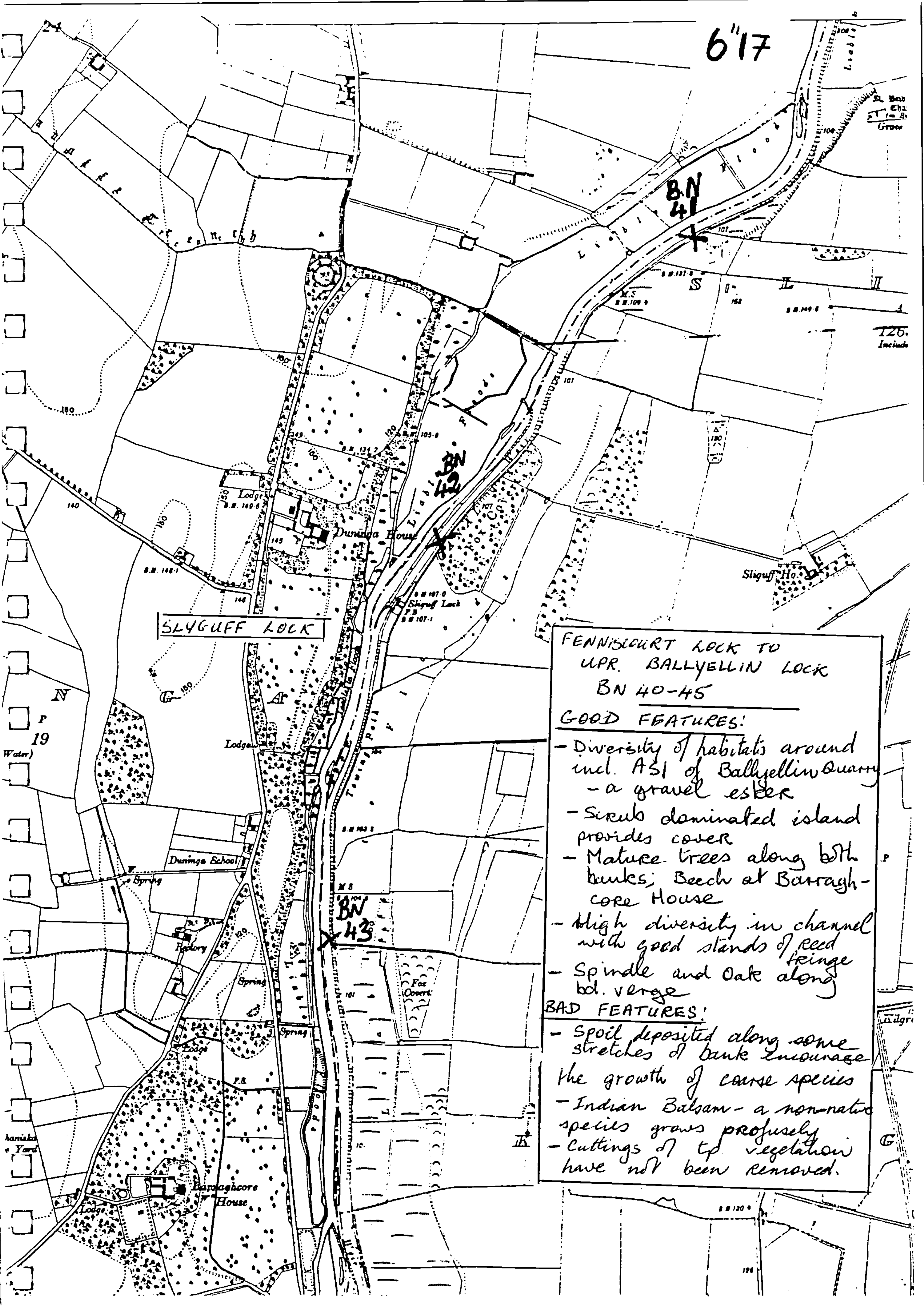
Townland.....

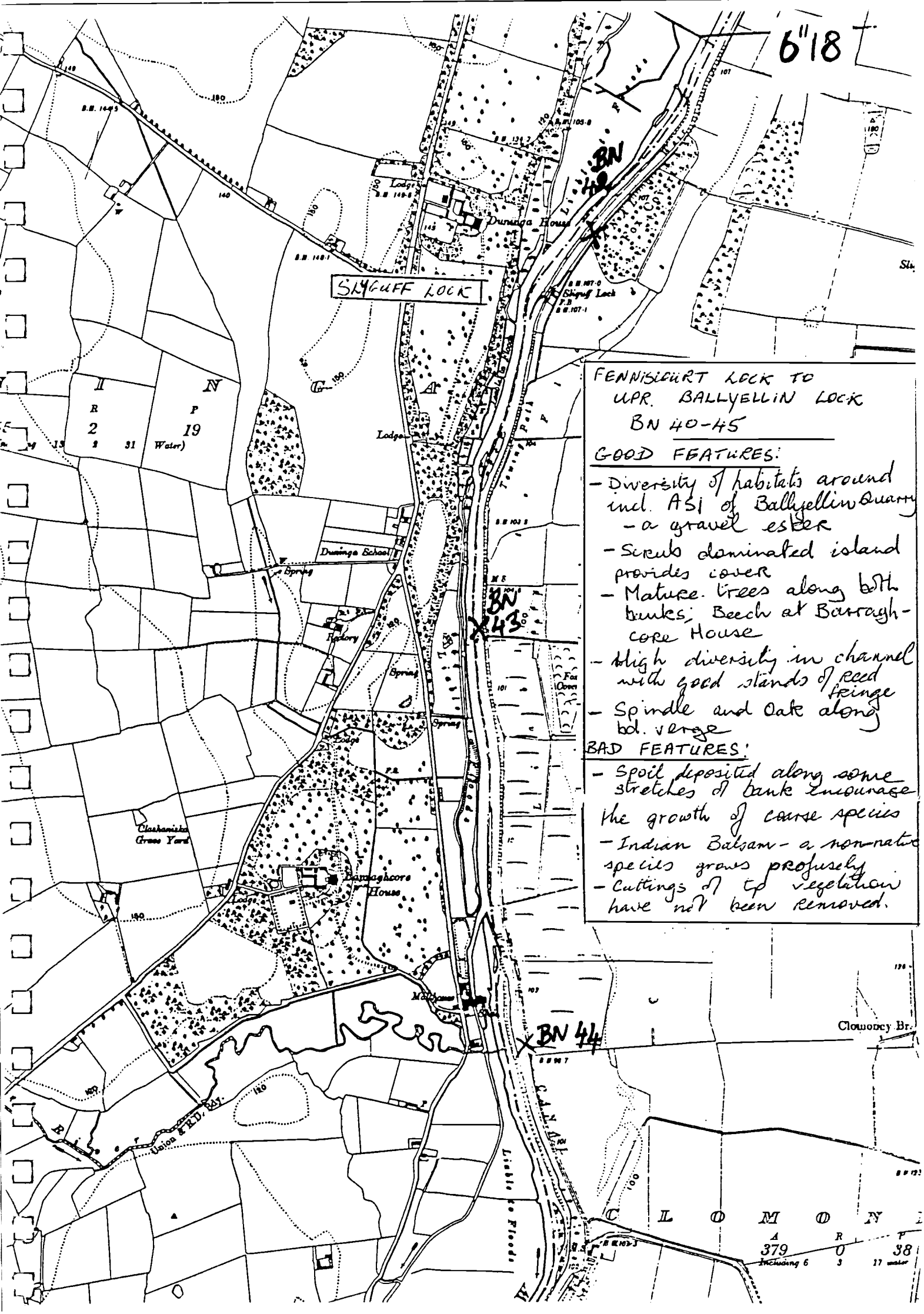
Municipal Wards.....

Contours..... 200

Road, Track, or Footpath, is not evidence of the existence of a right of way.

Characteristics: 1:10,560 scale.


6"17
BN 41
BN 42
BN 43
SLYGUFF LOCK
Lodge
Duninga House
Sliguff Lock
Sliguff Ho.
Fox Covert
Duninga School
Spring
Rectory
Barraghcore House
FENNISCOURT LOCK TO
UPR. BALLYELLIN LOCK
BN 40-45
GOOD FEATURES:
- Diversity of habitats around incl. ASI of Ballyellin Quarry - a gravel esker
- Scrub dominated island provides cover
- Mature trees along both banks; Beech at Barraghcore House
- High diversity in channel with good stands of reed fringe
- Spindle and Oak along bd. verge
BAD FEATURES:
- Spoil deposited along some stretches of bank encourage the growth of coarse species
- Indian Balsam - a non-native species grows profusely
- Cuttings of tp vegetation have not been removed.



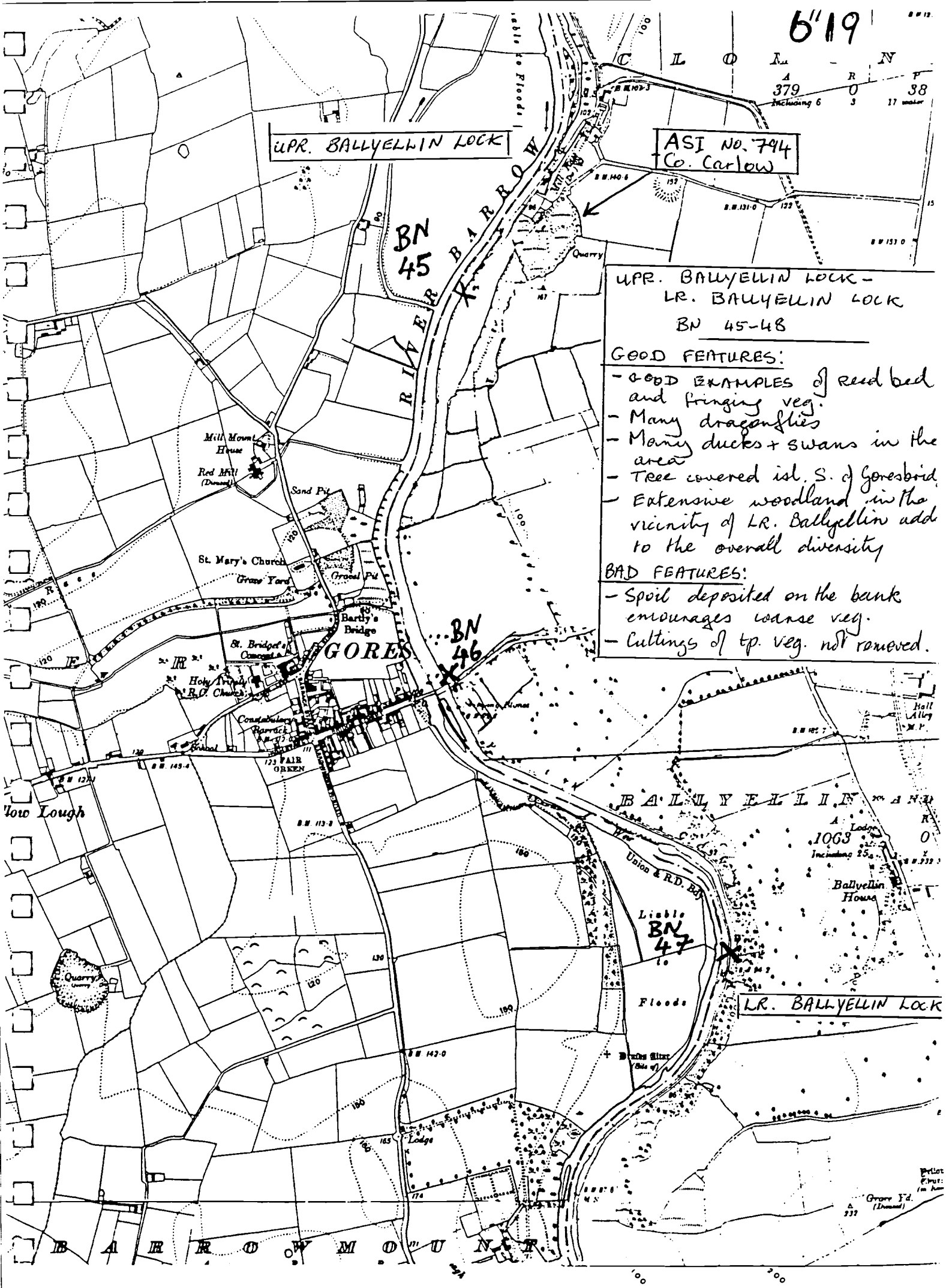
FENNISCOURT LOCK TO UPR. BALLYELLIN LOCK
BN 40-45

GOOD FEATURES:

- Diversity of habitats around incl. ASI of Ballyellin Quarry - a gravel esker
- Scrub dominated island provides cover
- Mature trees along both banks; Beech at Barraghcore House
- High diversity in channel with good stands of reed fringe
- Spindle and Oak along bd. verge

BAD FEATURES:

- Spoil deposited along some stretches of bank encourage the growth of coarse species
- Indian Balsam - a non-native species grows profusely
- Cuttings of tp vegetation have not been removed.



Revised in 1905-6.

Compiled and Printed by the

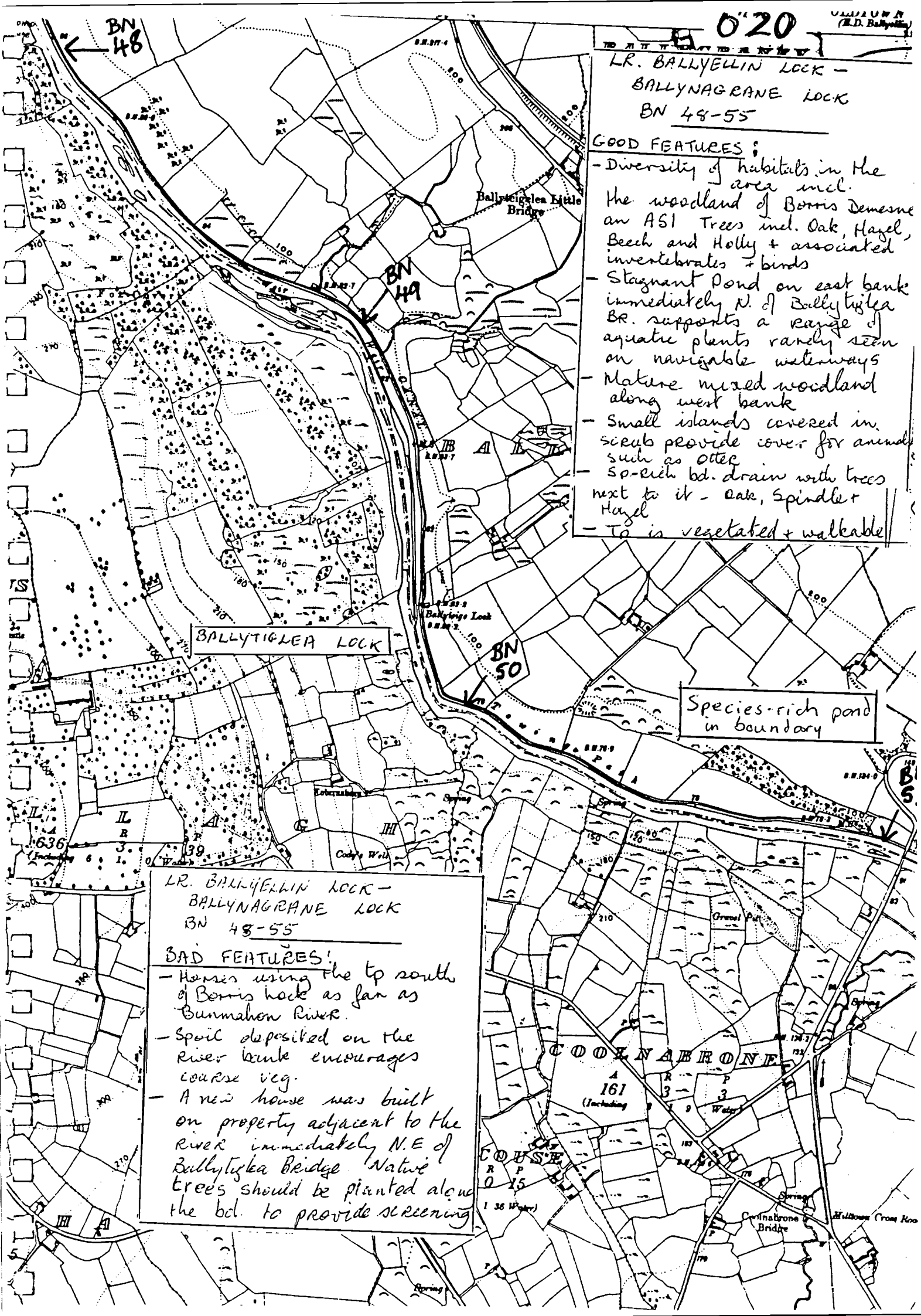
UPR. BALLYELLIN LOCK – LR. BALLYELLIN LOCK
BN 45-48

GOOD FEATURES:

- GOOD EXAMPLES of reed bed and fringing veg.
- Many dragonflies
- Many ducks + swans in the area
- Tree covered ist. S. of Goresbrid
- Extensive woodland in the vicinity of LR. Ballyellin add to the overall diversity

BAD FEATURES:

- Spoil deposited on the bank encourages coarse veg.
- Cuttings of tp. veg. not removed.


BN 48
BN 49
BN 50
Ballyteiglea Little Bridge
BALLYTIGLEA LOCK
Species-rich pond in boundary
COOLNABRONE
COUSE
Coolnabrone Bridge
LR. BALLYELLIN LOCK – BALLYNAGRANE LOCK
BN 48-55
GOOD FEATURES:
- Diversity of habitats in the area incl. the woodland of Borris Demesne an ASI Trees incl. Oak, Hazel, Beech and Holly + associated invertebrates + birds
- Stagnant Pond on east bank immediately N. of Ballytiglea BR. supports a range of aquatic plants rarely seen on navigable waterways
- Mature mixed woodland along west bank
- Small islands covered in scrub provide cover for animals such as otter
- Sp-rich bd. drain with trees next to it - Oak, Spindle + Hazel
- Tp is vegetated + walkable
LR. BALLYELLIN LOCK – BALLYNAGRANE LOCK
BN 48-55
BAD FEATURES:
- Horses using the tp south of Borris lock as far as Bunmahon River.
- Spoil deposited on the River bank encourages coarse veg.
- A new house was built on property adjacent to the River immediately N.E of Ballytiglea Bridge Native trees should be planted along the bd. to provide screening

LR. BALLYELLIN LOCK – BALLYNAGRANE LOCK
BN 48-55

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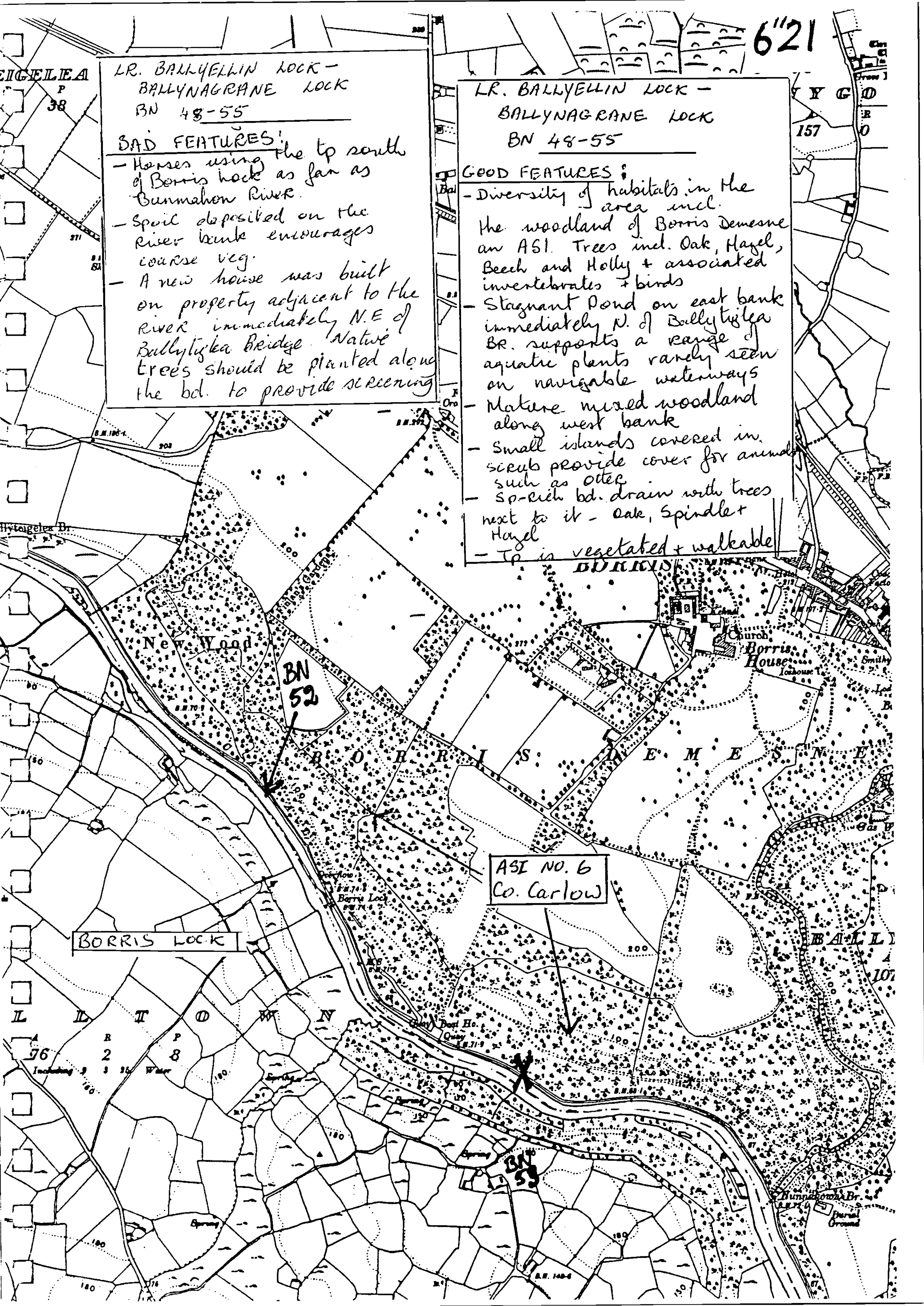
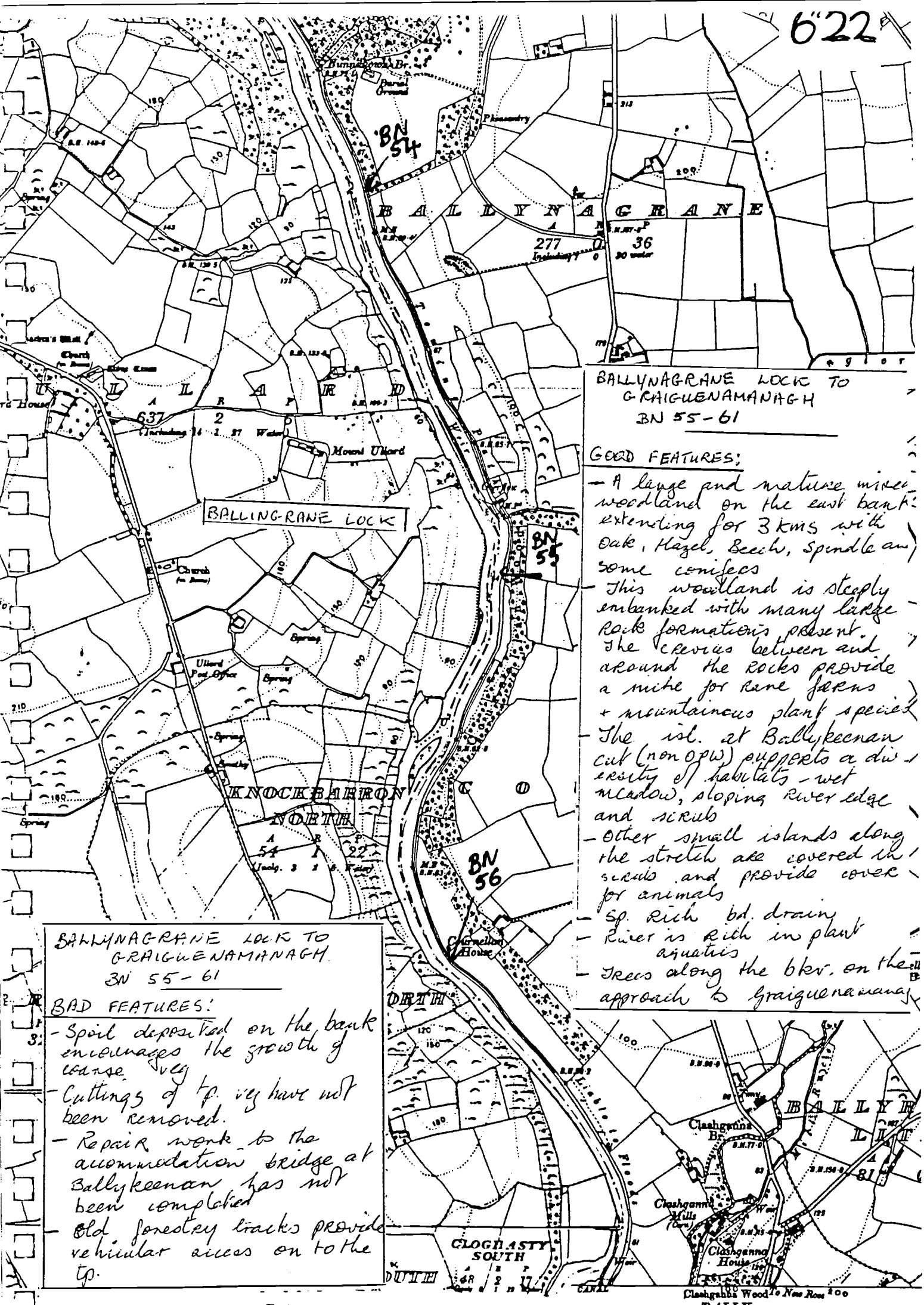


6"22



BALLYNAGRANE LOCK TO GRAIGUENAMANAGH
BN 55-61

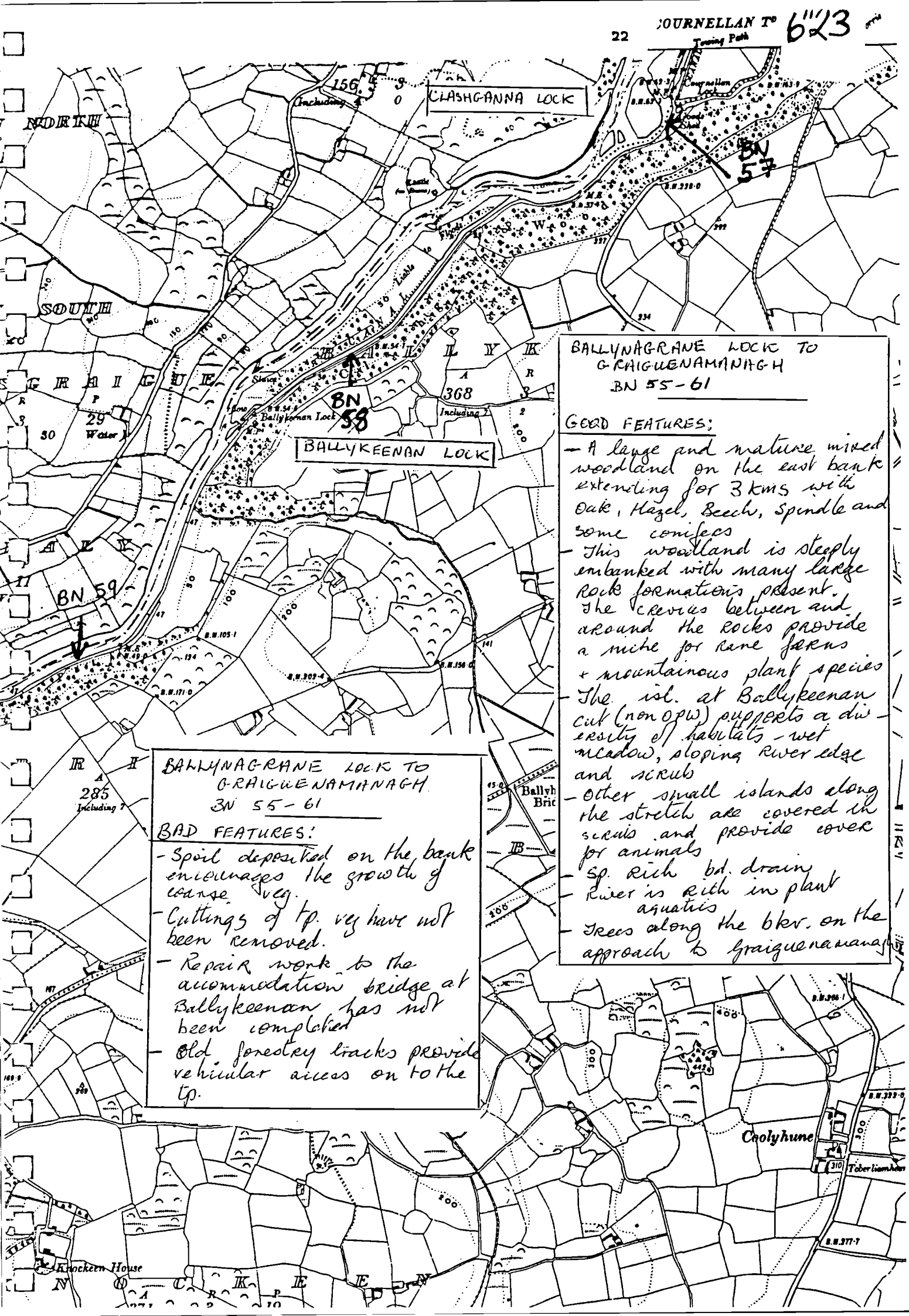
GOOD FEATURES:

- A large and mature mixed woodland on the east bank extending for 3 kms with Oak, Hazel, Beech, Spindle and some conifers
- This woodland is steeply embanked with many large rock formations present. The crevices between and around the rocks provide a niche for rare ferns + mountainous plant species
- The isl. at Ballykeenan cut (non OPW) supports a diversity of habitats - wet meadow, sloping river edge and scrub
- Other small islands along the stretch are covered in scrubs and provide cover for animals
- Sp. Rich bd. drain
- River is rich in plant aquatics
- Trees along the bkgr. on the approach to Graiguenamanagh

BALLYNAGRANE LOCK TO GRAIGUENAMANAGH
BN 55-61

BAD FEATURES:

- Spoil deposited on the bank encourages the growth of coarse veg
- Cuttings of tp. veg have not been removed.
- Repair work to the accommodation bridge at Ballykeenan has not been completed
- Old forestry tracks provide vehicular access on to the tp.



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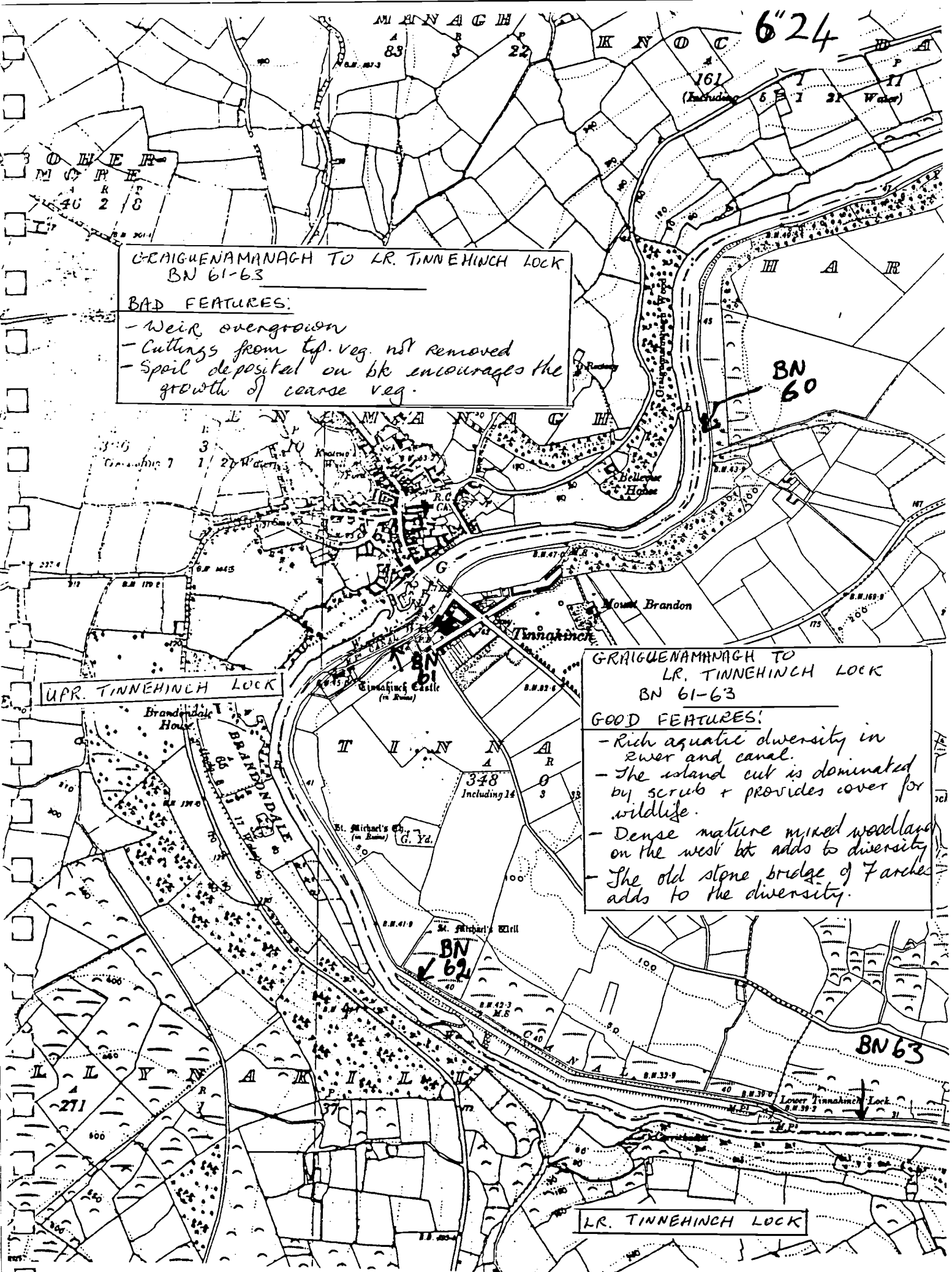
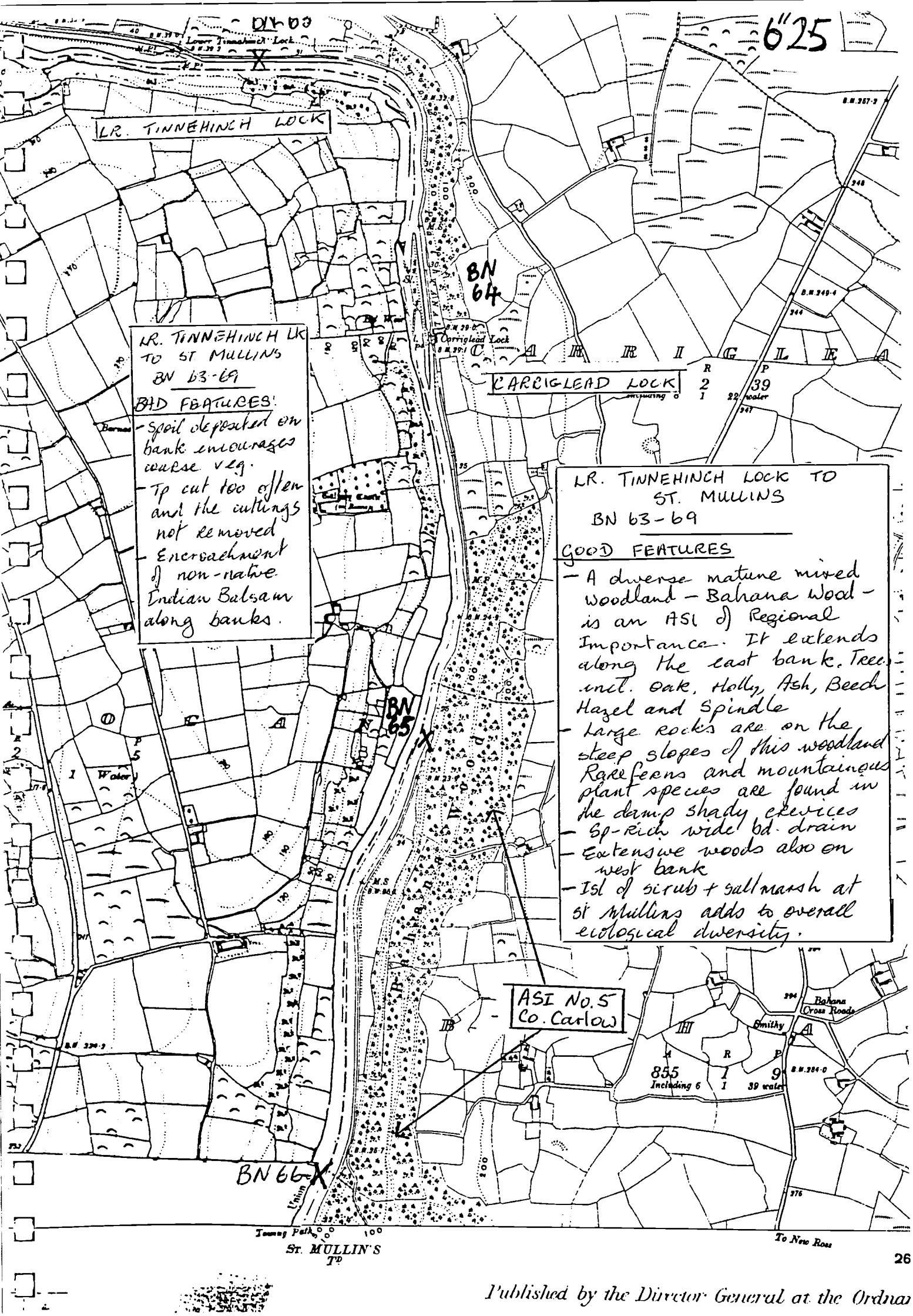

6"24
GRAIGUENAMANAGH TO LR. TINNEHINCH LOCK
BN 61-63
BAD FEATURES:
- Weir overgrown
- Cuttings from tip. veg. not removed
- Spoil deposited on bk encourages the growth of coarse veg.
BN 60
BN 61
BN 62
BN 63
UPR. TINNEHINCH LOCK
Tinnahinch
Mount Brandon
Tinnahinch Castle
Brandondale House
BRANDONDALE
St. Michael's Ch. (in Ruins)
St. Michael's Well
Lower Tinnahinch Lock
LR. TINNEHINCH LOCK
GRAIGUENAMANAGH TO LR. TINNEHINCH LOCK
BN 61-63
GOOD FEATURES:
- Rich aquatic diversity in river and canal.
- The island cut is dominated by scrub + provides cover for wildlife.
- Dense mature mixed woodland on the west bk adds to diversity.
- The old stone bridge of 7 arches adds to the diversity.



LR. TINNEHINCH LK TO ST MULLINS
BN 63-69

BAD FEATURES:

- Spoil deposited on bank encourages coarse veg.
- Tp cut too often and the cuttings not removed
- Encroachment of non-native Indian Balsam along banks.

LR. TINNEHINCH LOCK TO ST. MULLINS
BN 63-69

GOOD FEATURES

- A diverse mature mixed woodland – Bahana Wood – is an ASI of Regional Importance. It extends along the east bank. Trees incl. Oak, Holly, Ash, Beech Hazel and Spindle
- Large rocks are on the steep slopes of this woodland Rare ferns and mountainous plant species are found in the damp shady crevices
- Sp-Rich wide bd. drain
- Extensive woods also on west bank
- Isl of scrub + salt marsh at St Mullins adds to overall ecological diversity.

Published by the Director General at the Ordnan

6"26

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BN 63-69

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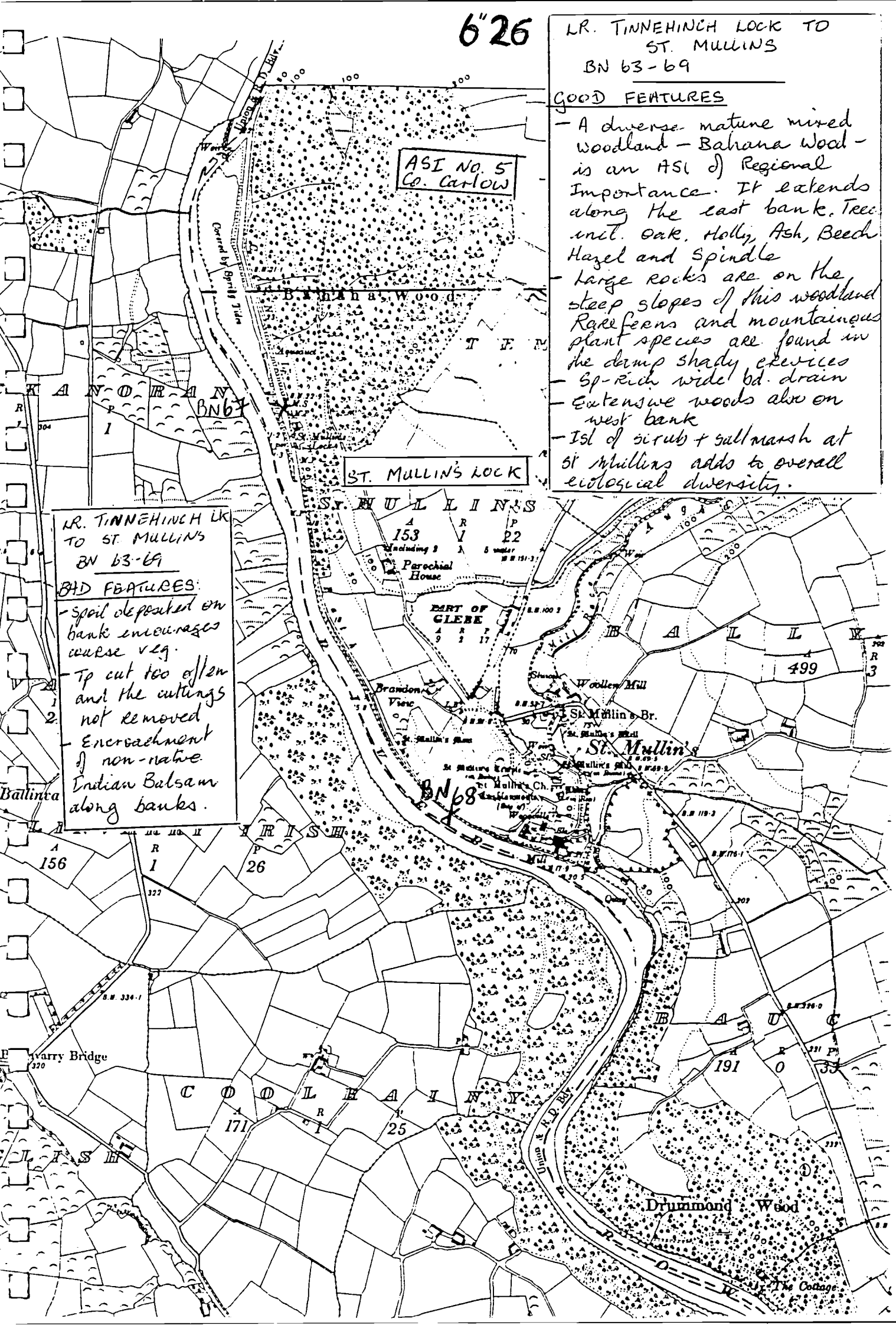

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Figure 1.1
Areas of Scientific Interest
along The Barrow Navigation