Office Of Public Works 992

ECOLOGICAL SURVEY

OF THE

GRAND CANAL

Part 2 Conservation Management Plan 1991

Prepared for
The Wildlife Service and Waterways Section,
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MANAGEMENT OBJECTIVES

1.1 To give nature conservation equal priority with other criteria in the maintenance and development of the canal network.

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

1.3 To maximise diversity by varying management practices along the canal system.

1.4 To allow flexibility in management to take into account the variability of nature.

GENERAL GUIDELINES FOR CONSERVATION MANAGEMENT

2.1 MAINTENANCE

2.1.1 General

. Because of the conservation value of the canals a full-time ecologist should be employed by the Waterways Section.

2.1.2 Dredging

General

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

. Hydraulic machinery should be used where possible as it is more selective and flexible than drag-line dredgers.

. Where possible the spoil should be pulled into the side, and not removed from the channel.

. Dredging should be minimised during the months March to July to avoid the main growing season and to reduce disturbance to nesting birds.

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

Protection of reed fringe

. Dredging 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 the floating dredger should be used to avoid damaging the marginal vegetation.

. Where no reed fringe exists submerged berms should be

created along the bank to facilitate the growth of shallow-water marginal vegetation outside the navigation area.

. Create artificial islands in a number of the canal harbours as nest sites for mute swans and other breeding waterfowl. (The island in Maynooth Harbour on the Royal Canal provides a successful model).

Spoil deposition

. Spoil should not be dumped on wetlands such as fens and raised bogs or on unimproved grasslands along the canal bank as these are the richest sites botanically.

. Spoil may be dumped in a trench dug between the towpath and the boundary. This should then be recovered with topsoil and allowed to revegetate naturally.

. Alternatively spoil may be dumped between the towpath and the boundary and topsoil spread thinly over this.

. If there are no other suitable places close to the canal bank spoil could be spread thinly in scrub.

Control of plant growth on spoil heaps

. In areas destined to become grassland the early colonising plants should be mowed at least twice in the first year and the cuttings removed. In subsequent years a single late summer mowing should be sufficient.

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

2.1.3 Repair work

Bank protection

. Natural materials or vegetation should be used in bank protection wherever possible instead of sheet piling.

. Where clay is used to build up the banks it should be covered with topsoil or peat from the same site and allowed to revegate naturally.

2.1.4 Towpath revegetation

. Towpaths should not be reseeded after clearance and should be allowed to revegetate naturally.

2.1.5 Bankside trees

Trimming

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

. Removal of overhanging branches should be confined to those which overhang the canal and catch floating debris or obstruct navigation.

. Pollarding is a suitable management method for Willows. Young growth is trimmed off 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 or 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 trees or shrubs are to be removed from the system altogether.

2.1.6 Scrub

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

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

. Scrub 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.

2.1.7 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 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.

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 shrub and tree species should be done in autumn or spring, but not during severe frosts.

2.1.8 Grassland

Grazing

. Grazing of individual sites either by sheep or cattle should be consistent from year to year.

. Boundary fencing should be repaired where necessary to control stock.

. Stocking rates should be lower than the average on agricultural land to avoid damage to canal banks and poaching of towpath soils.

. Fencing should be erected along the water's edge where banks are gently sloping to prevent poaching of bank structure.

Mowing

. Mowing can also be used to maintain grassland on the towpath and verges. Species-rich grasslands should be mown once per year in late July or August when the main flowering season is over.

. A footpath 1m wide can be cut through the grassland twice a year (May/June and August/September) if necessary, to provide pedestrian access.

. All hay or other cut vegetation should be removed from the towpath to maintain the low nutrient status of the grassland.

. 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.

Herbicides

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

2.1.9 Wetlands

. Grazing in such areas should be limited to light stocking to allow full flowering of the wetland species and to avoid poaching.

. Where grazing is not feasible and scrub development is undesirable, these wetland areas will have to be cut once a year

(August), possibly by hand.

2.1.10 Aquatic vegetation

Environmental control

. Water depth should be managed to limit the growth of aquatic vegetation in the navigation channel.

. Boat traffic during the summer months can be used to keep the navigation channel clear of plant growth.

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

Mechanical cutting

. Cutting should be carried out twice per year (once in early summer and once in late summer) using a boat-mounted cutter.

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

. Cuttings should be disposed of away from the canal or should be composted and used elsewhere.

Herbicides

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

. 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.

. 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 plants.

Biological control

. The introduction of herbivorous fish such as grass carp (Ctenopharyngodon idella) should not be considered because of potential impacts on aquatic ecosystem.

. If the barley straw experiment at Abbeyshrule on the Royal Canal proves successful, the same method should be used to control algae at other sites on the canal system.

2.1.11 Masonry

. The vegetation growing on stone-walls and similar structures adds to the diversity of the system, and should not be removed as a matter of course but only when necessary for maintenance purposes.

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

2.1.12 Water quality

. All direct discharges other than feeder streams should be eliminated and the water quality of the streams themselves should be monitored to ensure early detection of pollution sources.

2.2 RECREATIONAL MANAGEMENT

2.2.1 Boat traffic

. Speed limitations should be strictly enforced for all boat traffic to prevent damage to canal banks from wash.

. Boat design also affects the force of the wash - high-powered boats designed for cruising on rivers and lakes should be discouraged from using still-water canals.

. 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.

. Disposal of effluent from boats into the canal should be prohibited to ensure continued high water quality.

2.2.2 Angling

. Re-stocking should be limited to the species of fish already found in the canal to avoid any imbalance in the predator-prey relationships which might affect invertebrate populations.

. Areas of the canal known to be important for breeding and overwintering wildfowl (especially swans) should not be developed for coarse angling due to the risk of contamination with discarded lead weights. Alternatively the use of lead weights along the canal should be banned.

. Herbicide spraying as a fisheries management method should be discontinued.

. Limits should be placed on the interference with bank vegetation to facilitate anglers.

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

METHODS AND DEFINITIONS

The canal was surveyed in 1 km stretches according to the method devised by the BWB (Tandy, 1989) based on techniques developed by the Nature Conservancy Council (NCC, 1985). 1:2500 base maps were used, and expanded laterally to allow the canal corridor to be mapped in greater detail. The definition and symbols used in the maps are given below.

Canal Corridor	The zones within the boundary structures. i.e. channel verges towpath cuttings embankments boundaries

(The term 'canal corridor' is used in BWB literature to mean the canal property plus a zone 50 metres wide on either side of it. Although the adjacent land-use was noted it was not possible, given the limitations of the survey, to do a detailed study of the corridor as defined by the BWB and the more restricted definition was used).

Bank verge (bkv)	The strip of land between the tow-path and the channel.
Boundary verge (bdv)	The strip of land between the tow-path and the boundary.
Nearside (ns)	The bank of the canal which carries the tow-path,
Offside (ofs)	The bank opposite the towpath side.
Boundary (bd)	Hedgerow (hg) Fence (fc) Wall Ditch Stream/drain

GRAND CANAL MAIN LINE

MANAGEMENT GUIDELINES AND RECOMMENDATIONS

KM SECTIONS 1-6 RINGSEND BASIN - SUIR BROAD BRIDGE
CIRCULAR LINE

GOOD FEATURES:

- The presence of Groenlandia densa (a protected and nationally rare species) in the channel (a) east and west of Mount Street Lower (b) at Charlemont Bridge - east and west (c) east of Harberton Bridge.
- The presence of Sagittaria sagittifolia west of Dolphins' Barn Bridge.
- Many Chara species especially between Charlemont and Latouche Bridge and Robert Emmet and Parnell Bridge.
- High aquatic diversity though no great abundance.
- Well developed reed fringe though not continuous, between Lower Mount Street and Parnell Bridge.
- Many ducks and moorhens present.
- Mature trees along the banks - hosts to vast numbers of invertebrates.

BAD FEATURES:

- Excessive amounts of Ceratophyllum demersum in the basin. It is also present along the entire stretch. It is indicative of much nutrients in the water.
- Much algae along the stretch.
- Dumping - though not too seriously.
- Poor reed fringes west of Parnell Bridge.
- Bank verges cut too often. Also, the band of grass which is cut is very wide and the reed fringe often damaged.
- Effluent discharged into the canal east of Dolphin Barn Bridge.

OBJECTIVES:

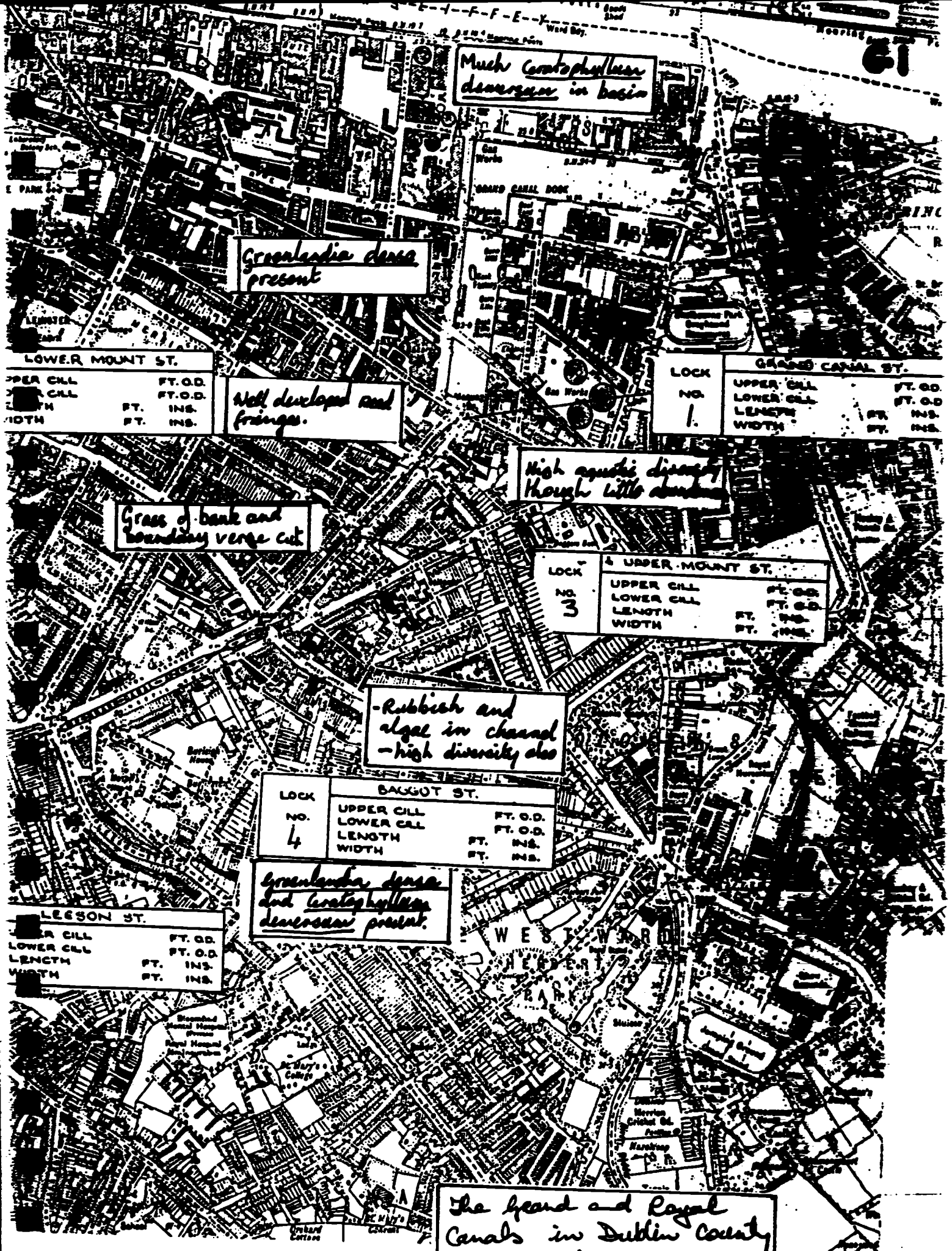
- To maintain the diversity of the channel, and to promote the development of a continuous and species-rich reed fringe.
- To improve the ecological value of the grass verges without decreasing the amenity value of the canal banks.

RECOMMENDATIONS:

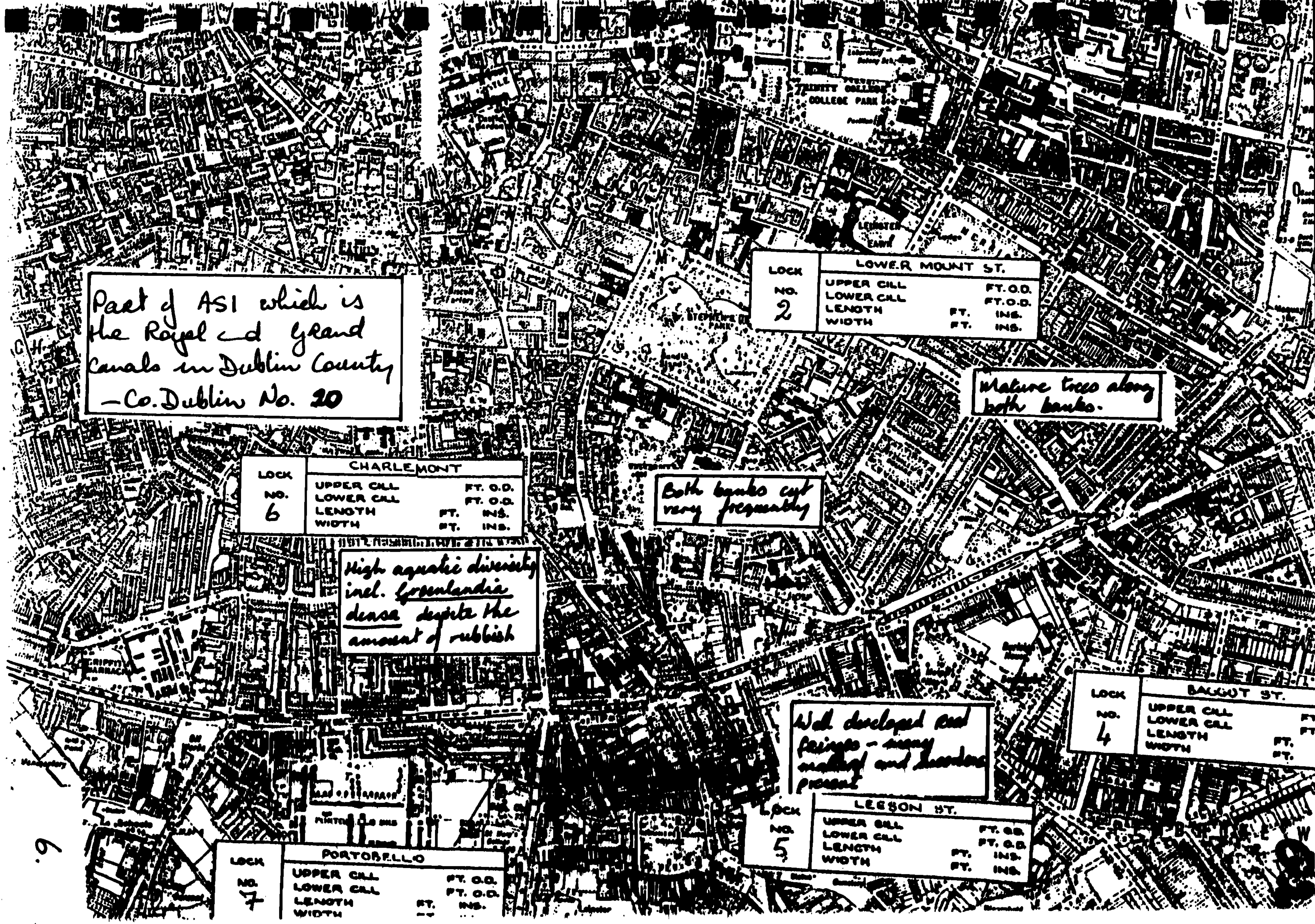
- Investigate the source of nutrients into the basin and stop or divert it, in order to curb the growth of Ceratophyllum demersum. However it should not be eliminated, this is the only site where C. demersum is common along the canal. If C. demersum were lost here, it would mean that the diversity of the canal system as a whole had been reduced. It must also be remembered that excess C. demersum in the channel and basin is preferable, in both ecological and amenity terms, to excess algae - which often occurs after over-control of submerged vegetation.
- No spraying to be carried out in the vicinity of the

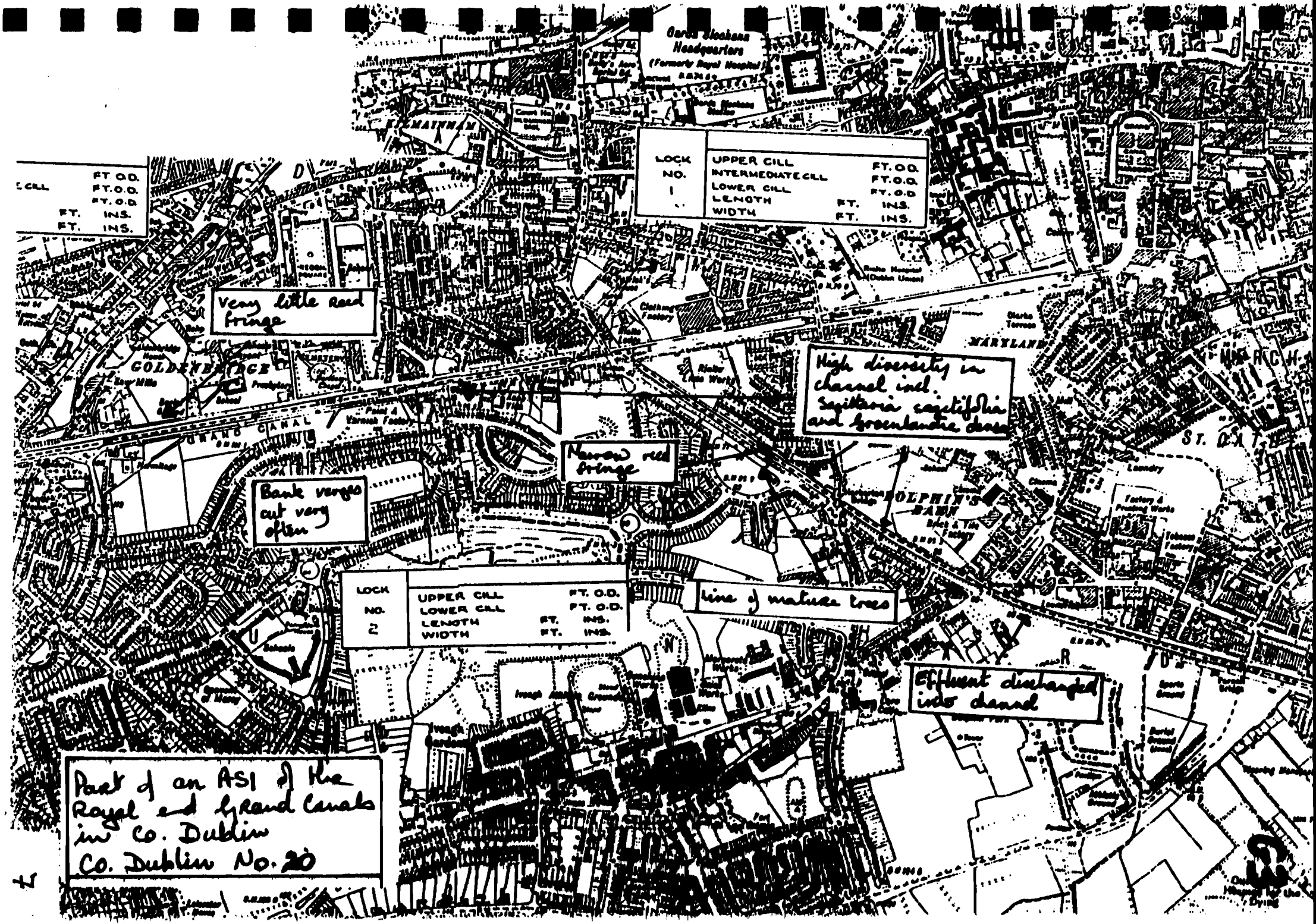
protected Groenlandia densa. It is proposed to spray between Lock 7 and Suir Road Bridge with Casoran in 1992. There is Groenlandia densa present along this stretch.

- Cutting of grass verges to be limited to a narrow band either side of the surfaced path.
- Investigate the source and quality of the inflow east of Dolphins' Barn Bridge.
- Deal with the litter/dumping problem.



The Grand and Royal Canals in Dublin County form an ASI.
- Co. Dublin No. 20.


Part of ASI which is the Royal and Grand Canals in Dublin County – Co. Dublin No. 20
LOCK NO. 2
LOWER MOUNT ST.
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
Mature trees along both banks.
LOCK NO. 6
CHARLEMONT
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
Both banks cut very frequently
High aquatic diversity incl. Greenlandia densa despite the amount of rubbish
LOCK NO. 4
BAGGOT ST.
UPPER CILL
LOWER CILL
LENGTH FT.
WIDTH FT.
Well developed reed fringes – many snails and shoreline present
LOCK NO. 5
LEESON ST.
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
LOCK NO. 7
PORTOBELLO
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH
TRINITY COLLEGE
COLLEGE PARK


Very little Reed fringe
High diversity in channel incl. Sagittaria sagittifolia and Groenlandia densa
Narrow reed fringe
Bank verges cut very often
line of mature trees
Effluent discharged into channel
Part of an ASI of the Royal and Grand Canals in Co. Dublin
Co. Dublin No. 20
LOCK NO. 1
UPPER CILL FT. O.D.
INTERMEDIATE CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
LOCK NO. 2
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
GRAND CANAL
GOLDEN BRIDGE
MARYLAND
DOLPHIN BARN

MAIN LINE

KMS 6 - 10 SUIR RD. BRIDGE - LOCK 8

GOOD FEATURES:

- All of this stretch is an ASI - part of ASI No. 20, Co. Dublin on the Grand Canal, an ecological site of regional importance.
- The presence of huge quantities of the protected Groenlandia densa between Locks 1 and 3. This stretch is not sprayed.
- Very good reed fringe west of Lock 2.
- Very high aquatic diversity throughout.
- The presence of Sagittaria sagittifolia throughout the stretch.
- Many moorhens and swans throughout.
- Very nice species-rich berms east of Lock 6 on the south bank.
- Calcareous grazed grassland rich in orchids on the north bank west of the New Bridge.
- Dense scrub hedgerow along most of the stretch west of Lock 5.
- Wet meadow on south bank Lock 8.

BAD FEATURES:-

- Much dumping at Lock 3, Lock 5 and at Lock 8.
- The towpath west of Lock 5 becomes very muddy. Pedestrians have formed new trails through the grass along the bank.
- Grass cut very frequently at the bank verge but not between towpath and boundary.
- Encroachment of boundary scrub species onto the towpath.
- Very little reed fringe between Locks 1 and 3.
- Many industrial buildings not screened.
- The species-rich calcareous grassland on the north bank is used by travellers and is a dumping ground for scrap metal.
- Rill erosion under the new bridge.

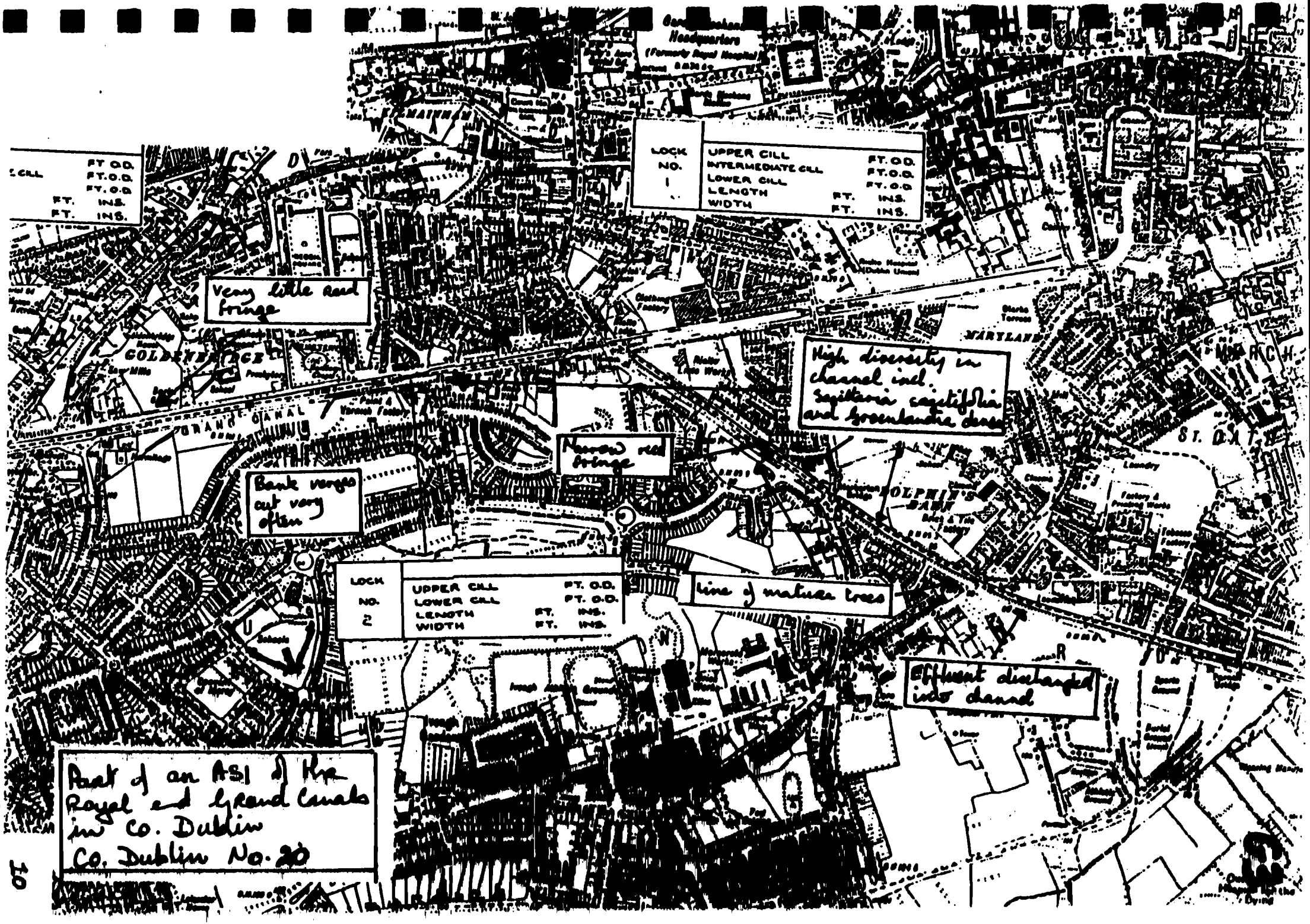
OBJECTIVES:

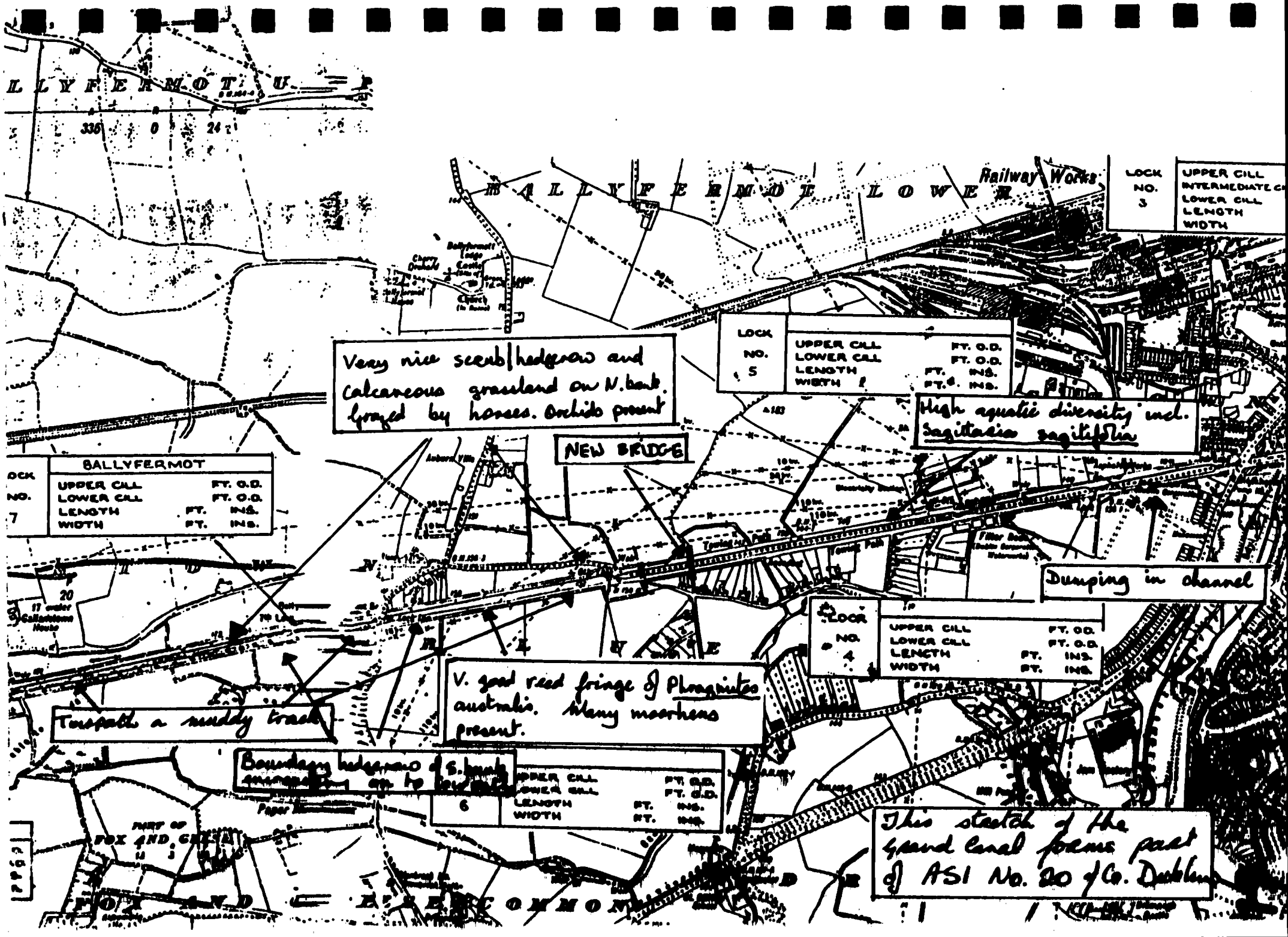
- To improve both the ecological value and the amenity value of this stretch by protecting the existing species diversity and increasing habitat diversity.

RECOMMENDATIONS:

- Do not spray the sections where the protected G.densa grows.
- Leave the species-rich berms intact during operations on the canal.
- Protect the healthy reed fringe and ensure it is not lost in future canal operations.
- Use native tree and shrub species to fill in gaps in the boundary hedgerow along the south bank.
- Where the hedgerow is too wide and encroaching on to the towpath, it should be cut back and the boundary verge cut once a year thereafter to remove young brambles.

- Plant native species along the north bank to act as a screen. Do not plant in a straight line, except where space is restricted.
- It is possible to plant a small group of trees such as Birch or Ash between the cement footpath and canal towpath at the North bank at Lock 3.
- Improve the towpath surface. This will encourage pedestrians to use it and not make trails on the bank.
- Deal with problem of litter and dumping.
- Stabilise the banks under the new bridge.


LOCK NO. 1
UPPER CILL FT. O.D.
INTERMEDIATE CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
Very little reed fringe
High diversity in channel incl. Sagittaria sagittifolia and Groenlandia densa
Narrow reed fringe
Bank verges cut very often
LOCK NO. 2
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
line of mature trees
Effluent discharged into channel
Part of an ASI of the Royal and Grand Canals in Co. Dublin
Co. Dublin No. 20


LLYFERMOTU
BALLYFERMOT LOWER
Railway Works
LOCK NO. 3
UPPER CILL
INTERMEDIATE C
LOWER CILL
LENGTH
WIDTH
LOCK NO. 5
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
Very nice scrub/hedgerow and calcareous grassland on N. bank. Grazed by horses. Orchids present
High aquatic diversity incl. Sagittaria sagittifolia
NEW BRIDGE
LOCK NO. 7
BALLYFERMOT
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
Dumping in channel
LOCK NO. 4
UPPER CILL FT. OD.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
V. good reed fringe of Phragmites australis. Many moorhens present.
Towpath a muddy track
Boundary hedgerow of S. bank
LOCK NO. 6
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
This stretch of the Grand Canal forms part of ASI No. 20 of Co. Dublin
FOX AND GEESE
COMMON

KM SECTIONS 10-13 **LOCK 8 - LOCK 11**

GOOD FEATURES:

- This stretch forms part of the ASI of the Grand Canal (ASI No. 20, Co. Dublin, of ecological interest and regional importance).
- This stretch of the channel is unsprayed but cut mechanically.
- Very high aquatic diversity.
- Rich reed fringe along most of the open stretch.
- Species-rich bank verge along both sides with many tall herbaceous plants.
- Mature trees along the boundaries of both banks west of Clondalkin Bridge and the 9th Lock.
- Sagittaria sagittifolia throughout the stretch.

BAD FEATURES:

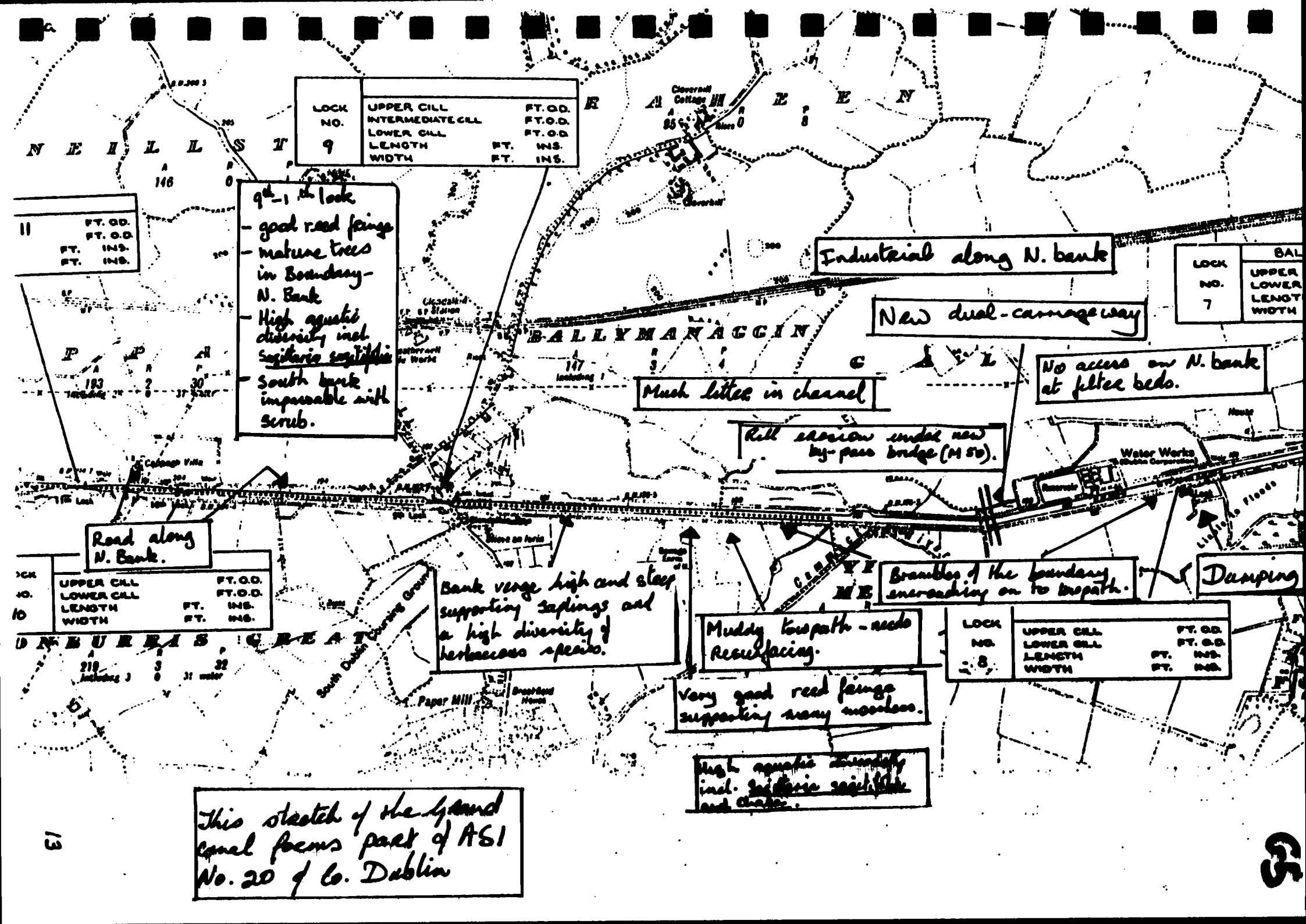
- No access on the north bank past Guinness Filter Beds even though the towpath under the dual carriageway is on the north bank.
- Rill erosion under the new dual carriageway bridge.
- The footpath between Lock 8 and the dual carriageway bridge is very muddy underfoot.
- Lack of screening between dual carriageway bridge and 500 m west of it and also between Locks 10 and 11 on the south bank.
- Impassable on the south bank between Locks 9 and 10 because the shrub/woodland tree species have encroached onto the towpath.
- Dumping at Lock 9 and 11.

OBJECTIVES:

- To maintain the high aquatic diversity and the species-rich reed fringe.
- To improve the ecological value of the terrestrial habitats by management (grass verges) and by planting (screening vegetation).

RECOMMENDATIONS:

- Continue to mechanically cut the aquatic plants making sure to remove them from the banks on the same day as they are deposited there.
- Improve the towpath.
- Plant native tree species to act as screening.
- Remove the tree/shrub species from the towpath west of Lock 9 and ensure that the remaining trees/shrubs do not encroach onto the towpath in future years. It is not necessary to remove all the trees to clear the towpath.
- Cut all the bank and boundary verges once a year in August/September, otherwise saplings, brambles and shrub species will eventually dominate.
- Protect the reed fringes in future canal operations.
- Deal with the dumping and litter problem.


LOCK NO. 9
UPPER CILL FT. O.D.
INTERMEDIATE CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
9th–10th lock.
- good reed fringe
- mature trees in Boundary – N. Bank
- High aquatic diversity incl. Sagittaria sagittifolia
- South bank impenetrable with scrub.
Industrial along N. bank
New dual-carriageway
LOCK NO. 7
BAL
UPPER
LOWER
LENGT
WIDTH
Much litter in channel
No access on N. bank at filter beds.
Rill erosion under new by-pass bridge (M 50).
Water Works
Road along N. Bank.
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
Bank verge high and steep supporting saplings and a high diversity of herbaceous species.
Brambles of the boundary encroaching on towpath.
Dumping
Muddy towpath – needs Resurfacing.
LOCK NO. 8
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
Very good reed fringe supporting many moorhens.
High aquatic diversity incl. Sagittaria sagittifolia and others.
Paper Mill
This sketch of the Grand Canal forms part of AS1 No. 20 of Co. Dublin
53

KM SECTIONS 13-16 LOCK 11 - LOCK 12

GOOD FEATURES:

- All of this stretch forms part of the ASI on the Grand Canal (ASI No. 20 Co. Dublin of ecological interest and regional importance).
- This stretch of channel is not sprayed but mechanically cut.
- Very high aquatic diversity throughout.
- Presence of Sagitaria sagittifolia throughout.
- Excellent reed fringes along both banks.
- Some wetland area along the base of both embanked sides.
- Species-rich hedges along the stretches which are embanked.
- Species-rich bank verge on the south bank near Lock 12

BAD FEATURES:

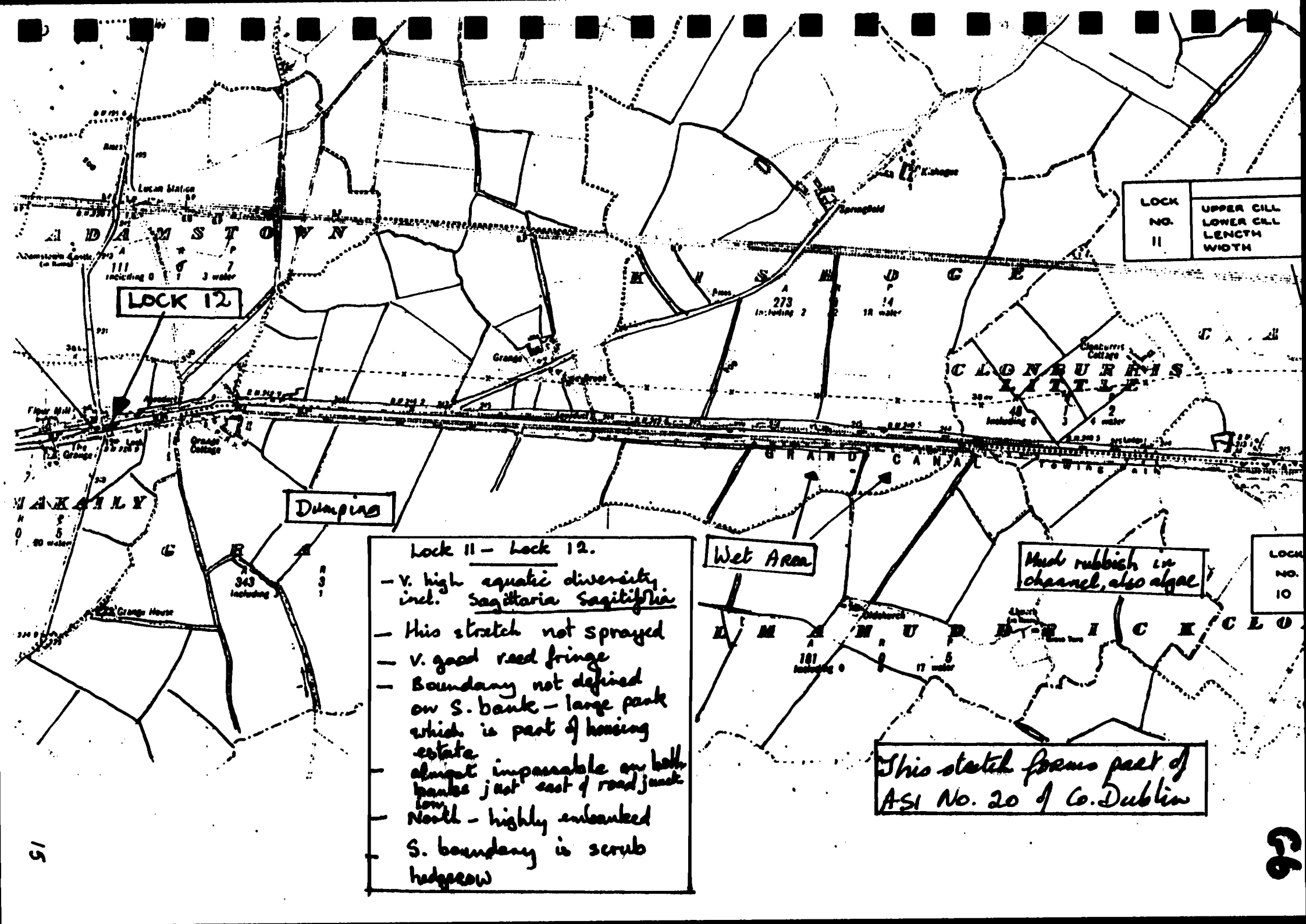
- Dumping at Lock 11; where the road leaves the canal on the north bank; and also on the south bank close to Lock 12.
- Towpaths and banks of both sides at the eastern end becoming impassable due to encroachment of shrub/scrub species.
- Boundary is not defined in the vicinity of Lock 11 on the south bank. There is open parkland - part of a housing estate with no shrubs or hedgerow showing the boundary. Because of easy access to the canal at this point a lot of rubbish including large items of discarded furniture is deposited there.
- Cattle poaching on north bank at the east end.
- Bank verge at Lock 12 cut very frequently and cuttings not removed.

OBJECTIVES:

- To maintain aquatic diversity and protect the reed fringes.
- To develop meadow grassland on the South bank.
- To maintain the pasture habitat on the north bank.

RECOMMENDATIONS:

- Continue to mechanically cut aquatic plants making sure to collect the cuttings and bring them away.
- Improve the walking path along both banks by cutting down encroaching hedgerow where it exists and cutting the path thereafter once a year in August/September. Remove cuttings.
- Define boundary and plant native species such as hawthorn and blackthorn. The prickly nature of these shrubs should ensure that they will not be damaged by children.
- Protect reed fringes in future canal operations.
- Protect the wetland areas by avoiding covering them with spoil or allowing rubbish to accumulate.
- Eliminate poaching of the north bank but continue to allow grazing.
- Deal with the dumping and litter problem.



Lock 11 – Lock 12.

- V. high aquatic diversity incl. Sagittaria Sagitifolia
- This stretch not sprayed
- V. good reed fringe
- Boundary not defined on S. bank – large park which is part of housing estate
- almost impassable on both banks just east of road junction
- North – highly embanked
- S. boundary is scrub hedgerow

15

C6

MAIN LINE

KM SECTIONS 16-18 **LOCK 12 - CO. BOUNDARY**
(West of Gollierstown Bridge)

GOOD FEATURES:

- This stretch forms part of the Grand Canal ASI (ASI No. 20 Co. Dublin of ecological value and regional importance).
- This stretch of channel is not sprayed but mechanically cut.
- Disused gravel/quarry pits at Gillierstown Bridge now filled with water - miniature lakes. Many species present with a marsh-like habitat around the edges. Dry sections of the disused pits support nutrient-poor species including Blackstonia perfoliata, Carlina vulgaris and orchids.
- Calcareous species including many orchids present on banks and boundary verge west of Gollierstown Bridge.
- The boundary on the north bank west of Gollierstown is embanked with species-rich calcareous hedgerow including Guelder Rose and Spindle.
- Many invertebrates and birds all along the stretch.
- Presence of Sagittaria sagittifolia in the channel.
- Species-rich scrub/woodland on south bank.
- Grazing of the south bank at Gollierstown.

BAD FEATURES:

- Sparse reed fringe.
- The cut aquatic plants were deposited on the banks and were not collected by late September. These cuttings enrich the soil and may change the character of the existing nutrient-poor bank.
- The towpath east of Gollierstown Bridge is too narrow and becoming overgrown.

OBJECTIVES:

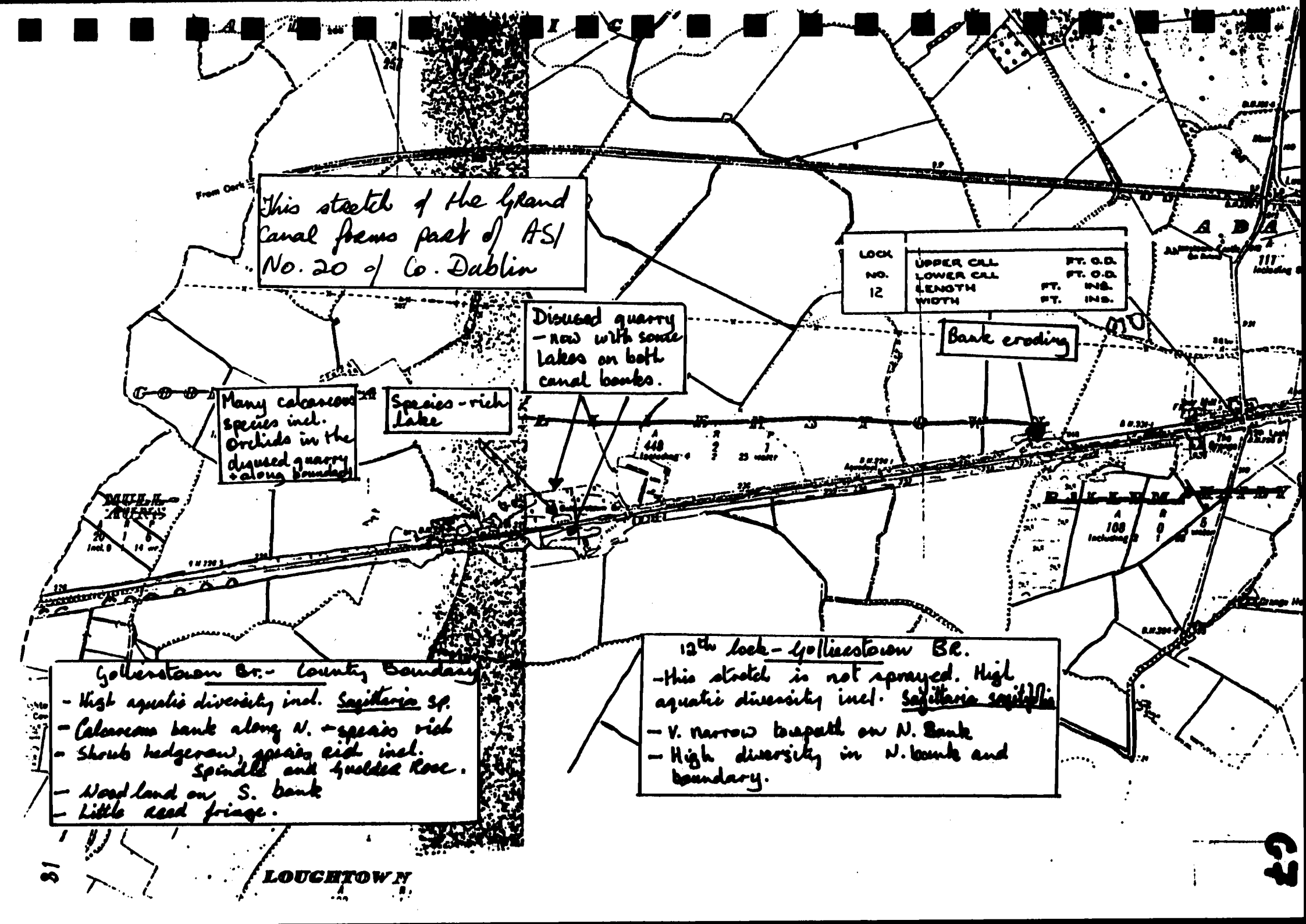
- To maintain aquatic diversity, and to promote the development of a continuous and species-rich reed fringe.
- To maintain pasture grassland on the south bank, and to develop it on the north bank around the disused gravel pits.
- To develop meadow grassland along the ungrazed verges by cutting once a year.
- To protect the scrub-woodland on the north bank.

RECOMMENDATIONS:

- Continue to mechanically cut the aquatic plants from the canal and remove the cuttings from banks on the same day as they are deposited.
- Protect the miniature lakes and disused gravel pits in all future canal operations.
- Cut tall herbaceous species and encroaching scrub/woodland species on the bank, towpath and boundary verge once a year August/September. Allow some saplings to remain on the banks.
- Maintain the nutrient-poor grassland on the north bank by Gollierstown Bridge by introducing grazing. (If

this is not possible the area should be cut once a year, in August/September, and all cut vegetation removed - this will create a hay-meadow vegetation rather than pasture).

- Protect the species-rich boundary hedgerow of the north bank.
- Protect the species-rich woodland on the south bank.


This stretch of the Grand Canal forms part of ASI No. 20 of Co. Dublin
LOCK NO. 12
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
Bank eroding
Disused quarry - now with some lakes on both canal banks.
Many calcareous species incl. Orchids in the disused quarry + along boundary
Species-rich lake
Gollierstown Br.- County Boundary
- High aquatic diversity incl. Sagittaria sp.
- Calcareous bank along N. - species rich
- Shrub hedgerow, species rich incl. Spindle and Guelder Rose.
- Wood land on S. bank
- Little reed fringe.
12th lock - Gollierstown Br.
- This stretch is not sprayed. High aquatic diversity incl. Sagittaria sagittifolia
- V. narrow towpath on N. Bank
- High diversity in N. bank and boundary.
LOUGHTOWN

KM SECTIONS 19-20 KILDARE/DUBLIN BOUNDARY TO HAZELHATCH

GOOD FEATURES:

- This stretch forms part of two ASIs on the Grand Canal (ASI No. 18 Co. Kildare, of ecological interest and local importance; and ASI No. 20 Co. Dublin, of ecological value and regional importance).
- This stretch of the channel is not sprayed but mechanically cut.
- Excellent reed fringes along both banks.
- High aquatic diversity including Sagittaria sagittifolia .
- Species-rich fen at the toe of embankment along the north bank.
- The bank is on a mound for some of this stretch and is nutrient-poor but species-rich.

BAD FEATURES:

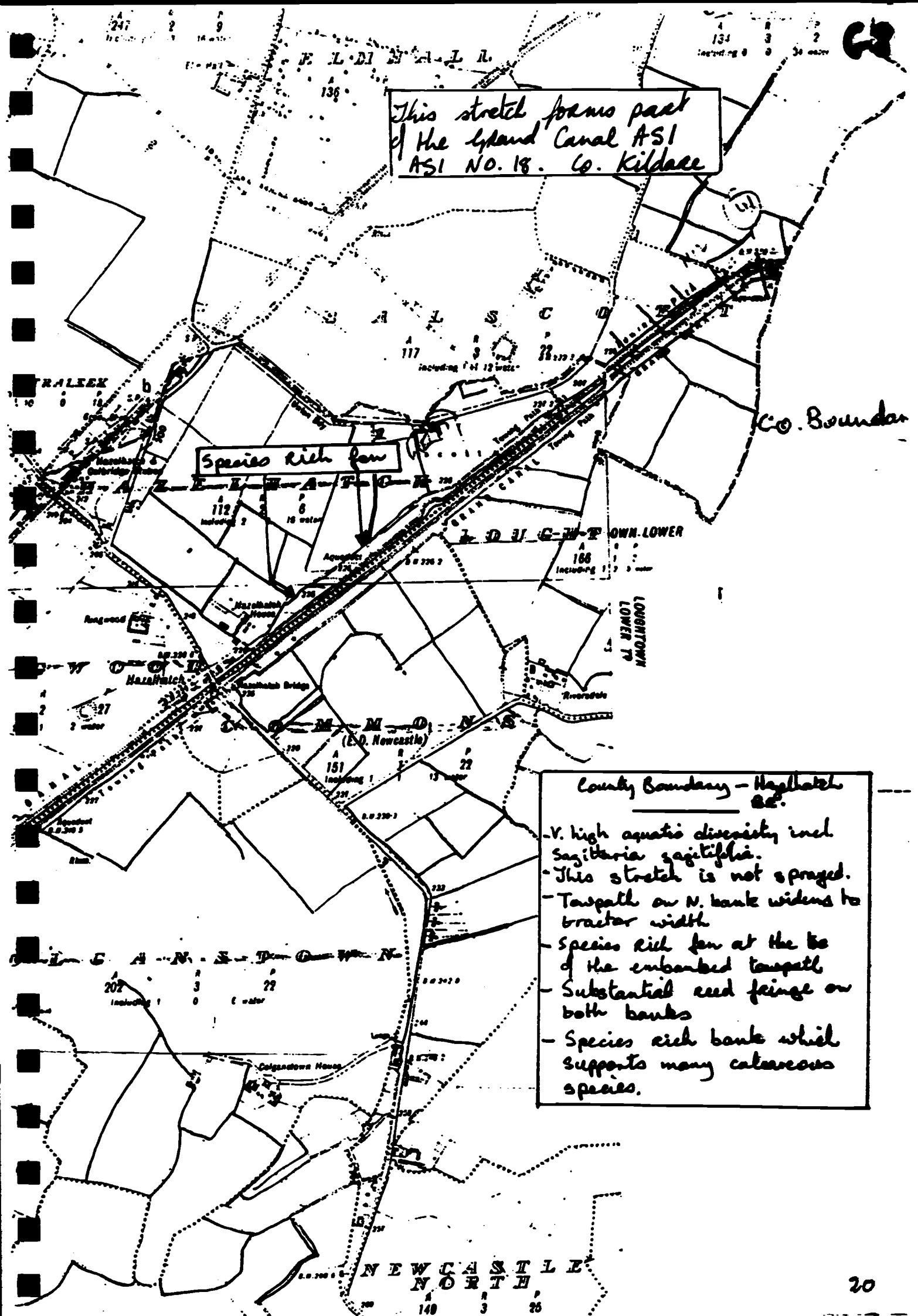
- Aquatic plants were deposited on bank and left there after cutting.

OBJECTIVES:

- To maintain aquatic diversity, and to protect the reed fringes along both banks.
- To develop meadow vegetation along the towpath and boundary verge.
- To maintain habitat diversity by protecting small habitats within the canal system.

RECOMMENDATIONS:

- Continue to cut mechanically but remove all aquatic cuttings from the bank the day they are deposited.
- Protect the fen in all future canal operations.
- Protect the reed fringe in all future canal operations.
- Three year rotation cutting of boundary and bank to ensure against encroachment from brambles and scrub species. Leave some saplings on the bank at each cutting. Remove cuttings.
- Cut boundary verge and towpath once a year (August/September) and remove cut vegetation.


This stretch forms part of the Grand Canal ASI
ASI NO. 18. Co. Kildare
Co. Boundary
Species Rich Fen
County Boundary – Hazelhatch
- V. high aquatic diversity incl. Sagittaria sagitifolia.
- This stretch is not sprayed.
- Towpath on N. bank widens to tractor width
- Species Rich fen at the toe of the embanked towpath
- Substantial reed fringe on both banks
- Species rich bank which supports many calcareous species.
Hazelhatch
NEWCASTLE NORTH

MAIN LINE

KM SECTIONS 20-23 **HAZELHATCH - LOCK 13**

GOOD FEATURES:

- This stretch forms part of two ASIs on the Grand Canal (ASI No. 18 Co. Kildare of ecological interest and local importance; and ASI No. 20 Co. Dublin, of ecological interest and regional importance).
- This stretch of the channel is not sprayed but mechanically cut.
- Good aquatic diversity including *Sagittaria sagittifolia.*
- Good reed fringes west of Aylmer Bridge.
- Nutrient-poor calcareous bank and boundary verge along the south with many orchids.
- South boundary is a mature species-rich hedgerow/woodland including Oak, Ash, Hazel, Spindle, Sycamore, Willow and Beech.
- Scrub/woodland along the north boundary between Hazelhatch and Aylmer Bridges.

BAD FEATURES:

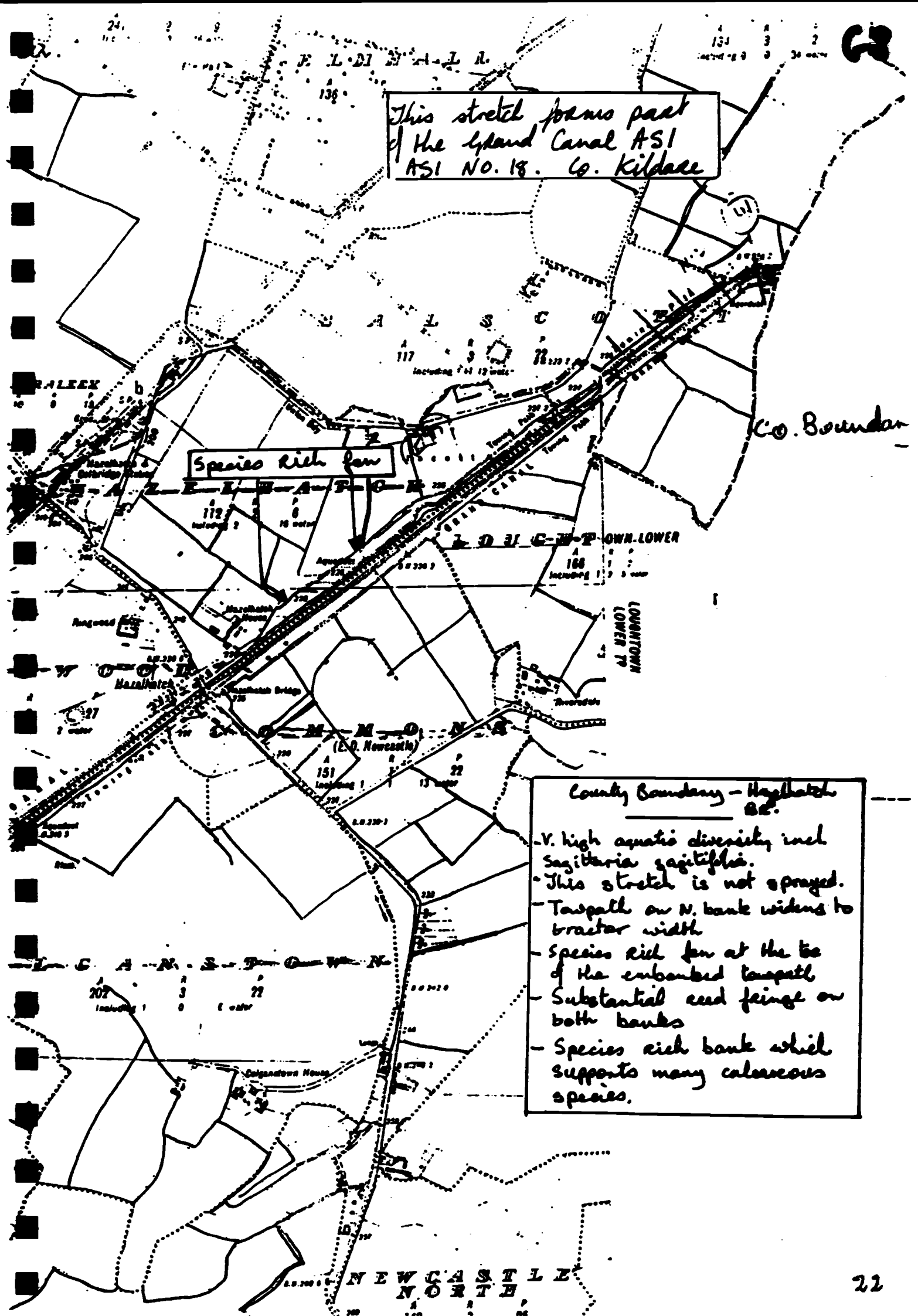
- Aquatic plants cut and deposited on the nutrient-poor bank. This is a source of nutrients to the soil and may change the character of the habitat.
- Much algae in the water.
- Cars dumped along southern boundary verge between Hazelhatch and Aylmer Bridges.
- Muddy towpath also used by vehicles.

OBJECTIVES:

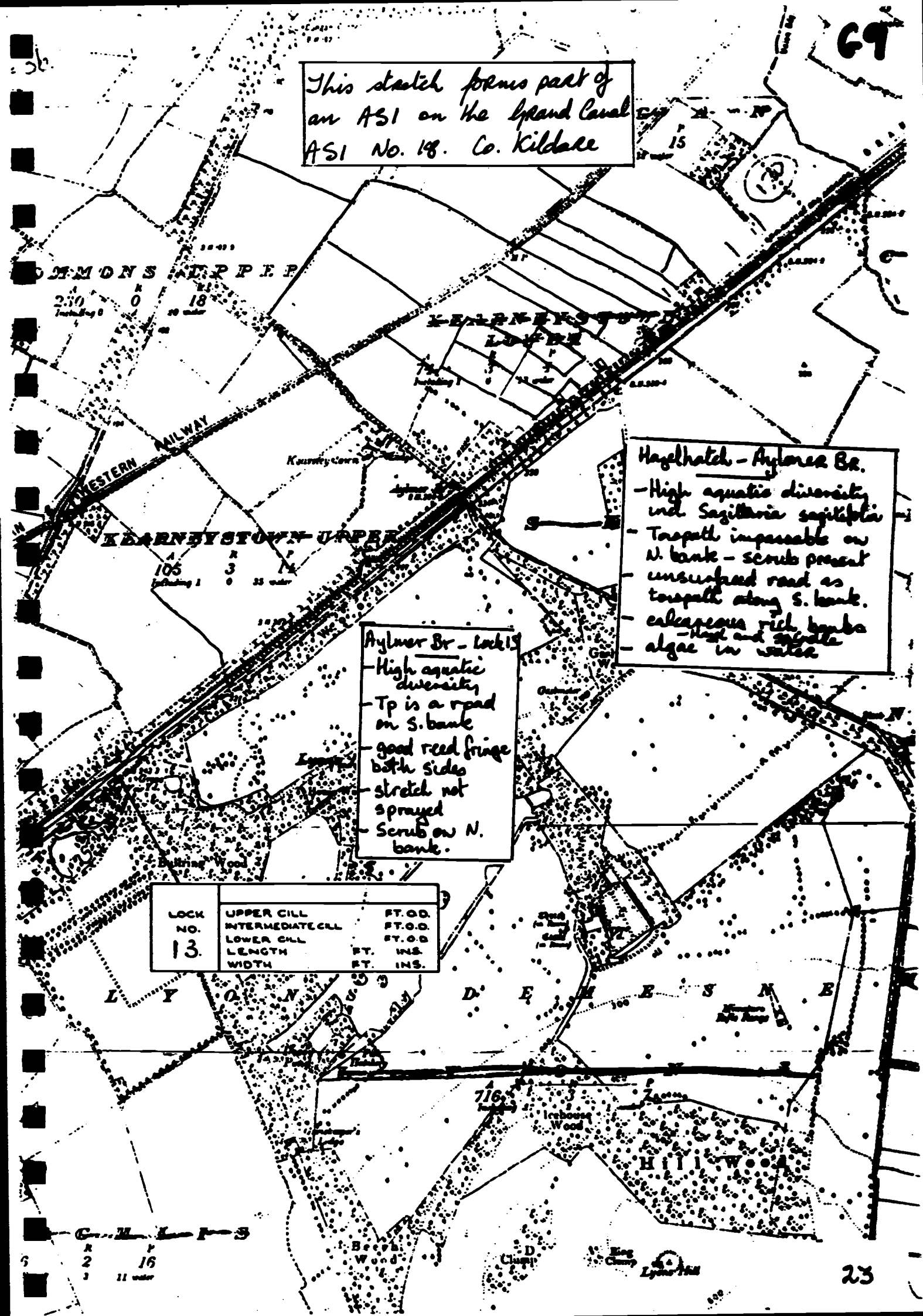
- Maintain aquatic diversity and species-rich reed fringe.
- Develop a meadow habitat along the boundary verge on the south bank.
- Maintain habitat diversity by retaining woodland and scrub.

RECOMMENDATIONS:

- Protect woodlands in future canal operations.
- Continue to mechanically cut the aquatic plants but remove them from the banks where they are deposited.
- Protect the reed fringes in all future canal operations.
- Investigate the source of nutrients which is resulting in so much algae. Joe Caffery (1990) identified this area as being high in nitrates/nitrites.
- Cut the boundary verge once a year in August/September and remove all cut vegetation.
- Repair the towpath surface.


This stretch forms part of the Grand Canal ASI
ASI No. 18. Co. Kildare
Co. Boundary
Species Rich fen
County Boundary - Hazelhatch
- V. high aquatic diversity incl Sagitteria sagitifolia.
- This stretch is not sprayed.
- Towpath on N. bank widens to tractor width
- Species rich fen at the toe of the embanked towpath
- Substantial reed fringe on both banks
- Species rich bank which supports many calcareous species.
NEWCASTLE
NORTH

This stretch forms part of an ASI on the Grand Canal ASI No. 18. Co. Kildare



Hazelhatch – Aylmer Br.
- High aquatic diversity incl. Sagittaria sagittifolia
- Towpath impassable on N. bank – scrub present
- unsurfaced road as towpath along S. bank.
- calcareous rich banks – high and specific
- algae in water

Aylmer Br – Lock 13
- High aquatic diversity
- Tp is a road on S. bank
- good reed fringe both sides
- stretch not sprayed
- Scrub on N. bank.

LOCK NO. 13.		
	UPPER CILL	FT. O.D.
	INTERMEDIATE CILL	FT. O.D.
	LOWER CILL	FT. O.D.
	LENGTH	FT. INS.
	WIDTH	FT. INS.

KM SECTIONS 23-27 LOCK 13 - PONSONBY BRIDGE

GOOD FEATURES:

- This stretch forms part of the Grand Canal ASI (ASI No. 18 Co. Kildare of ecological importance and local interest).
- This stretch of the channel is mechanically cut.
- High aquatic diversity including Sagittaria sagittifolia throughout.
- Some substantial stands of reed fringe east of Henry Bridge.
- Good diversity of tall herbaceous species along the south bank.
- Scrub on the north bank.

BAD FEATURES:

- Little reed fringe west of Henry Bridge.
- Bank erosion west of Henry Bridge.
- Much algae in the channel and water becoming very murky.
- Dumping on the south bank east of Ponsonby Bridge.

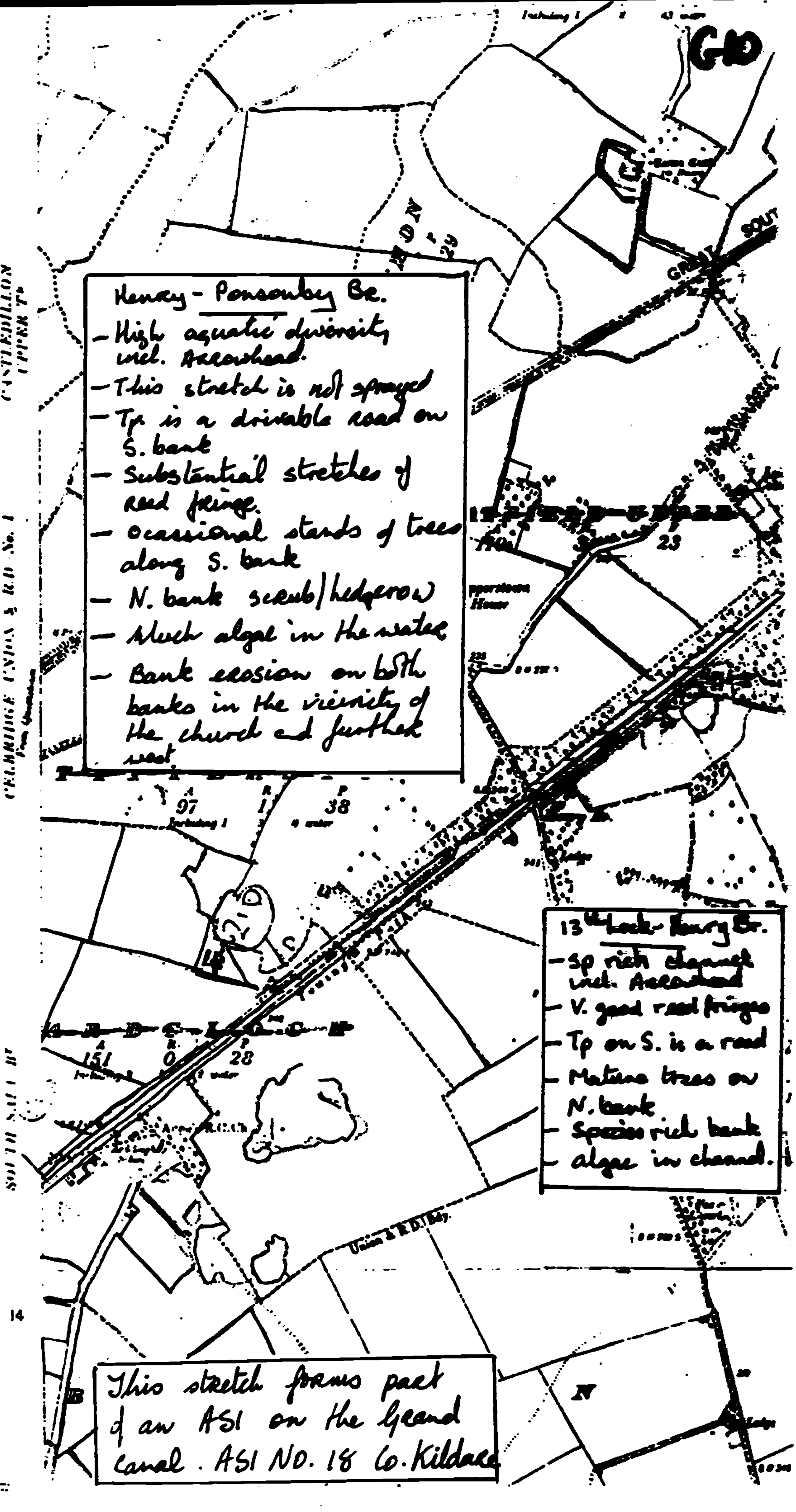
OBJECTIVES:

- To maintain aquatic diversity.
- To protect existing reed fringes, and to encourage the development of continuous reed fringe on both banks along the whole length of the stretch.
- To improve bank stability.

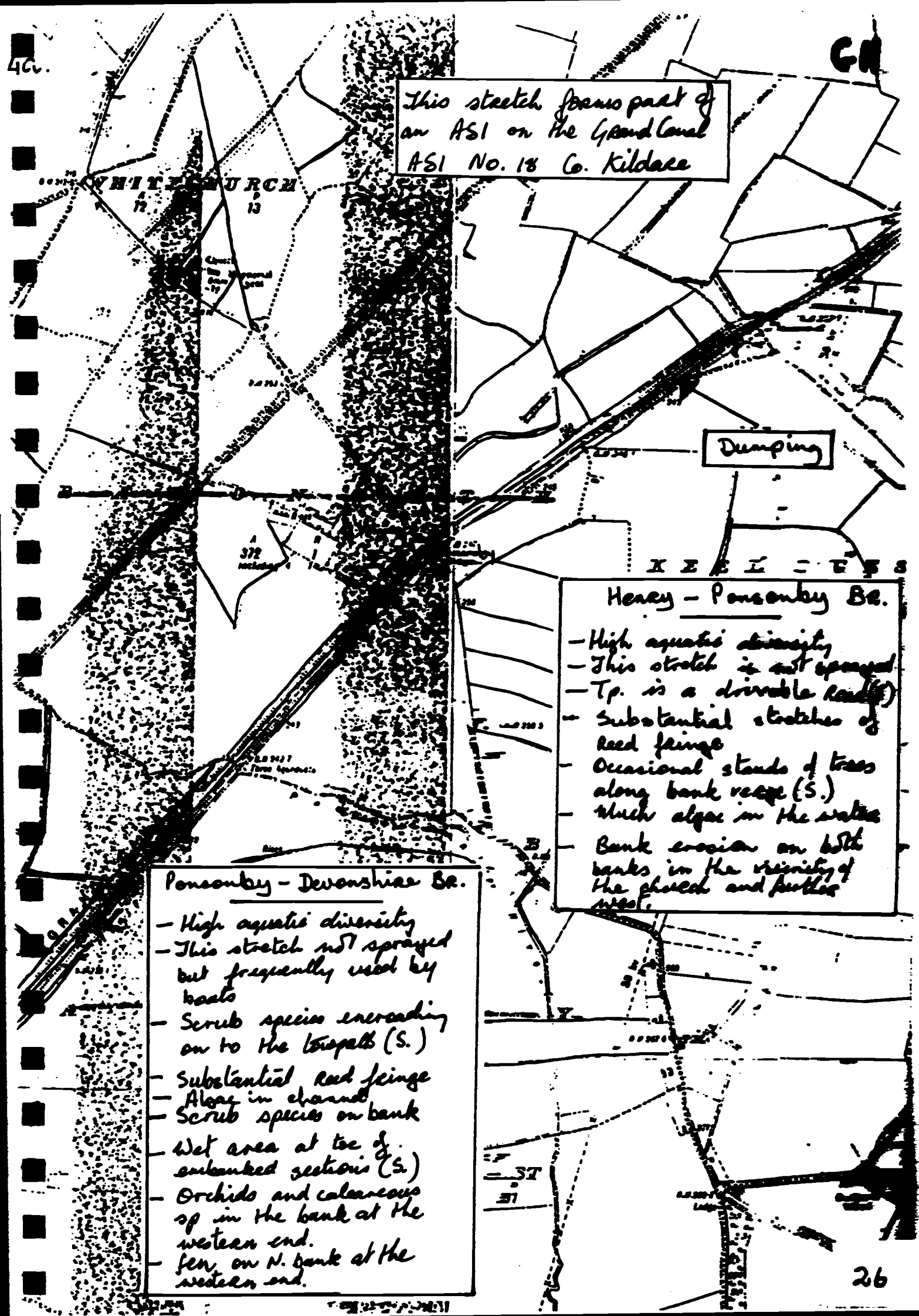
RECOMMENDATIONS:

- Continue to mechanically cut and remove aquatic plants.
- Protect the existing reed fringes.
- If claying of the eroded banks is to take place ensure topsoil is spread on top. Seeds can germinate quicker when on or in the soil.
- Bank verges to be cut on a three year rotation basis to ensure against encroachment to towpath and damage to the banks. Some saplings to be left at each cutting.
- Take active measures to discourage dumping.
- Investigate the source of nutrients which is resulting in an abundance of algae. Joe Caffrey (1990) identified this stretch as being very high in nitrates/nitrites.

3c


G10
Henry - Ponsonby Br.
- High aquatic diversity incl. Arrowhead.
- This stretch is not sprayed
- Tp is a drivable road on S. bank
- Substantial stretches of reed fringe.
- Ocassional stands of trees along S. bank
- N. bank scrub/hedgerow
- Much algae in the water
- Bank erosion on both banks in the vicinity of the church and further west.
13th Lock - Henry Br.
- Sp rich channel incl. Arrowhead
- V. good reed fringes
- Tp on S. is a road
- Mature trees on N. bank
- Species rich bank
- algae in channel.
This stretch forms part of an ASI on the Grand Canal. ASI NO. 18 Co. Kildare
CASTLEDILLON UPPER Td
CELBRIDGE UNION & R.D. No. 1
Union & R.D. Bdy.
23
97
38
151
0
28
14

This stretch forms part of an ASI on the Grand Canal ASI No. 18 Co. Kildare



Heavy - Ponsonby Br.

- High aquatic diversity
- This stretch is not sprayed
- Tp. is a drivable road (S.)
- Substantial stretches of reed fringe
- Occasional stands of trees along bank verge (S.)
- Much algae in the water
- Bank erosion on both banks in the vicinity of the sluices and further west.

Ponsonby - Devonshire Br.

- High aquatic diversity
- This stretch not sprayed but frequently used by boats
- Scrub species encroaching on to the towpath (S.)
- Substantial reed fringe
- Algae in channel
- Scrub species on bank
- Wet area at toe of embanked sections (S.)
- Orchids and calcareous sp in the bank at the western end.
- Fen on N. bank at the western end.

KM SECTIONS 27-33 PONSONBY BRIDGE - SALLINS

GOOD FEATURE:

- This stretch forms part of the Grand Canal ASI (ASI No. 18 Co. Kildare of ecological interest and local importance).
- This stretch of channel is not sprayed but cut mechanically.
- Exceptionally wide reed fringe west of Devonshire Bridge. Moorhens and Swans present.
- The canal is embanked for much of this stretch. Wet meadows are to be found at the base of these embankments and are species-rich.
- Where the embankments are not totally overgrown, a nutrient-poor flora can be found supporting many orchids - east and west of Devonshire Bridge.
- Mature Beech trees along the southern boundary west of Lock 15.
- Sagittaria sagittifolia present west of the railway line though in very small quantities. Chara also present.
- Boundary drain for much of the stretch (south bank).

BAD FEATURES:

- Poor reed fringe east of Lock 15.
- Bank and towpath overgrown between Ponsonby and Devonshire Bridges and impassable approaching Sallins (S bank).
- Poaching of the boundary drain by cattle east of Devonshire Bridge.
- Bank erosion.
- Algae present on the approach to Sallins.

OBJECTIVES:

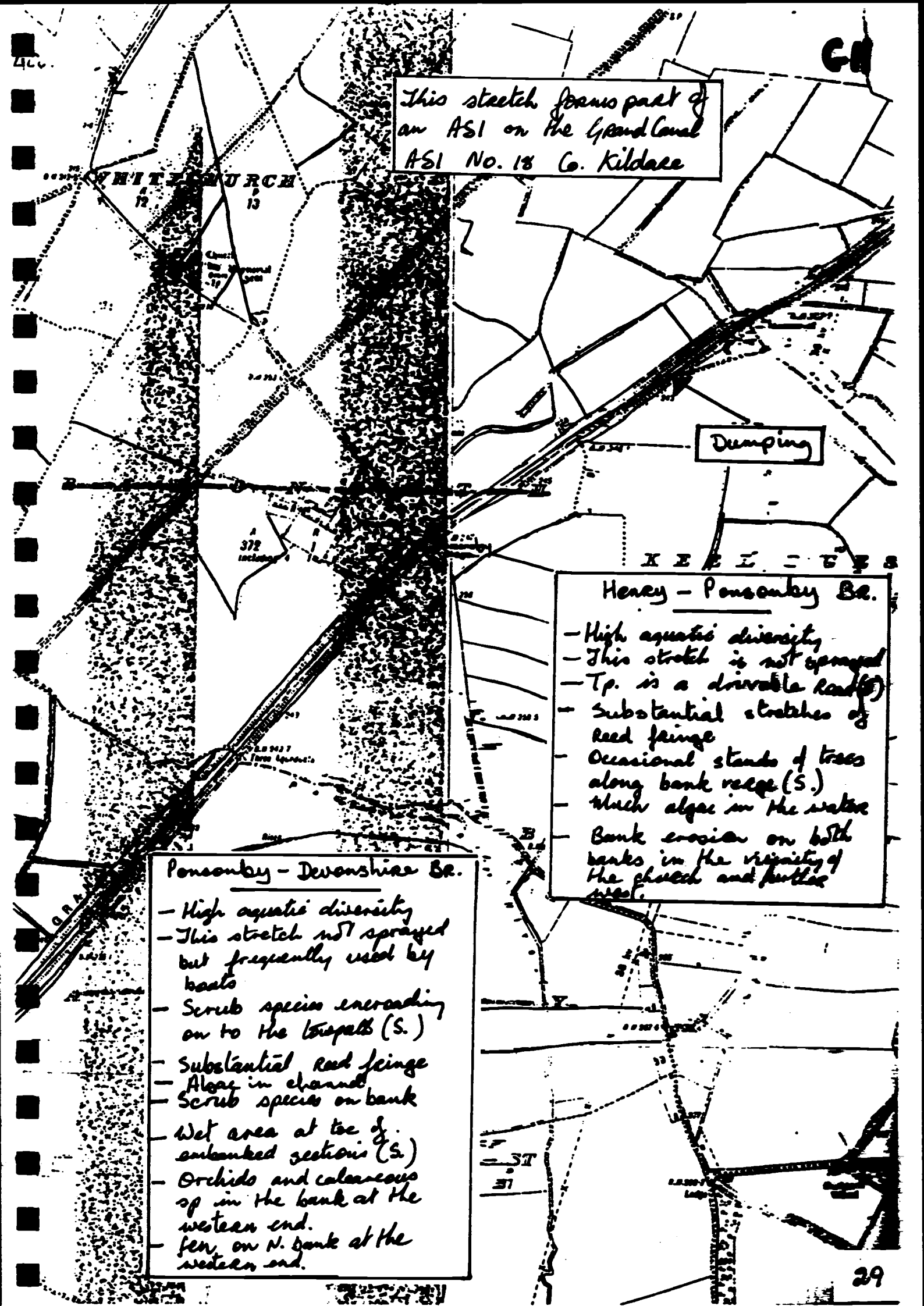
- Maintain aquatic diversity and protect the wide reed fringes.
- Maintain habitat diversity by protecting sensitive habitats (eg wet grassland at the toe of embankments).
- Create a meadow habitat along the towpath and verges by annual cutting.

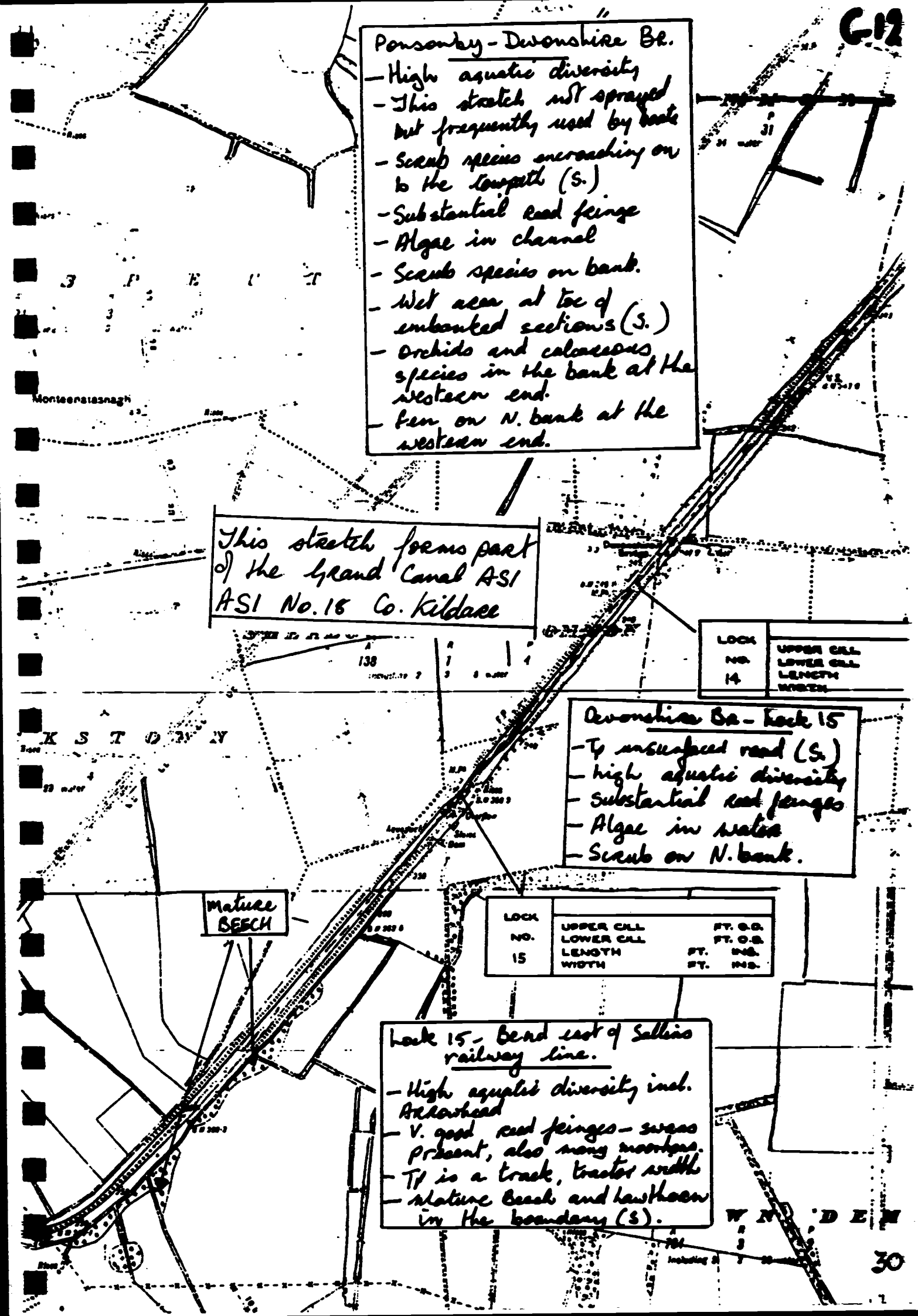
RECOMMENDATIONS:

- Continue to mechanically remove aquatic plants.
- Protect the reed fringes in all future canal operations.
- Protect the species-rich wet meadows which exist at the base of the embankments.
- Protect the nutrient-poor species which exist on the embankment slopes which are not overgrown.
- Prevent poaching of the boundary drain (S bank) by cattle.
- Clear the towpath and boundary verge by cutting out encroaching scrub/shrub species. Thereafter cut once a year in August/September. Banks and boundary verges can also be cut back every three years. Ensure that some saplings are left on the bank after each cutting.
- If claying of eroded banks is to take place, cover the

clay with topsoil as this is more suitable if seeds are to germinate.

- Investigate the water quality and cause of algal growth.


This stretch forms part of an ASI on the Grand Canal
ASI No. 18 Co. Kildare
Dumping
Heavy - Ponsonby Br.
- High aquatic diversity
- This stretch is not sprayed
- Tp. is a driveable road(S)
- Substantial stretches of Reed fringe
- Occasional stands of trees along bank recess (S.)
- Much algae in the water
- Bank erosion on both banks in the vicinity of the culvert and further west.
Ponsonby - Devonshire Br.
- High aquatic diversity
- This stretch not sprayed but frequently used by boats
- Scrub species encroaching on to the towpath (S.)
- Substantial Reed fringe
- Algae in channel
- Scrub species on bank
- Wet area at toe of embanked sections (S.)
- Orchids and calcareous sp in the bank at the western end.
- Fen on N. bank at the western end.



Ponsonby - Devonshire Br.

- High aquatic diversity
- This stretch not sprayed but frequently used by boats
- Scrub species encroaching on to the towpath (S.)
- Substantial reed fringe
- Algae in channel
- Scrub species on bank.
- Wet area at toe of embanked sections (S.)
- Orchids and calcareous species in the bank at the western end.
- Fen on N. bank at the western end.

This stretch forms part of the Grand Canal ASI
ASI No. 16 Co. Kildare

LOCK NO.	
14	UPPER CILL LOWER CILL LENGTH WIDTH

Devonshire Br - Lock 15

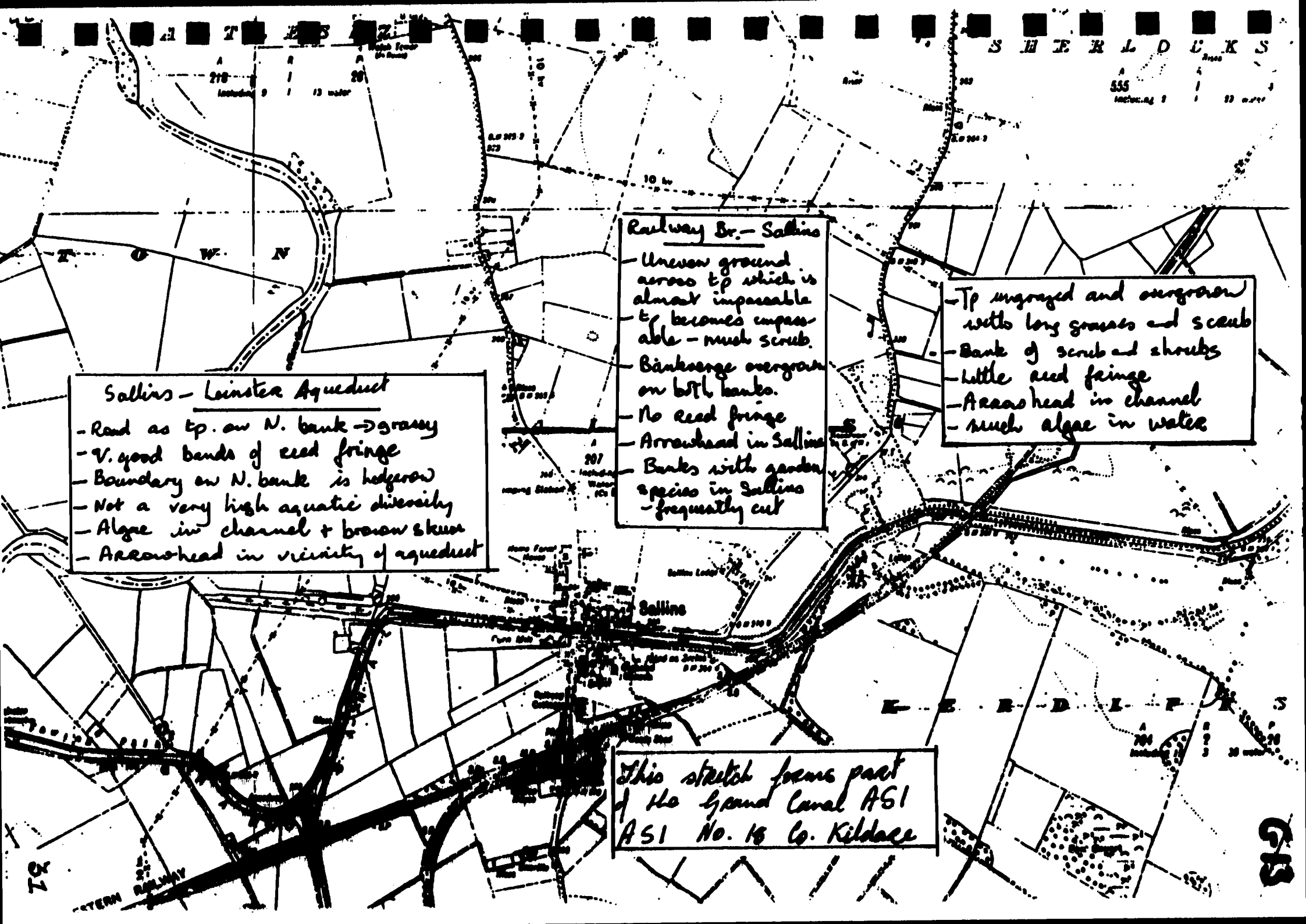
- Tf unsurfaced road (S.)
- High aquatic diversity
- Substantial reed fringes
- Algae in water
- Scrub on N. bank.

Mature BEECH

LOCK NO.		
15	UPPER CILL	FT. O.D.
	LOWER CILL	FT. O.D.
	LENGTH	FT. INS.
	WIDTH	FT. INS.

Lock 15 - Bend east of Sallins railway line.

- High aquatic diversity incl. Arrowhead
- V. good reed fringes - swans present, also many moorhens.
- Tf is a track, tractor width
- Mature Beech and hawthorn in the boundary (S).


Sallins – Leinster Aqueduct
- Road as tp. on N. bank → grassy
- V. good bands of reed fringe
- Boundary on N. bank is hedgerow
- Not a very high aquatic diversity
- Algae in channel + brown skum
- Arrowhead in vicinity of aqueduct
Railway Br. – Sallins
- Uneven ground across tp which is almost impassable → becomes impassable – much scrub.
- Bankside overgrown on both banks.
- No reed fringe
- Arrowhead in Sallins
- Banks with garden species in Sallins – frequently cut
- Tp ungrazed and overgrown with long grasses and scrub
- Bank of scrub and shrubs
- Little reed fringe
- Arrowhead in channel
- much algae in water
Sallins
This stretch forms part of the Grand Canal ASI
ASI No. 18 Co. Kildare

GOOD FEATURES:

- This stretch forms part of the Grand Canal ASI (ASI No. 18 Co. Kildare of ecological interest and local importance).
- This stretch of channel is mechanically cut.
- Good reed ridge west of Sallins and west of the Leinster Aqueduct.
- Good aquatic diversity including Sagittaria sagittifolia.
- Calcareous banks and towpath in the vicinity of the Leinster Aqueduct (northern bank).
- Mature trees along the northern boundary between Leinster Aqueduct and Landenstown Bridge.
- Species-rich south bank of tall herbaceous species which are not cut each year.

BAD FEATURES:

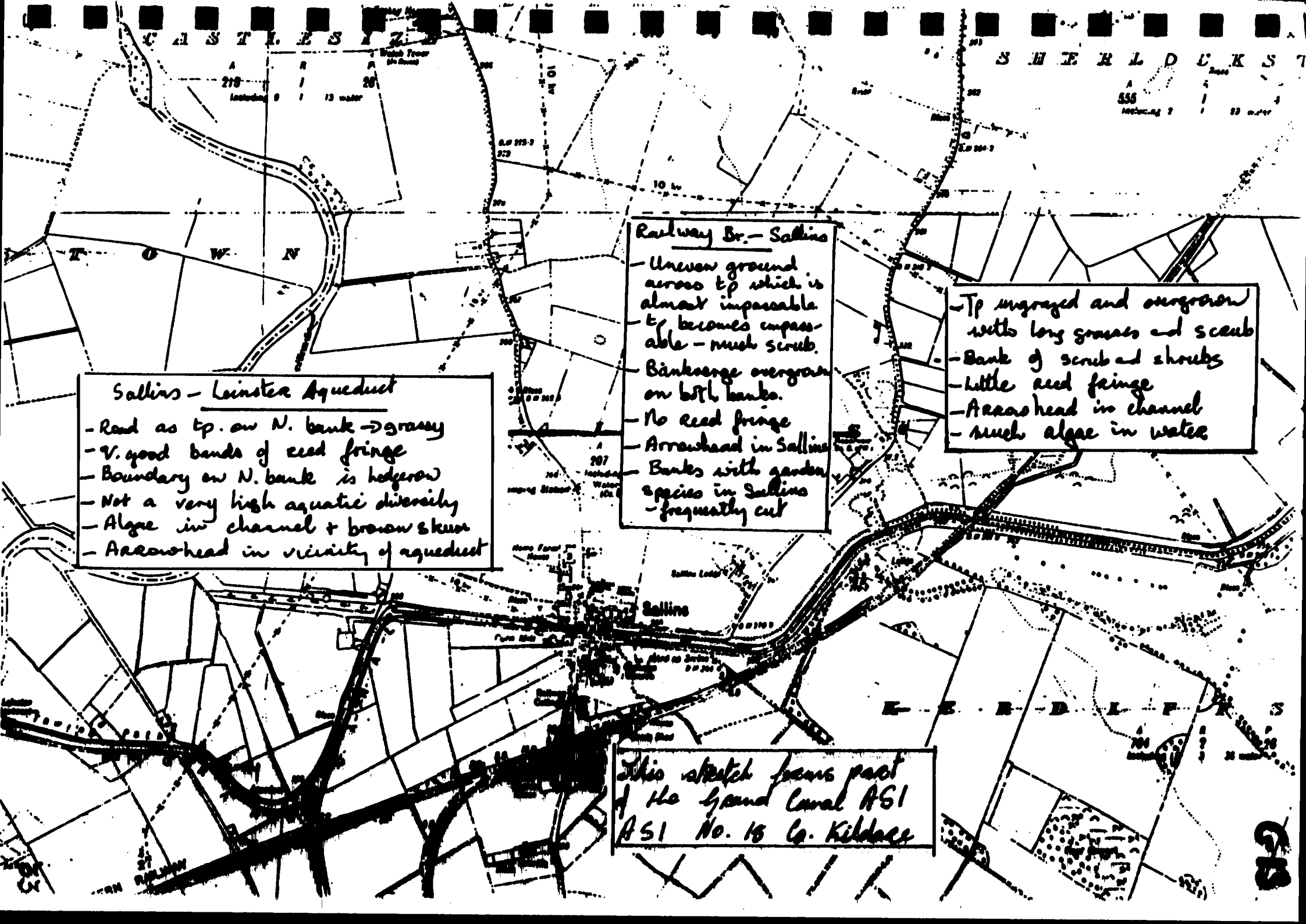
- Much algae in the channel and a brown scum is present along much of the stretch.
- Little reed fringe west of Digby Bridge.
- Clayed bank west of the Naas Branch which is not covered with top soil.
- Some poaching along the bank between Digby and Landenstown Bridges.

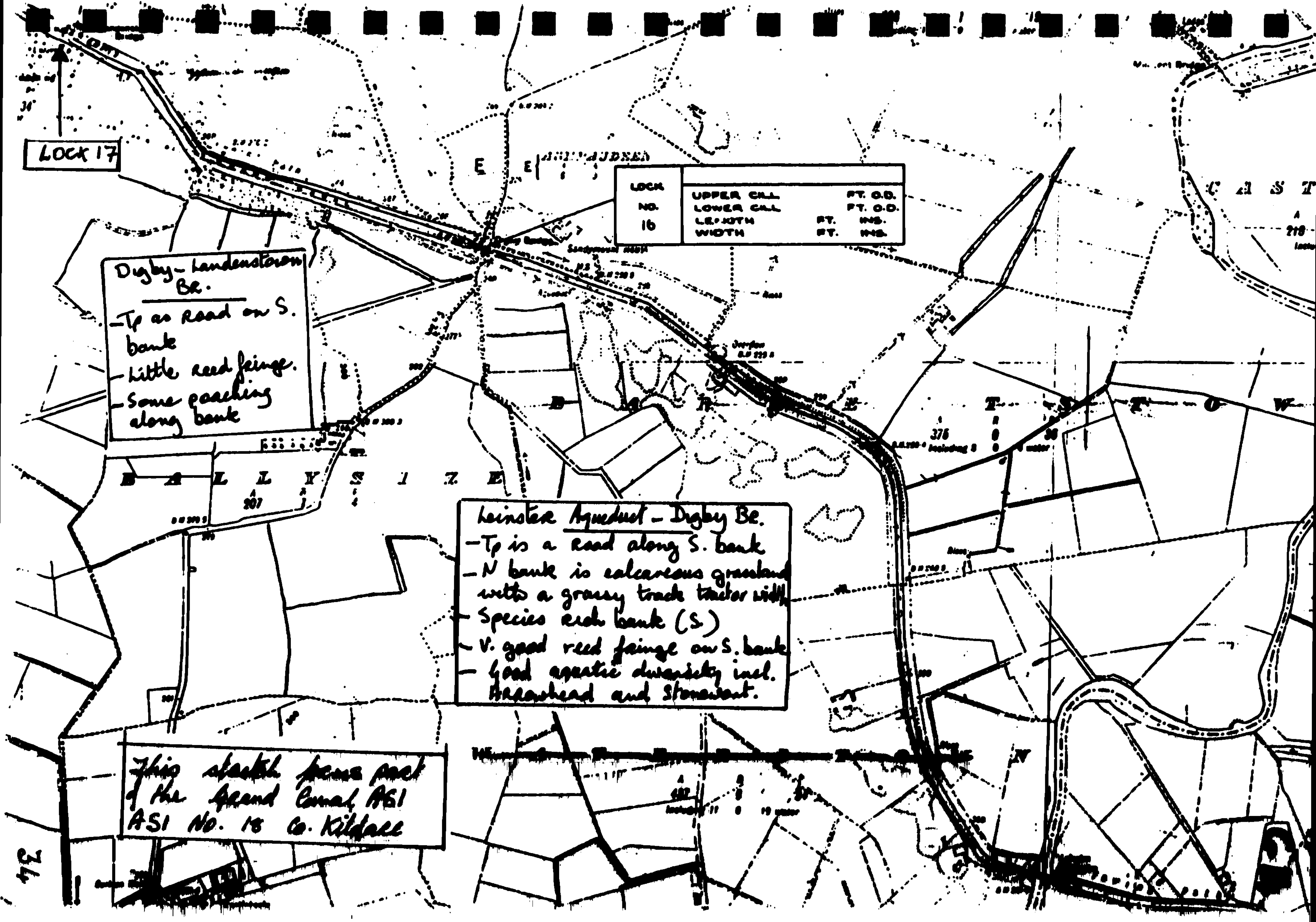
OBJECTIVES:

- To maintain aquatic diversity; and to protect existing reed beds and to encourage the development of continuous reed fringes along this stretch of canal.
- To develop a meadow habitat along the towpath and verges.

RECOMMENDATIONS:

- Continue to remove aquatic plants mechanically.
- Cut bank, towpath and boundary verge vegetation once a year in August/September and remove cuttings. This will ensure that a seed bank will be maintained and also encroachment with bramble and scrub species does not gain a stronghold. Leave some saplings on the bank after each cutting.
- Protect the reed fringes during canal operations.
- Ensure that nutrient - poor stretches are not enriched with cuttings.
- Cover clayed banks with topsoil to ensure quicker germination of seeds.
- Investigate water quality.
- Cattle to be prevented from poaching.


Sallins – Leinster Aqueduct
- Road as tp. on N. bank → grassy
- V. good bands of reed fringe
- Boundary on N. bank is hedgerow
- Not a very high aquatic diversity
- Algae in channel + brown skum
- Arrowhead in vicinity of aqueduct
Railway Br. – Sallins
- Uneven ground across tp which is almost impassable
- tp becomes impassable – much scrub.
- Bankside overgrown on both banks.
- No reed fringe
- Arrowhead in Sallins
- Banks with garden species in Sallins – frequently cut
- Tp ungrazed and overgrown with long grasses and scrub
- Bank of scrub and shrubs
- little reed fringe
- Arrowhead in channel
- much algae in water
Sallins
This sketch forms part of the Grand Canal ASI
ASI No. 18 Co. Kildare


LOCK 17
LOCK NO. 16
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
Digby - Landenstown Br.
- Tp as road on S. bank
- Little reed fringe.
- Some poaching along bank
Leinster Aqueduct - Digby Br.
- Tp is a road along S. bank
- N bank is calcareous grassland with a grassy track tractor width
- Species rich bank (S.)
- V. good reed fringe on S. bank
- Good aquatic diversity incl. Arrowhead and Stonewort.
This sketch forms part of the Grand Canal ASI
ASI No. 18 Co. Kildare
BALLYSHIZE
375
207

MAIN LINE

KM SECTIONS 38-42 LANDESTOWN - BONYNGE BRIDGE

GOOD FEATURES:

- This stretch forms part of the Grand Canal ASI (ASI No. 18 Co. Kildare of ecological interest and local importance).
- This stretch of canal is not sprayed but mechanically cut.
- Good aquatic diversity including <u>Sagittaria sagittifolia.</u>
- High gravel boundaries which are nutrient-poor along either or both banks between Cock and Bonynge Bridges making it very similar to an esker.
- Dense scrub along the boundary.
- There is nutrient-poor limestone grassland with many orchids on banks, towpaths and boundaries which are not overgrown.
- Many butterflies along this stretch.

BAD FEATURES:

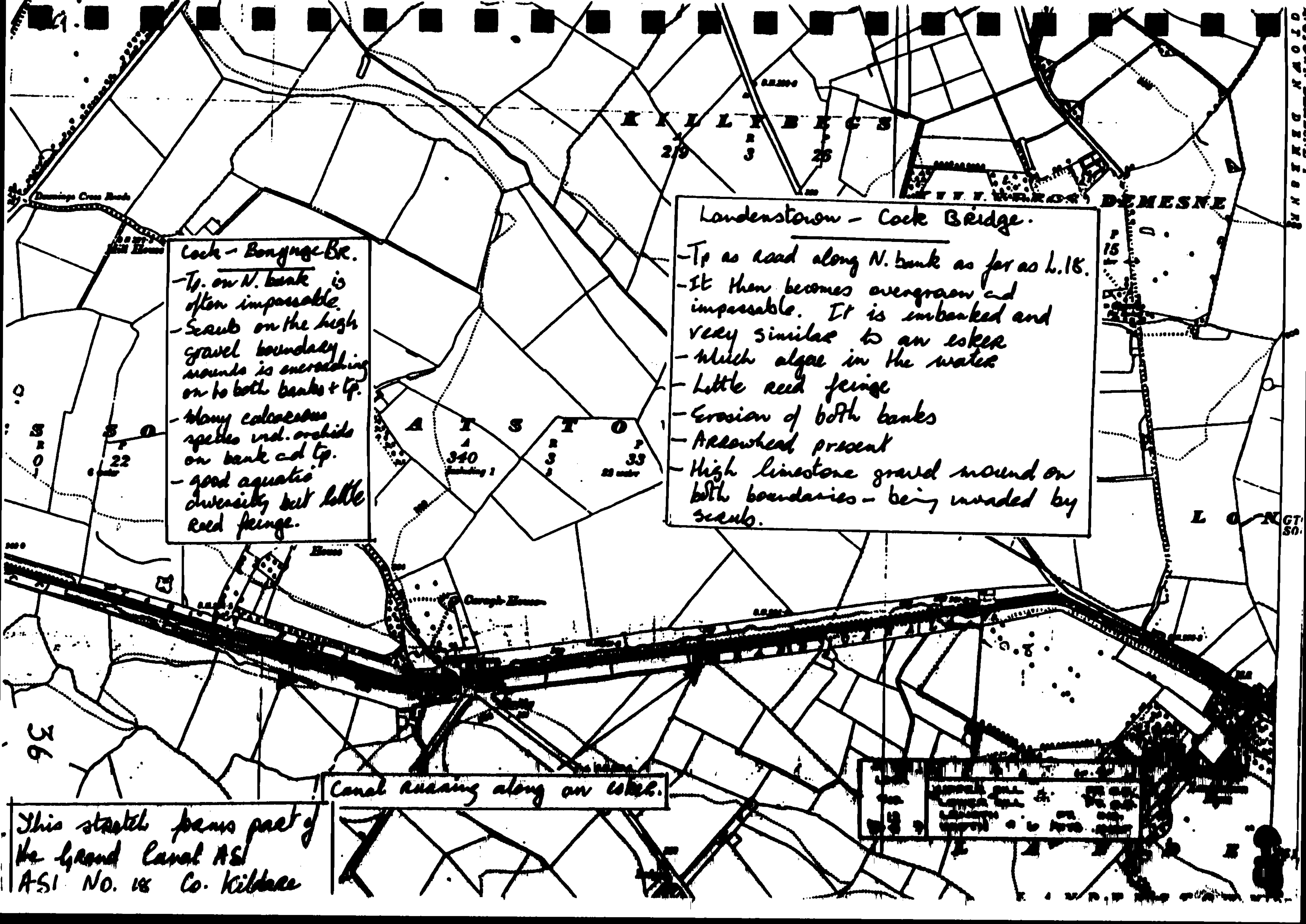
- Poor reed fringe along this stretch.
- Erosion of banks.
- Poaching of banks by cattle.
- Encroaching on the north bank of the scrub of the boundary thus making the towpath impassable east and west of Cock Bridge.
- South bank immediately west of Cock Bridge is part of a farmyard and over-grazed.

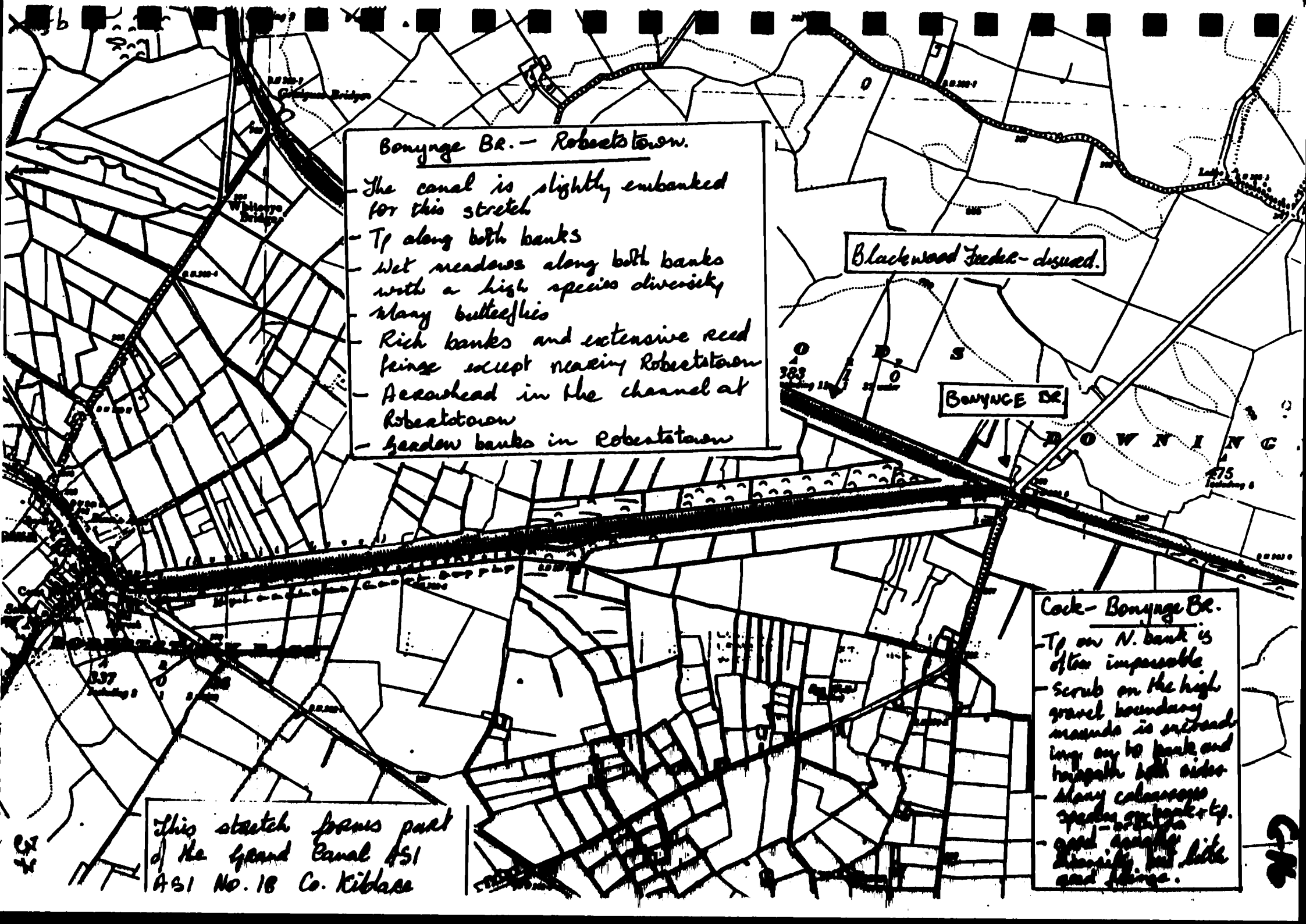
OBJECTIVES:

- To maintain aquatic diversity.
- To promote the development of a continuous reed fringe along both banks.
- To maintain the pasture habitat on the banks.
- To develop hay meadows along those stretches of the banks that are not grazed.

RECOMMENDATIONS:

- Continue to remove aquatic plants mechanically.
- Protect the nutrient-poor grassland sections by not enriching with spoil and not digging up.
- Trees/scrub species can be cut out of the towpath and removed. Scrub of the bank and boundary verge can be cut back.
- Light grazing may be carried out along the reopened towpath. Poaching to be discouraged.
- Investigate ownership of south bank west of Cock Bridge.
- Screen farm-yard using native species only.
- Ungrazed banks should be cut once a year (August/September) and all cut vegetation removed.


KILLYBEGS
DEMESNE
Cock - Bonynge Br.
- Tp. on N. bank is often impassable.
- Scrub on the high gravel boundary mounds is encroaching on to both banks + tp.
- Many calcareous species incl. orchids on bank and tp.
- good aquatic diversity but little reed fringe.
Landenstown - Cock Bridge.
- Tp as road along N. bank as far as L.18.
- It then becomes overgrown and impassable. It is embanked and very similar to an esker
- Much algae in the water
- Little reed fringe
- Erosion of both banks
- Arrowhead present
- High limestone gravel mound on both boundaries - being invaded by scrub.
Canal running along an esker.
This stretch forms part of the Grand Canal ASI
ASI No. 18 Co. Kildare
Caragh House
Mill House
Bonynge Cross Roads
A T S T O
340
33
22
15
36


Bonynge Br. – Robertstown.
– The canal is slightly embanked for this stretch
– Tp along both banks
– Wet meadows along both banks with a high species diversity
– Many butterflies
– Rich banks and extensive reed fringe except nearing Robertstown
– Aeroahead in the channel at Robertstown
– Meadow banks in Robertstown
Blackwood Feeder – disused.
BONYNGE BR.
BONYNGE
Cock – Bonynge Br.
– Tp on N. bank is often impassable
– Scrub on the high gravel boundary mounds is extending over to bank and towpath both sides
– Many calcareous species on bank + tp.
– Good quality [illegible] both sides and fringe.
This stretch forms part of the Grand Canal ASI
ASI No. 18 Co. Kildare

KM Sections 42-45 BONYNGE BRIDGE - ROBERTSTOWN

GOOD FEATURES:

- This stretch forms part of the Grand Canal ASI (ASI No. 18 Co. Kildare of ecological interest and local importance).
- This stretch of the channel is not sprayed but mechanically cut.
- Both sides are embanked. Species-rich wet meadows occur at the base of the embankments.
- Excellent reed fringe.
- Sagittaria sagittifolia present in the channel at Robertstown.
- Boundary drain along south bank.
- Many butterflies along stretch.

BAD FEATURES:

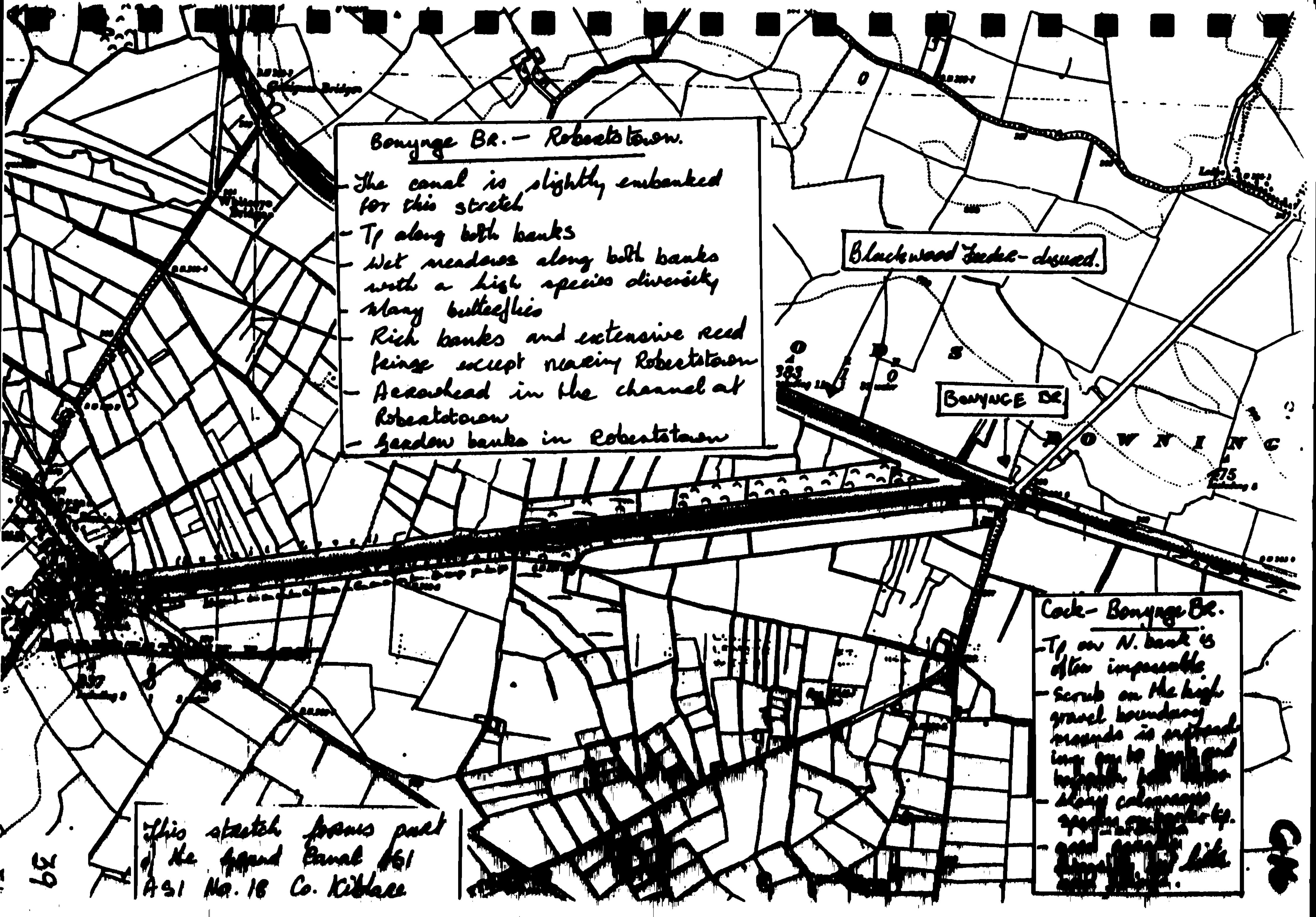
- Poor reed fringe in Robertstown.

OBJECTIVES:

- To maintain aquatic diversity, and to protect the wide and species-rich reed fringe.
- To develop meadow habitats along the towpath and verges.
- To maintain habitat diversity by protecting small habitats such as the patches of wet grassland at the toe of the embankments.

RECOMMENDATIONS:

- Continue to cut mechanically.
- Protect reed fringes in future canal operations.
- Protect wet meadows - no spoil to be deposited on them
- Cut banks, boundary verge and towpath once a year (August/September) to prevent encroaching by scrub and bramble species. Remove cuttings.
- Collect grass cuttings after each cutting in the village.


Bonynge Br. – Robertstown.
– The canal is slightly embanked for this stretch
– Tp along both banks
– Wet meadows along both banks with a high species diversity
– Many butterflies
– Rich banks and extensive reed fringe except nearing Robertstown
– Arrowhead in the channel at Robertstown
– Garden banks in Robertstown
Blackwood Feeder – disused.
BONYNGE BR.
Cock – Bonynge Br.
– Tp on N. bank is often impassable
This stretch forms part of the Grand Canal ASI
ASI No. 16 Co. Kildare

G16

MAIN LINE

KM SECTIONS 45-48 ROBERTSTOWN - BOND BRIDGE

GOOD FEATURES:

- This stretch forms part of an ASI on the Grand Canal (ASI No. 18 Co. Kildare of ecological importance and local interest).
- This stretch of channel is not sprayed but mechanically cut as far as Lock 19.
- Plants of calcareous and acidic conditions growing together along the bank.
- High diversity in the bank west of Lowtown.
- Good reed fringe along both banks just east of Bond Bridge.
- Species-rich boundary verge between Robertstown and Lowtown with a drain.

BAD FEATURES:

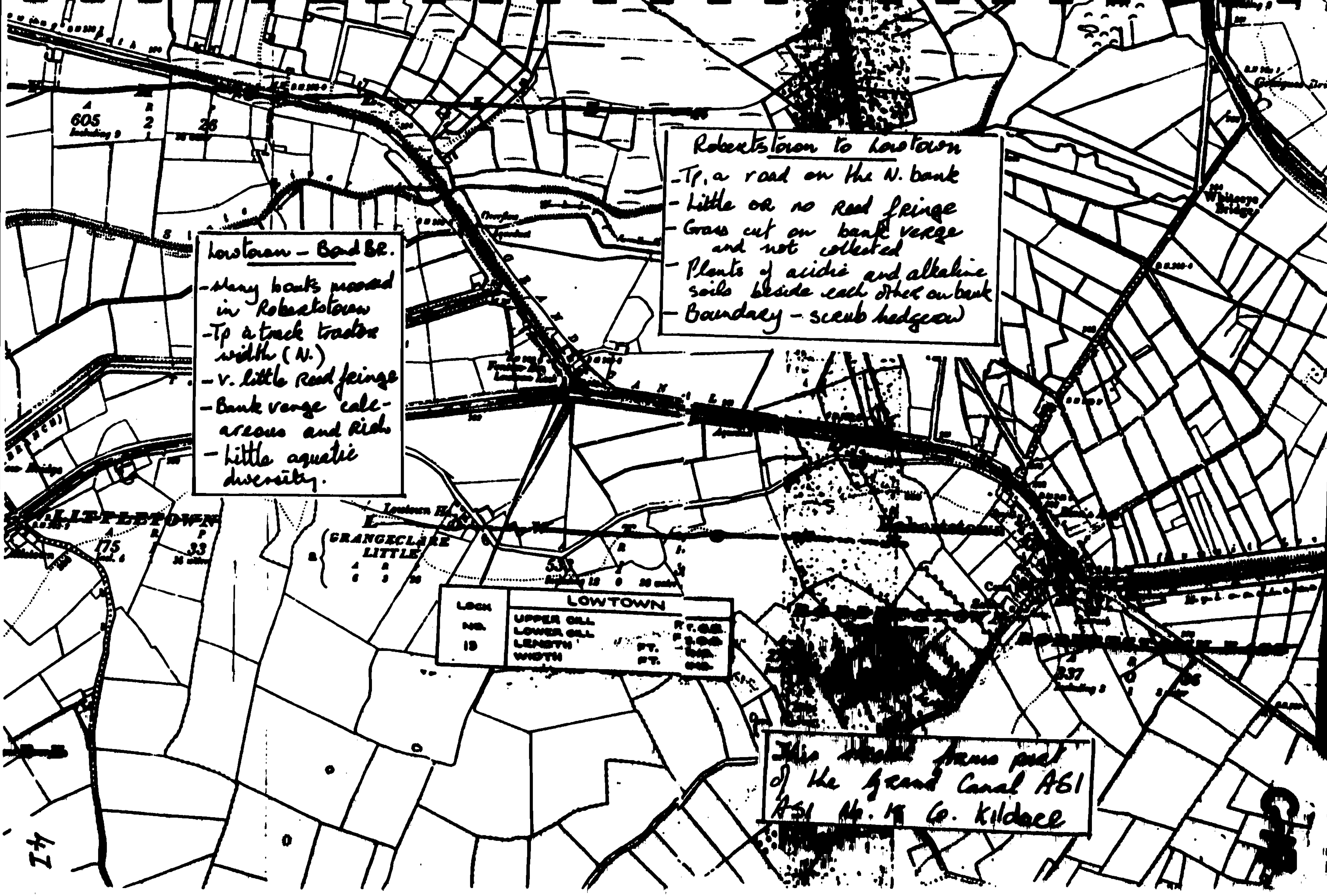
- Much oil/diesel in the water at Lowtown.
- Very few species in the channel.
- Grass verges cut too frequently and the cuttings not removed.
- Too many boats present.
- Very high levels of nitrates/nitrites in the water (Caffrey 1990).

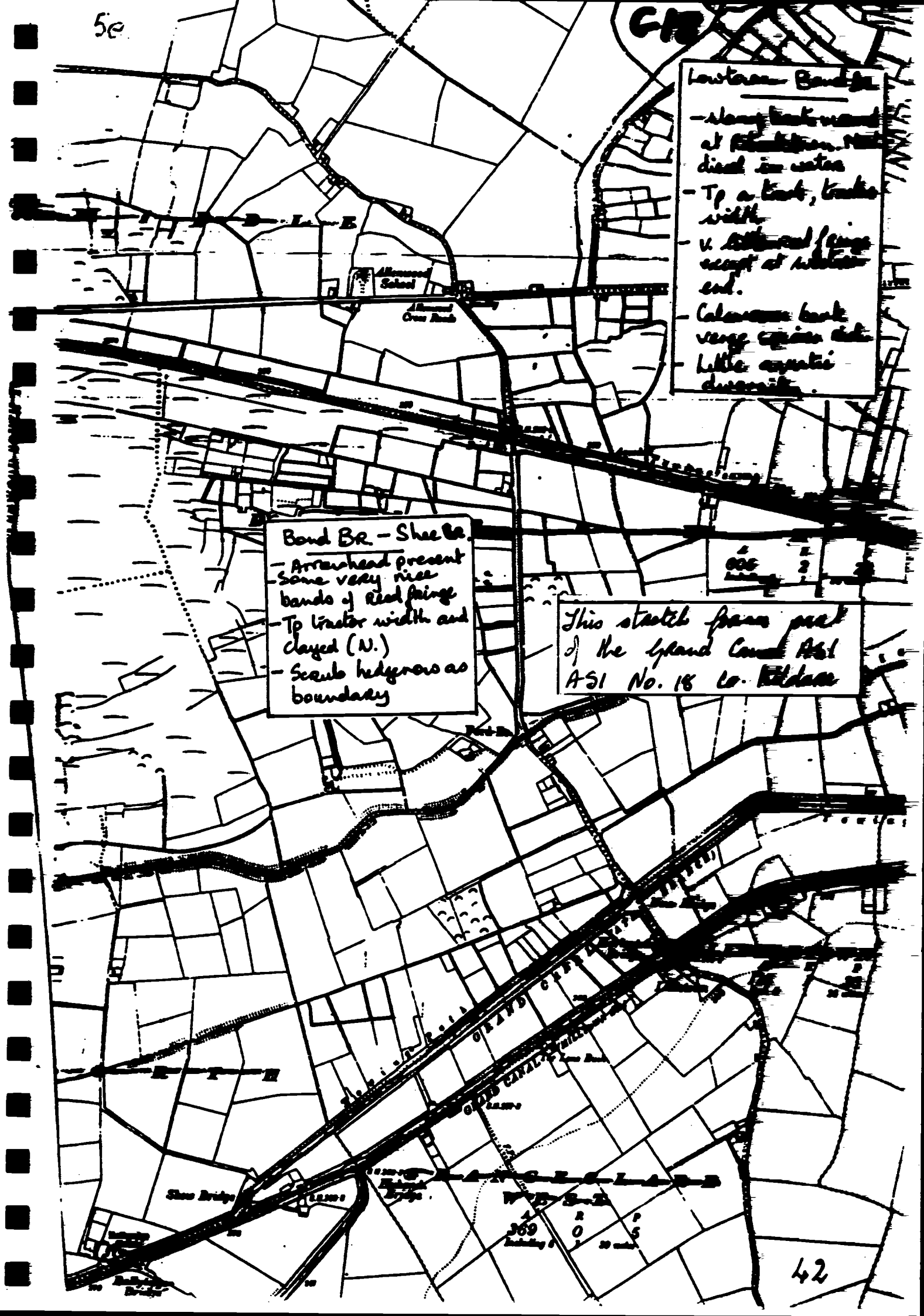
OBJECTIVES:

- To maintain the aquatic diversity and to encourage reed fringe growth along the entire length of channel.
- To promote the development of a calcareous meadow along the bank verge.
- To add to habitat diversity by maintaining the species rich hedgerow.

RECOMMENDATIONS:

- Continue to cut and remove surplus aquatic vegetation from the channel.
- Cut the vegetation of the bank and boundary verges just once a year at the end of the growing season and remove cuttings.
- Leave some saplings on the bank after each cutting.
- Protect the reed fringe just east of Bond Bridge.
- Remove unused boats from Robertstown and enforce mooring charges.
- Investigate the reason for the high nutrient status of the water.


Robertstown to Lowtown
-Tp, a road on the N. bank
- Little or no Reed fringe
- Grass cut on bank verge and not collected
- Plants of acidic and alkaline soils beside each other on bank
- Boundary - scrub hedgerow
Lowtown - Bond Br.
-Many banks mowed in Robertstown
-Tp a track tractor width (N.)
- v. little Reed fringe
- Bank verge calcareous and Rich
- Little aquatic diversity.
LOWTOWN
LOCK
NO.
13
UPPER SILL
LOWER SILL
LENGTH
WIDTH
GRANGECLARE
LITTLE
605
26
175
33
537
of the Grand Canal A61
Co. Kildare


5e
Bond Br. – Sheet 6
– Arrowhead present
– Some very nice bands of Reed fringe
– Tp linear width and clayed (N.)
– Scrub hedgerow as boundary
This stretch forms part of the Grand Canal ASI
ASI No. 18 Co. Kildare
Slow Bridge
369
42

KM SECTIONS 48-53 BOND BRIDGE - HAMILTON'S BRIDGE

GOOD FEATURES:

- All of this stretch forms part of an ASI on the Grand Canal (ASI No. 18 Co. Kildare of ecological importance and local interest).
- Very good reed fringe as far as Shee Bridge.
- Species-rich bank verge of tall herbaceous species west of Shee Bridge.
- Sagittaria sagittifolia and Chara species in the channel.
- Calcareous grassy towpath on much of the north bank.
- Species-rich hedgerow along the north bank. (This may not be part of O.P.W. property).

BAD FEATURES:

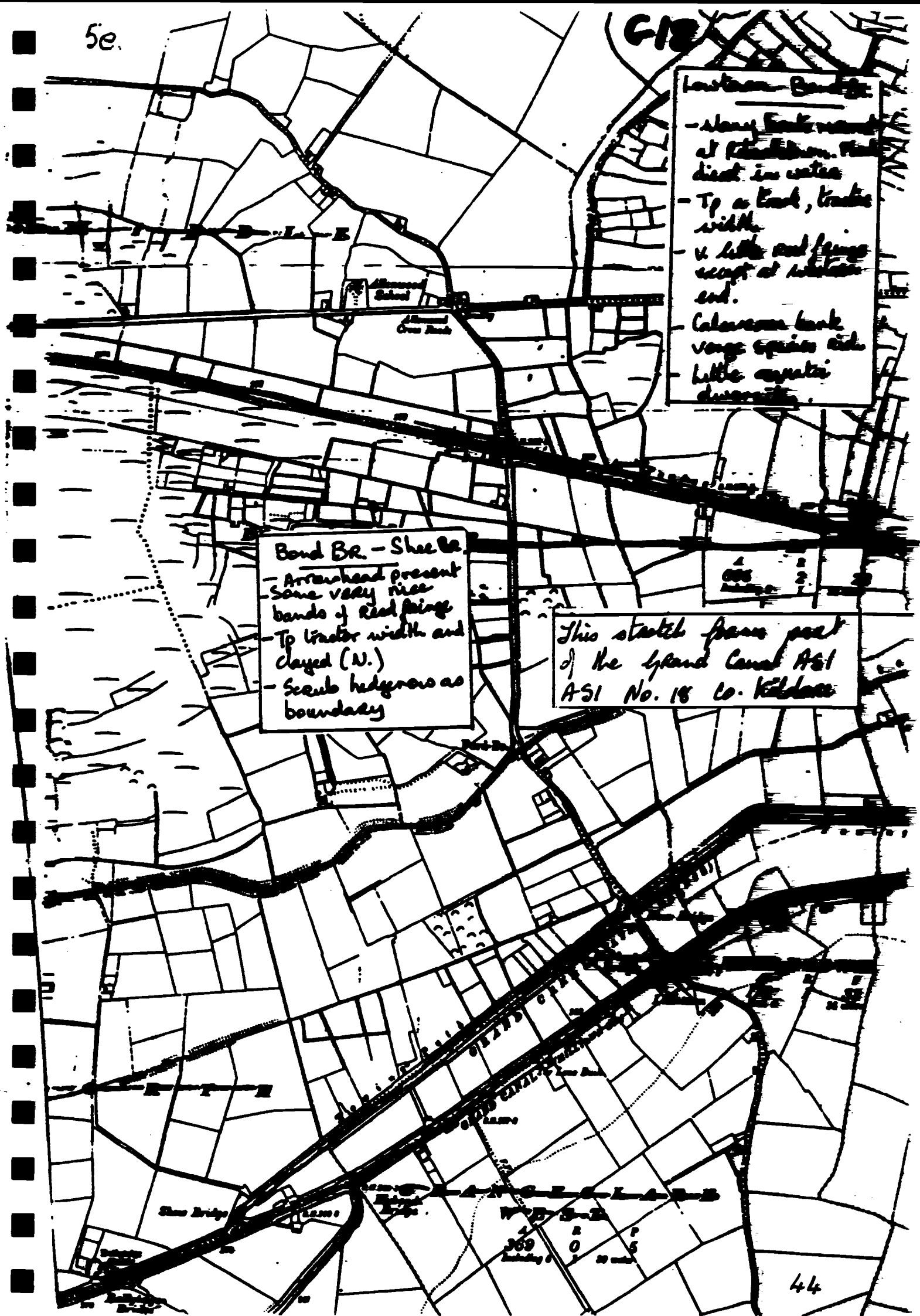
- Very little reed fringe west of Shee Bridge.
- Clayed banks not covered with topsoil east of Shee Bridge.
- White scum on the water in the vicinity of the aqueduct at The Doon.

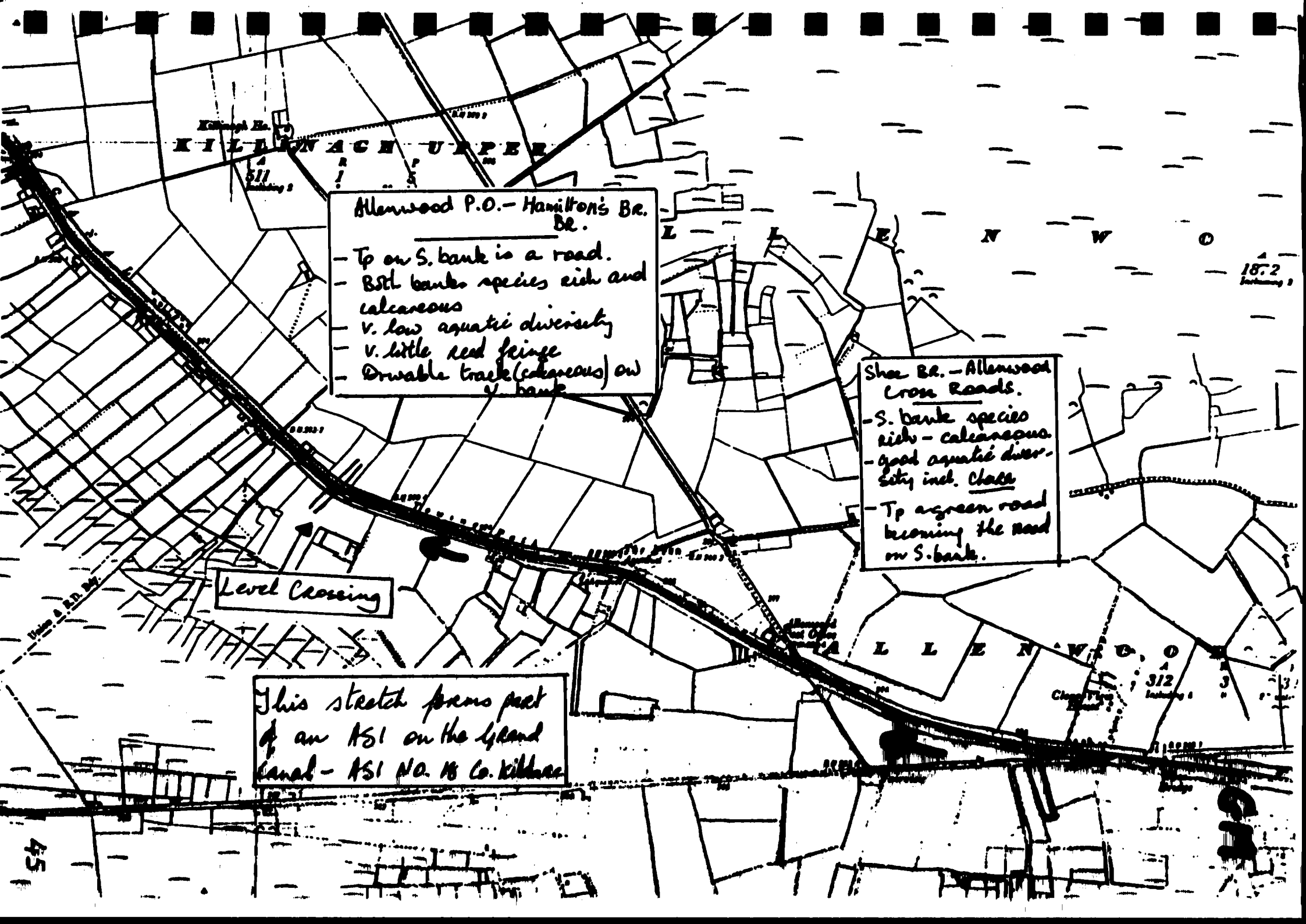
OBJECTIVES:

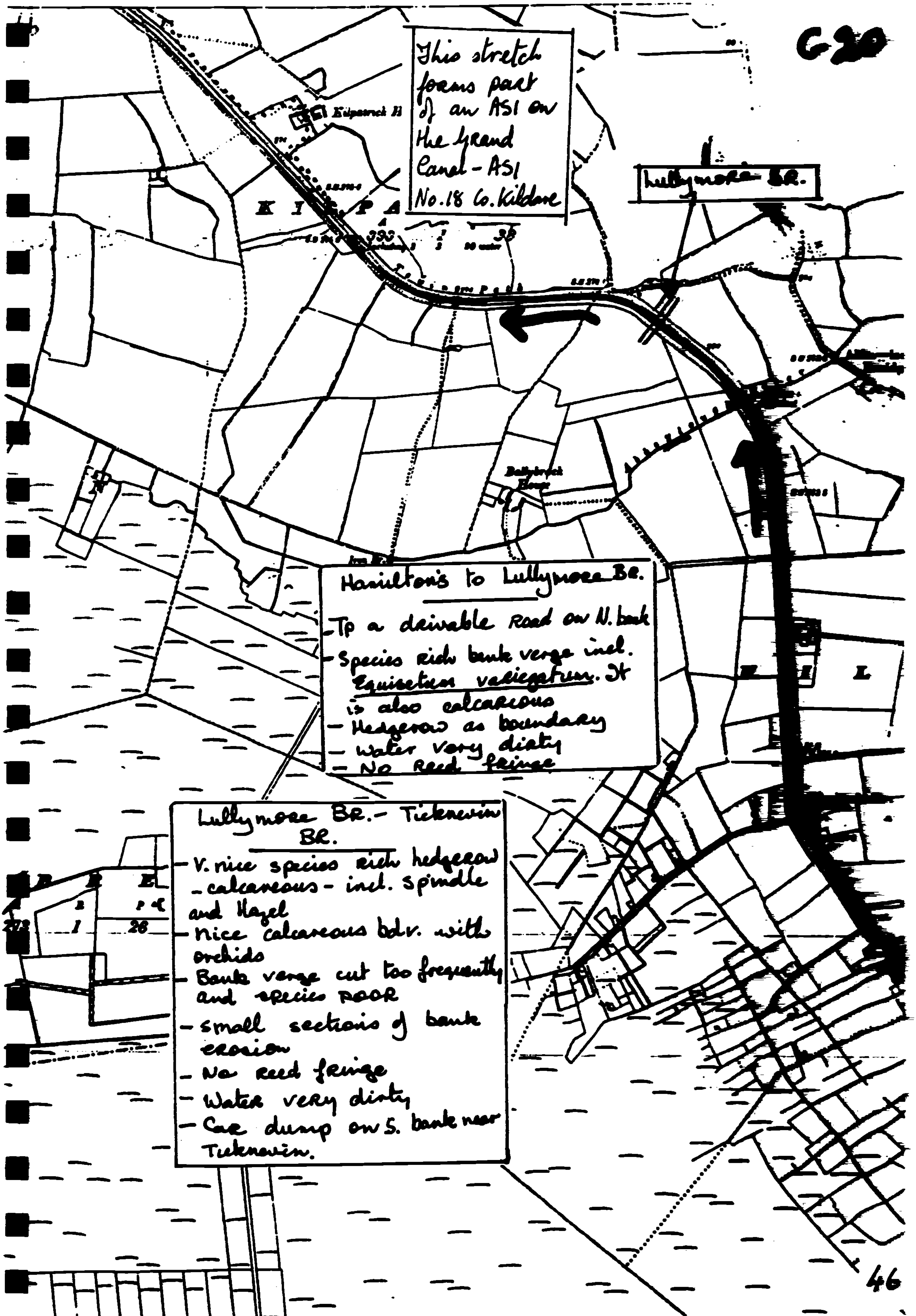
- To encourage the development of a reed fringe along the entire length of channel and to maintain aquatic diversity.
- To promote the development of a calcareous meadow along all of the north side and along the south bank.

RECOMMENDATIONS:

- Encourage the growth of reed fringes. It is proposed to use cutting trials along the channel at this point during 1992. This method is more environmentally friendly than spraying.
- Cover clayed banks with topsoil as this allows seeds to germinate quicker and so stabilize the banks further.
- Protect the calcareous grassy towpath of the north bank in future canal operations. Cut both banks once a year at the end of the growing season and remove cuttings. Leave some saplings on the bank after each cutting.
- Investigate the cause of the white scum. This stretch was found to have a relatively high nitrate/nitrite status (Caffrey, 1990).


5e.
C18
Bond Br. – Sheela
– Arrowhead present
– Some very nice bands of Reed fringe
– Tp Water width and clayed (N.)
– Scrub hedgerows as boundary
This stretch forms part of the Grand Canal ASI
ASI No. 18 Co. Kildare
44


KILLONAGH UPPER
Allenwood P.O. – Hamilton's Br.
Br.
– Tp on S. bank is a road.
– BSth banks species rich and calcareous
– V. low aquatic diversity
– V. little reed fringe
– Drivable track (calcareous) on S. bank
Shea Br. – Allenwood Cross Roads.
– S. bank species rich – calcareous.
– good aquatic diversity incl. Chara
– Tp a green road becoming the road on S. bank.
Level Crossing
This stretch forms part of an ASI on the Grand Canal – ASI No. 16 Co. Kildare
ALLENWOOD
511
312
18.2
54


This stretch forms part of an ASI on the Grand Canal - ASI No.18 Co. Kildare
Lullymore BR.
Hamilton's to Lullymore BR.
- Tp a drivable Road on N. bank
- Species rich bank verge incl. Equisetum variegatum. It is also calcareous
- Hedgerow as boundary
- water very dirty
- No Reed fringe
Lullymore BR. - Ticknevin BR.
- V. nice species rich hedgerow - calcareous - incl. spindle and Hazel
- Nice calcareous bdr. with orchids
- Bank verge cut too frequently and species POOR
- small sections of bank erosion
- No reed fringe
- Water very dirty
- Car dump on S. bank near Ticknevin.

KM SECTIONS 53-57 HAMILTON'S BRIDGE - LOCK 20

GOOD FEATURES:

- All of this stretch of canal in Co. Kildare forms part of the Grand Canal ASI (ASI No. 18 Co. Kildare of ecological importance and local interest).
- Species-rich calcareous banks though they are cut quite frequently.
- Species-rich calcareous boundary verge supporting many orchids (N).
- Species-rich hedge including much Hazel, tall Ash and Spindle-west of Lullymore Bridge (N).
- Very low nutrient status of water (Caffrey, 1990).
- Sagittaria sagittifolia present between Ticknevin Bridge and Lock 20.
- Clayed bank covered with peat at Lock 20 and supporting grass species.

BAD FEATURES:

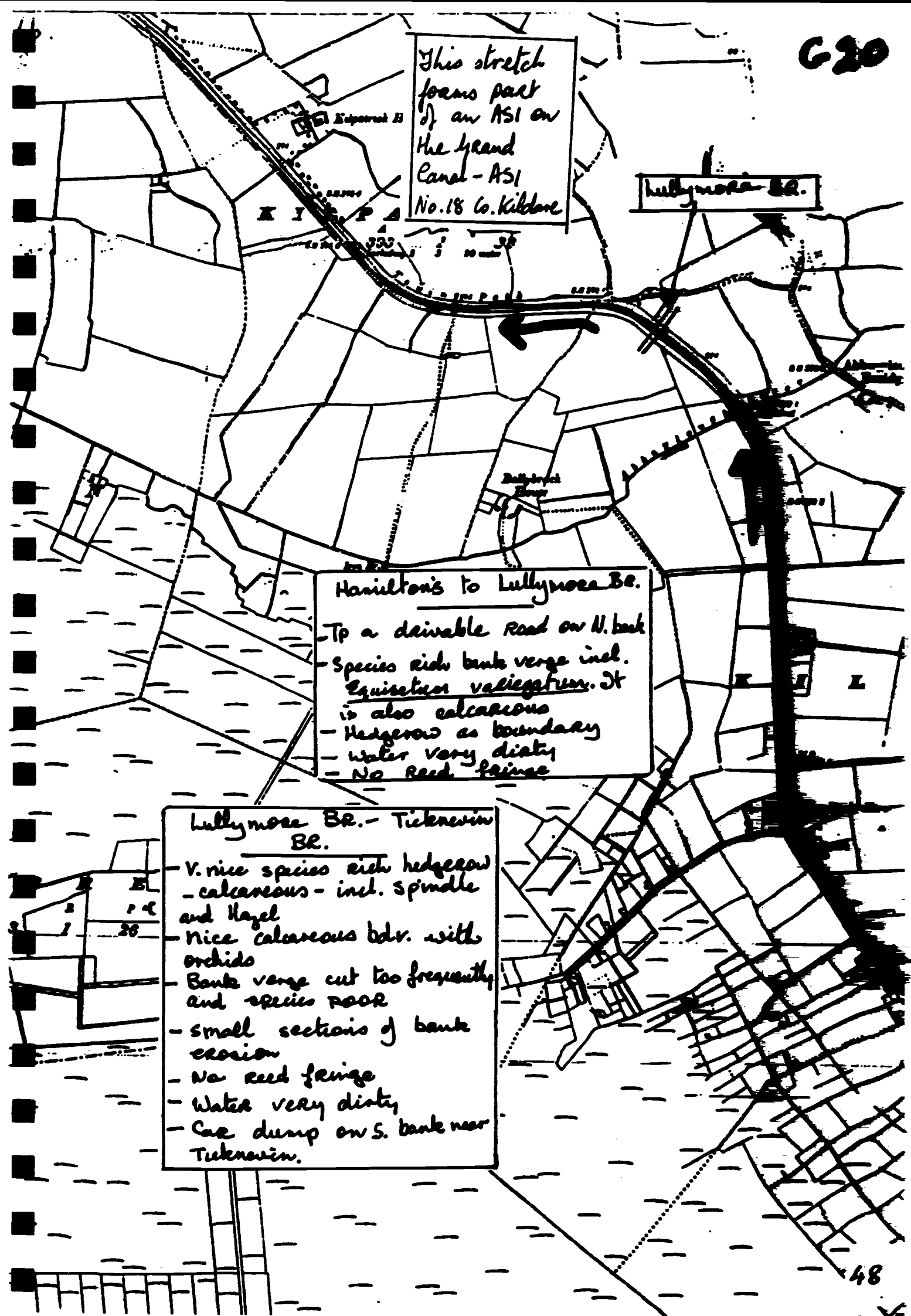
- Very little if any reed fringe along this stretch.
- Bank erosion west of Lullymore Bridge.
- Water a very greeny brown colour.
- Car dump on the south bank near Ticknevin Bridge, outside canal property.

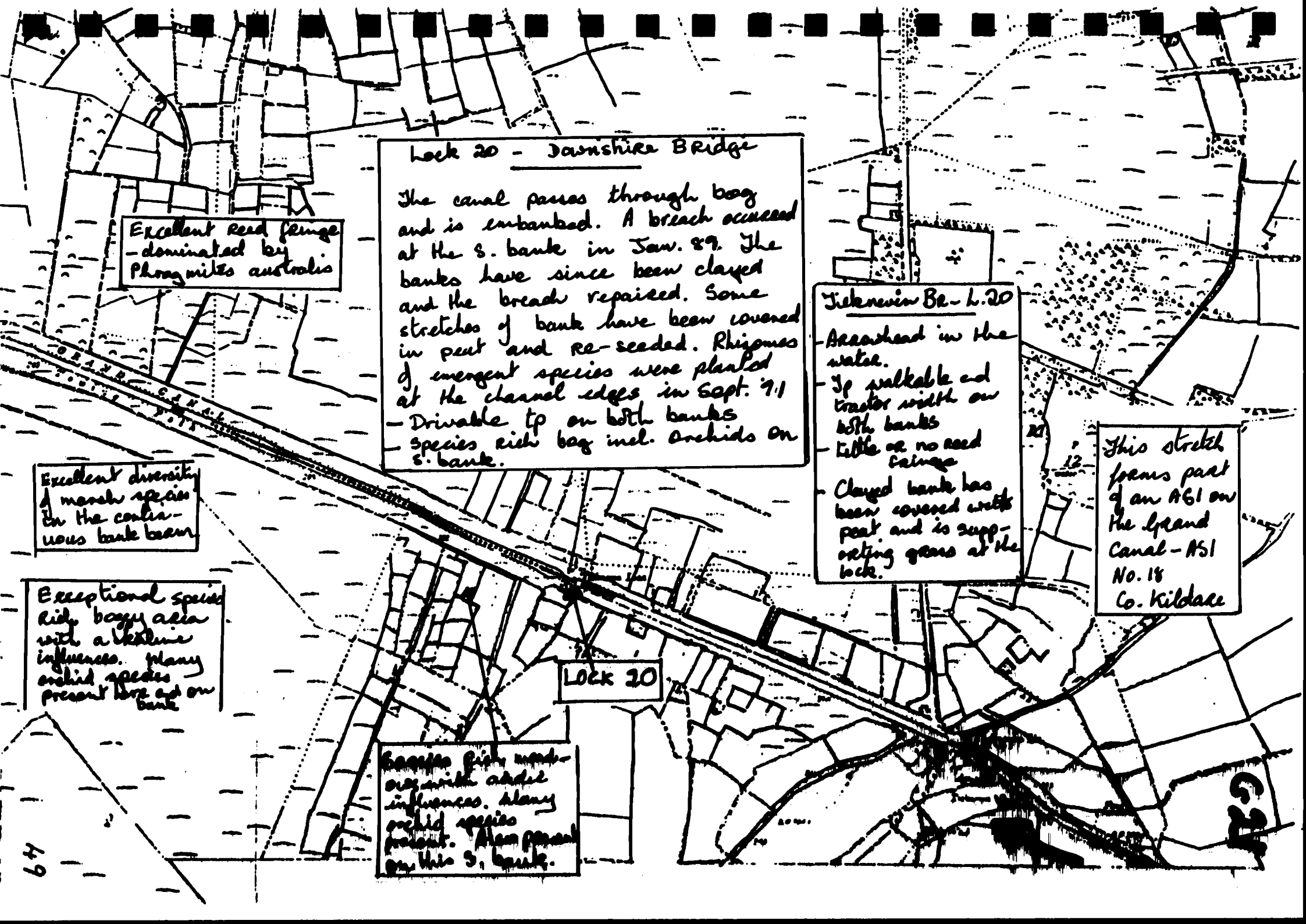
OBJECTIVES:

- To encourage the development of a reed fringe along the entire stretch of channel and to maintain aquatic diversity.
- To promote the development of a calcareous meadow along the bank and boundary verge of the north bank.
- To maintain habitat diversity by protecting the hedgerow.

RECOMMENDATIONS:

- Encourage reed fringe growth. It is proposed to use cutting trials along this stretch in June/July 1992 (Caffrey 1991).
- Plate 13 shows the difference in the amount of calcareous species in the uncut boundary and cut bank verge. Cut both on a yearly basis at the end of the growing season and not as frequently as during 1991. This is a rural stretch of canal and should not be over-maintained.
- Protect the hedgerow on the north bank.
- If claying of the banks is to be carried out, topsoil should be put on top in order to encourage germination which in turn increases stabilization.
- Screen the car dump site using native species such as Hawthorn, Blackthorn and Ash.


This stretch forms part of an ASI on the Grand Canal - ASI No. 18 Co. Kildare
Lullymore Br.
Hamilton's to Lullymore Br.
- Tp a drivable Road on N. bank
- Species rich bank verge incl. Equisetum variegatum. It is also calcareous
- Hedgerow as boundary
- Water very dirty
- No Reed fringe
Lullymore Br. - Ticknevin Br.
- V. nice species rich hedgerow - calcareous - incl. spindle and Hazel
- Nice calcareous bdr. with orchids
- Bank verge cut too frequently and species POOR
- small sections of bank erosion
- No reed fringe
- Water very dirty
- Car dump on S. bank near Ticknevin.


Lock 20 - Jamestown Bridge
The canal passes through bog and is embanked. A breach occurred at the S. bank in Jan. 89. The banks have since been clayed and the breach repaired. Some stretches of bank have been covered in peat and re-seeded. Rhizomes of emergent species were planted at the channel edges in Sept. 91
- Drivable tp on both banks
- species rich bog incl. orchids on S. bank.
Excellent reed fringe - dominated by Phragmites australis
GRAND CANAL
Excellent diversity of marsh species in the continuous bank beam
Exceptional species Rich boggy area with a lakeline influences. Many orchid species present here and on bank
LOCK 20
Species Rich woodland with alkaline influences. Many orchid species present. Also present on this S. bank.
Tickenevin Br - L.20
- Arrowhead in the water.
- Tp walkable and towpath width on both banks
- Little or no reed fringe
- Clayed bank has been covered with peat and is supporting grass at the lock.
This stretch forms part of an ASI on the Grand Canal - ASI No. 18 Co. Kildare
64

KM SECTIONS 57-64 LOCK 20 - DOWNSHIRE BRIDGE

GOOD FEATURES:

- The Grand Canal in Co. Kildare forms part of an ASI (ASI No. 18 Co. Kildare of ecological importance and local interest). All of the canal in Co. Offaly is not designated an ASI.
- Exceedingly species-rich banks and boundary verges for 2 kilometres west of Lock 20 (S). There are acidic meadows with many species typical of bogs and also calcareous banks. Some bog sections present (S).
- Very good reed fringe as far as Blundell Aqueduct but especially just west of Lock 20.
- Species-rich berms along south bank as far as Blundell Aquaduct.
- Some bank sections west of Blundell Aqueduct covered with peat. Stretches of this which were not reseeded are nonetheless now supporting plants.
- Birch woodland in the boundary between Lock 20 and Blundell Aqueduct.

BAD FEATURES:

- Some stretches of the banks have been clayed but not covered with topsoil. Already parts of these stretches are eroding.
- Some stretches of bank have been cut and the vegetation not collected.
- Water a greeny/white colour west of Blundell Aqueduct.
- Much of the boundary verge west of aqueduct is greatly disturbed owing to the restoration work which has been carried out.
- Few species present in the stretch west of the aqueduct. This is to be expected as restoration was only completed in 1990.
- A large area to the east of the aqueduct on the south bank is devoid of vegetation and resembles a desert. Dust from the clay present blows around while the clay itself provides a hard crust.

OBJECTIVES:

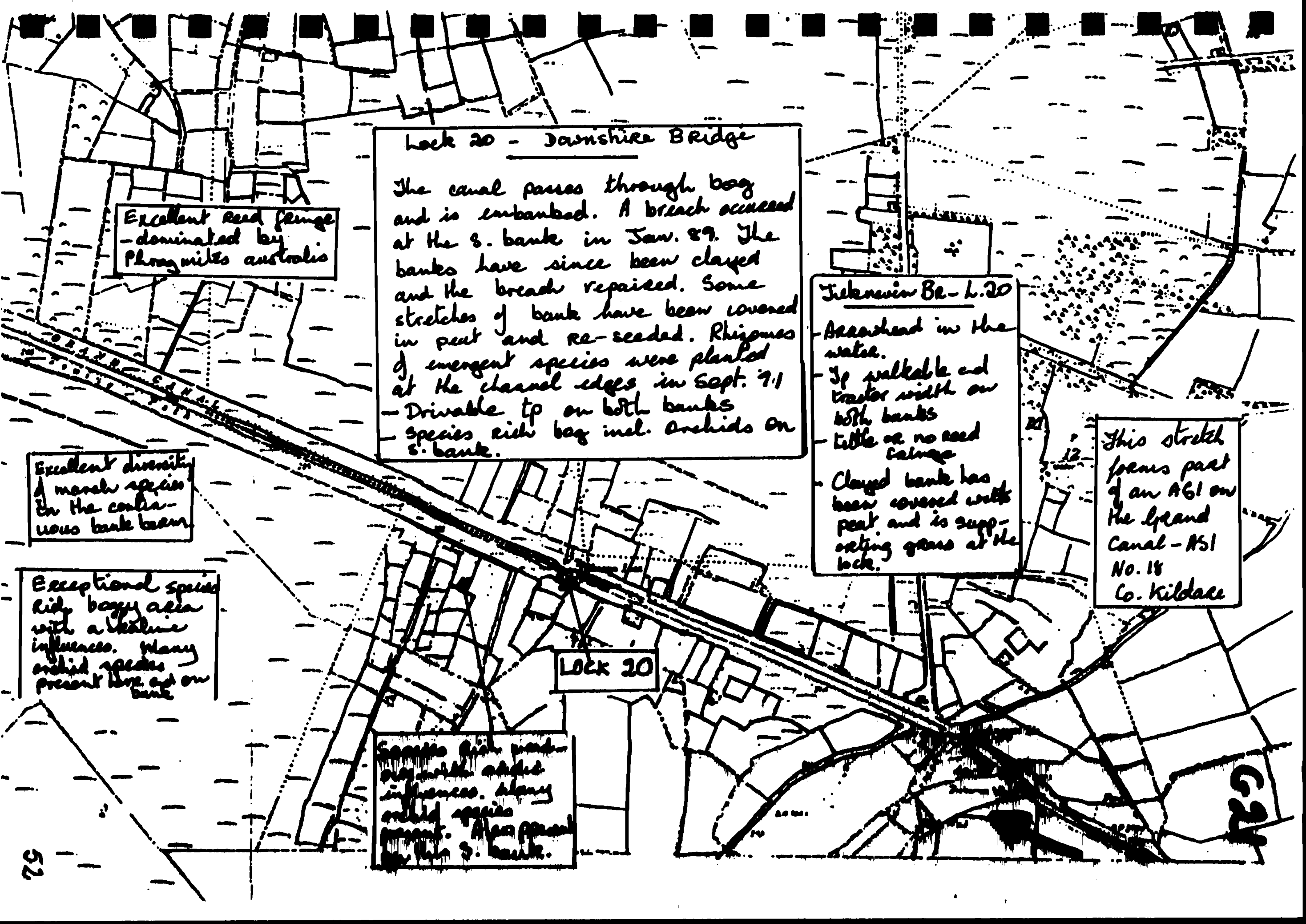
- To encourage the development of a reed fringe along this entire stretch of channel and to maintain habitat diversity.
- To maintain habitat diversity.
- To retain the different meadow types present by cutting of the grasslands once a year (August-September) and removing the cuttings.
- To allow natural species colonise restored banks.

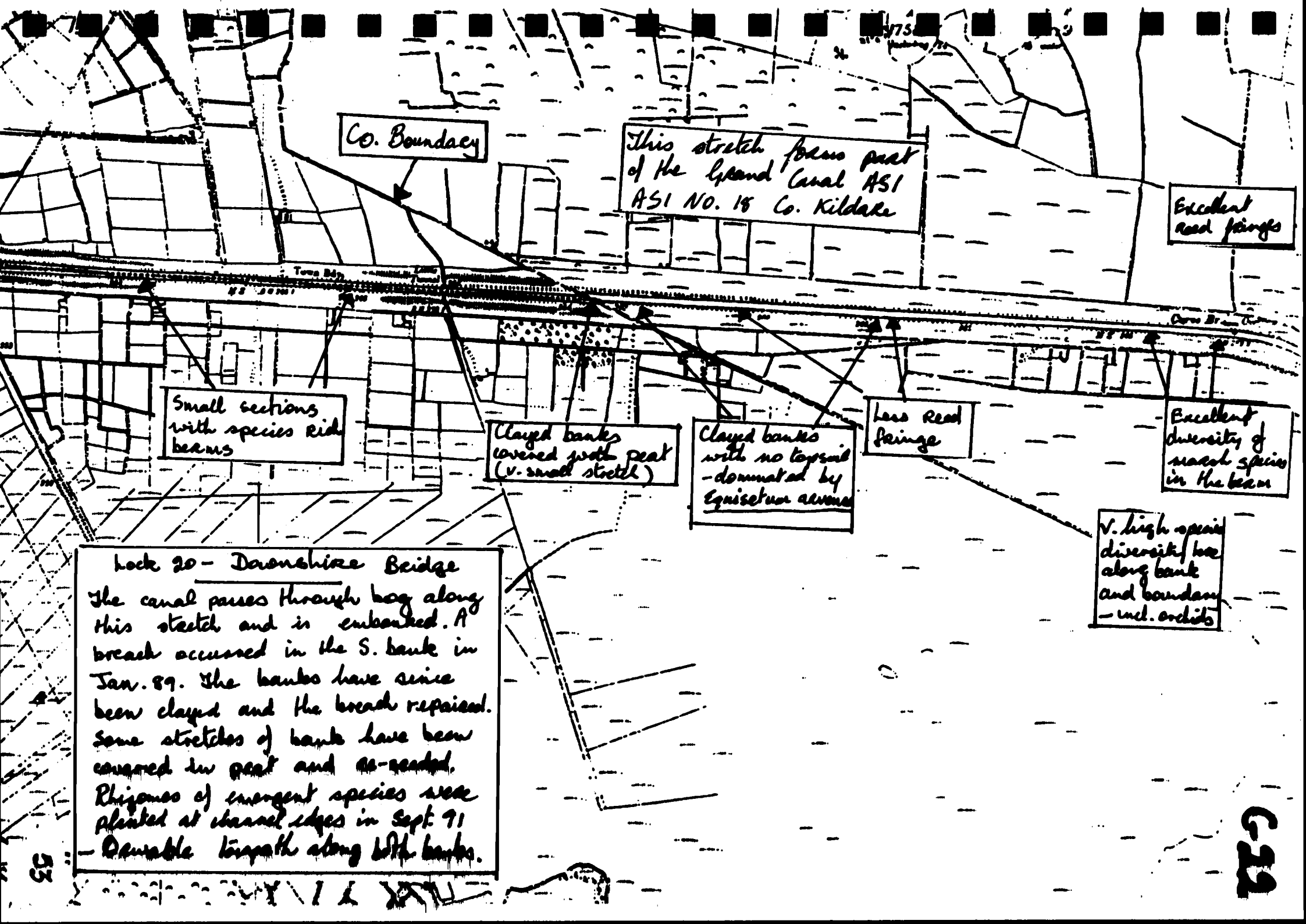
RECOMMENDATIONS:

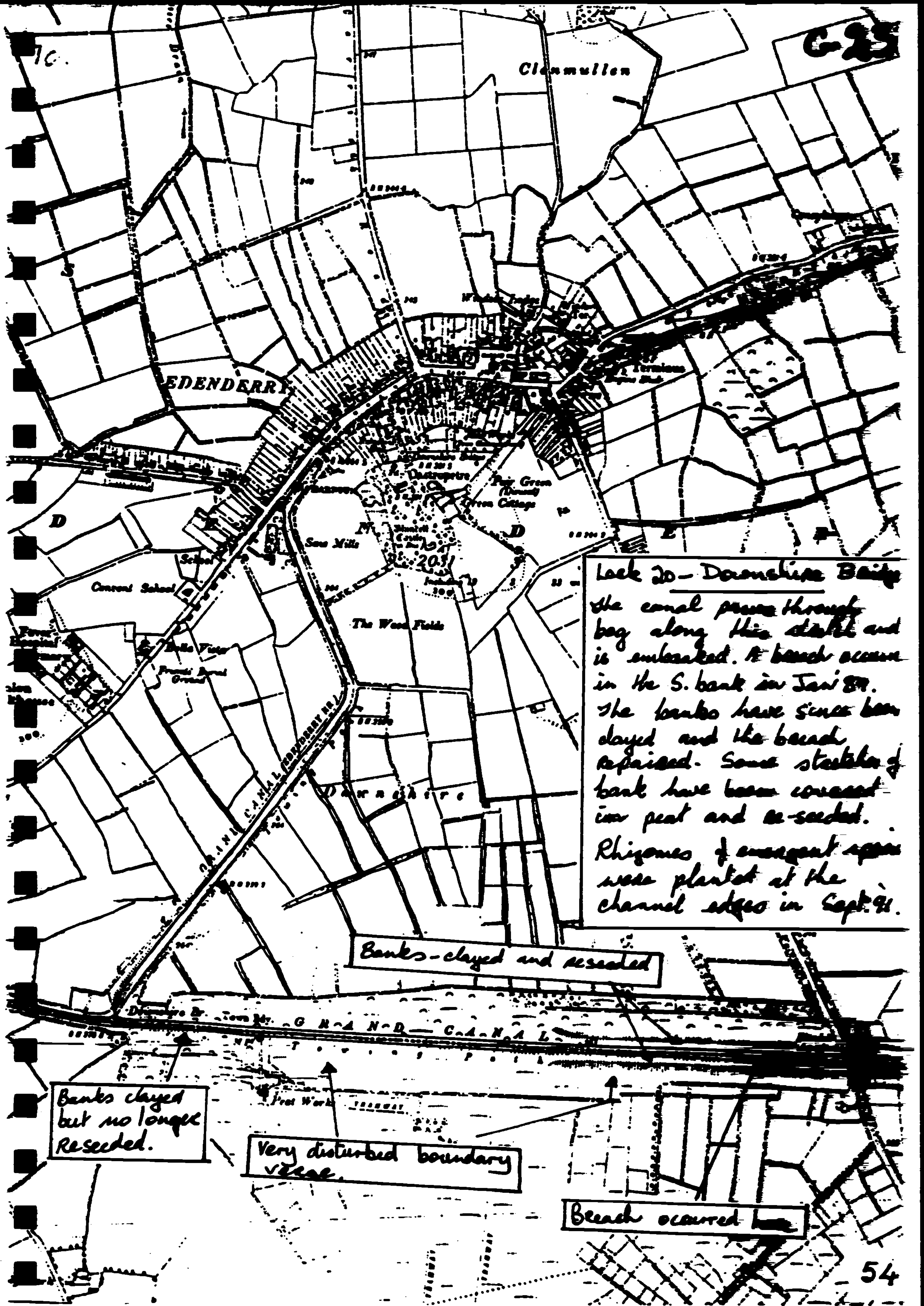
- Encourage a reed fringe to develop west of Blundell aqueduct (see note at end) and do not spray. It is proposed to leave the stretch between Blundell to Colgan's Bridge free from herbicide and mechanical cutting in 1992, (Caffrey, 1991)

- Protect the calcareous banks, the acidic meadows, the bog, the calcareous meadows, the wood, the reed fringes and the berms as far as the aqueduct.
- Cut the grasslands of bank and boundary verge once a year at the end of the growing season.
- Cover the clayed banks with topsoil or peat in order to facilitate germination and stabilize the banks further.
- Banks etc. should not be seeded with competitive species such as Lolium species. These species prevent other less competitive species growing and so reduce diversity.
- Much of the boundary verge area in the vicinity of the aqueduct is disturbed and greatly compacted due to pressure from heavy machinery. Plants cannot grow on compacted soil. It will be necessary to break up the soil crust early in the year to allow some of the seeds to germinate. Alternatively, a layer of topsoil will facilitate germination and growth while eliminating the dust.

NOTE:
Rhizomes of emergent species were planted along the edge of the channel in September '91 in an effort to encourage the growth of a reed fringe. The fringe acts as a buffer from wave motion and prevents/reduces bank erosion. It is too early yet to report on the growth progress.


Lock 20 - Downshire Bridge
The canal passes through bog and is embanked. A breach occurred at the S. bank in Jan. 89. The banks have since been clayed and the breach repaired. Some stretches of bank have been covered in peat and re-seeded. Rhizomes of emergent species were planted at the channel edges in Sept. 91
- Drivable tp on both banks
- species rich bog incl. orchids on S. bank.
Excellent reed fringe - dominated by Phragmites australis
Excellent diversity of marsh species on the continuous bank berm
Exceptional species rich boggy area with alkaline influences. Many orchid species present here and on bank
influences. Many
orchid species
S. bank.
LOCK 20
Ticknevin Br - L.20
- Arrowhead in the water.
- Tp walkable and tractor width on both banks
- Little or no reed fringe
- Clayed bank has been covered with peat and is supporting grass at the lock.
This stretch forms part of an A61 on the Grand Canal - NS1 No. 18 Co. Kildare
G21


Co. Boundary
This stretch forms part of the Grand Canal ASI ASI NO. 18 Co. Kildare
Excellent reed fringe
Small sections with species rich beams
Clayed banks covered with peat (v. small stretch)
Clayed banks with no topsoil - dominated by Equisetum arvense
Less Reed fringe
Excellent diversity of marsh species in the beam
V. high species diversity bee along bank and boundary - incl. orchids
Lock 20 - Devonshire Bridge
The canal passes through bog along this stretch and is embanked. A breach occurred in the S. bank in Jan. 89. The banks have since been clayed and the breach repaired. Some stretches of bank have been covered in peat and re-seeded. Rhizomes of emergent species were planted at channel edges in Sept. 91 - Durable towpath along both banks.


G25
Clonmullen
EDENDERRY
Convent School
School
Saw Mills
The Wood Fields
Downshire
GRAND CANAL
Towing Path
Peat Works
Lock 20 – Downshire Bridge
The canal passes through
bog along this stretch and
is embanked. A breach occurred
in the S. bank in Jan '89.
The banks have since been
clayed and the breach
repaired. Some stretches of
bank have been covered
in peat and re-seeded.
Rhizomes of emergent species
were planted at the
channel edges in Sept. 91.
Banks-clayed and reseeded
Banks clayed
but no longer
Reseeded.
Very disturbed boundary
verge.
Breach occurred

KM SECTION 64-65 DOWNSHIRE-RATHMORE BRIDGES

GOOD FEATURES:

- Good hedgerow in the south boundary between George's and Rathmore Bridges including Spindle.
- Calcareous species-rich grassland on the towpath and banks between Georges and Rathmore Bridges. It has not been cut. There are many orchids present.

BAD FEATURES:

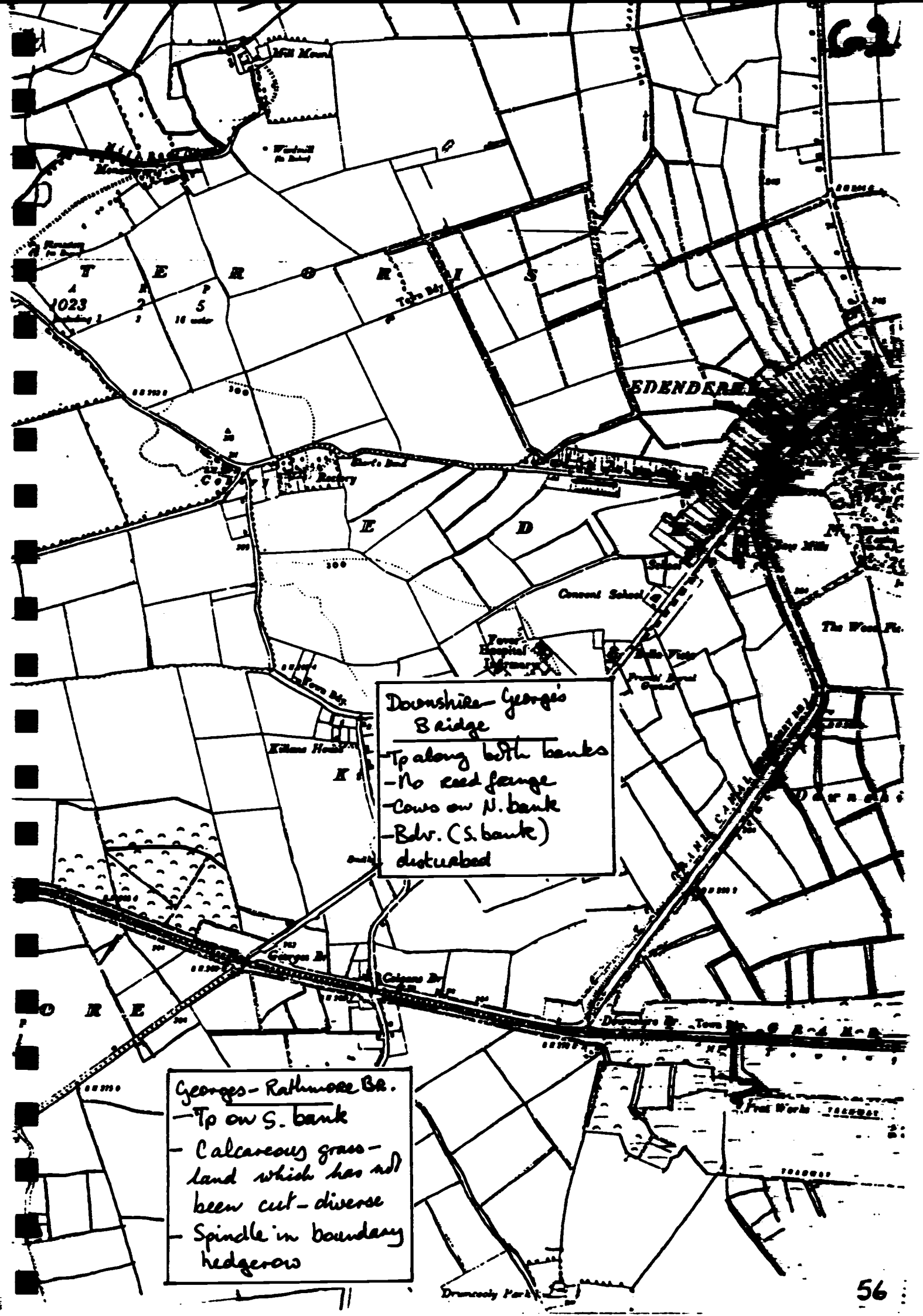
- Little or no reed fringe.
- Clayed banks especially on the north bank with no topsoil. The clay has solidified and compacted making it most difficult for seeds to germinate.
- Disturbed towpath and bank (S.) between Colgan's and George's Bridges.
- Water is still milky green.

OBJECTIVES:

- To encourage the development of a reed fringe along this entire stretch of channel and to maintain aquatic habitat diversity.
- To maintain habitat diversity.
- Promote the development of a calcareous meadow.

RECOMMENDATIONS:

- As there is so little aquatic vegetation or reed fringe, this stretch should not be treated with herbicides in 1992.
- Cut the calcareous banks and towpaths once a year at the end of the growing season. Remove cuttings.
- Cut the bank and boundary verge east of George's Bridge twice in 1992 and thereafter every year at the end of the growing season.
- Protect the hedgerow.
- Cover the clayed banks with topsoil to encourage germination and bank stabilization.


Downshire–Georges Baidge
–Tp along both banks
–No reed fringe
–Cows on N. bank
–Bdy. (S. bank) disturbed
Georges–Rathmore Br.
–Tp on S. bank
– Calcareous grass–land which has not been cut–diverse
– Spindle in boundary hedgerow

MAIN LINE

KM SECTIONS 65-69 RATHMORE BRIDGE - TRIMBLESTOWN BRIDGE

GOOD FEATURES:

- Very nice boundary hedgerow along both banks. Spindle occurs quite frequently. Plate 21.
- Species-rich boundary verge which is not cut frequently during the season (N).

BAD FEATURES:

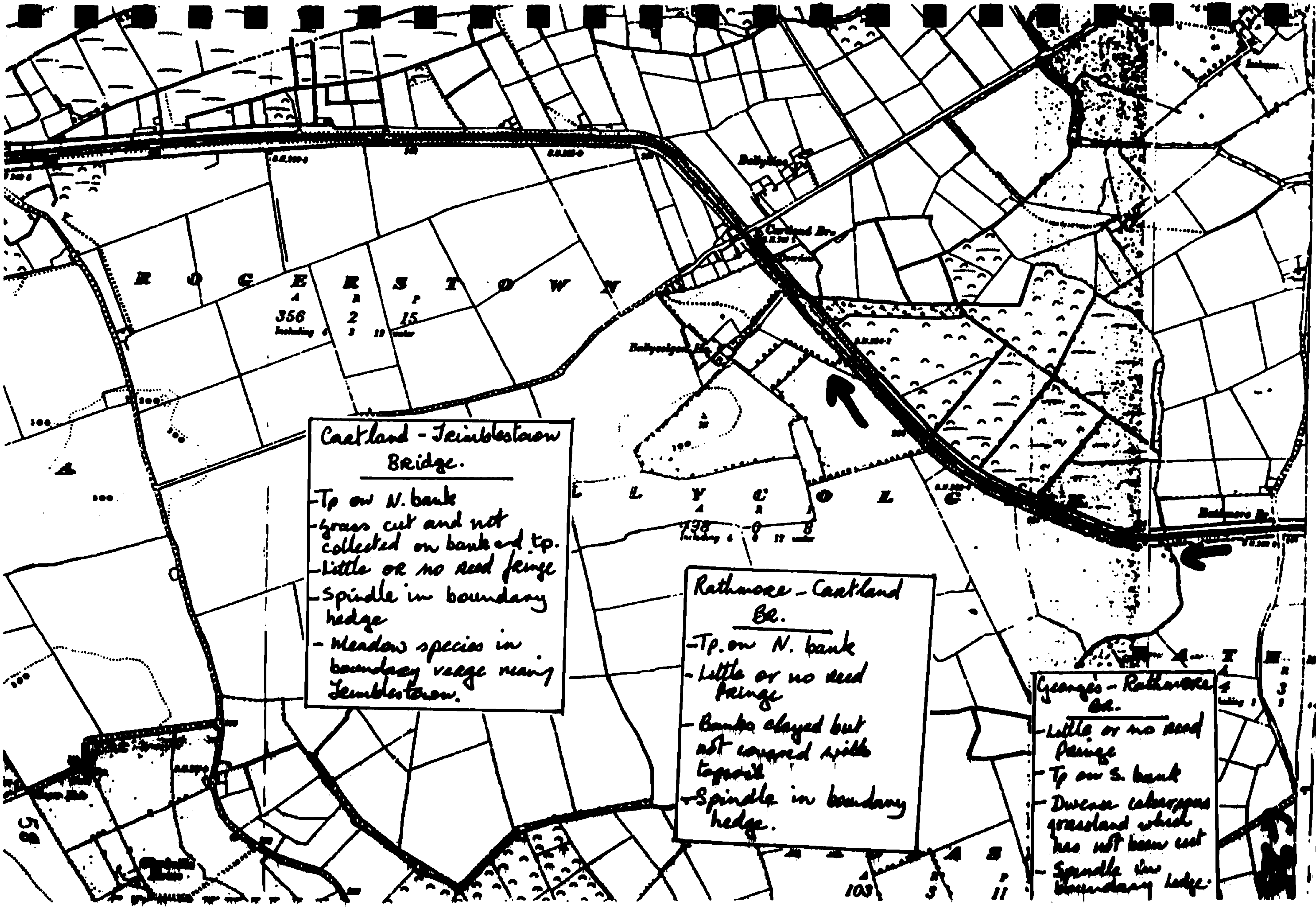
- There was very little reed fringe or aquatic species recorded during the survey. The water was very disturbed as a result of ongoing maintenance of eroding banks.
- A wide band 2m is frequently cut along both banks. There is no need for this. If a path along the rural canal is to be created, 1m wide will be sufficient.
- Grass is cut too frequently and not collected. Leaving the dead grass acts as source of nutrients to the soil and stimulates the growth of competitive species.
- Clayed banks on both sides are not covered with topsoil. The clay hardens making it very difficult for seeds to germinate. The lack of plants destabilizes the banks further.

OBJECTIVES:

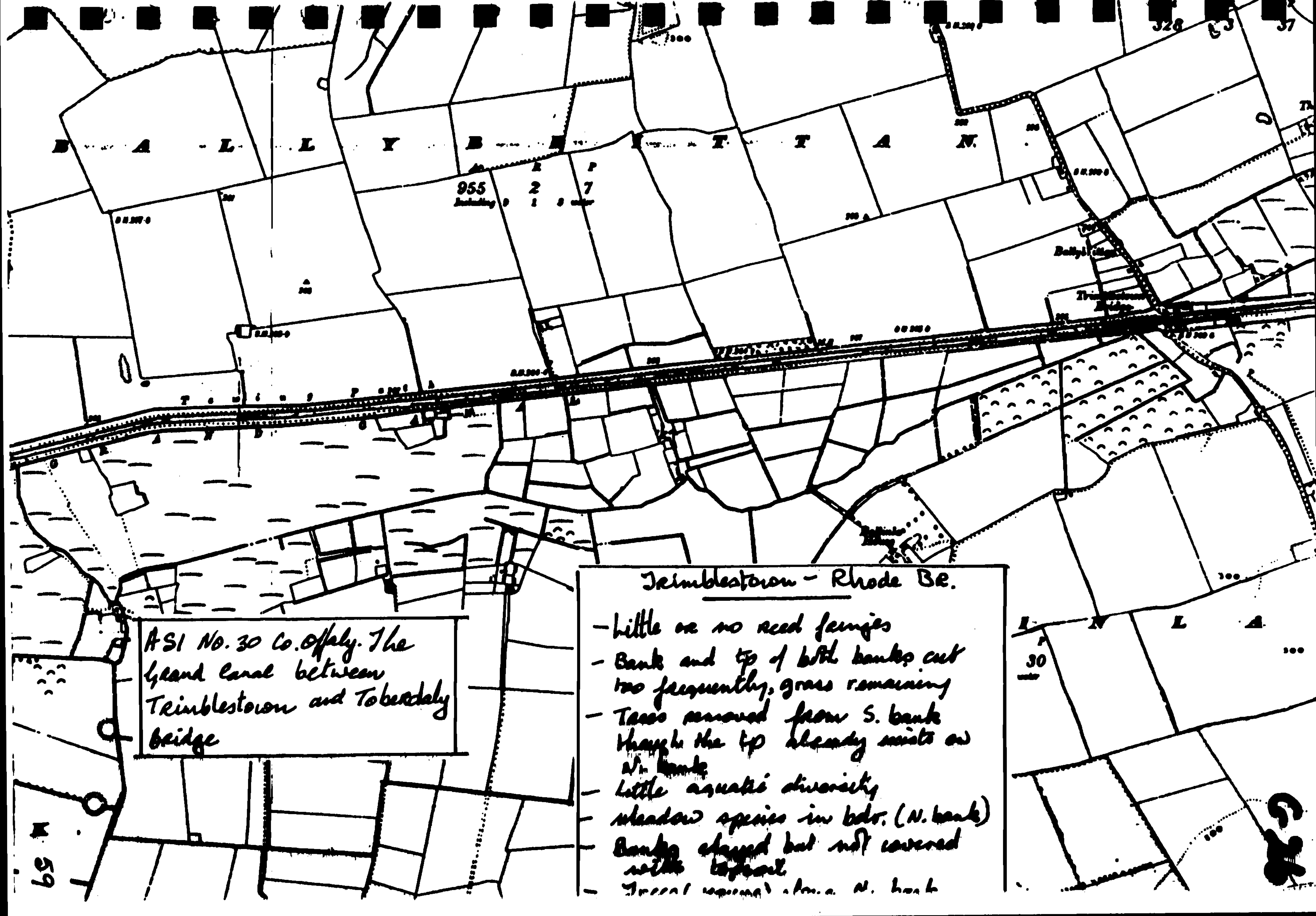
- To encourage the development of a reed fringe along this entire stretch of channel and to promote aquatic diversity.
- To increase habitat diversity by promoting the development of scrub and meadow and protecting the hedges.

RECOMMENDATIONS:

- Allow this stretch to recover and to support aquatic species and reed fringe. It is proposed to treat this stretch with Casoron in 1992. Very few aquatics were recorded there in July 1991. Herbicides should not be applied before the aquatic vegetation recovers.
- Reduce the width of the grass cutting along both banks to 1m. Cut twice a year for access. The rest to be cut once at the end of the season to allow meadow to develop.
- Collect all cuttings.
- Protect the boundary hedge and boundary verges. These can be cut at the end of the growing season. Where the boundary verge is wider than is necessary for machinery access, scrub should be allowed to develop.
- Clayed banks to be covered with topsoil in order to facilitate the growth of vegetation and so stabilize the banks further.



ROGERSTOWN
356 2 15
LLYCOLC
Castland Br.
Rathmore Br.
Castland - Trimblestown Bridge.
-Tp on N. bank
-grass cut and not collected on bank and tp.
-Little or no reed fringe
-Spindle in boundary hedge
- Meadow species in boundary verge nearing Trimblestown.
Rathmore - Castland Br.
-Tp. on N. bank
-Little or no reed fringe
-Banks clayed but not covered with topsoil
-Spindle in boundary hedge.
Georges - Rathmore Br.
-Little or no reed fringe
-Tp on S. bank
-Diverse calcareous grassland which has not been cut
-Spindle in boundary hedge.


BALLYBRITTAN
955
ASI No. 30 Co. Offaly. The Grand Canal between Trimblestown and Toberdaly bridge
Trimblestown - Rhode Br.
- Little or no reed fringes
- Bank and top of both banks cut too frequently, grass remaining
- Trees removed from S. bank though the top already exists on N. bank
- Little aquatic diversity
- Meadow species in bdr. (N. bank)
- Banks shaped but not covered with topsoil
59

KM SECTIONS 69-74 TRIMBLESTOWN - TOBERDALY BRIDGE

GOOD FEATURES:

- All of this stretch is an ASI on the Grand Canal in Co. Offaly (ASI No. 30 Co. Offaly of ecological interest and local interest).
- Species-rich boundary verge along both banks, including orchids on north bank.
- Saplings along bank.
- Boundary drain along north bank.
- Plants of calcareous and acidic conditions growing in the same area.
- Woodland along some of the south bank.
- The towpath west of Rhode bridge along the north bank was not cut.
- Good reed fringe along the south bank between Rhode and Toberdaly Bridge.

BAD FEATURES:

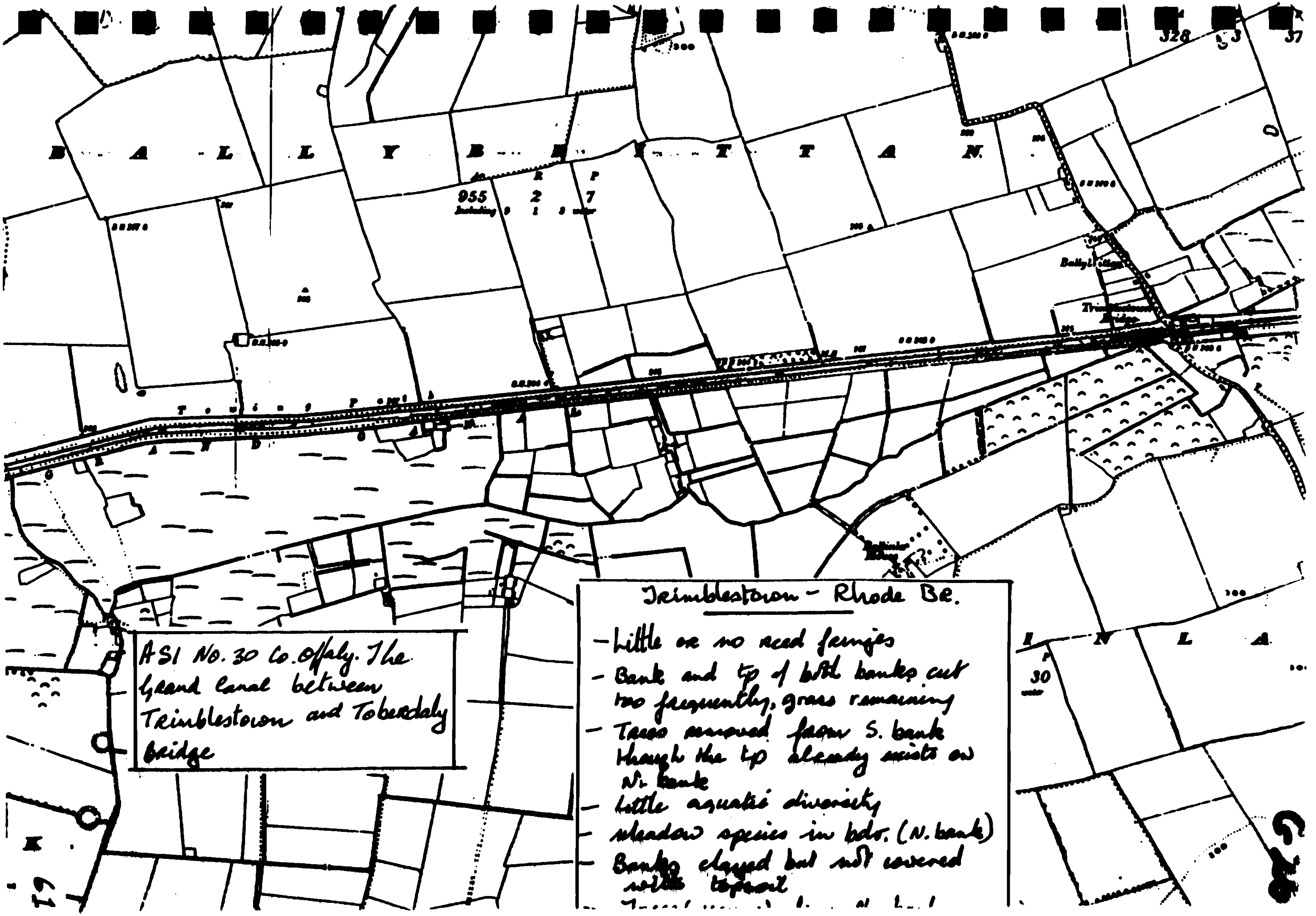
- Little or no reed fringe.
- Exceptionally poor number of aquatic species present.
- Towpath and banks cut too frequently along both sides. It is not necessary to have a grassy track >2m. for pedestrians especially as the canal at this point is very rural. Many trees were removed in order to create this linear lawn. If a path has to be cleared for machinery access along both banks it should not be necessary to cut the grass as frequently afterwards as is now being carried out. Plate 22.
- Clayed banks with no topsoil and as a result, very little vegetation taking root.
- High level of nutrients in the water (Caffrey 1990).

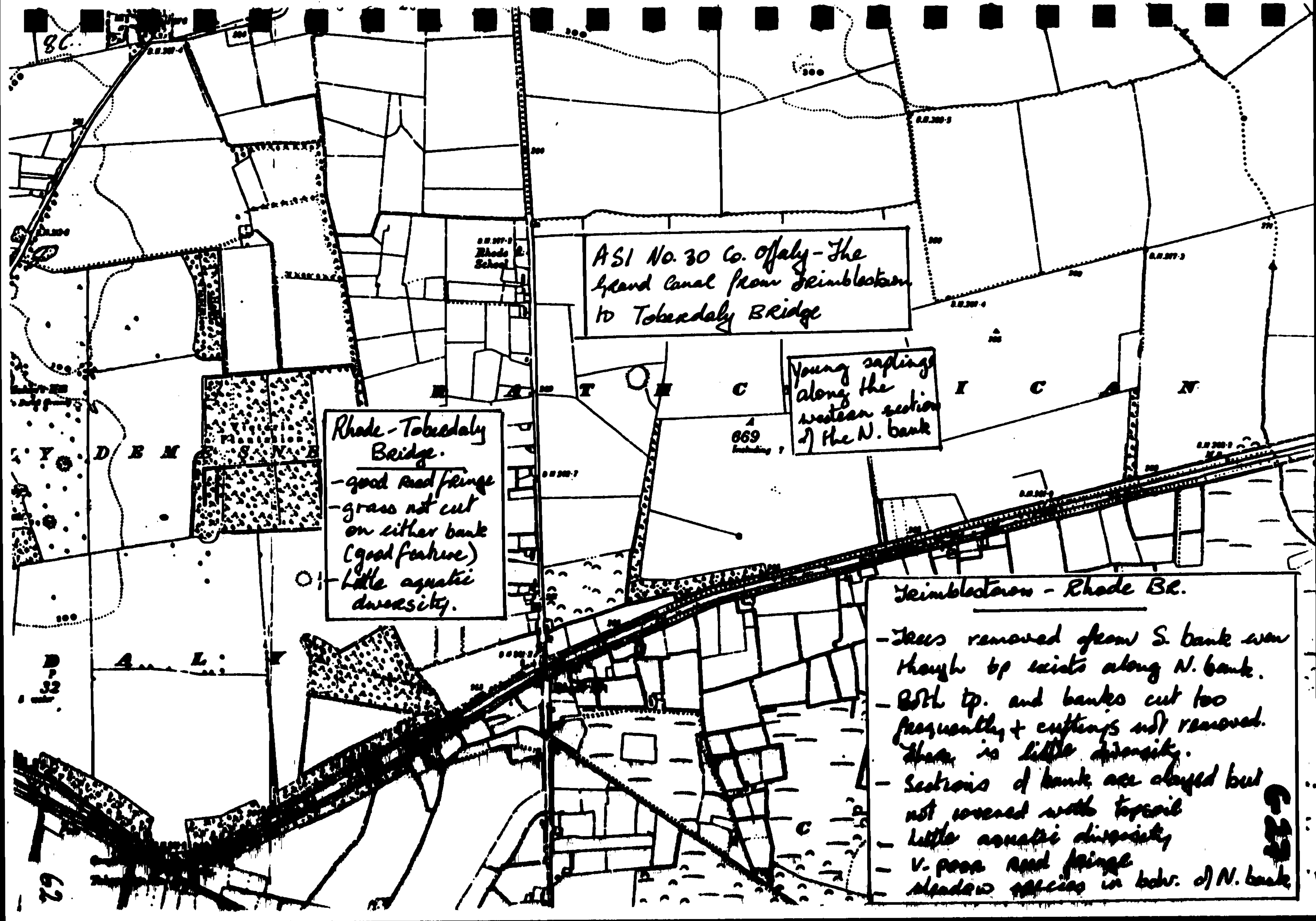
OBJECTIVES:

- To improve aquatic diversity, and to encourage the development of a reed fringe along both banks.
- To allow the development of a meadow habitat on both banks.
- To protect species and habitat diversity.

RECOMMENDATIONS:

- Allow reed fringe and aquatic species to recover. It is proposed to leave this stretch free from herbicide and manual cutting in 1992 (Caffrey, 1991).
- Protect the boundary verges by cutting once a year. Cutting will prevent the scrub species dominating.
- Cutting of such a wide path along both banks is not necessary. The path width and cutting frequency can both be reduced. Cutting so frequently does not allow plants to fruit and produce seed, reducing the ecological diversity so that in time the towpath will resemble "green concrete."
- Cut bank verge and part of towpath just once a year, collecting all cuttings and leaving some saplings on each bank after the cut.
- Put topsoil on the clayed banks to encourage plants to take root and so stabilize the banks further.
- Investigate the source of nutrients in the water.


B A L L Y B R I T T A N
955 2 7
Towing Path
ASI No. 30 Co. Offaly. The Grand Canal between Trimblestown and Toberdaly bridge
Trimblestown - Rhode Br.
- Little or no reed fringes
- Bank and top of both banks cut too frequently, grass remaining
- Trees removed from S. bank though the top already exists on N. bank
- Little aquatic diversity
- Meadow species in bdr. (N. bank)
- Banks clayed but not covered with topsoil
30
61



ASI No. 30 Co. Offaly - The Grand Canal from Trimblestown to Toberdaly Bridge
Young saplings along the western section of the N. bank
Rhode - Toberdaly Bridge.
- good reed fringe
- grass not cut on either bank (good feature)
- Little aquatic diversity.
Trimblestown - Rhode Br.
- Trees removed from S. bank even though tp exists along N. bank.
- Both tp. and banks cut too frequently + cuttings not removed. There is little diversity.
- Sections of bank are clayed but not covered with topsoil
- Little aquatic diversity
- V. poor reed fringe
meadow species in bdr. of N. bank
G27
Rhode School
DEMESNE
TICKNEVIN
DALY
669
32
62

MAIN LINE

KM SECTIONS 74-79 TOBERDALY BRIDGE - KILLEEN BRIDGE

GOOD FEATURES:

- Grass not cut in the vicinity of Toberdaly Bridge.
- Bank verge (N) not cut because it is partially on a mound higher than the towpath.
- Boundary verge not cut.
- Exceptionally species-rich bank and boundary verges with many species indicative of a combination of soil types –

  Nutrient-poor calcareous plants including many orchids; acidic species of the bog which forms the northern boundary; and some tall herbaceous plants of nutrient-rich soil.
- drain along part of northern boundary.
- Saplings including Alder, Ash and Willow along the bank.
- Tall trees and scrub on south bank.
- Species-rich hedgerow at both ends of this stretch including Willow, Alder, Guelder Rose and Spindle.

BAD FEATURES:

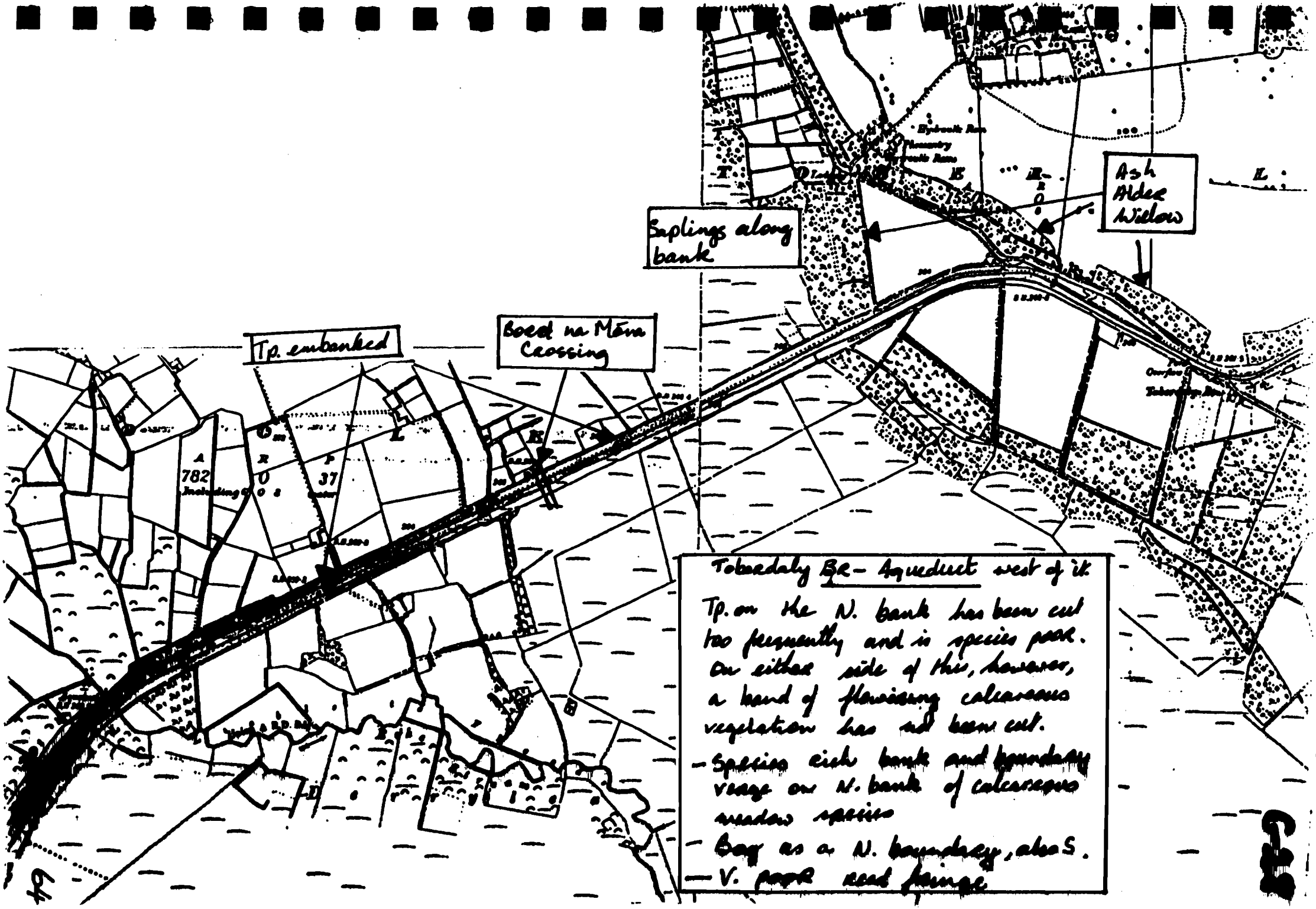
- Very poor reed fringe and aquatic diversity.
- Grass cuttings not collected. This dead matter adds nutrients to an otherwise nutrient-poor towpath.
- The band which is cut is too wide on two counts
  a) rural setting.
  b) pedestrians only require a maximum width of 1 metre for access.
- Bank erosion just east of Killeen Bridge.
- White scum on the water in the vicinity of Bord na Móna Bridge.

OBJECTIVES:

- To improve aquatic diversity, and to encourage the development of reed beds along both banks.
- To promote the development of meadow habitats on both banks.
- To maintain habitat diversity by protecting the hedgerow and patches of scrub on both banks.

RECOMMENDATIONS:

- Allow revegetation of the reed fringes and channel bed. It is proposed to leave this stretch free from herbicide treatment or mechanical cutting in 1992 (Caffrey, 1991).
- Protect the species-rich boundary verge, banks and hedgerow by not cutting frequently. Boundary verge and bank verge may be cut once a year at the end of the growing season. Remove cuttings and leave some saplings on the bank after each cutting.
- Cut the towpath in May and in August/September. Cutting more often reduces the ecological diversity of the sward.
- Collect the cuttings otherwise they change the nutrient status of the soil - making it richer and therefore allowing the competitive species to dominate.
- Reduce the width of the band to be cut more than once a year.

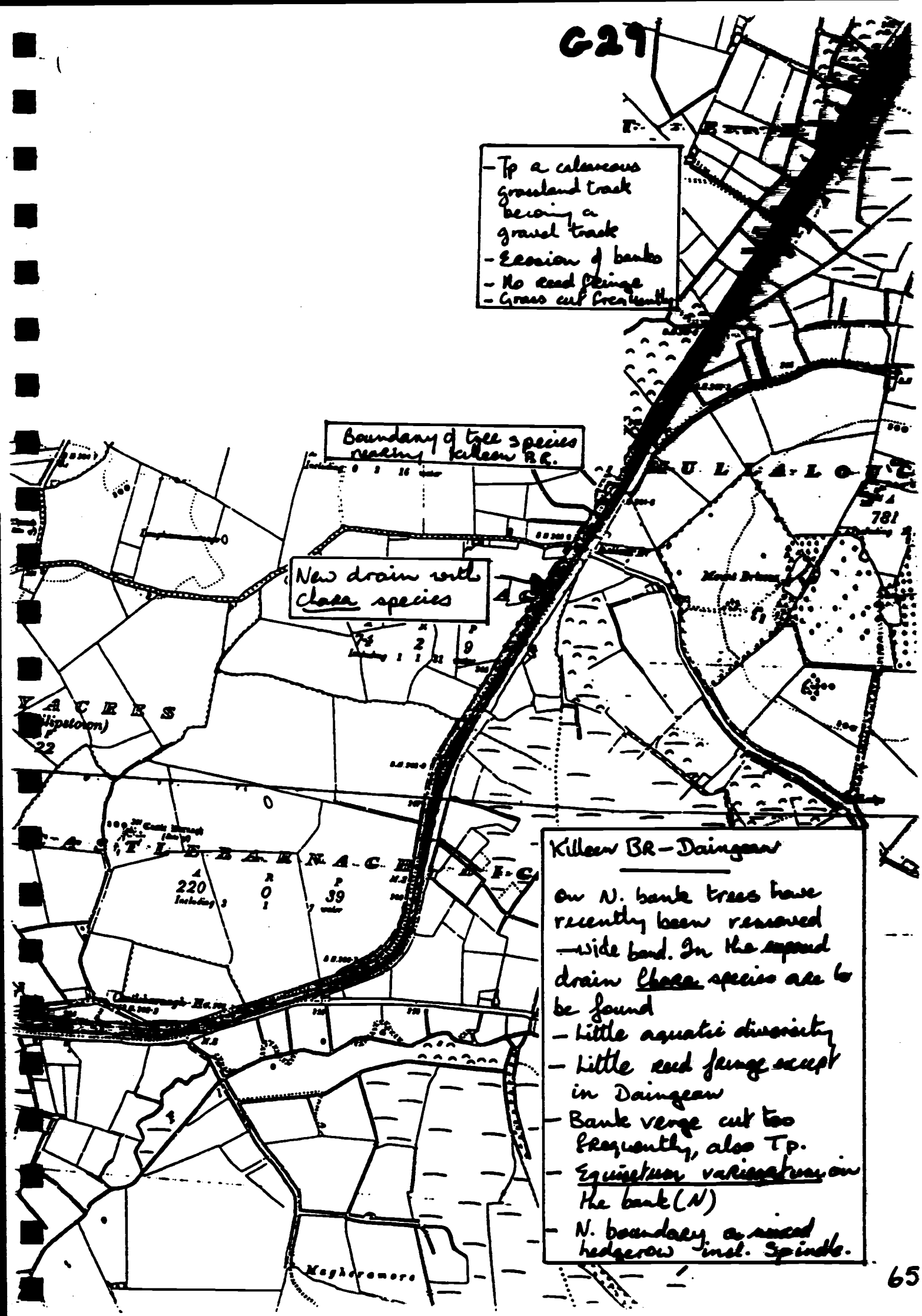


Tobeadaly Be- Aqueduct west of it

Tp. on the N. bank has been cut too frequently and is species poor. On either side of this, however, a band of flowering calcareous vegetation has not been cut.

- Species rich bank and boundary verge on N. bank of calcareous meadow species
- Bog as a N. boundary, also S.
- V. poor reed fringe

G29


- Tp a calcareous grassland track becoming a gravel track
- Erosion of banks
- No reed fringe
- Grass cut frequently
Boundary of tree species nearing Killeen B.C.
New drain with Cleavers species
Killeen BR - Daingean
On N. bank trees have recently been removed - wide band. In the exposed drain Cleavers species are to be found
- Little aquatic diversity
- Little reed fringe except in Daingean
- Bank verge cut too frequently, also Tp.
- Equisetum variegatum on the bank (N)
- N. boundary a mixed hedgerow incl. Spindle.

KM SECTIONS 79-81 KILLEEN BRIDGE - DAINGEAN

GOOD FEATURES:

- Mature trees along hedgerow west of Killeen Bridge on the north bank including Ash, Beech, Willow and Spindle.
- The presence of Chara species in the newly dredged drain at Killeen Bridge (N).
- Species-rich drain along north boundary.
- Calcareous and species-rich bank verges.
- Some small and very narrow stretches of reed fringe.
- Saplings along the bank.

BAD FEATURES:

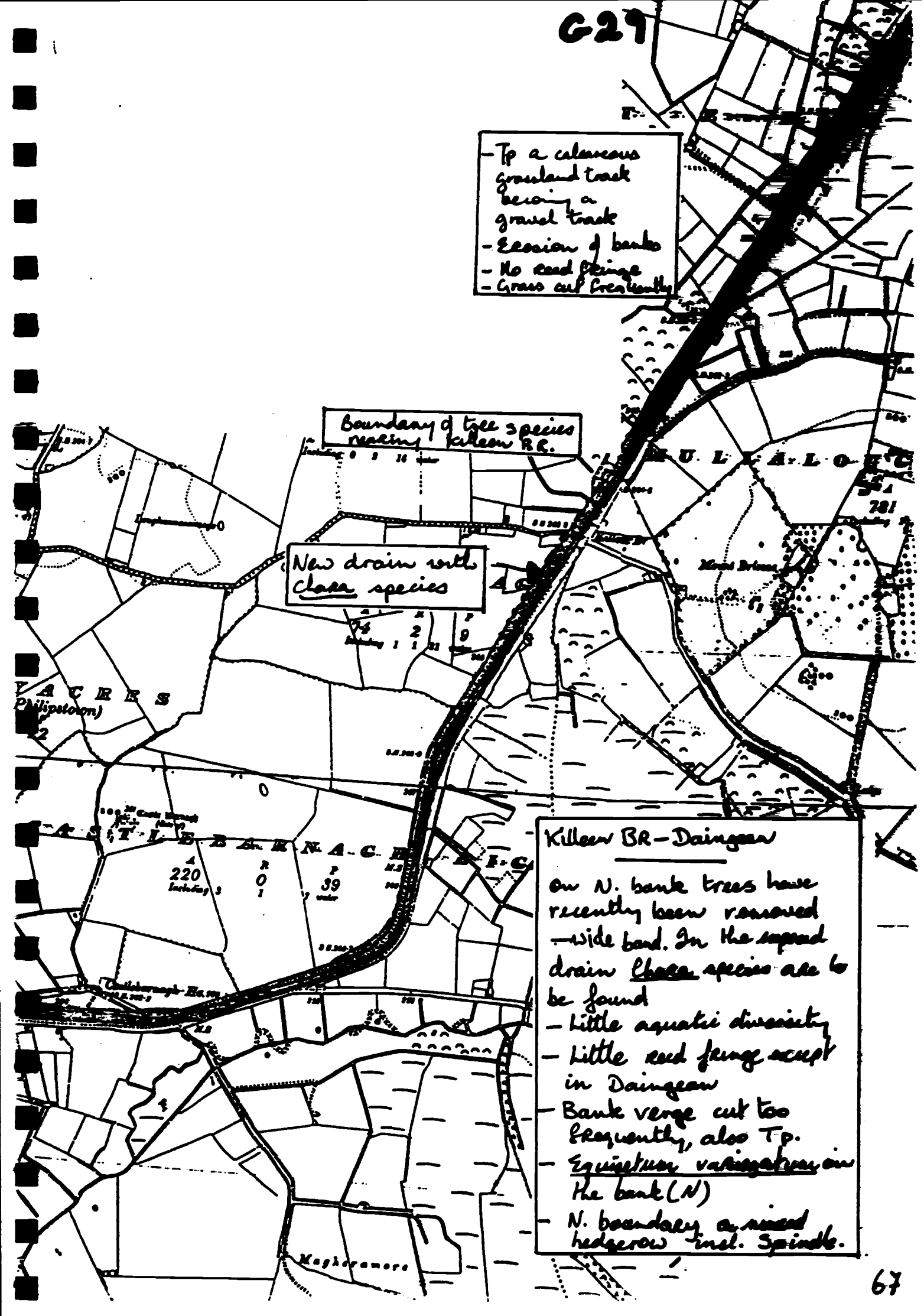
- Water very turbid.
- Towpath, bank and boundary verges cut too frequently. The band which is cut is also too wide.
- Grass cuttings not collected.

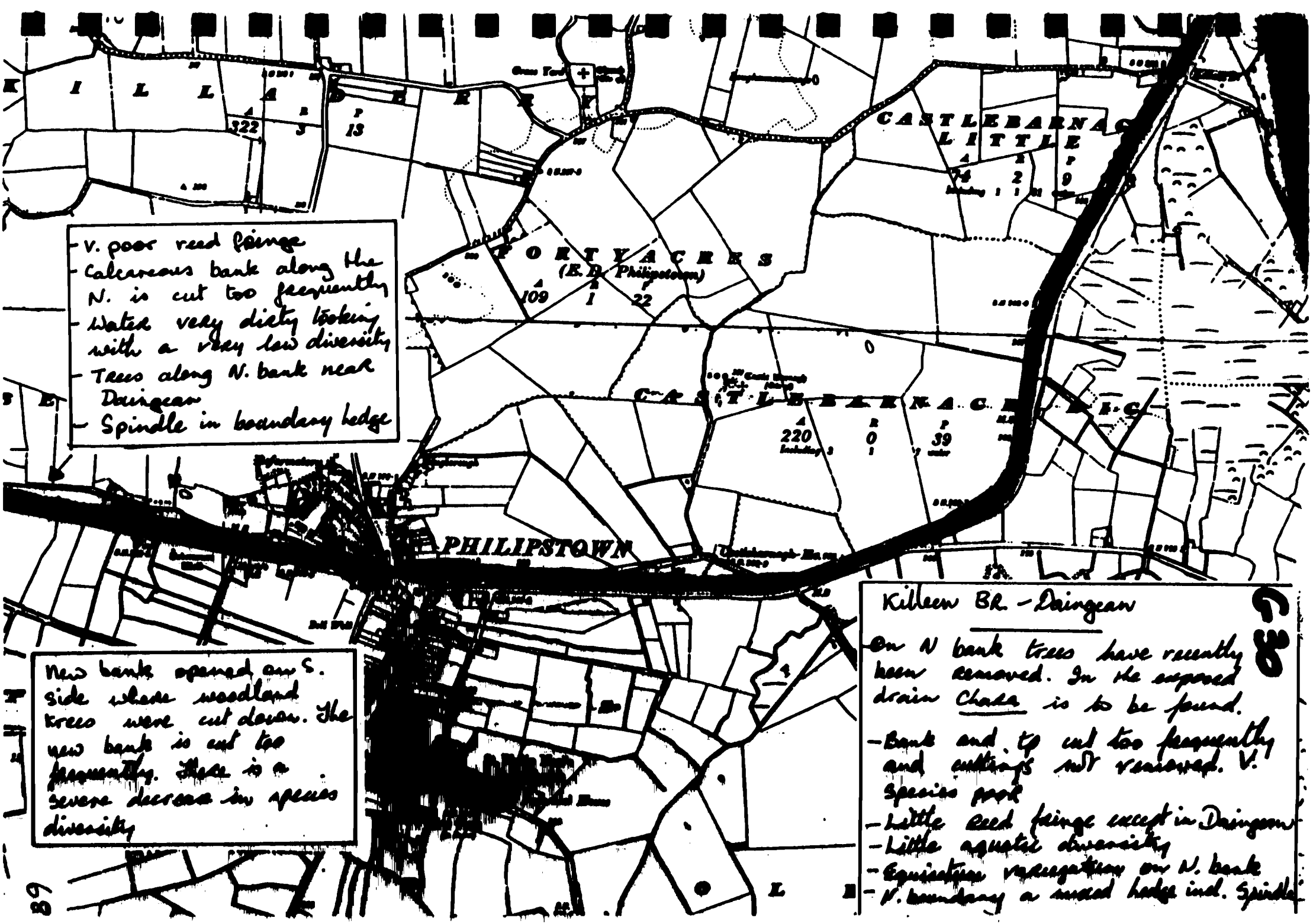
OBJECTIVES:

- To improve the species diversity of the channel.
- To allow a meadow habitat to develop along the towpath and boundary verge.

RECOMMENDATIONS:

- Do not spray or remove aquatics or emergents from this stretch. It is proposed to leave this stretch free from all weed treatment in 1992 (Caffrey, 1991).
- Cut the towpath less frequently and reduce the width of the cut band otherwise the ecological diversity will be reduced. Remove cuttings so as not to change the nutrient status of the soil.
- Cut the bank and boundary verge once a year at the end of the growing season. In this way scrub will not dominate. Remove cuttings and leave some saplings on the bank after each cutting.


- Tp a calcareous grassland track becoming a gravel track
- Erosion of banks
- No reed fringe
- Grass cut too frequently
Boundary of tree species nearing Killeen BR.
New drain with Chara species
Killeen BR - Daingean
On N. bank trees have recently been removed - wide band. In the exposed drain Chara species are to be found
- Little aquatic diversity
- Little reed fringe except in Daingean
- Bank verge cut too frequently, also Tp.
- Equisetum variegatum on the bank (N)
- N. boundary a mixed hedgerow incl. Spindle.


- V. poor reed fringe
- Calcareous bank along the N. is cut too frequently
- Water very dirty looking with a very low diversity
- Trees along N. bank near Daingean
- Spindle in boundary hedge
PHILIPSTOWN
New bank opened on S. side where woodland trees were cut down. The new bank is cut too frequently. There is a severe decrease in species diversity
Kilteen Br. - Daingean
- On N bank trees have recently been removed. In the exposed drain Chara is to be found.
- Bank and tp cut too frequently and cuttings not removed. V. Species poor
- Little reed fringe except in Daingean
- Little aquatic diversity
- Equisetum vegetation on N. bank
- N. boundary a cut hedge incl. Spindle

MAIN LINE

KM SECTIONS 81-85 DAINGEAN TO GRAVEL RIDGE ON THE NORTH BANK.

GOOD FEATURES:

- Excellent small area of wetland and calcareous species found together in the boundary verge. The patch is 20 x 8 feet and supports a huge diversity of species including 4 types of orchids one of which is Epipactis palustris - Marsh helleborine which is nationally rare and protected in Northern Ireland.
- The other stretches of boundary verge are species rich; some of small stretches of calcareous grassland/meadow and some of it supporting tall herbaceous species of more nutrient-rich soil.
- Species-rich hedgerow along the north bank including Hazel, Spindle and Guelder Rose.
- Saplings along the bank.
- Nice boggy area rich in acidic species just east of the gravel ridge. This is part of Barnaboy Bog which is an ASI (ASI No. 39 Co. Offaly, a site of ecological interest and national importance, now destroyed).

BAD FEATURES:

- The bank along this rural stretch is continually cut and cuttings not removed. The seed bed is being reduced and the soil status changed.
- Scrub is taking over sections of the boundary verge.
- Erosion of banks.
- Very little reed fringe.
- Trees of the south bank have been cleared and a wide band of the grassy towpath and bank continually being cut.
- This stretch has the highest level of nitrates/nitrites along the main line - 5 mg/L No_2+ NO_3 mg/lN. (Caffrey 1990).

OBJECTIVES:

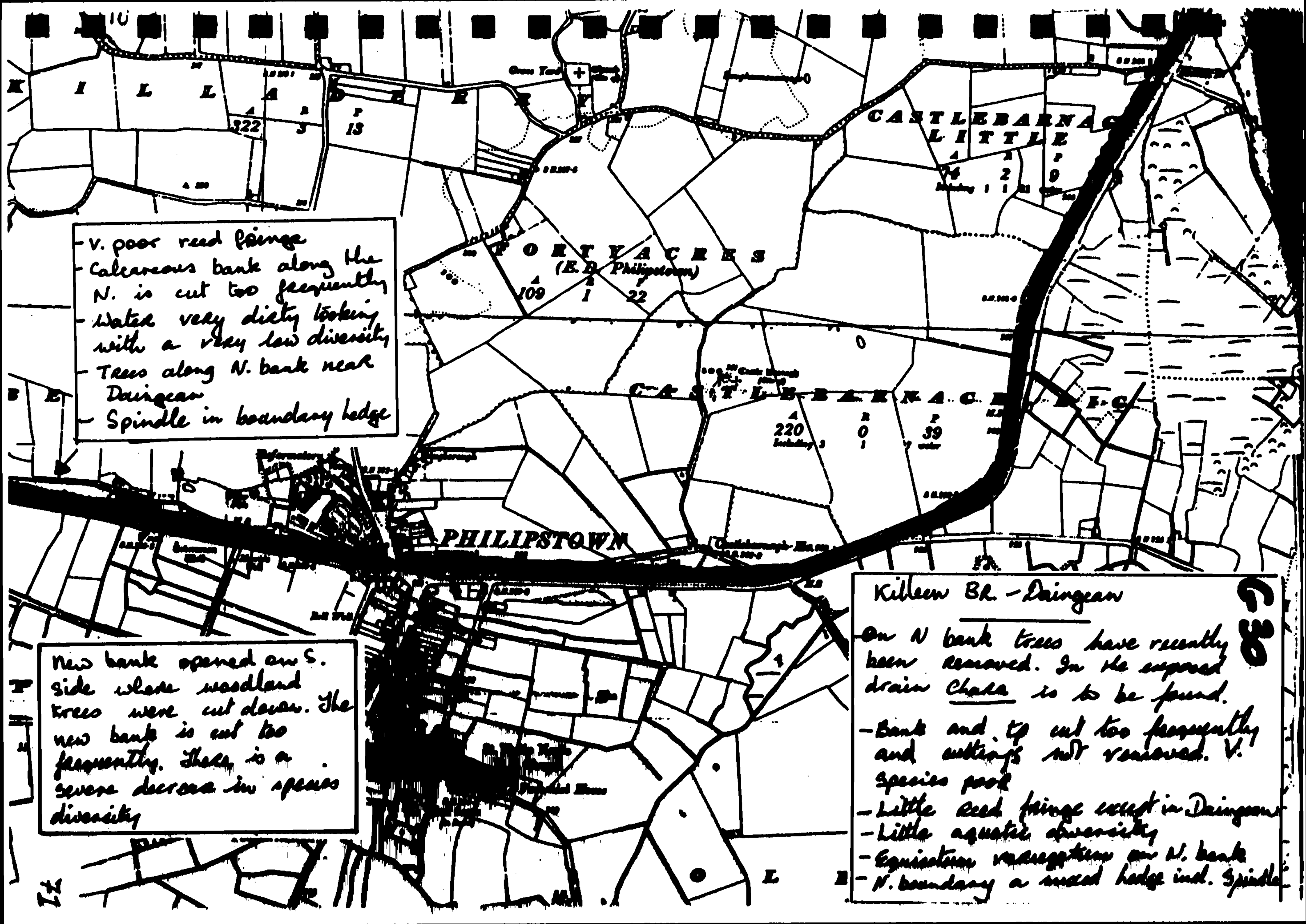
- To improve aquatic diversity, and to encourage the development of reed beds on both sides of the channel.
- To promote the development of a meadow habitat on the towpath and verges.
- To maintain habitat diversity by protecting sensitive habitats.

RECOMMENDATIONS:

- Protect the small species-rich habitat of the northern boundary verge.
- Protect existing reed fringes and encourage others to take hold. It is proposed (Caffrey 1991) to leave this stretch free from all aquatic weed treatments in 1992.
- Cut the boundary verge (N) once a year and at the end of the growing season
  a) to prevent scrub taking over.
  b) to maintain the meadow which exists at present. Remove cuttings so as not to enrich the soil.
- Bank verge (N) to be cut once a year at the end of the

growing season and all cuttings removed. Ensure some saplings remain after each cut. There is absolutely no reason why this bank, which forms the border between canal and road, should be cut more frequently. Pedestrians and canal machinery may use the road and the bank should be allowed to act as a haven for invertebrates by developing it as a calcareous meadow.

- The towpath and bank along the south side should only be cut once a year at the end of a growing season to allow a meadow to develop. Canal machinery can gain access since the trees have been removed. It is not necessary to cut so wide a band of grass for pedestrian access. The ecological diversity is being greatly reduced.
- Investigate the source of nutrients in the channel.



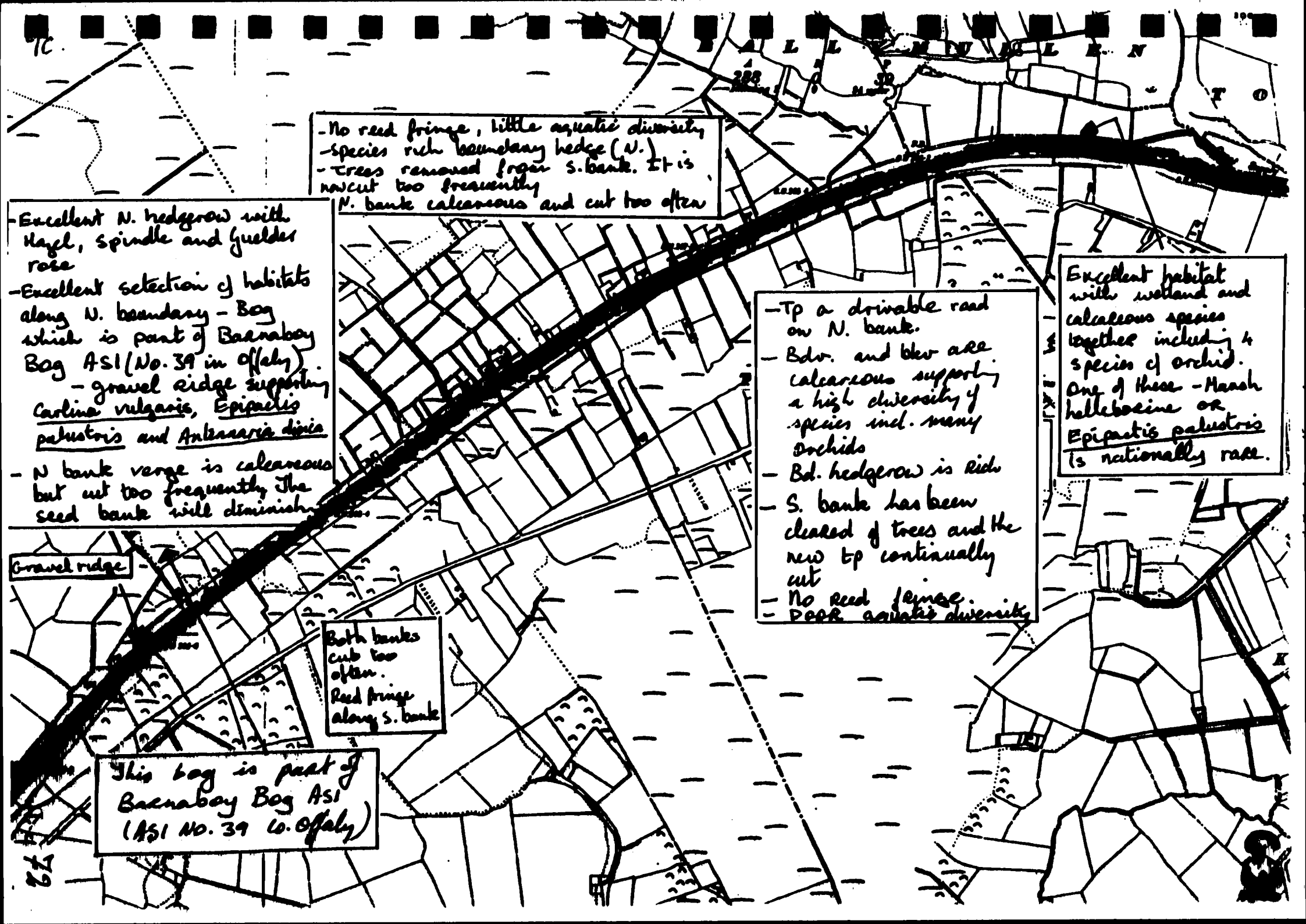
G38

Killeen Br. - Daingean

- On N bank trees have recently been removed. In the exposed drain *Chara* is to be found.
- Bank and tp cut too frequently and cuttings not removed. V. species poor
- Little reed fringe except in Daingean
- Little aquatic diversity
- Equisetum variegatum on N. bank
- N. boundary a mixed hedge incl. Spindle

- V. poor reed fringe
- Calcareous bank along the N. is cut too frequently
- Water very dirty looking with a very low diversity
- Trees along N. bank near Daingean
- Spindle in boundary hedge

New bank opened on S. side where woodland trees were cut down. The new bank is cut too frequently. There is a severe decrease in species diversity


- No reed fringe, little aquatic diversity
- species rich boundary hedge (N.)
- trees removed from S. bank. It is now cut too frequently
N. bank calcareous and cut too often
- Excellent N. hedgerow with Hazel, spindle and Guelder rose
- Excellent selection of habitats along N. boundary - Bog which is part of Baenaboy Bog ASI (No. 39 in Offaly)
- gravel ridge supporting Carlina vulgaris, Epipactis palustris and Antennaria dioica
- N bank verge is calcareous but cut too frequently. The seed bank will diminish
- Tp a drivable road on N. bank.
- Bdy. and bkw are calcareous supporting a high diversity of species incl. many Orchids
- Bd. hedgerow is Rich
- S. bank has been cleared of trees and the new tp continually cut
- No reed fringe
- POOR aquatic diversity
Excellent habitat with wetland and calcareous species together including 4 species of orchid. One of these - Marsh helleborine or Epipactis palustris is nationally rare.
Gravel ridge
Both banks cut too often. Reed fringe along S. bank
This bog is part of Baenaboy Bog ASI (ASI No. 39 Co. Offaly)

MAIN LINE

KM SECTIONS 85-87 GRAVEL RIDGE TO BALLYCOMMON BRIDGE

GOOD FEATURES:

- The gravel ridge at the start of this stretch is similar to an esker. It is nutrient-poor and species-rich. At the base there is Epipactis palustris, Antennaria dioica, Carlina vulgaris and many more calcareous species. The orchid, E. palustris is nationally rare and protected up in Northern Ireland.
- North bank is also calcareous and species-rich.
- North boundary hedge is species-rich supporting such lime-loving species as Hazel, Spindle and Guelder Rose.
- The boundary verge is uncut and supports many meadow species.
- Very small sections of reed fringe.
- Some saplings along north bank.

BAD FEATURES:

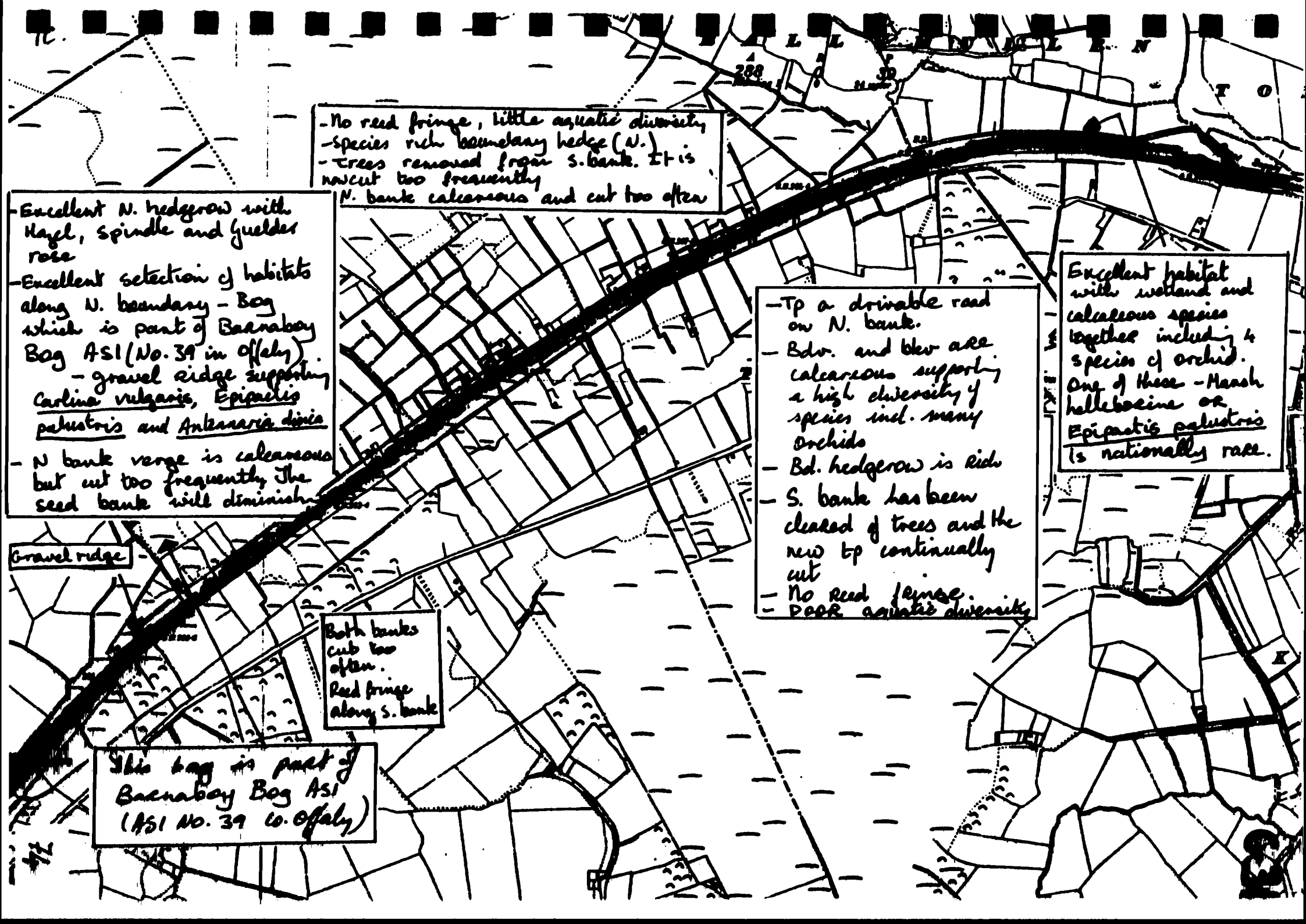
- Bank verge (N) is calcareous but cut too frequently. Cuttings not collected.
- Towpath and bank (S) cut too frequently and cuttings not collected. The seed bank is being reduced.
- The water is a milky colour near Ballycommon.
- Very little reed fringe and aquatic species.
- Banks eroding on both sides.

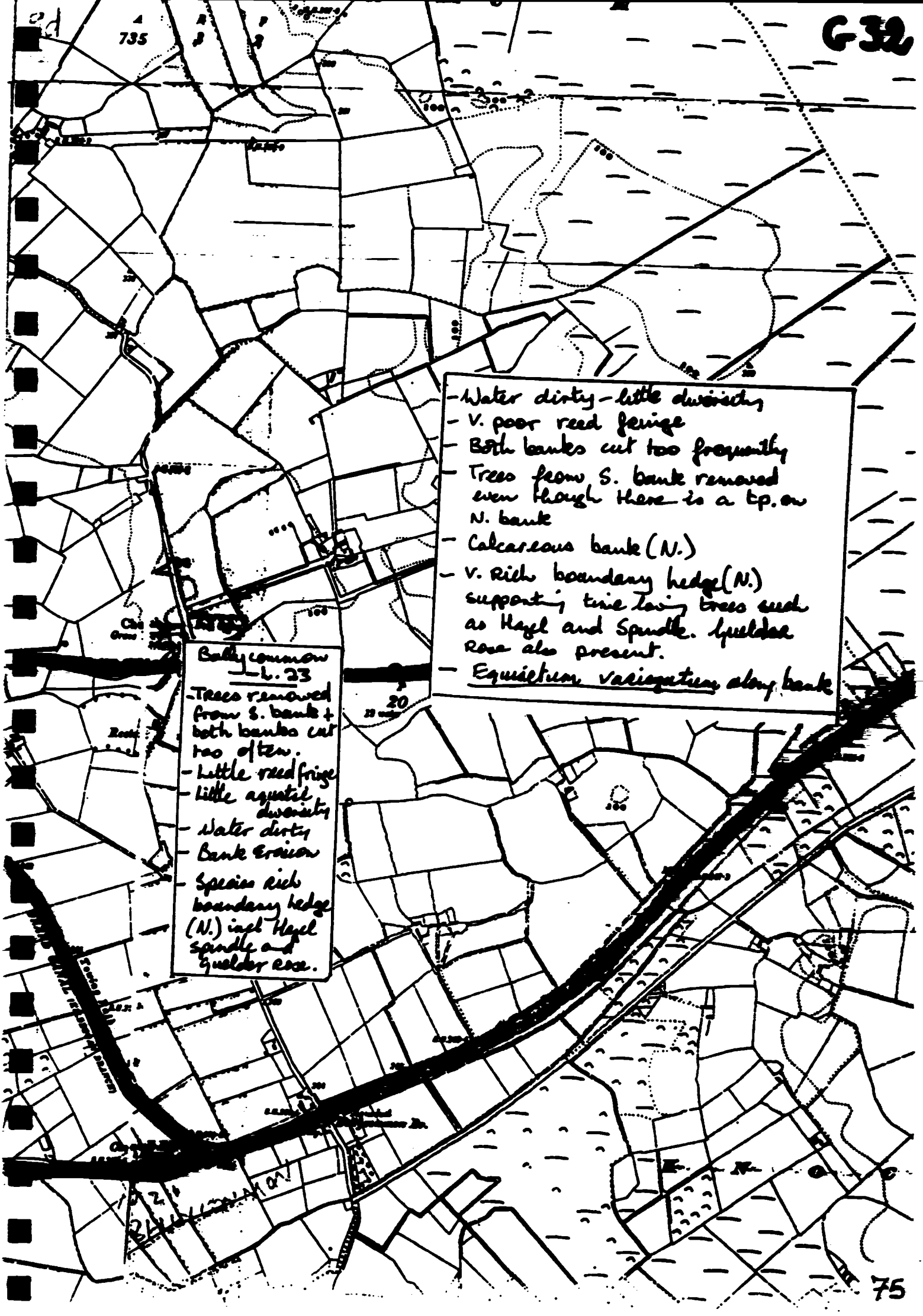
OBJECTIVES:

- To improve aquatic diversity, and to encourage the development of reed fringes along both banks.
- To maintain species and habitat diversity of both banks.
- To encourage the development of a meadow habitat on both banks.

RECOMMENDATIONS:

- Do not carry out any form of control on the aquatic plants in 1992, following the recommendations of the CFB (Caffrey, 1991).
- Cut the north bank, and the bank and towpath of south side once a year at the end of the growing season. Collect cuttings. In this way plants will be able to produce seeds and so ensure diversity again the following year. Invertebrates will have a food supply in the flowers. These various zones will be allowed to develop into a meadow and add to the beauty of the canal. The cuttings must be removed in order to ensure against enrichment which leads to the success of competitive species.
- A narrow path may be cut more frequently on the south bank to allow for pedestrian access but this should not be greater than 1 metre wide.
- Investigate the reason for the milky colour on the water in the vicinity of Ballycommon Bridge.
- Protect the hedgerow on the north bank.


- No reed fringe, little aquatic diversity
- Species rich boundary hedge (N.)
- Trees removed from S. bank. It is now cut too frequently
N. bank calcareous and cut too often
- Excellent N. hedgerow with Hazel, spindle and Guelder rose
- Excellent selection of habitats along N. boundary - Bog which is part of Baranaboy Bog ASI (No. 39 in Offaly).
- gravel ridge supporting Carlina vulgaris, Epipactis palustris and Antennaria dioica
- N bank verge is calcareous but cut too frequently. The seed bank will diminish
Gravel ridge
- Tp a drivable road on N. bank.
- Bdy. and bkw are calcareous supporting a high diversity of species incl. many Orchids
- Bd. hedgerow is Rich
- S. bank has been cleared of trees and the new tp continually cut
- No Reed fringe
- POOR aquatic diversity
Excellent habitat with wetland and calcareous species together including 4 species of orchid. One of these - Marsh helleborine or Epipactis palustris is nationally rare.
Both banks cut too often. Reed fringe along S. bank
This bog is part of Baranaboy Bog ASI (ASI No. 39 Co. Offaly)


735
Ballycommon
L. 23
- Trees removed from S. bank + both banks cut too often.
- Little reed fringe
- Little aquatic diversity
- Water dirty
- Bank Erosion
- Species rich boundary hedge (N.) incl Hazel spindle and Guelder rose.
- Water dirty - little diversity
- V. poor reed fringe
- Both banks cut too frequently
- Trees from S. bank removed even though there is a tp. on N. bank
- Calcareous bank (N.)
- V. Rich boundary hedge (N.) supporting tree/tall trees such as Hazel and Spindle. Guelder Rose also present.
- Equisetum variegatum along bank

KM SECTIONS 87-93 BALLYCOMMON - DIGBY BRIDGE AND LOCK 25

GOOD FEATURES:

- Very nice hedgerow of Hazel, Spindle and Guelder Rose - sometimes quite dense.
- Nutrient-poor species-rich limestone banks cut too frequently.

BAD FEATURES:

- Very poor reed fringe.
- Bank erosion along both banks.
- North bank verge cut too frequently throughout the growing season.
- Cuttings not removed.
- A wide bank along the south bank has been cleared. It is frequently cut also.
- Water very dirty.
- South bank near Lock 24 and both banks west of it have been clayed but not covered with peat or topsoil.

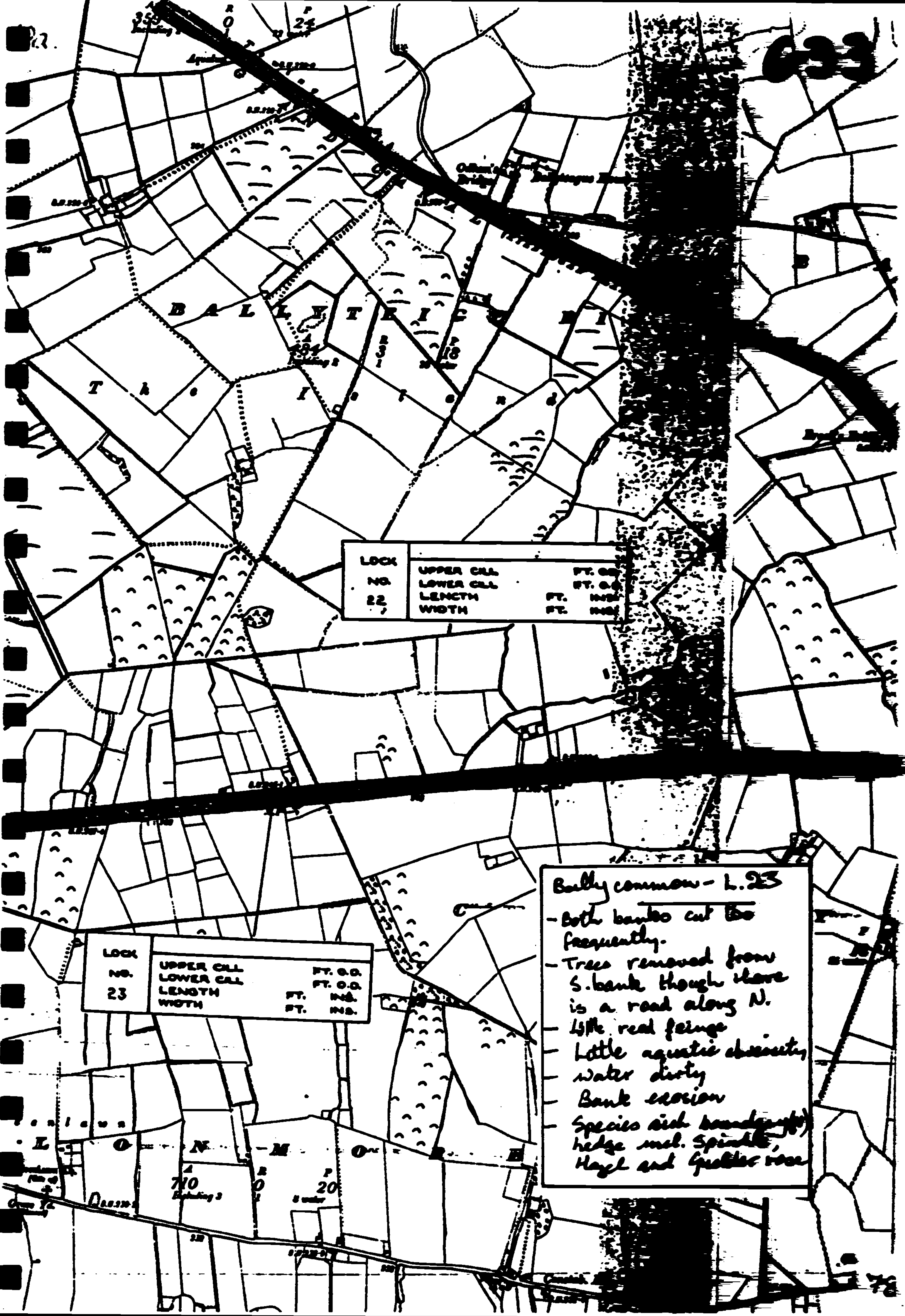
OBJECTIVES:

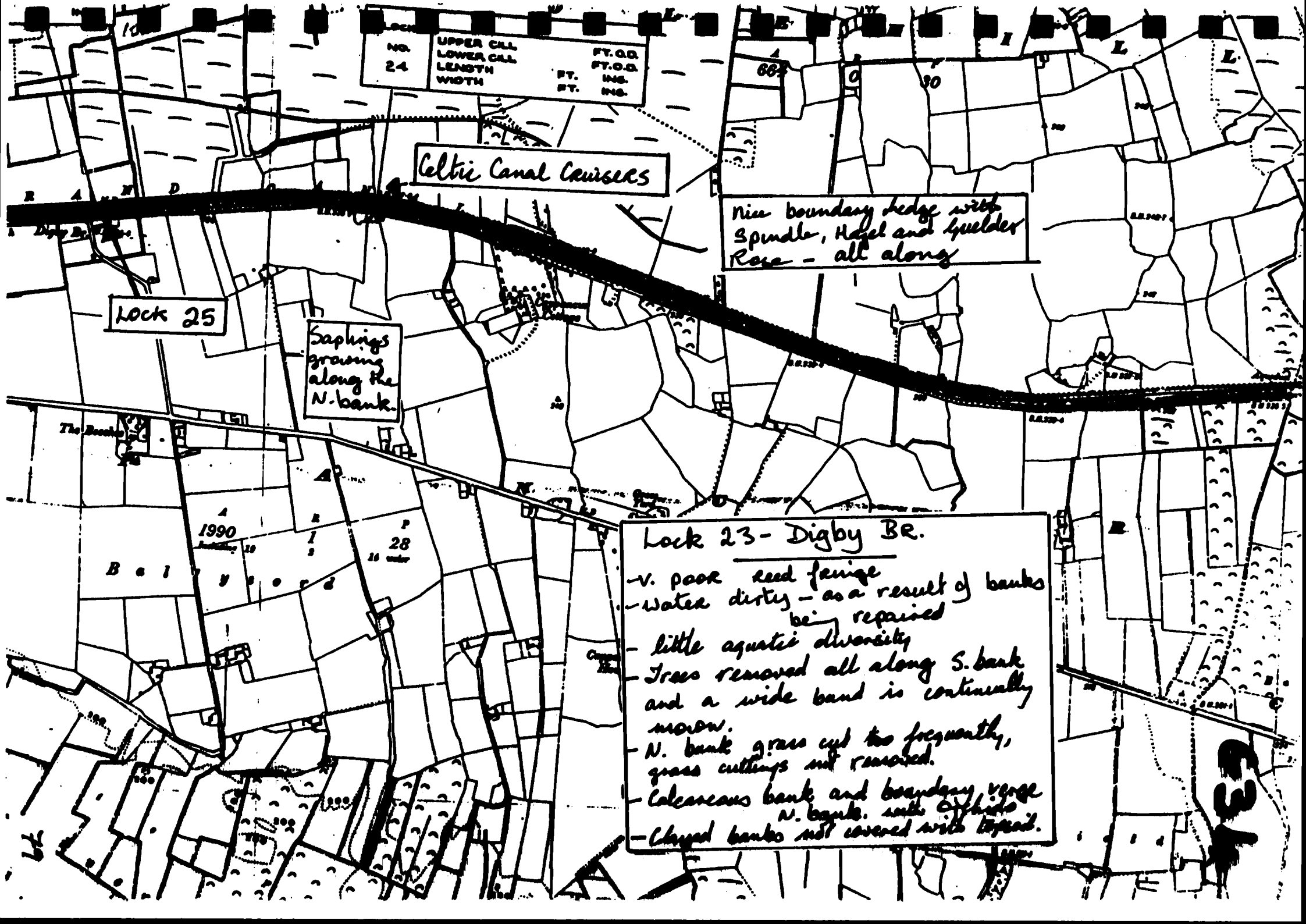
- To improve the aquatic diversity, and to encourage the development of reed fringes along both banks.
- To develop meadow grasslands along both banks.
- To maintain species and habitat diversity by protecting the existing hedgerows and patches of scrub.

RECOMMENDATIONS:

- This is a rural stretch of canal yet the vegetation along both banks is frequently cut. Flowers do not get the chance to produce seeds so the seed bank in the soil will be reduced leading to a reduction in the ecological importance of the habitat. Allow the grassland to mature and to develop into a calcareous meadow. Cut once a year at the end of the growing season and remove cuttings.
- Cut a narrow band of vegetation as a towpath along the south bank. It should be sufficient for pedestrian access. The remainder of this bank can be cut once a year and the cuttings removed.
- Remove all cuttings otherwise the dead matter acts as fertilizer and changes the status of the soil from nutrient poor to rich.
- Allow some young saplings to remain on the banks after each cutting.
- Protect the hedgerow (N).
- Protect the reed fringes. It is proposed for 1992 that this stretch be left free from herbicides. Monitor the growth progress of the fringe during 1992.
- Put topsoil or peat on the clayed banks in order to facilitate vegetation growth thus stabilizing the banks further.


735
Ballycommon
L. 23
- Trees removed from S. bank & both banks cut too often.
- Little reed fringe
- Little aquatic diversity
- Water dirty
- Bank Erosion
- Species rich boundary hedge (N.) incl Hazel spindle and Guelder rose.
- Water dirty - little diversity
- V. poor reed fringe
- Both banks cut too frequently
- Trees from S. bank removed even though there is a tp. on N. bank
- Calcareous bank (N.)
- V. Rich boundary hedge (N.) supporting tree bearing trees such as Hazel and Spindle. Guelder Rose also present.
- Equisetum variegatum along bank


LOCK NO. 22
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
LOCK NO. 23
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
Ballycommon - L.23
- Both banks cut too frequently.
- Trees removed from S. bank though there is a road along N.
- Little reed fringe
- Little aquatic diversity
- Water dirty
- Bank erosion
- Species rich boundary (?) hedge incl. Spindle, Hazel and Guelder rose


Celtic Canal Cruisers
Nice boundary hedge with Spindle, Hazel and Guelder Rose - all along
LOCK 25
Saplings growing along the N. bank.
Lock 23 - Digby Br.
- V. poor reed fringe
- Water dirty - as a result of banks being repaired
- little aquatic diversity
- Trees removed all along S. bank and a wide band is continually mown.
- N. bank grass cut too frequently, grass cuttings not removed.
- Calcareous bank and boundary verge N. bank, south of bridge
- Clayed banks not covered with topsoil.

KM SECTIONS 93-96 LOCK 25-LOCK 27 (TULLAMORE)

GOOD FEATURES:

- Nice hedgerow between Lock 25 and Tullamore Harbour. There is some scrub and Spindle present.

BAD FEATURES:

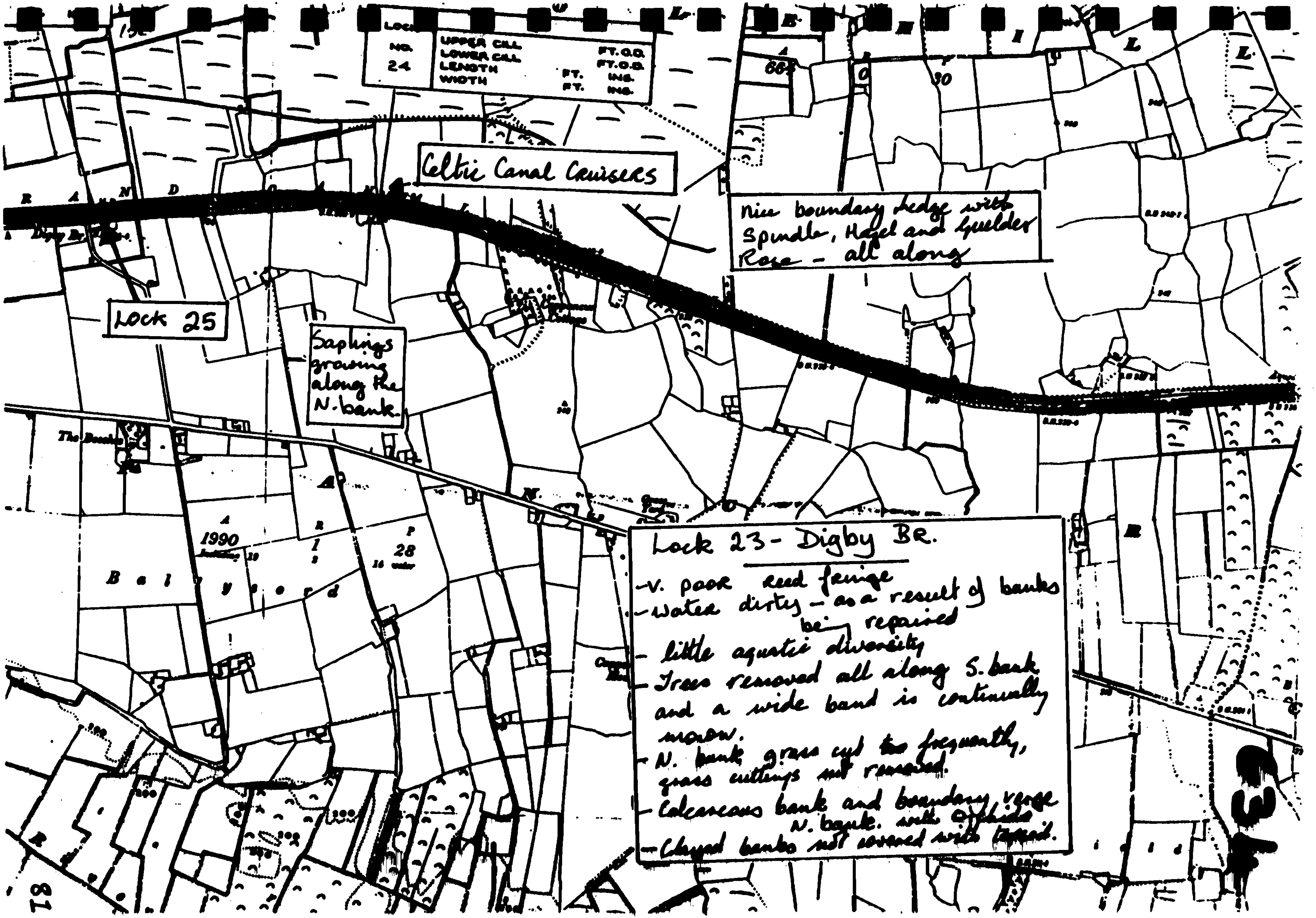
- Very little reed fringe.
- Both banks cut too frequently.
- A wide band along the south bank cut too frequently.
- Dumping west of Kilbeggan Bridge.
- No plants found in the harbour.
- Water very dirty.

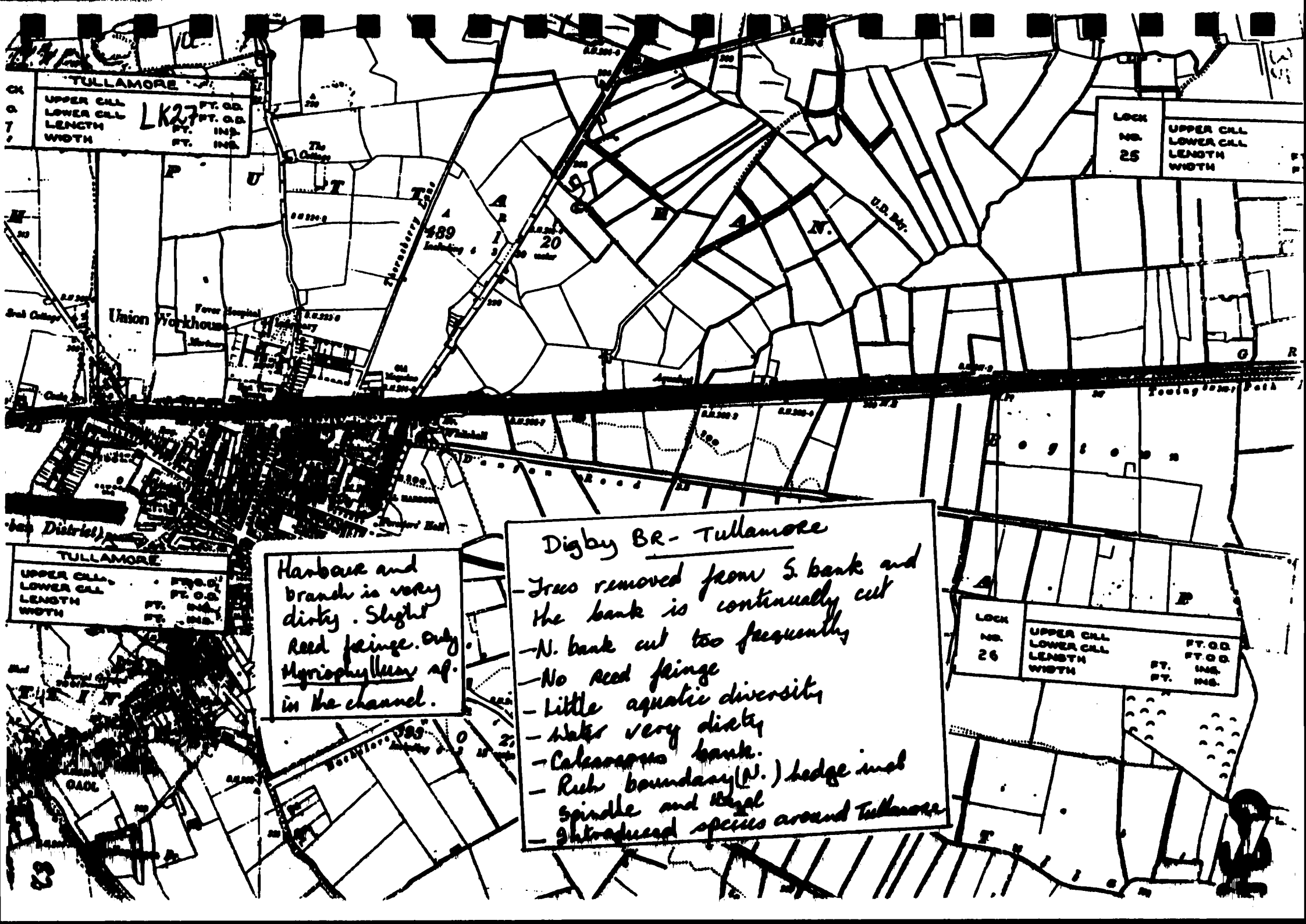
OBJECTIVES:

- To improve aquatic diversity, and to encourage the development of reed beds along both banks.
- To develop meadow grasslands along both banks.
- To maintain habitat and species diversity by protecting existing hedgerows and patches of scrub.

RECOMMENDATIONS:

- When necessary replace the poplars on the south bank on either sides of Tullamore with native species.
- Allow reed fringe to develop. This stretch is proposed to be free of aquatic herbicide treatment in 1992.
- Cut a narrower band along south bank for pedestrian access. Remove cuttings.
- Cut the remainder of south bank and north bank once a year at the end of the growing season and remove cuttings.
- Deal with the dumping problem.


LOCK NO. 24
UPPER CILL FT.O.D.
LOWER CILL FT.O.D.
LENGTH FT. INS.
WIDTH FT. INS.
Celtic Canal Cruisers
Nice boundary hedge with Spindle, Hazel and Guelder Rose - all along
Lock 25
Saplings growing along the N. bank
The Beeches
Digby Br.
1990
28
30
B a l l y f o r d
Lock 23 - Digby Br.
- V. poor reed fringe
- Water dirty - as a result of banks being repaired
- little aquatic diversity
- Trees removed all along S. bank and a wide band is continually mown.
- N. bank grass cut too frequently, grass cuttings not removed.
- Calcareous bank and boundary verge N. bank. with orchids
- Clayed banks not covered with topsoil.


TULLAMORE
UPPER CILL
LOWER CILL
LENGTH
WIDTH
LK27
FT. O.D.
FT. O.D.
FT. INS.
FT. INS.
LOCK NO. 25
UPPER CILL
LOWER CILL
LENGTH
WIDTH
Union Workhouse
TULLAMORE
UPPER CILL
LOWER CILL
LENGTH
WIDTH
LOCK NO. 26
UPPER CILL
LOWER CILL
LENGTH
WIDTH
Harbour and branch is very dirty. Slight Reed fringe. Only Myriophyllum sp. in the channel.
Digby BR - Tullamore
- Trees removed from S. bank and the bank is continually cut
- N. bank cut too frequently
- No Reed fringe
- Little aquatic diversity
- Water very dirty
- Calcareous bank.
- Rich boundary (N.) hedge incl spindle and Ivy
- Introduced species around Tullamore

KM SECTIONS 96-100 LOCK 27-LOCK 29 AT BALLYCOWAN

GOOD FEATURES:

- Very species-rich boundary hedge (N) and boundary verge west of Sragh Castle as far as the accommodation bridge. Many species of woodland understorey present including Arum maculatum, Allium ursinum (Wild Garlic) and Ranunculus ficaria (Celandines). Trees include Spindle, Ash, Hawthorn, Elder and Horse Chestnut.
- Kingfishers present along the canal supply on the south bank. Dense scrub overhanging this drain which provides cover for kingfisher and food for many other birds.
- Moorhens present along channel.
- Species rich calcarious bank (S).

BAD FEATURES:

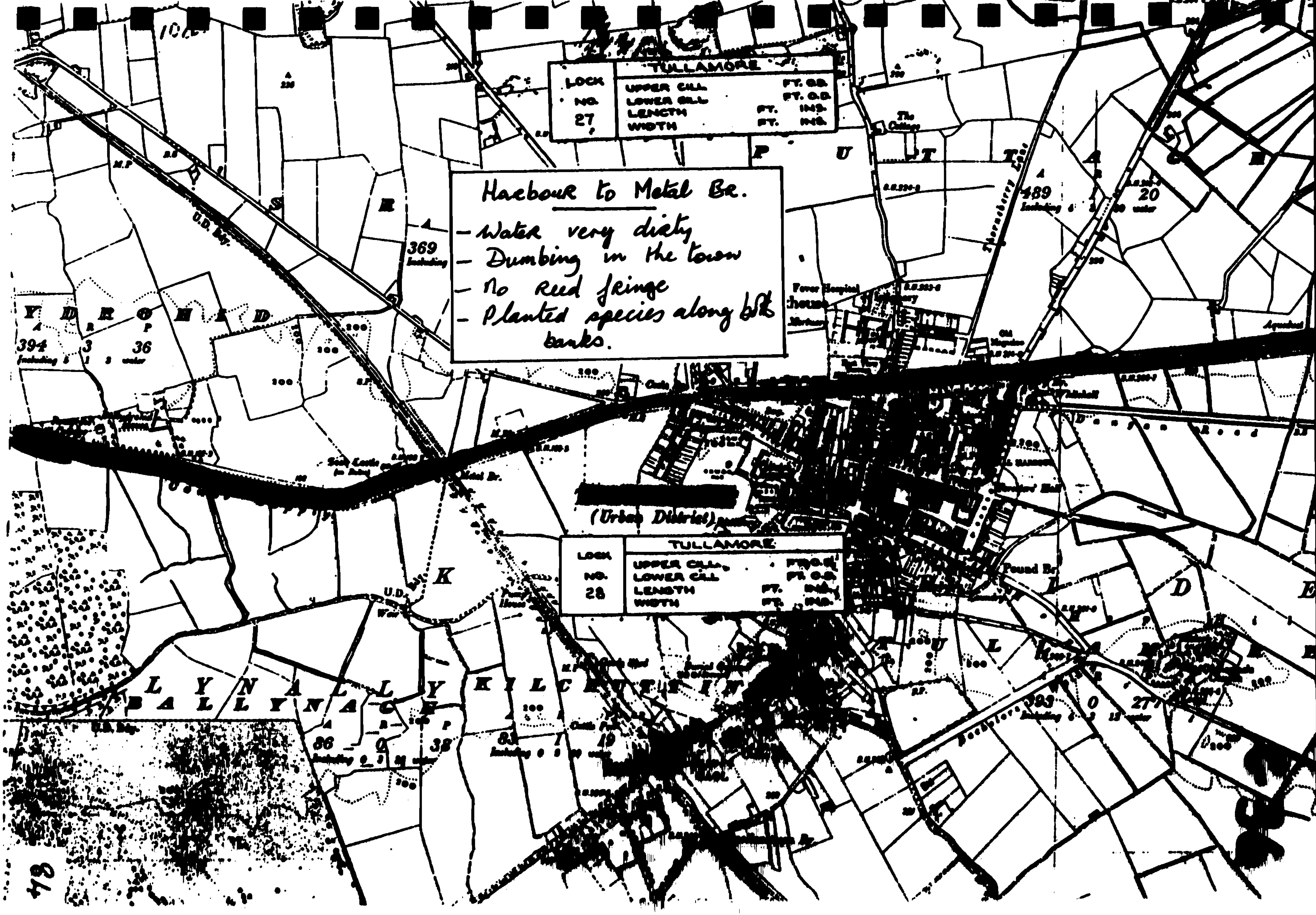
- Little aquatic diversity and very little reed fringe.
- Both banks being clayed on the approach to Ballycowan. No soil or peat covering this clay. Clay is too hard for vegetation to take root and vegetation is necessary to stabilize the clay.
- Very disturbed boundary verge (S) west of the accommodation bridge. It is dominated by thistles. The mounds present are old spoil heaps which were never levelled.
- Water very dirty.

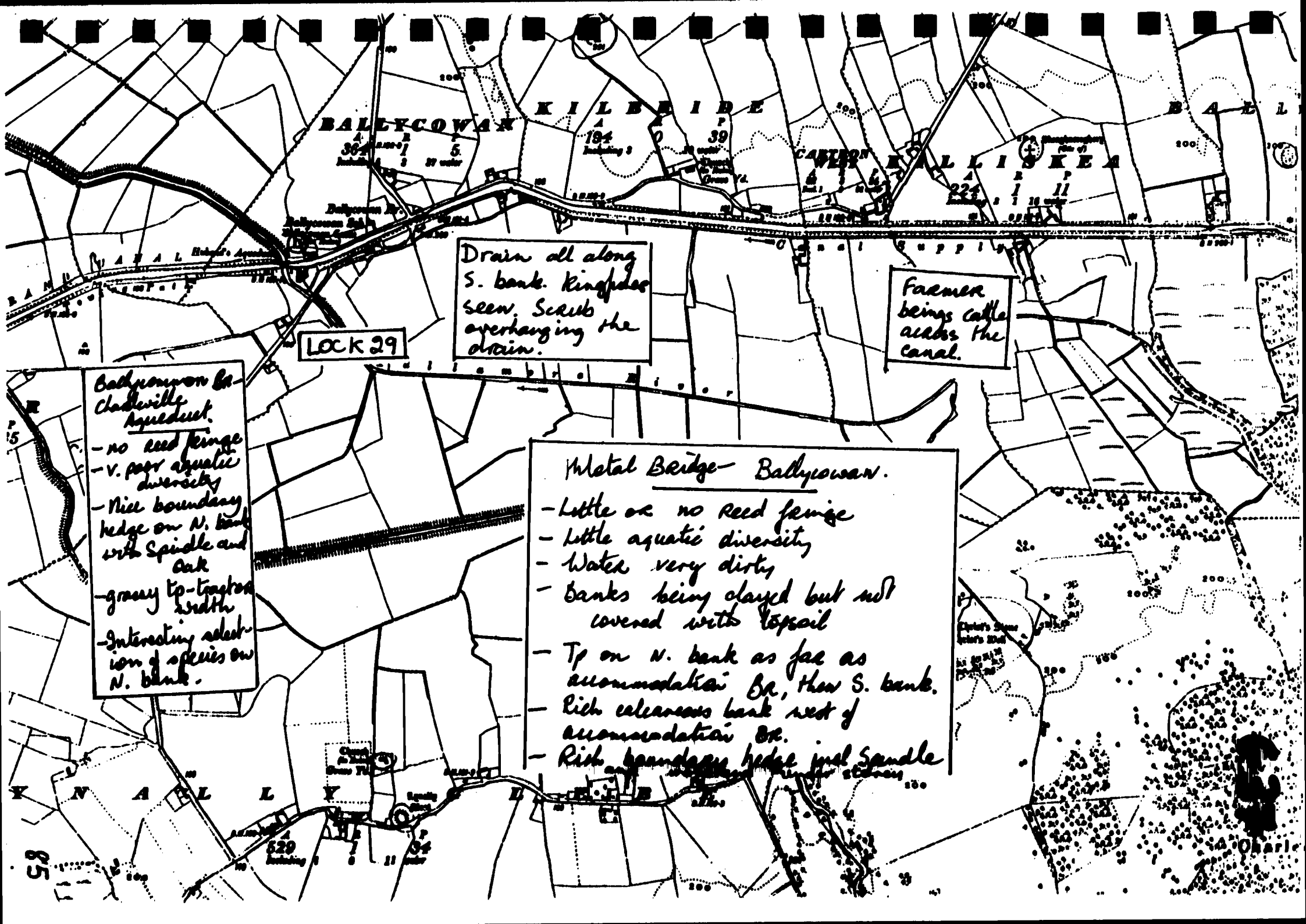
OBJECTIVES:

- To improve aquatic diversity, and to encourage the development of reed fringes along both banks.
- To develop meadow vegetation on the grass verges.
- To maintain habitat and species diversity, by protecting the existing hedgerows, patches of scrub and side-drains.

RECOMMENDATIONS:

- Protect the hedges and species-rich boundary and boundary verge.
- Ensure there is always some scrub/bushes overhanging the drain (S) to act as cover for the kingfishers.
- Cut the banks once a year after the growing season and remove the cuttings. This will allow plants to set seed and so the diversity of the seed bank will not be reduced.
- If possible, cut the vegetation on the old spoil heaps before the thistles set seed - around June/July of 1992. Thereafter cut the vegetation once a year.
- Put soil/peat on to the clayed banks as this facilitates germination and so stabilizes the clay and banks further.
- It is proposed to use Casoron along this stretch in 1992 (Caffrey 1991). The restoration of banks during 1991 resulted in a high turbidity in the water. This has a negative impact on aquatic plant growth. For this reason, the plants should be allowed to recover in 1992 and not be sprayed.


TULLAMORE
LOCK NO. 27
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
Harbour to Metal Br.
- Water very dirty
- Dumbing in the town
- No Reed fringe
- Planted species along b/k banks.
TULLAMORE
LOCK NO. 28
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
(Urban District)
Metal Br.
Pound Br.
Fever Hospital
The Cottage
U.D. Rly.
394
369
489
20
393
277
86
38
36
B A L L Y N A C H


BALLYCOWAN
KILBRIDE
CARTRON WEST
KILLISKEA
LOCK 29
Drain all along S. bank. Kingfisher seen. Scrub overhanging the drain.
Farmer brings cattle across the canal.
Ballycowan Br - Castleville Aqueduct.
- no reed fringe
- V. poor aquatic diversity
- Nice boundary hedge on N. bank with Spindle and Oak
- grassy tp-towpath width
- Interesting selection of species on N. bank.
Metal Bridge - Ballycowan.
- Little or no Reed fringe
- Little aquatic diversity
- Water very dirty
- Banks being dayed but not covered with topsoil
- Tp on N. bank as far as accommodation Br, then S. bank.
- Rich calcareous bank west of accommodation Br.
- Rich boundary hedge incl Spindle
KNALLY
65

MAIN LINE

KM SECTIONS 100 - 104 BALLYCOWAN-CORCORAN'S BRIDGE

GOOD FEATURES:

- A grassy towpath along the north bank which is calcareous and species-rich.
- Calcareous species-rich bank (N).
- Species-rich boundary hedgerow, (N) including Oak, Hazel, Beech, Guelder Rose, Ash and Hawthorn.
- Small fen area on north bank between the foot bridge and Corcoran's Bridge.
- Small stretches of reed fringe on the approach to Corcoran's Bridge.
- Proposed use of cutting trials along this stretch of channel in 1992.

BAD FEATURES:

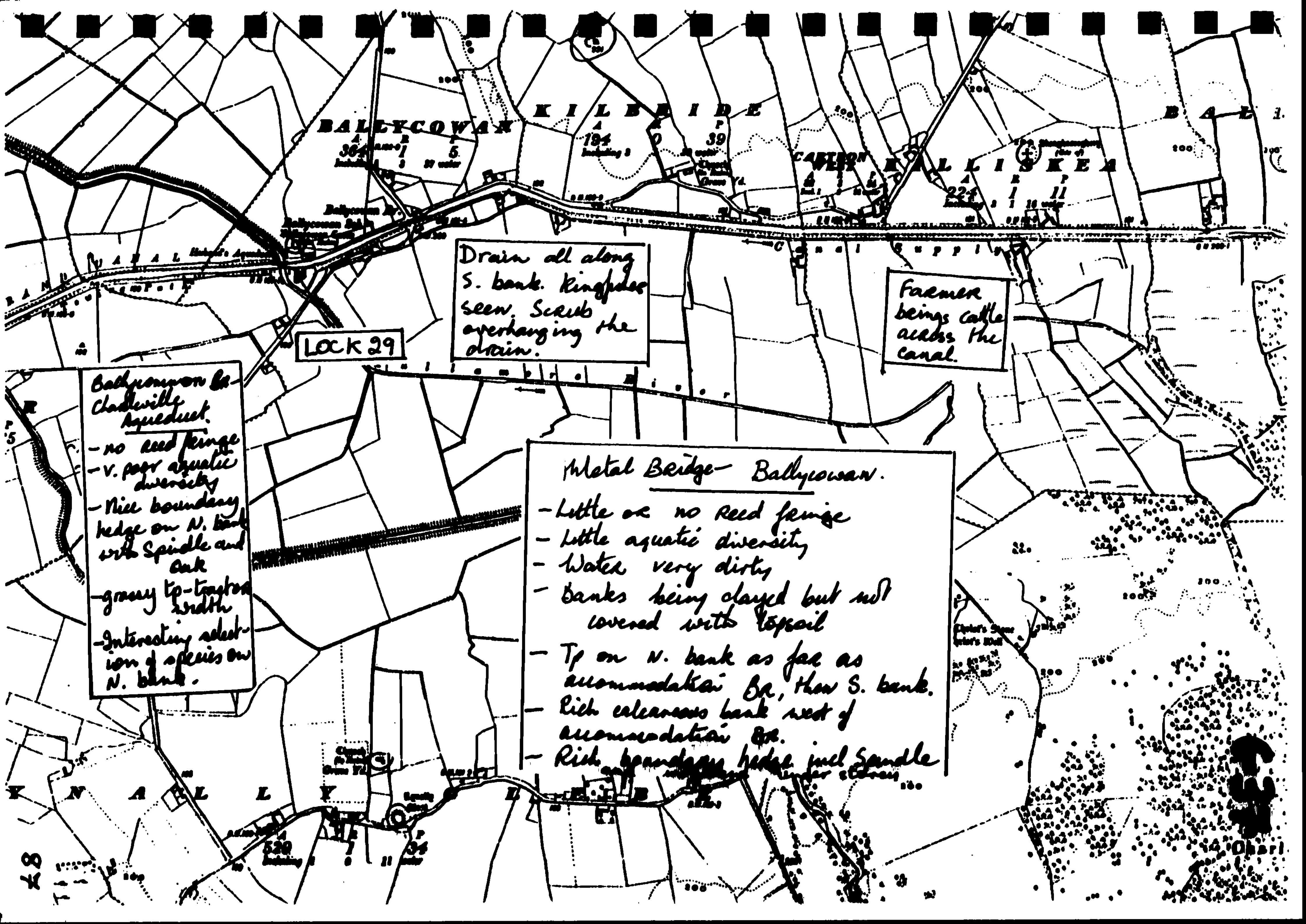
- Two silage pits very close to the canal on either bank a) just west of Charleville aqueduct on the south bank and b) west of the footbridge on the north bank. These do not seem to contribute to the poor water quality between lock 29 and Henesy's Bridge (Brendan Cooney pers. comm.).
- Clayed banks which have not been covered with soil/peat. The soil/peat enables seeds to germinate and so stabilize the banks further.
- Canal leak on north bank at Charleville aqueduct.
- Very poor reed fringe.
- It is proposed to use Roundup along this channel stretch in 1992.

OBJECTIVES:

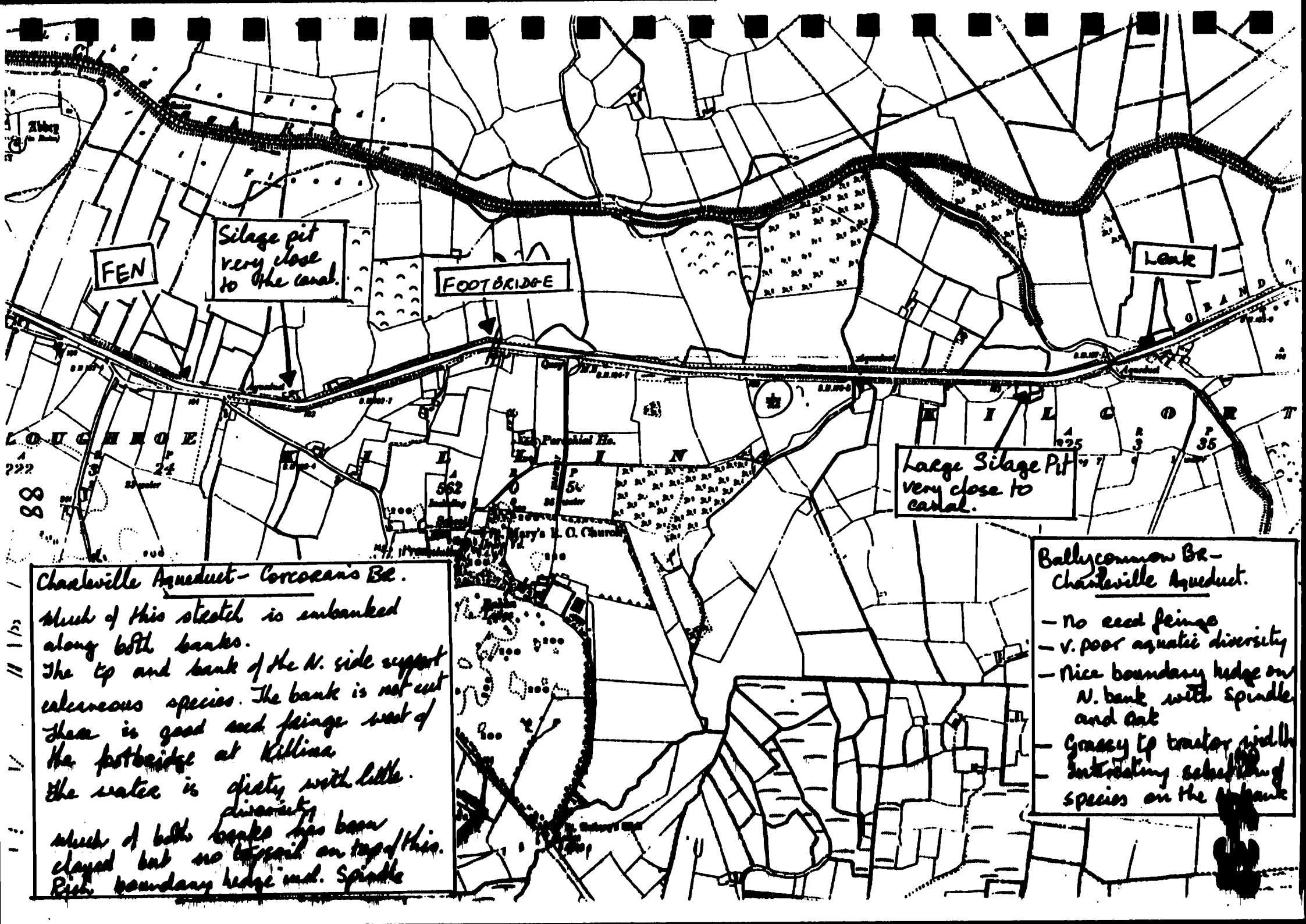
- To encourage the development of a continuous reed fringe along both banks and to maintain and increase aquatic diversity.
- To maintain habitat diversity by protecting the hedgerow and fen, berms and existing reed fringe.
- Add to habitat diversity by promoting the development of a meadow along the north bank.

RECOMMENDATIONS:

- Allow the aquatic diversity and reeds to recover. It is proposed to use trial cuttings along this stretch in 1992. Eliminate use of Roundup.
- Protect the species-rich boundary hedge.
- Cover the clayed banks with topsoil and facilitate vegetation growth and further bank stabilization.
- Cut the banks and towpaths once a year at the end of the growing season to promote the development of a meadow and remove the cuttings. Cuttings enrich the soil.
- Protect the small fen area.
- Investigate the reasons for the high amount of nitrates/nitrites present in this stretch relative to the rest of the canal.
- Investigate the leak on the north bank.



BALLYCOWAN
KILBRIDE
CARTRON
KILLISKEA
Canal Supply
LOCK 29
Drain all along S. bank. Kingfisher seen. Scrub overhanging the drain.
Farmer bring cattle across the canal.
Ballycowan Br. – Charleville Aqueduct.
- no reed fringe
- v. poor aquatic diversity
- Nice boundary hedge on N. bank with Spindle and Oak
- grassy tp-towpath width
- Interesting selection of species on N. bank.
Metal Bridge – Ballycowan.
- Little or no Reed fringe
- Little aquatic diversity
- Water very dirty
- Banks being clayed but not covered with topsoil
- Tp on N. bank as far as accommodation Br, then S. bank.
- Rich calcareous bank west of accommodation Br.
- Rich boundary hedge incl Spindle

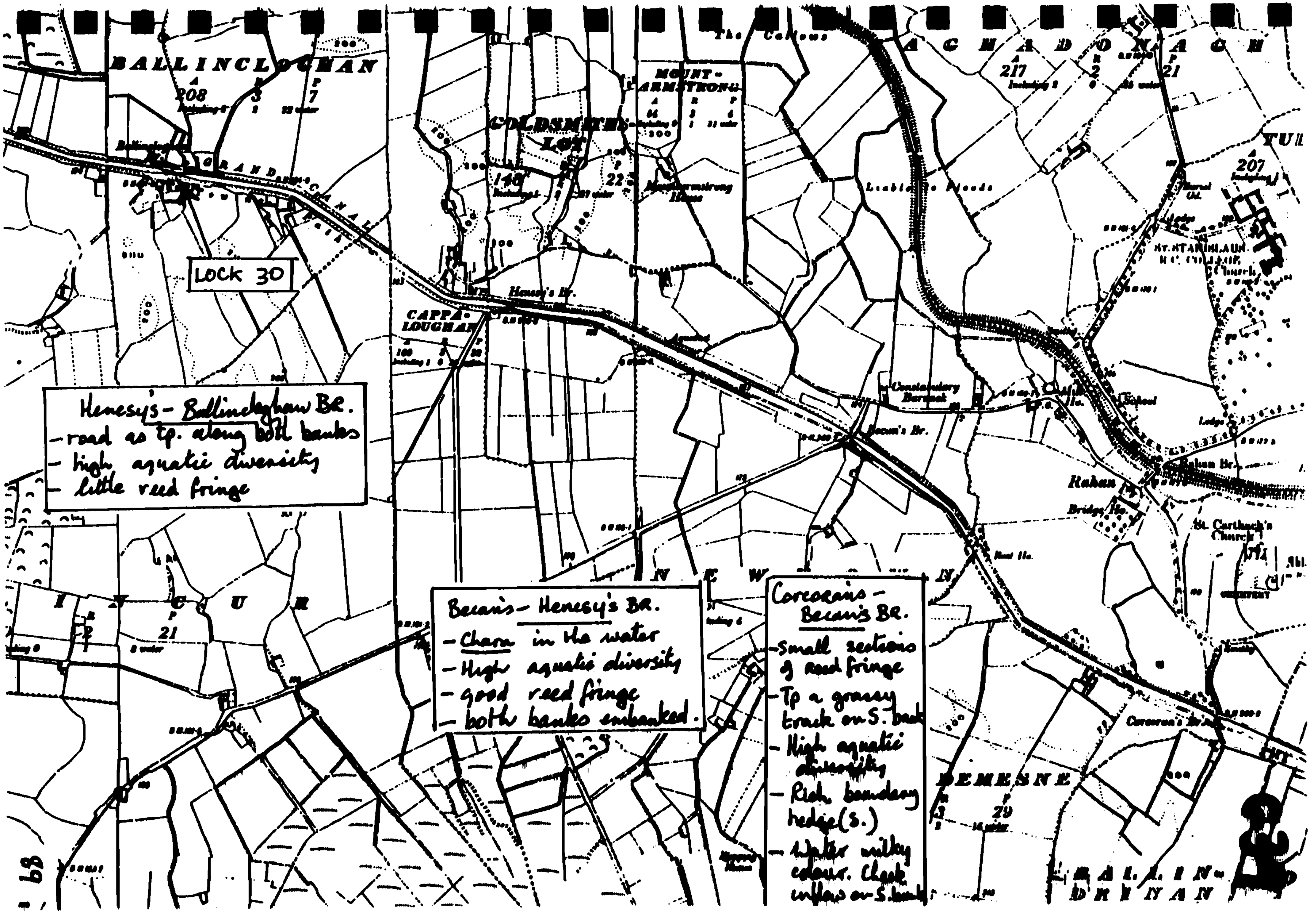


Charleville Aqueduct - Corcoran's Br.

Much of this stretch is embanked along both banks.
The top and bank of the N. side support calcareous species. The bank is not cut
There is good reed fringe west of the footbridge at Killina
The water is quite clear with little diversity
Much of both banks has been cleared but no regrowth on top of this.
Rich boundary hedge incl. Spindle

Ballycommon Br - Charleville Aqueduct.

- No reed fringe
- V. poor aquatic diversity
- Nice boundary hedge on N. bank with Spindle and Oak
- Grassy top tractor rutted
- Interesting selection of species on the N. bank



BALLINCLOGHAN
LOCK 30
GRAND CANAL
COLDSMITHS LOT
MOUNT-ARMSTRONG
CAPPA-LOUGHAN
Henesy's Br.
Becan's Br.
Corcoran's Br.
Raban Br.
Constabulary Barrack
St. Carthach's Church
DEMESNE
Henesy's - Ballinclogham BR.
- road as tp. along both banks
- high aquatic diversity
- little reed fringe
Becan's - Henesy's BR.
- Chara in the water
- High aquatic diversity
- good reed fringe
- both banks embanked.
Corcorans - Becan's BR.
- Small sections of reed fringe
- Tp a grassy track on S. bank
- High aquatic diversity
- Rich boundary hedge (S.)
- Water milky colour. Check inflow on S. bank

MAIN LINE

KM SECTIONS 104-107 CORCORAN'S BRIDGE - LOCK 30

GOOD FEATURES:

- Very good reed fringe along both banks.
- Banks and towpath not continually cut.
- Scrub/hedgerow along south bank very dense and rich.
- High aquatic diversity.
- Proposed use of localised cutting in the channel along this stretch in 1992.

BAD FEATURES:

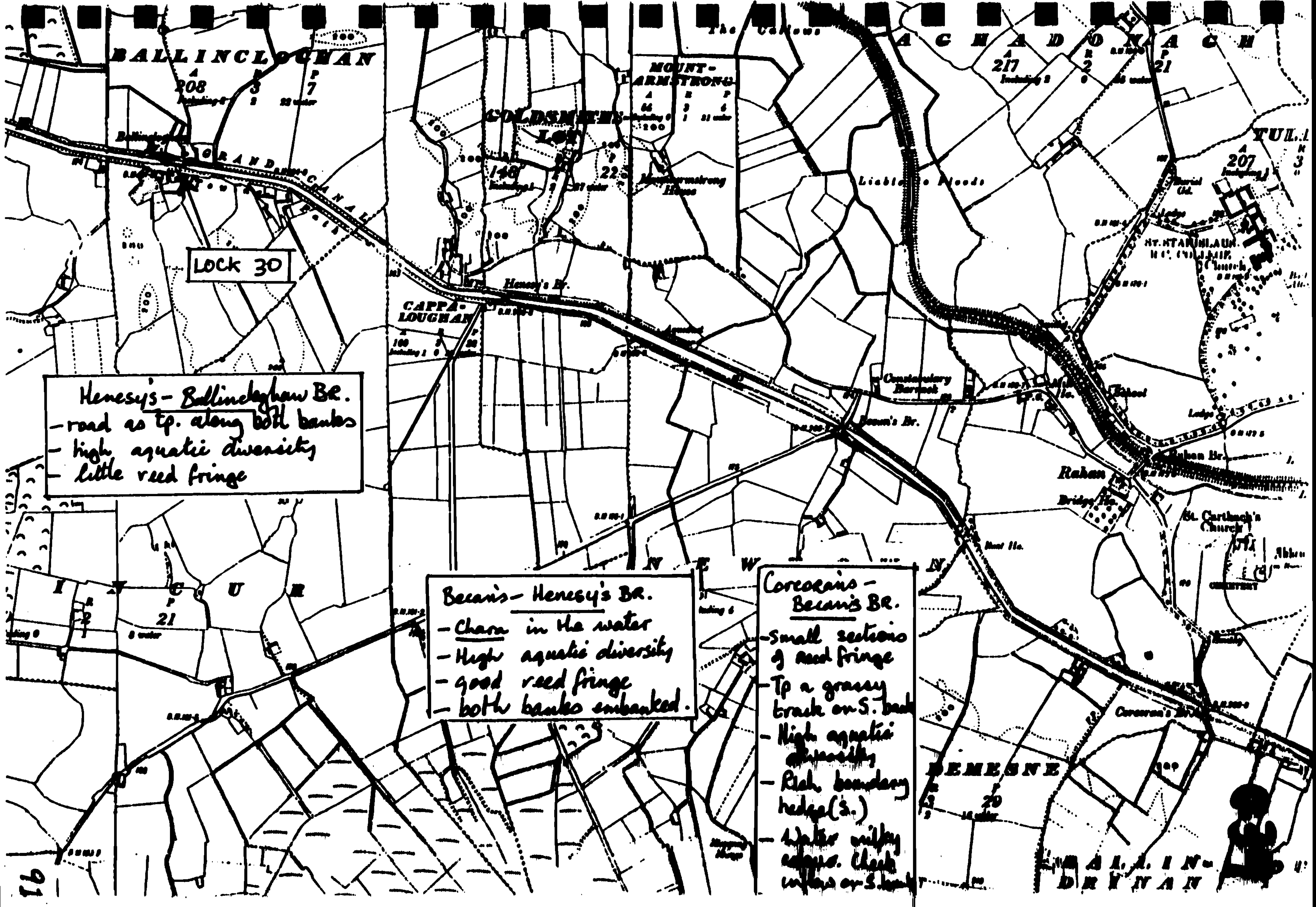
- Bank erosion.
- Very high nitrate/nitrite levels along this stretch.
- Inflow east of Becan's Bridge on S. bank was grey during time of survey.
- It is proposed to use Roundup along this stretch of channel in 1992.
- Boundary verge becoming too overgrown and encroaching on to towpath.

OBJECTIVES:

- To maintain the reed fringe and aquatic diversity.
- To promote habitat diversity by developing a meadow between Becan's and Henesy's Bridges (S) and scrub between Corcoran's and Becan's Bridges (S).

RECOMMENDATIONS:

- Cut banks and boundary verge between Becan's and Henesy's Bridge in 1992 and remove cuttings.
- Allow scrub to develop between Corcoran's and Becan's Bridges.
- Monitor the inflow.
- Protect the reed fringes and aquatic diversity. It is proposed that this stretch is to have cutting trials during 1992. Eliminate use of Roundup.
- Protect the hedgerows.


BALLINCLOGHAN
ACHADONACH
MOUNT-ARMSTRONG
GOLDSMITH'S LOT
CAPPALOUGHAN
GRAND CANAL
Liable to Floods
Henesy's Br.
Becan's Br.
Constabulary Barrack
Raheen Br.
Rahan
Bridge Ho.
St. Carthach's Church
Corcoran's Br.
DEMESNE
LOCK 30
Henesy's - Ballincloghan BR.
- road as tp. along both banks
- high aquatic diversity
- little reed fringe
Becan's - Henesy's BR.
- Chara in the water
- High aquatic diversity
- good reed fringe
- both banks embanked.
Corcoran's - Becan's BR.
- Small sections of reed fringe
- Tp a grassy track on S. bank
- High aquatic diversity
- Rich boundary hedge (S.)
- Water milfoil
- willows on S. bank

MAIN LINE

KM SECTIONS 107-111 LOCK 30 - POLLAGH

GOOD FEATURES

- Very good reed fringe and aquatic diversity between locks 30 and 31 and on the approach to Pollagh.
- Proposed use of cutting trials in the channel in 1992.
- Good reed fringe stretches west of Lock 31.
- Many moorhens present.
- Species-rich boundary hedge and boundary verge on south bank. Some acidic soil and acid loving species present due to the influence of the bog.
- Species-rich calcareous bank with many orchids present.
- Bank and boundary verge are not continually cut.

BAD FEATURES

- Much of the banks are clayed but are not covered in topsoil.
- The removal of much of the vegetation on the north bank west of Lock 31.

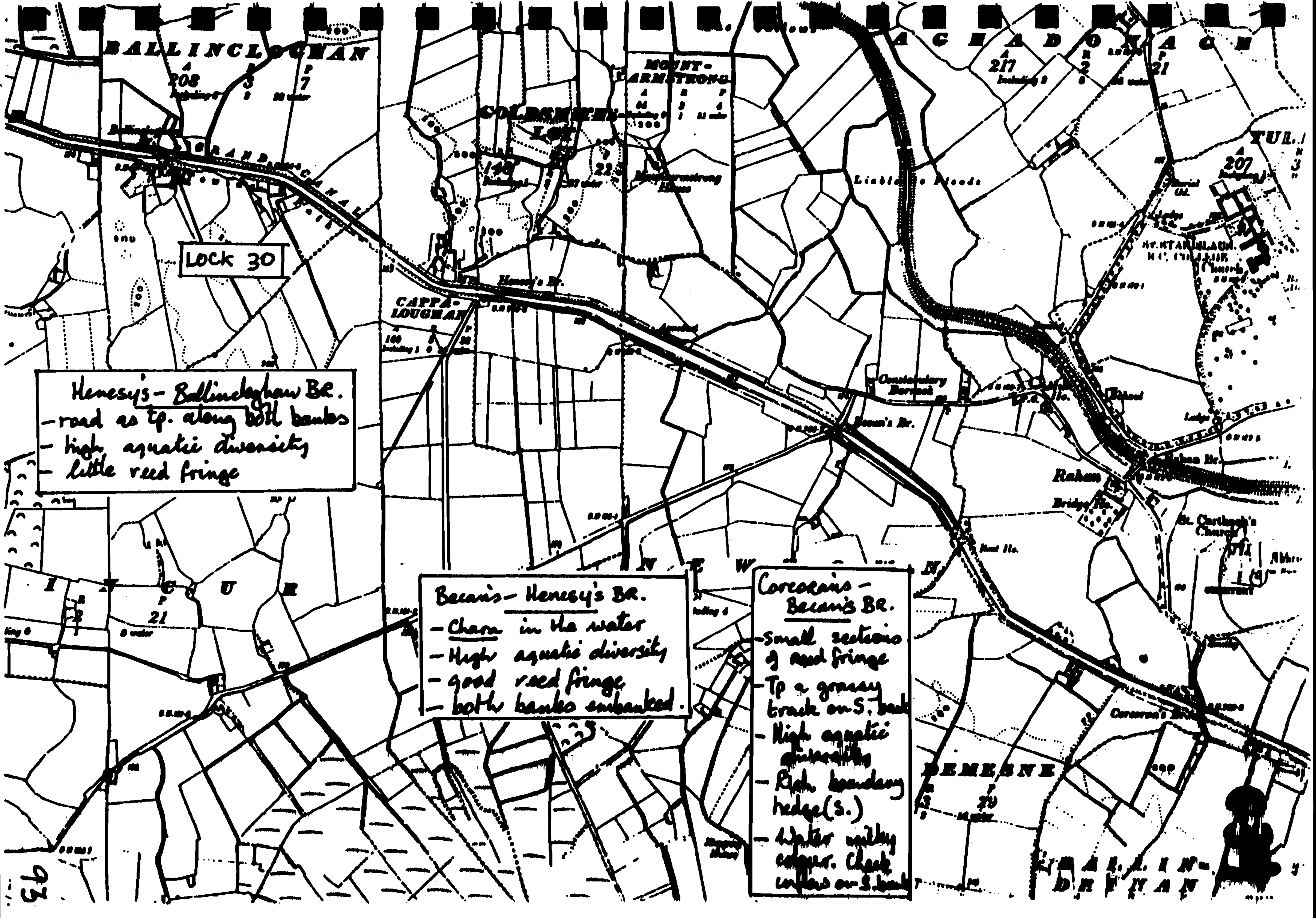
OBJECTIVES

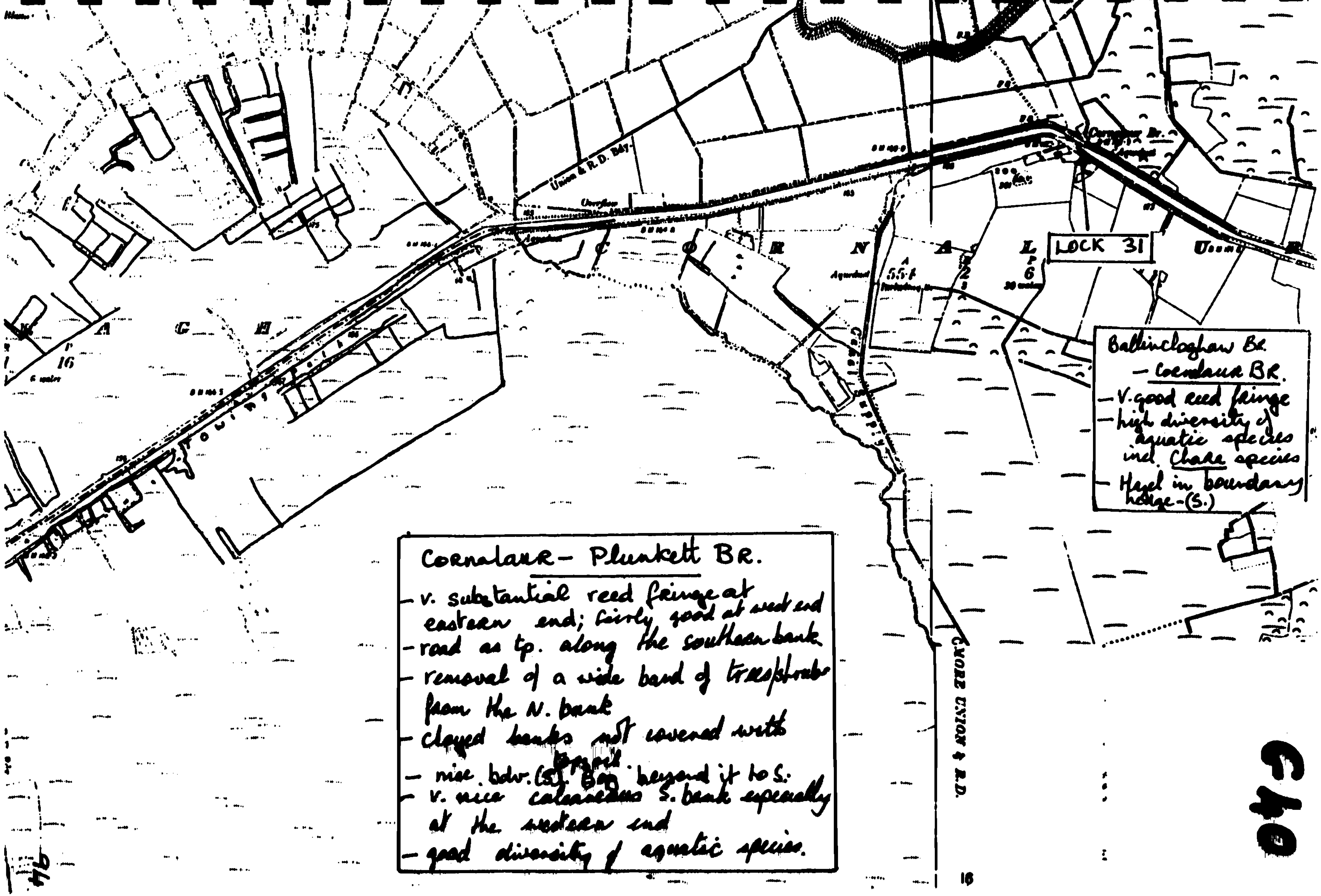
- To maintain aquatic diversity and to encourage the development of a reed fringe along the length.
- To maintain habitat diversity.
- To allow the bank verge to become hay meadow.
- To stabilize the banks.

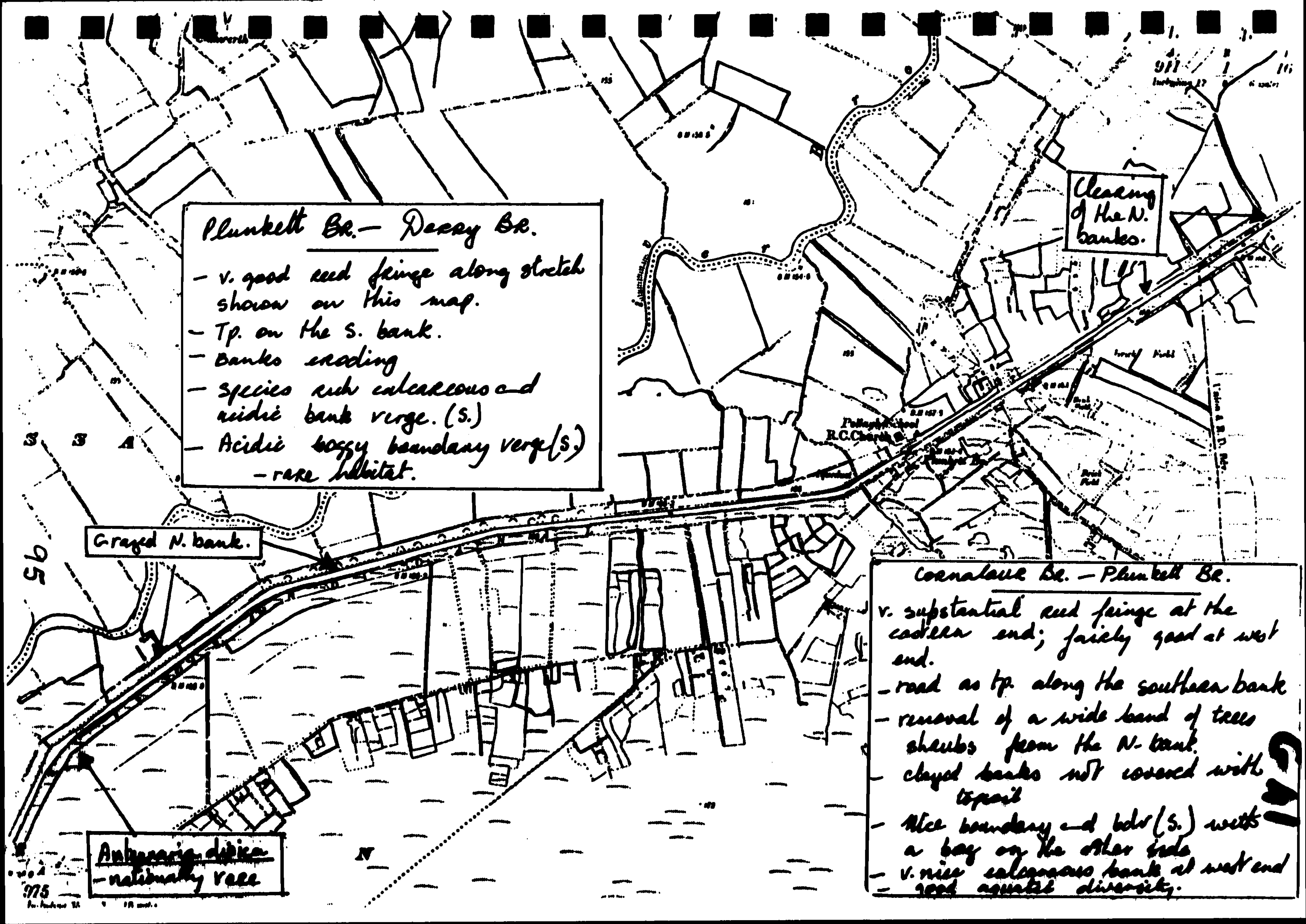
RECOMMENDATIONS

- Protect the reed fringe and aquatic diversity. It is proposed to use Cutting Trials between Locks 30 and 31 and to use Cutting Trials and Roundup West of Lock 31. Eliminate the use of Roundup.
- Use of Roundup in the channel at Pollagh which affected the terrestrial vegetation of the north bank.
- Cover the clayed banks with topsoil in order to facilitate germination and so stabilize the banks further.
- Cut the boundary verge on a three year rotation to prevent brambles dominating.
- Cut the calcareous banks once a year at the end of the growing season. Remove cuttings. Cutting late in the year allows plants to seed and so the diversity of the seed bank is not reduced.

- Why is it necessary to remove the vegetation from the north bank?


BALLINCLOGHAN
LOCK 30
GRAND CANAL
CAPPALOUGHAN
Henesy's Br.
MOUNT-ARMSTRONG
Constabulary Barrack
Becan's Br.
Rahan
Bridge Ho.
St. Carthagh's Church
DEMESNE
Corcoran's Br.
Henesy's- Ballincloghan BR.
-road as tp. along both banks
- high aquatic diversity
- little reed fringe
Becan's- Henesy's BR.
- Chara in the water
- High aquatic diversity
- good reed fringe
- both banks embanked.
Corcoran's- Becan's BR.
-Small sections of reed fringe
-Tp a grassy track on S. bank
- High aquatic diversity
- Rich boundary hedge (S.)
- Water milky colour. Check outflows on S. bank


LOCK 31
Canal Supply
Towing Path
Union & R.D. Bdy
C.MORE UNION & R.D.
Ballincloghan Br.
– Cornalaur Br.
– V. good reed fringe
– high diversity of aquatic species incl. Chara species
– Hazel in boundary hedge – (S.)
Cornalaur – Plunkett Br.
– v. substantial reed fringe at eastern end; fairly good at west end
– road as tp. along the southern bank
– removal of a wide band of trees/shrubs from the N. bank
– clayed banks not covered with topsoil
– nice bdw. (S.) Bog beyond it to S.
– v. nice calcareous S. bank especially at the western end
– good diversity of aquatic species.


Clearing of the N. banks.
Plunkett Br. – Derry Br.
– v. good reed fringe along stretch shown on this map.
– Tp. on the S. bank.
– Banks eroding
– species rich calcareous and acidic bank verge. (S.)
– Acidic boggy boundary verge (S.) – rare habitat.
Grazed N. bank.
– nationally rare
Cornalaur Br. – Plunkett Br.
v. substantial reed fringe at the eastern end; fairly good at west end.
– road as tp. along the southern bank
– removal of a wide band of trees shrubs from the N. bank
– clayed banks not covered with topsoil
– Nice boundary and bdr (S.) with a bog on the other side
– v. nice calcareous bank at west end
– good aquatic diversity.
R.C.Church

KM SECTIONS 111-116 POLLAGH - DERRY BRIDGE

GOOD FEATURES

- Patches of Phragmites australis reed fringe along the north bank.
- Proposed use of localised cutting in the channel in 1992.
- Species-rich calcareous bank all along the south bank supporting such species as Antennaria dioica, Listera ovata and other orchids.
- Species-rich calcareous towpath, where it is in grass, which separates the canal from the bog.
- Acidic and calcareous influences evident in the species-rich boundary verge.
- Species-rich grassland along the north bank.
- Birchwood west of the swing bridge in the boundary verge.

BAD FEATURES

- Very little reed fringe along the south bank.
- Very poor reed fringe on either bank on the approach to Derry Bridge.
- Erosion of banks.
- Erosion of towpath at two sites.
- Proposed use of Roundup along some of this channel stretch in 1992.

OBJECTIVES

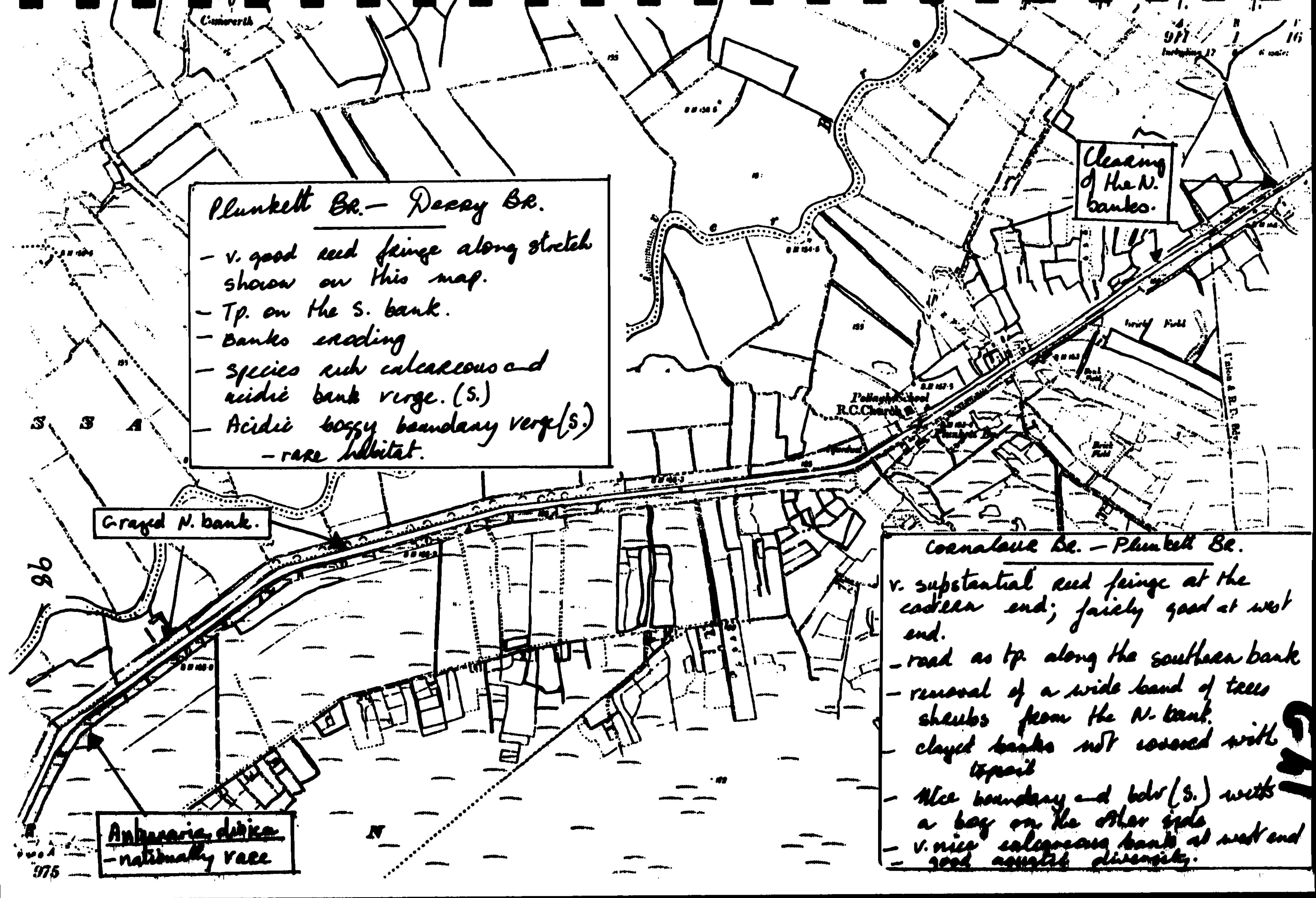
- To maintain aquatic diversity and to encourage the development of a reed fringe along the entire length.
- To maintain habitat diversity.
- To promote the development of a hay meadow along bank and towpath.
- To stabilize the banks.

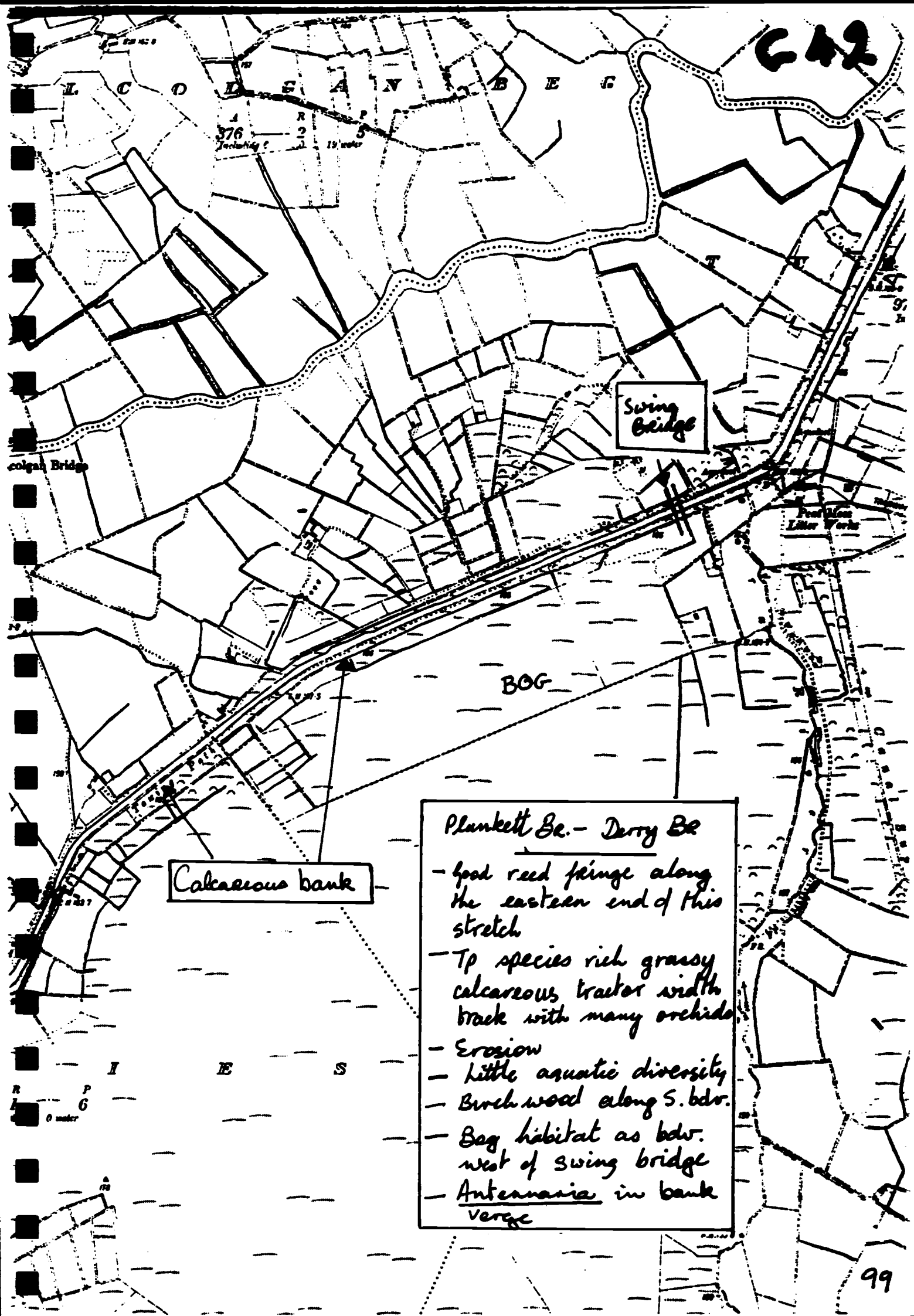
RECOMMENDATIONS

- Protect the bog sections of the boundary verge.
- Repair erosion points and plant emergent Rhizomes at the base of the new gentle gradient bank. Plant in March or September.
- Cover all sections to be clayed with peat. This will encourage plants to germinate which in turn will stabilize the banks further.
- Protect the diversity of the boundary verge, towpath and bank where possible.
- Continue to remove aquatic plants mechanically cutting up to 1 foot away from the bank. This may prevent the submerged form of Scirpus lacustris and Sparganium emersum, which presently grows at channel edges, from extending to mid channel and interfering with navigation.
- Eliminate the use of Roundup.
- Cut both banks once a year at the end of the growing season - to maintain the diversity of the meadow like grassland. Remove cuttings as they act as fertilizer and enrich the soil which

encourages competitive species to dominate.

- Cut the edge of the boundary verge on a three year rotation to prevent scrub encroaching on to the towpath.


Plunkett Br.— Derry Br.
- v. good reed feinge along stretch shown on this map.
- Tp. on the S. bank.
- Banks eroding
- species rich calcareous and acidic bank verge. (S.)
- Acidic boggy boundary verge (S.)
- rare habitat.
Clearing of the N. banks.
Grazed N. bank.
Cornalaue Br. – Plunkett Br.
v. supstantial reed feinge at the cadeen end; fairly good at west end.
- road as tp. along the southern bank
- removal of a wide band of trees shrubs from the N. bank.
- clayed banks not covered with topsoil
- Nice boundary and bdr (S.) with a bog on the other side
- v. nice calcareous bank at west end good aquatic diversity.
Anbunaria dubica
- nationally rare
R.C. Church
Union & R. D. Bdy.
Brick Field
Brick Field
Commerrh
911
16
975


Swing Bridge
BOG
Calcareous bank
Plunkett Be. - Derry Be
- Good reed fringe along the eastern end of this stretch
- Tp species rich grassy calcareous tractor width track with many orchids
- Erosion
- Little aquatic diversity
- Birch wood along S. bdy.
- Bog habitat as bdy. west of swing bridge
- Antennaria in bank verge

MAIN LINE

KM SECTIONS 116-121 DERRY BRIDGE - ARMSTRONG BRIDGE

GOOD FEATURES

- Species-rich south bank verge as far as Macartney aqueduct with many orchid variations.
- Rich wet meadows in the boundary verge west of the aqueduct.
- Small stretches of reed fringe.
- It is proposed to use Cutting Trials along some of this stretch of channel on 1992.
- Scrub along the north bank and southern boundary.

BAD FEATURES

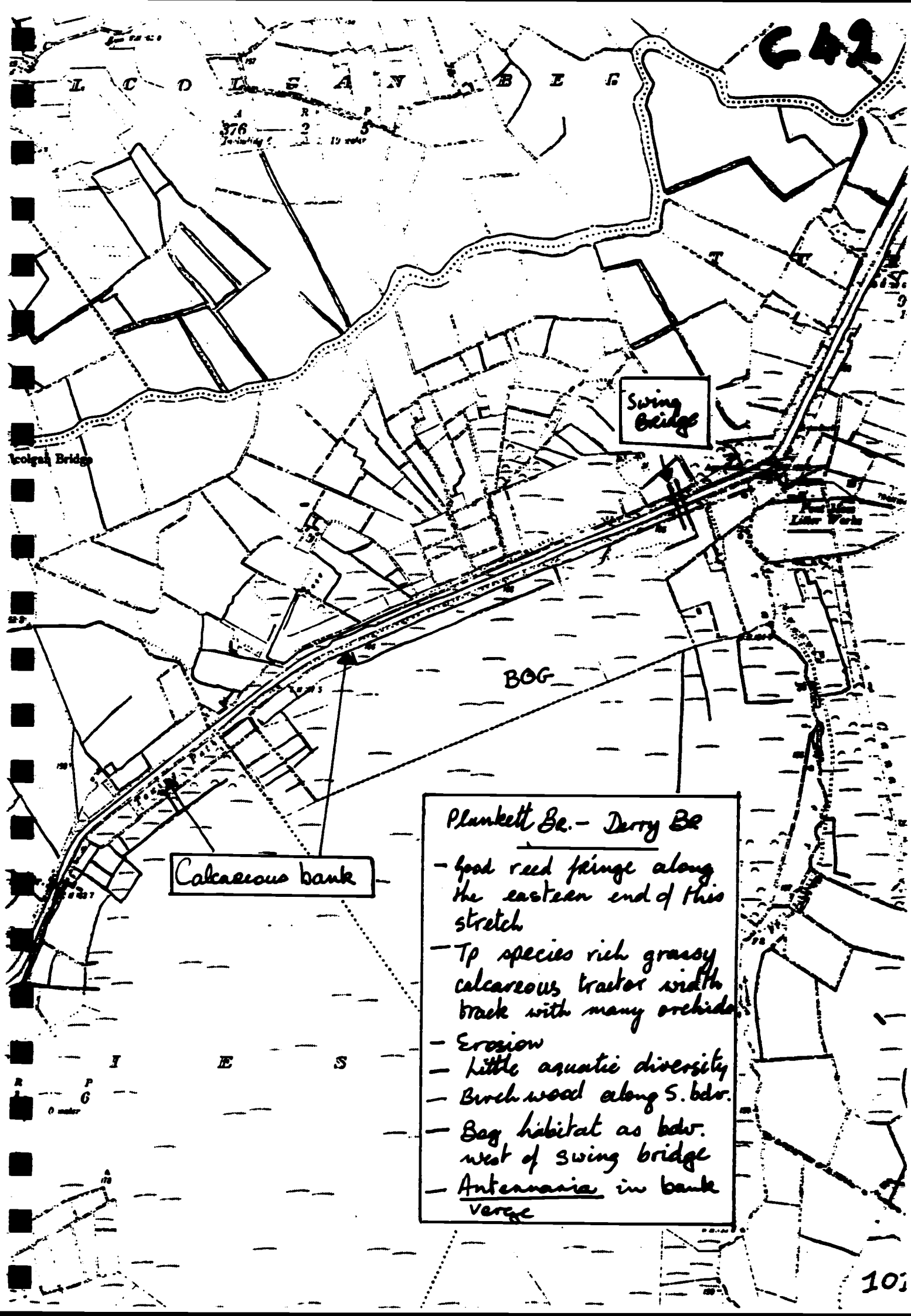
- It is proposed to use Roundup along some of this stretch in 1992.
- Clayed banks west of Macartney aqueduct with no soil/peat covering it to enhance vegetation growth.
- Eroding banks still present.
- The removal of trees and scrub species from the north bank east of Armstrong Bridge.

OBJECTIVES

- To maintain aquatic diversity and to encourage the development of reed fringe along the entire length.
- To promote habitat diversity.
- To develop hay meadow along the north bank if and when the trees/scrub are removed.
- To stabilize banks.

RECOMMENDATIONS

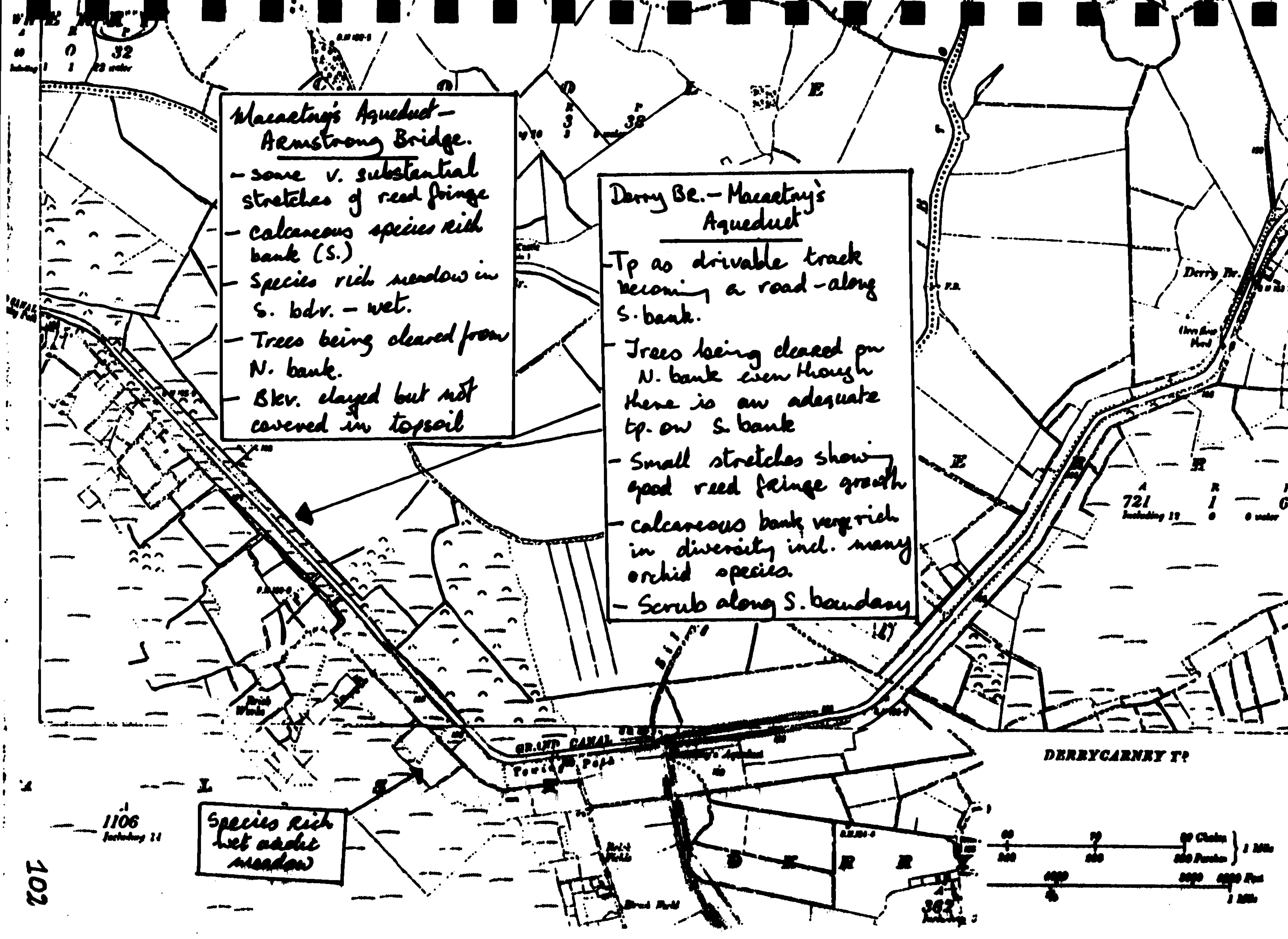
- There is a towpath being cleared along the north bank. Ensure that it is only wide enough for machinery but not over wide. Leave some saplings on the bank. Once the towpath has been made and if grass is to grow on it cut it once a year at the end of the growing season and remove cuttings. A narrower path can be cut more frequently for pedestrian access.
- Do not remove all trees and scrub wholesale from the north bank.
- Protect the bank verge.
- Protect the reed fringe.
- Eliminate the use of Roundup.
- Continue to use Cutting Trials on the aquatic vegetation.
- Cover the repaired banks with peat.

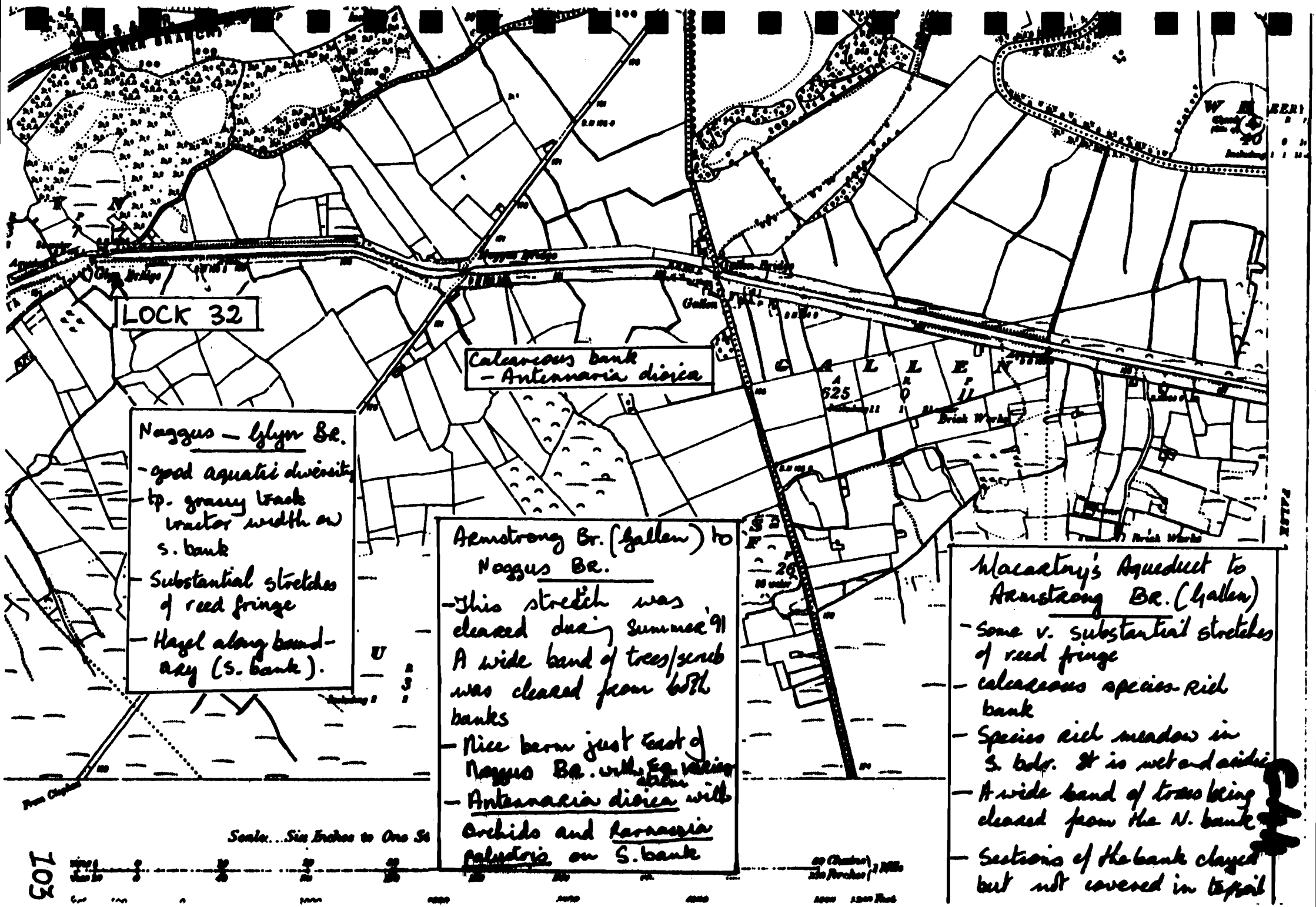


Plunkett Be.– Derry Be

- Good reed fringe along the eastern end of this stretch
- Tp species rich grassy calcareous tractor width track with many orchids
- Erosion
- Little aquatic diversity
- Birch wood along S. bdy.
- Bog habitat as bdy. west of swing bridge
- Antennaria in bank verge

G43


Macartney's Aqueduct – Armstrong Bridge.
– some v. substantial stretches of reed fringe
– calcareous species rich bank (S.)
– Species rich meadow in S. bdv. – wet.
– Trees being cleared from N. bank.
– Bkv. clayed but not covered in topsoil
Derry Be. – Macartney's Aqueduct
Tp as drivable track becoming a road – along S. bank.
– Trees being cleared on N. bank even though there is an adequate tp. on S. bank
– Small stretches showing good reed fringe growth
– calcareous bank very rich in diversity incl. many orchid species.
– Scrub along S. boundary
Species Rich wet arable meadow
Derry Br.
GRAND CANAL
Towing Path
DERRYCARNEY Tp
721
1106
32
38
362


LOCK 32
Calcareous bank
– Antennaria dioica
Naggus – Lylyn Br.
– good aquatic diversity
– tp. grassy track tractor width on S. bank
– Substantial stretches of reed fringe
– Hazel along boundary (S. bank).
Armstrong Br. (Gallen) to Naggus Br.
– This stretch was cleared during Summer '91 A wide band of trees/scrub was cleared from both banks
– Nice berm just east of Naggus Br. with Eq. variegatum
– Antennaria dioica with Orchids and Parnassia palustris on S. bank
Macartey's Aqueduct to Armstrong Br. (Gallen)
– Some v. substantial stretches of reed fringe
– calcareous species-Rich bank
– Species rich meadow in S. bdr. It is wet and acidic
– A wide band of trees being cleared from the N. bank
– Sections of the bank clayed but not covered in topsoil
Scale... Six Inches to One Mile
103

KM SECTIONS 121-123

MAIN LINE
ARMSTRONG BRIDGE - GLYN BRIDGE
(LOCK 32)

GOOD FEATURES

- South banks berms between Noggus and Armstrong Bridges are calcareous and species-rich including Carlina vulgaris, Antennaria dioica, Parnassia palustris, Brizia media and Equisetum variegatum.
- Good stretches of reed fringe on the approach to Glyn Bridge.
- Hazel hedge along the boundary (N. Bank) between Noggus and Glyn Bridges.

BAD FEATURES

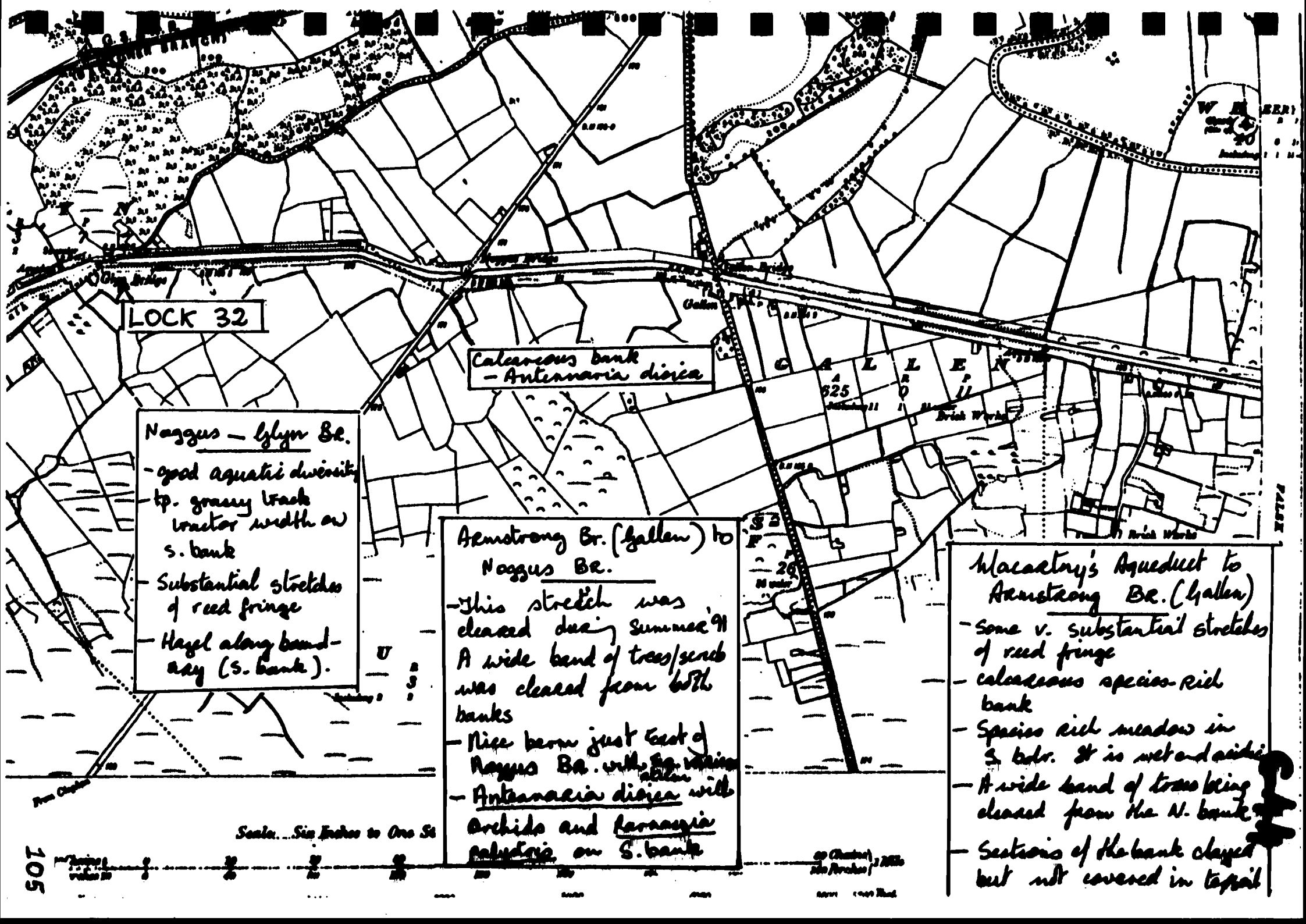
- Aquatic plants were treated with Roundup and Localised Casoraon.
- It is proposed to use Roundup and Cutting Trials in 1992 (Caffrey, 1991).
- Very little reed fringe.
- Both banks completely cleared of scrub by 9th September 1991 up to a width of 15-20m.

OBJECTIVES

- To promote habitat diversity.
- To develop a calcareous hay meadow along the cleared stretches.
- To encourage reed fringe development.

RECOMMENDATIONS

- Eliminate use of Casoron and Roundup.
- Cut the vegetation of the cleared stretches three times in 1992 and 1993, May, July and September and remove cuttings. Thereafter cut at the end of the growing season August/September and remove cuttings.
- Protect bank berms and other bank vegetation. Cut once a year only and remove cuttings.
- Protect Hazel hedge.


LOCK 32
Calcareous bank
- Antennaria dioica
Naggus – Lylyn Br.
- good aquatic diversity
- tp. grassy track tractor width on S. bank
- Substantial stretches of reed fringe
- Hazel along boundary (S. bank).
Armstrong Br. (Gallen) to Naggus Br.
- This stretch was cleared during Summer '91 A wide band of trees/scrub was cleared from both banks
- Nice berm just East of Naggus Br. with Sp. Valeriana officinalis
- Antennaria dioica with Orchids and Parnassia palustris on S. bank
Macartey's Aqueduct to Armstrong Br. (Gallen)
- Some v. substantial stretches of reed fringe
- calcareous species-Rich bank
- Species rich meadow in S. bdr. It is wet and acidic
- A wide band of trees being cleared from the N. bank
- Sections of the bank cleared but not covered in topsoil
Scale... Six Inches to One St
105

KM SECTIONS 123-125

MAIN LINE
GLYN BRIDGE (LOCK 32)
— BELMONT BRIDGE (LOCK 33)

GOOD FEATURES

- Species-rich boundary hedge of Oak, Elm, Guelder Rose and Hazel.
- Canal cuts through esker gravels east of Belmont Bridge and all terrestrial canal zones are calcareous and species-rich including Carlina vulgaris and many orchid varieties.

BAD FEATURES

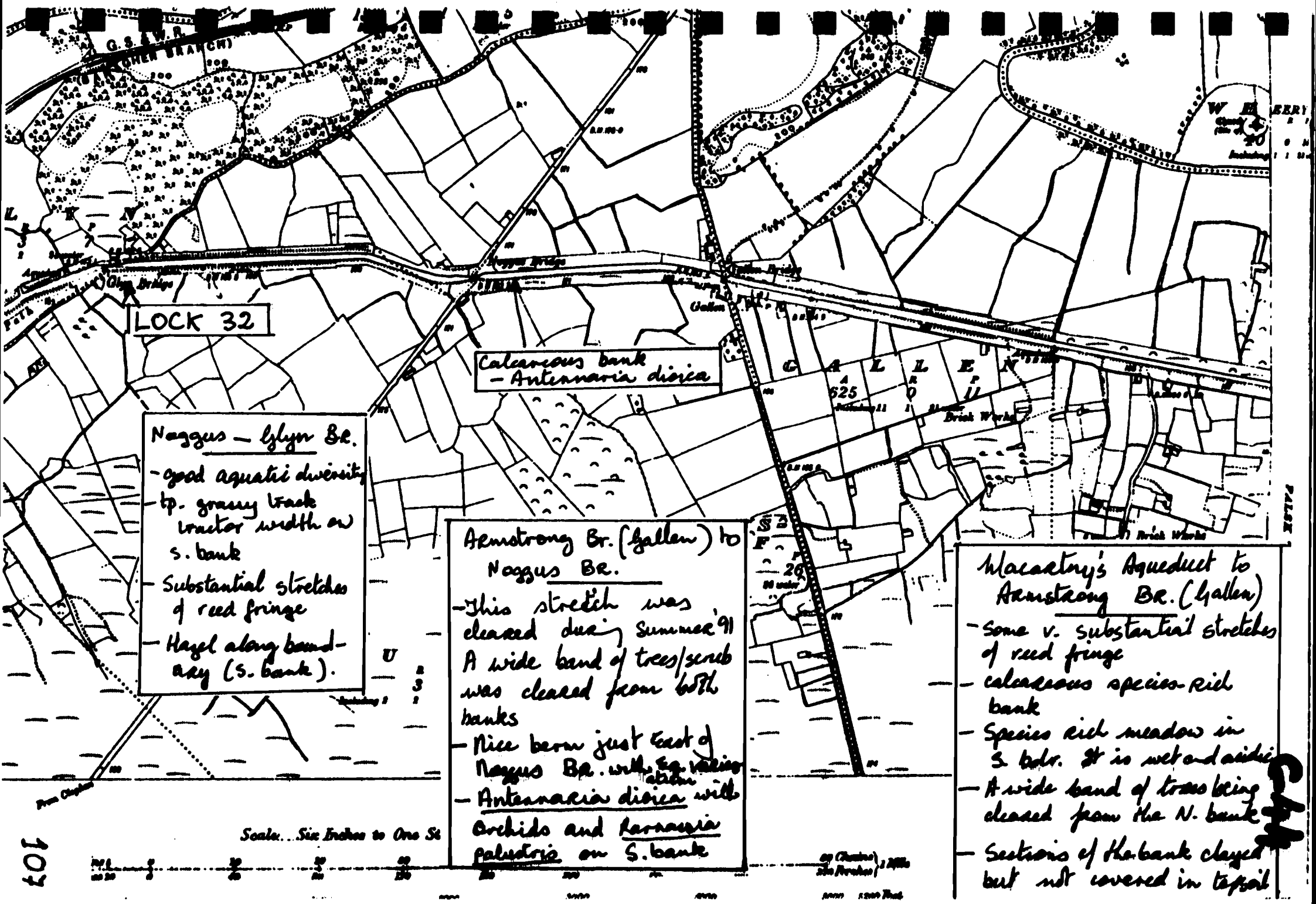
- This stretch was treated with Casoron in 1991 and it is proposed to use Roundup and cutting trials in 1992 (Caffrey, 1991).
- Very poor reed fringe throughout.
- Banks have been clayed but not covered with topsoil.
- Scrub encroaching on to towpath in the vicinity of Judge's Bridge.

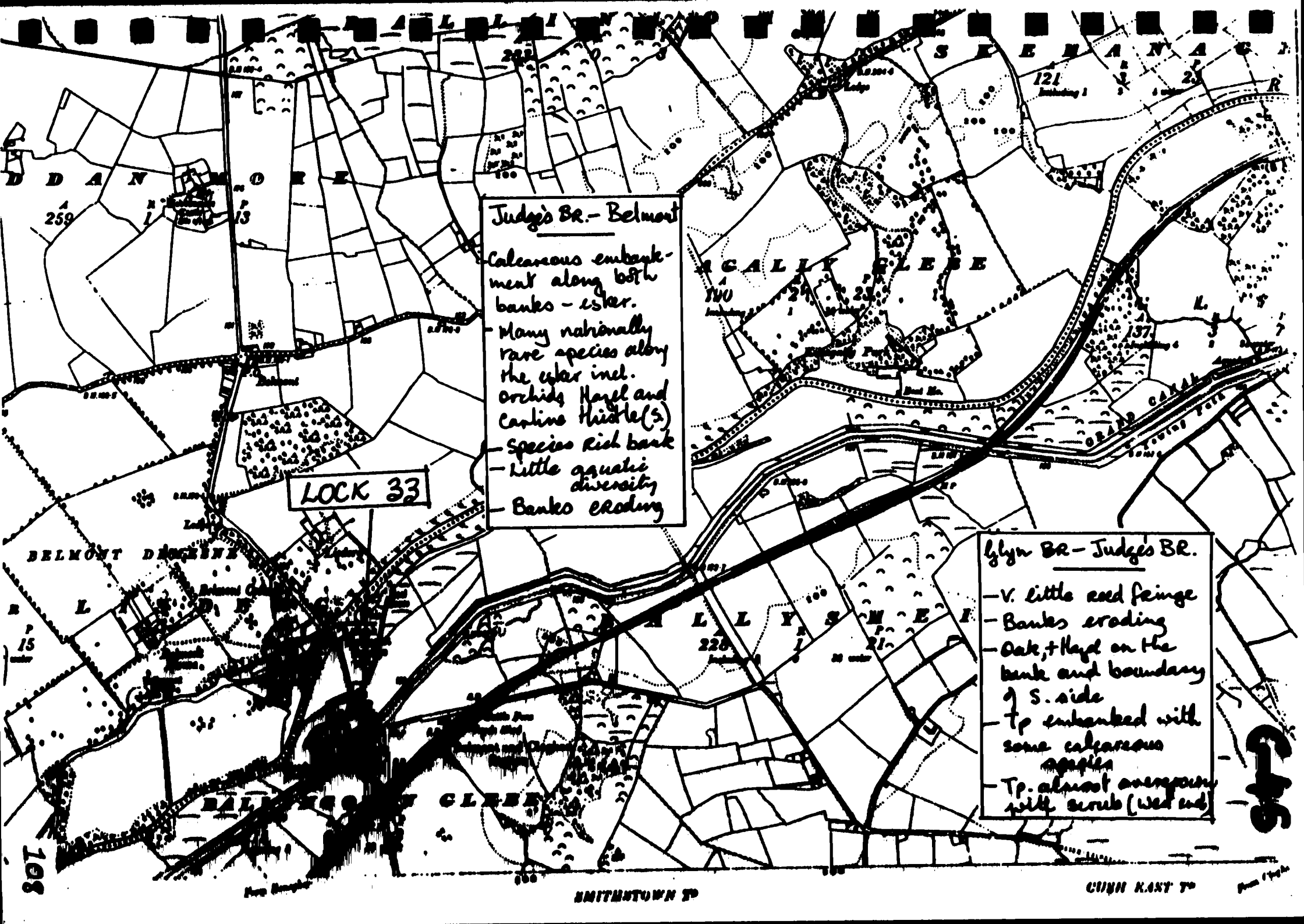
OBJECTIVES

- To encourage the development of reed fringe throughout.
- To allow meadow develop along the bank and towpath (S. bank).
- To encourage habitat diversity.
- to stabilize the banks.

RECOMMENDATIONS

- To eliminate use of Roundup and Casoron.
- To protect the vegetation of the Esker. Do not deposit spoil there.
- To remove scrub from towpath. Spot-treat stumps.
- Cut the bank and towpath once a year in August/September and remove cuttings. Calcareous meadow will result in time.
- Allow scrub to develop in the boundary verge.
- Cover the clayed banks with topsoil to facilitate germination and therefore stabilize the banks further.


LOCK 32
Calcareous bank
– Antennaria dioica
Naggus – Lylyn Br.
– good aquatic diversity
– tp. grassy track tractor width on S. bank
– Substantial stretches of reed fringe
– Hazel along boundary (S. bank).
Armstrong Br. (Gallen) to Naggus Br.
– This stretch was cleared during Summer '91 A wide band of trees/scrub was cleared from both banks
– Nice berm just East of Naggus Br. with Eq. palustre
– Antennaria dioica with Orchids and Parnassia palustris on S. bank
Macartney's Aqueduct to Armstrong Br. (Gallen)
– Some v. substantial stretches of reed fringe
– calcareous species-Rich bank
– Species rich meadow in S. bdr. It is wet and acidic
– A wide band of trees being cleared from the N. bank
– Sections of the bank cleared but not covered in topsoil
Scale... Six Inches to One St
102


Judge's Br. – Belmont
- Calcareous embankment along both banks – esker.
- Many nationally rare species along the weir incl. orchids Hazel and Carline Thistle(s)
- Species Rich bank
- Little aquatic diversity
- Banks eroding
LOCK 33
Glyn Br – Judge's Br.
- V. little reed fringe
- Banks eroding
- Oak, + Hazel on the bank and boundary of S. side
- Tp embanked with some calcareous species
- Tp. almost evergreen with scrub (West end)
BELMONT DEMESNE
SMITHSTOWN Tp
CUSH EAST Tp
108

KM SECTIONS 125-131 **BELMONT BRIDGE (LOCK 33) - GRIFFITH BRIDGE (LOCK 34)**

GOOD FEATURES

- Shannon Callows and Shannon Harbour form part of the boundary where the canal reaches the Shannon. The Callows are an ASI of National importance (ASI No. 6, Co. Offaly), because it forms very important wintering feeding grounds for geese and waders and a summer breeding ground for corncrakes.
- Boundary which is species-rich (N. Bank) between Belmont and L'Estrange Bridges including Oak, Ash, Beech, Hazel Guelder Rose, Spindle and Willow. Hazel along the same bank.
- Tall herbaceous species and grasses growing along the boundary verge bank and towpath between Belmont and L'Estrange Bridges.
- Calcareous species-rich bank on a mound between Clononey and Griffith Bridges.
- Species-rich herbaceous bank west of the harbour.
- Species-rich acidic wet grassland on south boundary verge immediately east of Griffith Bridge.
- North bank lightly grazed east of Griffith Bridge.

BAD FEATURES

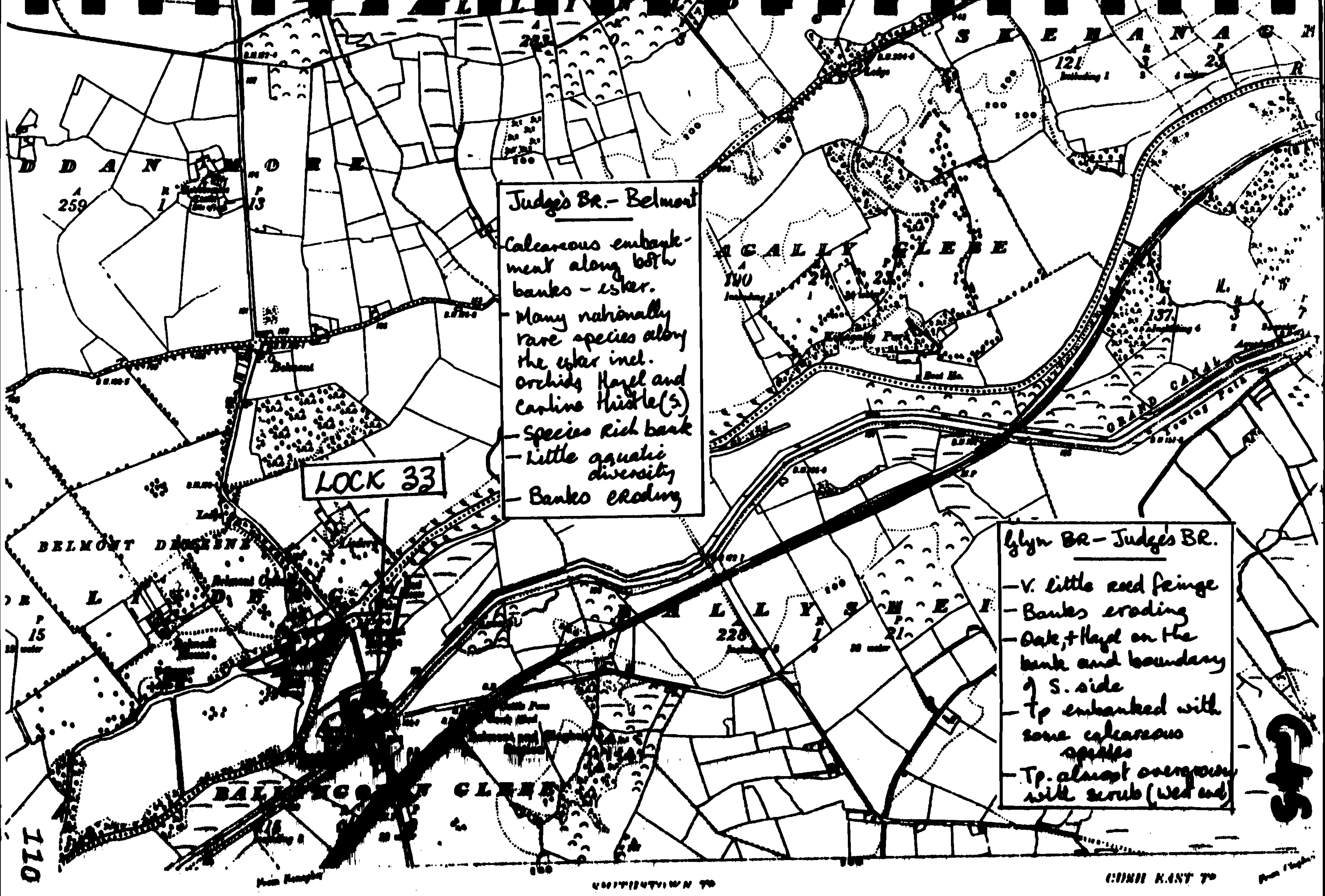
- Both Casoron and Roundup were used along this stretch of channel in 1991 and it is proposed to use some Roundup again in 1992 (Caffrey, 1991).
- Bank erosion.
- Very poor reed fringe throughout.

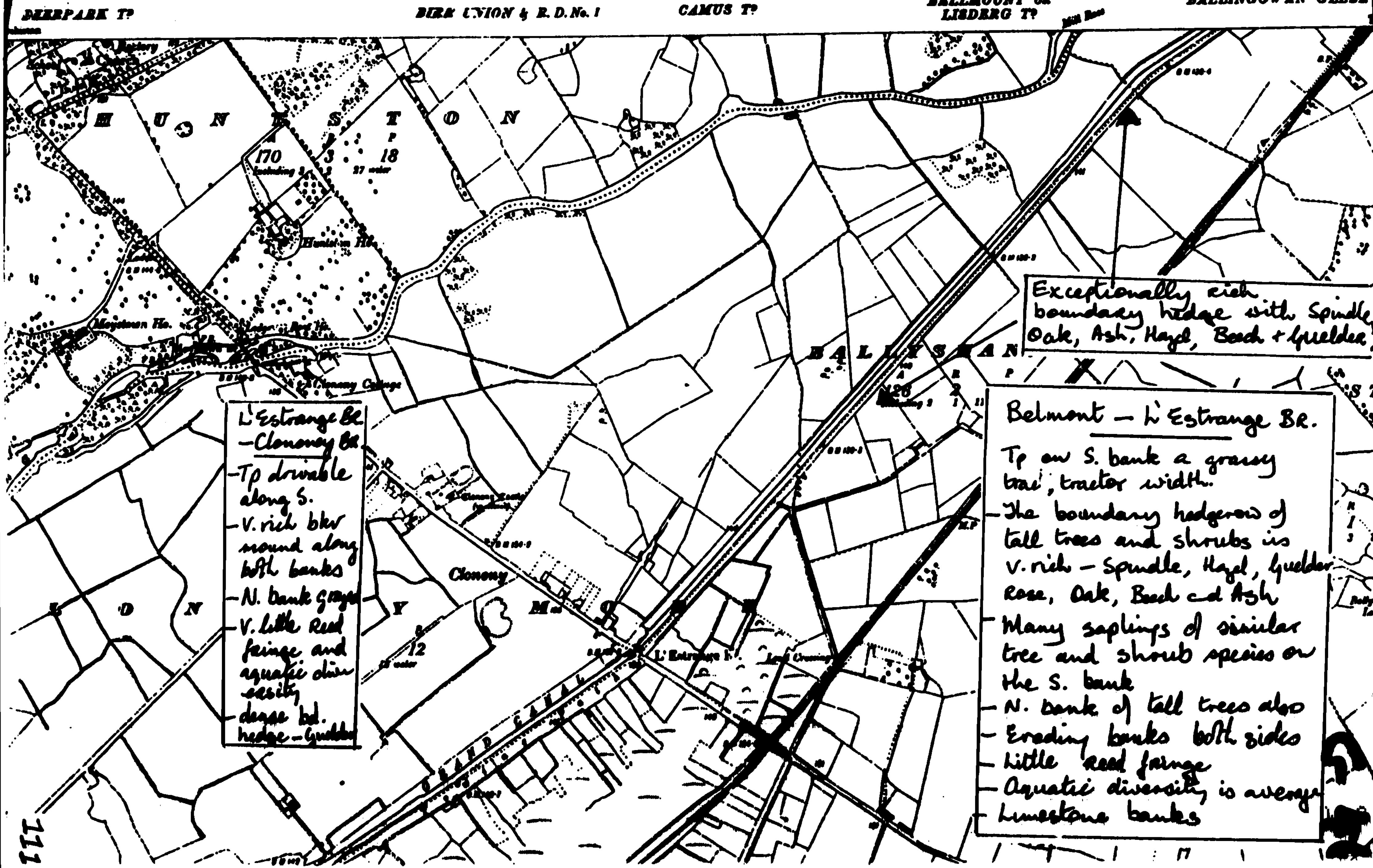
OBJECTIVES

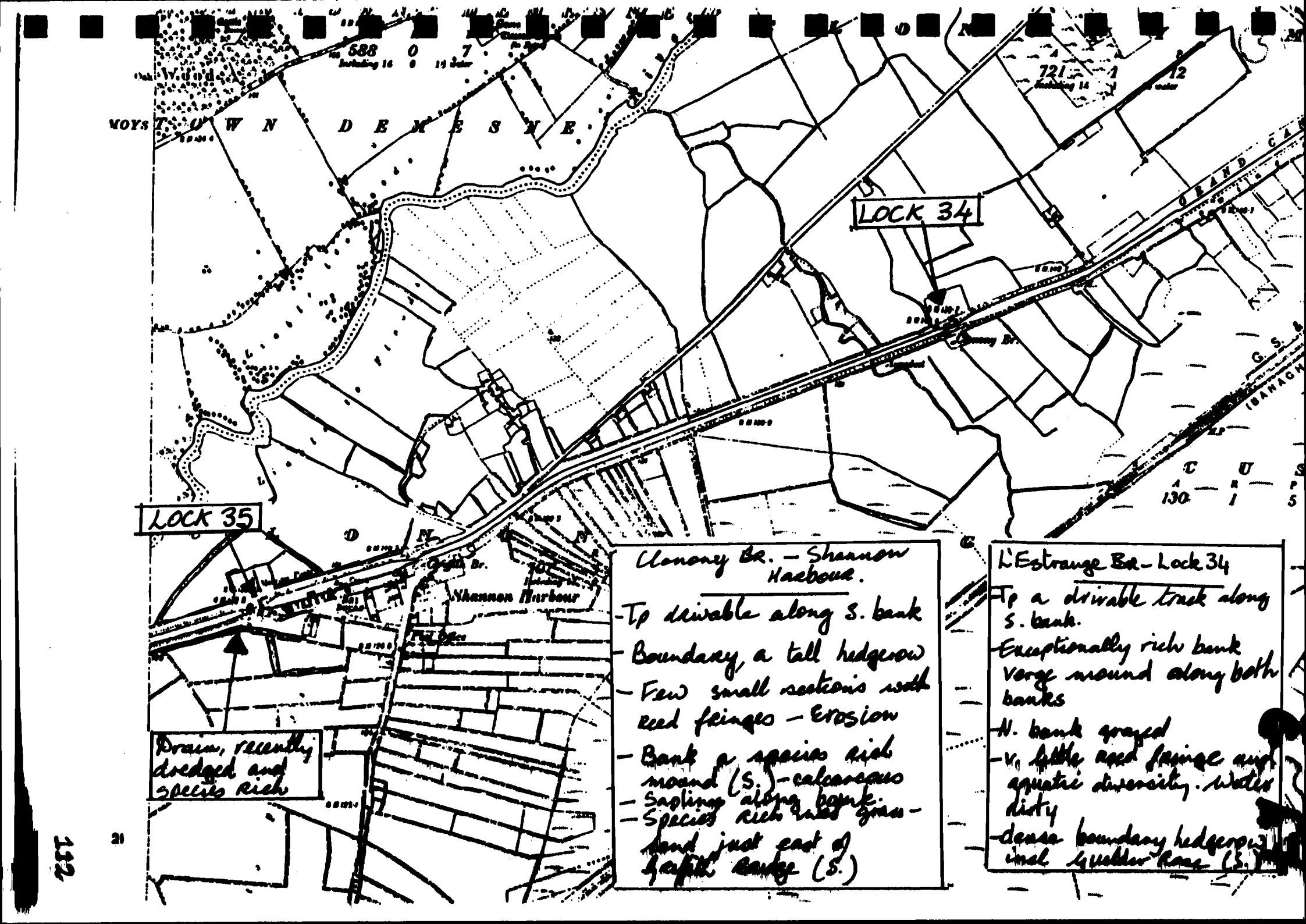
- To encourage the development of a reed fringe throughout.
- To maintain habitat diversity.
- To promote the development of meadows along south bank and towpath.
- To maintain pastureland along the north bank.

RECOMMENDATIONS

- Eliminate the use of herbicides as this stretch as this stretch of channel did not support much plant growth in 1991.
- No spoil to be deposited on the Callows.
- Cut the ungrazed grasslands and bank at the end of the growing season and collect cuttings. Leave some saplings along the bank.
- Protect the species-rich boundary tree species.
- Protect the wet grassland in future canal operations.
- Grass cutting in the vicinity of the harbour may be carried out more frequently.
- Collect boat permits and remove non-paying boats.


G45
Judge's BR.- Belmont
- Calcareous embankment along both banks - esker.
- Many nationally rare species along the esker incl. orchids Hazel and Carline thistle(S.)
- Species rich bank
- Little aquatic diversity
- Banks eroding
LOCK 33
Glyn BR - Judge's BR.
- V. little reed fringe
- Banks eroding
- Oak, + Hazel on the bank and boundary of S. side
- Tp embanked with some calcareous species
- Tp. almost overgrown with scrub (West end)
GRAND CANAL
BELMONT DEMESNE
ACALLY GLEBE
BALLYCOWAN GLEBE
259
121
137
228


DEERPARK Tp
BIRR UNION & R.D. No. 1
CAMUS Tp
BELLMOUNT OR LISDERG Tp
BALLINGOWAN GLEBE
H U N S T O N
170
18
Huniston Ho.
Clonony Cottage
Clonony
Y
M
12
D
N
B A L L Y S H A N
GRAND CANAL
L'Estrange Br.
Exceptionally rich boundary hedge with Spindle, Oak, Ash, Hazel, Beech + Guelder
Belmont — L'Estrange Br.
Tp on S. bank a grassy trac, tractor width.
- The boundary hedgerow of tall trees and shrubs is V. rich — Spindle, Hazel, Guelder Rose, Oak, Beech and Ash
- Many saplings of similar tree and shrub species on the S. bank
- N. bank of tall trees also
- Eroding banks both sides
- Little reed fringe
- Aquatic diversity is average
- Limestone banks
L'Estrange Br. — Clonony Br.
- Tp drivable along S.
- V. rich bkr mound along both banks
- N. bank grassy
- V. little Reed fringe and aquatic diversity
- dense bd. hedge — Guelder


LOCK 34
LOCK 35
Drain, recently dredged and species rich
Clonony Br. – Shannon Harbour.
- Tp drivable along S. bank
- Boundary a tall hedgerow
- Few small sections with reed fringes – Erosion
- Bank a species rich mound (S.) – calcareous
- Sapling along bank
- Species rich tall grass – land just east of Grand Canal (S.)
L'Estrange Br – Lock 34
- Tp a drivable track along S. bank.
- Exceptionally rich bank verge mound along both banks
- N. bank grazed
- V. little reed fringe and aquatic diversity. Water dirty
- dense boundary hedgerow inc. Guelder Rose (S.)

BARROW LINK

MANAGEMENT GUIDELINES AND RECOMMENDATIONS

CONTENTS

KM SECTIONS 1-3 FOOTBRIDGE - SHEE BRIDGE

GOOD FEATURES:

- Species-rich calcareous towpath (north bank) which has not been cut.
- The bank and boundary verge of the north bank have not been cut and support an excellent diversity of calcareous species.
- Species-rich berm along the north bank.
- Mature trees in the boundary hedgerow (N) on the approach to Shee Bridge including Hazel.
- Species-rich meadow along much of the south bank.
- Substantial reed fringe on the north bank between New Bridge and Shee Bridge.
- The aquatic plants were removed from this stretch with a mechanical cut.

BAD FEATURES:

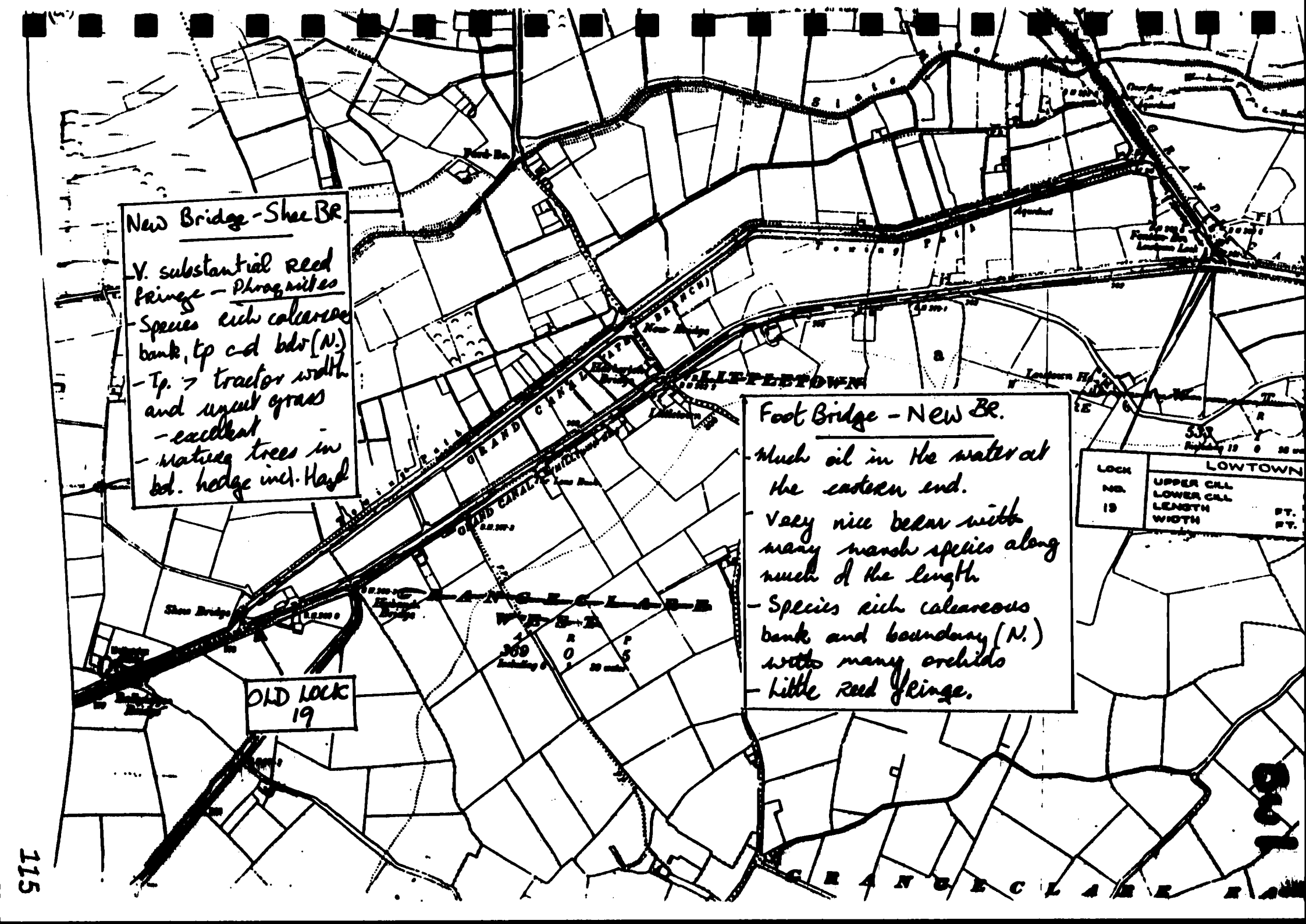
- Little reed fringe between Footbridge and New Bridge.
- Much oil/diesel in the water near the footbridge. Many moored boats present.

OBJECTIVES:

- To maintain aquatic diversity and to promote the development of a continuous reed fringe.
- To promote the development of a hay meadow habitat on both banks.

RECOMMENDATIONS:

- Continue to mechanically remove excess aquatic plants.
- Cut the calcareous bank and boundary verge at the end of the growing season to maintain the ecological diversity. A narrow band of 1 metre can be cut more frequently to facilitate pedestrian access.
- Protect the calcareous grasslands and boundary hedge in future canal operations. Do not deposit spoil on them.
- Protect the species-rich berm in future canal operations.
- Remove boats which have not paid for permit. In this way the number of boats present will be reduced with the resulting lowering of pollution levels from oil/diesel and waste.


New Bridge - Shee Br
V. substantial Reed fringe - Phragmites
- Species rich calcareous bank, tp c-d bdr (N.)
- Tp. > tractor width and uncut grass - excellent
- Maturing trees in bd. hedge incl. Hazel
Foot Bridge - New Br.
- Much oil in the water at the eastern end.
- Very nice beam with many marsh species along much of the length
- Species rich calcareous bank and boundary (N.) with many orchids
- Little Reed fringe.
OLD LOCK 19
LOWTOWN
LOCK No. 19
UPPER CILL
LOWER CILL
LENGTH FT.
WIDTH FT.
GRAND CANAL
LITTLETOWN
GRAND CANAL

KM SECTIONS 3-9

SHEE BRIDGE - GLENAREE BRIDGE AND LOCK 22

GOOD FEATURES:

- Diverse reed fringe although there is not very much of it.
- Diverse berms with marsh species between Lock 21 and Griffith Aqueduct.
- The towpath is embanked along both banks from east of Griffith Aqueduct as far as the farm. There are calcareous species-rich grassland down the embankments and along the towpath with wet grassland at the toe. The towpath is lightly grazed.
- A nutrient-rich grassland with many flowers exists along the boundary verge between Lock 21 and the embanked stretch (S bank).
- Species-rich drain in the boundary west of the aqueduct (S bank).

BAD FEATURES:

- This stretch was treated with Casoron in 1991 and it is proposed to continue to do so in 1992 (Caffrey, 1991) with some cutting trials.
- Much of the stretch is without a reed fringe on either bank.
- The boundary verge west of the farm between Griffith Aqueduct and Glenaree Bridge is very messy. The boundary drain was cleared but the spoil never levelled.
- The banks are clayed in the vicinity of the farm but not covered in topsoil.

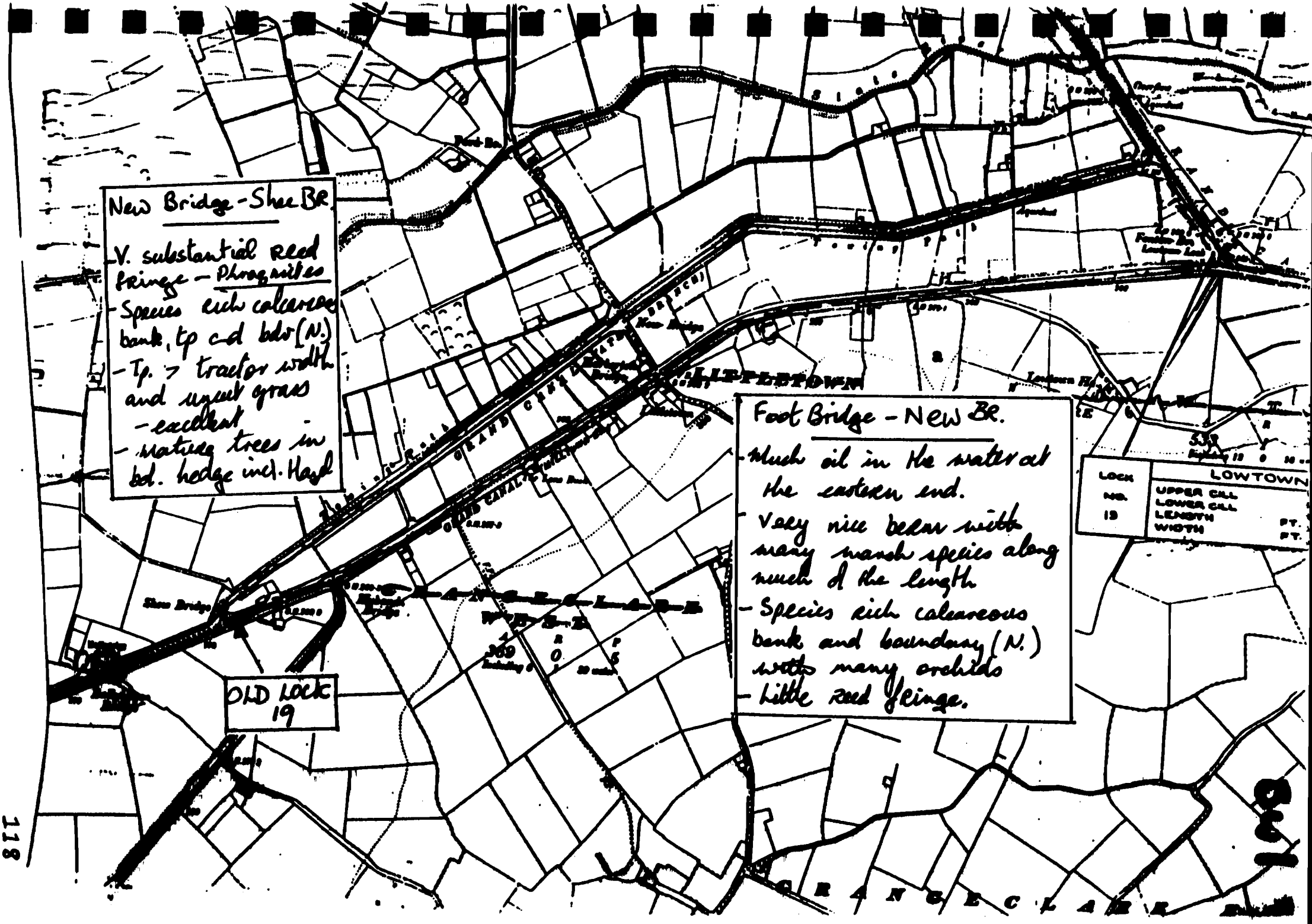
OBJECTIVES:

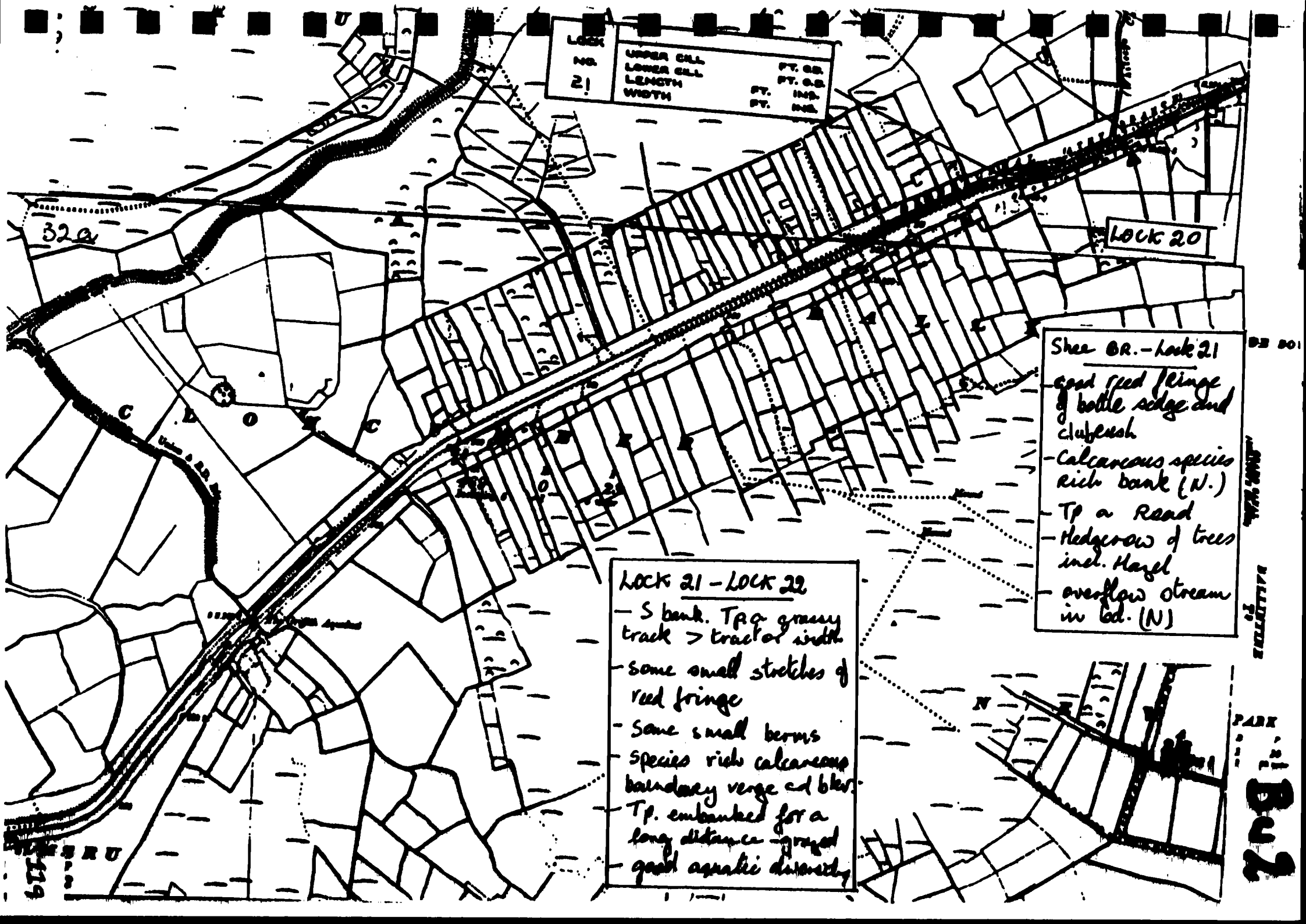
- To improve the aquatic diversity, and to promote the development of a continuous and species-rich reed fringe.
- To maintain the existing pasture grassland by continuing grazing.
- To promote the development of a meadow grassland on ungrazed stretches by mowing once a year (August/September).

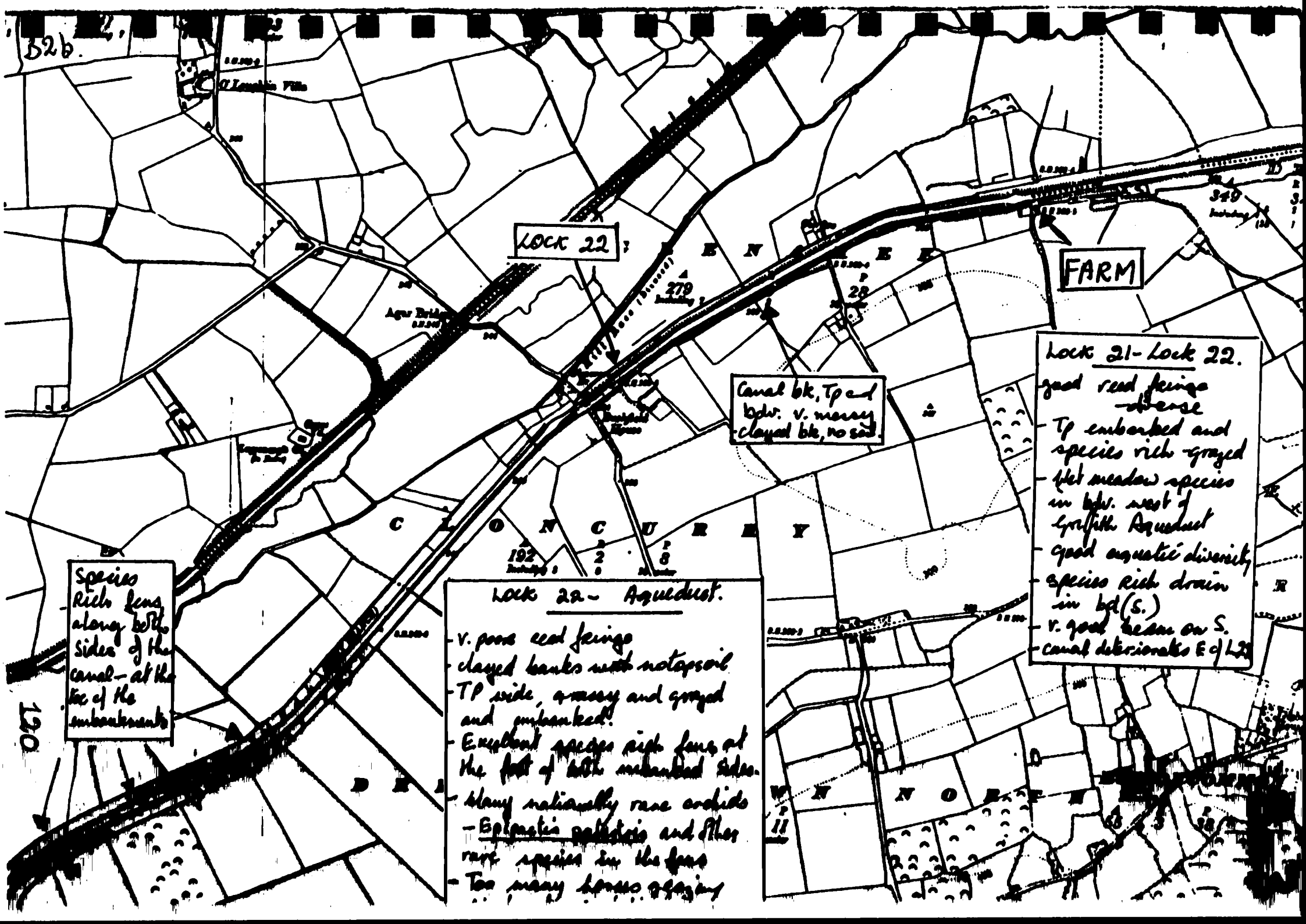
RECOMMENDATIONS:

- It is proposed that along this stretch the excess aquatic plants will be dealt with by cutting trials and Casoron. The reed fringe and berms are diverse but there is not too much of either. Do not use Casoron in 1992, but manage by mechanical means.
- Protect the berms, the reed fringes, the calcareous grasslands, the wet meadows and the species-rich drain in future canal operations. No spoil to be deposited on the grasslands.
- Cut all the ungrazed grasslands on either bank once a year at the end of the growing season. Collect cuttings to prevent soil enrichment.

- Continue to maintain pasture grassland by grazing.
- Level the spoil west of the farm yard. Cut the vegetation mid-season for the first year and thereafter once a year in August/September to promote the development of a hay meadow.
- Cover the clayed banks with soil to facilitate revegetation and bank stabilization.


New Bridge - Shee Br.
V. substantial Reed fringe - Phragmites
Species rich calcareous bank, tp c-d bdy (N.)
Tp. > tractor width and unmt grass - excellent
Mature trees in bd. hedge incl. Hazel
Foot Bridge - New Br.
Much oil in the water at the eastern end.
Very nice beach with many marsh species along much of the length
Species rich calcareous bank and boundary (N.) with many orchids
Little Reed fringe.
OLD LOCK 19
LOCK NO. 19
LOWTOWN
UPPER CILL
LOWER CILL
LENGTH FT.
WIDTH FT.
GRAND CANAL
LITTLETOWN
GRANGECLARE


LOCK NO. 21
UPPER CILL FT. O.D.
LOWER CILL FT. O.D.
LENGTH FT. INS.
WIDTH FT. INS.
32a
LOCK 20
Shee BR. - Lock 21
- good reed fringe of bottle sedge and clubrush
- Calcareous species rich bank (N.)
- Tp a Road
- Hedgerow of trees incl. Hazel
- overflow stream in Ld. (N)
LOCK 21 - LOCK 22
- S bank. Tp a grassy track > tractor width
- some small stretches of reed fringe
- Some small berms
- Species rich calcareous boundary verge and bks
- Tp. embanked for a long distance - good aquatic diversity
N
BU2


LOCK 22
FARM
Canal bk, Tp and bdw. v. mossy - clayed bk, no soil
Species Rich fens along both sides of the canal - at the toe of the embankments
LOCK 22 - Aqueduct.
- V. poor reed fringe
- clayed banks with notopsoil
- TP wide, mossy and grazed and embanked!
- Excellent species rich fens at the foot of both embanked sides.
- Many nationally rare orchids - Epipactis palustris and other rare species in the fens
- Too many horses grazing
LOCK 21 - Lock 22.
good reed fringe - dense
- Tp embanked and species rich grazed
- wet meadow species in bdw. west of Grifith Aqueduct
- good aquatic diversity
- species Rich drain in bd (S.)
- v. good beam on S.
- canal deteriorates E of L22

BARROW LINE

KM SECTIONS 9-14 LOCK 22 - LOCK 23

GOOD FEATURES:

- The channel along this stretch was left untreated with herbicides during 1991 allowing reed fringes a chance to re-colonise. However, there was so much channel disturbance and turbidity when claying the banks along this stretch that plants did not thrive. It is proposed that this channel stretch be left untreated in 1992 (Caffrey 1991).
- Excellent species diversity of acidic and calcareous species down the embankment slopes on both sides of the canal including Origanum vulgare. There is also a fen present at the base of both banks supporting such species as Epipactis palustris (which is protected in Northern Ireland) Carex disticha, Briza media, Rhinanthus minor, Gymnadenia conopsea, Dactylhoriza fuchsii Juncus subnodulosus, Succisa pratensis and Parnassia palustris
- The south bank is lightly grazed.
- Species-rich scrub on the south bank on the approach to Rathangan.
- Developing scrub just west of Rathangan Bridge on the north bank.
- Species-rich wall west of Rathangan (south bank).
- It is proposed to leave this stretch of channel free from herbicide in 1992 (Caffrey 1991).

BAD FEATURES:

- Long stretches with clayed banks and no soil or peat covering them.
- At least 13 horses were seen grazing the north bank on 10/9/91. Widened drains were ineffective in keeping them out of the fen area.
- No reed fringe even though this stretch of channel was not sprayed in 1991.
- Water a murkey green colour.
- Rubbish dumped where the towpath widens out between Glenaree Bridge and Rathangan (south bank).

OBJECTIVES:

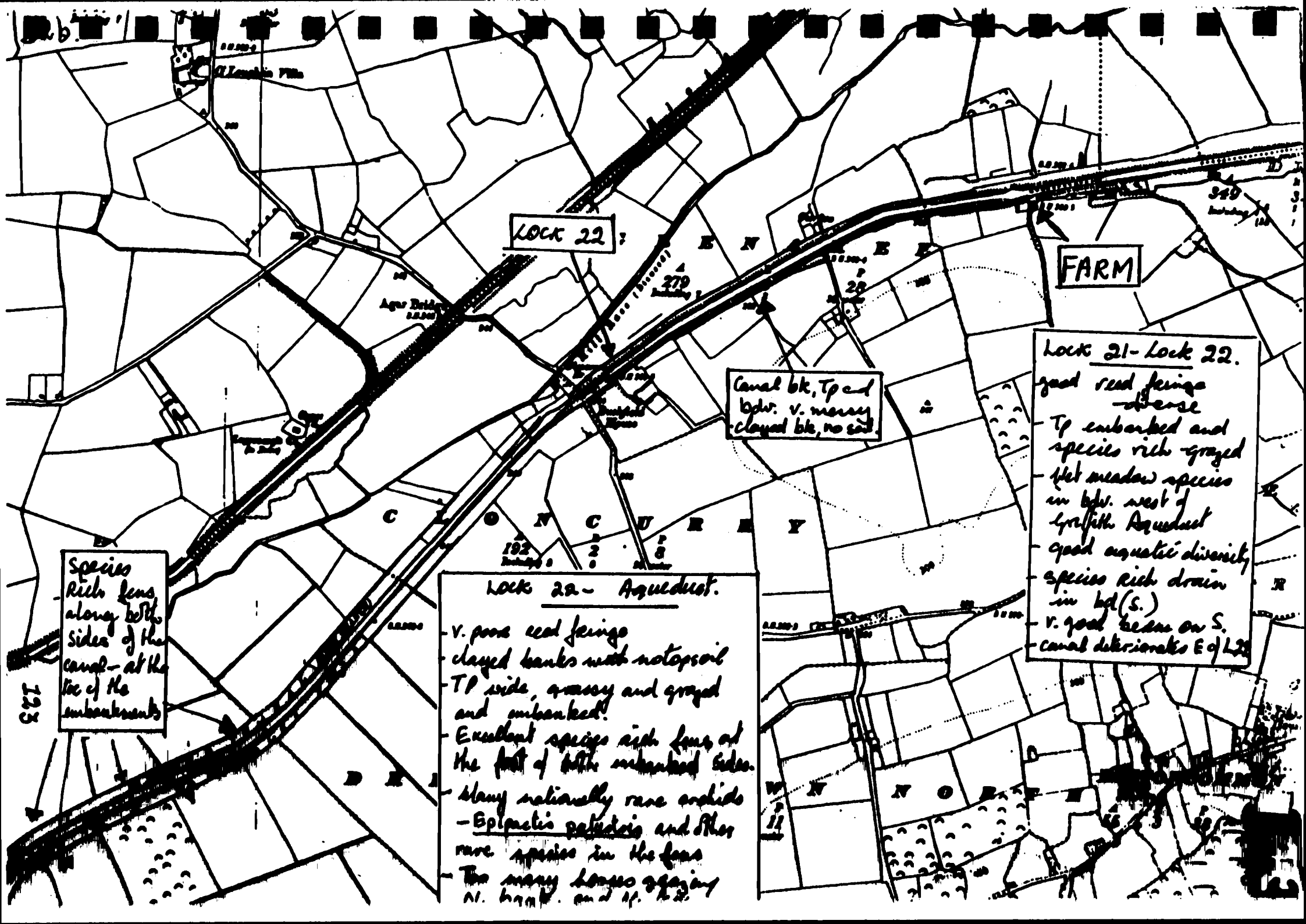
- To maintain aquatic diversity, and to promote the development of a continuous and species-rich reed fringe.
- To maintain the pasture habitat by continuing grazing.
- To improve the habitat diversity by encouraging the development of scrub along the canal boundary.

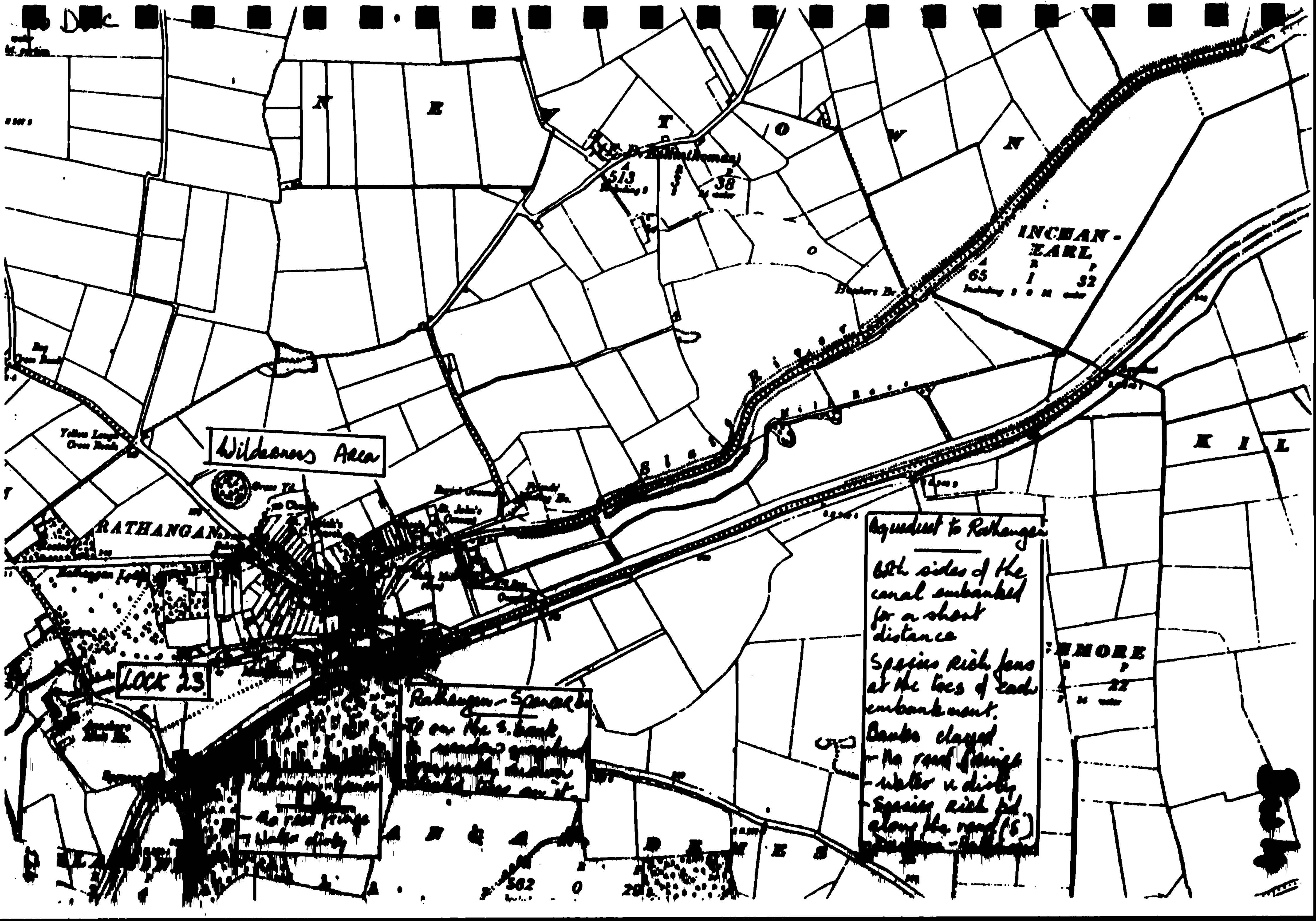
RECOMMENDATIONS

- No spoil to be deposited down the calcareous embankments or on the wet grassland/fen areas.
- Better barriers to be devised to keep the large number of horses off the north bank and fen.
- Clayed banks to be covered in topsoil so that seeds can germinate easily and so stabilise the

banks further. Clay is hard, forming crusts which makes it difficult for vegetation to become established. In addition clay particles are so fine that when very dry they blow away and when wet can be washed into the channel unless stabilised by vegetation cover.

- Continue grazing on the south bank. The north bank should be maintained by grazing (sheep or cattle but not horses) or by cutting once a year (August/September).
- The towpath between Rathangan and Spencer Bridge may be cut twice a year to facilitate pedestrian access (May and August/September). Do not cut the bank vegetation until the end of the season. Remove cuttings.
- Deal with the litter problem.
- Continue to keep the stretch free from herbicides.
- Investigate ownership of the scrub areas on the north bank, as they are a valuable wildlife habitat and add to the diversity of this stretch of canal.


LOCK 22
FARM
Species Rich fens along both sides of the canal - at the toe of the embankments
Lock 22 - Aqueduct.
- V. poor reed fringe
- clayed banks with notopsoil
- Tp wide, grassy and grazed and embanked!
- Excellent species rich fens at the foot of both embanked sides.
- Many nationally rare orchids - Epipactis palustris and other rare species in the fens
- Tho many horses grazing
Lock 21 - Lock 22.
good reed fringe - dense
- Tp embanked and species rich grazed
- Wet meadow species in bdw. west of Griffith Aqueduct
- good aquatic diversity
- species rich drain in bdl (S.)
- V. good reeds on S.
- canal deteriorates E of L22
Canal bk, Tp and bdw. v. grassy - clayed bk, no soil



INCHAN-EARL
65 1 32
KIL
MORE
22
RATHANGAN
Wilderness Area
LOCK 25
Aqueduct to Rathangan
Both sides of the canal embanked for a short distance
Species rich fens at the toes of each embankment.
Banks clayed
Yellow Lough Cross Roads
Bog Cross Roads
Bracken Br.
513
38

KM SECTIONS 14-16 SPENCER BRIDGE - WILSON'S BRIDGE

GOOD FEATURES

- This stretch of channel was unsprayed in 1991 and it is proposed that mechanical removal of excess aquatic plants be carried out in 1992 (Caffrey, 1991).
- Rich in aquatic diversity.
- Species-rich and dense hedgerow (south bank) including Guelder Rose and Alder.
- Species-rich calcareous grassland on towpath, boundary verge and bank. It is grazed for a short distance between Spencer Bridge and the next aqueduct.
- Rich bank with calcareous species as well as tall herbaceous plants.
- Species-rich drain along south bank.
- North Bank is species-rich and lightly grazed.
- Trees along the S. Bank.

BAD FEATURES

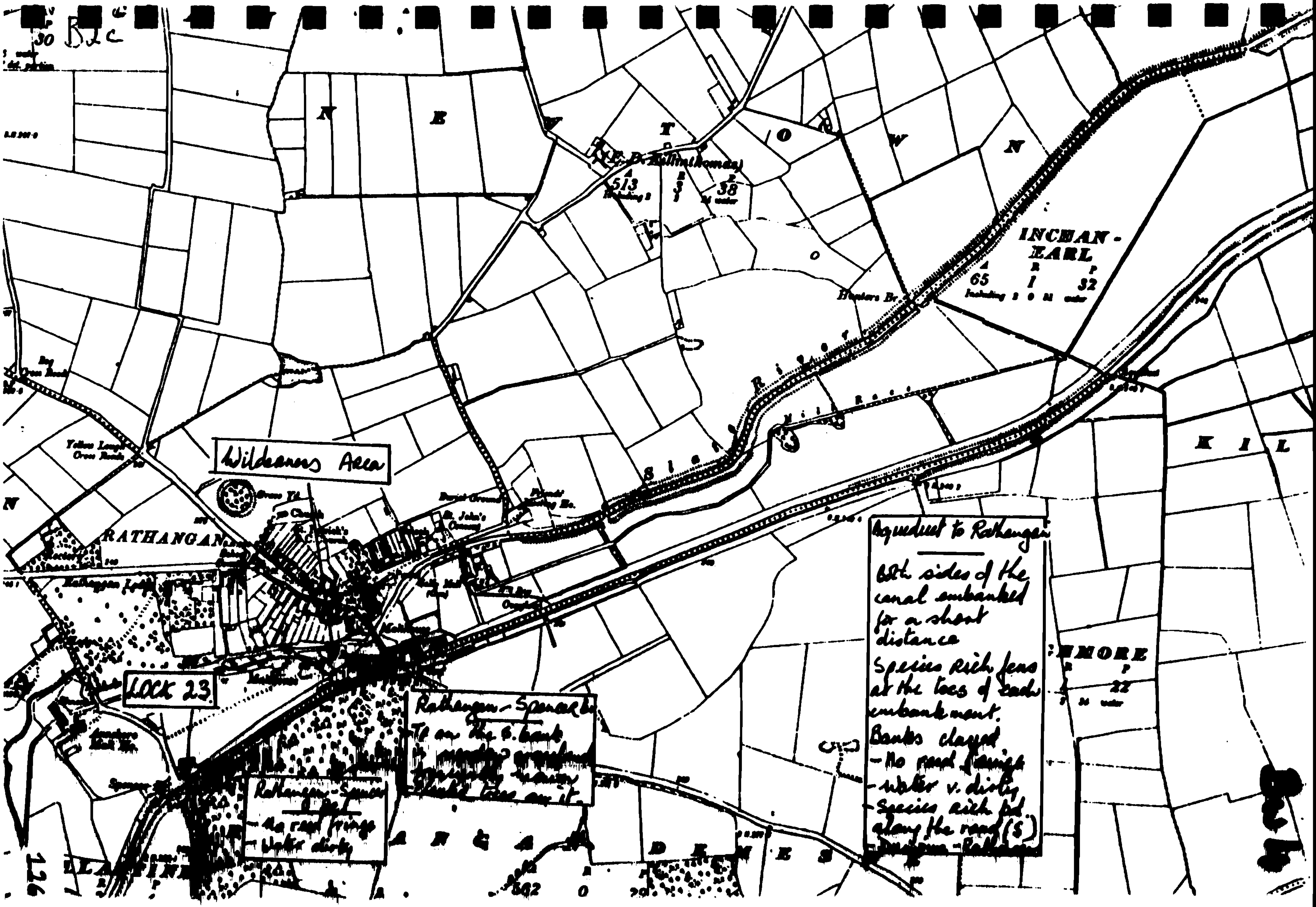
- Bank Erosion.
- Scrub is encroaching onto towpath from the boundary along the south bank, especially about the middle of the stretch.

OBJECTIVES

- To maintain aquatic diversity and reed fringe.
- To maintain the pasture where it exists along the canal.
- To promote the development of a meadow habitat in those places not traditionally grazed.
- To protect habitat diversity by maintaining scrub in some areas.

RECOMMENDATIONS

- Restore the eroded banks taking care to cover clay with topsoil or peat.
- Protect the hedgerow. Some of the species which are encroaching on to the towpath may be cut back.
- Cut the ungrazed grasslands once a year at the end of the season. Collect and remove cuttings. Cutting late every year allows the plants to flower and set seed and so maintain the ecological diversity of the grassland.
- Continue grazing to maintain the pasture habitat.
- Allow some saplings to remain on the bank after each cut.
- Protect the drain.


30 BJC
INCHAN-
EARL
65 1 32
Hunters Br.
RATHANGAN
Wilderness Area
LOCK 23
Aqueduct to Rathangan
Both sides of the canal embanked for a short distance
Species rich fens at the toes of each embankment.
Banks clayed
- No reed fringe
- Water v. dirty
- Species rich fd. along the road(s)
Rathangan - Spencer Br.
Rathangan - Spencer Br.
- No reed fringe
- Water dirty
513
38

126

MULLALTINE
PART OF RATHANGAN
Liable to Floods
MOUNTPROSPE
TAGHAN NORTH
TAGHAN SOUTH
Pipe discharging into canal
Spencer Br. - Wilson's Br.
- Little or no reed fringe along this stretch
- Bank (S.) heavily grazed, eroding but species rich
- Good aquatic diversity
- Pipe discharging into canal at Wilson's Br.
- species rich drain along the boundary (S.)
- T/p not grazed west of aqueduct
- T/p and below species rich with many orchids calcareous
- T/p. becoming v. narrow and almost overgrown (West end)
- trees on b/k and bed.

KM SECTIONS 16-21 WILSON'S BRIDGE - LOCK 24 AND MACARTNEY'S BRIDGE

GOOD FEATURES:

- This stretch of channel was not sprayed in 1991 and it is proposed not to spray it in 1992 but to mechanically remove excess aquatic plant growth (Caffrey, 1991).
- A wide and very species-rich calcareous boundary verge along the east bank immediately south of Wilson's Bridge supporting such species as Antennaria dioica - on small mounds - Listera ovata, other orchids and Brizia media. The towpath along this stretch is grazed.
- Further along the east bank and south of Umaras Bridge there is a wide boundary verge which is ungrazed and supports wet meadow, fen and calcareous mounds. Platanthera bifolia (butterfly orchids) were found on the mounds as well as other orchid species. The entire boundary verge is rich in habitat and species diversity.
- Species-rich hedgerow including Hazel Guelder Rose, Ash, Oak and Willow.
- Calcareous species-rich bank all along though sometimes with trees and saplings.
- Species-rich drain running along the boundary on the east bank.
- Small stretches of species-rich berms.
- Saplings/trees along the east bank.
- West boundary consists of mature trees.

BAD FEATURES:

- Banks eroding.
- Little reed fringe.
- Encroachment on to the rich grasslands by scrub from the boundary verge.
- The drain in the vicinity of the overflow is in need of repair.
- The drain was dredged in the recent past and the spoil deposited on the nutrient-poor grassland.
- Along the northern end of this stretch there are some places where the grazing is too heavy - horses present (east bank).

OBJECTIVES:

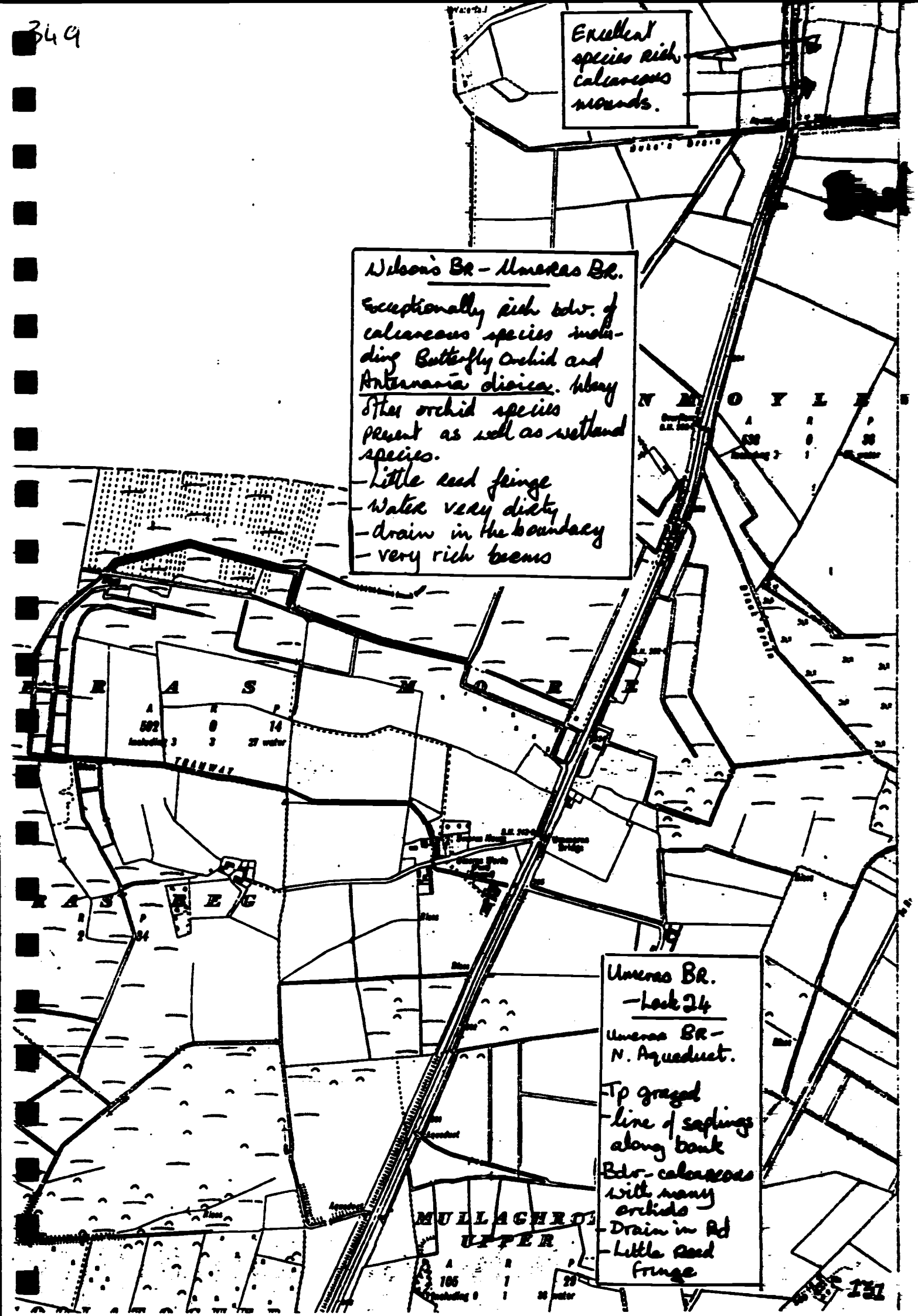
- To maintain and improve the diversity of the aquatic habitats.
- To maintain existing pasture habitats by continuing grazing.
- To promote the development of hay meadows in areas that are not currently grazed.

RECOMMENDATIONS

- Do not deposit spoil on the nutrient-poor grasslands, wet meadow or fen.
- Allow light grazing to maintain existing pastures.
- Ungrazed section should be cut once a year (August/September) and all cut vegetation removed.

- Bank verges may be cut on a three year rotation to allow biennials to flower. Leave some saplings after each cutting.
- Protect the drain and boundary hedges of both banks also in future canal operations.
- Continue to use herbicide-free treatment to control excess aquatic growth.


Spencer Br - Wilson's Br.
- Little or no reed fringe along this stretch
- Bank (S.) heavily grazed, eroding but species rich
- Good aquatic diversity
- species rich drain along boundary (S.)
- Pipe discharging to canal (Wilson's)
- T/p not grazed west of aqueduct
- T/p and bank species rich with many orchids calcareous
- T/p becoming v. narrow and almost overgrown (West end)
- Sparkler Area on bank and bed.
PART OF
RATHANGAN
MOUNTPROSPECT
MULLANTINE
Liable to Floods


Excellent species rich calcareous mounds.
Wilson's Br - Umeras Br.
Exceptionally rich bdr. of calcareous species including Butterfly Orchid and Antennaria dioica. Many other orchid species present as well as wetland species.
- Little reed fringe
- Water very dirty
- drain in the boundary
- very rich berms
Umeras Br. - Lock 24
Umeras Br - N. Aqueduct.
- Tp grazed
- line of saplings along bank
Bdr - calcareous with many orchids
- Drain in Rd
- Little Reed Fringe
TRAWAY
MULLAGHROE UPPER

COOLATOCEER
LOWER
Lock 24
Hazel, Spindle and Guelder Rose along Boundary
Northern to Macartney's Br.
- Both banks embanked
- Tp (S.) grazed and disturbed
- Species rich calcareous bdr.
- Wet grassland also in bdr
- No reed fringe
- Banks eroding
- Water dirty
Macartney's - Old Grange Br
- drain along boundary (E)
- Ash and brambles along bk (E)
- Cattle on Tp.
- Poaching
Old Grange Br - High Br.
Banks embanked
TP on E. grazed and v. disturbed
- thistle dominated
Phragmites reed fringe along N. bank

BARROW LINE

KM SECTIONS 21-22 MACARTNEY BRIDGE - HIGH BRIDGE

GOOD FEATURES

- It is proposed that this stretch be kept free from herbicide treatment in 1992 (Caffrey 1991).
- Species-rich hedgerow for a short stretch south of Grange Bridge.
- Saplings along east bank.
- Small stand of Phragmites australis on west bank nearing High Bridge.
- Drain running along east boundary.

BAD FEATURES

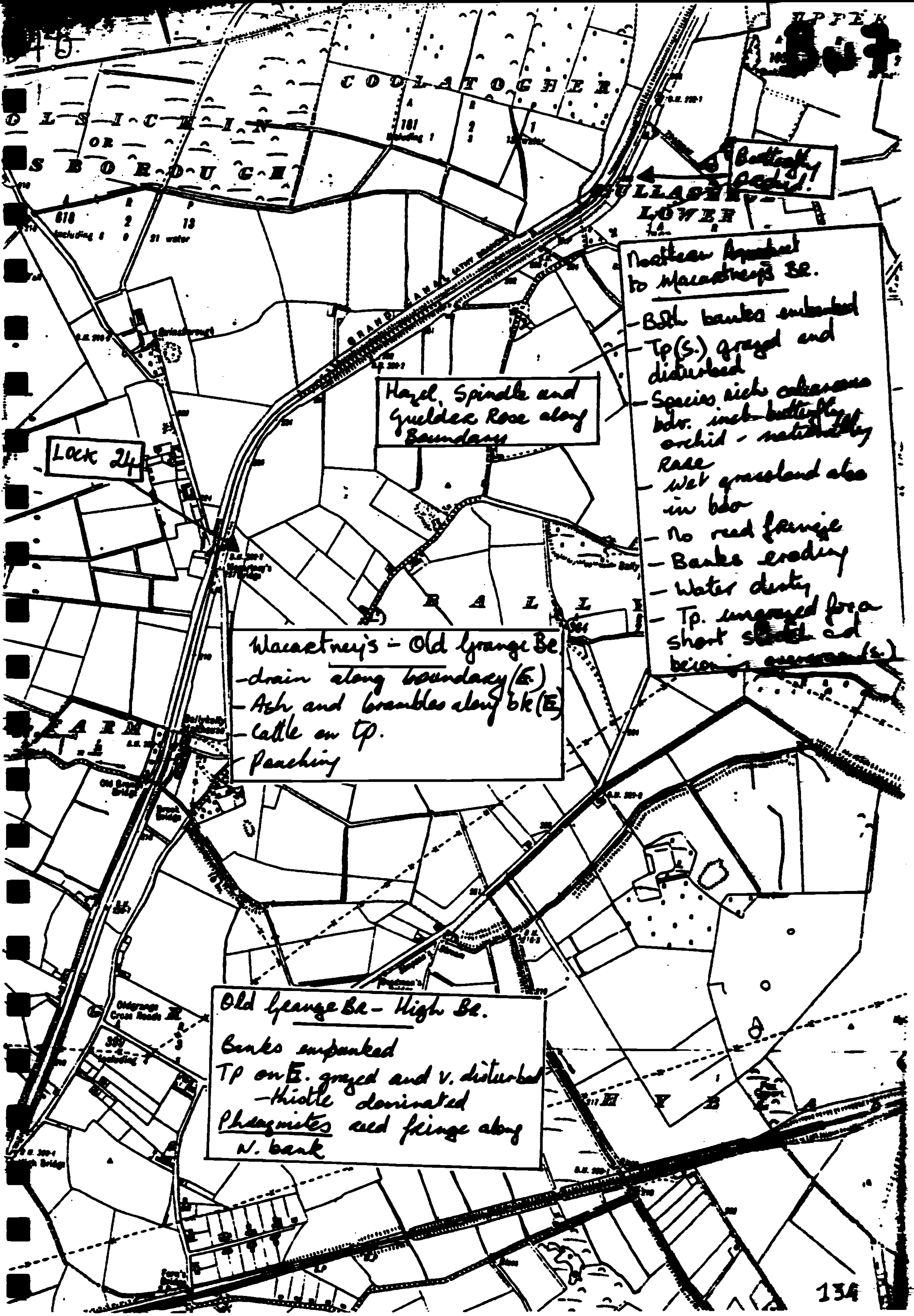
- Little or no reed fringe.
- This stretch was sprayed with late Casoron in 1991.
- The towpaths between the three bridges (E Bank) are overgrazed, and that between Grange and High Bridges very disturbed and dominated by thistles.

OBJECTIVES

- To improve the aquatic diversity, and to promote the development of a continuous reed fringe.
- To maintain and improve the pasture habitat on the towpath and verges on the east bank.

RECOMMENDATIONS

- Continue to mechanically remove excess aquatic growth.
- Protect the hedgerow, drain and reed fringe in future canal operations.
- Lessen the intensity of grazing between Grange and High Bridges.
- Cut and remove thistles in June/July before they seed. The cattle will not eat them. Removal before flowering is essential in ridding the towpath of this plant.


COOLATOGHER
OR
SBOROUGH
LOWER
Lock 24
Hazel, Spindle and Guelder Rose along Boundary
Macartney's - Old Grange Br.
- drain along boundary (E.)
- Ash and brambles along bk (E)
- Cattle on tp.
- Poaching
Old Grange Br. - High Br.
Banks embanked
Tp on E. grazed and v. disturbed
- thistle dominated
Phragmites reed fringe along N. bank
- Both banks embanked
- Tp (S.) grazed and disturbed
- Wet grassland also in bdr
- No reed fringe
- Banks eroding
- Water dirty
- Tp. ungrazed for a short stretch

KM SECTIONS 23-27 HIGH BRIDGE TO FOOT-BRIDGE WEST OF CLOGHEEN BRIDGE

GOOD FEATURES:

- Origanum vulgare between the aqueduct and Lock 25.
- Species-rich west boundary mound south of Lock 25. Species include Bromus erectus, Origanum vulgare, Viburnum opulus and Blackstonia perfoliata.
- Westbank of many herbaceous and calcareous species.
- Drain of the west boundary newly dredged and full of Chara species just north of Clogheen Bridge.
- South of Clogheen bridge there is a calcareous bank of Blackstonia perfoliata, Knautia arvensis and Origanum vulgare. The boundary hedgerow supports many lime-loving shrubs. Further south many herbaceous species present on bank.
- Wide and species-rich boundary verge (W) with wet meadow plants, herbaceous species and scrub south of Clogheen Bridge.
- Towpath uncut south of Clogheen Bridge.
- Species-rich but very small areas of aquatic bank verge. It is proposed to mechanically remove excess aquatics from this stretch in 1992 (Caffrey, 1991).

BAD FEATURES:

- The east bank verge was completely cleared and levelled of all vegetation by 17/6/91. No vegetation growth present on 10/9/91 after the summer growing season. Soil compaction occurring.
- Banks eroding.
- Very poor reed fringe.
- Water a milky colour.
- This stretch was sprayed with Late Casoron in June 1991.

OBJECTIVES:

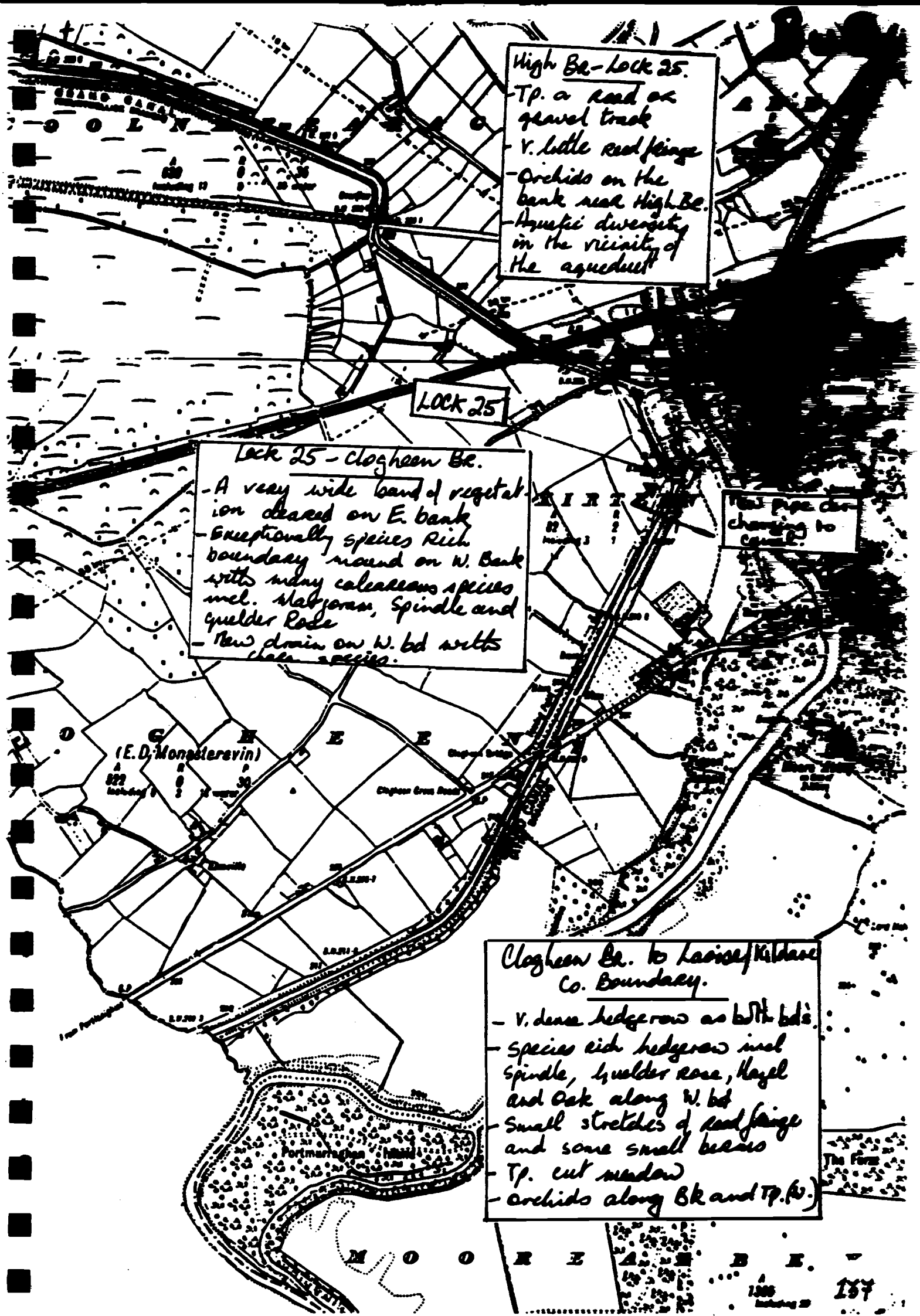
- The long term to allow the cleared east bank to develop into a meadow. It will take many years and continuous management before a stable sward is established.
- To maintain the west bank as a calcareous meadow.
- To maintain the diversity and density of the west boundary hedgerow.
- To maintain aquatic diversity and encourage reed growth.

RECOMMENDATIONS:

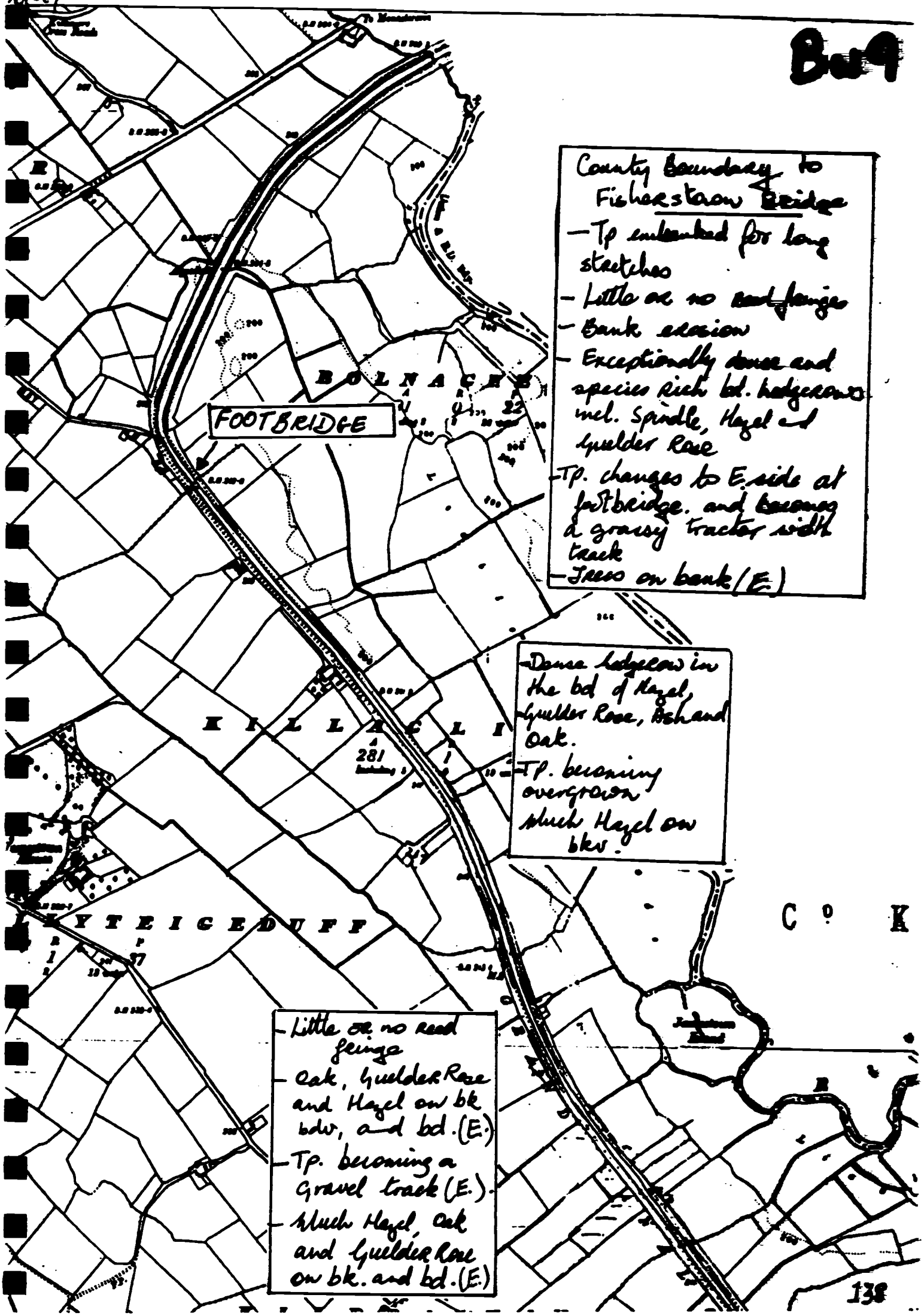
- If the east bank does not support vegetation by next June rotovate it and cover with topsoil. Soil facilitates germination. If thistles dominate on this bank in 1992 cut them in June/July prior to their setting seed. In the long term, allow a meadow to develop by cutting late at the end of season. Remove cuttings.
- Continue to leave this stretch of channel free from

aquatic herbicides.

- Protect the species-rich west boundary mound, calcareous and herbaceous banks and bank verges in future canal operations. Spoil may be deposited in the scrub.
- West bank grassland to be cut at the end of the growing season and cuttings removed. Leave some saplings on the banks after each cut.
- A 1m path may be cut twice yearly for pedestrian access along each bank.
- If repairing eroding banks with clay, cover them with topsoil to facilitate germination and hence bank stabilization.


High Be - Lock 25.
- Tp. a road or gravel track
- V. little reed fringe
- Orchids on the bank near High Be.
- Aquatic diversity in the vicinity of the aqueduct
LOCK 25
Lock 25 - Clogheen Be.
- A very wide band of vegetation cleared on E. bank
- Exceptionally species Rich boundary mound on W. Bank with many calcareous species incl. Blackthorn, Spindle and Guelder Rose
- New drain on W. bd with

Bu9



County Boundary to Fisherstown Bridge
- Tp embanked for long stretches
- Little or no reed fringe
- Bank erosion
- Exceptionally dense and species rich bd. hedgerows incl. Spindle, Hazel and Guelder Rose
- Tp. changes to E. side at footbridge and becomes a grassy tractor width track
- Trees on bank (E.)

- Dense hedgerow in the bd of Hazel, Guelder Rose, Ash and Oak.
- Tp. becoming overgrown much Hazel on bks.

- Little or no reed fringe
- Oak, Guelder Rose and Hazel on bk bdw, and bd. (E.)
- Tp. becoming a Gravel track (E.)
- Much Hazel, Oak and Guelder Rose on bk. and bd. (E.)

KM SECTIONS 27-30 [redacted] FOOTBRIDGE - [redacted] BRIDGE

GOOD FEATURES:

- It is proposed to leave this channel stretch free from herbicide treatment in 1992 (Caffrey, 1991).
- The towpath continues along the east bank and is tractor width. It is uncut often becoming overgrown supporting many invertebrates and birds.
- Species-rich boundary hedge including Hazel, Guelder Rose, Ash, Alder, Oak, Hawthorn and Holly.
- Saplings along the east bank including Hazel, Oak and Guelder Rose.
- Dense scrub along the west.

BAD FEATURES:

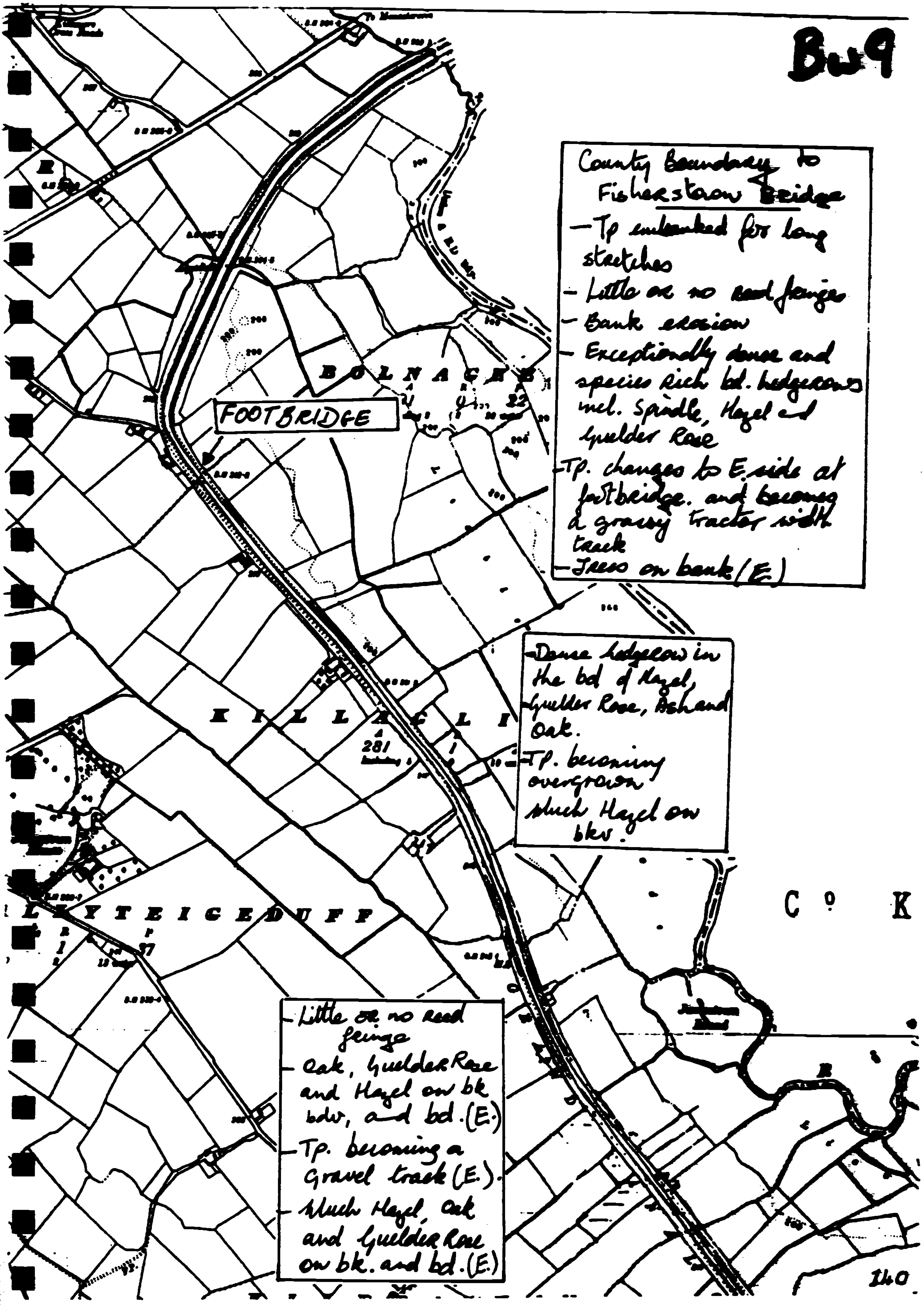
- Very little reed fringe.
- This stretch of channel was treated with Late Casoron in June 1991.

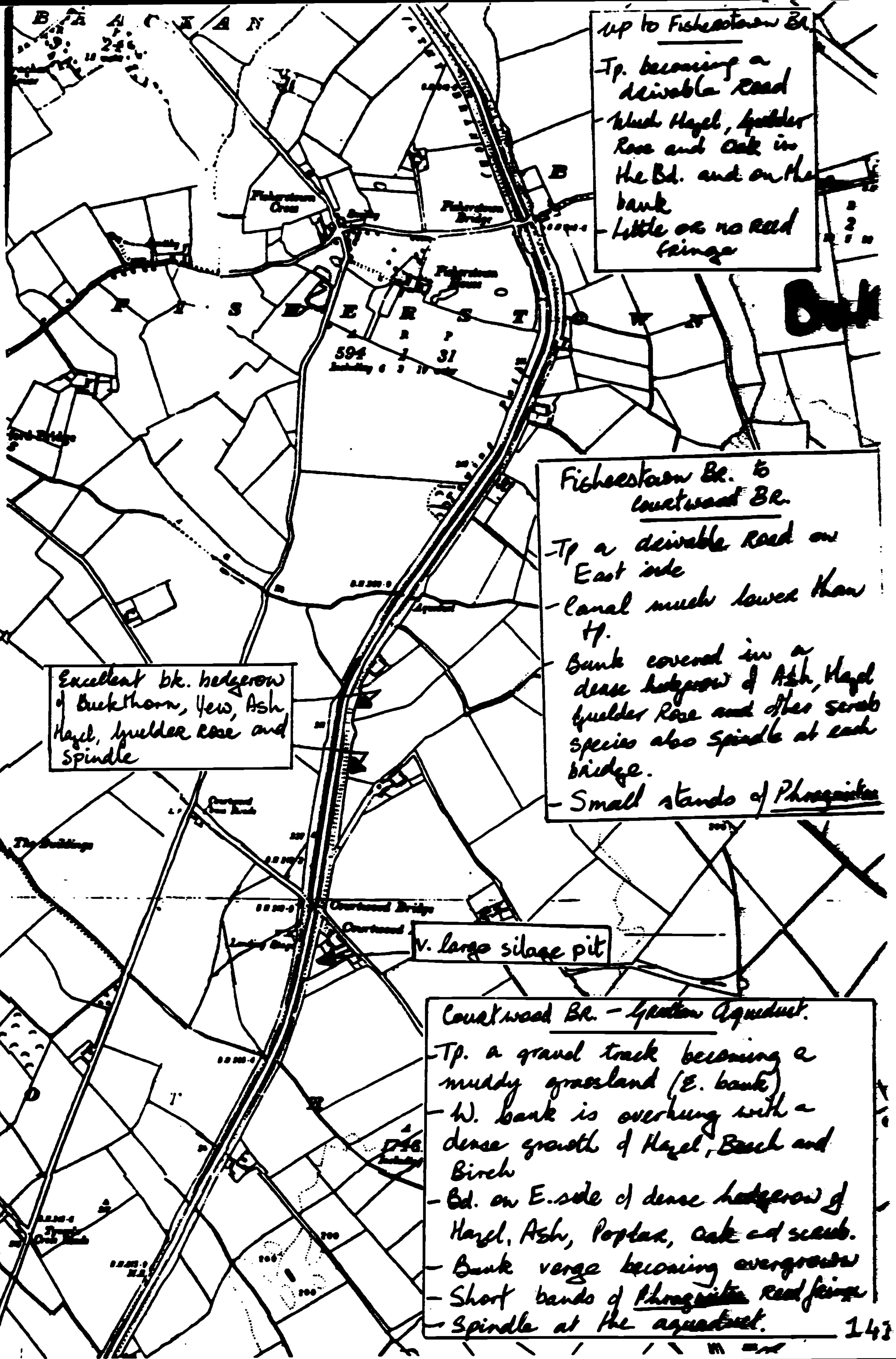
OBJECTIVES:

- To encourage the development of a reed fringe along both banks and to maintain aquatic diversity.
- To maintain the dense scrub habitat of the west bank.
- To retain the species rich boundary hedgerow (E).
- To promote the development of hay meadow along ungrazed towpath.
- To retain the species-rich calcareous bank (E). This high diversity is further increased by the presence of small stretches of hedgerow.

RECOMMENDATIONS:

- Protect the dense scrub of the westbank in future canal operations.
- Protect the species rich east boundary hedgerow in future canal operations.
- Cut back some of the encroaching tree/shrub species of the east towpath. Spot-treat cut stumps and allow the towpath to develop as a meadow. Cut at the end of the growing season and remove cuttings.
- Continue to leave the channel free from herbicide treatment.
- Remove some saplings from the east-bank on a three year rotation.
- Cut trees and overhanging branches at the bank edges and spot-treat the stumps.


Bw9
County Boundary to Fisherstown Bridge
- Tp embanked for long stretches
- Little or no reed fringe
- Bank erosion
- Exceptionally dense and species rich bd. hedgerows incl. Spindle, Hazel and Guelder Rose
- Tp. changes to E. side at footbridge, and becomes a grassy tractor width track
- Trees on bank (E.)
FOOTBRIDGE
B O L N A C E
K I L L A C L I
L A Y T E I C E D U F F
Cº K
- Dense hedgerow in the bd of Hazel, Guelder Rose, Ash and Oak.
- Tp. becoming overgrown
- Much Hazel on bkv.
- Little or no reed fringe
- Oak, Guelder Rose and Hazel on bk bdv, and bd. (E.)
- Tp. becoming a Gravel track (E.).
- Much Hazel, oak and Guelder Rose on bk. and bd. (E.)
140


Fisherstown Cross
Fisherstown Bridge
Fisherstown House
FISHERSTOWN
594
Courtwood Bridge
Courtwood
The Buildings
up to Fisherstown Br.
- Tp. becoming a drivable Road
- Much Hazel, Guelder Rose and Oak in the Bd. and on the bank
- Little or no reed fringe
Fisherstown Br. to Courtwood Br.
- Tp a drivable Road on East side
- Canal much lower than Tp.
- Bank covered in a dense hedgerow of Ash, Hazel Guelder Rose and other scrub species also Spindle at each bridge.
- Small stands of Phragmites
Excellent bk. hedgerow of Buckthorn, Yew, Ash Hazel, Guelder Rose and Spindle
V. large silage pit
Courtwood Br. - Grattan Aqueduct.
- Tp. a gravel track becoming a muddy grassland (E. bank)
- W. bank is overhung with a dense growth of Hazel, Beech and Birch
- Bd. on E. side of dense hedgerow of Hazel, Ash, Poplar, Oak and scrub.
- Bank verge becoming overgrown
- Short bands of Phragmites reed fringe
- Spindle at the aqueduct.

KM SECTIONS 30-33 FISHERSTOWN - GRATTAN AQUEDUCT.

GOOD FEATURES:

- Excellent hedgerow diversity immediately North of Courtwood bridge on the east bank. The following selection of species are in close proximity and the combination provides refuge for a host of invertebrates and birds - Yew, Blackthorn, Spindle, Guelder Rose, Hazel and Ash.
- Where the east bank is not overgrown it supports nutrient-poor grassland including many varieties of orchid and tall herbaceous species - another ideal niche for a diversity of invertebrates.
- Dense scrub/woodland all along the west bank.
- Short banks of Phragmites australis present along the stretch.
- Spindle at the aqueduct.
- It is proposed to leave this stretch of channel free of herbicide treatment in 1992 (Caffrey, 1991).

BAD FEATURES:

- Very little reed fringe. This stretch was sprayed with Late Casoron in June 1991.
- Silage pit very close to canal immediately south of Courtwood Bridge.
- The highest concentration of Averaged Oxidised Nitrogen (NO_2 + NO_3 Mg/lN) along the Barrow Line in 1990 was between Courtwood and Vicarstown Bridges (Caffrey, 1991)
- Farm machinery accessories and machinery parts left on the bank in front of two farms - on either side of Courtwood Bridge (E. Bank).
- Poaching by cattle.
- Towpath becoming overgrown (E. Bank).

OBJECTIVES:

- To encourage the development of a reed fringe all along the stretch and to increase aquatic diversity.
- To retain the scrub habitat and diverse hedgerow as havens for Wildlife.
- To allow the east bank and towpath develop as a meadow where grazing is not carried out and as a pasture where animals are present.

RECOMMENDATIONS:

- Continue to mechanically remove excess aquatics. Encourage the spread of existing reed fringes.
- Investigate the reasons for the relatively poor water quality when compared with the rest of the Barrow Line.
- Deal with the problem of farm machinery being left on the bank.

- Cut back some of the overgrown branches and trees/shrubs from the towpath along the east bank between Courtwood Bridge and the Grattan Aqueduct. Thereafter, encourage sheep grazing on the grazed stretches. Cut the grasslands of the bank and towpath which are not grazed in July/August.
- Protect the scrub of the west bank during future canal operations.
- Protect the species-rich boundary hedge between Fisherstown and Courtwood bridges.
- Cut and spot-treat tree stumps along the bank edges to allow boaters a safe passage.

km SECTIONS 30-33 FISHERSTOWN - GRATTAN AQUEDUCT

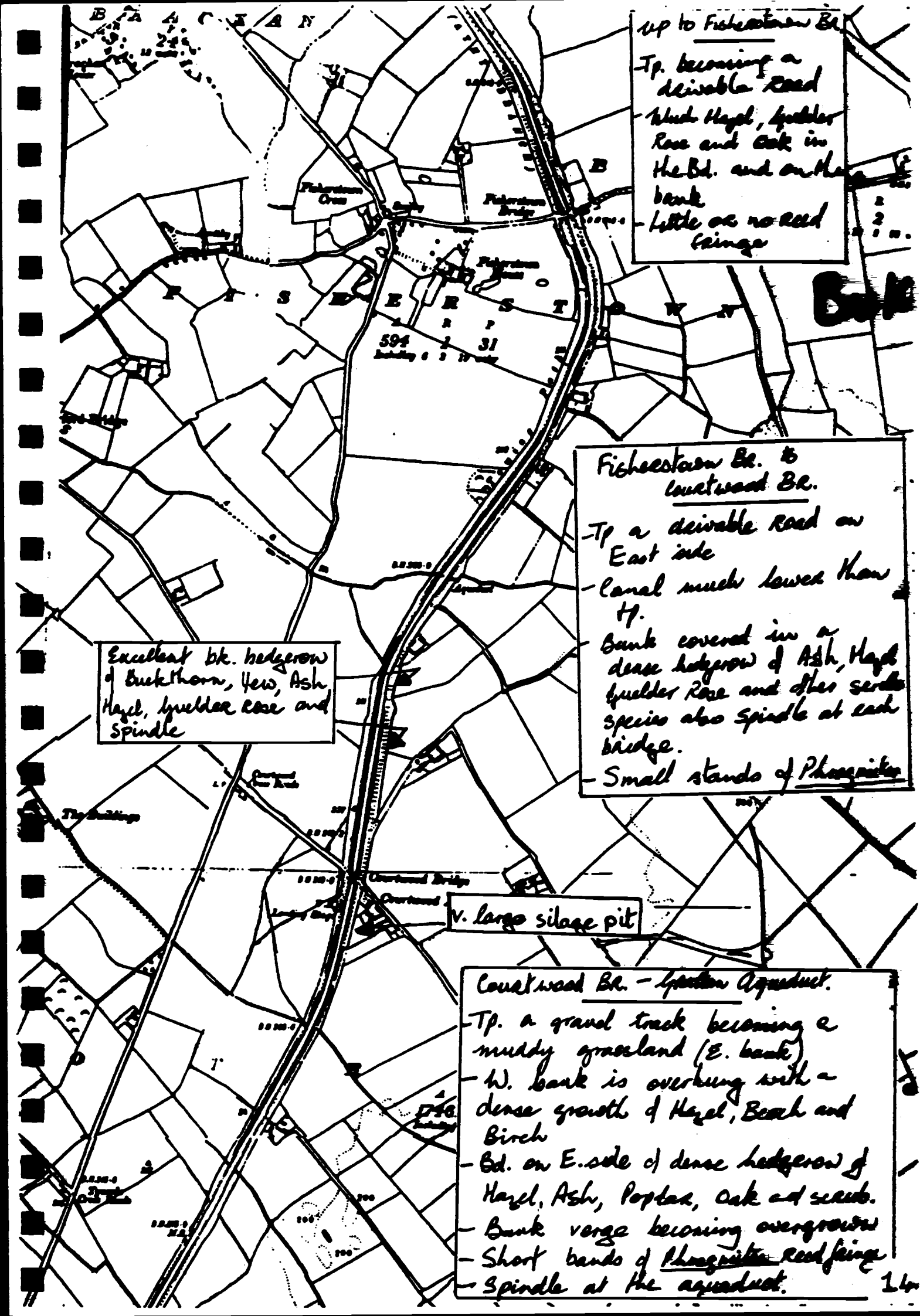
Access, bank repair and maintenance along the different parts of the banks of this stretch between Fisherstown and Courtwood was discussed with the engineer on site in February 1992. The canal along this stretch is aesthetically very pleasing as it has a closed aspect created by a combination of high east bank and a diversity of tree and shrub species along both banks. It was agreed that it would be appropriate that a variety of management strategies be used along this stretch.

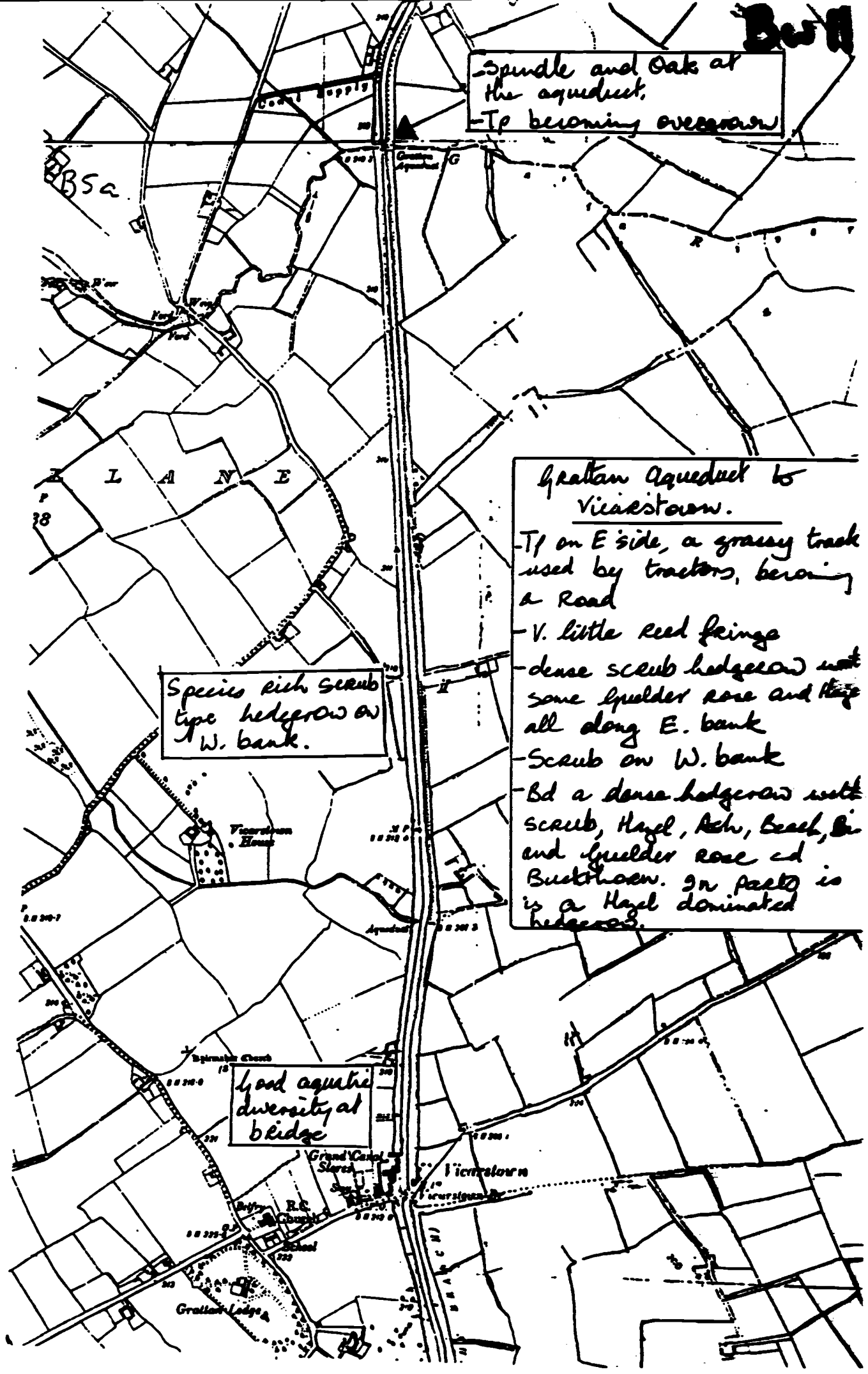
FURTHER RECOMMENDATIONS:

- Part of the west bank nearest to Fisherstown is damaged and needs to be repaired and to have the freeboard raised. It was decided that machine access is necessary to carry this out. A path no wider than 12 foot is to be cleared along part of this west bank as far as the area where the repairs are necessary.

- Once repairs have been carried out, the possibility of extending pedestrian access to Courtwood Bridge along the west bank is to be investigated. In the event of this being possible, encroaching trees/shrubs are to be removed manually from the towpath.

- If it is not possible to clear a path for pedestrian access along the west bank then it should be possible to remove trees at irregular but not less than 50m intervals from the high east bank to allow a view of the channel. Access is possible along this side on the road.


up to Fisherstown Bk.
Tp. becoming a desirable Road
Mud Hazel, Guelder Rose and Oak in the Bd. and on the bank
Little or no Reed fringe
Fisherstown Bk. to Lowtwood Bk.
Tp a desirable Road on East side
Canal much lower than Tp.
Bank covered in a dense hedgerow of Ash, Hazel, Guelder Rose and other scrub species also Spindle at each bridge.
Small stands of Phragmites
Excellent bk. hedgerow of Buckthorn, Yew, Ash, Hazel, Guelder Rose and Spindle
v. large silage pit
Lowtwood Bk. – Ironstone Aqueduct.
Tp. a grand track becoming a muddy grassland (E. bank)
W. bank is overhung with a dense growth of Hazel, Beech and Birch
Bd. on E. side of dense hedgerow of Hazel, Ash, Poplar, Oak and scrub.
Bank verge becoming overgrown
Short bands of Phragmites reed fringe
Spindle at the aqueduct.
14



Grattan Aqueduct to Vicarstown.

-Tp on E side, a grassy track used by tractors, becoming a Road
-V. little Reed fringe
-dense scrub hedgerow with some Guelder rose and Hazel all along E. bank
-Scrub on W. bank
-Bd a dense hedgerow with scrub, Hazel, Ash, Beech, Elm and Guelder rose and Buckthorn. In part is a Hazel dominated hedgerow.

KM SECTIONS 33-35 GRATTAN AQUEDUCT - VICARSTOWN BRIDGE

GOOD FEATURES:

- The bank/boundary along both banks is composed of dense species-rich scrub/woodland. It includes such species as Ash, Holly, Hazel, Hawthorn, Birch, Buckthorn and Guelder Rose immediately south of the aqueduct on the east bank.
- Many birds and invertebrate species present in the diverse scrub/woodland hedgerow.
- High aquatic diversity though not abundance, at Vicarstown Bridge.
- It is proposed to leave this stretch of channel free from herbicide treatment in 1992 (Caffrey, 1991).
- Small stretch of Phragmites australis stands in the channel.

BAD FEATURES:

- Little reed fringe.
- This stretch of channel was treated with Last Casoron in June 1991.

OBJECTIVES:

- To encourage the development of a reed fringe along all of this stretch and to maintain aquatic diversity.
- To retain the scrub woodland habitat of both banks for its diversity and as a habitat for large numbers of invertebrates and birds.

RECOMMENDATIONS:

- Leave hedgerows/scrub/woodlands of both banks intact to encourage floristic and faunistic diversity.
- Continue to mechanically remove excess aquatic plants.
- Protect existing reed fringe in future canal operations.
- It may be necessary to remove some trees from the bank edge. Selective cutting and spot-treatment of stumps of some species such as Ash is permissable.

- Manually remove trees from the east towpath in the vicinity of the aqueduct. This towpath is a track which leads onto a road at the southern end.

km SECTIONS 33-35 GRATTAN AQUEDUCT - VICARSTOWN BRIDGE

Following a visit to this area in January and February 1992, it was found that much of the dense scrub of the west bank had been removed. An old vegetated soil bank along this area was levelled thus raising the level of much of the west bank. All the reed fringe of the west bank was lost during the course of this work. Because large areas of scrub habitat were being lost, work was stopped. This now means there is a cleared bank which allows access for almost half the distance between Fisherstown and Vicarstown. The present towpath is along the east bank and becoming overgrown in the vicinity of the aqueduct.

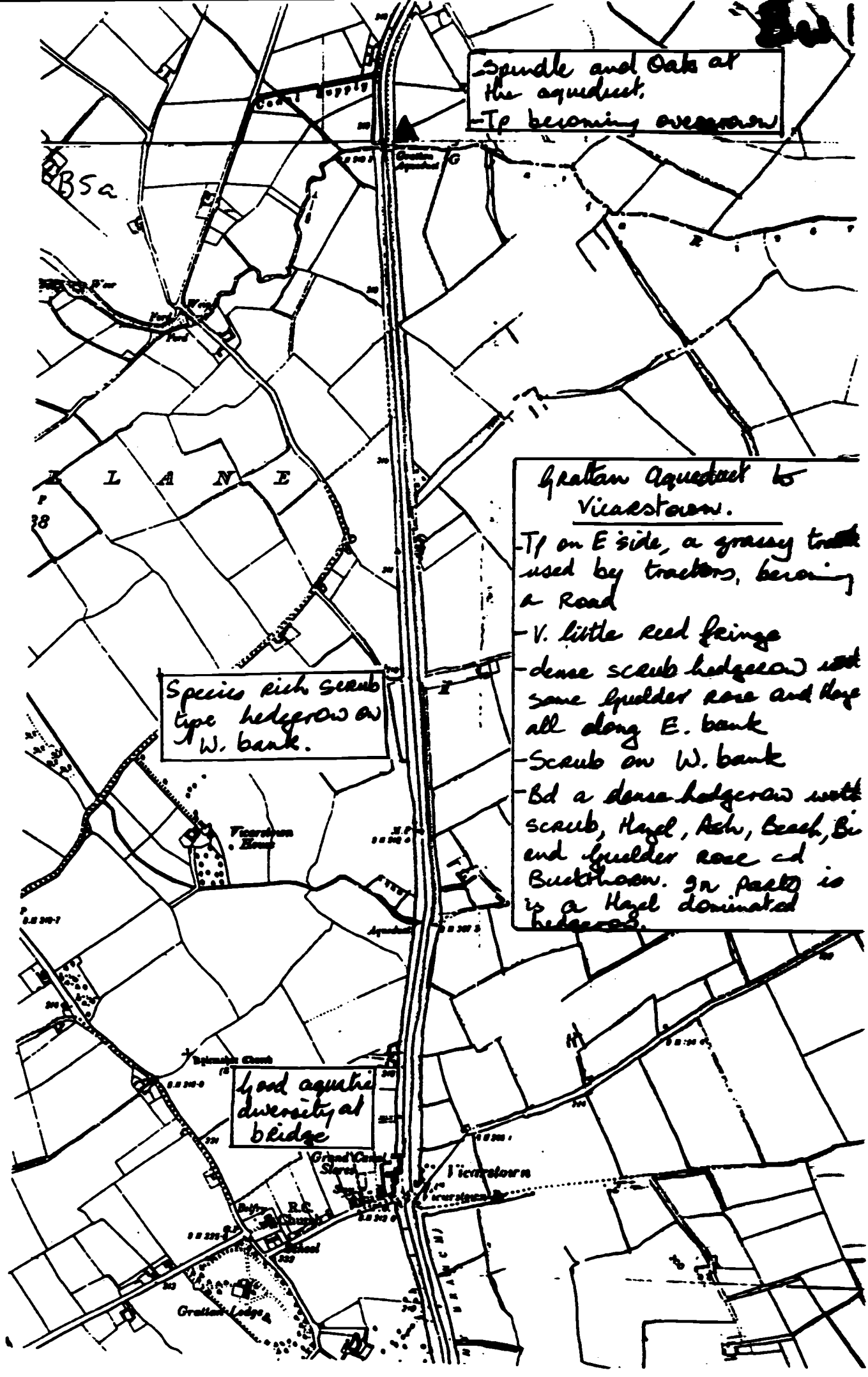
FURTHER RECOMMENDATIONS:

- Investigate the possibilities of manually clearing a narrow footpath along the uncleared section of the west bank. This investigation will need to be carried out jointly with the ecologists or the Wildlife Service.

- Allow meadow to develop along an 8 foot wide strip at the canal edge of the cleared west bank. Cut the vegetation in May and August of 1992 and collect the cuttings. Thereafter, cut once a year in July/August and again remove the cuttings. Removal of cuttings reduces the amount of plant nutrients getting into the system. Less nutrient recycling allows for a nutrient-poor soil status to be achieved quicker. A calcareous soil low in nutrients usually results in a species-rich sward.

- A sheep grazing regime may be introduced to the west bank once the sward has become established thus eliminating the need to mow and so reduce costs.

- Allow scrub to develop on the remainder of the cleared bank. Do not cut this section from 1993 onwards.


Spindle and Oak at the aqueduct.
-Tp becoming overgrown
B5a
L A N E
Species rich scrub type hedgerow on W. bank.
Grattan Aqueduct to Vicarstown.
-Tf on E side, a grassy track used by tractors, becoming a Road
-V. little reed fringe
-dense scrub hedgerow with some Spindle rose and Hogg all along E. bank
-Scrub on W. bank
-Bd a dense hedgerow with scrub, Hazel, Ash, Beech, Bi and Spindle rose cd Buckthorn. In Parish is a Hazel dominated hedgerow.
Good aquatic diversity at bridge
Vicarstown
Grattan Lodge

KM SECTIONS 35-41 VICARSTOWN - MILLTOWN BRIDGE

GOOD FEATURES:

- Saplings and diversity of tall herbaceous and calcareous species all along the uncut east/north bank.
- A dense growth of species rich scrub hedgerow/woodland all along the east/north boundary verge.
- Mature Beech trees on the west bank at Ballymanus Bridge. Scrub and tree species along the west/south bank south of Ballymanus Bridge.
- Some very good patches of reed fringe consisting of Typha latifolia, Glyceria maxima, Phragmites australis, Phalaris arundinacea and Scirpus lacustris all along the stretch.
- Berms present on north bank between Ballymanus and Milltown Bridges.
- Small fen at the boundary verge at Milltown Bridge (N).

BAD FEATURES:

- This stretch of channel was sprayed with Late Casoron in June '91 and it is proposed to continue to do so in 1992 (Caffrey, 1991).
- It is also proposed to use Roundup along some of this stretch of channel in 1992 (Caffrey, 1991).
- Trees being cut on the west bank south of Ballymanus Bridge.
- Much algae in the water on the approach to Milltown Bridge.

RECOMMENDATIONS:

- As the reed fringe is fragmented no herbicides should be used on this stretch.
- Protect the scrub/woodland species. Branches which overhang the channel may be cut back and Ash trees may be cut and the stumps spot-treated.
- If bank improvement needs to be carried out it can be done from the channel.
- It should not be necessary to clear the trees and shrubs from the banks to facilitate land based machinery.

OBJECTIVES:

- To encourage the development of a reed fringe all along the stretch and to increase aquatic diversity.
- To retain the scrub habitat and diverse hedgerow as havens for wildlife especially along the west bank.

km SECTIONS 35-41 VICARSTOWN - MILLTOWN BRIDGE

Following a visit to the area in January and February 1992 it was found that some of the scrub of the east bank and most of that of the west bank was cleared. Bank repair was carried out along the west bank in order to raise the freeboard and to repair canal leaks. Reed fringe of the west bank was removed.

FURTHER RECOMMENDATIONS:

- As the reed fringe all along the west bank has been removed, the proposed spraying with Late Casoron and Roundup in 1992 should be abandoned.

- Where clay is used to repair banks and to raise the freeboard, it should be covered with topsoil. This will facilitate early plant growth, which will in turn stabilise the new banks. The plants also act as a buffer against wave action thus reducing the erodibility of the banks.

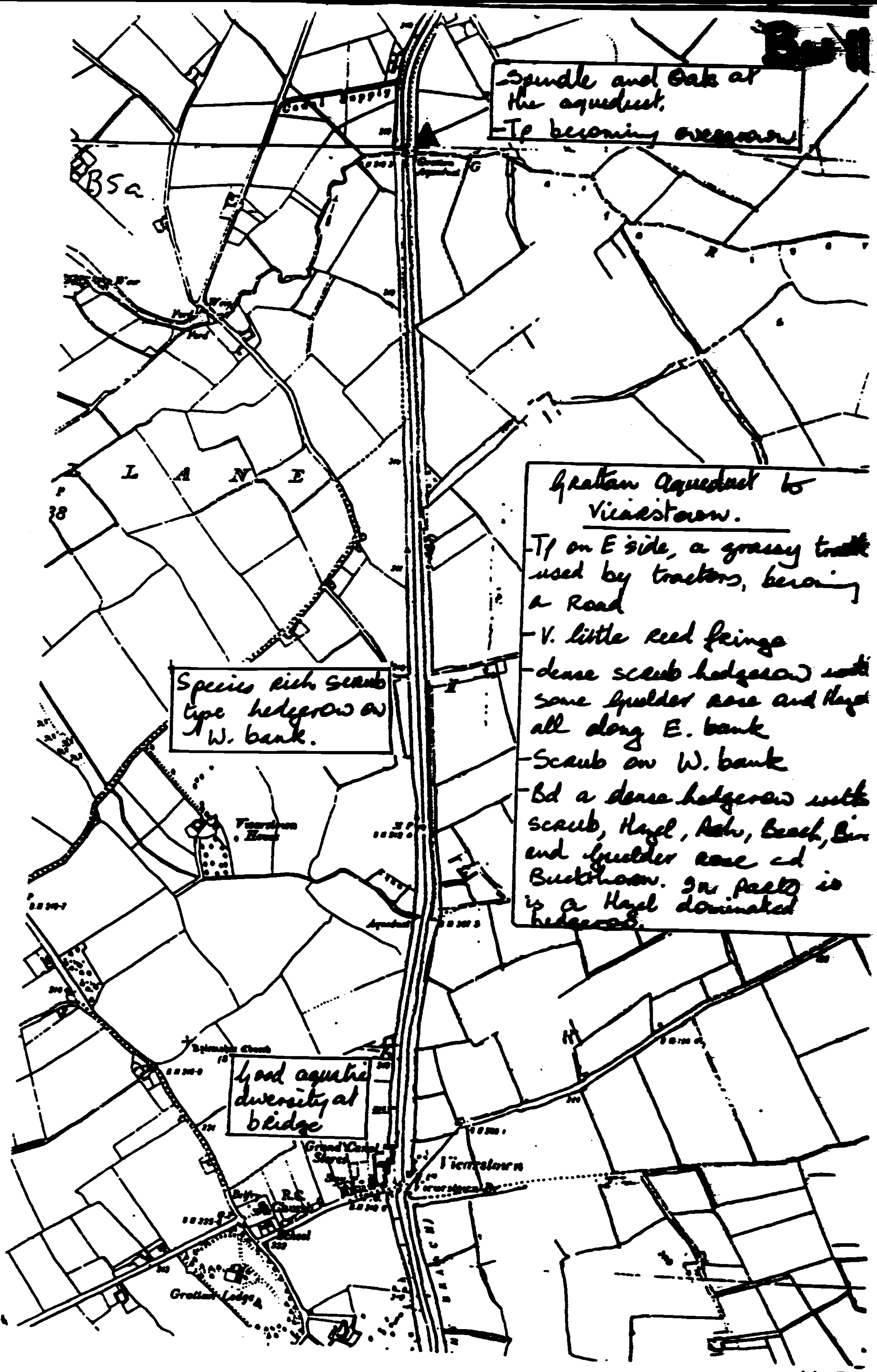
- Allow an 8 foot wide strip along the west bank to develop into meadow. Cut twice in 1992 - May and August - and collect the cuttings. In 1993 cut the strip in late July/August and remove the cuttings.

- A sheep grazing regime may be introduced to the west bank once the sward has become established thus eliminating the need to mow and so reduce costs. The close cropping of grass species by sheep allows non-grass species to become established and so increases the diversity.

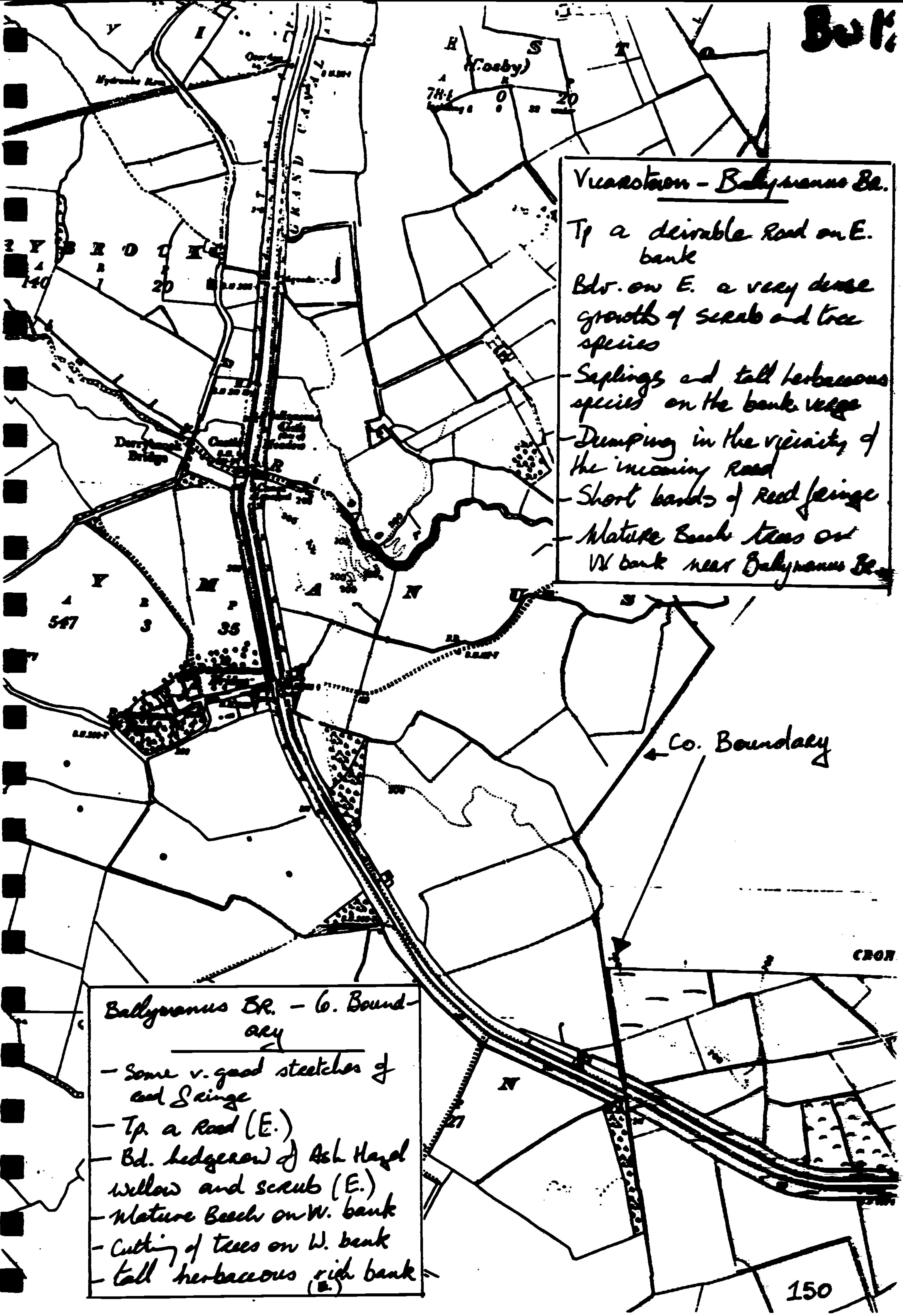
- Allow scrub to develop along the west bank in the area between the 8 foot strip and the boundary. This area will not need cutting from 1993 onwards until such time as the trees and bushes begin to encroach on to the meadow strip.

- Allow scrub re-establish itself in the trench along the road at east of the canal (Plate 59).

- Monitor the revegetation of the soil mounds at the Camac Aqueduct.



Spindle and Oaks at the aqueduct.
-Tp becoming overgrown
B5a
L A N E
38
Grattan Aqueduct to Vicarstown.
-T/p on E side, a grassy track used by tractors, becoming a Road
-V. little reed fringe
-dense scrub hedgerow with some Guelder rose and Hazel all along E. bank
-Scrub on W. bank
-Bd a dense hedgerow with scrub, Hazel, Ash, Beech, Bir and Guelder rose cd Buckthorn. In parts is is a Hazel dominated hedgerow
Species rich scrub type hedgerow on W. bank.
Aqueduct
Good aquatic diversity at bridge
Grand Canal Stores
Vicarstown
R.C. Church
Grattan Lodge


GRAND CANAL
(Cosby)
Vicarstown – Ballymanus Br.
Tp a desirable Road on E. bank
Bdr. on E. a very dense growth of scrub and tree species
- Saplings and tall herbaceous species on the bank verge
- Dumping in the vicinity of the incoming Road
- Short bands of Reed fringe
- Mature Beech trees on W bank near Ballymanus Br.
Co. Boundary
Ballymanus BR. – 6. Boundary
- Some v. good stretches of Reed fringe
- Tp. a Road (E.)
- Bd. hedgerow of Ash Hazel willow and scrub (E.)
- Mature Beech on W. bank
- Cutting of trees on W. bank
- tall herbaceous rich bank (E.)

CASTLEREBAN NORTH TD

KILBERRY TD

KILBERRY TD

GRAND CANAL (CAREY BRANCH)

TO ATHY

CASTLEREBAN SOUTH

MOATSTOWN

ALLYROE

TOWN

CHURCHTOWN NORTH

Ballyroe House

Millbrook Br.

Ballyroe Mullhouse

Millbrook House

Ballyroe Lodge

Co. Boundary – Millbrook Br.

- Tp. a Road along N. bank
- N. bd – species rich hedgerow incl. scrub and Willow to Road's edge
- S. bd of scrub and tree species
- small fen/meadow at W. end of N. bdy.
- good patches of reed fringe
- wide beam sections on N. side
- Saplings and tall herbaceous species along N. bank (uncut)
- Erosion of banks

Millbrook Br. – Lock 36

Dense scrub woodland species Rich 6 deep, along bth bank. The entire wide band along east bank removed completely by Aug '94.

GOOD FEATURES:

- Small stretches of hedgerow is all that remains of a dense species-rich scrub/woodland which was present across the entire east bank for a distance of up to 1.5 kilo metres.
- Some small stretches of species-rich reed fringe.
- Scrub along the bank (W).

BAD FEATURES:

- The Species-rich dense scrub/woodland was totally cleared in August 1991.
- This stretch of channel was treated with late Casoron in 1991 and it is proposed to continue to do so in 1992 (Caffrey, 1991).
- It is also proposed to treat some selected stretches with Roundup.
- The vegetation of the towpath along the east bank is cut too frequently resulting in a species-poor sward.

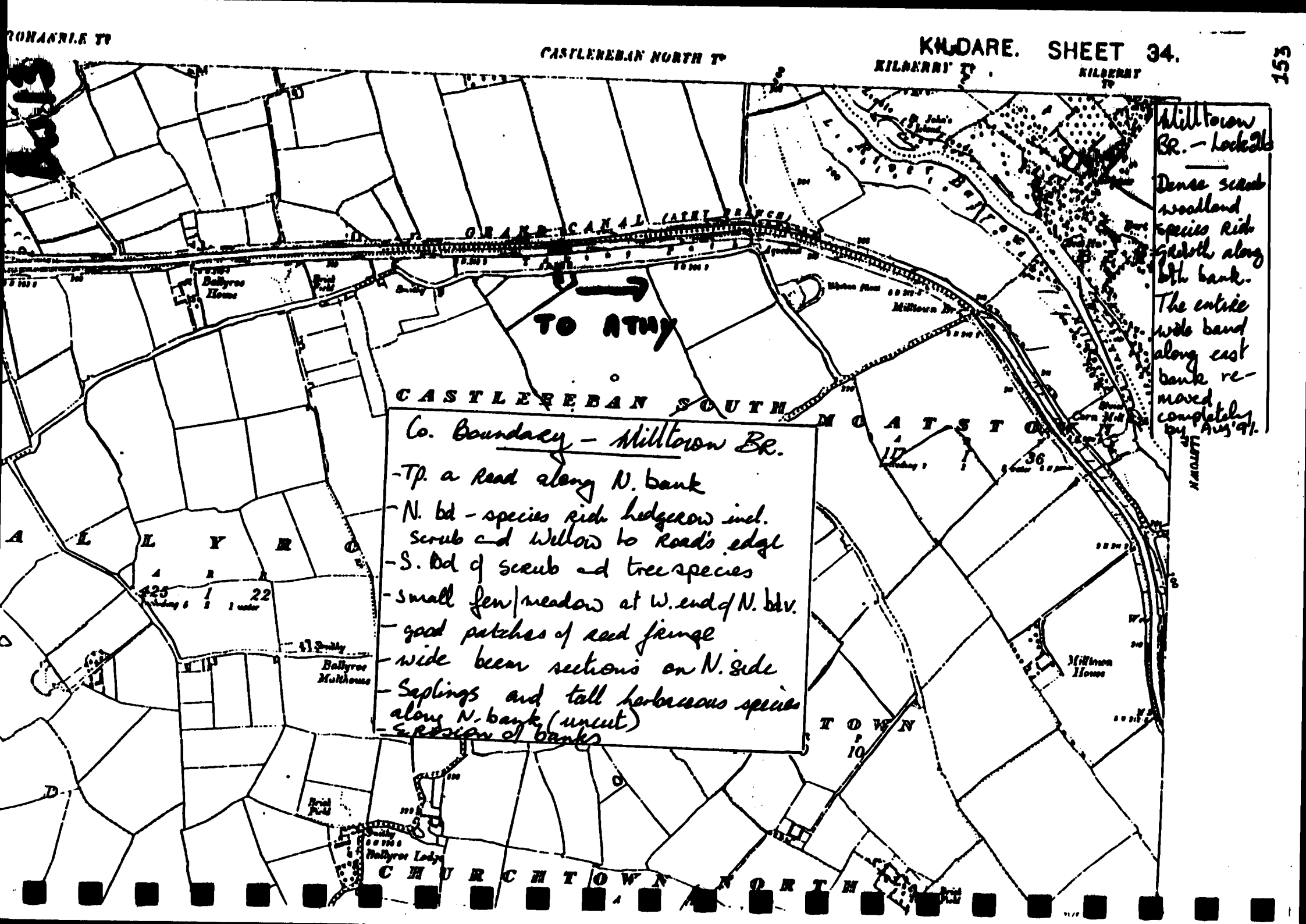
OBJECTIVES:

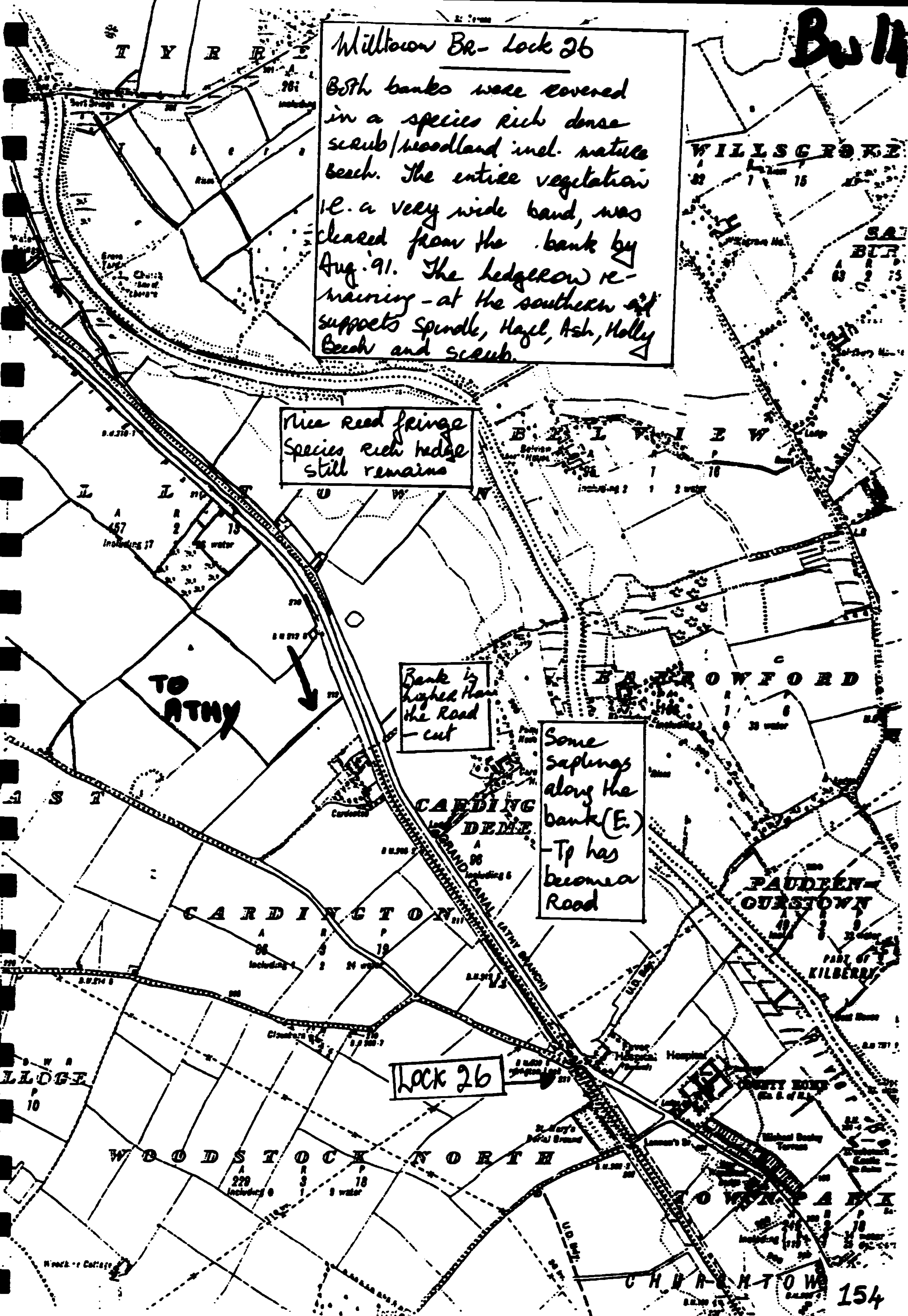
- To retain the scrub woodland of the bank (W).
- In the long term, to manage the cleared east bank as a meadow. It will take time and continuous management before a stable meadow sward becomes established.
- To encourage the development of a reed fringe along both banks.

RECOMMENDATIONS:

- As the reed fringe is fragmented, eliminate use of aquatic herbicides.
- Leave the scrub of the west bank intact. If bank repairs to that side are necessary it may be carried out from the channel. Overhanging branches may be cut. Removal of selected species such as Ash, and spot-treatment of the stumps is permissable.
- Cut the vegetation of the east bank three times in 1992 - May, July and September. Collect cuttings. Thereafter cut at the end of the growing season only and remove cuttings.

- Cut the vegetation of the east bank twice in 1992 - May and August - to a width of 8 feet. Collect the cuttings. In 1993, cut once a year in July/August and collect the cuttings. A meadow should develop.
- Allow scrub to develop on the remainder of the cleared east bank between the boundary and the proposed 8 foot meadow strip.
- Once the meadow has become established, a sheep grazing regime will further enhance species diversity and change the sward to pasture.


RONANNE TP
CASTLEREBAN NORTH TP
KILBERRY TP
KILBERRY TP
Milltown Br. – Lock 26
Dense scrub woodland species Rich growth along bth bank. The entire wide band along east bank removed completely by Aug '91.
GRAND CANAL (CAPE BRANCH)
TO ATHY
CASTLEREBAN SOUTH
Co. Boundary – Milltown Br.
-Tp. a Road along N. bank
-N. bd - species rich hedgerow incl. scrub and Willow to Road's edge
-S. bd of scrub and tree species
-small fen/meadow at W. end of N. bdy.
-good patches of reed fringe
-wide berm sections on N. side
-Saplings and tall herbaceous species along N. bank (uncut)
-Erosion of banks
Ballyroe House
Ballyroe Milkhouse
Ballyroe Lodge
Milltown Br.
Milltown House
MOATSTOWN
TOWN
CHURCHTOWN NORTH


Milltown Br - Lock 26
Both banks were covered in a species rich dense scrub/woodland incl. mature Beech. The entire vegetation i.e. a very wide band, was cleared from the bank by Aug. '91. The hedgerow remaining - at the southern end supports Spindle, Hazel, Ash, Holly Beech and scrub.
Nice Reed fringe
Species rich hedge still remains
TO ATHY
Bank is higher than the Road - cut
Some saplings along the bank (E.) - Tp has become a Road
LOCK 26
TYRRE
WILLSGROVE
BELVIEW
BARROWFORD
CARDINGTON
GRAND CANAL (ATHY BRANCH)
PAUDEEN-OURSTOWN
KILBERRY
WOODSTOCK NORTH
TOWNPARK
CHURCHTOWN

BARROW LINE

SECTIONS 45-46 LOCK 26 - LOCK 28
CARDINGTON BRIDGE - BARROW LOCK

GOOD FEATURES:

- Species-rich calcareous bank and boundary verge between Cardington and Lennon Bridges (E). Some of the section is being encroached by Blackthorn and Whitethorn.
- Line of mature Beech trees along the west bank.
- Wide boundary verge suitable for meadow (W). The towpath is a tarred track.

BAD FEATURES:

- Very poor reed fringe.
- This stretch was treated with Late Casoron in June 1991.
- It is proposed to continue with Casoron Trials in 1992 (Caffrey, 1991).

OBJECTIVES:

- To encourage the development of reed fringes along this entire length and to maintain and increase aquatic diversity.
- To allow a meadow habitat to develop along the wide west boundary verge.

RECOMMENDATIONS:

- Don't use herbicides along this stretch of channel as there is very little aquatic vegetation there at present.
- Allow the west bank and boundary verges to develop into hay meadow. This will mean only cutting at the end of the growing season - August/September. Ecological diversity and a pleasing appearance will be the result. Cuttings to be collected.


CARDINGTON
PAUDEEN-OURSTOWN
PART OF KILBERRY
KILBERRY
LOCK 26
WOODSTOCK NORTH
Lock 26 - Lennon's Bridge.
- TP a narrow path between the species rich bank and species rich scrub of the bd cd bdw.
- Calcareous species abound.
- Small reed fringe
CLONMU
PART OF ST. JOHN'S
Lennon's BR - Augustus Br.
- The tp. is a surfaced walking track on the W. bank.
- The grass of bank and boundary verge is cut too often
- There is a line of mature Beech trees at N. end
- There is a boundary hedge with a drain
- No reed fringe
CHURCHTOWN
ATHY
(Urban District)
SOUTH
Augustus BR - Barrow Lock
- some reed fringe
- road along both sides
- disturbed habitat on E.
BLEACH
QUARRY
34

NAAS BRANCH

MANAGEMENT GUIDELINES AND RECOMMENDATIONS

CONTENTS

KM SECTIONS M1-M3 SOLDIER'S ISLAND-TANDYS' BRIDGE

GOOD FEATURES

- Very high aquatic diversity including Sagittaria sagittifolia.
- Very healthy reed fringes along both banks.
- Diverse banks of tall herbaceous species.
- Hedge along the east bank.
- Mature trees at 3rd Lock (E).

BAD FEATURES

- Much algae in the water.
- This stretch of channel is to be treated using Casoron in 1992 (Caffrey, 1991).

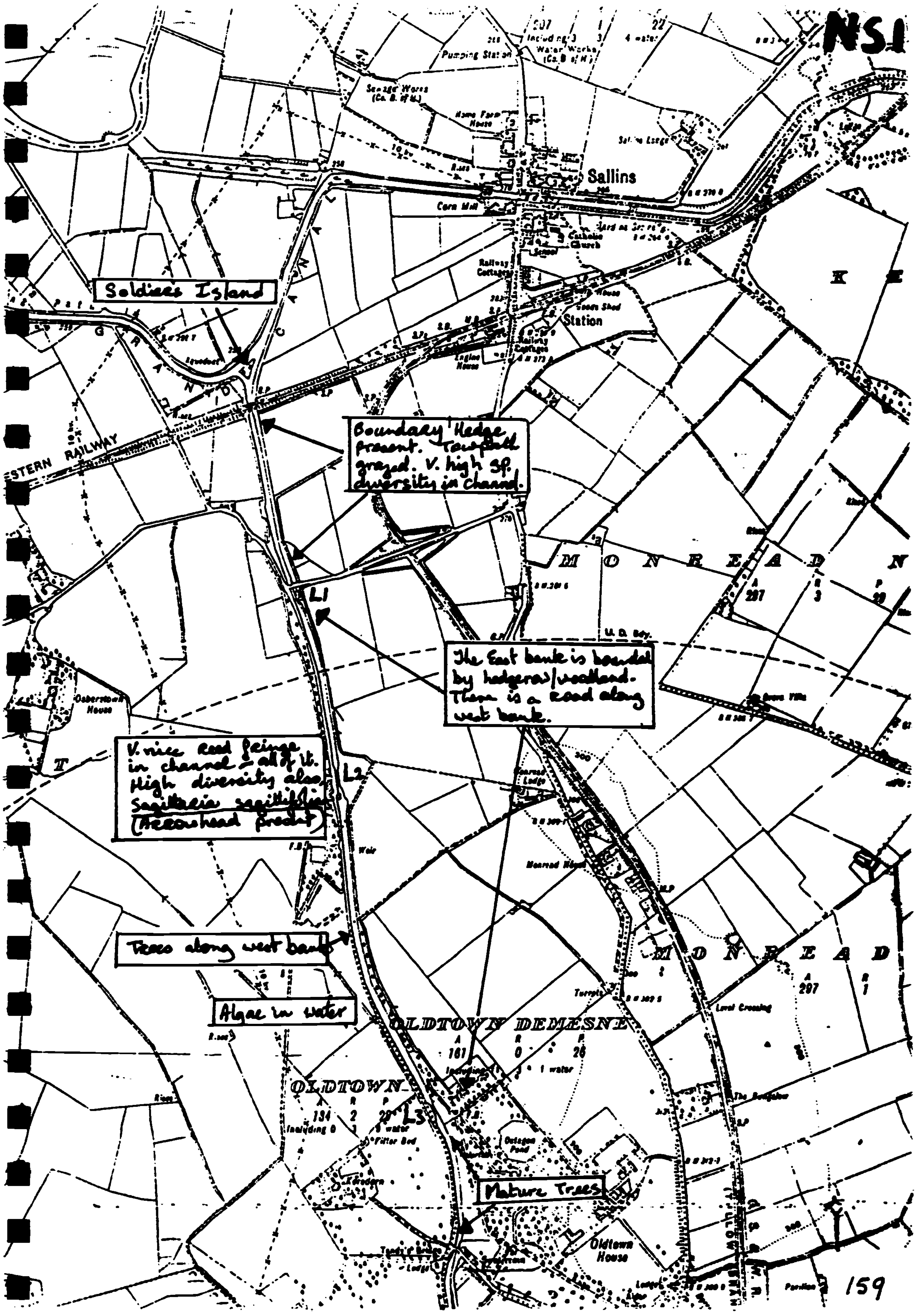
OBJECTIVES

- Maintain aquatic diversity and reed fringes.
- To preserve habitat diversity.

RECOMMENDATIONS

- Remove excess aquatic plants manually.
- Protect hedgerow and mature trees.
- Cut banks and towpath once a year at the end of the season and collect cuttings. Leave some young saplings after each cut.

NS1


Soldiers Island
Boundary Hedge present. Towpath grazed. V. high sp. diversity in channel.
The East bank is bounded by hedgerow/woodland. There is a road along west bank.
V. nice Reed fringe in channel - all of it. High diversity also, Sagittaria sagittifolia (Arrowhead present)
Trees along west bank
Algae in water
Mature Trees
L1
L2
L3
Sallins
Pumping Station
Sewage Works
Home Farm House
Corn Mill
Catholic Church
School
Railway Cottages
Station
Goods Shed
Engine House
Aqueduct
RAILWAY
MONREAD
Oberstown House
Weir
Monread House
Level Crossing
OLDTOWN DEMESNE
OLDTOWN
Filter Bed
Octagon Pond
Oldtown House
Lodge
Pavilion

KM SECTIONS N3-N6 TANDY'S BRIDGE - LIMERICK BRIDGE

GOOD FEATURES

- High aquatic diversity including Sagittaria sagittifolia.
- Healthy reed fringes present especially west of the harbour.
- Many moorhens and swans present.
- Mature trees along the north bank west of Ploopluck Bridge.
- Species rich south bank with many plants characteristic of a marsh and drier bank zones.
- Scrub woodland along south bank west of Jigginstown Bridge.
- It is proposed that the channel west of the harbour be free of herbicide in 1992.

BAD FEATURES

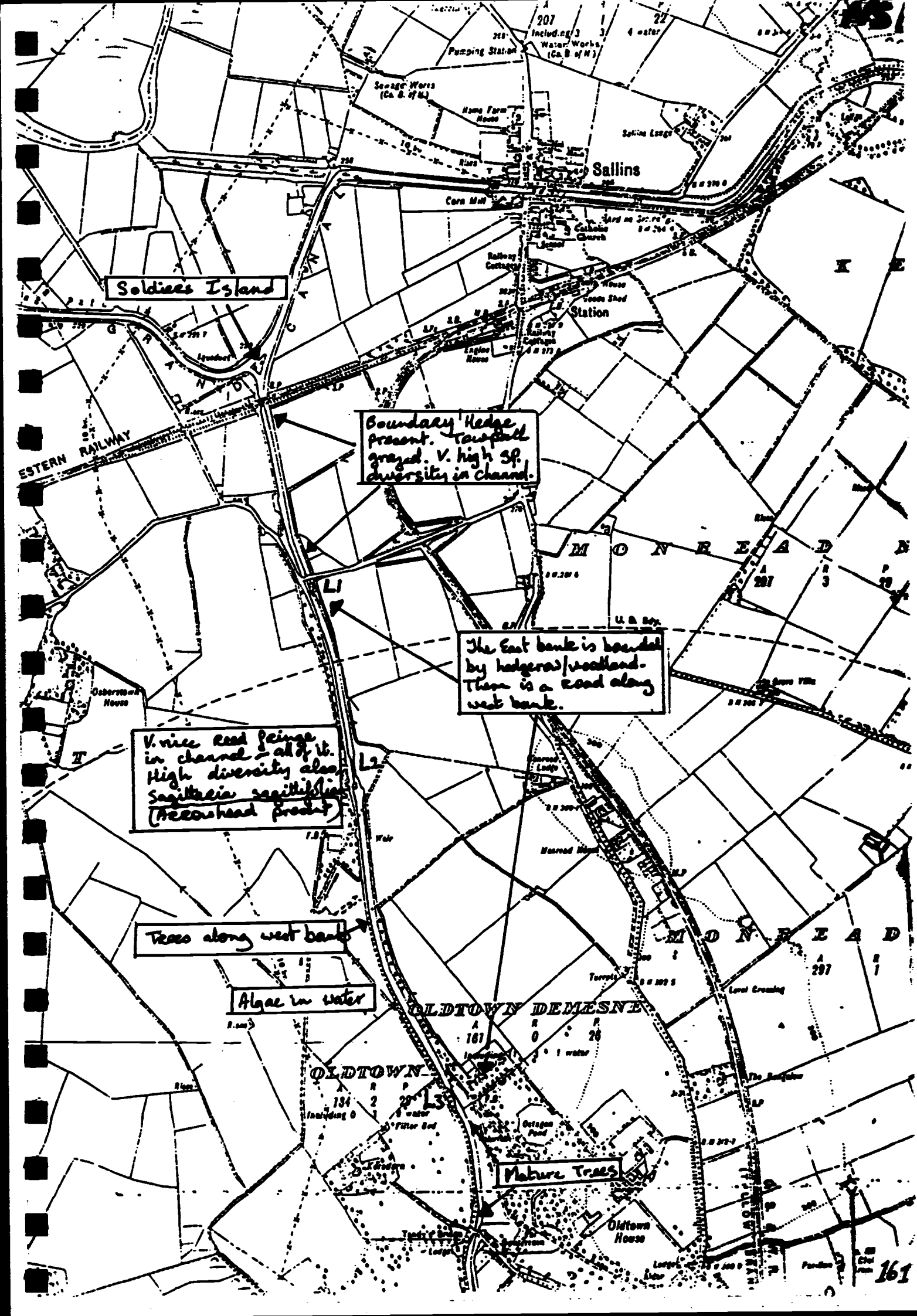
- Much algae in lock chambers.
- Dumping in canal immediately west of the harbour.
- Southern boundary not defined west of the harbour.
- Gardens of new houses west of Jigginstown Bridge encroaching on to canal property. (N)
- North bank becoming impassable west of Jigginstown Bridge.
- Poaching by horses at the north bank at Jigginstown Bridge.

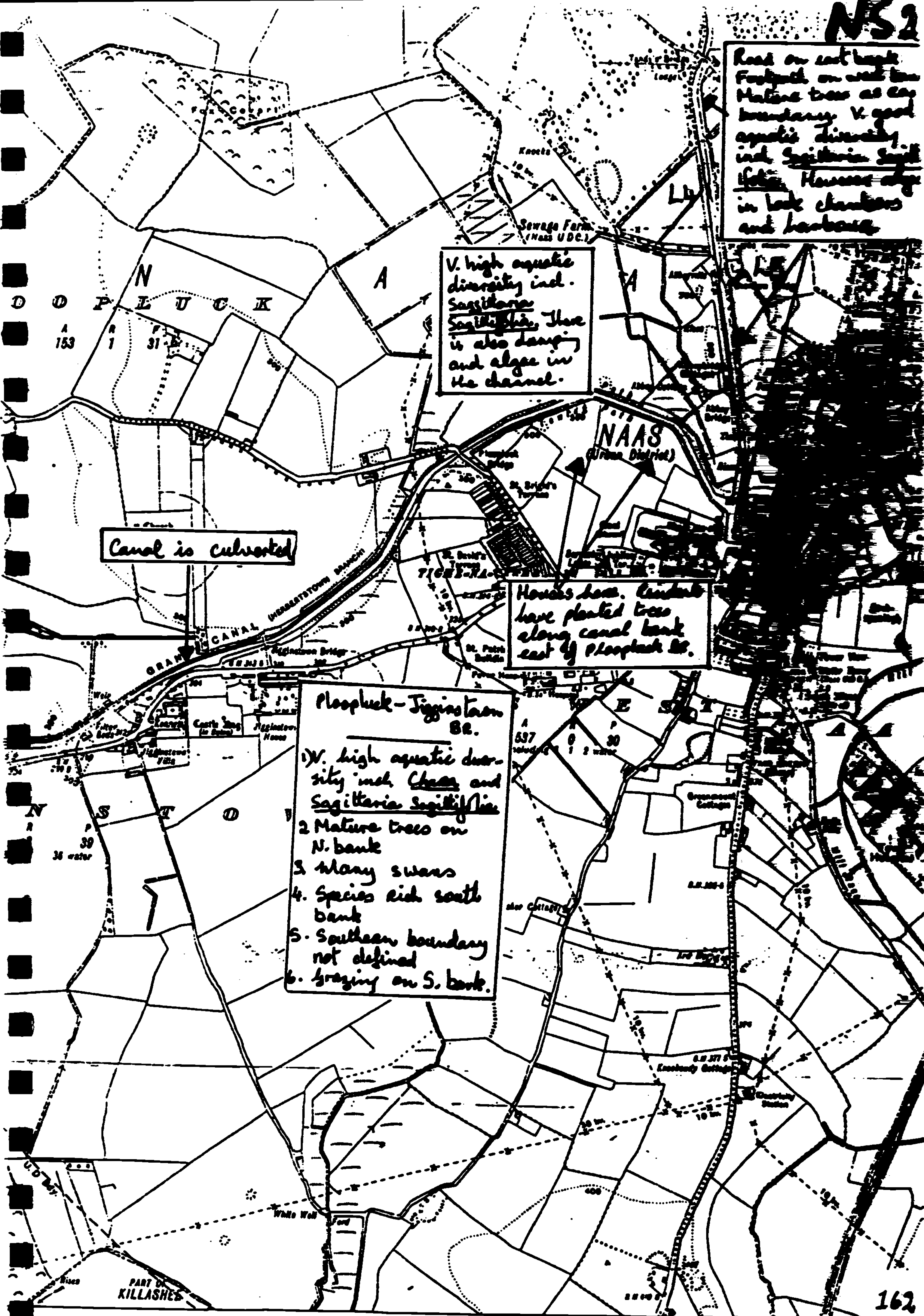
OBJECTIVES

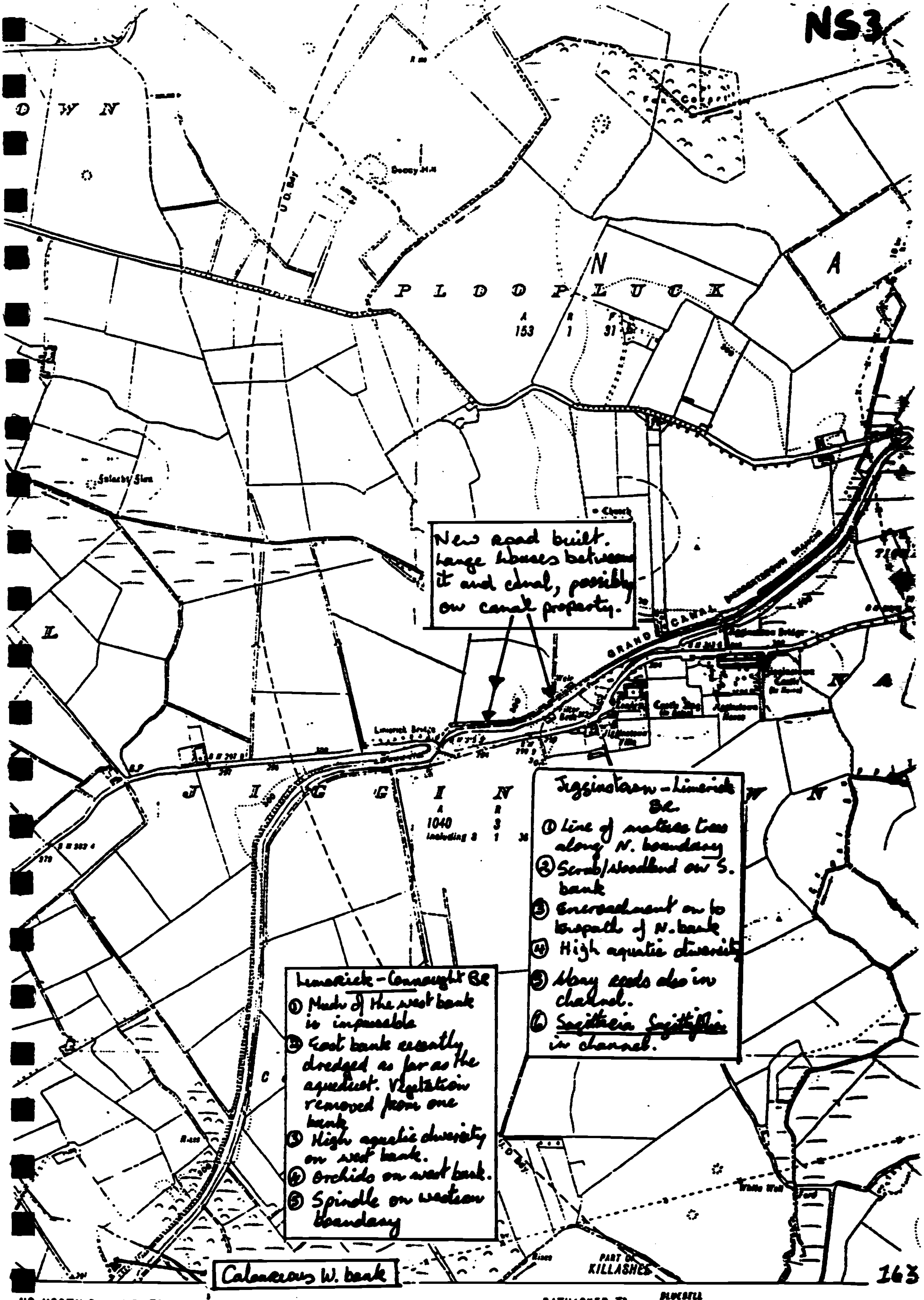
- To maintain aquatic and terrestrial habitat diversity.
- To open the towpath for pedestrians without reducing ecological diversity.

RECOMMENDATIONS

- Cut trees and shrubs where towpath access is hindered and spot treat. Cut the towpath once a year thereafter.
- Trim the banks once a year.
- Allow light grazing to continue along the south bank between Ploopluck and Jigginstown Bridge.
- Remove horses from north bank at Jigginstown Bridge.
- Define boundary and plant native tree/shrub species.
- Investigate encroachment by house owners on to canal property.


Soldiers Island
Boundary Hedge present. Towpath grazed. V. high Sp. diversity in channel.
The East bank is bounded by hedgerow/woodland. There is a road along west bank.
V. nice reed fringe in channel - all of it. High diversity also Sagittaria sagittifolia (Arrowhead present)
Trees along west bank
Algae in water
Mature Trees
L1
L2
L3
Sallins
Station
OLDTOWN DEMESNE
OLDTOWN
MONREAD
Oldtown House
ESTERN RAILWAY


Road on east bank.
Footpath on west
Mature trees as
boundary. V. good
aquatic diversity
incl. Sagittaria
in lock chambers
and harbours
V. high aquatic diversity incl. Sagittaria Sagittifolia. There is also dumping and algae in the channel.
Canal is culverted
Houses here. Residents have planted trees along canal bank east of Plopluck Br.
Plopluck – Jigginstown Br.
1) V. high aquatic diversity incl. Chara and Sagittaria Sagittifolia
2 Mature trees on N. bank
3. Many swans
4. Species rich south bank
5. Southern boundary not defined
6. Grazing on S. bank.
NAAS
(Urban District)
D O P L U C K
N A
A 153 R 1 P 31
GRAND CANAL
Sewage Farm (Naas U.D.C.)
Jigginstown Bridge
St. Brigid's Terrace
St. David's Terrace
Castle Ring (in Ruins)
Jigginstown House
Jigginstown Villa
Greenmount Cottages
Kerrybeg Cottages
White Well
Ford
PART OF KILLASHEE


P L O D P L U C K
A 153
R 1
P 31
N
A
N
A
D W N
L
Church
GRAND CANAL
Limerick Bridge
New road built. Large houses between it and canal, possibly on canal property.
J I G G I N
A 1040
R 3
Including 3 1 36
Jigginstown – Limerick Br.
① Line of mature trees along N. boundary
② Scrub/woodland on S. bank
③ Encroachment on to towpath of N. bank
④ High aquatic diversity
⑤ Many reeds also in channel.
⑥ Sagittaria sagittifolia in channel.
Limerick – Connaught Br
① Much of the west bank is impassable
② East bank recently dredged as far as the aqueduct. Vegetation removed from one bank
③ High aquatic diversity on west bank.
④ Orchids on west bank.
⑤ Spindle on western boundary
Calcareous W. bank
PART OF KILLASHEE
NEWTOWN T^{D}
RATHASKER T^{D}

KM SECTIONS N6-N7 LIMERICK BRIDGE - CONNAUGHT BRIDGE

GOOD FEATURES

- This stretch of canal corridor has recently been designated an Area of Scientific Interest of Regional Importance because of its Ecological Interest.
- The stretch is not sprayed.
- There is a large diversity of aquatic plants including many Charaphytes.
- Calcareous west bank though almost impassible. Many orchid species present.
- Lightly grazed west bank.
- Rich west boundary hedge including Spindle.
- The east bank was recently dredged.

The good aspects of this include the following

- The dredging was carried out from one bank only - this allows birds and invertebrates to take refuge in the vegetation of the opposite bank. Also, plant regrowth of the dredged bank is facilitated by having a root mat source from which recolonisation can take place.
- The flowering parts of the vegetation in the channel - heads and stalks - were removed but much of the root mat still remains thus allowing revegetation.
- Dredged/Cut material was deposited along the boundary verge and not spread across the towpath. In some places the bank was built up with it.
- The top soil layer of the towpath does not seem damaged.
- No spoil.

BAD FEATURES

- Quite a long stretch was dredged at the one time.
- Too wide a band of trees/shrubs was removed from the towpath.

OBJECTIVES

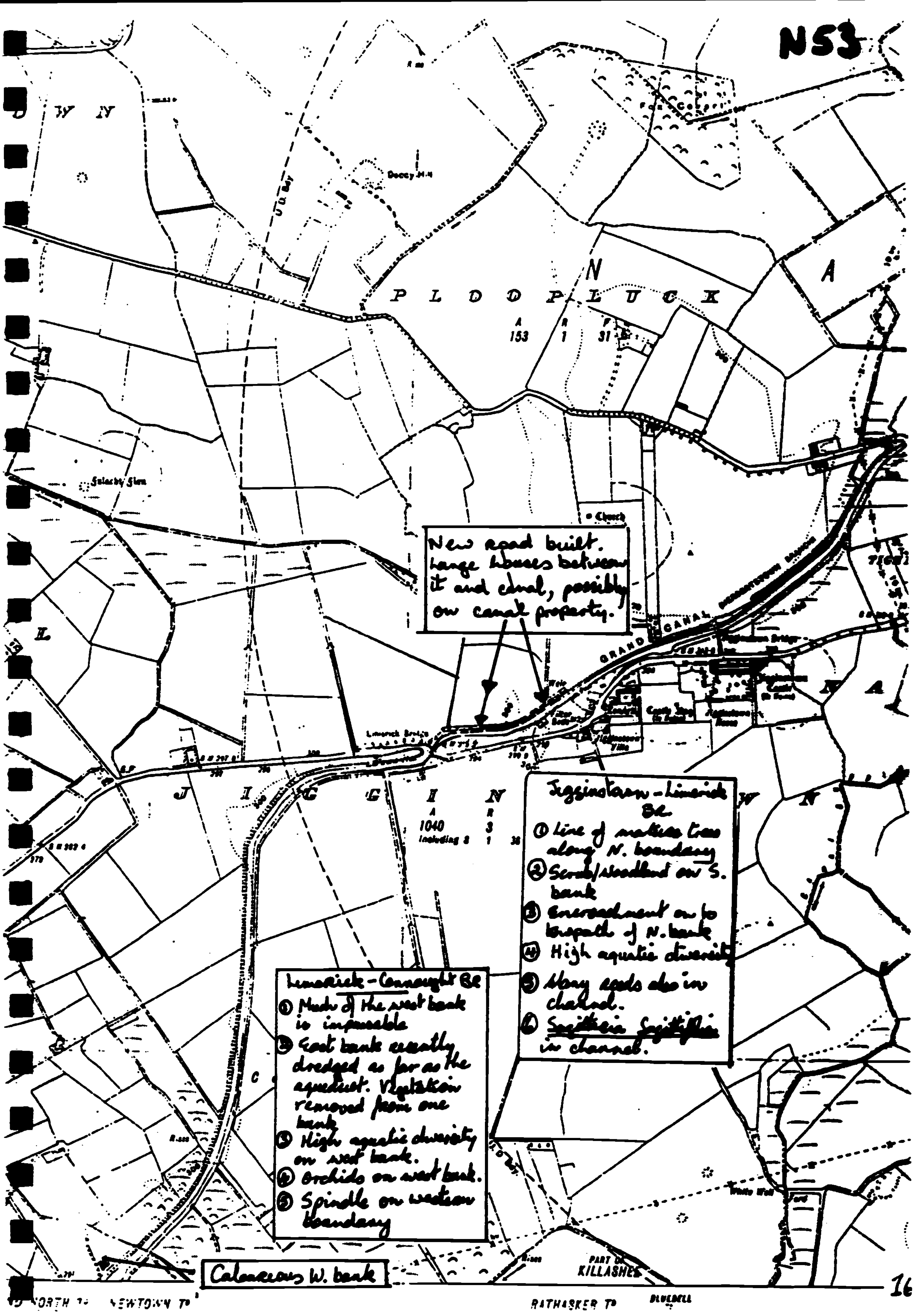
- To maintain habitat diversity.
- To allow pedestrian access.

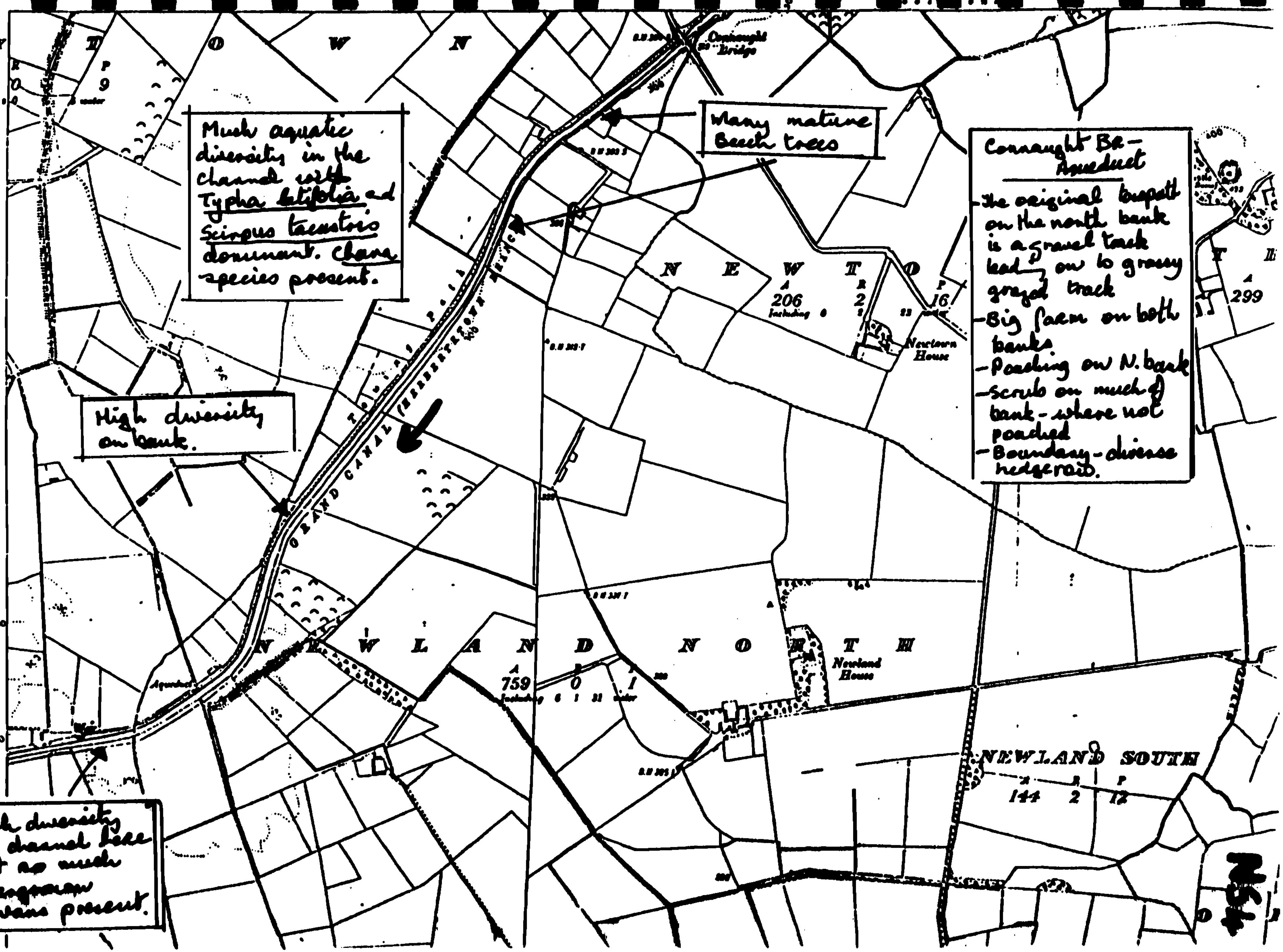
RECOMMENDATIONS

- Cut a narrow band of trees along west bank and spot-treat the stumps.
- Cut the grasses of the undredged east bank once a year to prevent scrub encroachment.
- For dredging the following guidelines pertain.
- Dredge in short stretches and from one bank only.

This is most important.

- Spoil should be buried in a trench or covered in topsoil or pulled to the edge of the channel.
- Dredging and clearing of the channel should be concentrated at the Corbally end. This will facilitate water flow further in towards the main line. Clearing of the harbour itself will allow for an increase in the water volume and hence and increased water flow towards the main line.
- A hydraulic dredger should be used to ensure that marginal vegetation is left along both banks and so that spoil can be dumped accurately in the designated sites.
- Dredge during winter when much of the flowering vegetation and stalks have died back.
- Monitor the vegetation the growth at the boundary edge where the reeds were deposited.


N53
PLODPLUCK
A 153 R 1 P 31
GRAND CANAL
Church
Limerick Bridge
JIGGINSTOWN
A 1040 R 3
Including 2 1 36
New road built. Large houses between it and canal, possibly on canal property.
Jigginstown - Limerick Br.
① Line of mature trees along N. boundary
② Scrub/woodland on S. bank
③ Encroachment on to towpath of N. bank
④ High aquatic diversity
⑤ Many reeds also in channel.
⑥ Sagittaria sagittifolia in channel.
Limerick - Connaught Br.
① Much of the west bank is impassable
② East bank recently dredged as far as the aqueduct. Vegetation removed from one bank
③ High aquatic diversity on west bank.
④ Orchids on west bank.
⑤ Spindle on western boundary
Calcareous W. bank
PART OF KILLASHEE
NEWTOWN Tᴰ
RATHASKER Tᴰ
BLUEBELL


NS4
Connaught Br - Aqueduct
- the original towpath on the north bank is a gravel track leading on to grassy grazed track
- Big farm on both banks
- Poaching on N. bank
- scrub on much of bank - where not poached
- Boundary - diverse hedgerow.
Many mature Beech trees
Much aquatic diversity in the channel with Typha latifolia and Scirpus lacustris dominant. Chara species present.
High diversity on bank.
much diversity in channel here
- not as much overgrown
- swans present.
GRAND CANAL
Connaught Bridge
NEWTOWN
NEWLAND NORTH
NEWLAND SOUTH
Newtown House
Newland House
Aqueduct
CONNELL BY
LADY
206
759
299
144
1133

KM SECTIONS N7-N12 CONNAUGHT BRIDGE - CORBALLY HARBOUR

GOOD FEATURES

- This stretch of canal corridor has recently been designated an Area of Scientific Interest of Regional Importance because of its Ecological Interest.
- Light grazing by sheep west of Hoare's Bridge.
- The boundary is a diverse hedgerow including Spindle and Whitethorn.
- Many mature Beech trees on the south bank at Connaught Bridge.
- High diversity of habitat and species along both banks, the towpath and boundary verge (N).
- Calcareous species - rich mounds on the north bank between Hoare's Bridge and Corbally Harbour.
- High aquatic diversity though overgrown.
- Many swans present in the canal.

BAD FEATURES

- Parts of the ungrazed banks are becoming overgrown.
- Channel needs selective dredging.
- Much cress, indicator of nutrient input present between Mooney's and Hoare's Bridges.
- Some of the boundary hedge has been removed for the new By-Pass.

OBJECTIVES

- To maintain maximum ecological diversity.

RECOMMENDATIONS

- Management of the sites will need to be carried out in close co-operation with the technical staff of the Wildlife Service.
- Aquatic herbicides should not be used in the ASIs - channel vegetation should be controlled when and where necessary by cutting.
- Maintain the grassland on both banks between Corbally Harbour and Hoare's Bridge by grazing. Sheep are preferable to cattle, as they produce a short, diverse sward; and do not damage the canal banks in the way cattle do.
- Newbridge By-Pass: surface water run-off should not be discharged into the canal, either during construction or after the road is opened.
- South of Hoare's Bridge, on the north bank, a relatively large area of land between the site of the new road and the canal has been cleared and the boundary hedgerow removed - why? What is going to be done at this site? How will it

affect the canal ASI?

- Impact of road construction on the hydrology of the area. Investigate the sources of water to the canal: Corbally supply - into harbour and Coolmoonan supply - into channel just north of Connaught Bridge.
  Are these supplies fed by the Curragh Aquifer?
  Are there any other inflows?
  Water quality of inflows?
- Investigate the source of the input of nutrients between Mooney's Bridge and Hoare's Bridge. Is it due to groundwater seepage (the adjacent fields show a pronounced groundwater influence) or is it due to an outflow from the house on the west bank?
  Dredging of:
  - Corbally Harbour, to restore a relatively large area of open water to the system.
  - Isolated patches along the channel north of Corbally.
- Spoil should be dumped behind the grassy mounds between the towpath and the boundary, or in the gaps between mounds.
- A hydraulic dredger should be used to ensure that marginal vegetation is left along both banks, and so that the spoil can be dumped accurately in the designated sites.

km SECTIONS N6-N12 LIMERICK BRIDGE TO CORBALLY HARBOUR.

Part of the disused Corbally Branch of the Grand Canal was visited on the 20th February 1992. It was found that dredging had taken place, namely, along the north bank for approximately 600m east of Hoare's Bridge, the entire north bank between Hoare's and Mooney's Bridges and approximately 500 m along the north bank west of Mooney's Bridge. This forms part of the stretch of the canal which was proposed for designation as an ASI based on its botanical and habitat diversity. The fact that the canal is not impacted by pleasure craft also helps add to the ecological diversity of the proposed ASI.

Dredging was carried out from one bank only (as previously recommended in a report submitted in October 1991). However, the spoil was deposited on top of the nutrient-poor mounds which previously existed along the now dredged stretch between Hoare's Bridge and west of Mooney's Bridge. Dredged material was dragged to the edge of the bank along stretches which were in front of private property. Spoil from the stretch east of Hoare's Bridge was deposited in the boundary verge and boundary hedgerow.

It was observed that there was an inflow into the channel at the junction of dredged and undredged sections east of Corbally Harbour.

RECOMMENDATIONS ON THE REHABILITATION OF DREDGED SECTIONS.

Hoare's Bridge to west of Mooney's Bridge.

Remove the dredging spoil from the top of the mounds in the boundary verge, as this is the most sensitive of the grassland habitats within the ASI. Its sensitivity is due to the very low nutrient status of the soil, which is most pronounced at the top of the mound where the effect of leaching is greatest. Depostiton of nutrient-rich spoil on to such a site encourages nutrient recycling. The soil status of the mounds becomes altered. A reduction of species diversity and the loss of an unimproved grazed grassland habitat results.

The spoil should be deposited behind the mounds, where the grassland is less nutrient-poor, and where the spoil will have a less severe impact.

Grazing by sheep must be continued along the north bank in an attempt to maintain the nutrient-poor status of the grassland.

Investigate the ownership of the small triangular field on the south bank at Mooney's Bridge. If the OPW owns or leases this property, it should be possible to have sheep graze it. In this way a diverse grassland sward will in time become established.

FURTHER DREDGING.

Corbally Harbour eastwards.

Where possible the spoil should be dragged to the edge of the channel but not removed. This is because, although dredging improves the aquatic habitat, the deposition of nutrient-rich spoil onto terrestrial habitats tends to decrease their botanical interest.

Other dredging spoil from the harbour and the undredged stretch to the immediate east of it could be deposited behind the calcareous mounds of the north bank. There are at least three gaps between the mounds through which the spoil could be moved. Spoil could also be deposited into these gaps. These deposition areas should then be marked, and the spoil from future dredging operations should be deposited on the same sites, thus limiting the area affected by dredging and spoil disposal.

Spoil from the harbour area should not be deposited onto the opposite south bank, where a nutrient-poor grassland still exists.

Sheep to be allowed to graze both banks.

Alternatively, spoil could be removed from the site and dumped in an area outside the ASI.

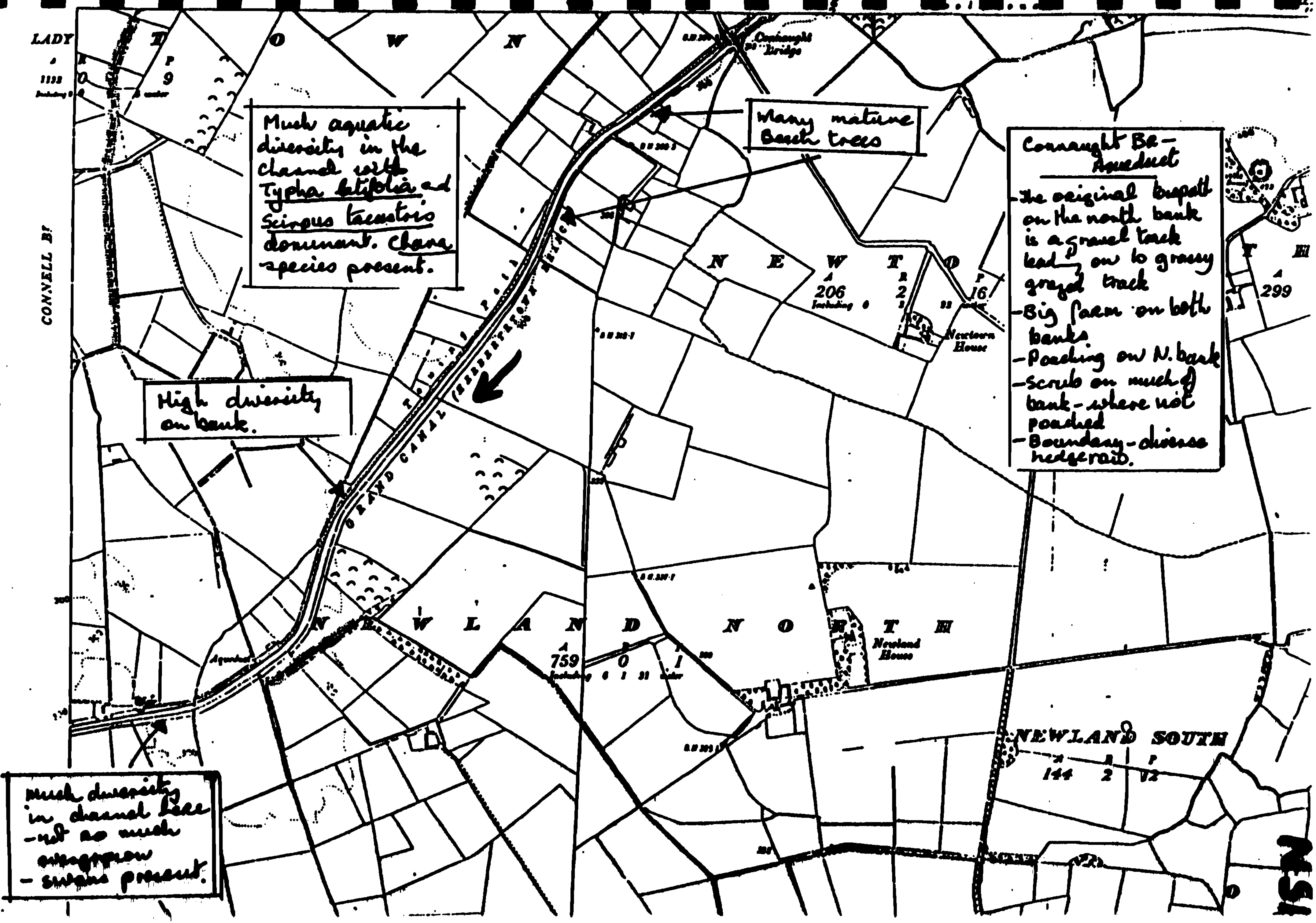
The source of the inflow should be investigated while dredging operations are being carried out and the situation remedied.

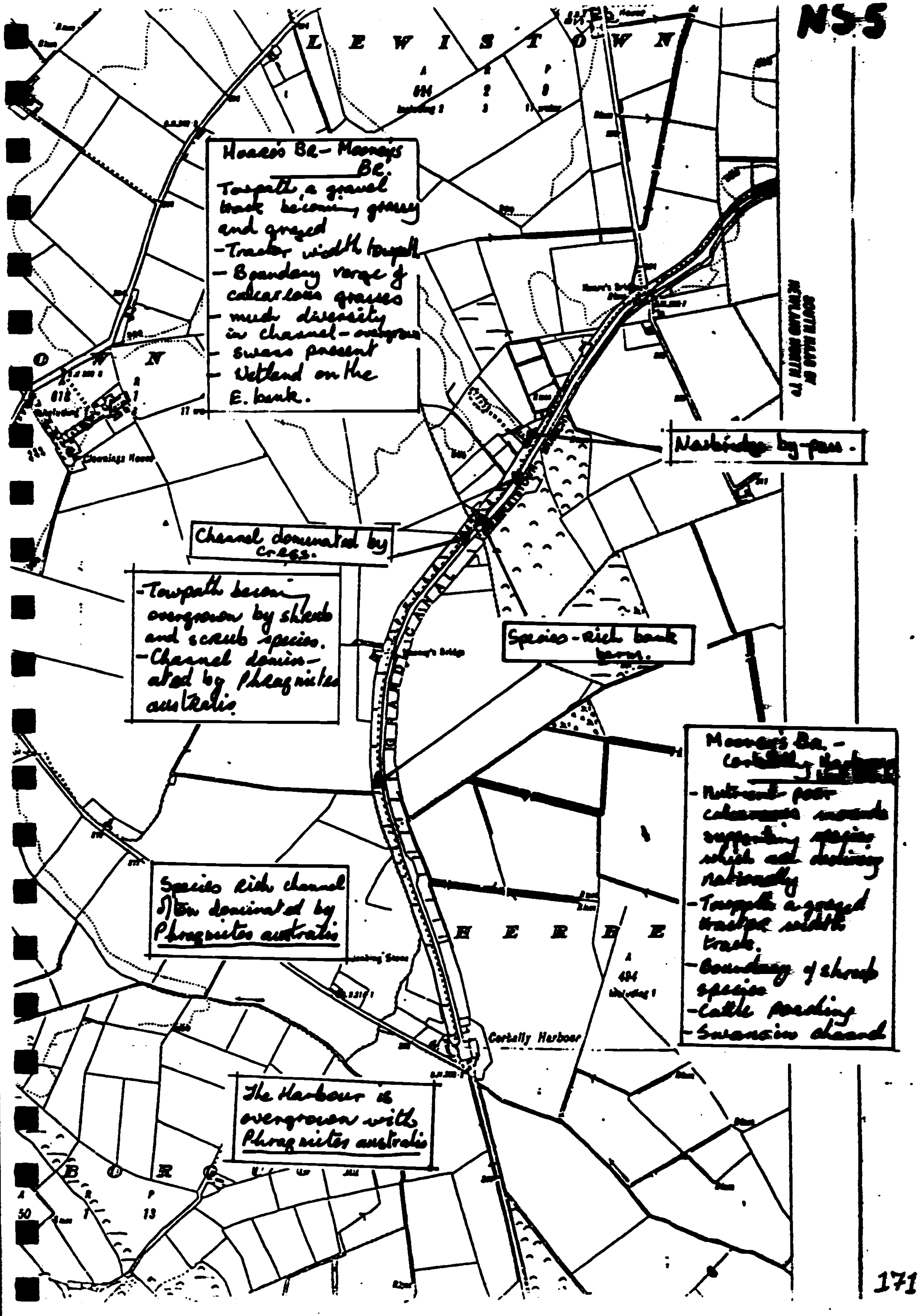
Undredged stretches between Limerick and Connaught Bridges

(not visited on 20th February).

This is an area of canal where the channel is overgrown. Both banks are impassable east of Connaught Bridge. Canal management staff will need to decide whether or not it is necessary to dredge this stretch.

If restoration of this stretch of canal is necessary, then it is to be visited jointly with engineer and wildlife staff in order to discuss dredging techniques, options for spoil disposal and the reinstating of towpath/s.


NSI
Much aquatic diversity in the channel with Typha latifolia and Scirpus lacustris dominant. Chara species present.
Many mature Beech trees
Connaught Br – Aqueduct
– the original towpath on the north bank is a gravel track leading on to grassy grazed track
– Big farm on both banks
– Poaching on N. bank
– Scrub on much of bank – where not poached
– Boundary – diverse hedgerow.
High diversity on bank.
much diversity in channel here – not so much overgrown – swans present.
GRAND CANAL
Connaught Bridge
NEWTOWN
206
Newtown House
NEWLAND NORTH
759
Newland House
NEWLAND SOUTH
144
LADY
CONNELL
Aqueduct


L E W I S T O W N
Hoare's Br. – Mooney's Br.
Towpath a gravel track becoming grassy and grazed
– Tractor width towpath
– Boundary verge of calcareous grasses
much diversity in channel – overgrown
– swans present
– Wetland on the E. bank.
Nashridge by-pass.
Channel dominated by cress.
– Towpath becoming overgrown by shrub and scrub species.
– Channel dominated by Phragmites australis.
Species-rich bank verges.
Mooney's Bridge
Mooney's Br. – Cortally Harbour
– Nutrient poor calcareous ... supporting species which are declining nationally
– Towpath a grassed tractor width track.
– Boundary of shrub species
– Cattle poaching
– Swans in channel
Species rich channel often dominated by Phragmites australis
Loading Stone
Cortally Harbour
The Harbour is overgrown with Phragmites australis

MILLTOWN FEEDER

MANAGEMENT GUIDELINES AND RECOMMENDATIONS

CONTENTS

KM SECTIONS M1-M3 LOWTOWN-HUBAND BRIDGE

GOOD FEATURES

- High aquatic diversity including Sagittaria sagittifolia.
- Species-rich grassland of bank and towpath between Lowtown and Littletown Bridges and south of Huband Bridge.
- Species-rich hedgerow.
- Aquatic herbicides are not used along Milltown Feeder.

BAD FEATURES

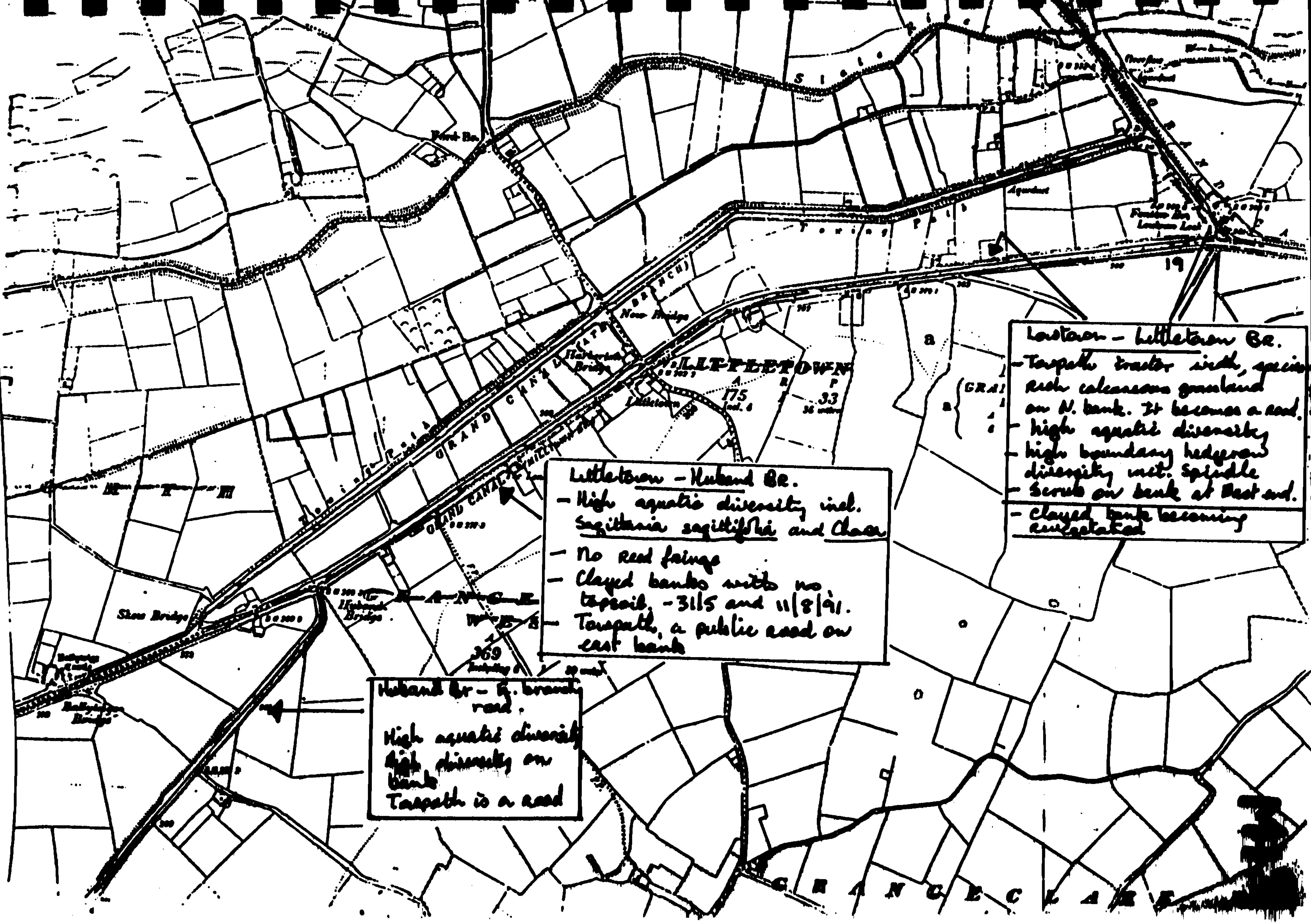
- Little reed fringe west of Littletown Bridge.
- Newly clayed banks which have not been covered in topsoil.

OBJECTIVES

- To maintain aquatic diversity and to encourage the development of a reed fringe.
- To develop meadow grassland along the bank and towpath between Lowtown and Littletown Bridges.

RECOMMENDATIONS

- To cut the grass of bank and towpath at the end of the growing season.
- To protect the hedgerow.
- Cover the newly clayed banks with topsoil.


Lostock – Littleton Br.
– Towpath tractor width, species rich calcareous grassland on N. bank. It becomes a road.
– high aquatic diversity
– high boundary hedgerow diversity incl. Spindle
– Scrub on bank at West end.
– Clayed banks becoming eutrophicated
Littleton – Huband Br.
– High aquatic diversity incl. Sagittaria sagittifolia and Chara
– No reed fringe
– Clayed banks with no topsoil. – 31/5 and 11/8/91.
– Towpath, a public road on east bank
Huband Br – G. branch road.
High aquatic diversity
High diversity on bank
Towpath is a road
GRAND CANAL
LITTLETOWN
Shee Bridge
New Bridge
Towing Path
Aqueduct
19
175
33
369

KM SECTIONS M4-M7 WEST OF HUBAND BRIDGE - PLUCKERSTOWN BRIDGE

GOOD FEATURES

- High aquatic diversity including Sagittaria sagittifolia and Chara species.
- Species-rich banks of tall herbaceous plants.
- Species-rich hedgerow including Hazel.
- Aquatic Herbicides not used along the Milltown Feeder.

BAD FEATURES

- The stretch between Pim's and Pluckestown Bridges was dredged in 89/90 and the banks were thistle dominated in 1991.

OBJECTIVES

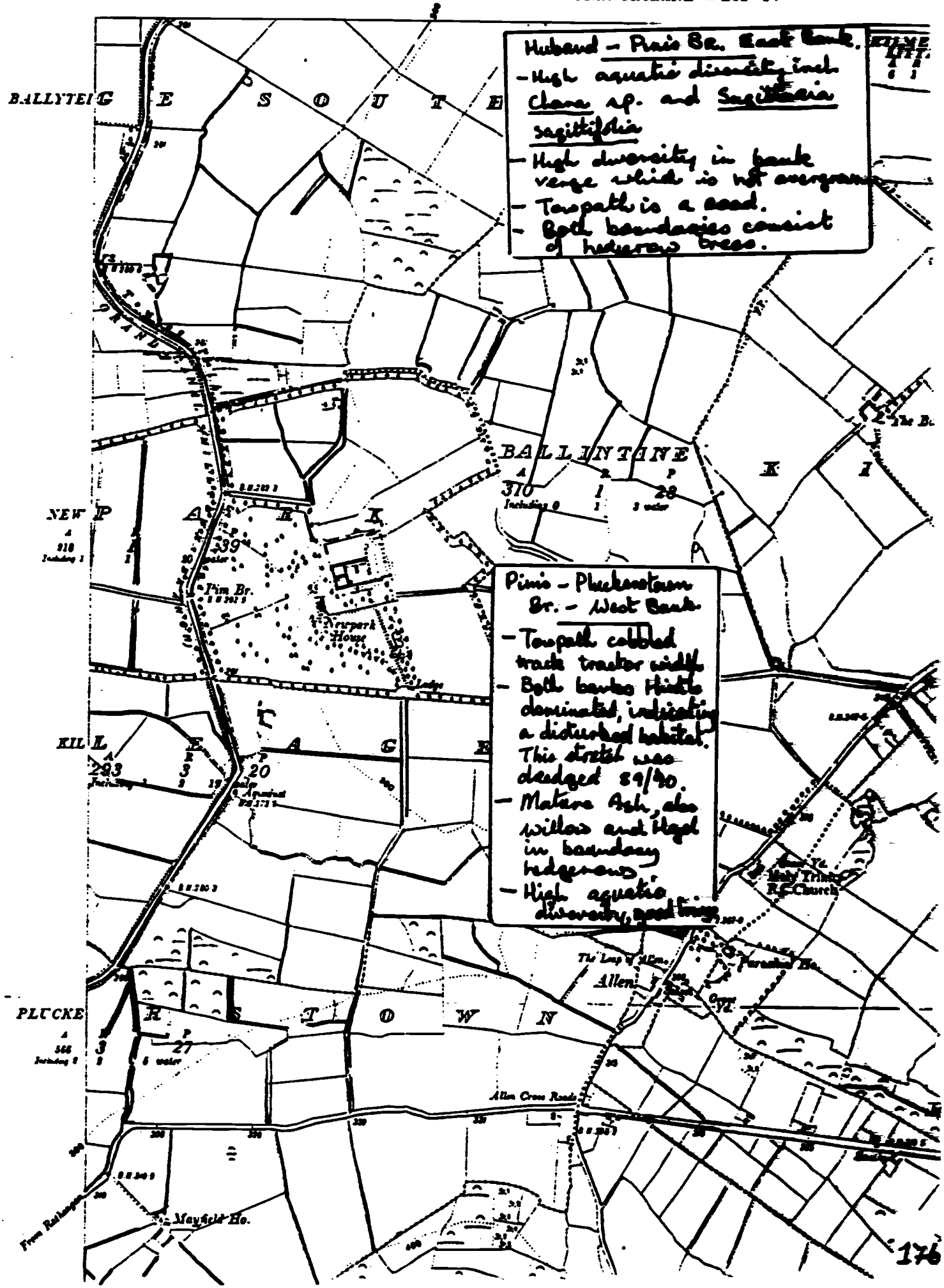
- To develop meadow grassland along the banks.

RECOMMENDATIONS

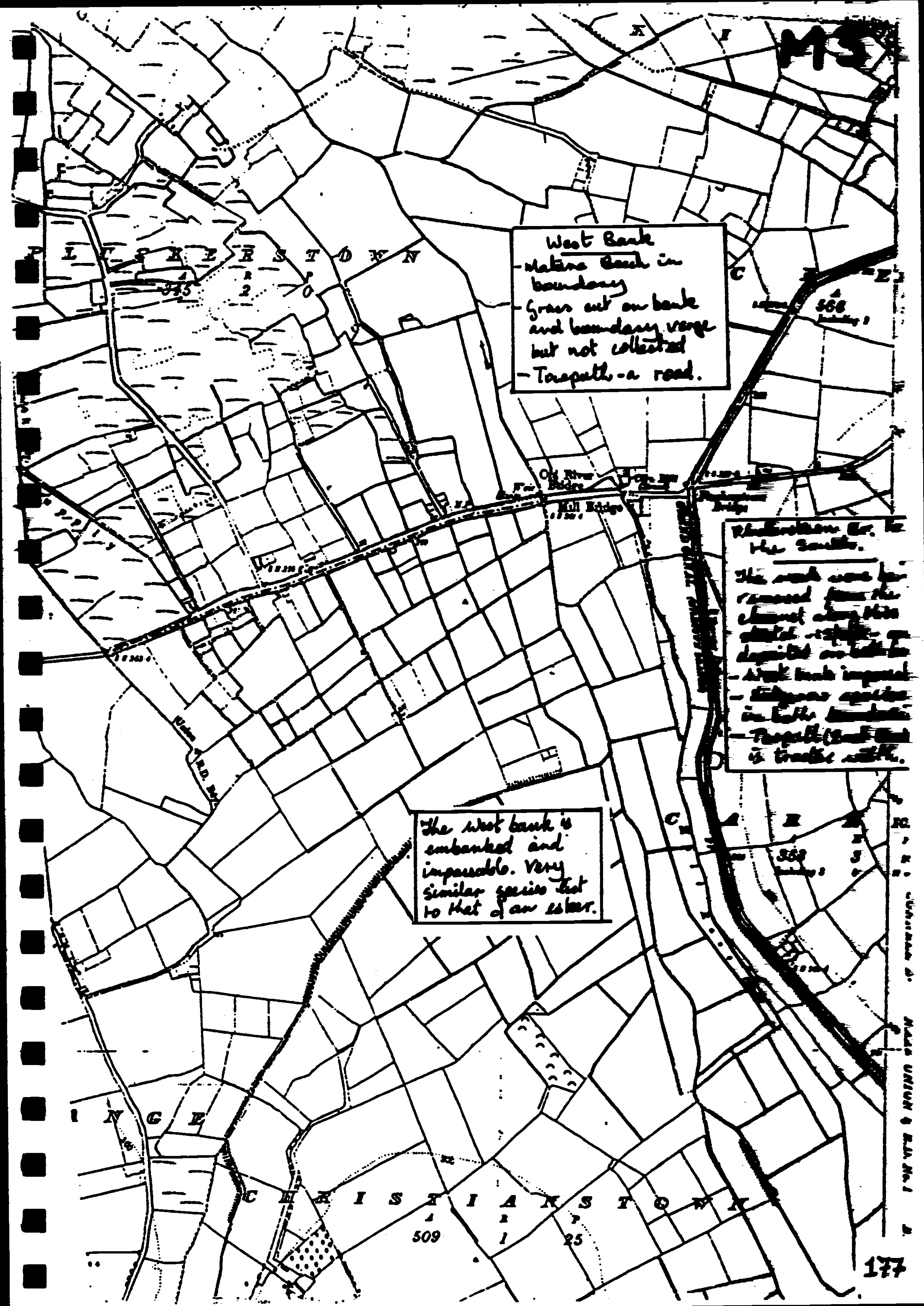
- Cut the thistle dominated banks early (June/July) in 1993 to prevent seeding. Thereafter, cut the banks at the end of the growing season. Collect cuttings.

M1

GRANGECLARE WEST TP



176


MS
West Bank
- Mature Beech in boundary
- Grass cut on bank and boundary verge but not collected
- Towpath - a road.
Old River Bridge
Mill Bridge
The west bank is embanked and impassable. Very similar species list to that of an esker.
C H R I S T I A N S T O W N
509 1 25
I N G E

KM SECTIONS M7-M10 PLUCKERSTOWN TO MILLTOWN BRIDGES

GOOD FEATURES

- High aquatic diversity.
- Species - rich hedgerows.
- Tall herbaceous species rich bank (E).
- The west bank is embanked and nutrient-poor and species-rich.
- Aquatic herbicides not used in the Milltown Feeder.

BAD FEATURES

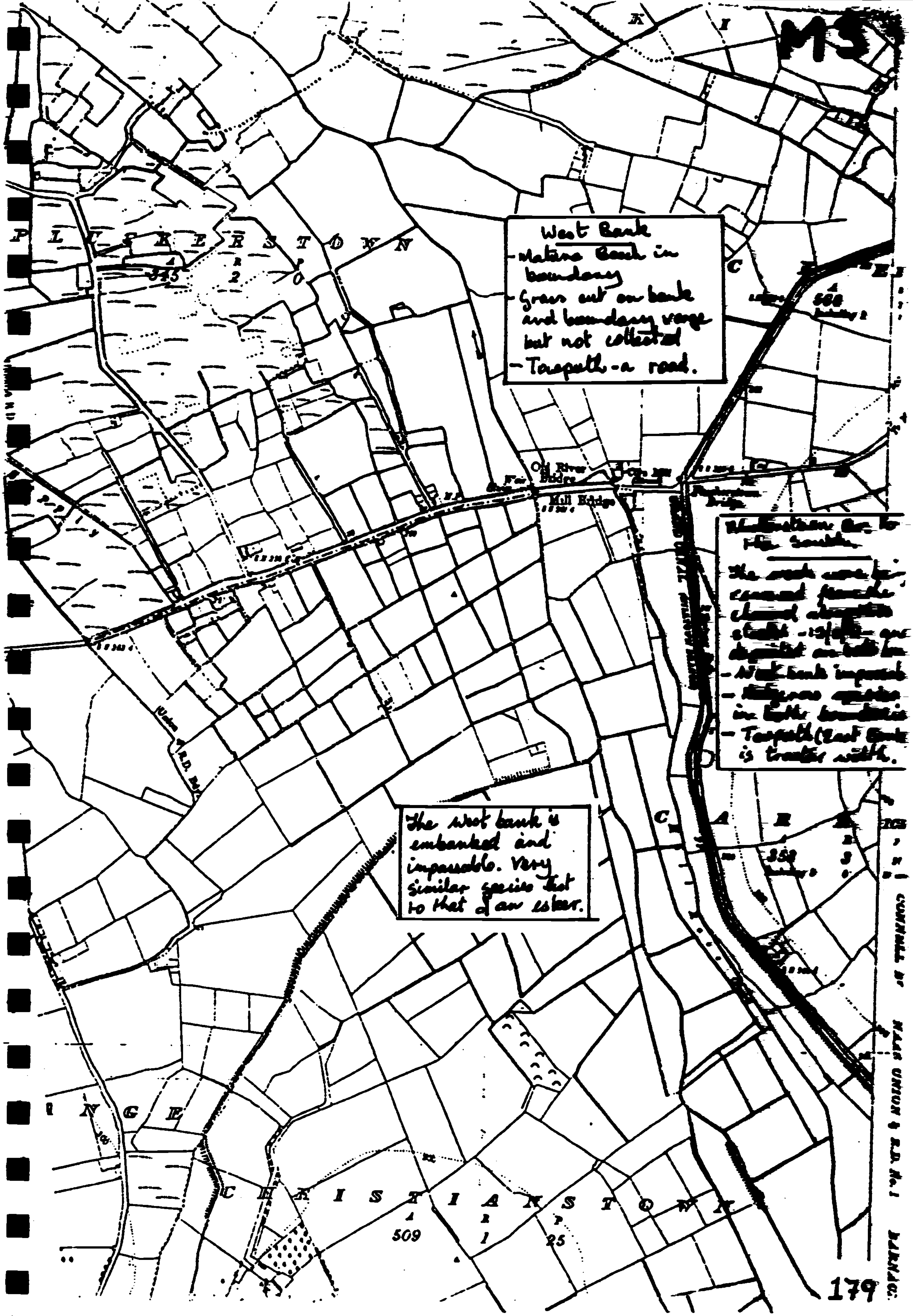
- Spoil was deposited along some of the west bank some years ago and never levelled. It was not covered in topsoil and now there are reeds growing across the bank.
- Weeds which are mechanically cut are deposited on the banks. They act as fertilizing agents and change the soil status producing a species-poor competitive sward.

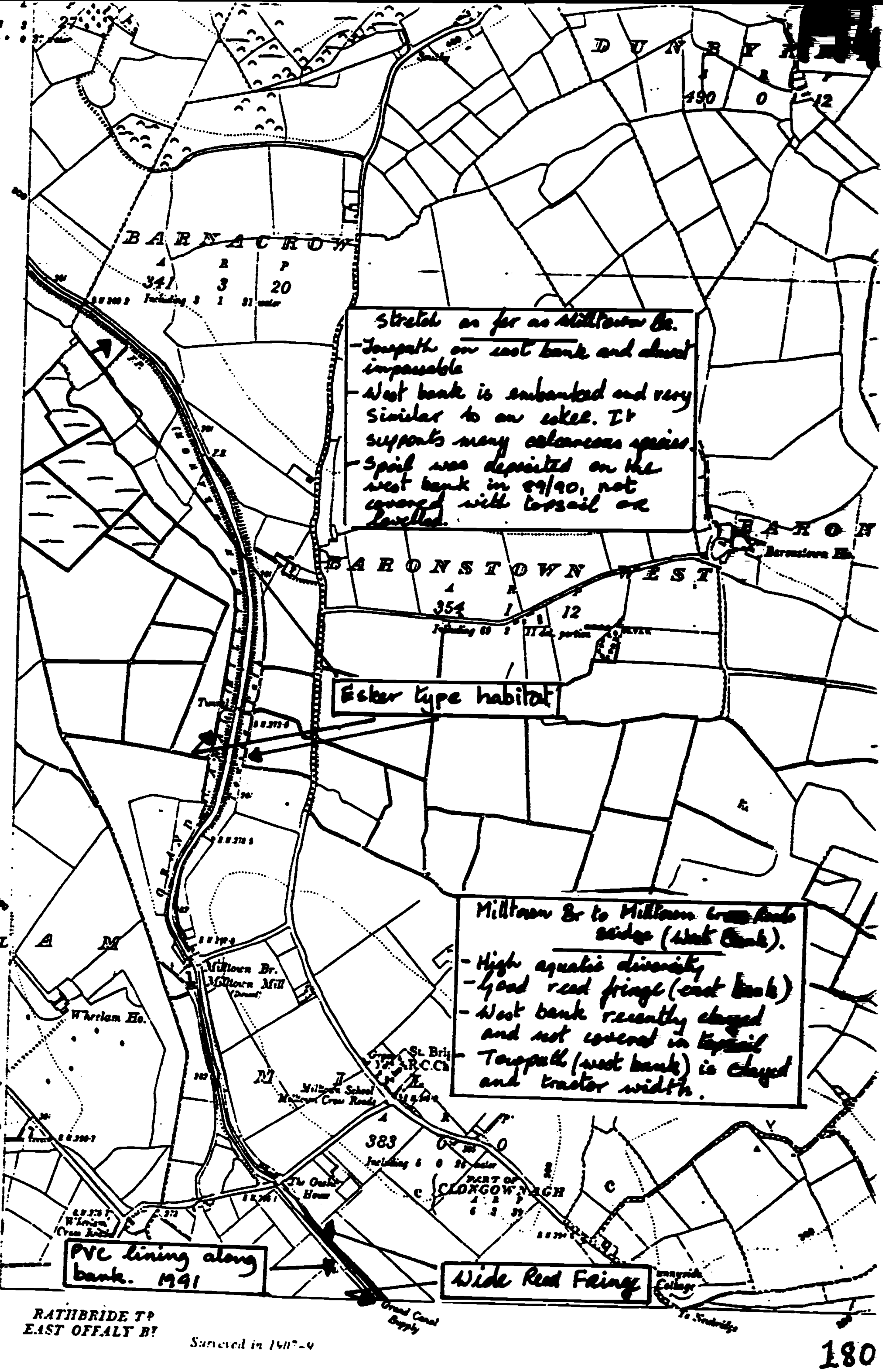
OBJECTIVES

- To develop meadows along both banks.

RECOMMENDATIONS

- Remove cut aquatic weeds from the canal corridor.
- Cut the growing reeds on the unlevelled banks and remove cuttings.


MS
West Bank
- Malvina Bush in boundary
- Grass cut on bank and boundary verge but not collected
- Towpath - a road.
The west bank is embanked and impassable. Very similar species list to that of an esker.
Old River Bridge
Mill Bridge
PLUCKERSTOWN
CHRISTIANSTOWN
509 1 25


D U N
490 0 12
BARNACROW
A R P
341 3 20
Stretch as far as Milltown Br.
- Towpath on east bank and almost impassable
- West bank is embanked and very similar to an esker. It supports many calcareous species.
- Spoil was deposited on the west bank in 89/90, not covered with topsoil or levelled.
BARONSTOWN WEST
A R P
354 1 12
Baronstown Ho.
Esker type habitat
Tunnel
Milltown Br. to Milltown Cross Roads Bridge (West Bank).
- High aquatic diversity
- Good reed fringe (east bank)
- West bank recently changed and not covered in topsoil
- Towpath (west bank) is changed and tractor width.
WHEEL A M
Milltown Br.
Milltown Mill
Wheelam Ho.
St. Brig.
R.C.Ch
Milltown School
Milltown Cross Roads
A R P
383 0 0
PART OF CLONGOWNAGH
The Cock House
PVC lining along bank. 1991
Wide Reed Fringe
Sunnyside Cottage
Grand Canal Supply
To Newbridge
RATHBRIDE Tp
EAST OFFALY Bv
Surveyed in 1907-9

KM SECTIONS M10-M13 MILLTOWN BRIDGE - POLLARDSTOWN FEN

GOOD FEATURES

- Very high aquatic diversity.
- Healthy reed fringes south of Milltown Cross Roads Bridge.
- Drain as west boundary west of Milltown Cross Roads Bridge.
- Milltown feeder is not sprayed.
- The fen is species-rich and an ASI of International Importance, - No. 1 in County Kildare.

BAD FEATURES

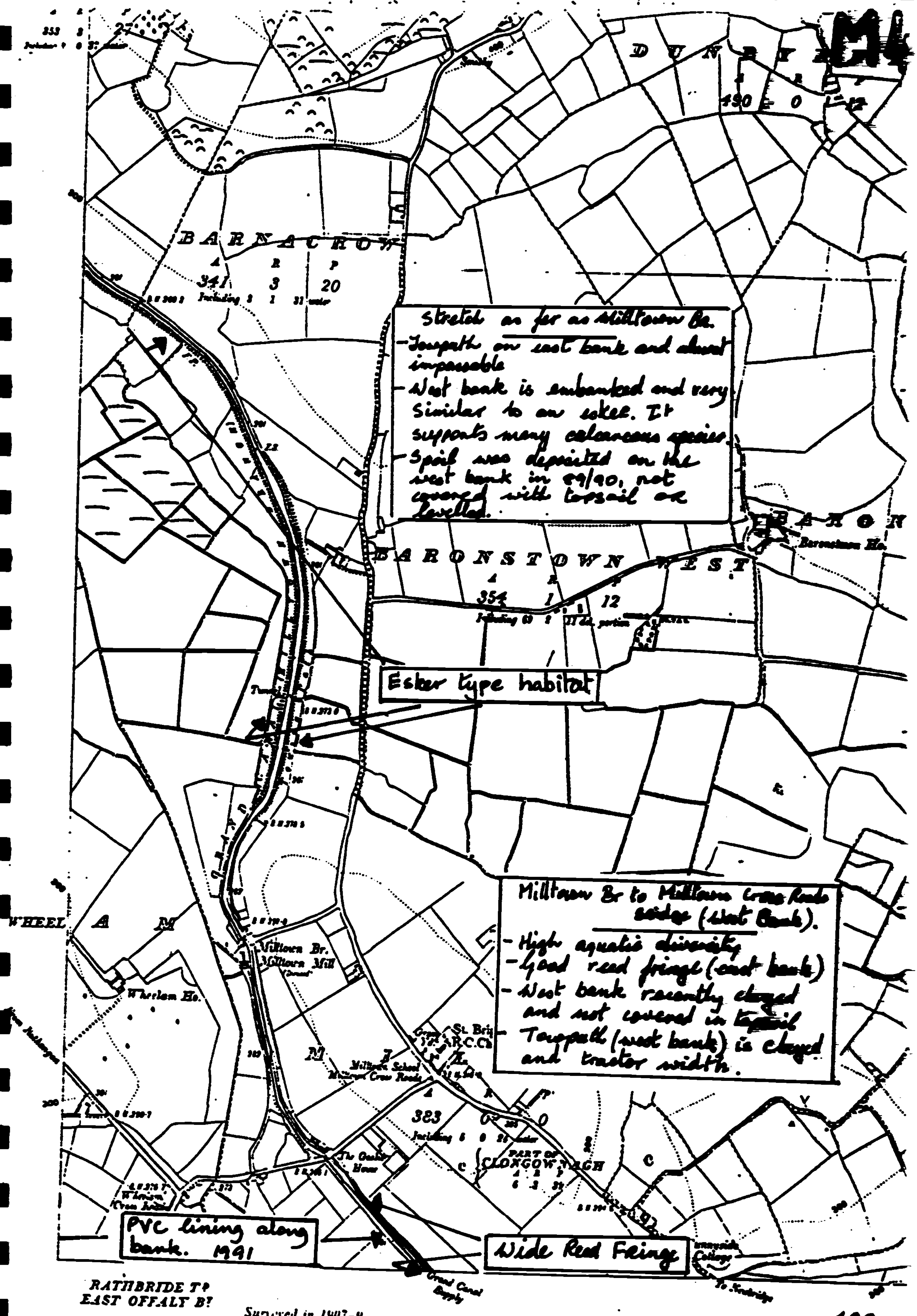
- Clayed banks not covered with topsoil.
- Towpath vegetation removed and as a result of much vehicular movement the towpath soils are compacted. It will be difficult for revegetation to take place.
- The canal in the fen was dredged in 1991 and newly lined with PVC. Little vegetation present.

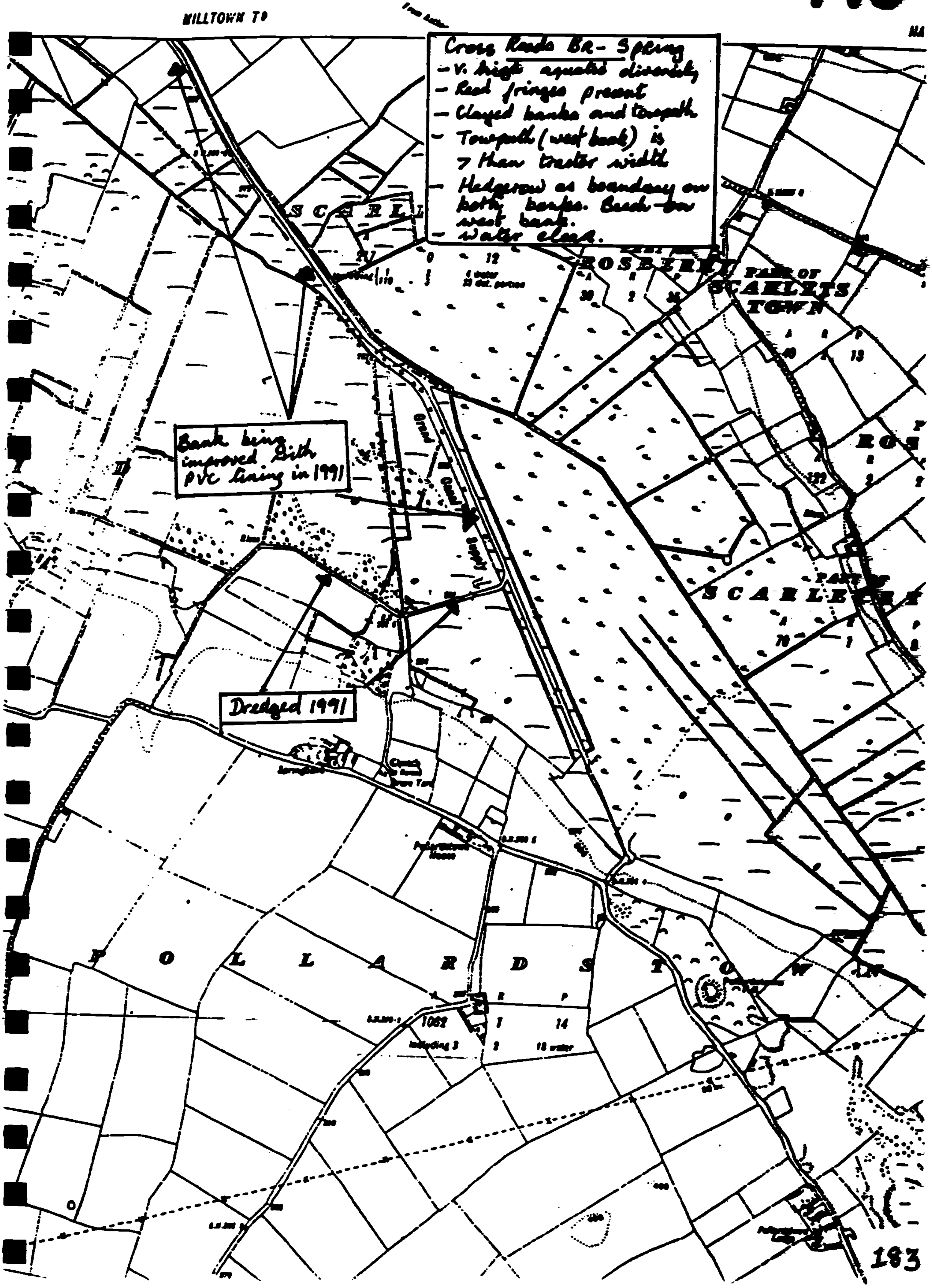
OBJECTIVES

- To maintain aquatic diversity.
- To protect the fen.

RECOMMENDATIONS

- Rotovate the towpath along the compacted stretch towpath to facilitate revegetation.
- Monitor the regrowth of aquatic vegetation on the lined PVC.
- Protect the reed fringes.


M4
D U N
490 0
BARNACROW
A R P
341 3 20
Including 3 1 31 water
Stretch as far as Milltown Br.
- Towpath on east bank and almost impassable
- West bank is embanked and very similar to an esker. It supports many calcareous species.
- Spoil was deposited on the west bank in 89/90, not covered with topsoil or levelled.
BARONSTOWN WEST
A R P
354 1 12
Baronstown Ho.
Esker type habitat
Milltown Br to Milltown Cross Roads bridge (West Bank).
- High aquatic diversity
- Good reed fringe (east bank)
- West bank recently cleared and not covered in topsoil
- Towpath (west bank) is cleared and tractor width.
WHEEL A M
Milltown Br.
Milltown Mill
Wheelam Ho.
St. Brig
R.C.Ch
Milltown School
Milltown Cross Roads
A R P
383 0 0
PART OF CLONGOWNAGH
PVC lining along bank. 1991
Wide Reed Fringe
Grand Canal Supply
To Kildare
RATHBRIDE T.P
EAST OFFALY B.Y
Surveyed in 1907-9


MILLTOWN TO
Cross Roads Br - Spring
- V. high aquatic diversity
- Reed fringes present
- Clayed banks and towpath
- Towpath (west bank) is
> than tractor width
- Hedgerow as boundary on
both banks. Beech on
west bank.
- Water clear.
SCARLL
ROSBERRY
PART OF
SCARLETS
TOWN
SCARLETS
Bank being
improved with
PVC lining in 1991
Dredged 1991
POLLARDSTOWN
1082
including 3
18 water

EDENDERRY BRANCH

MANAGEMENT GUIDELINES AND RECOMMENDATIONS

KM SECTIONS E1-E2 EDENDERRY BRANCH

GOOD FEATURES

- High aquatic diversity.
- Species-rich hedgerow along the west bank including Spindle, Hazel, Oak and Yew.
- Rich west bank near the harbour.
- Towpath grassy and diverse.
- It is proposed to use mechanical cutting here (Caffrey, 1991).

BAD FEATURES

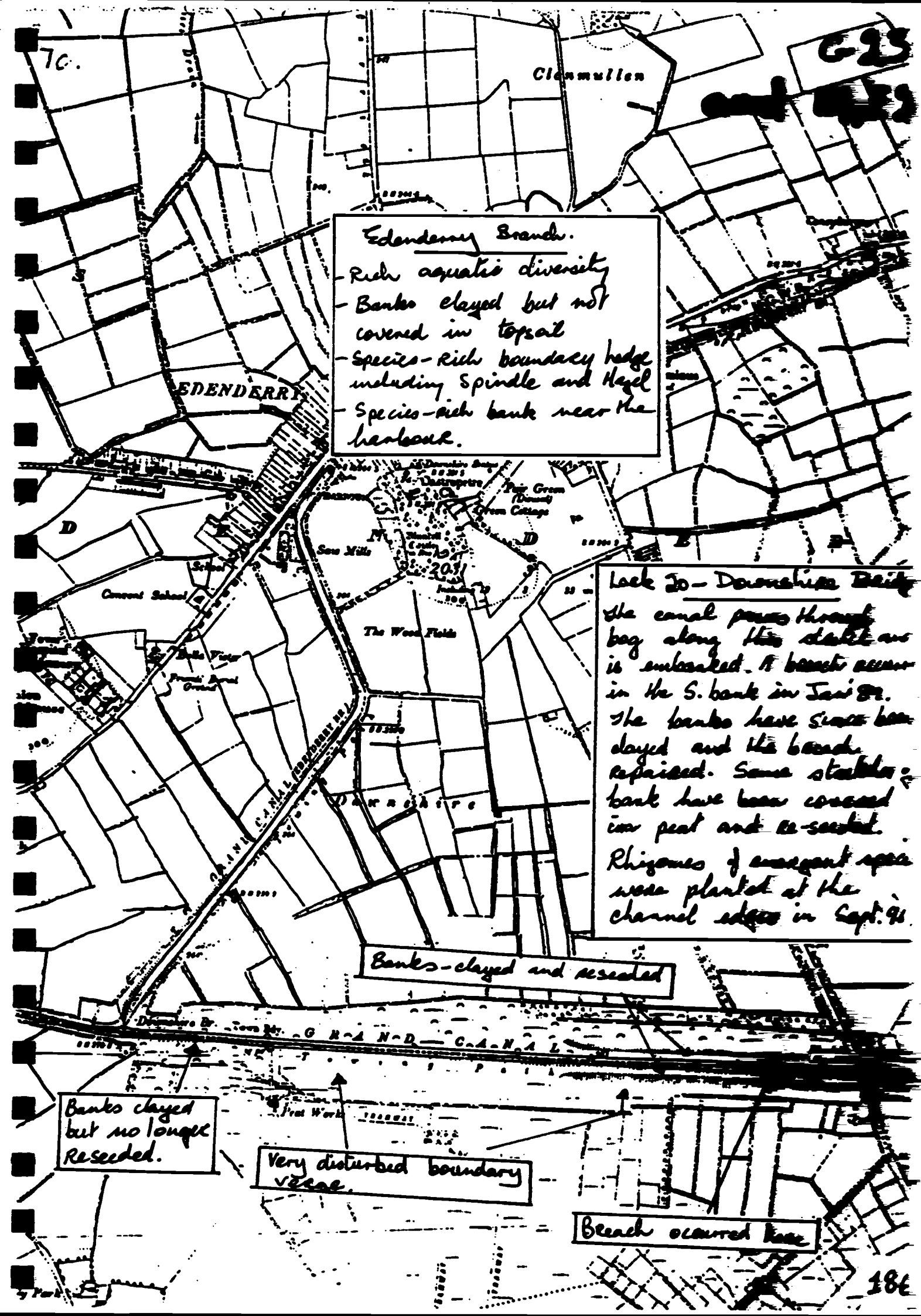
- Clayed banks which are not covered in topsoil.
- Little or no reed fringe.

OBJECTIVES

- To encourage the development of reed fringe along the channel edges and to maintain aquatic diversity.
- To develop meadows along both banks.

RECOMMENDATIONS

- Protect the rich aquatic diversity by eliminating use of herbicides.
- Protect the hedgerow.
- Cut the banks and towpaths at the end of the growing season. Collect cuttings.
- Cover the clayed banks with topsoil to facilitate revegetation and the bank stabilization.


7C.
G13
Clanmullen
Edenderry Branch.
- Rich aquatic diversity
- Banks clayed but not covered in topsoil
- Species-Rich boundary hedge including Spindle and Hazel
- Species-rich bank near the harbour.
EDENDERRY
Saw Mills
Convent School
The Wood Fields
Lock 20 - Downshire Bridge
The canal passes through bog along this stretch and is embanked. A breach occurred in the S. bank in Jan '91. The banks have since been clayed and the bands replaced. Some stretches of bank have been covered in peat and re-seeded. Rhizomes of emergent spp were planted at the channel edges in Sept. '91.
Banks - clayed and reseeded
GRAND CANAL
Banks clayed but no longer Reseeded.
Very disturbed boundary verge.
Breach occurred here
18E

KILBEGGAN BRANCH

Preliminary Survey and Outline Management Guidelines for the re-opening of the Kilbeggan Branch of the Grand Canal.

OBJECTIVES

SHORT TERM - To ensure that the existing habitat diversity is not lost through unsuitable management or insensitive development.

MEDIUM TERM - To ensure that the restoration of the branch line is done in such a way as to minimise ecological damage and to maximise the area of undisturbed habitats that remain after restoration is completed.

LONG TERM - To maintain the branch as a diverse mosaic of habitats including open water and reed bed in the channel; grazed pasture, meadows and bog along the towpath and verges; scrub and woodland in the boundary and boundary verge.

CONTENTS

KILBEGGAN BRANCH

KM Section 1 CAMPBELL BRIDGE-BROOK'S BRIDGE

GOOD FEATURES

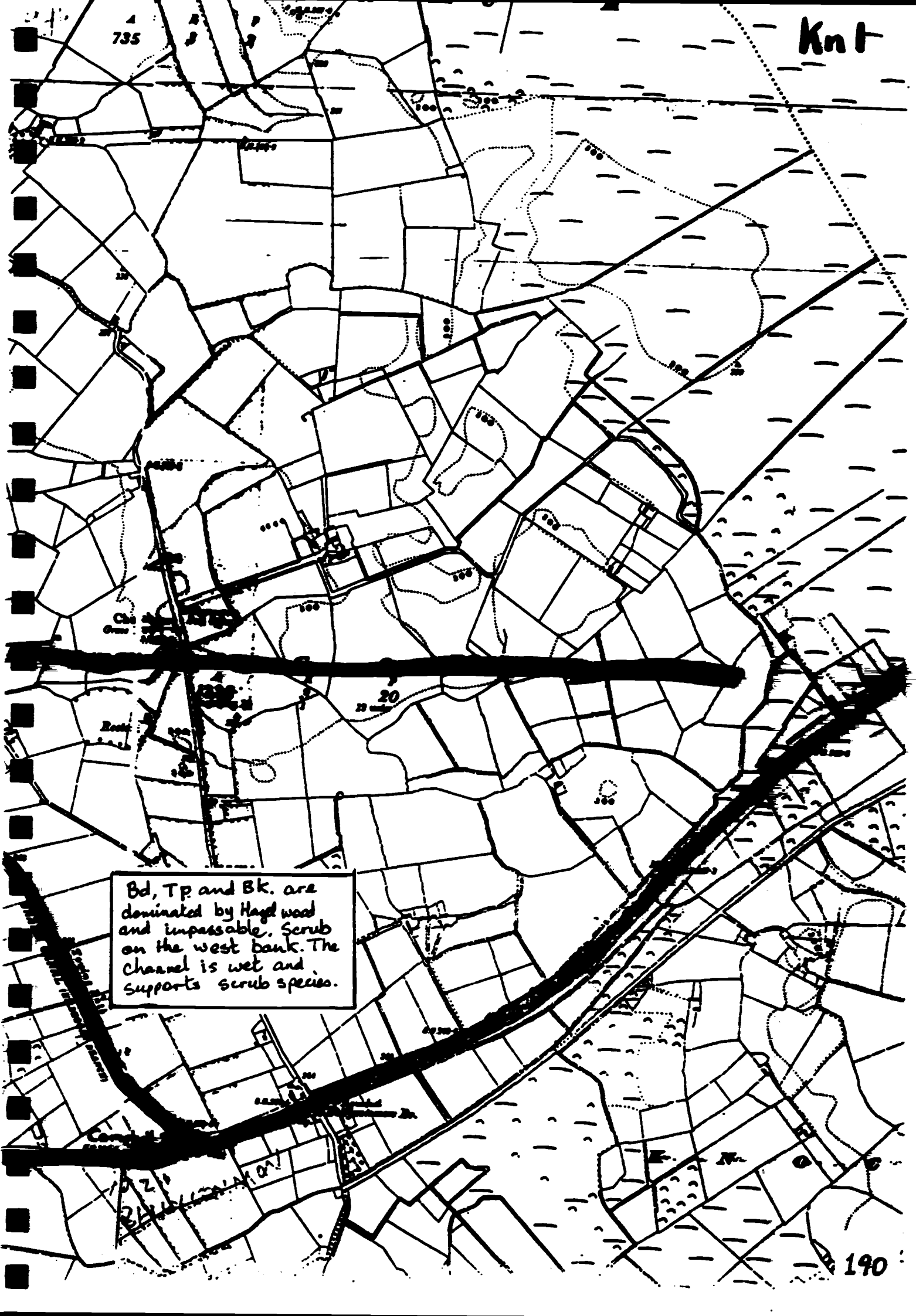
- Unused stretch of canal which is not treated with any herbicides - a wildlife haven for invertebrates, birds and plants.
- Ungrazed hazel wood along the East towpath and boundary verge. Some of the Hazel is growing on an old boundary mound. Good diversity of woodland under-storey species. It is possible to walk through this wood though it is rather dense.
- Scrub woodland on the west bank which is more or less impassable.
- Much Phragmites australis in the channel bed which is overgrown but still rather wet.
- Banks which are not overgrown support a nutrient-poor, species-rich vegetation.

BAD FEATURES

- Impassable on the towpath side at Brook's Bridge.
- Dumping in the vicinity of the bridge.
- Barbed wire fencing running across the towpath.
- Boundary not clearly defined (E).

Recommendations

- Determine both boundaries and erect fencing.
- Deal with the dumping problem.
- Remove barbed wire fencing from the towpath.
- Clear a narrow 1m non-linear towpath through the scrub woodland of the west bank.
- When the channel is being dredged the spoil may be deposited on the west boundary and covered with topsoil.
- Leave emergent species on one bank when dredging takes place.
- Protect the nutrient - poor banks.
- When it becomes necessary to clear a track for the dredgers, it should be cleared along the west bank, and not through the Hazel woodland on the east bank.


Kn 1
735
Bd, Tp and Bk. are dominated by Hazel wood and impassable scrub on the west bank. The channel is wet and supports scrub species.
190

KILBEGGAN BRANCH

KM SECTIONS 1-4 BROOK'S BRIDGE - WOOD OF O BRIDGE

GOOD FEATURES

- For walkers, there is a road from Odlum's to Wood of O'Bridge. Alternatively much of the original towpath on the east Bank is in meadow grasses and walkable.
- Hazel and scrub species along east bank between Brook's and Odlum's bridges.
- There is a Hazelwood on the west bank between Brook's and Odlum's Bridges. It is used by cattle and it is accessible for walkers.
- Meadow grassland along east bank
- Calcareous species present on the sections of the west bank which are not overgrown.
- Nice boundary hedge along both banks including Guelder Rose, Hazel and Spindle.
- Spindle along the west bank.
- Most of the channel still wet and supports reeds or Willow Scrub.
- Sheep grazing west bank near Odlum's Bridge.

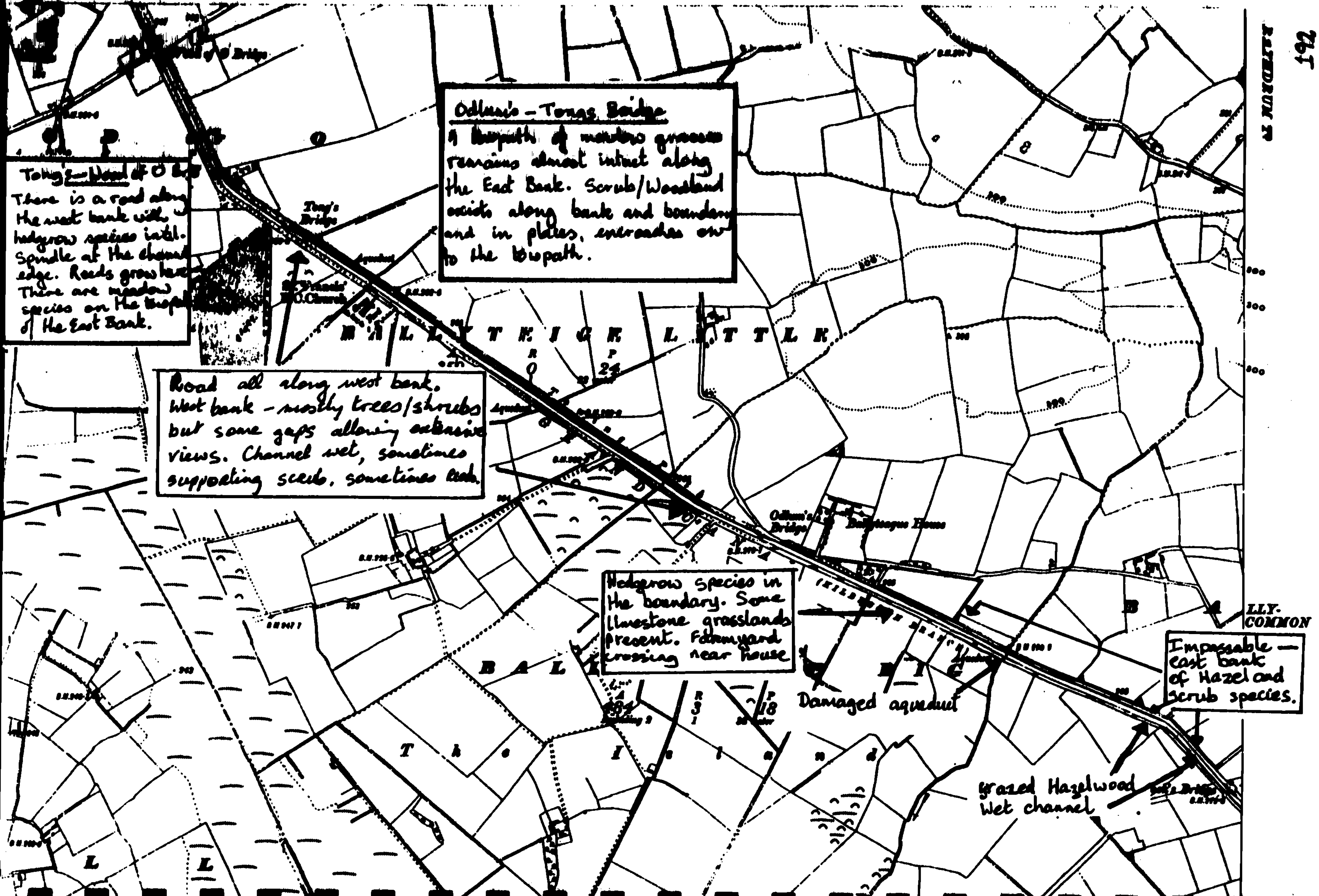
BAD FEATURES:

- Bank has fallen in at the aqueduct and the channel is dry at this point.
- Boundary not clearly defined between Brook's and Odlum's Bridges on the west bank.
- Farm crossing just north of Odlum's Bridge.

RECOMMENDATIONS:

- Establish ownership and boundaries.
- Remove the farm crossing.
- Repair bank and damaged aqueduct
- Protect the Hazelwood of the west bank.
- Allow low intensity grazing to continue.

* For short term purposes some trees may be removed from the banks before they get too big. The stretch will have to be visited again before restoration commences in order to decide where spoil can be deposited.



There is a road along the west bank with hedgerow species intl. Spindle at the channel edge. Reeds grow here. There are meadow species on the towpath of the East Bank.
Odlum's – Tongs Bridge
A towpath of meadow grasses remains almost intact along the East Bank. Scrub/Woodland exists along bank and boundary and in places, encroaches on to the towpath.
Road all along west bank. West bank – mostly trees/shrubs but some gaps allowing extensive views. Channel wet, sometimes supporting scrub, sometimes reeds.
Hedgerow species in the boundary. Some limestone grasslands present. Farmyard crossing near house
Damaged aqueduct
Impassable – east bank of Hazel and scrub species.
grazed Hazelwood
Wet channel
Tong's Bridge
Odlum's Bridge
LLY-COMMON

KM SECTIONS 5-7 WOOD OF O BRIDGE - MURPHY'S BRIDGE

GOOD FEATURES:

- The canal for much of this stretch passes through bog where there are many snipe, curlew, pheasants and hares. There are no trees along either bank or on the bog which allows for wide panoramic views of undisturbed bogland. This stretch of channel is not sprayed.
- The towpath is along the east bank. It is composed of limestone gravels - a nutrient-poor habitat - which was probably put down when the channel was cut. This alkaline gravel habitat adds to habitat diversity. There are plants favouring acidic and alkaline conditions growing side by side.
- The presence of a gravel hill along the towpath with many calcareous species present even as late as October - Blackstonia perfoliata and Carlina vulgaris.
- The channel in the bog is very wet and supports a high diversity of species including many sedges and marsh species at the edges with diverse clumps of reeds present.
- Bog species including heathers growing at the western edge of the channel.
- Just beyond Whelan's bridge there is also an Esker on the west bank covered in Hazel.
- Species-rich bank and boundary hedgerow (E) on the approach to Murphy's Bridge including Rosa pimpinellifolia

BAD FEATURES

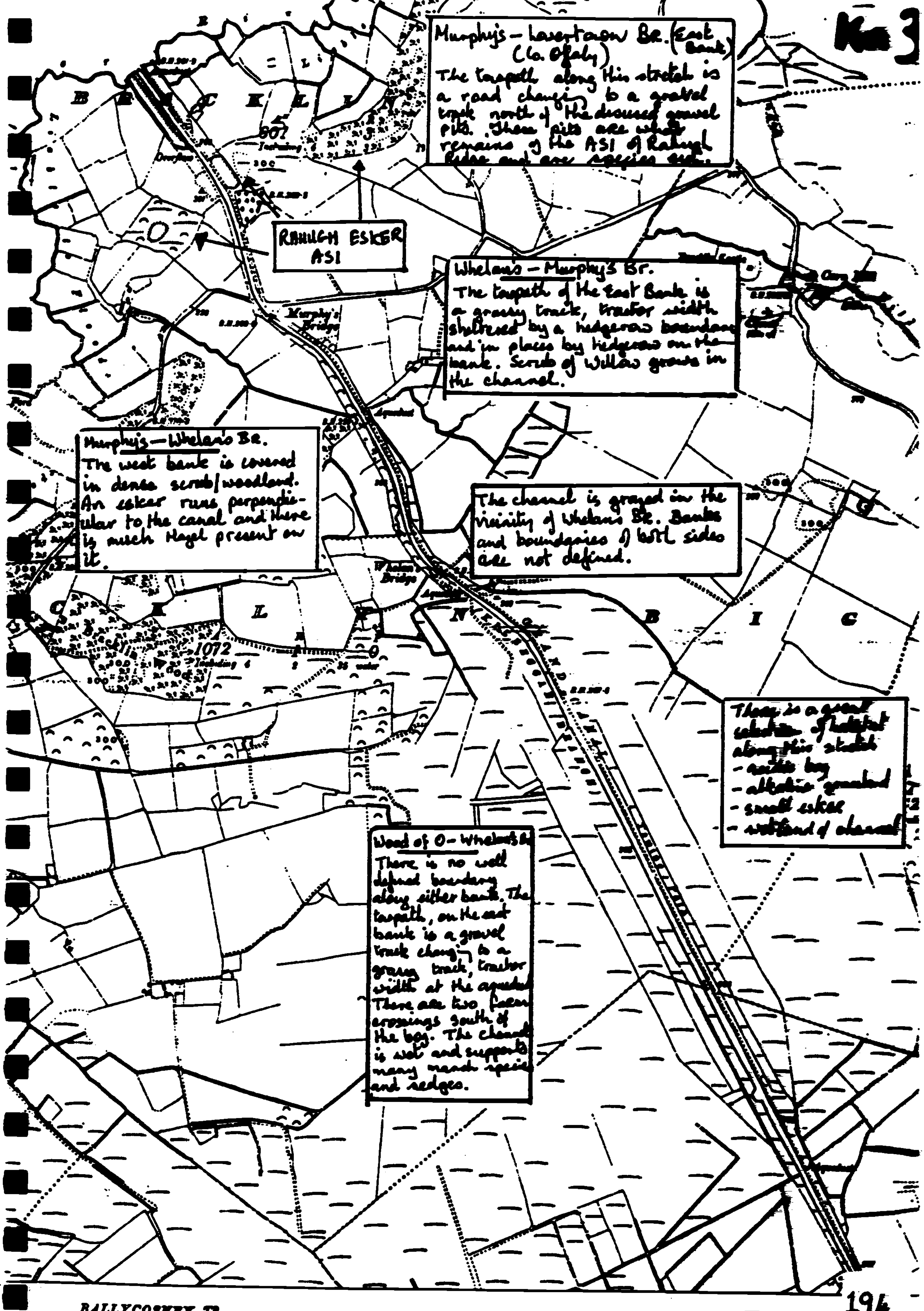
- Boundary is not defined between Wood of O Bridge and Whelan's Bridge.
- Two farm crossings between Wood of O Bridge and the bog.
- Two fences across the canal at either end of the stretch.
- Bank and channel grazed at two places as part of the adjacent fields:
  Whelans Bridge to Murphy's Bridge and at the aqueduct west of Wood of O Bridge.

RECOMMENDATIONS

- Establish ownership and define boundaries.
- Remove farm crossings.
- Protect the bog in future operations.
- Protect the hazelwood in future operations.
- Protect the gravel mound on the towpath.
- Protect the species-rich hedgerow, trimming it every three years to keep the towpath open.
- Leave the reed fringe and marsh species intact on at least one bank when dredging.
- Do not introduce herbicide treatment.

Note
It is important that this stretch be revisited during the growing season.

(a) to establish whether spoil can be deposited on site, and if so where - digging a trench and covering with topsoil seems at the moment to provide the best option.
(b) to record the early flowering species.


Km 3
Murphy's – Lowertown Br. (East Bank)
(Co. Offaly)
The towpath along this stretch is a road changing to a gravel track north of the disused gravel pits. These pits are what remains of the ASI of Rahugh Ridge and are species rich.
RAHUGH ESKER ASI
Whelan's – Murphy's Br.
The towpath of the East Bank is a grassy track, tractor width sheltered by a hedgerow boundary and in places by hedgerow on the bank. Scrub of willow grows in the channel.
Murphy's Bridge
Murphy's – Whelan's Br.
The west bank is covered in dense scrub/woodland. An esker runs perpendicular to the canal and there is much Hazel present on it.
The channel is grazed in the vicinity of Whelan's Br. Banks and boundaries of both sides are not defined.
Whelan's Bridge
1072
There is a great selection of habitat along this stretch
- acidic bog
- alkaline grassland
- small esker
- wetland of channel
Wood of O – Whelan's Br.
There is no well defined boundary along either bank. The towpath, on the east bank is a gravel track changing to a grassy track, tractor width at the aqueduct. There are two farm crossings south of the bog. The channel is wet and supports many marsh species and sedges.
BALLYCOSNEY T°

KILBEGGAN BRANCH

KM SECTIONS 7-8 MURPHY'S BRIDGE - LOWERTOWN BRIDGE

GOOD FEATURES:

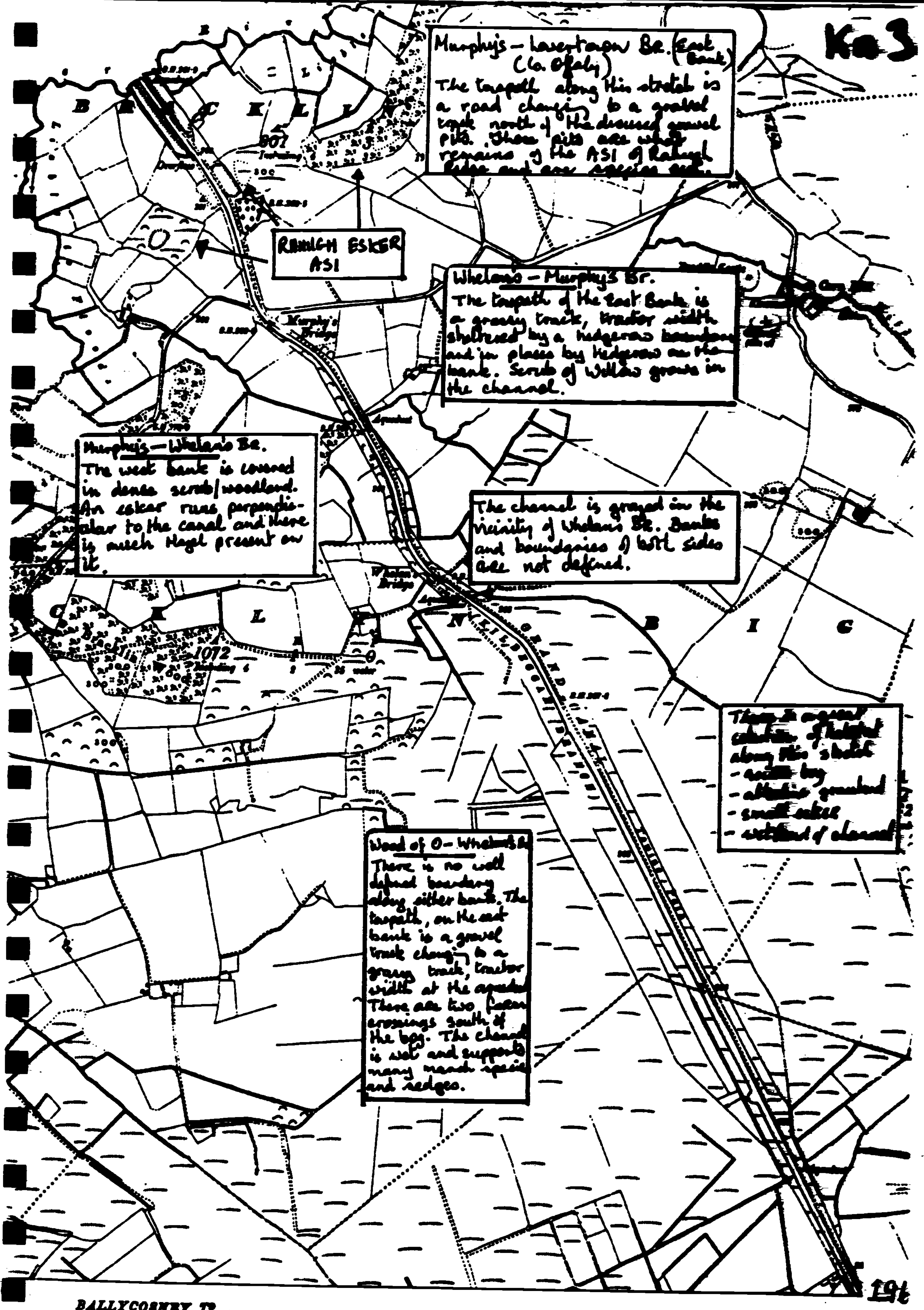
- An ASI of International Importance, Rahugh Eskar-Ridge, is cut by the canal (ASI No. 1 Co. Westmeath). This is very nutrient-poor supporting a range of calcareous species including Blackstonia perfoliata and Origanum vulgare.
- This stretch of channel is not treated with herbicide.
- The towpath continues as a grassy track on a very high embankment.
- Approximately 10m higher than the Silver River on the eastern embankment a Hazelwood has developed.
- Species-rich hedgerow boundary including Spindle.
- Dense scrub along the west bank.

BAD FEATURES:

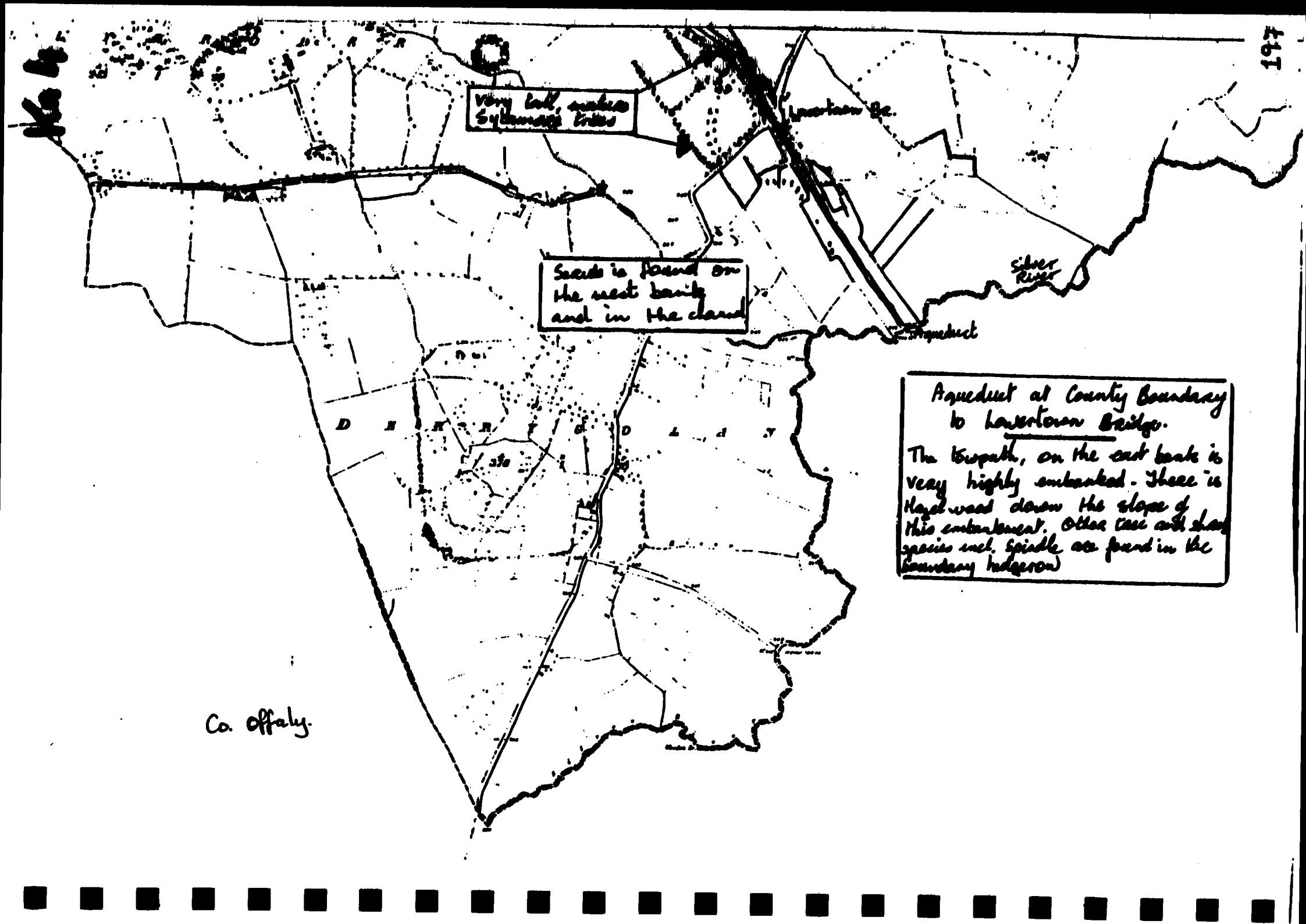
- Two farm crossings between Murphy's Bridge and the Eskar.
- Channel becoming too overgrown so that now it resembles scrub/woodland.

RECOMMENDATIONS:

- Remove farm crossings.
- The stretch will have to be revisited in order to determine where spoil can be deposited.
- Further survey of early growing flora is necessary in 1992 prior to restoration.
- Do not introduce herbicide treatment when this stretch is re-opened.
- Cut back the trees and bushes of the boundary hedgerow on a three year basis in order to keep the towpath open.
- Protect the hedgerow and Hazelwood in future canal operations.



Ko3
Murphy's – Lavertown Br. (East Bank)
(Co. Offaly)
The towpath along this stretch is a road changing to a gravel track north of the disused gravel pits. These pits are what remains of the ASI of Rahugh
RAHUGH ESKER ASI
Murphy's Bridge
Whelan's – Murphy's Br.
The towpath of the East Bank is a grassy track, tractor width sheltered by a hedgerow boundary and in places by hedgerow on the bank. Scrub of willow grows in the channel.
Aqueduct
Murphy's – Whelan's Br.
The west bank is covered in dense scrub/woodland. An esker runs perpendicular to the canal and there is much Hazel present on it.
The channel is grazed in the vicinity of Whelan's Br. Banks and boundaries of both sides are not defined.
Whelan's Bridge
1072
Wood of O – Whelan's Br.
There is no well defined boundary along either bank. The towpath, on the east bank is a gravel track changing to a grassy track, tractor width at the aqueduct. There are two farm crossings south of the bog. The channel is wet and supports many marsh species and sedges.
BALLYCOSNEY Tᴰ
WOOD of O Tᴰ



Aqueduct at County Boundary to Lowertown Bridge.

The towpath, on the east bank is very highly embanked. There is Hazel wood down the slope of this embankment. Other tree and shrub species incl. Spindle are found in the boundary hedgerow

KILBEGGAN BRANCH

KM SECTIONS 9-10 LOWERTOWN BRIDGE - GRANGE BRIDGE

GOOD FEATURES

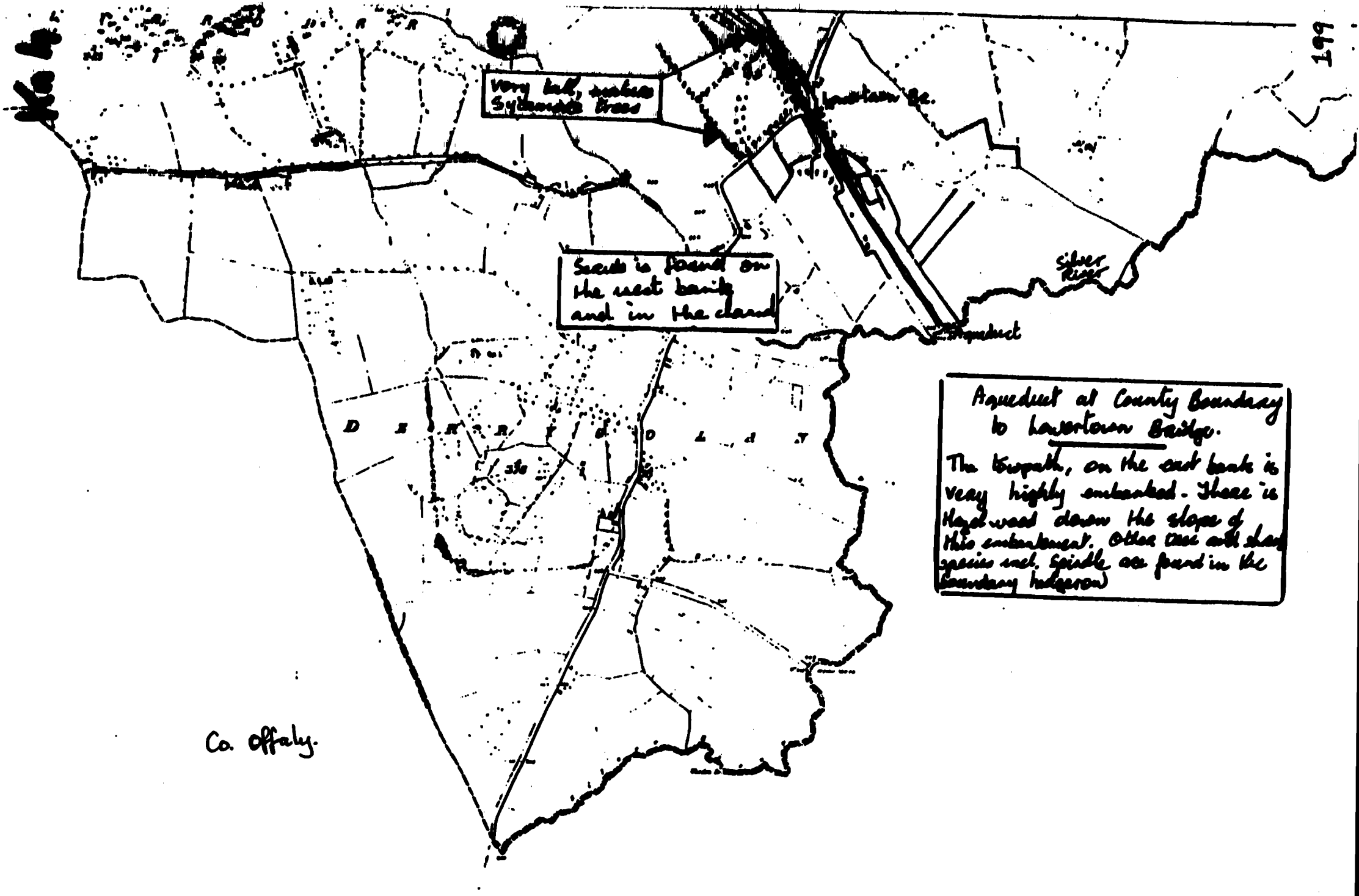
- This stretch of channel is not sprayed.
- Esker at Grange Bridge - species rich.
- Channel cuts through another esker half way between the two bridges. It is wooded on the west bank.
- Line of mature trees along the West bank.
- Where the eastern boundary is defined it is composed of a dense species-rich hedgerow including Hazel and Oak.
- The towpath is calcareous grassland often sheltered by the species-rich hedgerows of east bank and boundary.
- Open views of pastoral countryside and eskers where the boundary hedgerow is missing.

BAD FEATURES

- Boundaries not defined.
- Much of the channel is either grazed or overgrown.
- Where the canal is grazed the west bank, channel bed and surrounding field are all on the same level.
- Farm crossings between the two bridges.

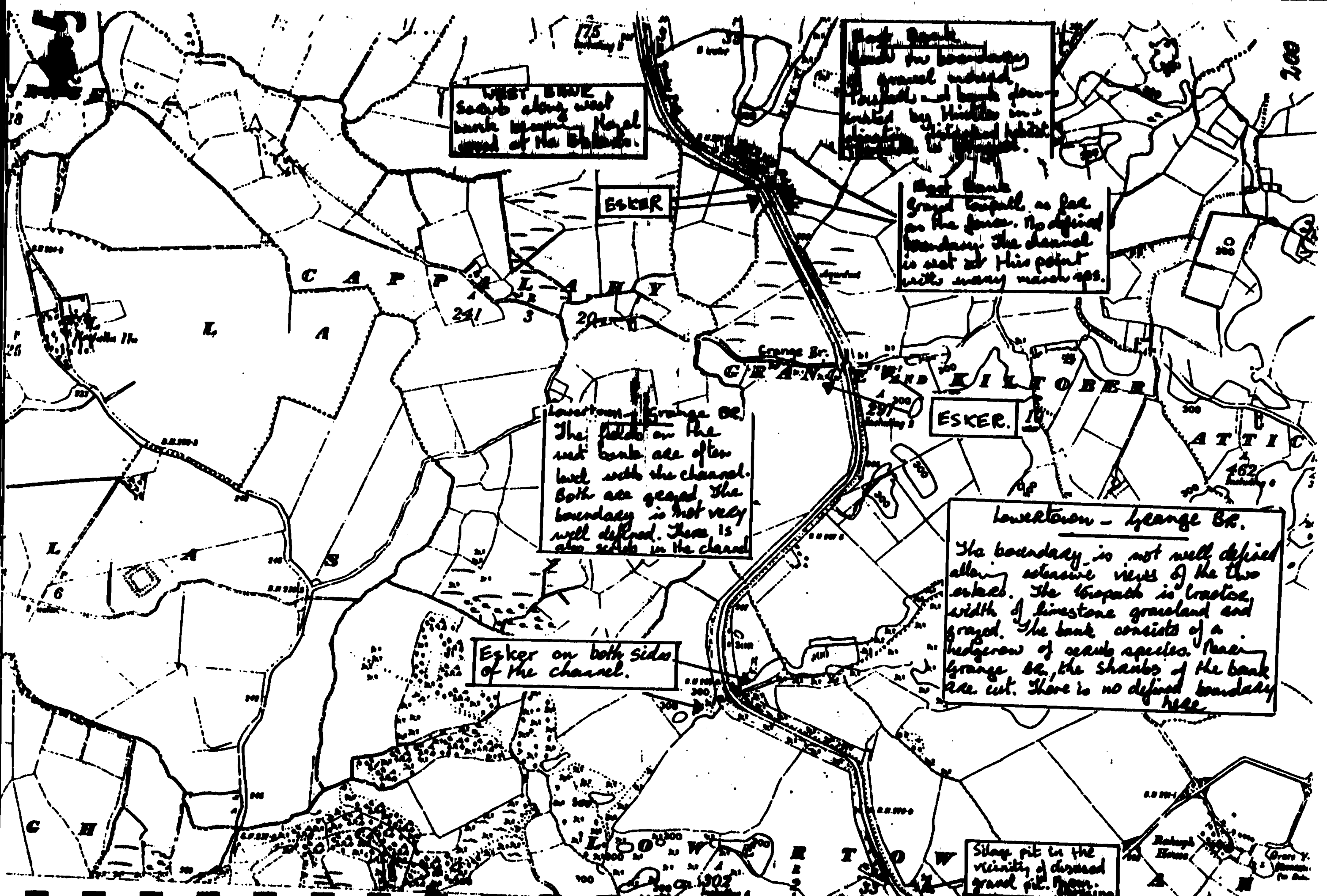
RECOMMENDATIONS

- Do not introduce herbicide treatment along this stretch.
- Establish ownership and define boundaries.
- Remove farm crossings.
- Protect species diversity of existing boundary hedges.
- Protect eskers and Hazelwood growing there. Spoil is not to be deposited on eskers.
- Site to be revisited to discuss spoil deposition and canal restoration.
- The site needs to be revisited for the purpose of early species recordings.



Aqueduct at County Boundary to Lowertown Bridge.

The towpath, on the east bank is very highly embanked. There is Hazel wood down the slope of this embankment. Other tree and shrub species incl. Spindle are found in the boundary hedgerow



WEST BANK
Scrub along west
ESKER
West Bank
Grazed towpath as far as the fence. No defined boundary. The channel is wet at this point with many marsh spp.
CAPPALAHY
GRANGE
Grange Br.
KILTOBER
ESKER.
ATTIC
Lowertown - Grange Br.
The fields on the west bank are often level with the channel. Both are grazed. The boundary is not very well defined. There is also scrub in the channel
Lowertown - Grange Br.
The boundary is not well defined allowing extensive views of the two eskers. The towpath is tractor width of limestone grassland and grazed. The bank consists of a hedgerow of scrub species. Near Grange Br. the shrubs of the bank are cut. There is no defined boundary here
Esker on both sides of the channel.
LOWERTOWN
Silage pit in the vicinity of disused gravel pit.

KILBEGGAN BRANCH

KM SECTIONS: 11-13 GRANGE BRIDGE - SKEAHANAGH BRIDGE

GOOD FEATURES

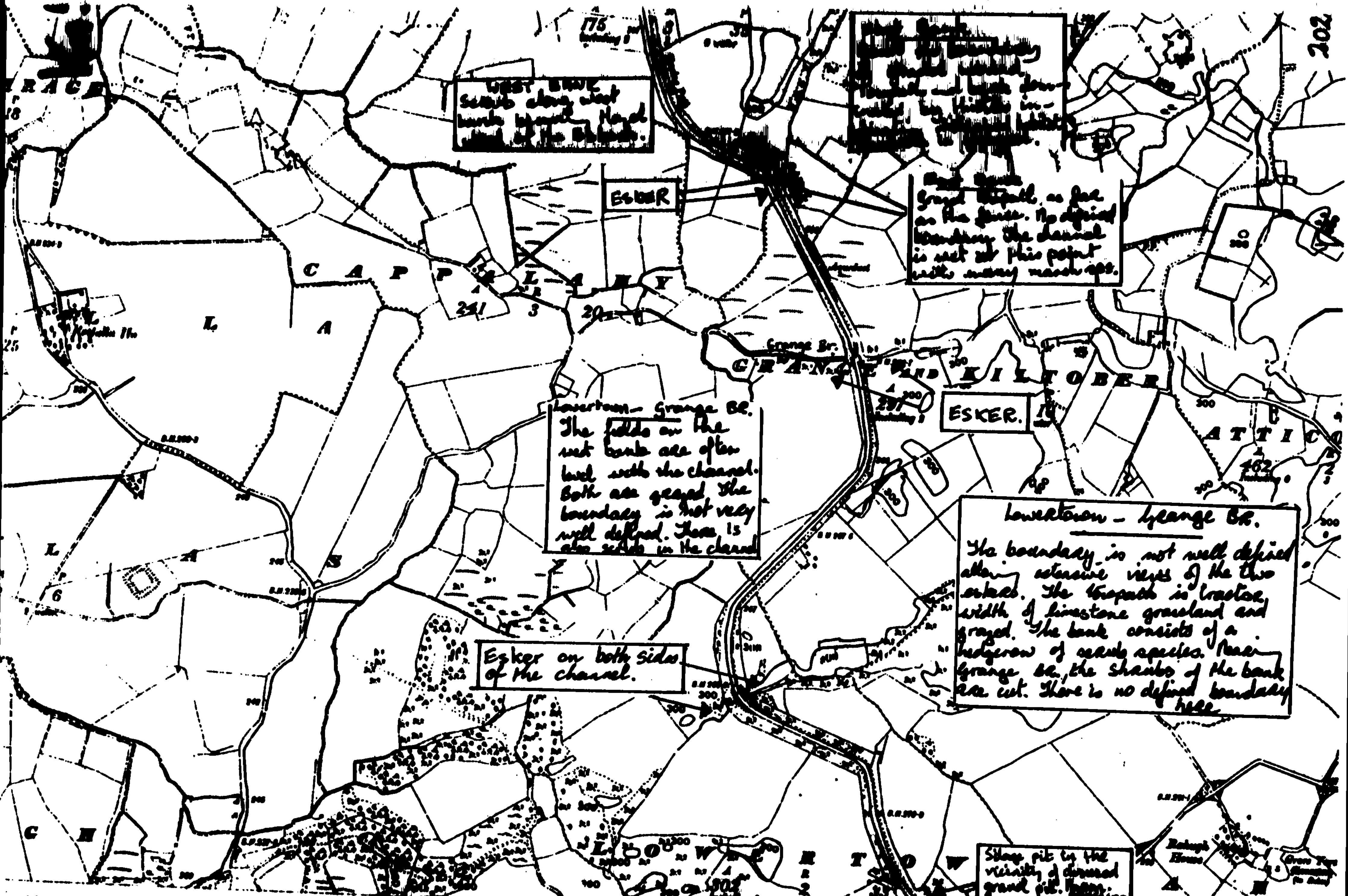
- Towpath along the east bank.
- The stretch is not sprayed.
- The west bank is dominated by scrub/woodland which changes to Hazel-dominated stands at gravel mounds. It is impassable.
- Where the eastern boundary is defined it consists of a line of Beech on a built-up mound with Birch and Hazel behind it.
- There is a gravel mound at the bend south of Skeahanagh Bridge with a species-rich under-story beneath the Beech.
- Most of the channel is wet with many sedges, marsh species and reeds.

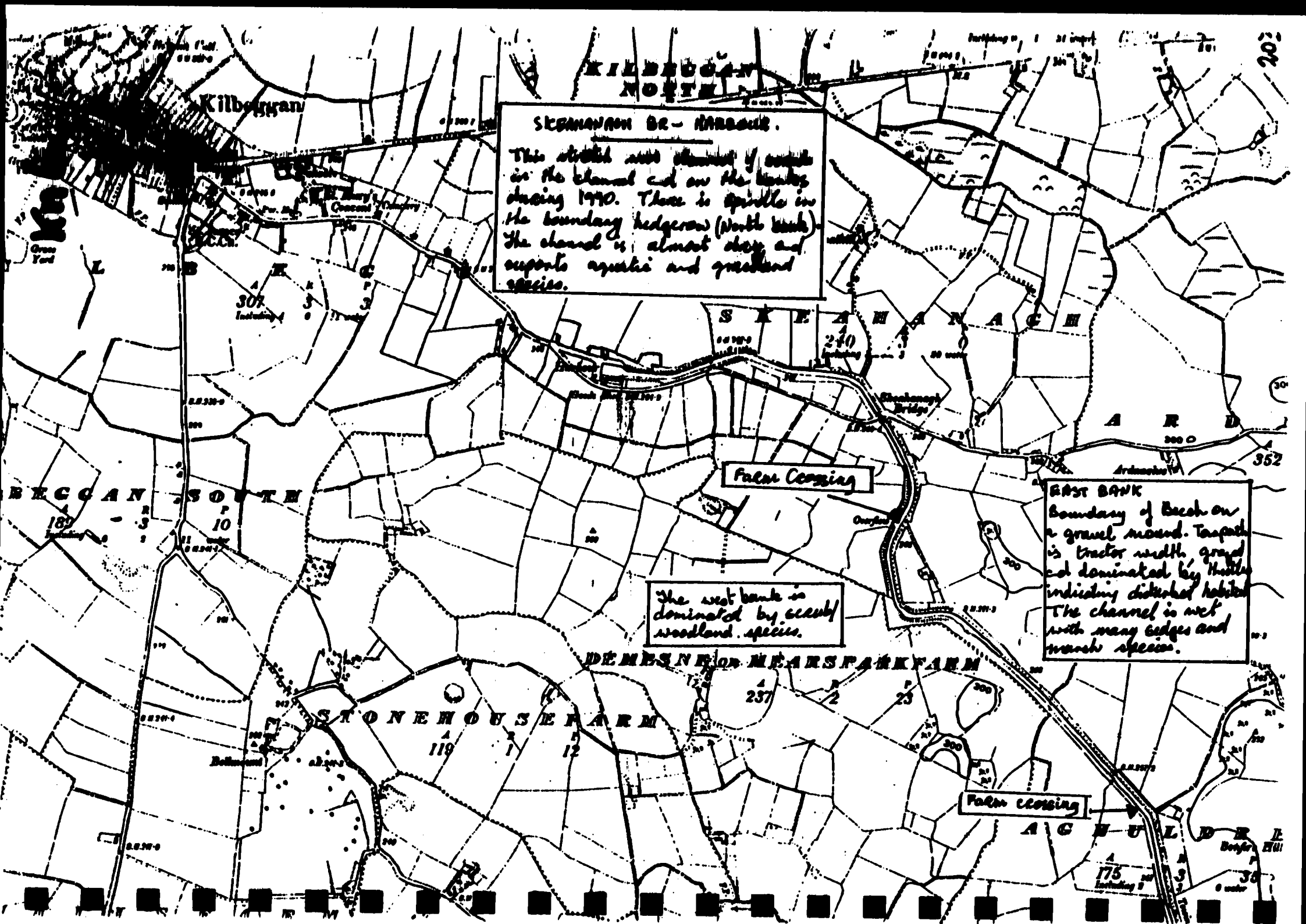
BAD FEATURES

- Boundary not defined at the southern end.
- Two farm crossings present.
- Towpath is dominated by thistles indicating recent disturbance.

RECOMMENDATIONS

- Another visit is necessary in order to decide where spoil can be deposited during restoration.
- Leave the stretch of channel herbicide-free.
- Protect the gravel mounds and associated trees from spoil.
- Define boundaries.
- Remove farm crossings.
- Cut the towpath vegetation mid-summer in order to be rid of thistles before they flower and set seed. Cut once a year thereafter at the end of the season and remove cuttings, to promote the development of a hay meadow habitat.


WEST BANK
Scrub along west
bank ...
Grassed towpath as far
as the fence. No defined
boundary. The channel
is wet at this point
with many marsh sps.
ESKER
CAPPALANEY
GRANGE AND KILTOBER
ATTICO
Grange Br.
Lowertown – Grange Br.
The fields on the
west bank are often
level with the channel.
Both are grazed. The
boundary is not very
well defined. There is
also scrub in the channel
ESKER.
Lowertown – Grange Br.
The boundary is not well defined
allowing extensive views of the two
estates. The towpath is tractor
width of limestone grassland and
grazed. The bank consists of a
hedgerow of scrub species. Near
Grange Br. the shrubs of the bank
are cut. There is no defined boundary
here
Esker on both sides
of the channel.
Silage pit in the
vicinity of disused
gravel pit.
Raleigh House


KILBEGGAN NORTH
Kilbeggan
SEANAVAN BR - HARBOUR.
This stretch was cleared of weeds in the channel and on the banks during 1990. There is spindle in the boundary hedgerow (North bank). The channel is almost clear and supports aquatic and grassland species.
SKEAMANAGH
Farm Crossing
EAST BANK
Boundary of Beech on a gravel mound. Towpath is tractor width, grazed and dominated by thistles indicating disturbed habitat. The channel is wet with many sedges and marsh species.
BECCAN SOUTH
The west bank is dominated by scrub/woodland species.
DEMESNE OR MEARSFARKFAM
STONEHOUSE FARM
Farm crossing
ACHUL
352
237
119
175

KMS SECTIONS 13-14 SKEAHANAGH BRIDGE - HARBOUR

GOOD FEATURES

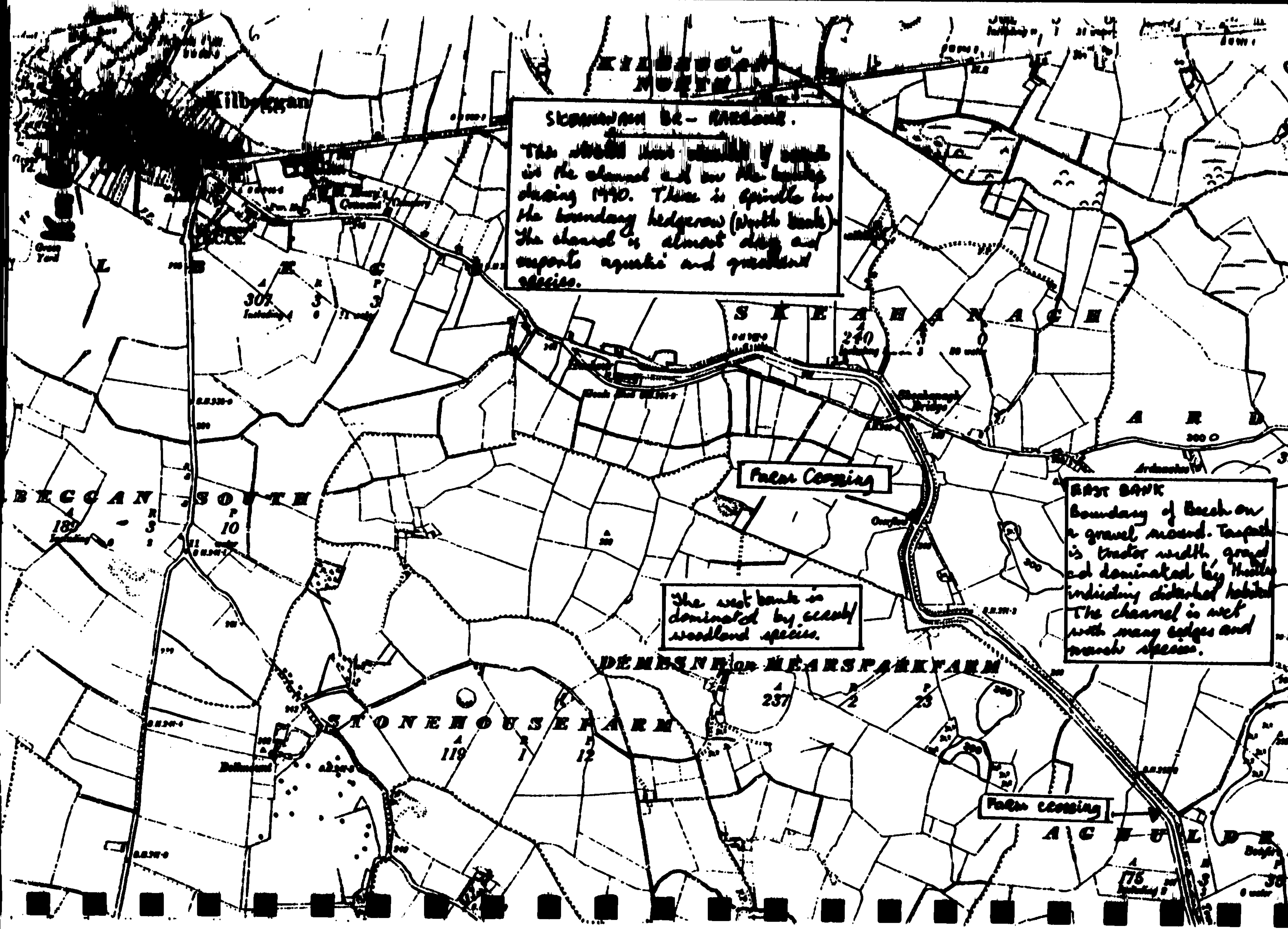
- Towpath on the east bank is passable.
- Species-rich boundary hedge including spindle.
- Restoration of harbour buildings in progress.
- The channel is free from herbicide.

BAD FEATURES

- This stretch was cleared during 1990. However, grassland species and bushes are already growing in the channel bed. The stretch was not ready for watering.
- West bank towpath thistle-dominated.

RECOMMENDATIONS

- Do not use herbicide when the channel is restored.
- Only dredge if a stretch is ready for rewatering otherwise terrestrial species will invade and the operation may have to be carried out again at a later stage.
- Protect the boundary hedge.
- Cut the thistle-dominated west bank before they flower in July and again at the end of the growing season of 1992. Thereafter cut on a yearly basis. A narrow towpath of approximately 1m wide may be cut more frequently.



Kilbeggan
KILBEGGAN NORTH
during 1990. There is Spindle in the boundary hedgerow (North bank). The channel is almost dry and supports aquatic and grassland species.
SKEAHANAGH
ARDE
Farm Crossing
EAST BANK
Boundary of Beech on a gravel mound. Towpath is tractor width, grazed and dominated by thistles indicating disturbed habitat. The channel is wet with many sedges and marsh species.
The west bank is dominated by scrub/woodland species.
BEGGAN SOUTH
DEMESNE or BEARSPARKFARM
STONEHOUSEFARM
Farm Crossing
ACHULDERE

WALK ALONG THE KILBEGGAN BRANCH OF THE GRAND CANAL 28th October 1991

Cappaball to Brook's Bridge (East Bank)

The Hazelwood on the east bank is quite dense and it is difficult to get through it. The cover extends right down to the channel which is wet at this point. The opposite bank is covered in dense scrub of Willow, Bramble and Hawthorn. It was exceptionally difficult to climb up on to Brook Bridge on the eastern side.

Brooks to Odlum's Bridge (West Bank)

The stretch of towpath between these two bridges varied in the amount of tree cover along its length. It was wooded but grazed as far as the damaged aqueduct. The cattle had woven many paths through the undergrowth. Beyond the damaged aqueduct, the towpath becomes more open.

Odlum's Bridge to Wood of O Bridge (West Bank)

Here it is possible to walk along the road. There was an open aspect for much of this stretch allowing extensive views to both east and west. The towpath on the eastern bank along this stretch was of meadow species and seemed quite negotiable.

Wood of O to Whelan's Bridge (East Bank)

Here the towpath starts off as a gravel track which peters out at the fence just beyond the aqueduct. It is replaced by a wide towpath of grassy species. There was evidence of tractor usage on this towpath and this keeps down the growth making it easier for the walker. The towpath crosses a bog of extreme beauty. The channel at this point was in water and supported a diverse flora.

Whelan's to Murphy's Bridge (East Bank)

Leaving the bog behind, the channel from Whelan's Bridge was dry and was in fact being grazed. The towpath is used by both tractor and cattle and is sealed off by a mixed scrub hedgerow on both the bank and boundary. The eastern bank is also covered in mixed scrub/woodland species which is dominated by Hazel.

Murphy's to Lowertown Bridge (East Bank)

Beyond Murphy's Bridge there was a road as towpath. It passed by the disused gravel pits which are part of Rahugh Esker - an Area of Scientific Interest (A.S.I.) which was designated by the Wildlife Service on account of its ecological interest in the late 1970s. The road then veers off to the east and the towpath becomes a gravel and grassy track approximately 2 metres wide and up on a high embankment above the surrounding land. Hazelwood covers much of the eastern slope of this embankment.

Lowertown to Grange Bridge (East Bank)

The towpath is level with the surrounding land at Lowertown and starts off as a road becoming a grassy track just beyond the disused gravel pit which now houses a silage pit. The towpath is approximately 2 metres wide. The boundary hedgerow is missing for much of the stretch north of the disused gravel pit and this allows for fine views of the Esker which is another 500m north. Where the boundary hedge does exist there is an enclosed walk between both it and the hedgerow of the bank. Approaching Grange Bridge, the trees

and shrubs of the east bank have been coppiced.

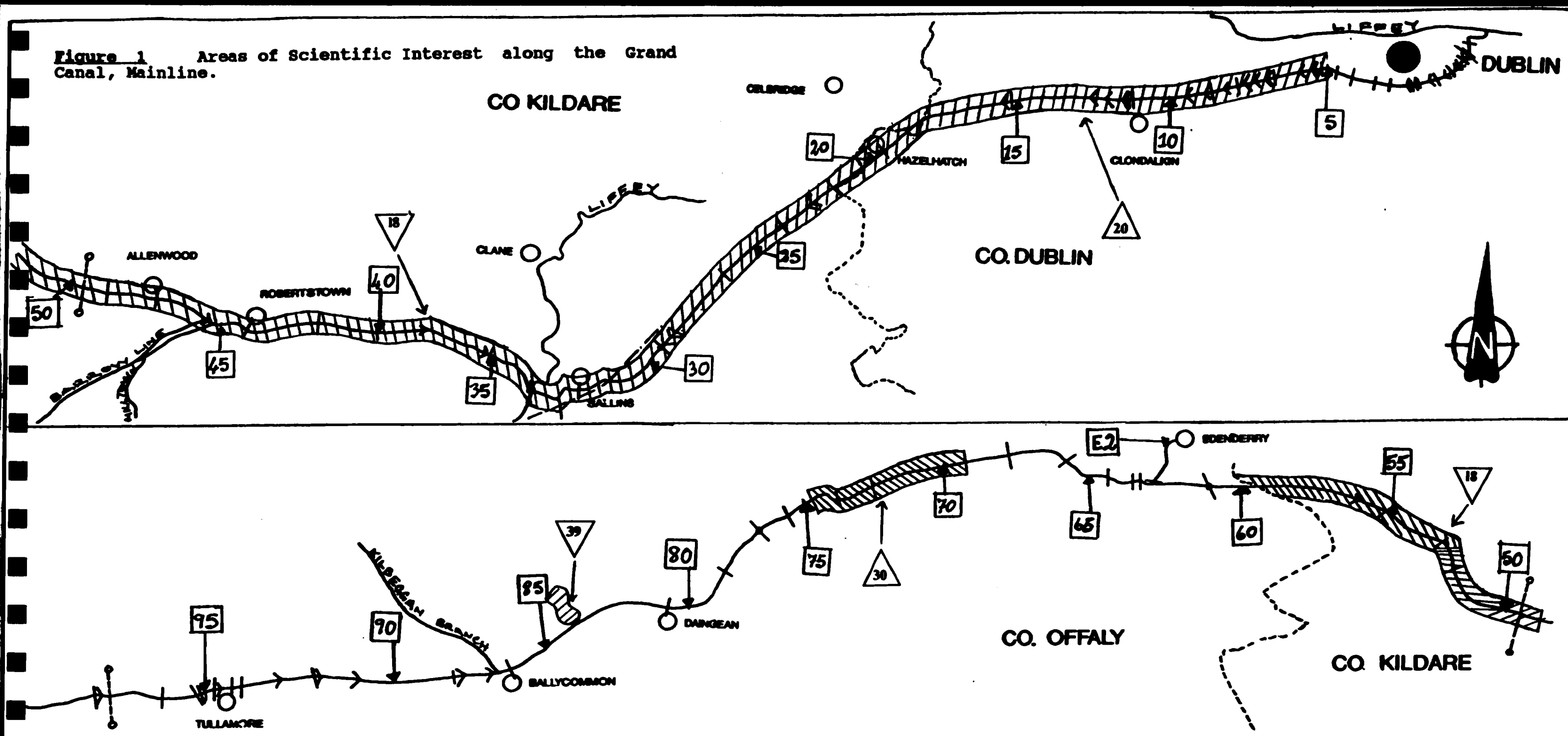
Grange Bridge to Skeahanagh Bridge (East Bank)

Between these two bridges much of the boundary hedgerow at the southern end does not now exist and the towpath is a grazed grassy track approximately 3m wide. A boundary of Beech trees on a gravel mound can be seen about 800 m north of Grange Bridge and here the towpath vegetation is indicative of disturbed ground and is dominated by thistles. It is also grazed by cattle.

Skeahanagh Bridge to Harbour (East Bank)

From Skeahanagh Bridge to the harbour there is a well-used towpath approximately 2-3 m wide. There is also a well-defined boundary hedgerow. Much of the hedgerow of the bank has been removed.

Figure 1 Areas of Scientific Interest along the Grand Canal, Mainline.



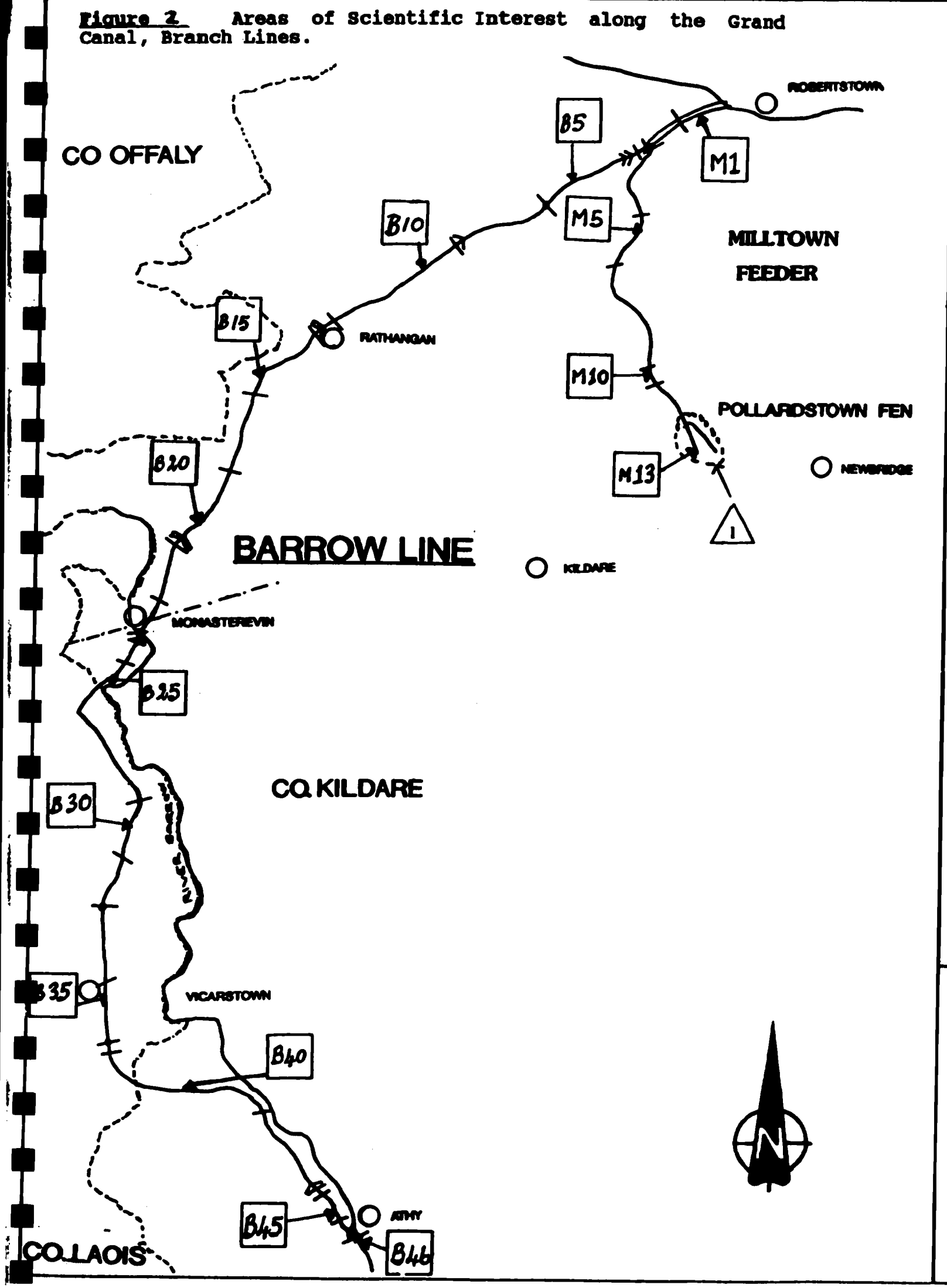
GRAND CANAL MAINLINE

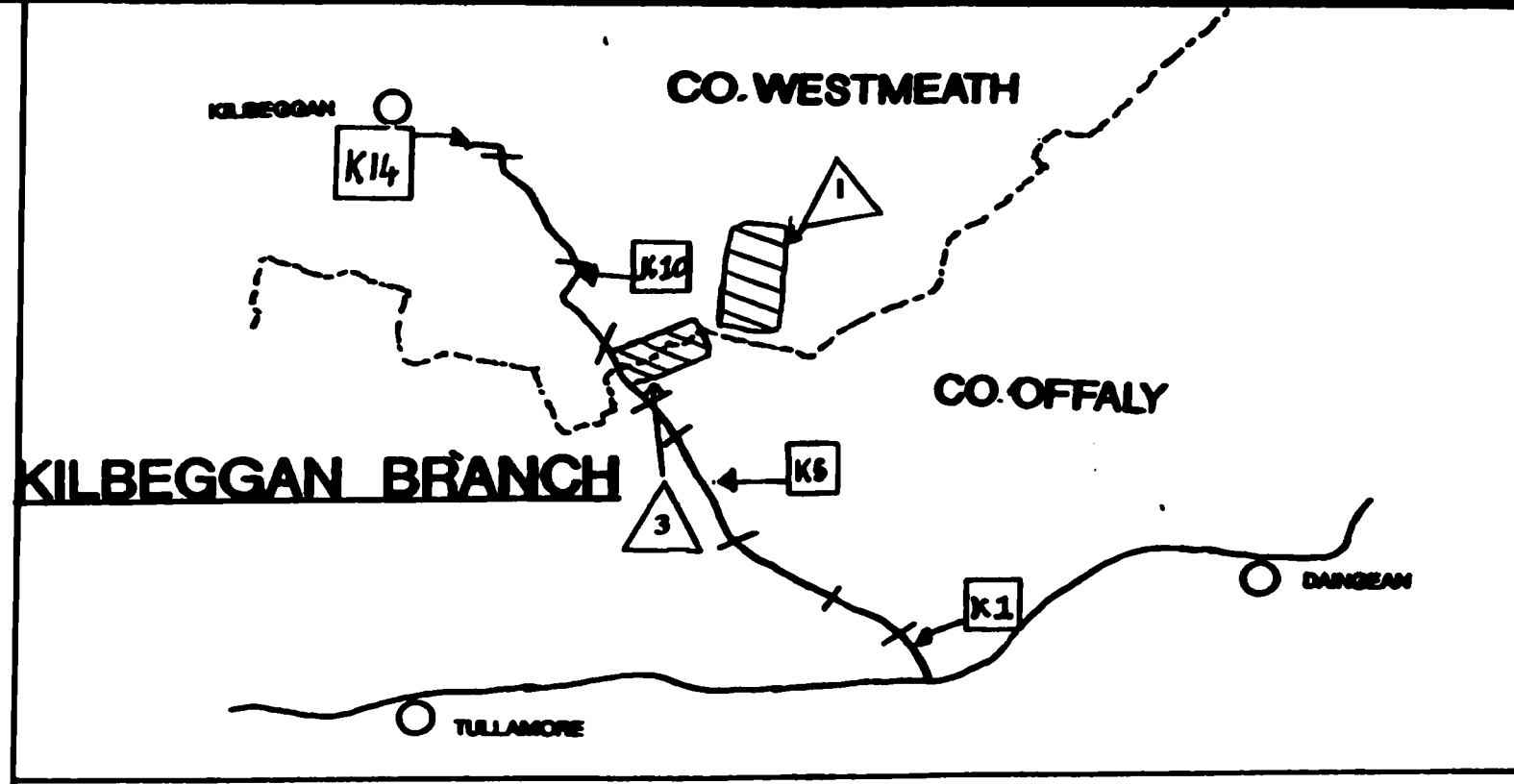
- LOCK
- BRIDGE
- TOWN
- AQUEDUCT
- CO BOUNDARY
- MAP BOUNDARY
- RAILWAY
- denotes the end of a km section
- Area of Scientific Interest

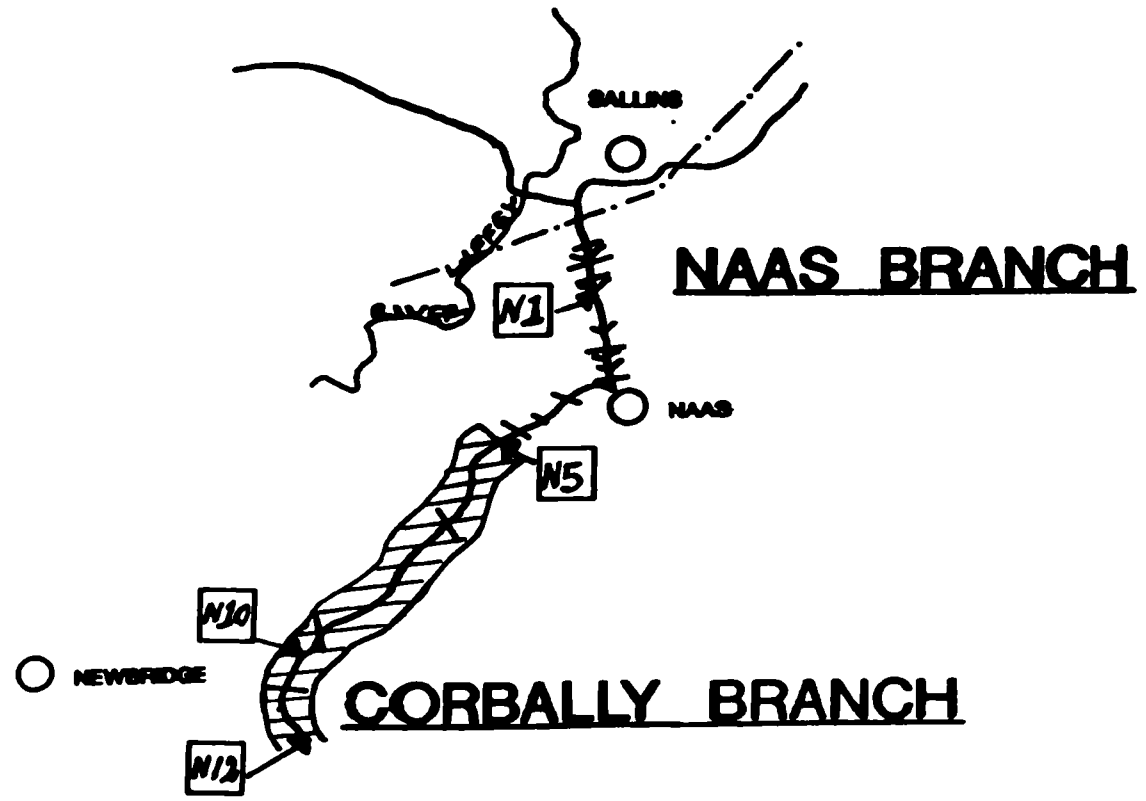
SCALE

0 1 2 3 4 5 Km

Figure 2 Areas of Scientific Interest along the Grand Canal, Branch Lines.







GRAND CANAL BRANCHES BARROW LINE

LOCK
BRIDGE
TOWN
AQUEDUCT
CO BOUNDARY
RAILWAY

SCALE
Km

Area of Scientific Interest

denotes the end of a km section