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SURVEYS OF THE DISTRIBUTION OF FRESHWATER CRAYFISH *AUSTROPOTAMOBIUS PALLIPES* IN NORTHERN IRELAND

AERC Ltd.

1998

Prepared [illegible] contract commissioned by the Environm[illegible]

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Report d[illegible] 8
Report to: [illegible]nment and Heritage Service
Contract No.: CP 1149/46/1

This report should be cited as follows:
AERC Ltd. 1998. Surveys of the distribution of freshwater crayfish (*Austropotamobius pallipes*) in Northern Ireland Environment and Heritage Service Research and Development Series. No.98/2

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UNITED KINGDOM

ISSN 1367-1979

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SUMMARY

A survey of the native crayfish (*Austropotamobius pallipes*) in lakes and rivers in Northern Ireland was undertaken in the summer/autumn of 1996 and continued in the summer of 1997. In 1996 consultation with IRTU (Industrial Science and Technology Unit) and DANI (Department of Agriculture, Northern Ireland) Fisheries Division indicated that, at least in recent years, no crayfish had been found outside the Erne and Blackwater catchments. So with the limited time and manpower available and with the agreement of EHS, it was decided to limit the survey to these areas unless any evidence of populations elsewhere was discovered. In 1997 the survey was widened to include the southern part of the Foyle, and the Ballinderry catchments. Sampling was carried out at a total of 830 locations in 54 named rivers and their tributaries and 132 lakes within the Lough Erne, River Blackwater, Foyle and River Ballinderry catchments using a combination of trapping in baited creels and active searching/kick sampling.

Crayfish were found to be widespread in silt-free sections of some rivers, with particular strongholds around lower Lough Erne, the eastern side of upper Lough Erne and the upper River Blackwater. Crayfish were found in a range of lake types from relatively oligotrophic, upland to productive lowland sites, but with the highest numbers recorded in the marl lakes around Clones. Few 'crayfish-positive' sites were found during the 1997 part of the survey and none were found outside the Erne and Blackwater catchments. However, other river surveys in 1997 found evidence of crayfish in the upper part of the Ballinderry River.

The distribution of crayfish in Northern Ireland appears to be limited by the presence of suitable underlying geology, predominantly Carboniferous limestone and, within the limestone area, water quality determines local distribution. Unhealthy crayfish were taken in the Blackwater, and although crayfish plague was not found, bacterial infection and a large number of parasites were present. Poor health is likely to be linked to reduced water quality, through increased physiological stress possibly related to lower dissolved oxygen levels. However there are some rivers and lakes which were surveyed, where geology and habitat appear to be suitable and water quality is known to be good but from which crayfish were not recorded.

Whilst no crayfish plague (a fungus - *Aphanomyces astaci*) was found during the survey, this is considered to be the main threat to future survival of crayfish in Northern Ireland as it could be introduced from mainland Britain where it is well-established in several alien crayfish species. The distribution of crayfish in Northern Ireland, (limited to part of one catchment and widespread within only one other) means that the species would be extremely vulnerable to this disease were it to be introduced. There is also a risk of populations disappearing if the trend of deteriorating water quality continues.

1 INTRODUCTION

1.1 Environment and Heritage Service (EHS), an agency of the Department of the Environment (Northern Ireland) is currently undertaking a review of the conservation status of the rivers in Northern Ireland with a view to instigating appropriate measures to ensure their protection. This work has highlighted a number of species about which further information is required including the distribution of native freshwater or Atlantic stream crayfish (*Austropotamobius pallipes*) also referred to as the white-clawed crayfish. This report presents the result of surveys of *A. pallipes* carried out during 1996 and 1997.

1.2 *A. pallipes* is shortly to be included in Schedule 5 of the Wildlife (Northern Ireland) Order 1985 which lists species that are protected at all times. The species is also listed in Annexes II and V of the EC Habitats Directive. Annex II identifies species whose conservation requires the designation of Special Areas of Conservation (SACs) and Annex V lists those whose exploitation may be controlled.

1.3 *A. pallipes* is widely distributed throughout England, Wales and Ireland and is known to have had expensive and large populations which have been subject to fluctuations recorded since the mid 1800s (e.g. Pixell Goodrich 1956). No clear reasons for these fluctuations were forthcoming although drought, changes in water quality and habitat modifications are the most likely causes (Holditch and Reeve 1991). The crayfish action plan (Palmer 1994) describes *A. pallipes* as abundant in the Republic of Ireland but rare in Northern Ireland.

1.4 *A. pallipes* is the only crayfish species native to Britain and Ireland, and is the only species currently recorded in Northern Ireland. Since the 1970s, several alien species have become established in mainland Britain, as a result of their escaping from commercial crayfish farms, together with a fungal disease (*Aphanomyces astaci*) known as crayfish plague which is endemic in several introduced species, including the signal crayfish (*Pacifastacus leniusculus*). This disease is almost invariably fatal to the native species. *P. leniusculus* has been described as the 'grey squirrel of Britain's waterways' (Mary Gibson 1996), likening its spread to that of the alien squirrel which has contributed to the decline of the native species, and in parts of England and Wales *A. pallipes* is facing the real threat of local extinction. Whilst there have been outbreaks of crayfish plague in the Republic of Ireland, leading to the assumption that it was likely to spread into the North, there are no recent reports of the disease in Ireland (J. D. Reynolds pers. comm.) and it was suggested that with no resistant vector species present in the Republic, the plague has eradicated the population of *A. pallipes* in some areas and then has died out. The healthy populations of *A. pallipes* still existing in Northern Ireland are therefore important in a UK context.

1.5 *A. pallipes* occurs in both lotic and lentic waterbodies, usually in hard water where there is adequate calcium for exoskeleton development. Other species of crayfish have been shown to be adversely affected by acidification. For example in Canada, *Oronectes virilis* begins to lose calcium from its exoskeleton at pH5.6 and also becomes more susceptible to parasites and disease (Schindler 1988). In the UK, native crayfish are absent from Scotland and Cornwall where base-poor geology and extensive peat cover maintain generally low pH values.

1.6 *A. pallipes* is active at night, seeking cover during the day under stones, in vegetation or in burrowed holes in the substrate or banks (although this species is less adept at excavation than some of its con-familiars). *A. pallipes* requires well-oxygenated conditions and, like

other invertebrates of clean water, is relatively intolerant of siltation. Silt fills the interstices between stones, thus reducing available cover, smothers vegetation, causes physical abrasion of crayfish and clogs their gills. As with many other crustacea, *A. pallipes* is very sensitive to biocides, and is therefore vulnerable to pollution by agro-chemicals. *A. pallipes* feeds on a variety of plant and animal material and is in turn taken by a range of predators (birds, fish and mammals) and is therefore an important part of the aquatic food web. Northern Ireland otters appear to be skilled predators of crayfish from the abundant spraints found containing their remains. (e.g. Northern Ireland River Habitat Surveys 1996).

1.7 Five aims were identified for this project:

- To map the distribution of freshwater crayfish in Northern Ireland.
- To describe the abundance and health of populations.
- To describe habitat requirements of freshwater crayfish in Northern Ireland.
- To make recommendations on conservation and identify any sites meriting ASSI designation to protect the species.
- To draw up a monitoring programme for crayfish and carry out any baseline monitoring required above the initial survey work.

1.8 This report describes the methods used to survey for freshwater crayfish in Section 2. In Section 3 the results of the study are given and Section 4 discusses these results with the conclusions of the survey work set out in Section 5. Section 6 makes recommendations for the future monitoring of this species and Section 7 outlines recommendations for conservation measures.

2 METHODS

2.1 Site Selection

2.1.1 Discussions with researchers at both the Industrial Research and Technology Unit (IRTU) and the Department of Agriculture for Northern Ireland (DANI) Fisheries Division prior to the surveys indicated that *A. pallipes* was only present in rivers and lakes in the Lough Erne and River Blackwater catchments in the south-west of the Province. (Table 1 lists those rivers and lakes in which crayfish had been recorded previously in Northern Ireland.) Consequently it was decided to survey a representative sample of rivers and lakes in these two catchments. In late 1996 a report of crayfish presence in the Ballinderry River was received. In 1997 the survey was extended into this catchment and also into the southern part of the Foyle catchment, targeting those rivers close to the northern-most tributaries of Lough Erne.

Table 1 Rivers with IRTU crayfish records

River	Sites with positive records	
	1993	1995
Ballinamallard	145	145
Bannagh	136, 137	136, 137
Cleen		153
Colebrooke	142, 149 150	130, 149, 150
Dooraa	142, 144	142
Drumnagreshial	138	138
Upper Erne		123
Lower Erne	263	
Finn	159	159, 279
Garvary	134	
Glendurragh (Kesh)	141	
Hollybrook	278	
Lackey	157, 158	157, 158
Lough a Hache	277	277
Manyburns	154	154
Newtownbutler	276	
Screenagh	167	
Sillees	164, 168, 165	164, 168, 165
Tempo	151, 152, 271, 128	151, 271
Trillick	148	148
Waterfoot	265	
Fury		228
Blackwater		57, 62, 229

2.1.2 The present survey involved selective sampling at 132 different lakes and 54 named rivers and their tributaries. River sites were selected in all major sub-catchments throughout the study area. Lake sites were selected proportionally from the range of macrophyte Types identified during the Northern Ireland Lakes Survey. More lake sites were surveyed in the Lough Erne catchment than elsewhere because of the large number of lakes in this area. However, a greater percentage of the total number of lakes were surveyed outside the Lough Erne catchment.

2.1.3 At each river or lake site, locations for sampling were selected by the surveyor on the basis of ease of access to the shore and identification of areas believed likely to provide suitable crayfish habitat (based on previous surveying experience). Sampling sites usually had some form of cover such as a fishing jetty or an overhanging bank often with boulders for cover and aquatic macrophytes. Excessively silty lake sites were avoided where possible as crayfish tend not to occur in silty conditions (Holditch 1994). Where access to exposed areas of lake shore was difficult because of a thick fringe of reeds or silt, creels were deployed on a long rope and thrown into open water which was most productive.

2.2 Timing

2.2.1 The most appropriate time for sampling freshwater crayfish is in the period before breeding when they are most active and in *A. pallipes* this is between September and early November. In this survey, however, sampling was carried out between August 10th and October 3rd 1996, and between June 5th and July 1st 1997 when low flows made deploying traps and active searching more feasible, particularly in the river locations. Crayfish are active throughout the warmer months of the year and could be expected to be caught during this period.

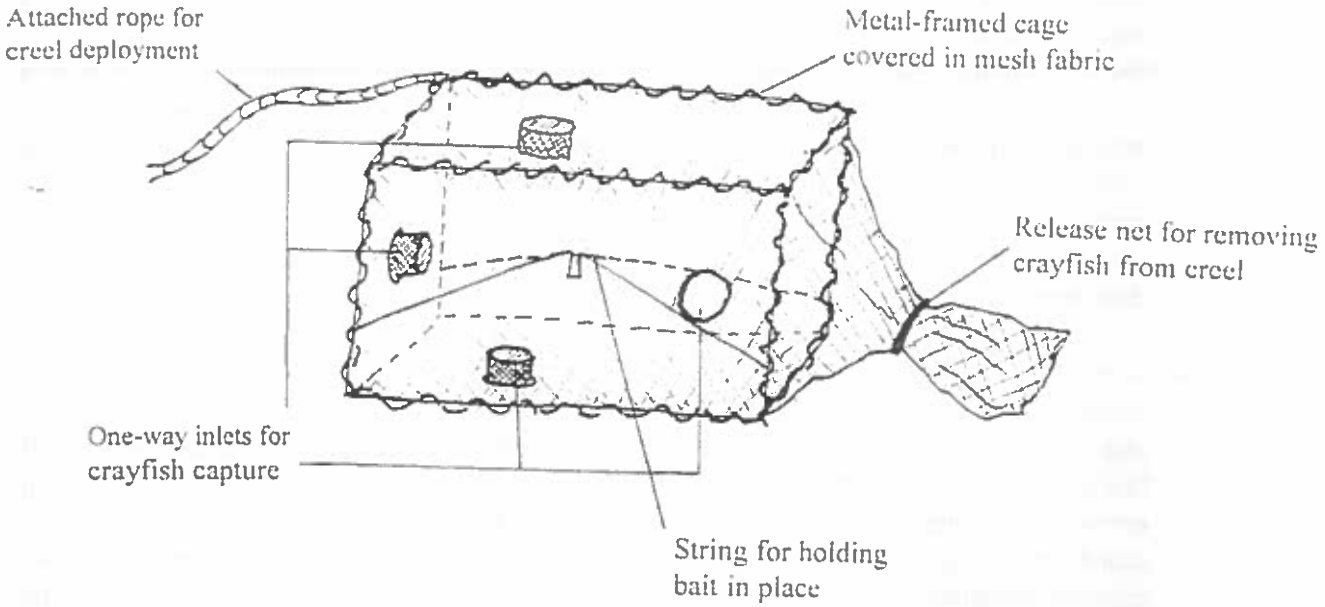
2.3 Sampling Techniques

Two sampling methods were used to find crayfish:

2.3.1 Baited creels were used in lakes and deeper sections of rivers to attract crayfish from the surrounding area. The creels used were approximately 50cm cubes with five entrances, each with in-scales and whilst designed primarily for capture of Dublin Bay Prawns, they were appropriate in design and size for the capture of crayfish (Figure 1). Creels were baited with fresh or frozen oily fish (mackerel) and suspended in the water on, or as close to the substratum as possible. Methods of attachment were site-specific, but usually involved creels being anchored to the bank with a length of rope and a peg or tied to suitable trees/posts. Weighting of creels was not found to be necessary, although in fast-flowing water they are prone to moving away from the substrate (and here alternative sites or survey methods were chosen). Creels were disinfected in a solution of domestic bleach between rivers or sub-catchments to prevent the spread of any disease.

2.3.2 Creels were usually deployed in the afternoon, left overnight and retrieved the following morning, and were never left for longer than 24 hours at a site. On retrieval, captured crayfish were sexed, weighed (to the nearest gram) and the length and width of the carapace measured (to the nearest 0.1 millimeter) using callipers. Any incidence of disease or presence of non-native species was recorded, together with a comment on general health, missing limbs etc. of the individuals. At a few sites where a large number were captured, because of time constraints it was not possible to weigh and measure all individuals and a representative sample were measured in addition to the largest and smallest individuals to provide an indication of the range of sizes present. All specimens were returned to the water at the location of capture. Crayfish are known to be hardy animals and do not appear to suffer from stress associated with their capture; none died whilst in the traps.

1a



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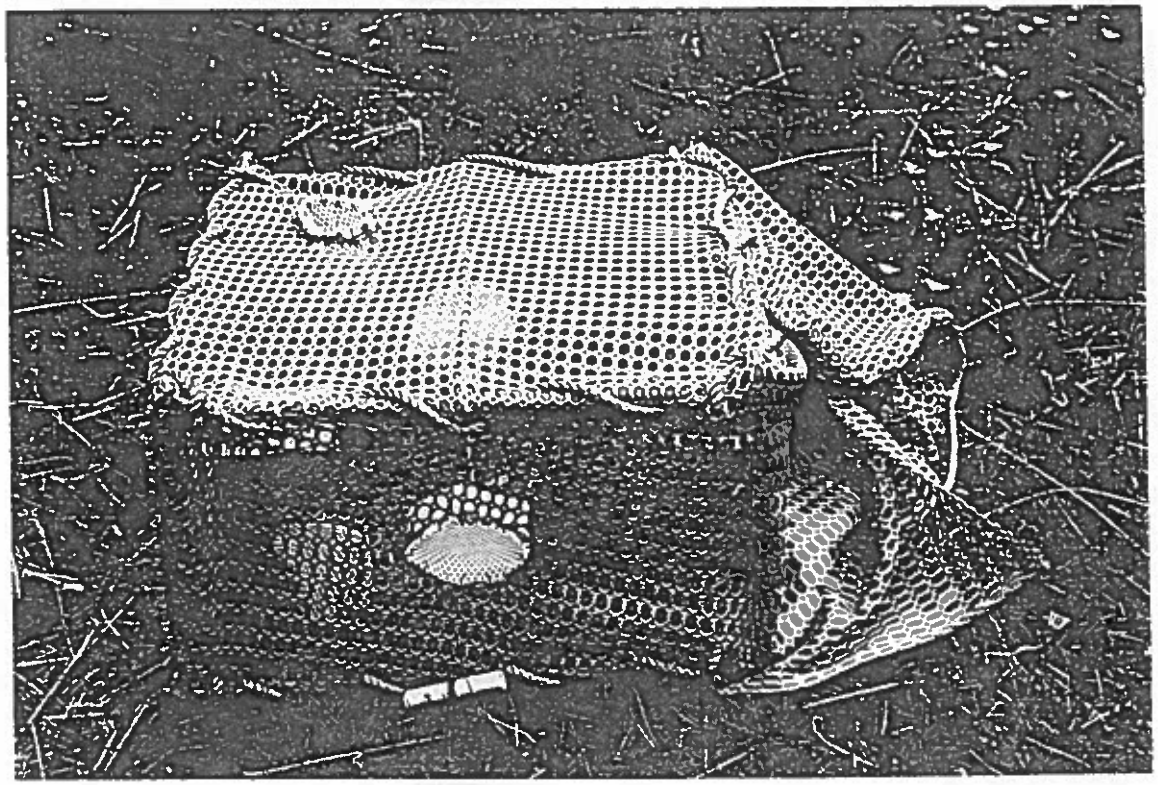


Figures 1a and b Diagram and Photograph of the Creels Deployed for Capturing Crayfish

2.3.3 It was initially intended to deploy a single creel in each lake, however early in the survey it became clear that more creels were needed at each location. Surveyor experience and discussions with recognised experts (David Holditch, Nottingham University and Mary Gibson, English Nature) suggested that crayfish trapability is unpredictable and a trap in a location known to support crayfish may not catch any. There do not appear to be any published studies on crayfish behaviour that explain this and, whilst there are a number of possible reasons, study of these fell outside the scope of the Northern Ireland survey. As a consequence, it was decided that where suitable sites for their location were available, several creels would be placed in each lake. At most sites four creels were used, distributed around the margin.

2.3.4 In shallow water of lakes and in rivers, crayfish were sought by either kick-sampling into a standard FBA (Freshwater Biological Association) pond net or by turning over stones and picking up by hand. Searching was aided with use of a viewing box (a glass-bottomed bucket). Crayfish can often be found close to the bank and tend to remain motionless when uncovered. Sampling lasted for three minutes at each site, although when no crayfish were found in the first three minutes, further searching was undertaken for periods of five minutes upstream and downstream of the initial location particularly seeking areas of suitable crayfish habitat. Each crayfish captured was weighed and measured.

2.4 Habitat Data

2.4.1 At each site (river or lake), a survey form was completed (Appendix 1) to provide information on the habitats present. Site descriptions included an area of approximately 15m radius of the creel location as this is thought to be the maximum distance the majority of crayfish entering creels could have travelled (from the personal experience of the surveyor). Information recorded included grid reference, an assessment of the range of substrates present where these were visible, the presence of bank and instream cover, and river depth, width and flow type (these types taken from the 1996 River Habitat Survey, Environment Agency) in addition to the crayfish records. Each lake site was sketched with creel positions noted for future use. These sketch maps are included as Appendix 4.

2.5 Surveyors

2.5.1 One surveyor (Keir Brown) was employed for the 1996 survey. He had previously worked on crayfish in an English lake and was familiar with *A. pallipes* and the use of traps for its capture although he was not familiar with Northern Ireland. The surveyor was on his own for the majority of the fieldwork and was project managed by a senior member of staff from AERC in Belfast and spent some time in the field with the project manager, Susanna Allen (EHS) and Peter Hale (IRTU). Permission to deploy creels was sought from land owners/fishing clubs wherever possible by the surveyor, with the help of EHS liaison staff when necessary. In 1997 Andrew Rodger continued the survey.

2.6 Water Quality Sampling

2.6.1 Water samples were taken at 65 sites in 1996 for analysis of total calcium hardness. Results of this analysis can be found as part of Appendix 2.

3 RESULTS

3.1 The results of the survey are presented in Appendix 2 which lists all sites surveyed together with a summary of the information recorded, including water hardness where samples were taken and whether or not crayfish were found. Appendix 3 lists all crayfish biometrics for river and lake sites with comments recorded on the health and appearance of individuals. Crayfish were recorded from parts of the Erne catchment, the upper River Blackwater and Fury Rivers, but not in rivers of the Foyle system or the Ballinderry catchment.

3.2 A total of 563 creel deployments were made and 267 further sites were searched involving 132 lakes and 54 rivers and their tributaries in total. Of these, 59 samples, were positive, and a total of 203 crayfish were captured. Biometrics have been recorded for 168 individuals. A summary of all crayfish 'positive' sites recorded during the past five years, including those collected during other surveys (IRTU biological water quality monitoring, DANI Fisheries Division, salmonid spawning site surveys, River Habitat Survey and incidental records) has been established as a 'Maps In Action' database and is included in full on Maps I - X. This database includes details of the recorder and date of recording. The results are discussed in Section 4. Data from the 1996 and 97 surveys will also be forwarded to CEDaR for inclusion in Recorder.

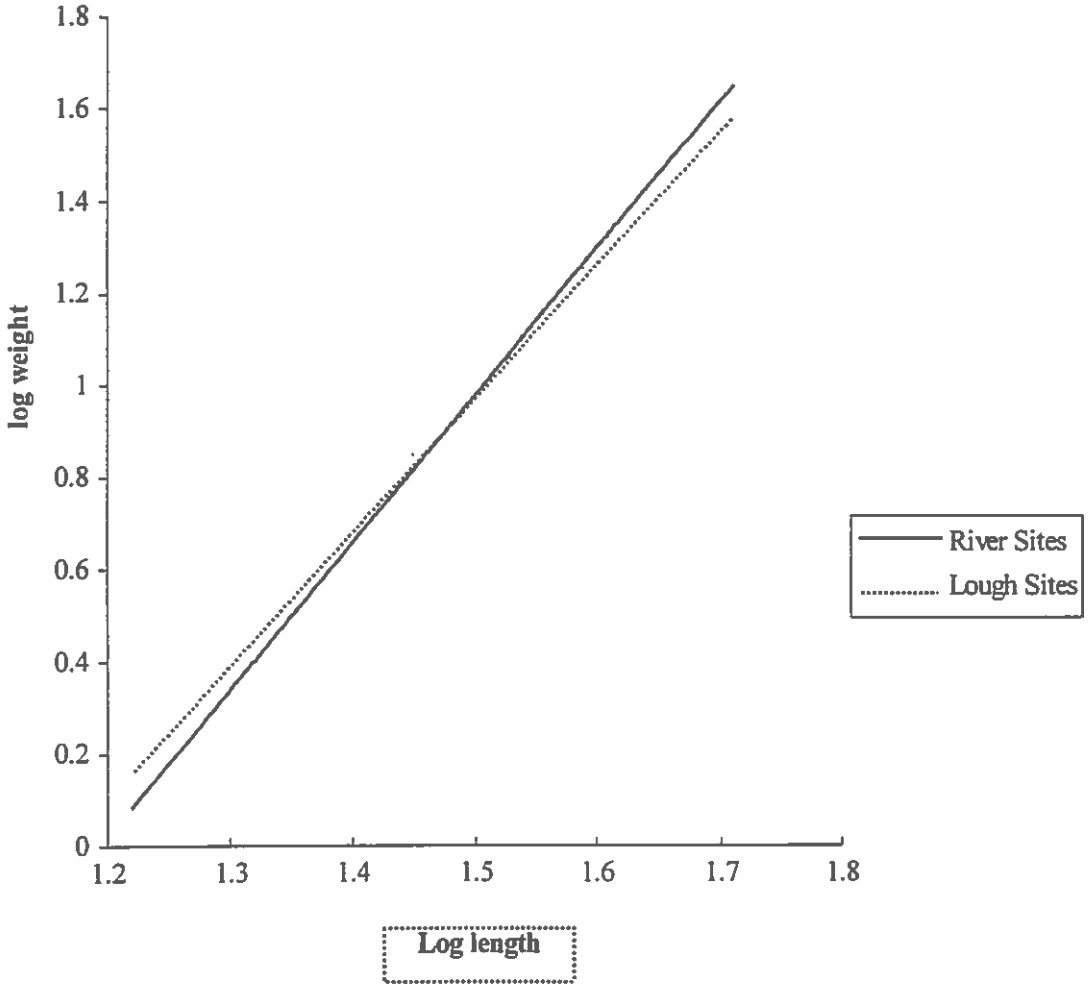
Comparison of the two survey methods

3.3 Crayfish captured from lakes appeared to be larger than their counterparts taken from rivers, but this was found to be an artefact of the trapping method as all crayfish captured in lakes were in creels and a comparison of the capture methods showed that smaller animals could be found by active searching. The smallest crayfish found in a creel weighed 1g, but the mean weight was over 40g, whereas searching produced crayfish weighing less than 1g, and an average weight of under 35g. An assessment of the population size structure is therefore not possible because of the bias towards larger crayfish introduced by the trapping method used in lakes. This problem has been encountered before with the widely-used Swedish 'Trapy' trap (D. Holditch *pers. comm.*), although it was felt by the surveyor that the creel design used for this survey was possibly more likely to catch small individuals.

Comparison of crayfish taken from lakes and rivers

3.4 Whilst a full comparison of the populations of crayfish in lakes and rivers was not possible for the reason described above, a regression analysis of the length/weight relationship of individuals taken from the two habitats was carried out as this is unlikely to have been affected by the trapping method. The results of this analysis are presented in Figure 2 and it can be seen that when small, crayfish in lakes are heavier than their counterparts in rivers but that the reverse is true for larger crayfish. The two lines intersect at approximately 36mm length and 14.5g weight. This relationship is significant at the 95% level $t_{0.005}(2)$, 136 = 2.236. More rapid weight gain is thus achieved in lakes during early life and conditions more suited to smaller crayfish are therefore implied.

Figure 2 Crayfish length/weight regression analysis



River : Log weight = (Log length x 3.184) - 3.8

Lough : Log weight = (Log length x 2.884) - 3.333

4 DISCUSSION

4.1 Distribution

4.1.1 In the course of the survey crayfish were found in both lakes and rivers throughout the Lough Erne catchment and upper Blackwater and Fury Rivers in habitats ranging from fast-flowing streams to peat-coloured still water, demonstrating the adaptability of *A. pallipes* to a broad spectrum of physical conditions. No crayfish were found outside these two catchments. Map 1 shows the location of survey sites, and Map 2 the distribution of crayfish captured during the surveys.

4.1.2 Only two reports of crayfish from elsewhere in Northern Ireland have been made in recent years. The first record is of one (dead) individual found in Lough Neagh close to the mouth of the River Blackwater. This was probably washed down the river rather than being from a viable population in the lough (P. Hale *pers. comm.*). The other record comes from the Ballinderry River where crayfish were reported to be found at the intake of at least one fish farm. Despite an extensive search of this catchment, no crayfish were found during the 1997 survey and it seems likely that the population in this river has a restricted distribution. River surveys of the Ballinderry carried out by ATEC in the summer of 1997 found that crayfish were not found in the Foyle catchment, although many sites were surveyed, concentrating on the rivers close to the Erne catchment. The River Derg is actually connected to the Termon/Ominey River in the Erne catchment through Lough Derg, and it was thought that this might be a corridor for the species into the Foyle system but although several sites were surveyed in the Derg and its tributaries, no crayfish were found. However, crayfish were found in Loch Nageague (RoI), and although this lake is close to the Termon River, it is apparently connected to the River Derg via a series of small streams.

4.1.3 It is probable that whilst *A. pallipes* populations are abundant and well-established in the Lough Erne and (parts of) the River Blackwater catchments, there are few populations outside this area. IRTU carry out regular (three times yearly) invertebrate sampling at over 300 sites throughout Northern Ireland and have no records of crayfish other than in these catchments. In addition, DANI Fisheries Division have undertaken extensive electrofishing surveys on a large number of sites and also have many positive records for crayfish only in the Lough Erne and upper Blackwater catchments. No evidence for the existence of crayfish elsewhere was found during extensive RHS and macrophyte surveys throughout Northern Ireland during the summer of 1996 whereas live crayfish, their exoskeletons and otter/mink spraints containing their claws were found in these catchments.

Distribution in relation to geology/water hardness

4.1.4 The distribution largely coincides with the extent of Carboniferous limestone in the Lough Erne catchment and upper River Blackwater, and is illustrated in Map 3. There are significant populations in areas draining sandstone, notably the Ballinamallard and Tempo Rivers but the base status of these rivers is still quite high. Even within the Erne catchment it is difficult to make generalisations about distribution in relation to underlying geology because of the influence of overlying deposits. The Colebrooke River for example, which has extensive populations of crayfish, rises in sandstone uplands with peat soils and considerable afforestation but flows through limestone grasslands with intensive agriculture in its lower reaches before discharging into Upper Lough Erne. Conversely, other rivers in the Erne catchment which drain limestone catchments appear not to have crayfish and there

must therefore be other reasons for the observed distribution pattern.

4.1.5 In both the Lough Erne and Blackwater catchments the bedrock is largely overlain by boulder clay or peat although recent lacustrine deposits are more extensive in the area draining into the western side of Upper Lough Erne. This latter area includes the Swanlinbar, Arney and Woodford rivers, where crayfish have not been recorded. However it is not known how or if these deposits affect crayfish distribution. Map Y shows the distribution of crayfish records overlaid on the geology of the area.

4.1.6 Results of the analysis of water hardness are presented as part of Appendix 2. The distribution of crayfish in relation to these results is shows no trends and no analysis was possible. Distribution is discussed instead in relation to Lake Type.

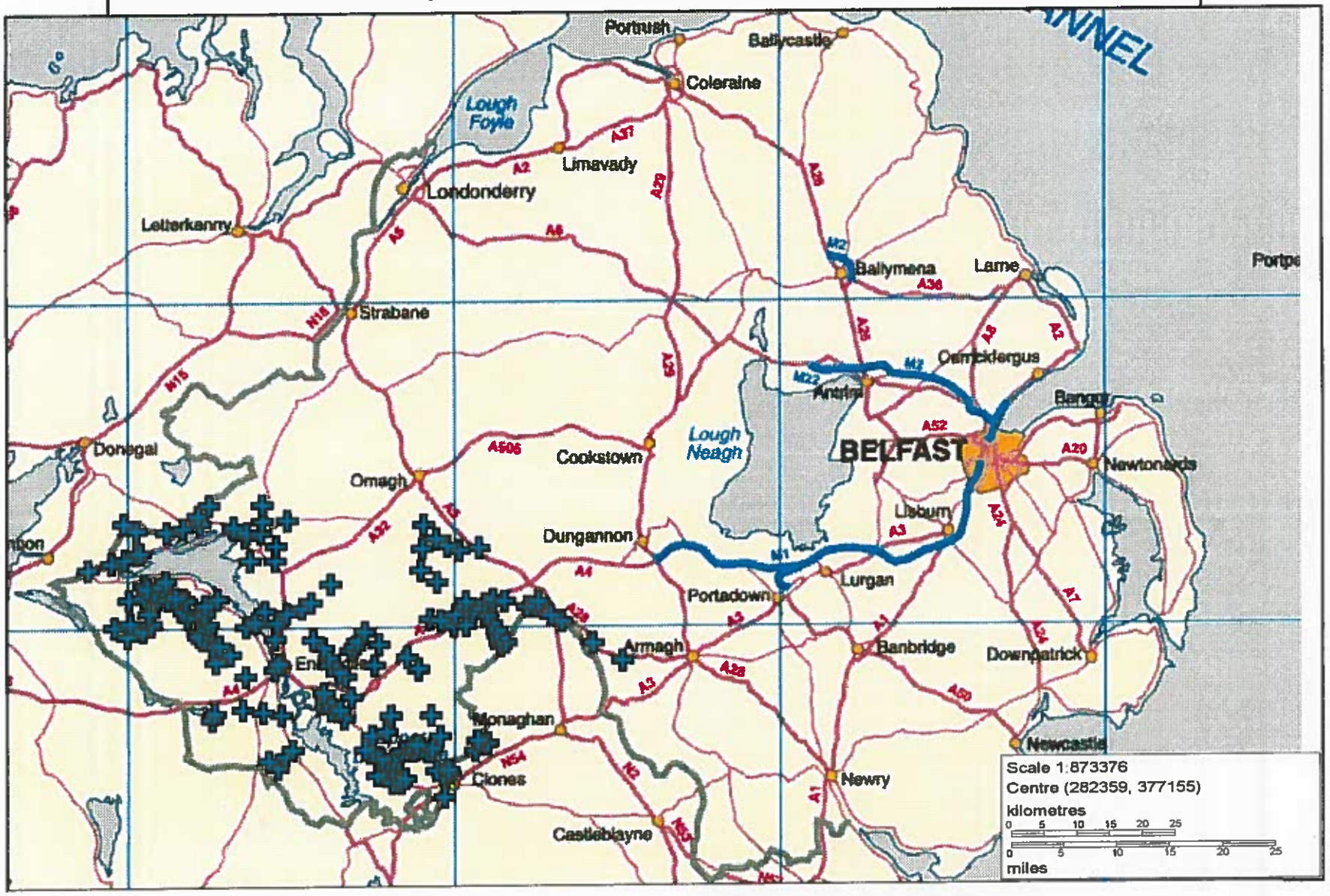
Distribution in relation to macrophyte community type

4.1.7 Lakes from a range of macrophyte Types classified by the Northern Ireland Lake Survey were sampled with the results showing that crayfish were found more frequently in mid- to low-altitude base-rich lake Types. Of the 118 lakes surveyed to which a macrophyte class can be attributed, 12 had positive crayfish records (in 21 creels). The presence or absence of crayfish in lakes of different Types is shown in Table 2, which includes a brief description of lake Type which shows that whilst surveyed sites were distributed across the range of Types, crayfish were found more frequently in Types VIII and XVI. A comparison of the proportion of sites with and without crayfish is illustrated in Figure 3. which shows that traps were more likely to be successful in Type VIII and XVI lakes, although even in lakes where crayfish are known to be present, some traps were unsuccessful, demonstrating the unpredictability of trapping success. The greatest number of crayfish captured (26 in a single creel) was in Kilroosky Lough, a Type XVI lake.

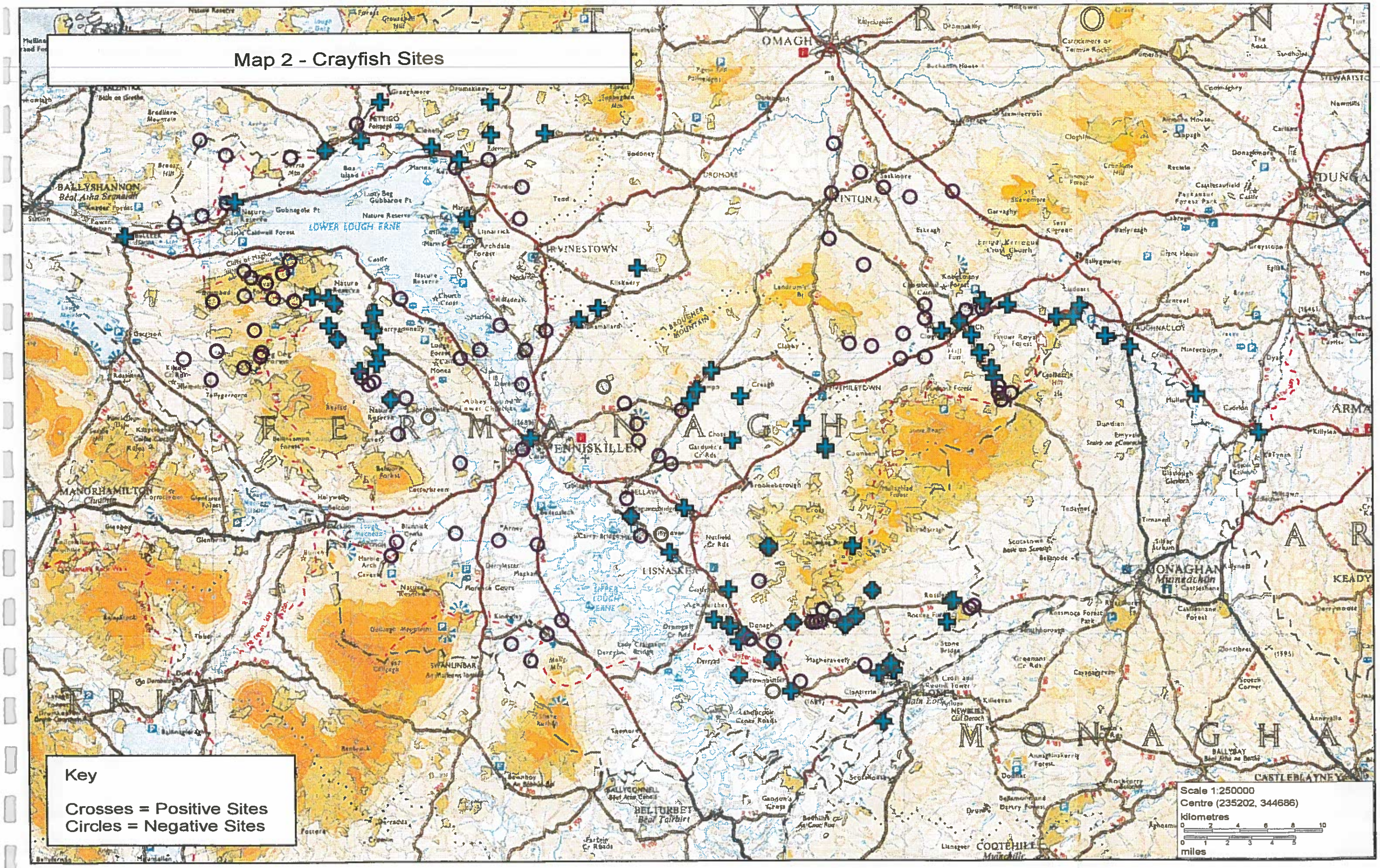
4.1.8 There is one confirmed record from a Type IV lake. Lough Corry, in the Colebrooke River catchment had a crayfish taken in each of two creels during the survey. In addition, a dead crayfish was seen at Lough Rushen (another Type IV lake north of Lower Lough Erne on the border with the Republic) in 1990 during the Lake Survey, but the lake was not part of the 1996/7 crayfish survey programme. Neither lake is on a main river, and Lough Rushen has no apparent inlet/outfall for migration into or out of the lake by crayfish. A dead crayfish was also found at the outlet of Lough Scolban during 1996 macrophyte surveys. Water in the outfall streams of nutrient poor lakes such as Lough Scolban (a Type III lake) is also likely to be nutrient poor and therefore usually considered to be sub-optimal crayfish habitat. Crayfish remains have also been found in otter spraints at Lough Navar, another Type III lake surrounded by coniferous plantation (Habitat Survey Team, 1994) although none were found during trapping in 1996 or 1997.

4.1.9 No crayfish were found in lake Types I or II , which occur at higher altitudes and are base-poor and would be unlikely to have much suitable habitat. Lake Types VI and VII are both characteristically silty, and therefore are less suitable for crayfish. Both of these Types are uncommon in the study area, having an eastern distribution. Crayfish were also not found in Types X, XI or XIV, which are described as both silty and/or nutrient enriched.

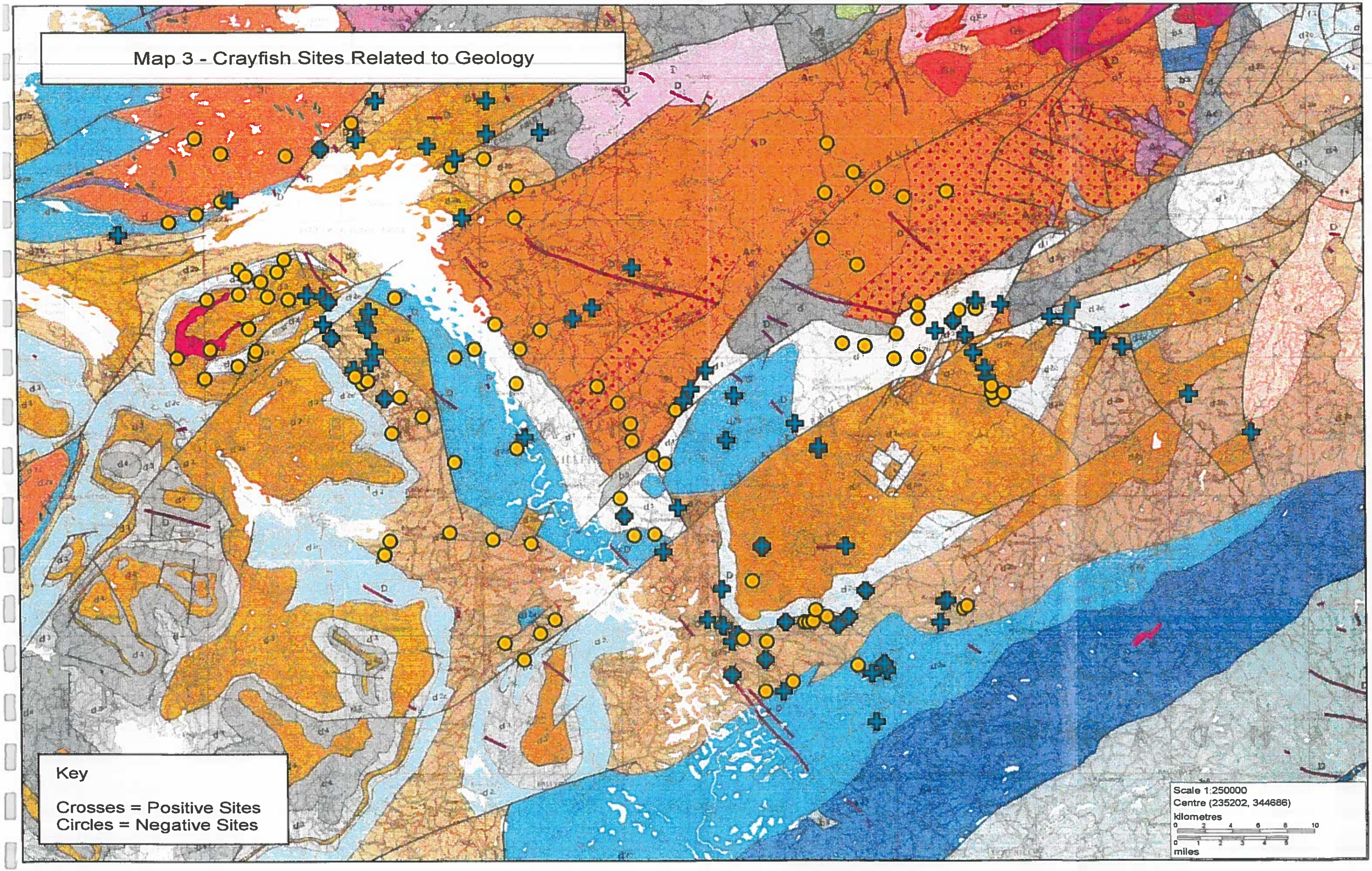
Map 1 - Distribution of Survey Sites



Map 2 - Crayfish Sites



Map 3 - Crayfish Sites Related to Geology



SEDIMENTARY AND CONTEMPORANEOUS IGNEOUS ROCKS

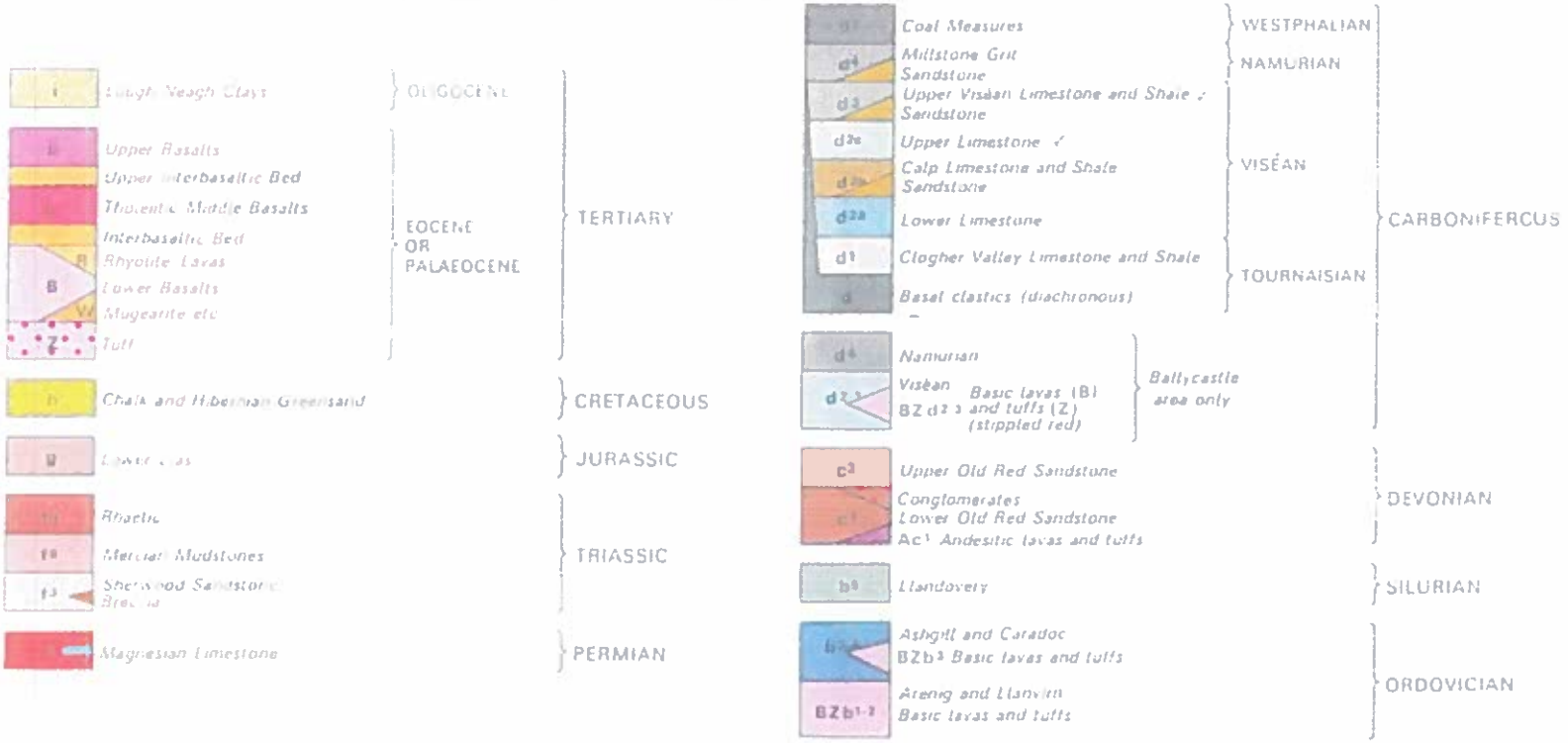
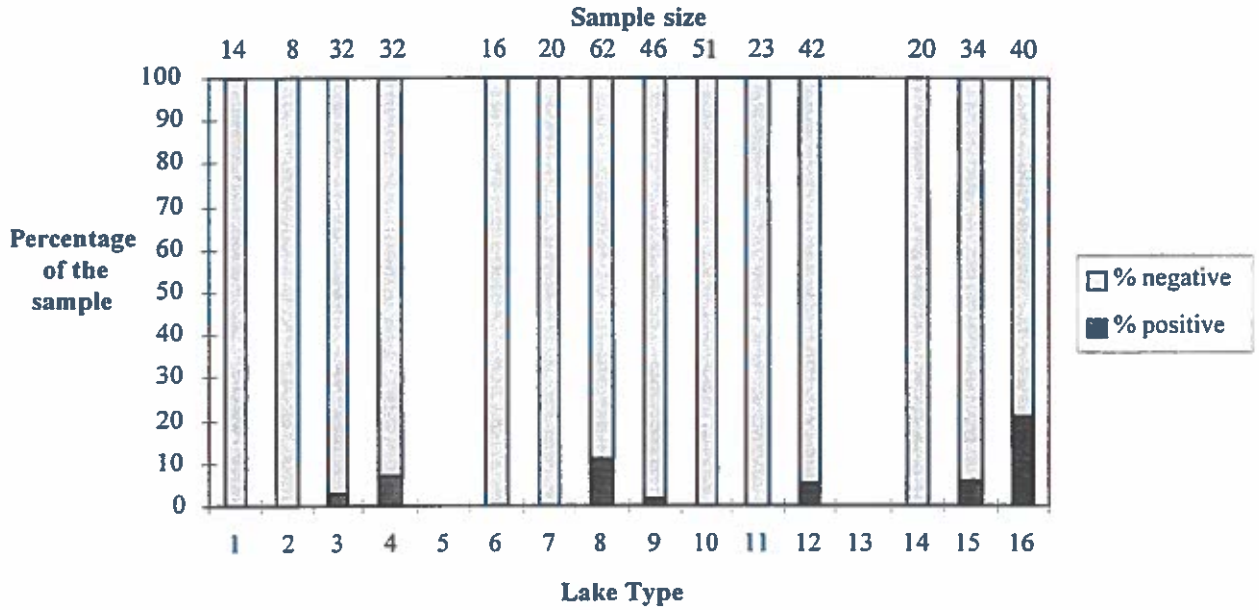


Table 2 Presence and absence of crayfish in samples from each Lake Type (presence in number of lakes in each Lake Type in parentheses).

Lake Type	Description	Mean calcium concentration mg/l	No. sites with crayfish	No. sites without crayfish
I	Upland, bryophyte dominated, small	1.94	0	14(4)
II	Upland, deep, rocky, forested catchments	10.07	0	8(2)
III	Upland,large, deep, rocky	6.58	1(1)	31(9)
IV	Small, upland, peaty/silty	7.15	2 (1)	30(7)
VI	Man-made, medium size, shallow	27.53	0	16(4)
VII	Silty, moderately enriched	30.79	0	20(5)
VIII	Mid-altitude, deep, nutrient poor	21.36	6(3)	56(12)
IX	Mid/low-altitude, peaty or silty	20.22	1(1)	45(10)
X	Lowland, nutrient enriched, silty	36.61	0	51(12)
XI	Lowland, nutrient enriched, silty	33.43	0	23(6)
XII	Low altitude, large, enriched, silty	37.75	2(1)	40(11)
XIV	Low-mid altitude, small, silty/peaty	40.09	0	20(6)
XV	Low altitude, small, not enriched	50.00	2(1)	32(8)
XVI	'Marl' lakes, not enriched, low altitude	65.27	7(4)	33(10)

- Mean water hardness taken from Northern Ireland Lakes Survey

Figure 3 Comparison of the proportion of sites with and without crayfish in different Lake Types



4.1.9 Distribution in relation to water quality

Chemical and Biological River Quality in Northern Ireland is classified by the Environment Protection Division of DoE (NI). The distribution of crayfish in relation to both biological and chemical water quality class is shown in Table 3. The distribution of crayfish in rivers within each of the biological water quality classes (from survey results) is illustrated in Figure 4. River classes referred to in the table, the figure and the text are taken from the 1995 GQA classifications. The categories used apply to both biological and chemical water quality and are described below:

A	Very good
B	Good
C	Fairly good
D	Fair
E	Poor
F	Bad

4.1.10 Crayfish tend to be found in clean water, 86% of records held on the national database are from (chemical) Class A and B waters (Holditch 1994). In the Erne system, the rivers where the greatest number of crayfish have been found fall into these classes although there are a significant number of less high quality. Crayfish populations are established in several biological Class E rivers, for example the Cleen River. Interestingly, the Newtownbutler River had crayfish recorded in 1993, since when the biological water quality Class has deteriorated, and the population has now disappeared (the river was classed chemically as E in 1995 and biologically as C/D).

4.1.11 Most crayfish sites in the Erne catchment still fall into biological classes A and B, with only the Finn, Hollybrook and Lough-a-Hache sites in C quality water. However, the chemical water quality classes show considerably more variability with notable differences between the Sillees catchment, which has A and B quality water, and the Ballinamallard, Colebrooke and Finn catchments, where water quality is at best B and more frequently only D. The source of the problem in these rivers is commonly diffuse source farm waste, which, coupled with generally long water retention times and a diverse macrophyte community can lead to de-oxygenated conditions. The invertebrate communities in these rivers are not currently affected, but there should be a concern that any further deterioration in chemical water quality would lead to a change in the number and range of species present. Crayfish would almost certainly be amongst the species to suffer were this to occur.

4.1.12 In the River Blackwater catchment, crayfish were only found in the Fury and upper River Blackwater as far downstream as Caledon, both rivers with good water quality, although the chemical water class is lower than the biological class (Class C and Class B, respectively). Most of the other rivers in this catchment have lower biological water quality particularly in their lower reaches. It is probable that water quality is largely responsible for the observed current distribution pattern in this catchment (but see also the following section). The GQA classes in this catchment follow those of the Erne, with almost universally higher biological quality class than chemical class. The discovery of two diseased crayfish in the Blackwater during the 1997 survey demonstrates that *A. pallipes* is sensitive to pollution stress and indicates that there may be a problem in parts of the Blackwater catchment. A veterinary investigation found that crayfish plague was not present, but the diseased individuals had a bacterial infection and a heavy parasite infestation. The causes of this cannot be stated with certainty, but are likely to relate to agricultural practices. Research currently being undertaken by the Game Conservancy Trust (see Appendix 4) indicates that modern land use techniques may be having a significant impact on crayfish numbers in England and this is also likely to be true in Northern Ireland.

4.1.13 There has been a trend of deteriorating water quality in most Erne and Blackwater rivers and crayfish populations may be at risk. The present distribution of *A. pallipes* in the Lough Erne and upper Blackwater catchments is dependent on the current water quality being maintained or improved. It is EHS policy to maintain water quality at D, as a minimum, with no downward movement between classes. It is possible that this will be inadequate for retaining the present crayfish distribution as some populations are already stressed. A target of B water quality may therefore be necessary in some rivers.

Table 3 Distribution of crayfish in rivers related to water quality

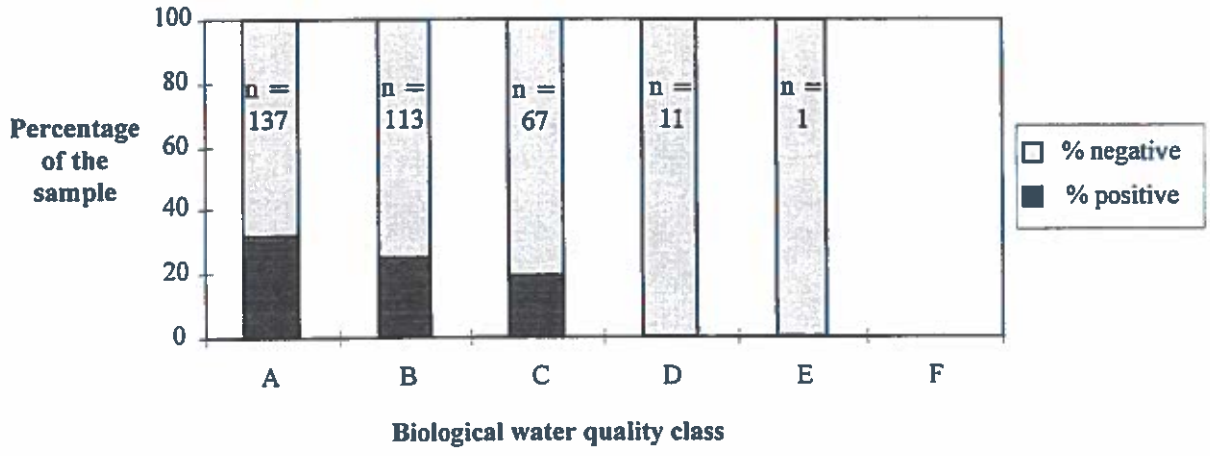
A. Biological water quality

Biological water quality class	Number of sites where crayfish have been found (and proportion of sites surveyed)	Number of sites where crayfish have not been found (and proportion of sites surveyed)
A	44 (0.53)	93 (0.38)
B	28 (0.33)	85 (0.35)
C	13 (0.14)	54 (0.22)
D	-	11 (0.5)
E	-	1 (<0.1)
F	-	-

B. Chemical water quality

Chemical water quality class	Number of sites where crayfish have been found (and proportion of sites surveyed)	Number of sites where crayfish have not been found (and proportion of sites surveyed)
A	5 (0.06)	24 (0.10)
B	46 (0.54)	110 (0.45)
C	18 (0.21)	64 (0.26)
D	15 (0.18)	33 (0.14)
E	1(0.01)	13 (0.05)
F	-	-

Figure 4 Distribution of crayfish in rivers related to biological water quality class



Distribution in relation to physical habitat

4.1.14 Figures 5a-i show a comparison of features of the physical habitat of sites where crayfish were found with sites where they were absent. Data from all sites surveyed during 1996 were used, i.e. both lakes and rivers. It should be noted that sites were selected for survey because they appeared to be suitable for crayfish, for example included vegetated lake edges or shelter in the form of boulders or overhanging banks, and excessively silty areas were not surveyed. As a result it is perhaps unsurprising that the analysis has not revealed any significant differences between positive and negative sites. Few definite trends can be identified from the habitat data collected. Figure 5i shows that crayfish were absent where silt was recorded as dominant or abundant. It is clear that crayfish are not recorded in all areas that appear suitable.

4.1.15 Crayfish distribution in the River Blackwater was affected by the Capital Drainage Scheme of the 1980s when large sections of the river were lowered to improve drainage of the surrounding land (IRTU biological water quality monitoring programme data). One of the impacts of the programme of straightening was that scour levels were increased and there is constant erosion of bed material. Since then there has been only a limited recovery of the river substrate, and long stretches are still affected by scour. Despite the lack of stony substrates other than artificial fishery-enhancement weirs in places, recolonisation is taking place and further downstream migration is probably more significantly affected by water quality.

4.1.16 Data from the Northern Ireland River Habitat Survey will be used to analyse the physical habitat requirements and preferences of crayfish further. Data are being forwarded to the Environment Agency for inclusion on the national crayfish database and analysis with the River Habitat Survey database. Preliminary results of the analysis using British data suggest that the occurrence of crayfish in rivers is strongly correlated with overhanging boughs, boulders, riffles and tree shading whilst features associated with erosion and channel modifications are correlated with the absence of crayfish (Marc Naura, *pers. com*). It is hoped that this research may help to predict the occurrence of crayfish in the future and will be of use in determining areas where introduction or re-introduction is possible.

Figure 5a Crayfish distribution related to the abundance of macrophytes

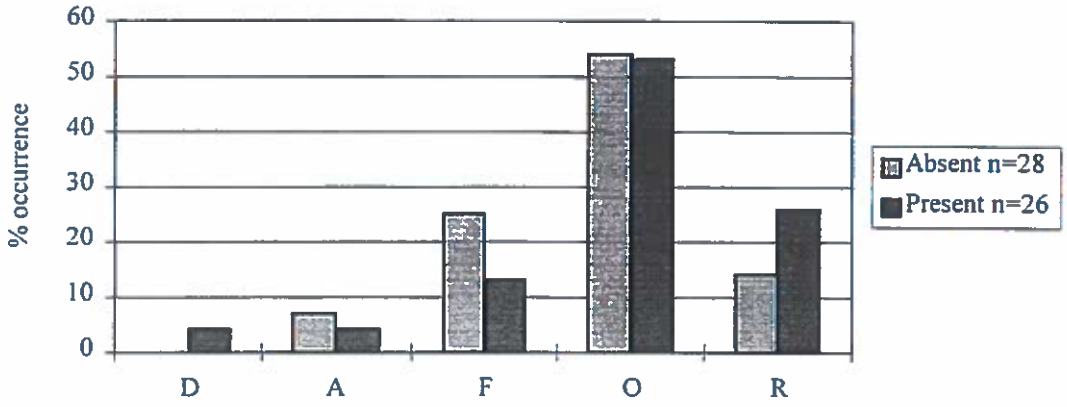


Figure 5b Distribution of crayfish related to the abundance of bank cover

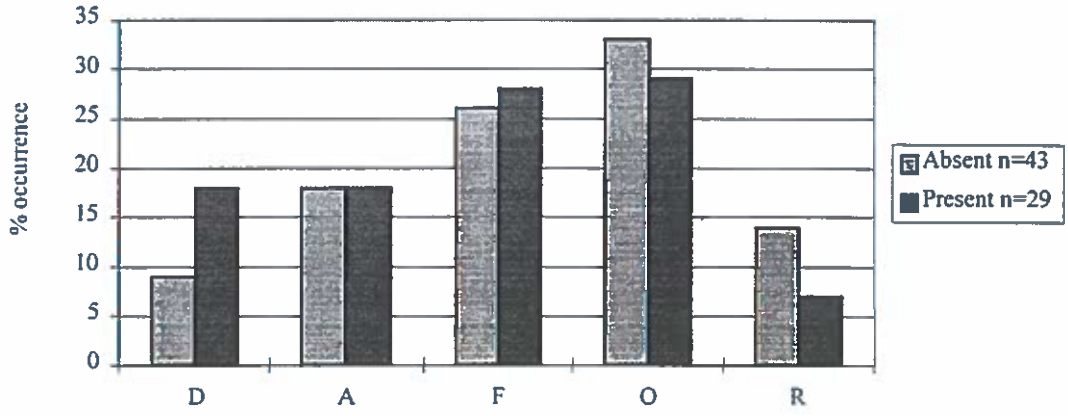


Figure 5c Distribution of crayfish related to the abundance of bedrock

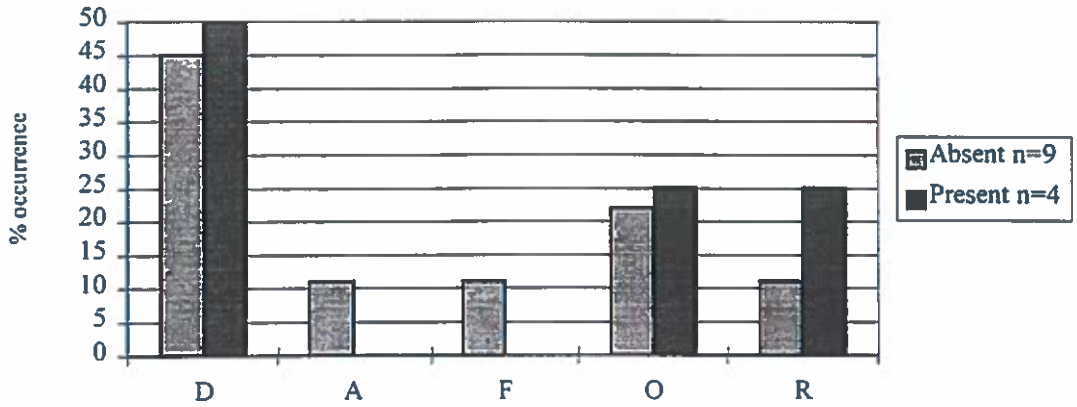


Figure 5d Distribution of crayfish related to the abundance of boulders

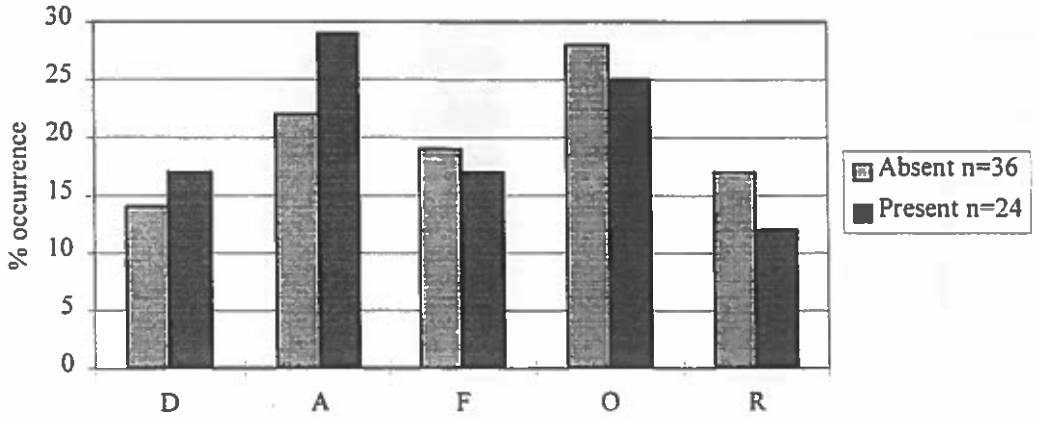


Figure 5e Distribution of crayfish related to the abundance of cobbles

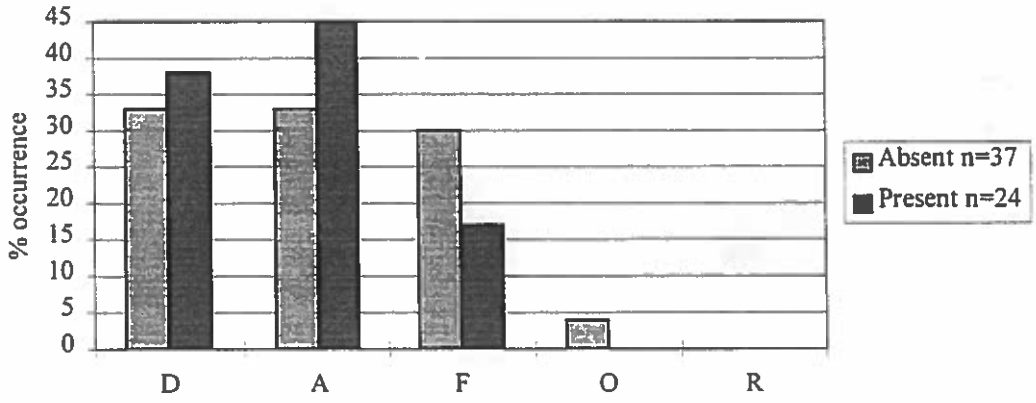


Figure 5f Distribution of crayfish related to the abundance of pebbles

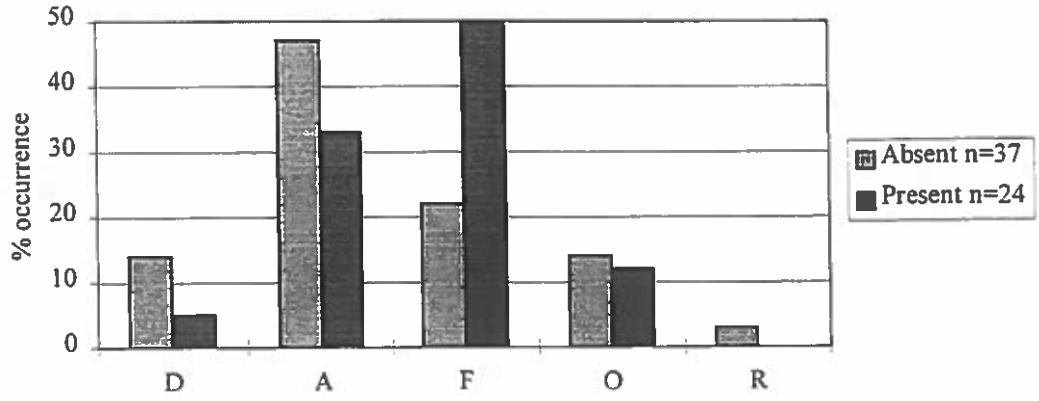


Figure 5g Distribution of crayfish related to the abundance of gravel

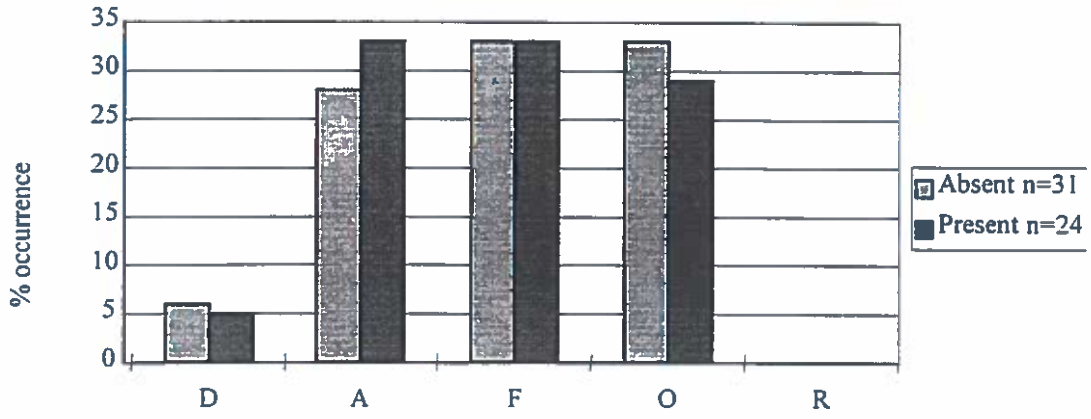


Figure 5h Distribution of crayfish related to the abundance of sand

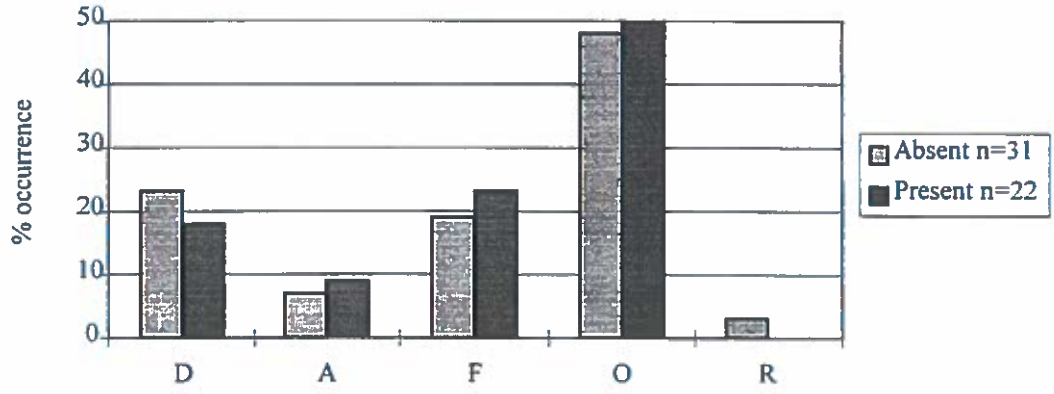
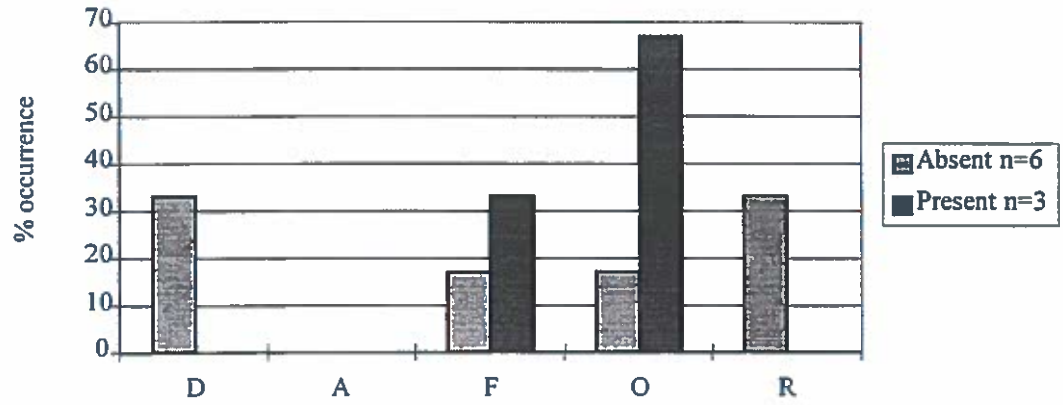


Figure 5i Distribution of crayfish related to the abundance of silt



4.2 Abundance and health of the populations

4.2.1 Apart from the two diseased animals taken from the Blackwater, all crayfish captured were healthy, and many from both rivers and lakes were recorded as being fertile. Sizes ranged from <1g and <1cm long, to 57g and over 5cm long, with the majority in the range 30-45g and 30-45mm length. Larger crayfish have been recorded elsewhere, although they are rarely found in excess of 10cm long. *A. pallipes* recorded from Blessington Lake in County Wicklow fell into the size range of those found in the present survey (Matthews and Reynolds 1995). Of the 168 individuals for which there are records, there were equal numbers of male and female crayfish. No introduced species were found, and there are no records of alien species in Ireland.

4.2.2 In terms of population abundance, crayfish were found throughout the Erne and in parts of the Blackwater catchment. The species appeared to be particularly abundant in the areas of the Sillees River, the Colebrooke and other rivers draining into the upper east side of Upper Lough Erne, especially around Clones, and the Upper Blackwater and Fury Rivers. Highest recorded numbers were from Kilroosky Lough (26) the Sillees River at Stratore Bridge (19) and Derrygonnelly school (13). The data collected do not enable a quantitative evaluation of relative abundance of crayfish population within the catchments surveyed.

4.2.3 A few animals captured during the survey were noted to have claws missing or growing back. This is not unusual and claws may be lost for a number of reasons including mechanical damage, attack by predators or territorial disputes with other crayfish. Claws regrow with successive moults although if lost from mature animals (3-4 years old) they may never reach the size of the original as moulting probably takes place only once yearly. A range of carapace colours was noted from pale, probably recently moulted, to dark brown and including distinctively green and red-clawed individuals, again this is normal.

4.2.4 Fewer crayfish were captured during the 1997 survey than in the previous year and it is possible that this is a result of two different surveyors carrying out the survey. However the 1997 surveyor, Andy Rodger, re-surveyed Kilroosky Lough and captured several crayfish there, indicating use of an appropriate technique. The 1996 survey concentrated on the areas considered most favourable for crayfish (the Erne and Blackwater catchments), and consequently the 1997 survey was largely conducted outside this area. It is likely that fewer crayfish are present in the areas surveyed in 1997 either because geology and habitat are deficient or because water quality is less good.

4.3 Problems with the survey

4.3.1 The use of creels has been found to result in very variable numbers of crayfish captured from habitats where the animals are known to be present. For this reason several creels were usually deployed in each lake, but the possibility of crayfish being present at sites where none were caught cannot be ruled out. Many of the lakes surveyed were large and crayfish populations may have been present only in limited areas. The locations of deployed creels are shown as sketch maps in Appendix 4.

4.3.2 The main problem found at lake sites was that access was difficult because of isolation or fencing and frequently access to open water was impaired because of a thick fringe of vegetation. In 1996 a large proportion of survey time was spent searching for accessible lakes to survey and for points where creels could be sited, which reduced the number of

sites where survey was achieved. The easiest access was found at lakes used for fishing which may not constitute a representative sample because of potential differences in management. The 1997 survey had greater success in deploying creels in lakes, although two loughs (Loughs Napeasta and Eschleagh) were still found to be inaccessible. Recommendations for future monitoring methods are made in Section 6.

5 CONCLUSIONS

5.1 *A pallipes* is widely distributed in the Erne and upper Blackwater catchments. It was found that usually, where crayfish were present in the rivers, they were also likely to be present in adjacent loughs where suitable conditions existed. Strongholds for *A. pallipes* are the Sillees river area, the Colebrooke and other rivers draining into the eastern side of Upper Lough Erne, especially around Clones, and the upper Blackwater and Fury Rivers. Their absence from the Swanlinbar, Arney and Woodford area around the western side of Upper Lough Erne cannot be explained using the available data given suitable water quality and underlying geology. Similarly, their apparent absence from geologically suitable parts of the Foyle catchment is not readily explained.

5.2 Crayfish are found in rivers with good or moderate water quality and whilst a small degree of enrichment may aid the species as it leads to more abundant food being available (improved plant growth), poor water conditions have probably led to their disappearance from the IRTU monitoring site on the Newtownbutler River. That there are no records for much of the River Blackwater catchment can also be partly attributed to poor water quality in addition to the impact of the major drainage scheme on the physical habitat (discussed in section 4.1). *A. pallipes* is therefore vulnerable both to any future decline in water quality and to aggressive/insensitive habitat management.

5.4 *A. pallipes* is an adaptable species, with the ability to recolonise areas where it may have been wiped out by management practices or pollution, for instance in large parts of the Blackwater catchment which have been recolonised following the arterial drainage scheme in the 1980s. Crayfish are currently recorded at Caledon, and they may extend further in the future. It is likely that if eradicated locally, by a pollution incident, for example, crayfish will be able to recolonise from adjacent lakes and tributary streams although this may take a long time.

5.5 The observed patchy distribution of crayfish in apparently suitable areas in the south west of Northern Ireland suggests that the species may be slow to recolonise areas where past perturbations have led to local extinctions. There are therefore opportunities for active management to further the conservation of this species by introduction or reintroduction into appropriate lakes or rivers.

6 RECOMMENDATIONS FOR MONITORING

6.1 The data collected from this survey has been passed to CEDaR and will form part of the central database on freshwater crayfish held for Northern Ireland. This will enable the results of future surveys to be compared with the 1996/7 data.

6.2 It is probable that in the continuing absence of plague and with water quality maintained (as a minimum) at current levels, crayfish populations will remain healthy in parts of the Lough Erne catchment and upper River Blackwater. The greatest risk to continuing survival in large parts of the range is the real deterioration in water quality which has been observed over most of this area. The vulnerability of crayfish to pollution is demonstrated, for example, in the Newtownbutler River where there have been none recorded since 1993. The first priority should therefore be to monitor closely the water quality of rivers and to establish additional monitoring sites further upstream than are currently found in many of the rivers. This is particularly important in the Sillees and Colebrooke, upper Blackwater and Fury Rivers which have been identified as having particularly good populations of crayfish. Recommended water quality sampling locations are shown in Table 4.

6.3 The existing monitoring programmes for salmonid spawning and biological water quality routinely record crayfish, although the results are not held centrally. These surveys (especially the latter) provide annual data on populations at specific points, giving good time-series information on presence and abundance. Staff carrying out such surveys should be trained to recognise the alien species and the diseases which may be introduced. Data from the surveys should be compiled so that trends can be discerned. These survey programmes can then form the basis of crayfish monitoring in rivers so that EHS can concentrate on monitoring crayfish populations in lakes.

6.4 The extent of the monitoring programme will clearly depend on the resources available, but it is recommended that re-surveys should take place in lakes at least every five years in addition to the annual three-season water quality monitoring in rivers. Sites for re-survey should include a sample of the Clones lakes, (e.g. Kilroosky and Summerhill Loughs), as these have large crayfish populations and are a high priority for maintenance. As relatively few lakes from the current survey were found to have crayfish populations, these could all be considered for future monitoring. A further search of the Ballinderry and south Foyle catchments is recommended as the presence of even small and isolated populations there would enhance the conservation status of the crayfish in Northern Ireland as a whole and provide further opportunities for population management and introductions.

6.5 The advantages and disadvantages of four potential survey methods are discussed in Table 5 and include the two methods used in this survey.

Table 4 Existing and recommended chemical water quality monitoring locations

River	Existing monitoring sites	Proposed additional monitoring sites
Blackwater	H882611 H873586 H852559 H819520 H759446 H712474 H625530	Further upstream at H560543 H502518
Fury	H552517	H565493
Ballygawley	H630538	H633574
Ballinamallard	H228507 H281537	H307578
Colebrooke	H331360 H378441 H445434	H494423
Cleen	H428453	H473481
Dooraa	H182645 H205663	H216685
Lackey	H485237 H482272	H506305
Hollybrook	H363311	H378341
Lough-a-Hache	H374307	H430309
Manyburns	H384474	H404514
Sillees	H230413 H181448 H130471 H120497 H118521	H074547
Screenagh	H108492	H093515
Boho	H134445	H108431
Termon	H111659	H130695 H156719
Glendurragh/Kesh	H180639 H222652 H244664	H275672

Table 5 Crayfish survey methods

Method	Habitat	Advantages	Disadvantages	Manpower/safety requirements
Creels	Lakes/deeper parts of rivers	Can be left for several days before retrieval. Use of bait will attract crayfish from several metres away.	Variable trapping efficiency (therefore difficult to quantify data). Creels are cumbersome. Needs a supply of fresh bait. Needs knowledge of crayfish ecology to set traps in most appropriate habitat.	Boat recommended for lake work with two personnel. Each site needs to be visited twice for deployment and retrieval
Electrofishing	Rivers	Relatively quick and easy. Does not require specialist knowledge and can be used as a quantitative method. A good method to establish upstream limits of distribution	Can damage crayfish (limbs lost). Will be less efficient where there is dense vegetation.	Two people (minimum) required for surveys in shallow water. In deeper water a boom-boat would be required.
Kick sampling/ searching	Shallow rivers/lake edges	Quick and easy for surveyors with knowledge about crayfish habitat	Needs knowledge of crayfish habitat. Is semi-quantitative at best.	Possible with a single surveyor (although two are recommended for safe river work). Minimal equipment required.
Diving	Deeper/larger lakes	Suitable for deep lakes or areas of large lakes. Allows habitat features to be recorded	Not quantitative and will be less efficient where there is dense vegetation	Needs qualified divers/support staff and equipment.

7 RECOMMENDATIONS FOR CONSERVATION MEASURES

7.1 The current ban on the import of non-native species should be maintained (Article 15 of the Wildlife (Northern Ireland) Order). It should be noted that red swamp crayfish (*Procambarus clarkii*) are widely available in mainland UK through the aquarist trade. Known as the 'red lobster' this species is as capable of carrying crayfish plague as other North American species. Close monitoring of the frequently mixed batches of fish and invertebrates imported for retail sale may therefore be warranted.

7.2 Co-operation with the Republic of Ireland is required to ensure that the populations concentrated in the border area are protected, and that knowledge of any further incidence of disease and reports of non-native species becoming established are shared.

7.3 Future water quality objectives in the best crayfish rivers should take account of the sensitivity of crayfish to siltation and enrichment. It is suggested that chemical water quality of class C should be the minimum objective in these rivers, and where better water quality exists now, there should be a presumption against permitting any deterioration. Improving water quality is clearly a complex undertaking, requiring the co-operation of several parties and probably needs to be approached from the overview perspective of a Water Quality Management Strategy (WQMS).

7.4 Co-operation between DANI Countryside Management Division, and Rivers Agency, and EHS is needed to promote (within WQMS) the need to maintain clean, silt-free conditions for crayfish. It is recommended that a group is established with representatives from these departments (and the RoI) to ensure that future survey/monitoring data are collated effectively and that land/river management proposals which may affect crayfish survival are discussed fully. It is an objective of the Biodiversity Action Plan that the present distribution of the species is maintained, and this can only be achieved through maintenance of appropriate water quality (and habitat) conditions.

7.5 Lakes are already part of the ASSI network, including some key crayfish sites such as Kilroosky Lough, and some river sites will eventually be designated. Protection of relatively isolated lakes such as Lough Rushen, Lough Corry and Lough Lea (as recommended in the Biodiversity Action Plan) would help to safeguard *A. pallipes* populations if crayfish plague does become established in Ireland. Priority should be given to sites where there is no fishing. The decision concerning which lake sites to protect clearly needs to take account of site defensibility and conservation value other than for crayfish - with existing water quality, surrounding land use and biota given due regard. The lakes around Clones appear to hold the greatest numbers of crayfish, and some of these have obvious potential for statutory protection. Within this area, Kilroosky Lough has been listed as a candidate for SAC designation, and parts of the Sillees River, which also held large numbers of crayfish could also be considered for this designation. Parts of the Colebrooke River may also be suitable for designation if water quality can be maintained or improved.

7.6 Publicity for crayfish conservation should be considered, in line with the Biodiversity Action Plan, particularly relating to the need for fishing and diving equipment to be disinfected/dried before coming into the Erne/Blackwater catchments from elsewhere. This would require co-operation with fishing clubs and the Fish Conservancy Board for effective

dissemination of information which could be achieved through leaflets to be distributed to appropriate bodies.

7.7 Introduction/reintroduction of crayfish into areas where they are currently absent should be considered. As there are areas with apparently suitable geology, water quality and habitat present within the Lough Erne catchment, there a good chance for introductions to be successful. Possible sites for introduction include stretches of the Swanlinbar River.

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APPENDIX 1

CRAYFISH SURVEY RECORDING FORM

NORTHERN IRELAND CRAYFISH SURVEY

Site Number:

River/Lough: NGR:

Date Deployed: Time Deployed:

Date Retrieved: Time Retrieved:

RIVER	**LOUGH**
Width (m):	Area (m^2):
Depth (m):	
Flow Type:	
Instream Cover (%):	Vegetation Cover (%):
Bank Cover (%):	Bank Cover (%)

SUBSTRATE (%):

Bedrock:	Boulders:	Cobbles:	Pebbles:
Gravel:	Sand:	Silt/Clay:	Peat:

Land Use:

Site Drawing

Sex	Length (mm)	Width (mm)	Weight (g)	Native	Other Comments

APPENDIX 2

CRAYFISH SURVEY DATA

A. Lakes
B. Rivers

Key

NV	Not visible
D	Dominant
A	Abundant
F	Frequent
O	Occasional
R	Rare
c	Creel
k	Kick/search
P	Present
H	High water level
M	Medium water level
L	Low water level

Water hardness is expressed as mgl^{-1}

Appendix 2 Survey records A. Loughs

Lough	NGR	Date surveyed	Land use	Veg. cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	Lake type	no. crayfish	Method
Abacon	H334255	10.8.97	improv.past.	R	O			R				D			12	0	c
Abacon	H334255	10.8.97	improv.past.	R	O			R				D			12	0	c
Abacon	H334255	10.8.97	improv.past.	R	O			R				D			12	0	c
Abacon	H334255	10.8.97	improv.past.	R	O			R				D			12	0	c
Achork	H042555	1.7.97	forestry	R	D			F	F	O		D			9	0	c
Achork	H042555	1.7.97	forestry	R	D			F	F	O		D			9	0	c
Achork	H042555	1.7.97	forestry	R	D			F	F	O		D			9	0	c
Achork	H042555	1.7.97	forestry	R	D			F	F	O		D			9	0	c
Achork	H041556	20.08.96	forestry	0		R	A	D	F	O				36.07	9	0	c
Achork	H041556	20.08.96	forestry			R	D	A	F	O				36.07	9	0	c
Aghintain	H462517	17.6.97	woodland + grasspark	R	D				R			D				0	c
Aghintain	H462517	17.6.97	woodland + grasspark	R	D				R			D				0	c
Aghintain	H462517	17.6.97	woodland + grasspark	R	D				R			D				0	c
Aghintain	H462517	17.6.97	woodland + grasspark	R	D				R			D				0	c
Aghlisk	H363621	27.6.97	improved pasture	O	D								D		14	0	c
Aghlisk	H363621	27.6.97	improved pasture	O	D								D		14	0	c
Aghlisk	H363621	27.6.97	improved pasture	O	D								D		14	0	c
Aghlisk	H363621	27.6.97	improved pasture	O	D								D		14	0	c
Aghnahinch	H422239	13.6.97	woodland+impro.past.	O	D			R				D			15	0	c
Aghnahinch	H422239	13.6.97	woodland+impro.past.	O	D			R				D			15	0	c
Aghnahinch	H422239	13.6.97	woodland+impro.past.	O	D			R				D			15	0	c
Aghnahinch	H422239	13.6.97	woodland+impro.past.	O	D			R				D			15	0	c
Aleen	H138544	28.08.96	imp. grass/pasture	D	A	NV	NV	NV	NV	NV	NV	NV	NV		16	0	c
Aleen	H138544	28.08.96	imp. grass/pasture	D	A	NV	NV	NV	NV	NV	NV	NV	NV		16	0	c
Aleen	H138544	28.08.96	imp. grass/pasture	A	A	NV	NV	NV	NV	NV	NV	NV	NV		16	0	c
Aleen	H138544	28.08.96	imp. grass/pasture	D	A	NV	NV	NV	NV	NV	NV	NV	NV		16	0	c
Aleen	H138544	28.08.96	imp. grass/pasture												16	0	c
Anlaban	H053563	20.08.96	forestry	D	D	NV	NV	NV	NV	NV	NV	NV	NV		1	0	c
Anlaban	H053563	20.08.96	forestry	D	O	NV	NV	NV	NV	NV	NV	NV	NV		1	0	c
Annashanko	H549319	16.09.96	imp. grassland												10	0	c
Annashanko	H549319	16.09.96	imp. grassland												10	0	c
Annashanko	H549319	16.09.96	imp. grassland												10	0	c
Annashanko	H549319	16.09.96	imp. grassland												10	0	c
Arda	H284375	7.6.97	unimp.past	R	D (reeds)							D			14	0	c
Arda	H284375	7.6.97	unimp.past	R	D (reeds)							D			14	0	c
Arda	H284375	7.6.97	unimp.past	R	D (reeds)							D			14	0	c
Arda	H284375	7.6.97	unimp.past	R	D (reeds)							D			14	0	c
Auger Castle	H560536	25.09.96	garden	A	F	NV	NV	NV	NV	NV	NV	NV	NV	157.34	12	0	c
Auger Castle	H560536	25.09.96	garden	NV	A	NV	NV	NV	NV	NV	NV	NV	NV		12	0	c
Auger Castle	H560536	25.09.96	garden	D	F	NV	O	F	F	NV	NV	NV	NV		12	0	c
Auger Castle	H560536	25.09.96	garden	D	O	NV	NV	NV	NV	NV	NV	NV	NV		12	0	c
Auger Castle	H560536	25.09.96	garden	D	O	NV	NV	NV	NV	NV	NV	NV	NV		12	0	c
Back	H231451	5.6.97	park + housing	R	R							D			13	0	c
Back	H231451	5.6.97	park + housing	R	R							D			13	0	c
Back	H231451	5.6.97	park + housing	R	R							D			13	0	c
Back	H231451	5.6.97	park + housing	R	R							D			13	0	c
Back	H458307	11.09.96	imp. grassland	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	138.85	16	1	c
Back	H458307	11.09.96	imp. grassland	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	138.85	16	0	c
Back	H458307	11.09.96	imp. grassland	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	138.85	16	1	c
Back	H458307	11.09.96	imp. grassland	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	138.85	16	0	c
Back	H458307	11.09.96	imp.grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	138.85	16	8	c
Back	H458307	11.09.96	imp.grassland	NV	F	NV	NV	NV	NV	NV	NV	NV	NV	138.85	16	0	c
Ballagh	H500500	25.09.96	scrub/road	F	F	NV	O	F	A	D	D	NV	NV	147.36	12	0	c
Ballagh	H500500	25.09.96	scrub/road	A	O	NV	O	O	A	D	A	NV	NV	147.36	12	0	c
Ballagh	H500500	25.09.96	imp.grassland/scrub	O	O	NV	NV	NV	NV	NV	NV	NV	NV	147.36	12	0	c
Ballagh	H500500	25.09.96	imp.grassland/scrub	O	O	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Ballydoolagh	H284480	18.09.96	imp.grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Ballydoolagh	H284480	18.09.96	imp.grassland	NV	R	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Ballydoolagh	H284480	18.09.96	imp.grassland	O	O	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Ballydoolagh	H284480	18.09.96	imp.grassland	F	F	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Ballydoolagh	H284480	18.09.96	imp.grassland	O	F	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c

Lough	NGR	Date surveyed	Land use	Veg. cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	Lake type	no. crayfish	Method
Ballydoolagh	H284480	18.09.96	imp.grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Big Dogs	H024495	21.08.96	forestry	F	F	NV	NV	NV	NV	NV	NV	NV	NV		14	0	c
Big Dogs	H024495	21.08.96	forestry	A	F	NV	NV	NV	NV	NV	NV	NV	NV		14	0	c
Bracken	H705754	24.6.97	improved pasture	R	A				F	F		D				0	c
Bracken	H705754	24.6.97	improved pasture	R	A				F	F		D				0	c
Bracken	H705754	24.6.97	improved pasture	R	A				F	F		D				0	c
Bracken	H705754	24.6.97	improved pasture	R	A				F	F		D				0	c
Bradan	H259713	29.6.97	forestry	0	R				R	O			D		2	0	c
Bradan	H259713	29.6.97	forestry	0	R				R	O			D		2	0	c
Bradan	H259713	29.6.97	forestry	0	R				R	O			D		2	0	c
Bradan	H259713	29.6.97	forestry	0	R				R	O			D		2	0	c
Brantry	H748538	18.6.97	woodland + improved pasture	D algae	D				O			D			15	0	c
Brantry	H748538	18.6.97	woodland + improved pasture	D algae	D				O			D			15	0	c
Brantry	H748538	18.6.97	woodland + improved pasture	D algae	D				O			D			15	0	c
Brantry	H748538	18.6.97	woodland + improved pasture	D algae	D				O			D			15	0	c
Burdautien	H405282	14.08.96	grazing & woodland	A	D	NV	NV	NV	NV	NV	NV	NV	NV		16	4	c
Burdautien	H405282	14.08.96	imp. grassland/woodland	D	A	NV	NV	NV	NV	NV	NV	NV	NV		16	0	c
Cack	H170728	30.6.97	unimproved pasture	R	D								D			0	c
Cack	H170728	30.6.97	unimproved pasture	R	D								D			0	c
Cack	H170728	30.6.97	unimproved pasture	R	D								D			0	c
Cack	H170728	30.6.97	unimproved pasture	R	D								D			0	c
Cam	H667767	24.6.97	unimproved pasture + quarry	O	R								D			0	c
Cam	H667767	24.6.97	unimproved pasture + quarry	O	R								D			0	c
Cam	H667767	24.6.97	unimproved pasture + quarry	O	R								D			0	c
Cam	H667767	24.6.97	unimproved pasture + quarry	O	R								D			0	c
Cargin	H360273	10.8.97	unimpro.past.	R	D				R				D		13	0	c
Cargin	H360273	10.8.97	unimpro.past.	R	D				R				D		13	0	c
Cargin	H360273	10.8.97	unimpro.past.	R	D				R				D		13	0	c
Cargin	H360273	10.8.97	unimpro.past.	R	D				R				D		13	0	c
Carnmore	H472358	11.6.97	foresty+unimp.past	D	D (reeds)							D			1	0	c
Carnmore	H472358	11.6.97	foresty+unimp.past	D	D (reeds)							D			1	0	c
Carnmore	H472358	11.6.97	foresty+unimp.past	D	D (reeds)							D			1	0	c
Carnmore	H472358	11.6.97	foresty+unimp.past	D	D (reeds)							D			1	0	c
Carnteel	H699548	17.6.97	improved pasture	R	D			R				D			6	0	c
Carnteel	H699548	17.6.97	improved pasture	R	D			R				D			6	0	c
Carnteel	H699548	17.6.97	improved pasture	R	D			R				D			6	0	c
Carnteel	H699548	17.6.97	improved pasture	R	D			R				D			6	0	c
Carra	H231452	5.6.97	unimp.past.	R	D (reeds)							D				0	c
Carra	H231452	5.6.97	unimp.past.	R	D (reeds)							D				0	c
Carra	H231452	5.6.97	unimp.past.	R	D (reeds)							D				0	c
Carra	H231452	5.6.97	unimp.past.	R	D (reeds)							D				0	c
Carran outflow	H141472	03.09.96	imp. grassland	F	O	NV	NV	NV	NV	NV	NV	NV	NV		12	0	c
Carran outflow	H141472	03.09.96	imp. grassland	O	O	NV	NV	NV	NV	NV	NV	NV	NV		12	0	c
Carrick	H090541	02.09.96	imp. grassland												8	0	c
Carrick	H090541	02.09.96	scrub/imp grassland	NV		NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Carrick	H090541	02.09.96	imp grassland	NV	D	NV	NV	NV	NV	NV	NV	NV	NV		8	6	c
Carrick	H090541	02.09.96	scrub/pasture	NV	D	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Carrickavoy	H582493	26.6.97	unimproved pasture	A	D					R		D			9	0	c
Carrickavoy	H582493	26.6.97	unimproved pasture	A	D					R		D			9	0	c
Carrickavoy	H582493	26.6.97	unimproved pasture	A	D					R		D			9	0	c
Carrickavoy	H582493	26.6.97	unimproved pasture	A	D					R		D			9	0	c
Carricknagower	H002543	20.08.96	forestry	D	A	NV	NV	NV	NV	NV	NV	NV	NV		4	0	c
Carricknagower	H002543	20.08.96	forestry	A	A	NV	NV	NV	NV	NV	NV	NV	NV		4	0	c
Castlehume	H195507	29.08.96	imp. grass/pasture	O	R		A	D	O						12	0	c
Castlehume	H195507	29.08.96	imp. grass/pasture	R	R		D	A	O			O			12	0	c
Castlehume	H195507	29.08.96	imp. grass/pasture	O	R		O	D	R			O			12	0	c
Castlehume	H195507	29.08.96	imp. grass/pasture	R	R		A	D	O			O			12	0	c
Clay	H835324	23.6.97	improved pasture	R	D					O		D			3	0	c
Clay	H835324	23.6.97	improved pasture	R	D					O		D			3	0	c
Clay	H835324	23.6.97	improved pasture	R	D					O		D			3	0	c
Clay	H835324	23.6.97	improved pasture	R	D					O		D			3	0	c

Appendix 2 Survey records A. Loughs

Lough	NGR	Date surveyed	Land use	Veg. cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	Lake type	no. crayfish	Method
Coolnamarrow	H450313	11.09.96	imp. grassland	NV	F	NV	NV	NV	NV	NV	NV	NV	NV		11	0	c
Coolnamarrow	H450313	11.09.96	imp. grassland	NV	F	NV	NV	NV	NV	NV	NV	NV	NV		11	0	c
Coolnamarrow	H450313	11.09.96	imp. grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV		11	0	c
Coolnamarrow	H450313	11.09.96	imp. grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV		11	0	c
Coolnamarrow	H450313	11.09.96	imp. grassland	NV	F	NV	NV	NV	NV	NV	NV	NV	NV		11	0	c
Coolnamarrow	H450313	11.09.96	imp. grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV		11	0	c
Coolyermer	H180425	01.10.96	imp.grassland/forestry	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	92.88	8	0	c
Coolyermer	H180425	01.10.96	imp.grassland/forestry	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	92.88	8	0	c
Coolyermer	H180425	01.10.96	imp.grassland/forestry	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	92.88	8	0	c
Coolyermer	H180425	01.10.96	imp.grassland/forestry	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	92.88	8	0	c
Coolyermer	H180425	01.10.96	imp.grassland/forestry	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	92.88	8	0	c
Coolyermer	H180425	01.10.96	imp.grassland/forestry	NV	R	NV	NV	NV	NV	NV	NV	NV	NV	92.88	8	0	c
Coranny	H478332	12.09.96	imp. grassland	NV	R	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Coranny	H478332	12.09.96	imp. grassland/scrub	NV	O	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Coranny	H478332	12.09.96	imp. grassland/road	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV		8	1	c
Coranny	H478332	12.09.96	imp. grassland	NV	F	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Coranny	H478332	12.09.96	scrub/road	NV	O	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Coranny	H478332	12.09.96	imp. grassland	A	R	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Cornague	H474303	11.6.97	improv.past.	R	D							D			16	0	c
Cornague	H474303	11.6.97	improv.past.	R	D							D			16	0	c
Cornague	H474303	11.6.97	improv.past.	R	D							D			16	0	c
Cornague	H474303	11.6.97	improv.past.	R	D							D			16	0	c
Corr	H290769	29.6.97	unimproved pasture	F	O				R	F		D			4	0	c
Corr	H290769	29.6.97	unimproved pasture	F	O				R	F		D			4	0	c
Corr	H290769	29.6.97	unimproved pasture	F	O				R	F		D			4	0	c
Corr	H290769	29.6.97	unimproved pasture	F	O				R	F		D			4	0	c
Corracoash	H247340	6.6.97	unimp.past	O	D (reeds)						F	D			13	0	c
Corracoash	H247340	6.6.97	unimp.past	O	D (reeds)						F	D			13	0	c
Corracoash	H247340	6.6.97	unimp.past	O	D (reeds)						F	D			13	0	c
Corracoash	H247340	6.6.97	unimp.past	O	D (reeds)						F	D			13	0	c
Corragh	H367297	10.6.97	improv.past.	D	D (reeds)							D			10	0	c
Corragh	H367297	10.6.97	improv.past.	D	D (reeds)							D			10	0	c
Corragh	H367297	10.6.97	improv.past.	D	D (reeds)							D			10	0	c
Corragh	H367297	10.6.97	improv.past.	D	D (reeds)							D			10	0	c
Corry	H403364	12.09.96	forestry	NV	R	NV	NV	NV	NV	NV	NV	NV	NV	25.48	4	0	c
Corry	H403364	12.09.96	forestry	F	O		R	O	O	F	D			25.48	4	0	c
Corry	H403364	12.09.96	forestry	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	25.48	4	1	c
Corry	H403364	12.09.96	forestry	NV	F	NV	NV	NV	NV	NV	NV	NV	NV	25.48	4	1	c
Corry	H464364	12.09.96	forestry	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	25.48	4	0	c
Corry	H403364	12.09.96	forestry	NV	F	NV	NV	NV	NV	NV	NV	NV	NV	25.48	4	0	c
Corry	H403364	12.09.96	forestry	NV	F	NV	NV	NV	NV	NV	NV	NV	NV	25.48	4	0	c
Creave	H738512	18.6.97	woodland + improved pasture	D algae	D				O			D			7	0	c
Creave	H738512	18.6.97	woodland + improved pasture	D algae	D				O			D			7	0	c
Creave	H738512	18.6.97	woodland + improved pasture	D algae	D				O			D			7	0	c
Creave	H738512	18.6.97	woodland + improved pasture	D algae	D				O			D			7	0	c
Crockacleaven	H484443	14.6.97	forestry	R	F				R		O		D		6	0	c
Crockacleaven	H484443	14.6.97	forestry	R	F				R		O		D		6	0	c
Crockacleaven	H484443	14.6.97	forestry	R	F				R		O		D		6	0	c
Crockacleaven	H484443	14.6.97	forestry	R	F				R		O		D		6	0	c
Cromaghy	H513308	13.6.97	impr.past	D	D							D			16	0	c
Cromaghy	H513308	13.6.97	impr.past	D	D							D			16	0	c
Cromaghy	H513308	13.6.97	impr.past	D	D							D			16	0	c
Cromaghy	H513308	13.6.97	impr.past	D	D							D			16	0	c
Cullentra	H476475	14.6.97	impr.past.	F	D				R			D			15	0	c
Cullentra	H476475	14.6.97	impr.past.	F	D				R			D			15	0	c
Cullentra	H476475	14.6.97	impr.past.	F	D				R			D			15	0	c
Cullentra	H476475	14.6.97	impr.past.	F	D				R			D			15	0	c
Derg	H091760	30.6.97	forestry	R	D		F	D				D				0	c
Derg	H091760	30.6.97	forestry	R	D		F	D				D				0	c
Derg	H091760	30.6.97	forestry	R	D		F	D				D				0	c
Derg	H091760	30.6.97	forestry	R	D		F	D				D				0	c
Derryallen	H241332	6.6.97	unimp.past	A	D						F	D			10	0	c

Lough	NGR	Date surveyed	Land use	Veg. cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	Lake type	no. crayfish	Method
Derryallen	H241332	6.6.97	unimp.past	A	D						F	D			10	0	c
Derryallen	H241332	6.6.97	unimp.past	A	D						F	D			10	0	c
Derryallen	H241332	6.6.97	unimp.past	A	D						F	D			10	0	c
Derrycanon	H323252	10.6.97	unimpro.past.	D	D							D			11	0	c
Derrycanon	H323252	10.6.97	unimpro.past.	D	D							D			11	0	c
Derrycanon	H323252	10.6.97	unimpro.past.	D	D							D			11	0	c
Derrycanon	H323252	10.6.97	unimpro.past.	D	D							D			11	0	c
Derrychree	H330265	11.6.97	unimpro.past.	R	D			F				D			10	0	c
Derrychree	H330265	11.6.97	unimpro.past.	R	D			F				D			10	0	c
Derrychree	H330265	11.6.97	unimpro.past.	R	D			F				D			10	0	c
Derrychree	H330265	11.6.97	unimpro.past.	R	D			F				D			10	0	c
Derrycloony	H585508	26.6.97	unimproved pasture	F	D							D			9	0	c
Derrycloony	H585508	26.6.97	unimproved pasture	F	D							D			9	0	c
Derrycloony	H585508	26.6.97	unimproved pasture	F	D							D			9	0	c
Derrycloony	H585508	26.6.97	unimproved pasture	F	D							D			9	0	c
Derryhowlaght	H300365	6.6.97	unimp. past.	D	A							D			11	0	c
Derryhowlaght	H300365	6.6.97	unimp. past.	D	A							D			11	0	c
Derryhowlaght	H300365	6.6.97	unimp. past.	D	A							D			11	0	c
Derryhowlaght	H300365	6.6.97	unimp. past.	D	A							D			11	0	c
Derrynacarbit	H004507	21.08.96	forestry	R	R		D	A	F	O					3	0	c
Derrynacarbit	H004507	21.08.96	forestry	NV	A		D	A	F	O					3	0	c
Doo	H037506	26.08.96	forestry	R	O		D	A	F					19.52	3	0	c
Doo	H037506	26.08.96	forestry	R	O		D	A	F					19.52	3	0	c
Doo	H037506	26.08.96	forestry	R	R		D	A	F					19.52	3	0	c
Dooletter	H097430	5.6.97	unimp.past.	R	D							F	D		9	0	c
Dooletter	H097430	5.6.97	unimp.past.	R	D							F	D		9	0	c
Dooletter	H097430	5.6.97	unimp.past.	R	D							F	D		9	0	c
Dooletter	H097430	5.6.97	unimp.past.	R	D							F	D		9	0	c
Drum Manor	H762777	24.3.97	forestry + public gardens	D	D							D				0	c
Drum Manor	H762777	24.3.97	forestry + public gardens	D	D							D				0	c
Drum Manor	H762777	24.3.97	forestry + public gardens	D	D							D				0	c
Drum Manor	H762777	24.3.97	forestry + public gardens	D	D							D				0	c
Drumacrittin	H549319	16.09.96	imp. grassland												16	0	c
Drumacrittin	H549319	16.09.96	imp. grassland												16	0	c
Drumacrittin	H549319	16.09.96	imp. grassland												16	0	c
Drumacrittin	H549319	16.09.96	imp. grassland												16	0	c
Drumgay	H245476	5.6.97	unimp. past.	R	R			O	D			D			6	0	c
Drumgay	H245476	5.6.97	unimp. past.	R	R			O	D			D			6	0	c
Drumgay	H245476	5.6.97	unimp. past.	R	R			O	D			D			6	0	c
Drumgay	H245476	5.6.97	unimp. past.	R	R			O	D			D			6	0	c
Drumquin	H326749	29.6.97	unimproved pasture	O	D								D		9	0	c
Drumquin	H326749	29.6.97	unimproved pasture	O	D								D		9	0	c
Drumquin	H326749	29.6.97	unimproved pasture	O	D								D		9	0	c
Drumquin	H326749	29.6.97	unimproved pasture	O	D								D		9	0	c
Drumroosk	H346334	7.9.97	unimpro.past.	D	D							D			12	0	c
Drumroosk	H346334	7.9.97	unimpro.past.	D	D							D			12	0	c
Drumroosk	H346334	7.9.97	unimpro.past.	D	D							D			12	0	c
Drumroosk	H346334	7.9.97	unimpro.past.	D	D							D			12	0	c
Enagh	H757464	18.6.97	woodland + improved pasture	R	D				O			D			11	0	c
Enagh	H757464	18.6.97	woodland + improved pasture	R	D				O			D			11	0	c
Enagh	H757464	18.6.97	woodland + improved pasture	R	D				O			D			11	0	c
Enagh	H757464	18.6.97	woodland + improved pasture	R	D				O			D			11	0	c
Envagh	H341782	29.6.97	bog	D	D								D		9	0	c
Envagh	H341782	29.6.97	bog	D	D								D		9	0	c
Envagh	H341782	29.6.97	bog	D	D								D		9	0	c
Envagh	H341782	29.6.97	bog	D	D								D		9	0	c
Lough Erne	H210525	02.10.96	imp.grassland	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Lough Erne	H210525	03.10.96	imp.grassland	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Lough Erne	H225482	03.10.96	imp.grassland	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Lough Erne	H225482	03.10.96	imp.grassland	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Lough Erne	H225482	03.10.96	imp.grassland	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV			0	c

Appendix 2 Survey records A. Loughs

Lough	NGR	Date surveyed	Land use	Veg. cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	Lake type	no. crayfish	Method
Lough Erne	H225482	03.10.96	imp.grassland	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Eskragh	H772618	18.6.97	improved pasture	R	D							D			8	0	c
Eskragh	H772618	18.6.97	improved pasture	R	D							D			8	0	c
Eskragh	H772618	18.6.97	improved pasture	R	D							D			8	0	c
Eskragh	H772618	18.6.97	improved pasture	R	D							D			8	0	c
Eyes	H324430	19.09.96	woodland/scrub		A	NV	NV	NV	NV	NV	NV	NV	NV	24.08	8	0	c
Eyes	H324430	19.09.96	imp.grassland/woodland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	24.08	8	0	c
Eyes	H324430	19.09.96	woodland/scrub	NV	F	NV	NV	NV	NV	NV	NV	NV	NV	24.08	8	0	c
Eyes	H324430	19.09.96	woodland/scrub	A	A	NV	NV	NV	NV	NV	NV	NV	NV	24.08	8	0	c
Eyes	H324430	19.09.96	woodland/scrub	NV	R	NV	NV	NV	NV	NV	NV	NV	NV	24.08	8	0	c
Eyes	H324430	19.09.96	scrub	D	A	NV	NV	NV	NV	NV	NV	NV	NV	24.08	8	0	c
Eyes	H324430	19.09.96	imp.grassland	NV	R	NV	NV	NV	NV	NV	NV	NV	NV	24.08	8	0	c
Eyes	H324430	19.09.96	imp.grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	24.08	8	0	c
Far	H815664	24.6.97	improved pasture	R	D							D			7	0	c
Far	H815664	24.6.97	improved pasture	R	D							D			7	0	c
Far	H815664	24.6.97	improved pasture	R	D							D			7	0	c
Far	H815664	24.6.97	improved pasture	R	D							D			7	0	c
Fardrum	H181501	30.08.96	imp. grassland	D	O	NV	NV	NV	NV	NV	NV	NV	NV		7	0	c
Fardrum	H181501	30.08.96	imp. grassland	D	O	NV	NV	NV	NV	NV	NV	NV	NV		7	0	c
Fardrum	H181501	30.08.96	imp. grassland	D	O	NV	NV	NV	NV	NV	NV	NV	NV		7	0	c
Fardrum	H181501	30.08.96	imp. grassland	D	O	NV	NV	NV	NV	NV	NV	NV	NV		7	0	c
Fir	H013649	27.08.96	pasture	A	O	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Fir	H013649	27.08.96	pasture	A	R	NV	NV	NV	NV	NV	NV	NV	NV		8	0	c
Fymore	H595519	17.6.97	unimproved pasture	D	A				R			D			13	0	c
Fymore	H595519	17.6.97	unimproved pasture	D	A				R			D			13	0	c
Fymore	H595519	17.6.97	unimproved pasture	D	A				R			D			13	0	c
Fymore	H595519	17.6.97	unimproved pasture	D	A				R			D			13	0	c
Galbally	H338603	27.6.97	improved pasture + bod	F	D								D		15	0	c
Galbally	H338603	27.6.97	improved pasture + bod	F	D								D		15	0	c
Galbally	H338603	27.6.97	improved pasture + bod	F	D								D		15	0	c
Galbally	H338603	27.6.97	improved pasture + bod	F	D								D		15	0	c
Gail	H909515	23.6.97	improved pasture + woodland	R	D								D		10	0	c
Gail	H909515	23.6.97	improved pasture + woodland	R	D								D		10	0	c
Gail	H909515	23.6.97	improved pasture + woodland	R	D								D		10	0	c
Gail	H909515	23.6.97	improved pasture + woodland	R	D								D		10	0	c
Glencreawan	H025565	1.7.97	moorland + forestry	R				O	F	F			50		4	0	c
Glencreawan	H025565	1.7.97	moorland + forestry	R				O	F	F			50		4	0	c
Glencreawan	H025565	1.7.97	moorland + forestry	R				O	F	F			50		4	0	c
Glencreawan	H025565	1.7.97	moorland + forestry	R				O	F	F			50		4	0	c
Glencreawan	H025565	19.08.96	forestry	O	A	NV	NV	NV	NV	NV	NV	NV	NV	36.26	4	0	c
Glencreawan	H025565	19.08.96	forestry	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	36.26	4	0	c
Glencreawan	H025565	19.08.96	forestry	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	36.26	4	0	c
Hamul	H067413	8.6.97	unimp.past.	R	R				O			D	D		1	0	c
Hamul	H067413	8.6.97	unimp.past.	R	R				O			D	D		1	0	c
Hamul	H067413	8.6.97	unimp.past.	R	R				O			D	D		1	0	c
Hamul	H067413	8.6.97	unimp.past.	R	R				O			D	D		1	0	c
Jenkin	H483400	14.6.97	forestry	R	R								D		2	0	c
Jenkin	H483400	14.6.97	forestry	R	R								D		2	0	c
Jenkin	H483400	14.6.97	forestry	R	R								D		2	0	c
Jenkin	H483400	14.6.97	forestry	R	R								D		2	0	c
Keenaghan	G975599	26.08.96	imp. grassland/road	R	F	D			F					91.34	8	0	c
Keenaghan	G975599	26.08.96	imp. grassland/road	R	F	D		O	O					91.34	8	0	c
Keenaghan	G975599	26.08.96	imp. grassland/road	R	O	D	F	O						91.34	8	0	c
Killyfaddy	H526538	17.6.97	improved grazing	D	D							D			10	0	c
Killyfaddy	H526538	17.6.97	improved grazing	D	D							D			10	0	c
Killyfaddy	H526538	17.6.97	improved grazing	D	D							D			10	0	c
Killyfaddy	H526538	17.6.97	improved grazing	D	D							D			10	0	c
Killynubber	H388242	11.6.97	improv.past.	R	D							D			7	0	c
Killynubber	H388242	11.6.97	improv.past.	R	D							D			7	0	c
Killynubber	H388242	11.6.97	improv.past.	R	D							D			7	0	c
Killynubber	H388242	11.6.97	improv.past.	R	D							D			7	0	c

Lough	NGR	Date surveyed	Land use	Veg. cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	Lake type	no. crayfish	Method
Killyvilly	H551355	13.6.97	woodland+impr.past	Q	D							D			10	0	c
Killyvilly	H551355	13.6.97	woodland+impr.past	Q	D							D			10	0	c
Killyvilly	H551355	13.6.97	woodland+impr.past	Q	D							D			10	0	c
Killyvilly	H551355	13.6.97	woodland+impr.past	Q	D							D			10	0	c
Kilmacbrack	H406295	09.09.96	imp. grassland	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	168.89	12	0	c
Kilmacbrack	H406295	09.09.96	imp. grassland	NV	D	NV	NV	NV	NV	NV	NV	NV	NV	168.89	12	0	c
Kilmacbrack	H406295	09.09.96	imp. grassland	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	168.89	12	0	c
Kilmacbrack	H406295	09.09.96	imp. grassland	NV		NV	NV	NV	NV	NV	NV	NV	NV	168.89	12	0	c
Kilroosky	H493274	14.08.96	imp. grassland/wooded	D	A		R	O	O	A	D	O		144.26	15	26	c
Kilroosky	H493274	14.08.96	imp. grassland/wooded	D	A		A	F	F	F	O			144.26	15	7	c
Kilturk	H371259	10.8.97	unimpro.past.	F	D								D		12	0	c
Kilturk	H371259	10.8.97	unimpro.past.	F	D								D		12	0	c
Kilturk	H371259	10.8.97	unimpro.past.	F	D								D		12	0	c
Kilturk	H371259	10.8.97	unimpro.past.	F	D								D		12	0	c
Knockballymore	H481271	13.08.96	imp. grassland	D	A	NV	NV	NV	NV	NV	NV	NV	NV		16	0	c
Knockballymore	H481271	13.08.96	pasture & imp. grassland	D	A	NV	NV	NV	NV	NV	NV	NV	NV		16	0	c
Knockballymore	H481271	13.08.96	pasture & imp. grassland	D	A	NV	NV	NV	NV	NV	NV	NV	NV		16	3	c
Lack	H230735	29.6.97	forestry + bog	0	O			O	O	O			D		3	0	c
Lack	H230735	29.6.97	forestry + bog	0	O			O	O	O			D		3	0	c
Lack	H230735	29.6.97	forestry + bog	0	O			O	O	O			D		3	0	c
Lack	H230735	29.6.97	forestry + bog	0	O			O	O	O			D		3	0	c
Largy	H299468	18.09.96	imp.grassland	NV	A	NV	NV	NV	NV	NV	NV	NV	NV		14	0	c
Largy	H299468	18.09.96	imp.grassland	NV	D	O	NV	NV	NV	NV	NV	NV	NV		14	0	c
Largy	H299468	18.09.96	imp.grassland	NV	A	NV	NV	NV	NV	NV	NV	NV	NV		14	0	c
Largy	H299468	18.09.96	imp.grassland	NV	A	NV	NV	NV	NV	NV	NV	NV	NV		14	0	c
Lea	H403363	12.09.96	imp. grassland	NV			O	F	F					33.35	8	5	c
Lea	H403363	12.09.96	scrub			NV	NV	NV	NV	NV	NV	NV	NV	33.35	8	1	c
Lea	H403363	12.09.96	scrub - gorse			NV	NV	NV	NV	NV	NV	NV	NV	33.35	8	0	c
Lea	H403363	12.09.96	imp.grassland + wetland		O	NV	NV	NV	NV	NV	NV	NV	NV	33.35	8	8	c
Lea	H403363	12.09.96	imp.grassland + wetland				F	D	A					33.35	8	0	c
Lea	H403363	12.09.96	imp.grassland + wetland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	33.35	8	11	c
Lee	H255761	29.6.97	unimproved pasture + peat bog	0	R			F	F	F			D		3	0	c
Lee	H255761	29.6.97	unimproved pasture + peat bog	0	R			F	F	F			D		3	0	c
Lee	H255761	29.6.97	unimproved pasture + peat bog	0	R			F	F	F			D		3	0	c
Lee	H255761	29.6.97	unimproved pasture + peat bog	0	R			F	F	F			D		3	0	c
Lehinch	H391267	10.8.97	impro.past.	D	D							D			13	0	
Lehinch	H391267	10.8.97	impro.past.	D	D							D			13	0	
Lisnamallard	H434309	10.09.96	imp. grassland	NV	R	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Lisnamallard	H434309	10.09.96	imp. grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Lisnamallard	H434309	10.09.96	imp. grassland	NV	F	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Lisnamallard	H434309	10.09.96	imp. grassland	NV	A	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Lisnamallard	H434309	10.09.96	imp. grassland	NV	D	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Lisnamallard	H434309	10.09.96	imp. grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Lowry's	H912447	23.6.97	improved grazing	R	D				R			D			6	0	c
Lowry's	H912447	23.6.97	improved grazing	R	D				R			D			6	0	c
Lowry's	H912447	23.6.97	improved grazing	R	D				R			D			6	0	c
Lowry's	H912447	23.6.97	improved grazing	R	D				R			D			6	0	c
Martray	H641584	22.6.97	woodland + improved pasture	R	D							D			15	0	c
Martray	H641584	22.6.97	woodland + improved pasture	R	D							D			15	0	c
Martray	H641584	22.6.97	woodland + improved pasture	R	D							D			15	0	c
Martray	H641584	22.6.97	woodland + improved pasture	R	D							D			15	0	c
Meenameen	H028559	1.7.97	forestry	R	R			A	A	A		O			9	0	c
Meenameen	H028559	1.7.97	forestry	R	R			A	A	A		O			9	0	c
Meenameen	H028559	1.7.97	forestry	R	R			A	A	A		O			9	0	c
Meenameen	H028559	1.7.97	forestry	R	R			A	A	A		O			9	0	c
Meenameen	H030560	19.08.96	forestry	NV	R	NV	NV	NV	NV	NV	NV	NV	NV	44.57	9	0	c
Meenameen	H030560	19.08.96	forestry	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	44.57	9	0	c
Meenameen	H030560	19.08.96	forestry	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	44.57	9	0	c
Mill	H466313	10.09.96	imp. grass/scrub/road	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	51.82	9	0	c
Mill	H466313	10.09.96	imp. grass/scrub/road	NV	F	NV	NV	NV	NV	NV	NV	NV	NV	51.82	9	0	c
Mill	H466313	10.09.96	imp. grass/scrub/road	NV	F	NV	NV	NV	NV	NV	NV	NV	NV	51.82	9	0	c

Appendix 2 Survey records A. Loughs

Lough	NGR	Date surveyed	Land use	Veg. cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	Lake type	no. crayfish	Method
Mill	H466313	10.09.96	imp. grass/scrub/road	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	51.82	9	0	c
Mill	H466313	10.09.96	imp. grass/scrub/road	NV	P	NV	NV	NV	NV	NV	NV	NV	NV	51.82	9	0	c
Mill	H466313	10.09.96	imp. grass/scrub/road	NV	F	NV	NV	NV	NV	NV	NV	NV	NV	51.82	9	1	c
Mill	H466313	10.09.96	imp. grass/scrub/road	NV	F	NV	NV	NV	NV	NV	NV	NV	NV	51.82	9	0	c
Mill	H466313	10.09.96	imp. grass/scrub/road	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	51.82	9	0	c
Moorlough	H385300	09.09.96	imp. grassland					D	A			D		181.98	12	P	c
Moorlough	H385300	09.09.96	imp. grassland			NV	NV	NV	NV	NV	NV	NV	NV	181.98	12	0	c
Moorlough	H385300	09.09.96	imp. grassland			NV	NV	NV	NV	NV	NV	NV	NV	181.98	12	1	c
Moorlough	H385300	09.09.96	imp. grassland			NV	NV	NV	NV	NV	NV	NV	NV	181.98	12	0	c
Muck	H433686	27.6.97	improved pasture	R	D				R	R		D			10	0	c
Muck	H433686	27.6.97	improved pasture	R	D				R	R		D			10	0	c
Muck	H433686	27.6.97	improved pasture	R	D				R	R		D			10	0	c
Muck	H433686	27.6.97	improved pasture	R	D				R	R		D			10	0	c
Mullaghbane Moss	H735589	22.6.97	improved pasture	D	A							D			15	0	c
Mullaghbane Moss	H735589	22.6.97	improved pasture	D	A							D			15	0	c
Mullaghbane Moss	H735589	22.6.97	improved pasture	D	A							D			15	0	c
Mullaghbane Moss	H735589	22.6.97	improved pasture	D	A							D			15	0	c
Mullaghmore	H754638	18.6.97	woodland + improved pasture	R	D							D			15	0	c
Mullaghmore	H754638	18.6.97	woodland + improved pasture	R	D							D			15	0	c
Mullaghmore	H754638	18.6.97	woodland + improved pasture	R	D							D			15	0	c
Mullaghmore	H754638	18.6.97	woodland + improved pasture	R	D							D			15	0	c
Mullycar	H743569	22.6.97	improved + unimproved pasture	R	D							D			9	0	c
Mullycar	H743569	22.6.97	improved + unimproved pasture	R	D							D			9	0	c
Mullycar	H743569	22.6.97	improved + unimproved pasture	R	D							D			9	0	c
Mullycar	H743569	22.6.97	improved + unimproved pasture	R	D							D			9	0	c
Mullygruern	H757650	18.6.97	improved pasture + woodland	R	D							D			9	0	c
Mullynagawan	H4311266	11.6.97	improv.past.	R	O				O			90			10	0	c
Mullynagawan	H4311266	11.6.97	improv.past.	R	O				O			90			10	0	c
Mullynagawan	H4311266	11.6.97	improv.past.	R	O				O			90			10	0	c
Mullynagawan	H4311266	11.6.97	improv.past.	R	O				O			90			10	0	c
Mulshane	H319509	5.7.97	unimp.past.	R								O	90		1	0	c
Mulshane	H319509	5.7.97	unimp.past.									O	90		1	0	c
Mulshane	H319509	5.7.97	unimp.past.									O	90		1	0	c
Mulshane	H319509	5.7.97	unimp.past.									O	90		1	0	c
na blaney bane	H580475	26.09.96	imp.grassland	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	54.12	8	0	c
na blaney bane	H580475	26.09.96	imp.grassland	O	F	NV	NV	NV	NV	NV	NV	NV	NV	54.12	8	0	c
na blaney bane	H580475	26.09.96	imp.grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	54.12	8	0	c
na blaney bane	H580475	26.09.96	imp.grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	54.12	8	0	c
na blaney bane	H580475	26.09.96	imp.grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	54.12	8	0	c
Nabrickboy	H036503	21.08.96	forestry	A	F		F	D	A					31.54	3	0	c
Nabrickboy	H036503	21.08.96	forestry	O	D		O		D	A	O			31.54	3	0	c
Nageague (Rol)	H172740	30.6.97	unimproved pasture + woodland	R	A			O	O	D						3	c
Nageague (Rol)	H172740	30.6.97	unimproved pasture + woodland	R	A			O	O	D						0	c
Nageague (Rol)	H172740	30.6.97	unimproved pasture + woodland	R	A			O	O	D						0	c
Nageague (Rol)	H172740	30.6.97	unimproved pasture + woodland	R	A			O	O	D						0	c
Naman	H032522	10.08.96	forestry	D	NV		D	A					O	26.96	3	0	c
Naman	H032522	22.08.96	forestry	O	R		D	A	F					26.96	3	0	c
Naman	H032522	22.08.96	forestry	R	R		A	D	F					26.96	3	0	c
Naman	H032522	22.08.96	forestry	A	R		A	D	F					26.96	3	0	c
Narye	H396339	16.09.96	forestry												8	0	c
Narye	H396339	16.09.96	forestry												8	0	c
Narye	H396339	16.09.96	forestry												8	0	c
Narye	H396339	16.09.96	forestry												8	0	c
Narye	H396339	16.09.96	forestry												8	0	c
Narye	H396339	16.09.96	forestry												8	0	c
Navar	H027546	1.7.97	forestry	5	0			A	F	F	A				3	0	c
Navar	H027546	1.7.97	forestry	5				A	F	F	A				3	0	c
Navar	H027546	1.7.97	forestry	5	0			A	F	F	A				3	0	c
Navar	H027546	1.7.97	forestry	5	0			A	F	F	A				3	0	c
Navar	H025547	19.08.96	forestry	A	R	NV	A	D	A	F	F	NV	NV		3	0	c
Navar	H025547	19.08.96	forestry	A	R	NV	A	D	A	F	F	NV	NV		3	0	c

Lough	NGR	Date surveyed	Land use	Veg. cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	Lake type	no. crayfish	Method
Navar forest lough	H068566	1.7.97	forestry + grassland	80	A								D			0	c
Navar forest lough	H068566	1.7.97	forestry + grassland	80	A								D			0	c
Navar forest lough	H068566	1.7.97	forestry + grassland	80	A								D			0	c
Navar forest lough	H068566	1.7.97	forestry + grassland	80	A								D			0	c
Parabaun	H059572	1.7.97	forestry	5	0			A	D	O		F			8	0	c
Parabaun	H059572	1.7.97	forestry	5	0			A	D	O		F			8	0	c
Parabaun	H059572	1.7.97	forestry	5	0			A	D	O		F			8	0	c
Parabaun	H059572	1.7.97	forestry	5	0			A	D	O		F			8	0	c
Parabaun	H058572	20.08.96	forestry	R	A		R	D	F						8	0	c
Parabaun	H058572	20.08.96	forestry	R	R	not recorded									8	0	c
Parkhill	H227625	28.08.96	imp. grassland	F	R	not recorded					F	D			12	0	c
Parkhill	H227625	28.08.96	imp. grassland	F	R	not recorded					F	D			12	0	c
Parkhill	H227625	28.08.96	imp. grassland	F	R	not recorded					F	D			12	0	c
Raymond	H287387	7.6.97	unimp. past.	30	D (reeds)							D			13	0	c
Raymond	H287387	7.6.97	unimp. past.	30	D (reeds)							D			13	0	c
Raymond	H287387	7.6.97	unimp. past.	30	D (reeds)							D			13	0	c
Raymond	H287387	7.6.97	unimp. past.	30	D (reeds)							D			13	0	c
Rossole	H225435	03.10.96	housing/gardens	D	R	NV	NV	NV	O	A	D	NV	NV	196.05	15	0	c
Rossole	H225435	03.10.96	housing/gardens	D	R	NV	NV	NV	O	A	D	NV	NV	196.05	15	0	c
Rossole	H225435	04.10.96	private road	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	196.05	15	0	c
Rossole	H225435	03.10.96	private road	MV	O	NV	NV	NV	NV	NV	NV	NV	NV	196.05	15	0	c
Roughan	H828688	24.6.97	improved pasture	5	D					F	F	D			16	0	c
Roughan	H828688	24.6.97	improved pasture	5	D					F	F	D			16	0	c
Roughan	H828688	24.6.97	improved pasture	5	D					F	F	D			16	0	c
Roughan	H828688	24.6.97	improved pasture	5	D					F	F	D			16	0	c
Round	H444484	26.6.97	housing + improved grazing	20	D				R			D			14	0	c
Round	H444484	26.6.97	housing + improved grazing	20	D				R			D			14	0	c
Round	H444484	26.6.97	housing + improved grazing	20	D				R			D			14	0	c
Round	H444484	26.6.97	housing + improved grazing	20	D				R			D			14	0	c
Rushen															4	P	
Scolban	G995605	26.08.96	scrub + sand extraction	R	A				R	D	A	A		64.93	3	0	c
Scolban	G995605	26.08.96	scrub + sand extraction	R	O		R	A	D	A	A			64.93	3	0	c
Screeby	H469496	17.4.97	improved grazing	40	A				O			D			16	0	c
Screeby	H469496	17.4.97	improved grazing	40	A				O			D			16	0	c
Screeby	H469496	17.4.97	improved grazing	40	A				O			D			16	0	c
Screeby	H469496	17.4.97	improved grazing	40	A				O			D			16	0	c
Sessiagh East	H261346	6.6.97	unimp.past+wood	10	D (reeds)			F				D			12	0	c
Sessiagh East	H261346	6.6.97	unimp.past+wood	10	D (reeds)			F				D			12	0	c
Sessiagh East	H261346	6.6.97	unimp.past+wood	10	D (reeds)			F				D			12	0	c
Sessiagh East	H261346	6.6.97	unimp.past+wood	10	D (reeds)			F				D			12	0	c
Shankill	H559309	13.6.97	improv.past.	5	D							D			10	0	c
Shankill	H559309	13.6.97	improv.past.	5	D							D			10	0	c
Shankill	H559309	13.6.97	improv.past.	5	D							D			10	0	c
Shankill	H559309	13.6.97	improv.past.	5	D							D			10	0	c
Skale	H309441	19.09.96	imp.grassland	O	R	NV	NV	NV	NV	NV	NV	NV	NV		4	0	c
Skale	H309441	19.09.96	imp.grassland	O	R	NV	R	F	A	A	D	NV	NV		4	0	c
Skale	H309441	19.09.96	imp.grassland	F	R	NV	R	A	F	A	D	NV	NV		4	0	c
Skale	H309441	19.09.96	imp.grassland	F	NV	NV	D	F	NV	NV	NV	NV	NV		4	0	c
Skale	H309441	19.09.96	imp.grassland	NV	NV	NV	R	A	A	A	D	NV	NV		4	0	c
Summerhill	H491279	13.08.96	wooded/imp. grassland	D	A	not recorded						D		174.7	16	0	c
Summerhill	H491279	13.08.96	imp. grassland/ wooded	D	A	not recorded						D	O	174.7	16	0	c
Summerhill	H491279	13.08.96	woodland	D	A	not recorded					O	A		174.7	16	3	c
Summerhill	H491279	13.08.96	woodland	D	A	not recorded					O	D		174.7	16	4	c
Tattycam	H440310	15.08.96	pasture/imp.grassland/meadow	O	A	NV	NV	NV	NV	O	D	O	NV		14	0	c
Tattycam	H440310	15.08.96	pasture/imp.grassland	O	A	NV	NV	NV	NV	O	D	O	NV		14	0	c
Tempo	H359481	6.6.97	woodland	20	A							D				0	c
Tempo	H359481	6.6.97	woodland	20	A							D				0	c
Tempo	H359481	6.6.97	woodland	20	A							D				0	c
Tempo	H359481	6.6.97	woodland	20	A							D				0	c
Topped Mountain	H308453	18.09.96	wetland/scrub/road	D	A	NV	NV	NV	NV	NV	NV	NV	NV	14.35	4	0	c
Topped Mountain	H308453	18.09.96	scrub/road	D	A	NV	NV	NV	NV	NV	NV	NV	NV	14.35	4	0	c

Appendix 2 Survey records A. Loughs

Lough	NGR	Date surveyed	Land use	Veg. cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	Lake type	no. crayfish	Method
Topped Mountain	H308453	18.09.96	imp.grassland	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	14.35	4	0	c
Topped Mountain	H308453	18.09.96	heathland/scrub	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	14.35	4	0	c
Topped Mountain	H308453	18.09.96	heathland/scrub	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	14.35	4	0	c
Topped Mountain	H308453	18.09.96	wetland	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	14.35	4	0	c
Tullyvocady	H060647	01.10.96	forestry	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	20.74	10	0	c
Tullyvocady	H060647	01.10.96	forestry	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	20.74	10	0	c
Tullyvocady	H060647	01.10.96	forestry	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	20.74	10	0	c
Tullyvocady	H060647	01.10.96	forestry	NV	D	NV	NV	NV	NV	NV	NV	NV	NV	20.74	10	0	c
Tullyvocady	H060647	01.10.96	forestry	NV	O	NV	NV	NV	NV	NV	NV	NV	NV	20.74	10	0	c
Unshinagh	H552321	16.09.96	imp. grassland												10	0	c
Unshinagh	H552321	16.09.96	imp. grassland												10	0	c
Unshinagh	H552321	16.09.96	imp. grassland												10	0	c
Unshinagh	H552321	16.09.96	imp. grassland												10	0	c
Unshinagh	H552321	16.09.96	imp. grassland												10	0	c
Unshinagh	H552321	16.09.96	imp. grassland												10	0	c
Vearty	G994660	28.08.96	pasture	R	A			R	A	A	D			20.95	4	0	c
Vearty	G994660	28.08.96	pasture	R	A		A	A	F	F	D			20.95	4	0	c
White	H705524	17.6.97	woodland + improved pasture	40	O							D			7	0	c
White	H705524	17.6.97	woodland + improved pasture	40	O							D			7	0	c
White	H705524	17.6.97	woodland + improved pasture	40	O							D			7	0	c
White	H705524	17.6.97	woodland + improved pasture	40	O							D			7	0	c
White	H225602	27.08.96	pasture	D	A	NV	NV	NV	NV	NV	NV	NV	NV		11	0	c
Whitehill	H472278	15.08.96	grazing/woodland	D	F	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Whitehill	H472278	15.08.96	grazing/woodland	D	F	NV	NV	NV	NV	NV	NV	NV	NV			0	c
Wood	H760601	18.6.97	woodland + improved pasture	5	D							D			11	0	c
Wood	H760601	18.6.97	woodland + improved pasture	5	D							D			11	0	c
Wood	H760601	18.6.97	woodland + improved pasture	5	D							D			11	0	c
Wood	H760601	18.6.97	woodland + improved pasture	5	D							D			11	0	c

River	NGR		Date surveyed	Surveyor	Land Use	Width (m)	Depth (m)	Flow Type	Cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	no. crayfish	Method
Arney	H176374	1	05.09.96	AERC	improved grassland	16	5	run	R	F		F	A	D	A	F				0	c
Arney	H235366	1	06.09.96	AERC	improved grassland	10	0.5	run	R	O		A	D	A			O		61.75	0	k
Arney	H176374	1	05.09.96	AERC	improved grassland	16	0.45	run			O	D	F	A	O	O				0	c
Arney	H207369	1	06.09.96	AERC	improved grassland	0.7	0.5	run	O	F		D	A	F	O	O			61.75	0	k
Ballinamallard	H267529	3	07.10.96	AERC	improved grassland/small tip	6	0.35	run/riffle	O	O									124.38	4	k
Ballinamallard	H302561	3	5.6.97	AERC	impr past + wood	6	0.15	riff+glide	F	D	A		F	F	F	D				0	k
Ballinamallard	H307578	3	5.6.97	AERC	impr. + unimp. past.	5	0.15	riff+glide	A	A	F		F	D			F			0	k
Ballinamallard	H334597	3	5.6.97	AERC	impr. + unimp. past.	2	0.1	glide	R	F						O	D			0	k
Ballinamallard	H228507	3	03.10.96	AERC	improved grassland/scrub	5	0.5	run	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	124.38	0	c
Ballinamallard	H228507	3	03.10.96	AERC	improved grassland/scrub	5	0.5	run	NV	A	NV	NV	NV	NV	NV	NV	NV	NV	124.38	0	c
Ballinamallard	H243521	3	07.10.96	AERC	improved grassland	12	0.25	run	F	O		O	A	D	F	F			124.38	0	k
Ballinamallard	H281537	3	1995	IRTU																P	k
Ballinderry	H656790	1	23.6.97	AERC	peat bog	2	0.7	glide	D	O			R	F	F			D		0	k
Ballinderry	H672804	1	23.6.97	AERC	unimproved pasture	6	0.5	glide	D	O			O	A	F		A			0	k
Ballinderry	H735791		1997	ATEC																P	
Ballinderry	H683811	1	23.6.97	AERC	housing + improved pasture	2	0.4	glide	D	D			O	A	O		D			0	k
Ballinderry	H684804	1	23.6.97	AERC	improved pasture + housing development	3	0.5	glide	D	D			O	A	A		A			0	k
Ballinderry	H704800	1	23.6.97	AERC	improved pasture + industrial park	6	0.3	glide	D	D			R	A	A		D			0	k
Ballinderry	H734783	1	23.6.97	AERC	improved pasture	9	0.5	glide	A	D			O	A	A		A			0	k
Ballinderry	H734792	1	23.6.97	AERC	improved pasture	7	1	glide	D	D			F	A	A		A			0	k
Ballinderry	H742833	1	26.6.97	AERC	improved pasture + woodland	1	0.5	glide	D	A			R	A	A		D			0	k
Ballinderry	H750791	1	23.6.97	AERC	woodland, unimproved grazing + mill	10	1	riffle	D	D			D	F	A		O			0	k
Ballinderry	H768783	3	previously surveyed	AERC																0	
Ballinderry	H769783	3	23.6.97	AERC	unimproved pasture + woodland	10	0.7	glide + riffle	D	D			A	A	O		A			0	k
Ballinderry	H773854	1	27.6.97	AERC	improved pasture + house	1.5	0.3	riffle	D	R			R	D	A		A			0	k
Ballinderry	H781791	1	23.6.97	AERC	unimproved pasture	2	0.4	riffle + glide	A	D			O	A	A		A			0	k
Ballinderry	H787781	3	23.6.97	AERC	improved pasture	9	0.8	glide	D	D			F	A	A		F			0	k
Ballinderry	H804768	1	23.6.97	AERC	woodland, roads + housing	12	0.5	glide	D	D			O	A	F		A			0	k
Ballinderry	H942801	1	28.6.97	AERC	improved pasture	8	1.5	glide		D							D			0	k
Ballinderry trib.	H721767		23.6.97	AERC	Housing, roads + improved grazing	1.5	0.6	glide	O	D			F	O			D			0	k
Ballinderry trib.	H783773		23.6.97	AERC	improved pasture	2.5	0.2	riffle	F	D				O	A		D			0	k
Ballinderry trib.	H832839		27.6.97	AERC	fishery + unimproved grazing	1.5	0.3	riffle	D	D			R	D	A		F			0	k
Ballygawley	H619559	1	21.6.97	AERC	woodland + improved pasture	6	0.3	riffle	F	D			R	O	F		D			0	k
Ballygawley	H648587	1	21.6.97	AERC	improved pasture	3	0.5	glide	F	D			R	F	D		D			0	k
Ballygawley	H652637	1	21.6.97	AERC	improved pasture	1.5	0.1	riffle	O	A				F	A		D			0	k
Ballygawley	H660610	1	21.6.97	AERC	woodland + improved pasture	2.5	0.4	riffle	D	D			O	F	F		D			0	k
Ballygawley	H673614	1	21.6.97	AERC	industrial park + improved pasture	2.5	0.5	riffle	A	D			R	F	D		D			0	k
Ballygawley	H630538	1	25.09.96	AERC	scrub/improved grassland	4	0.25	glide	O	O		R	F	F	D	A			132.9	P (seen but not captured)	k
Ballymully	H810859	1	23.6.97	AERC	unimproved pasture	1	0.1	riffle	D	O	A		F	F	A					0	k
Ballymully	H819808	1	24.6.97	AERC	improved pasture	6	0.5	glide	A	D			O	F	D		O			0	k
Ballymully	H834853	1	21.6.97	AERC	unimproved pasture	4	0.3	riffle	D	D			O	A	D		O			0	k
Ballymully	H844797	1	24.6.97	AERC	improved grazing	4	0.5	glide	D	A			R	F	F		D			0	k
Ballymully	H859829	1	24.6.97	AERC	playing fields + improved pasture	6	0.5	riffle + glide	D	A			F	A	A		F			0	k
Ballymully	H866784	1	24.6.97	AERC	improved pasture	6	0.5	glide	F	F			R	A	D		A			0	k
Ballymully	H870801	1	24.6.97	AERC	improved pasture	5	0.8	glide	D	A			F	F	O		D			0	k
Bannagh	H178679	1	8.6.97	AERC	unimprov. past+woodland	5	0.3	riffle+glide	D	D			D	D			F			0	k
Bannagh	H197689	1	8.6.97	AERC	unimprov. past.	2.5	0.2	riffle+pool	F	D	F		F	D			F			0	k
Bannagh	H205687		1995	IRTU																P	
Bannagh	H206686	1	8.6.97	AERC	unimprov. past.	3	0.3	riffle+pool	D	D	F		O	D			A			0	k
Bannagh	H162654	1	02.10.96	AERC	improved grassland	7	0.3	run	O	F		D	A	F	F	O			92.67	P (seen but not captured)	k
Bannagh	H162654	1	1995	IRTU															92.67	P	
Black	H019435	1	7.6.97	AERC	unimp.past.	4	0.5	glide+riffle	R	D		A	F	A	O		O			0	k
Black	H041437	1	7.6.97	AERC	unimp.past.	3	0.5	glide+riffle	R	D			A	A	A		O			0	k
Blackwater	H440519	1	16.6.97	AERC	unimproved pasture	1.5	0.3	glide	R	D			R	O	A		D			0	k
Blackwater	H463511	2	23.09.96	AERC	improved grassland	1	0.1	glide	O	R		O	A	A	F	D	NV	NV		0	k
Blackwater	H479509	2	23.09.96	AERC	improved grassland	2.5	0.2	run/glide	O	O		R	O	A	D	A	NV	NV		0	k
Blackwater	H502518	2	23.09.96	AERC	improved grassland	2	0.3	run/riffle	A	F	NV	F	A	A	D	D	NV	NV		0	k
Blackwater	H508546	1	16.6.97	AERC	improved grazing	2	0.5	riffle + glide	D	O			R	A	A		D			0	k
Blackwater	H517507	1	16.6.97	AERC	improved grazing	2	1.5	glide	O	D			R	R			D			0	k
Blackwater	H518519	2	24.09.96	AERC	improved grassland	2.5	0.1	run	R	O	NV	R	D	A	A	F	NV	NV		0	k
Blackwater	H518539	2	24.09.96	AERC	improved grassland	2	1	run/riffle	O	R	NV	F	A	A	D	D	NV	NV		0	k
Blackwater	H526553	2	22.6.97	AERC	improved grazing	2	0.3	riffle + glide	O	A			R	F	F		D			0	k
Blackwater	H543527	1	24.09.96	AERC	improved grassland	5	0.4	glide/riffle/run	O	F		O	A	O	A	A				P (seen but not captured)	k
Blackwater	H543527	1	25.09.96	AERC	improved grassland	7	1.00	glide	NV	F										3	c
Blackwater	H543527	1	25.09.96	AERC	improved grassland	4	0.6	glide	NV	NV									103.25	0	c
Blackwater	H548535	2	24.09.96	AERC	improved grassland	5.5	0.2	run/riffle	O	O	NV	F	D	A	A	F	NV	NV		0	k
Blackwater	H560542	1	24.09.96	AERC	improved grassland	6	0.15	run/riffle	O	O		F	A	D	A	F				1	k
Blackwater	H578539	1	25.09.96	AERC	improved grassland	7	0.2	glide/run	O	O		R	F	A	A	D				P (seen but not captured)	k
Blackwater	H586550	2	16.6.97	AERC	improved pasture	2	0.5	glide	F	A				F	F	A	A			0	k
Blackwater	H598569	2	22.6.97	AERC	improved pasture + housing	3	0.4	glide + pool	D	A			O	A			D			0	k
Blackwater	H601580	2	21.6.97	AERC	improved pasture	2	0.4	riffle	F	A			R	O	F		D			0	k
Blackwater	H613530	1	25.09.96	AERC	scrub/improved grassland	9	1.00	glide	R	O		A	D	A	F	F				2	k
Blackwater	H625530	1	1995	IRTU																P	
Blackwater	H649516	1	25.09.96	AERC	scrub/improved grassland	12	0.75	glide/riffle	R	O		O	A	F	F	O				1	k
Blackwater	H633527	2	16.6.97	AERC	improved grazing	2	1.5	glide	R	A							D			0	k
Blackwater	H654538	2	16.6.97	AERC	unimproved pasture + dump	0.5	0.1	riffle	O	D				A	D		A			0	k
Blackwater	H666508	1	25.09.96	AERC	scrub/improved grassland														168.72	1	k
Blackwater	H697501	2	16.6.97	AERC	improved grazing	0.7	0.1	riffle	O	D				A			D			0	k
Blackwater	H699487	2	16.6.97	AERC	improved pasture	14	1.5	glide		F							D			0	k
Blackwater	H699539	2	16.6.97	AERC	improved grazing	1.5	0.5	riffle+glide	A	D			R	O	F		D			0	k
Blackwater	H705492	2	16.6.97	AERC	marsh + unimproved pasture	0.5	0.1	riffle	R	R				O	O		D			0	k
Blackwater	H710481	2	16.6.97	AERC	improved pasture	1.5	0.3	riffle	O	A				O	D		D			0	k
Blackwater	H714474	1	1995	IRTU																P	

Appendix 2 Survey records B. Rivers

River	NGR		Date surveyed	Surveyor	Land Use	Width (m)	Depth (m)	Flow Type	Cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	no. crayfish	Method
Blackwater	H717453	1	18.6.97	AERC	unimproved pasture	12	1.00	glide	D	D			O	O	O		D			3	k
Blackwater	H732439	1	18.6.97	AERC	improved pasture	8	0.70	glide	D	F			O	F	F		D			7	k
Blackwater	H759446	1	1995	IRTU																P	
Blackwater trib.	H501482		16.6.97	AERC	improved grazing	0.3	0.1	riffle	R	D				A	A		D			0	k
Blackwater trib.	H507483		16.6.97	AERC	improved grazing	0.4	0.1	riffle	O	A				F	F		D			0	k
Blackwater tributary	H518501		27.09.96	AERC	woodland/improvedgrassland	4	0.3	run/glide	F	F	NV	NV	NV	NV	NV	NV	NV	NV		0	k
Blackwater tributary	H530520		27.09.96	AERC	improved grassland	1	0.30	glide/run	F	R		D	A	F	F	O				1	k
Boho	H135446	1	05.09.96	AERC	improved grassland	3	0.75	run	O	O		F	D	F	F	O				0	c
Boho	H135446	1	05.09.96	AERC	improved grassland	5	0.3	run	O	R		O	D	A	A	O				0	c
Callan	H854409	2	22.6.97	AERC	improved pasture + housing	7	1	riffle + falls	D	F			A	A	F		F			0	k
Callan	H861439	2	22.6.97	AERC	improved pasture, road + playing fields	11	1.2	glide	F	D					F		D			0	k
Callan	H864410	2	22.6.97	AERC	woodland + improved grazing	6	0.4	glide	F	D			R	R	A		D			0	k
Callan	H866492	1	22.6.97	AERC	improved pasture	8	0.6	riffle + glide	D	A			O	A	A		A			0	k
Callan	H870371	2	22.6.97	AERC	woodland + improved pasture	12	0.5	glide	A	D			R	D	A		A			0	k
Callan	H880507	2	22.6.97	AERC	improved grazing + farm yard	10	0.7	riffle + glide	D	A			F	A	A		F			0	k
Callan	H892525	1	23.6.97	AERC	improved pasture	9	2.5	glide		A							D			0	c
Callan	H892525	1	23.6.97	AERC	improved pasture	9	2.5	glide		A							D			0	c
Claddagh	H129358	1	05.09.96	AERC	improved grassland	10	0.5	run	R	F	O	D	A	O	O					0	c
Claddagh	H133368	1	05.09.96	AERC	improved grassland	10	0.3	glide	R	F		R	F	D	F					0	c
Claddagh	H129358	1	05.09.96	AERC	improved grassland	7	0.25	run	O	A		D	A	A	F					0	c
Claddagh	H133368	1	05.09.96	AERC	improved grassland	2.5	0.35	run	R	F		O	D	A	F	O	R		53.08	0	c
Claggan	H785710	1	23.6.97	AERC	improved pasture	3.5	1	glide	O	F				O	F		D			0	k
Cleen	H429452	4	13.6.97	AERC	impro.past	7	1	glide	F	F			F	A			D			0	k
Cleen	H450463	4	13.6.97	AERC	impro.past	5	1	glide	D	D			O	A	O		D			0	k
Cleen	H474481	4	13.6.97	AERC	impro.past	5	0.50	glide	D	D			F	F	O		D			1	k
Cleen	H484474	4	13.6.97	AERC	impro.past	4	0.5	riffle+glide	A	D			O	A	F		D			0	k
Cleen	H428453	4	1995	IRTU																P	
Colebrooke	H368405	3	14.6.97	AERC	unimp.past.	12	0.5	riffle	D	D	D		O	E	O		O			0	k
Colebrooke	H373426	3	14.6.97	AERC	unimp.past.	12	0.70	pool+riffle	D	A			F	D	F		F			2	k
Colebrooke	H445436	3	28.07.93	Mackie																P	
Colebrooke	H459429	3	14.6.76	AERC	woodland	5	1.00	glide	D	D		O	A	O	O		D			1	k
Colebrooke	H495424	3	14.6.76	AERC	woodland+unimp.past.	4	0.70	riffle+glide	D	D			A	A	O		A			1	k
Colebrooke	H525406	3	14.6.97	AERC	forest+unimp.past.	1.5	0.3	pool+riffle	F	D	D			O	O		O			0	k
Colebrooke	H331360	3	1995	IRTU																P	
Colebrooke	H378441	3	1995	IRTU																P	
Colebrooke	H445434	3	1995	IRTU																P	
Cor	H754428	2	20.6.97	AERC	improved pasture	5	1.5	glide	R	F							D			0	k
County	G938507	1	7.6.97	AERC	woodland	5	1	glide/pool	D	D		A	D	F			O			0	k
County	G953485	1	7.6.97	AERC	woodland+unimp.past.	5	1	glide/pool	D	D	A	O	D	O			O			0	k
County	G963464	1	7.6.97	AERC	impro.past.	5	1	pool+riffle	D	D		F	A	A	A		E			0	k
County	G984462	1	7.6.97	AERC	imp.+unim. past.	2	0.5	glide	F	O				O			D			0	k
Derg	H091760	2	30.6.97	AERC	forestry	9	0.5	pool + riffle	D	A		R	F	A	A	F				0	k
Derg	H106763	2	30.6.97	AERC	unimproved pasture + forestry	5	0.7	pool, riffle + glid	D	A			F	A	D	O				0	k
Derg	H127778	2	30.6.97	AERC	unimproved pasture	11	0.5	riffle + glide	D	O			A	A	A	O				0	k
Derg trib	H170794		30.6.97	AERC	unimproved pasture	2.5	0.3	riffle	D	D	D	O	O	O	O					0	k
Dooraa	H205663	1	1995	IRTU																P	
Dooraa	H206673	1	8.6.97	AERC	unimp.past.	3	0.50	glide+riffle	D	D	O		D	A			E			1	k
Dooraa	H206673	1	8.6.97	AERC	unimp.past.	2.5	0.5	glide	A	D			F	E	E		D			0	k
Dooraa	H217684	1	8.6.97	AERC	unimp.past.	3	0.70	pool	A	D		F	A	D	F		O			2	k
Dooraa	H182645	1	1993	IRTU																P	
Drumnagreshial	H187602	1	1992	IRTU																P	
Drumquin	H277742	3	28.6.97	AERC	woodland + unimproved pasture	4	0.5	riffle +pool	A	D	D		O	O						0	k
Drumquin	H298743	3	28.6.97	AERC	unimproved pasture	9	0.5	Pool + falls	D	D	D	O	O	O						0	k
Drumquin	H324741	3	28.6.97	AERC	improved pasture	9	0.5	riffle + pool	D	A			O	A	D	F				0	k
Drumquin	H332732	2	28.6.97	AERC	improved pasture	6	0.5	riffle + pool	A	D	A		O	F	F	F				0	k
Drumragh	H326675	3	26.6.97	AERC	unimproved grazing	3	0.5	glide + riffle	A	D			F	A	D		O			0	k
Drumragh	H359658	3	26.6.97	AERC	unimproved pasture	5	1.5	glide		D							D			0	k
Drumragh	H359658	3	26.6.97	AERC	unimproved pasture	5	1.5	glide		D							D			0	k
Drumragh	H359658	3	27.6.97	AERC	improved pasture	5	1.5	glide		A							D			0	k
Drumragh	H371626	2	27.6.97	AERC	improved pasture	4	1.5	glide		A							D			0	k
Drumragh	H400669	3	27.6.97	AERC	improved pasture	7	0.5	glide		D							D			0	k
Drumragh	H400669	2	27.6.97	AERC	improved pasture	7	1.5	glide		D							D			0	k
Drumragh trib.	H320653		27.6.97	AERC	unimproved pasture	3	1	glide	F	A			F	A			D			0	k
Drumragh trib.	H371626		27.6.97	AERC	improved pasture	4	1.5	glide		A							D			0	k
Drumragh trib.	H371626		27.6.97	AERC	improved pasture	4	1.5	glide		A							D			0	k
Edenclaw	H244649	1	8.6.97	AERC	unimp. past.	1.5	0.2	riffle	F	D			D	A			A			0	k
Edenclaw	H250630	1	8.6.97	AERC	imp.past.	1.5	0.2	riffle	F	A			E	A			D			0	k
Fairy	H259784	3	29.6.97	AERC	improved pasture	2	0.5	glide	D	A			O	A	A		A			0	k
Fairy	H272793	3	29.6.97	AERC	improved pasture	5	0.5	riffle	D	D			A	A	O					0	k
Fairy	H292801	3	29.6.97	AERC	improved pasture	5	0.3	riffle	D	D			O	A	A		A			0	k
Fairy	H326780	3	28.6.97	AERC	improved pasture	6	1	glide	D	D				F	O		D			0	k
Fairy tribs.	H402753		28.6.97	AERC	improved pasture + farm buildings	2.5	0.7	pool + riffle	A	F			R	A	A		D			0	k
Fairy tribs.	H412746		28.6.97	AERC	improved pasture + farm yard	3	0.4	riffle +pool	D	A			R	A	A		D			0	k
Finn	H448186	2	12.6.97	AERC	imp.past.	15	1.00	glide	D	D			E	E	O		D			1	k
Finn	H482222	2	12.6.97	AERC	imp.past.	7	1.00	glide	A	F			O	A	O		D			2	k
Finn	H517364	2	11.6.97	AERC	unimp.past.	3	0.2	glide	A	D			E	A	D		F			0	k
Finn	H544336	2	12.6.97	AERC	woodland+unimp.past.	6	1	glide	D	D		R	O	A	O		D			0	k
Finn	H548363	3	12.6.97	AERC	unimp.past.	4	0.5	glide	D	D			A	A	E		E			0	k
Finn	H554347	2	12.6.97	AERC	imp.past.	5	0.5	glide	D	A			A	F	F		A			0	k
Finn	H532309	3	1995	IRTU															76.06	P	k
Finn	H535324	3	16.09.96	AERC	imp grassland	6	0.40	glide	O	A		A	F	F	A	D	F		76.06	1	k
Finn	H537325	3	1995	IRTU																P	k
from loch NE Carrick Lough	H085545		30.6.97	AERC	unimproved pasture + forest	4	1.5	glide	D	D			A	O	O		D			0	k

River	NGR		Date surveyed	Surveyor	Land Use	Width (m)	Depth (m)	Flow Type	Cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	no. crayfish	Method
Fury	H561462	2	16.6.97	AERC	forestry	2	0.4	riffle + glide	A	D			F	F	A		A			0	k
Fury	H569469	2	16.6.97	AERC	unimproved pasture	3	0.6	riffle + pools	D	D			F	F	A		A			0	k
Fury	H552517	2	1995	IRTU																P	
Fury	H552517	2	26.09.96	AERC	scrub/improvedgrassland	4	0.10	glide/run	O	D	D	A	A	F	F					4	k
Fury	H558504	2	26.09.96	AERC	road/scrub	5	0.20	glide	R	A		D	A	A	A	O			25.7	2	k
Fury	H566493	2	26.09.96	AERC	improved grassland/scrub	3	0.20	run	O	D		F	D	A	F	O				1	k
Fury	H568486	2	27.09.96	AERC	scrub/road	3	0.20	run/riffle	A	D		D	A	A	F	F				2	k
Fury	H571475	2	27.09.96	AERC	improvedgrassland/scrub	1.5	0.1	run	O	D	A	A	F	F	O	NV	NV	NV		0	k
Fury	H571480	2	27.09.96	AERC	improvedgrassland/scrub	2	0.15	run/riffle	O	D	NV	A	D	A	F	O	NV	NV		0	k
Fury	H573470	2	27.09.96	AERC	forestry/scrub	2	0.1	run/riffle	R	O	F	O	A	D	A	NV	NV	NV		0	k
Fury		2	26.09.96	AERC	improvedgrassland/scrub	1.5	0.1	glide/run	R	D	NV	A	P	F	O	O	R	NV		0	k
Garvary	H000647	1	7.6.97	AERC	unimp.past.	1.5	0.15	riffle					D	D	O		O			0	k
Garvary	H007620	1	7.6.97	AERC	unimp.past.	3	0.2	riffle	A	D		F	A	A	O		Q			0	k
Garvary	H009630	1	7.6.97	AERC	unimp.past.	2	0.2	riffle	A	D			D	A			O			0	k
Garvary	H010644	1	7.6.97	AERC	unimp.past.	2	0.1	riffle	D	A			F	D	E		E			0	k
Garvary	H013614	1	29.08.96	AERC	improvedgrassland/wooded river bank	4	0.3	riffle	R	A	NV	O	F	D	A	D	NV	NV	46.72	0	k
Garvary	H019615	1	1993	IRTU																P	
Glendurragh	H244664	1	1995	IRTU																P	
Gortin	H770800		23.6.97	AERC	unimproved pasture	2	0.3	glide	F	D			O	F	F		D			0	k
Gortin	H744796		27.6.97	AERC	woodland + improved pasture	2.5	0.5	pool, glide + riff	D	D		R	F	A	A		F			0	k
Hollybrook	H401340	2	8.6.97	AERC	impro.past.	1	0.15	riffle	D	F			O	A	A		A			0	k
Hollybrook	H404353	2	8.6.97	AERC	houses	1.5	0.25	riffle	A	D			O	A	A		A			0	k
Hollybrook	H310372	2	09.09.96	AERC	improvedgrassland	2	0.3	run	O	F		R	F	D	A	F			57.83	0	k
Hollybrook	H325373	2	09.09.96	AERC	improvedgrassland	3.5	0.15	run	R	O		R	D	A	F	O			57.83	0	k
Hollybrook	H363311	2	1993	IRTU															57.83	P	
Hollybrook	H374333	2	16.09.96	AERC	improved grassland	3	0.25	glide	R	F		O	D	A	O		P		57.83	1	k
Irvinestown	H225557	3	8.6.97	AERC	imp.past.	2	0.5	glide	O	O			R	R			D			0	k
Irvinestown	H248577	3	8.6.97	AERC	unimp. past.	2.5	0.5	glide	F	R				F			D			0	k
Irvinestown	H257594	4	8.6.97	AERC	imp.past.	0.8	0.2	riffle	F	O					D		D			0	k
Kesh	H202662	1	8.6.97	AERC	impro.past.	3.5	0.4	glide+riffle	D	D	D		F	F			F			0	k
Kesh	H222652	1	8.6.97	AERC	impro.past.	4	1	glide	A	A			A	F			D			0	k
Kesh	H244664	1	8.6.97	AERC	impro.past.	3	1.5	glide	F	O				O	O		D			0	k
Kesh	H258671	1	8.6.97	AERC	unimp.past.	3	0.3	riffle	A	D			A	F	F		A			0	k
Kesh	H264673	1	8.6.97	AERC	improv.past.	2	0.4	riffle+pools	A	D			A	D			A			0	k
Kesh	H179639	1	02.10.96	AERC	improvedgrassland/road	8	0.4	riffle/run	F	R	NV	A	A	F	F	O	NV	NV	145.32	0	k
Kesh	H203645	1	07.10.96	AERC	improved grassland/scrub	4	0.3	run	F	A	D	F	F	O	O	R			135.59	0	k
Killen Burn	H224764	3	28.6.97	AERC	improved pasture + woodland	3	0.4	pool + riffle	D	D		R	F	A	A		F			0	k
Killen Burn	H226775	3	28.6.97	AERC	unimproved pasture	5	0.5	pool + riffle	D	D			F	A	D	O				0	k
Killymoon	H723664	1	21.6.97	AERC	improved pasture	30	20	riffle	A	F				O	F		D			0	k
Killymoon	H745668	1	21.6.97	AERC	improved pasture	2	0.4	glide	O	D					A		D			0	k
Killymoon	H750688	1	21.6.97	AERC	improved pasture	7	0.4	riffle	F	F			O	F	D		A			0	k
Killymoon	H763682	1	21.6.97	AERC	improved pasture	4	0.2	riffle	O	O			R	F	O		D			0	k
Killymoon	H800720	1	23.6.97	AERC	woodland + roads	9	1	glide	A	D			R	A	D		A			0	k
Killymoon	H814735	1	23.6.97	AERC	housing + unimproved pasture	8	1.5	glide	D	D			R	A	A		A			0	k
Killymoon	H822747	1	23.6.97	AERC	woodland + unimproved pasture	10	1	pools + riffle	D	D			F	D	A		O			0	k
Lackey	H478274	2	12.6.97	AERC	woodland	7	0.5	glide	A	D			R	E	F		D			0	k
Lackey	H485241	2	12.6.97	AERC	impro.past	9	0.5	glide	F	R			R	O	O		D			0	k
Lackey	H494298	2	12.6.97	AERC	impro.past	1.5	1	glide	R	R							D			0	k
Lackey	H505304	2	12.6.97	AERC	unimp.past	2.5	0.4	glide	F	O			R	O			D			0	k
Lackey	H482272	2	1995	IRTU																P	
Lackey	H485237	2	1995	IRTU																P	
Lissan	H783844	1	23.6.97	AERC	improved pasture	3	0.3	riffle	D	D			O	A	D		F			0	k
Lissan	H789828	1	23.6.97	AERC	unimproved pasture	3	0.3	riffle	D	D			O	A	D		F			0	k
Lough-a-Hache	H303386	3	09.09.96	AERC	improved grassland	3.5	0.60	glide	O	A	NV	NV	NV	NV	NV	NV	NV	NV		1	c
Lough-a-Hache	H303386	3	09.09.96	AERC	improved grassland	4	1	glide	F	A	NV	NV	NV	NV	NV	NV	NV	NV		0	c
Lough-a-Hache	H374307	3	1995	IRTU															173.87	P	
Lough-a-Hache	H375306	3	12.08.96	AERC	improvedgrassland	2	0.50	riffle	O	O		F	A	F	O				182.79	1	c
Lough-a-Hache	H389297	3	09.09.96	AERC	improved grassland	2	0.3	run	O	A		R	D	A						0	c
Lough-a-Hache	H389297	3	09.09.96	AERC	improvedgrassland	3	0.2	riffle	O	A		O	D	F	O	O				0	k
Lough-a-Hache	H420309	3	09.09.96	AERC	improved grassland	2	0.10	pool/run	R	D			A	F	F	D	O			1	c
Lough-a-Hache	H420309	3	09.09.96	AERC	improved grassland	3.5	0.4	glide	O	A		R	A	A	F	O	F			0	c
Lough-a-Hache	H442318	3	10.09.96	AERC	improved grassland	3	0.15	glide	O	A		F	F	A	A	O	D		173.87	0	k
Lough-a-Hache	H300199	3	09.09.96	AERC	improved grass/main road	2	0.15	run	R	O	D		F	F	O	O				0	k
Lower River Erne	G939590	1	1993	IRTU																P	
Manyburns	H387485	3	14.6.97	AERC	unimp.past.	2	0.3	riffle	A	R			O	O	O		D			0	k
Manyburns	H390506	3	14.6.97	AERC	unimp.past.	2	0.4	riffle+pool	D	A			R	D			F			0	k
Manyburns	H393476	3	14.6.97	AERC	unimp.past.	3.5	0.7	glide	F	A			O	F	O		D			0	k
Manyburns	H404514	3	14.6.97	AERC	improv.past.	2	0.5	riffle	D	A			A	A	O		A			0	k
Manyburns	H381295	3	23.03.96	AERC	improved grassland	1.5	0.15	run	F	O		O	D	A	A	F			104.47	2	k
Manyburns	H384473	3	1995	IRTU															104.47	P	
Newtownbutler	H414275	3	12.6.97	AERC	impro.past.	1.5	0.3	glide	F	A			O	A			D			0	k
Newtownbutler	H434291	3	12.6.97	AERC	impro.past.	2	0.5	glide	O	D			O	O	O		D			0	k
Newtownbutler	H405259	4	06.09.96	AERC	not recorded															0	
Newtownbutler	H418259	4	1993	IRTU																P	
Newtownbutler	H425266	4	06.09.96	AERC	not recorded															0	
Ominey	H105714	1	28.6.97	AERC	unimproved pasture + sawmill/farm yard	3	0.5	glide	F	D			O	A	O		D			0	k
Ominey	H113689	1	29.6.97	AERC	unimproved pasture	5	0.5	glide	D	D			A	F	F		A			0	k
Ominey	H706108	1	29.6.97	AERC	unimproved pasture + forestry	2	0.2	riffle + pool	D	D			O	A	A		A			0	k
Oona	H709640	1	21.6.97	AERC	improved pasture	3	0.2	riffle + pools	F	R			R	F	D		D			0	k
Oona	H711626	1	21.6.97	AERC	improved pasture	4	0.4	glide	F	O			F	F	F		D			0	k
Oona	H760576	1	21.6.97	AERC	woodland + improved pasture	6	1	glide	A	D			R	F	A		D			0	k
Oona	H780563	1	21.6.97	AERC	improved pasture	6	0.7	riffle + pools	F	R			R	R	A		D			0	k
Oona	H781559	1	21.6.97	AERC	improved pasture + housing	5	0.3	riffle	F	D			R	F	A	O	D			0	k

Appendix 2 Survey records B. Rivers

River	NGR		Date surveyed	Surveyor	Land Use	Width (m)	Depth (m)	Flow Type	Cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	no. crayfish	Method
Quiggery	H441601	2	26.6.97	AERC	improved pasture	5	0.7	riffle + glide	D	D			O	A	D	O	O			0	k
Quiggery	H458580	2	26.6.97	AERC	improved pasture	5	0.6	riffle	D	D			F	D	A	O				0	k
Quiggery	H467561	2	26.6.97	AERC	unimproved pasture + excavavations upstream	3.5	0.5	riffle	F	D			O	A	D	O	O			0	k
Quiggery	H475567	2	26.6.97	AERC	improved pasture	5	1	glide	D	D			O	A	D	O	O			0	k
Quiggery	H449587	2	30.09.96	AERC	improvedgrassland	5	0.25	run	F	O	NV	R	F	D	A	A	O	NV		0	k
Quiggery	H451620	2	30.09.96	AERC	improvedgrassland	4	0.3	run/riffle	O	O	NV	R	F	D	A	F	O	NV		0	k
Quiggery	H453656	2	30.09.96	AERC	improvedgrassland	6	0.4	run	A	R	NV	NV	NV	NV	NV	NV	NV	NV		0	c
Quiggery	H453656	2	30.09.96	AERC	improvedgrassland	8	1	run	NV	O	NV	NV	NV	NV	NV	NV	NV	NV		0	c
Quiggery	H474568	2	30.09.96	AERC	improvedgrassland	3	0.15	run/riffle	O	F	NV	R	D	A	A	F	O	NV		0	k
Quiggery	H699773	1	23.6.97	AERC	unimproved grazing	1	0.2	riffle	D	D			R	A	A		D			0	k
Rock	H727727	1	23.6.97	AERC	unimproved grazing	2	0.3	riffle	D	D			O	A	D		F			0	k
Rock	H755717	1	23.6.97	AERC	improved pasture	4	0.5	glide	D	F			D	F	F		F			0	k
Rock	H781718	1	23.6.97	AERC	improved pasture	3	0.4	glide	O	F			R	F	D		D			0	k
Roogagh	H020486	1	7.6.97	AERC	unimp.past.	3	0.5	riffle	D	F	F	F	F	A			O			0	k
Roogagh	H030489	1	7.6.97	AERC	unimp.past.	3	0.5	pool/glide	A	R	F	R	F	F		O	A			0	k
Roogagh	G980501	1	05.09.96	AERC	improvedgrassland/scrub	3.5	0.5	glide	O	R	NV	F	D	O	NV	F	NV	NV	49.54	0	c
Roogagh	G980501	1	04.09.96	AERC	improvedgrassland/scrub	4	0.75	glide	R	R	NV	O	F	O	NV	D	NV	NV	49.54	0	c
Roogagh	G980501	1	04.09.96	AERC	improvedgrassland/scrub	4	0.75	glide	R	R	NV	O	F	NV	NV	D	NV	NV	49.54	0	c
Roogagh	G980501	1	04.09.96	AERC	improvedgrassland/scrub	6	0.4	run	O	A	NV	D	A	F	NV	O	NV	NV	49.54	0	c
Roogagh	H000486	1	04.09.96	AERC	improvedgrassland/scrub	3	0.3	glide	F	D	NV	A	D	A	O	NV	NV	NV	49.54	0	c
Roogagh	H000486	1	04.09.96	AERC	improvedgrassland/scrub	4	0.2	run	A	O	NV	F	O	F	F	F	F	NV		0	k
Routing Burn	H472635	3	30.09.96	AERC	improvedgrassland	6	0.2	run	F	F	NV	F	O	R	R	NV	D	NV		0	k
Routing Burn	H489624	3	30.09.96	AERC	improvedgrassland	2	0.15	run	R	O	NV	R	O	O	F	D	A	NV		0	k
Routing Burn	H506617	3	30.09.96	AERC	improvedgrassland	1	0.2	run	O	R	NV	O	A	O	F	D	F	NV		0	k
Routing Burn	H539621	3	30.09.96	AERC	improvedgrassland/road	5	0.4	run/pool	D	D	NV	A	D	A	F	O	NV	NV	151.12	P (seen but not captured)	c
Screenagh	H092515	1	04.09.96	AERC	improvedgrassland	2.5	0.3	glide	F	O	NV	R	D	A	A	F	NV	NV	151.12	0	c
Screenagh	H092515	1	04.09.96	AERC	improvedgrassland															P	
Screenagh	H108492	1	1993	IRTU										O	A	D				0	c
Screenagh	H109487	1	05.09.96	AERC	improved grassland	1.5	0.25	glide	R	O										0	
Screenagh	H109487	1	05.09.96	AERC	improved grassland	3	0.4	glide	O	O	NV	NV	NV	NV	NV	NV	NV	NV	165.17	0	
Screenagh	H114482	1	04.09.96	AERC	improvedgrassland	4.5	0.2	run	R	O		R	F	A	F	O	D			0	k
Screenagh	H109487	1	06.09.96	AERC	improved grassland	3	0.5	glide	R	F	A									0	k
Sillees	H045549	1	30.6.97	AERC	forestry	2	0.5	riffle + glide	D	D			A	A	F		F			0	k
Sillees	H053538	1	30.6.97	AERC	moorland + forestry	2	0.7	glide	A	D			O	O			D			0	k
Sillees	H046545	1	30.08.96.	AERC	forestry	1.5	0.2	riffle	F	O	NV	O	A	D	A	NV	NV	NV		0	k
Sillees	H061543	1	30.08.96.	AERC	forestry/road	2.5	0.3	run	O	F	D	O	O	R	A	NV	NV	NV		0	k
Sillees	H074546	1	30.08.96	AERC	forestry, nature reserve	3	0.20	run	F	O	O	F	D	F		F			43.95	2	k
Sillees	H086525	1	22.06.88	Foster																P	
Sillees	H086545	1	02.09.96	AERC	improved grassland	4.5	0.75	glide	NV	A										1	c
Sillees	H086545	1	02.09.96	AERC	wooded/scrub	4	0.40	riffles	R	F	R	O	D	F	O	O			46.42	1	k
Sillees	H116525	1	02.09.96	AERC	improved grassland	3.5	0.40	run	O	O									55.34	13	c
Sillees	H116525	1	02.09.96	AERC	improved grassland	1.5	0.60	run	NV	O									55.34	9	c
Sillees	H118484	1	02.09.96	AERC	improved grassland/pasture	5	0.5	glide	NV	O										0	c
Sillees	H118484	1	04.09.96	AERC	improvedgrassland/pasture	3.5	0.5	glide	NV	A	NV	NV	NV	NV	NV	NV	NV	NV		0	c
Sillees	H118484	1	04.09.96	AERC	improvedgrassland/pasture	4	0.75	still	NV	A	NV	NV	NV	NV	NV	NV	NV	NV		0	c
Sillees	H118521	1	1995	IRTU																P	
Sillees	H119534	1	10.08.96	AERC	improved grassland	12	1	glide	NV		NV	NV	NV	NV	NV	NV	NV	NV		P (seen but not captured)	k
Sillees	H119534	1	02.09.96	AERC	improved grassland	2.5	0.60	glide	NV	A										3	c
Sillees	H119534	1	02.09.96	AERC	improved grassland	2.5	0.30	glide	NV	A										1	c
Sillees	H120497	1	03.09.96	AERC	improved grassland	6	0.3	riffle	O	F		O	A	D	A	O	O			P (seen but not captured)	c
Sillees	H120497	1	1995	IRTU																P	
Sillees	H120497	1	03.09.96	AERC	improved grassland	6	0.20	riffle	O	R		O	A	D	A	O	O			1	c
Sillees	H123505	1	02.09.96	AERC	scrub, grassland, forestry	4.5	0.20	run	NV	F										3	c
Sillees	H123505	1	02.09.96	AERC	grassland, forestry	4	0.40	run	O	F										19	c
Sillees	H130471	1	1995	IRTU															91	P	
Sillees	H130471	1	03.09.96	AERC	improvedgrassland	12	1.5	glide	NV	R									91	0	c
Sillees	H130471	1	03.09.96	AERC	improvedgrassland	10	1	glide	NV	O									91	0	c
Sillees	H157458	1	03.09.96	AERC	improvedgrassland	15	0.2	glide	NV	O									100.74	0	c
Sillees	H157458	1	03.09.96	AERC	improvedgrassland	15	2	glide	NV	F									100.74	0	c
Swanlinbar	H215294	1	06.09.96	AERC	not recorded															0	
Swanlinbar	H229282	1	06.09.96	AERC	not recorded															0	
Swanlinbar	H241301	1	06.09.96	AERC	not recorded															0	
Swanlinbar	H252311	1	06.09.96	AERC	scrub	14.5	0.2	glide/run	F	R		O	O	A	F	O			34.43	0	k
Tall	H889569	2	23.6.97	AERC	improved pasture	7	2.5	glide		D							D			0	c
Tall	H889569	2	23.6.97	AERC	improved pasture	7	2.5	glide		D							D			0	c
Tall	H939499	4	22.6.97	AERC	housing + unimproved	1.5	0.2	riffle	R	D			R				D			0	k
Tall	H943458	2	22.6.97	AERC	improved pasture	3	0.3	riffle + glide	F	D			R	O	F		D			0	k
Tall	H947481	4	22.6.97	AERC	housing, roads + improved pasture	3	0.2	riffle	F	R				O	A		D			0	k
Tall	H948521	2	22.6.97	AERC	improved pasture + housing	2.5	0.7	glide	O	D							D			0	k
Tall	H960529	2	22.6.97	AERC	orchard + improved pasture	2.5	0.5	riffle	D	F			R	F	A		D			0	k
Tempo	H362490	3	4.6.97	AERC	impr.past.+wood	5	0.2	riffle	O	F		O	O	F	F		D			0	k
Tempo	H371506	3	4.6.97	AERC	impr.past.	4	0.15	glide	F	D		F	F	F	D					2	k
Tempo	H378517	3	4.6.97	AERC																0	k
Tempo	H333424	1	23.09.96	AERC	improvedgrassland	4.5	0.2	glide/riffle	A	F	R	A	D	A	F	F	NV	NV		0	k
Tempo	H341463	1	23.09.96	AERC	improvedgrassland	2.5	0.4	glide/run	F	O		O	D	F	O	O	NV	NV		0	k
Tempo	H342392	3	1995	IRTU																P	k
Tempo	H347469	3	1993	IRTU																P	k
Tempo	H347470	1	23.09.96	AERC	improved grassland	3	0.20	glide/run	O	A		A	D	O	O	O				1	k
Tempo	H352478	1	23.09.96	AERC	improved grassland/wooded	4	0.40	glide	O	F		R	R	O	O	D				1	k
Tempo	H363491	1	23.09.96	AERC	improved grassland	3	0.3	glide	R	F		A	F	F	A	O				P (seen but not captured)	k
Tempo	H363492	3	1995	IRTU																P	k
Termon	H125687	1	29.6.97	AERC	unimproved pasture	7	0.8	glide	D	D			F	O			D			0	k
Termon	H140707	1	29.6.97	AERC	improved pasture	6	0.3	glied	D	D			O	A	D		F			0	k
Termon	H157719	1	29.6.97	AERC	unimproved pasture	5	0.5	glide + riffle	D	D			A	A	F		F			0	k

River	NGR		Date surveyed	Surveyor	Land Use	Width (m)	Depth (m)	Flow Type	Cover	Bank cover	Bedrock	Boulders	Cobbles	Pebbles	Gravel	Sand	Silt/Clay	Peat	Ca hardness	no. crayfish	Method
Termon	H108671	1	02.10.96	AERC	road/scrub	3.5	0.4	rapids	R	O	D	A	F	F	O	O	NV	NV	77.96	0	k
Termon	H111659	1	1993	IRTU																P	
Termon	H125687	1	02.10.96	AERC	improved grassland	8	0.30	run	R	F	D	A	A	F	O	O			81.69	1	k
Torrent	H700686	1	21.6.97	AERC	unimproved pasture	0.5	0.05	riffle	F	D			R	A	A		D			0	k
Torrent	H719648	1	21.6.97	AERC	improved pasture	3	0.5	glide	F	D			R	F	F		D			0	k
Torrent	H727628	1	21.6.97	AERC	improved pasture	5	0.3	glide	O	D			R	F	F		D			0	k
Torrent	H745616	1	21.6.97	AERC	forest + improved pasture	3	0.5	glide	O	D			O	O			D			0	k
Torrent	H773653	1	21.6.97	AERC	housing + improved grazing	4	0.5	glide	F	A			O	F	F		D			0	k
Torrent	H790670	1	21.6.97	AERC	improved pasture + housing	6	0.7	glide	A	F			D	A	F		D			0	k
Torrent	H826664	1	23.6.97	AERC	roads + housing	5	0.5	pools + riffle	D	D			R	D	D		F			0	k
Tullick	H310566	3	1995	IRTU																P	
Tynan	H763420	2	20.6.97	AERC	improved pasture	3	0.5	glide	A	A			R	A	D		A			0	k
Tynan	H764446	2	20.6.97	AERC	woodland + improved pasture	4	1	glide	A	D			A	F			D			0	k
Tynan	H774420	2	20.6.97	AERC	improved pasture	3	0.5	glide + riffle	F	D			R	F	F		D			0	k
Tynan	H781419	2	20.6.97	AERC	improved pasture	2.5	1	glide	O	D				F	F		D			0	k
Tynan	H788417	2	20.6.97	AERC	woodland + gardens	3.5	1	glide	A	D			O	F	F		D			0	k
Tynan	H803364	2	20.6.97	AERC	improved pasture	2.5	0.5	glide	A	D			R	O	F		D			0	k
Upper River Erne	H231443	1	1995	IRTU																P	
Waterfoot	H064679	1	8.6.97	AERC	unimp.past. + woodland	3	0.2	riffle	D	D			D	A			O			0	k
Waterfoot	H070670	1	8.6.97	AERC	unimp.past.	3	0.3	riffle + pool	D	D			D	F			F			0	k
Waterfoot	H075660	1	8.6.97	AERC	unimp.past. + woodland	3	0.2	riffle	D	D			D	F			F			0	k
Waterfoot	H085652	1	1993	IRTU																P	
Waterfoot	H085652	1	02.10.96	AERC	improved grassland/scrub	8	0.2	run	O	O	NV	F	A	A	A	D	O	NV	29.64	0	k

NORTHERN IRELAND CRAYFISH SURVEY					
A. Lakes	Sex	Length	Width	Weight	Comments
		(mm)	(mm)	(grams)	
Back Lough a	F	39.8	21.7	17	Healthy / fertile
Back Lough c	M	26.5	13.5	5	Healthy / fertile
Back Lough e	F	41.8	23.7	23	Healthy / fertile - greenish brown colour
Back Lough e	M	43.6	24.8	28	Healthy / fertile - reddish brown colour
Back Lough e	M	43.4	24.3	28	Healthy / fertile - reddish brown colour
Back Lough e	F	39.7	21.6	19	Healthy / fertile - reddish brown colour
Back Lough e	M	38.8	21.9	22	Healthy / fertile - reddish brown colour
Back Lough e	M	38.8	21	19	Healthy / fertile - reddish brown colour
Back Lough e	M	41.7	24.6	25	Healthy / fertile - reddish brown colour
Back Lough e	M	46.8	25.5	35	Healthy / fertile - reddish brown colour
Burdautien Lough a	M	39.7	21.7	21	Healthy
Burdautien Lough a	M	44.6	24.9	27	Healthy
Burdautien Lough a	F	51.3	28.4	35	Healthy
Burdautien Lough a	M	46.2	25.4	31	Healthy
Carrick Lough c	F	38.1	20.4	16	Healthy / fertile
Carrick Lough c	F	33.3	17.1	10	Healthy / fertile
Carrick Lough c	M	37.2	19.6	15	Healthy
Carrick Lough c	F	40	21.3	18	Healthy-blue white under tail = fertile
Carrick Lough c	M	34.5	17.8	13	Healthy / fertile
Carrick Lough c	M	41.4	22.3	19	Healthy - left claw growing back
Corranny Lough c	F	39.7	21.9	19	Healthy / fertile
Kilroosky Lough a	F	41.9	24.6	19	Healthy
Kilroosky Lough a	M	49.6	26.3	37	Healthy
Kilroosky Lough a	M	46.8	25.5	34	Healthy
Kilroosky Lough a	M	51.1	27.9	38	Healthy
Kilroosky Lough a	M	44	22.3	26	Healthy
Kilroosky Lough a	M	45.3	25.1	30	Healthy
Kilroosky Lough a	F	26	19.6	13	Healthy
Kilroosky Lough a	F	38	21.4	18	Healthy
Kilroosky Lough a	F	43.4	23	19	Healthy
Kilroosky Lough b	M	45.7	25.4	26	Healthy
Kilroosky Lough b	M	42.1	22.5	22	Healthy
Kilroosky Lough b	M	42.8	24	25	Healthy
Kilroosky Lough b	M	41.9	23.6	20	Healthy
Kilroosky Lough b	F	39.8	21.4	16	Healthy
Kilroosky Lough b	M	43.3	23.4	23	Healthy
Kilroosky Lough b	M	47.4	28.2	38	Healthy
Knockballymore c	F	37.4	19.2	14	Healthy
Knockballymore c	F	44.8	24	21	One claw missing and small hole in carapace
L. Nageague	M	37	18	15	Healthy
L. Nageague	M	39	21	19	Missing l.claw
L. Nageague	M	36	19	15	Healthy
Lough Corry c	M	43.2	23.7	26	Healthy / fertile shell softish
Lough Corry d	F	47.7	24.6	26	Healthy / fertile
Lough Lea a	M	42.9	24.4	24	Lost claw / fertile
Lough Lea a	F	41.1	22.3	19	Healthy / fertile
Lough Lea a	M	44.6	23.7	26	Healthy / fertile
Lough Lea a	F	39	21.4	16	Healthy / fertile
Lough Lea a	M	44.5	23.7	29	Healthy / fertile
Lough Lea b	M	42.7	22.8	26	Healthy / sperm on underside
Lough Lea d	M	43.4	23.2	26	Healthy / fertile
Lough Lea d	M	37.5	19.8	17	Healthy / fertile
Lough Lea d	M	43.7	22.8	23	Healthy / fertile
Lough Lea d	M	39.1	21	19	Healthy / fertile
Lough Lea d	F	35.6	19.1	14	Healthy / fertile
Lough Lea d	M	39.8	21.4	22	Healthy / fertile
Lough Lea d	M	39.3	21.1	20	Healthy / fertile
Lough Lea d	F	35.4	18.8	13	Healthy / fertile
Lough Lea f	F	42.4	22.4	21	Healthy / fertile

NORTHERN IRELAND CRAYFISH SURVEY					
A. Lakes	Sex	Length	Width	Weight	Comments
		(mm)	(mm)	(grams)	
Lough Lea f	F	33.9	17.8	12	Healthy / fertile
Lough Lea f	M	38.2	20.3	16	Healthy / fertile
Lough Lea f	F	34.6	18.4	12	Healthy / fertile
Lough Lea f	M	45.8	25	34	Healthy / fertile
Lough Lea f	F	39.2	19.5	16	Healthy / fertile
Lough Lea f	F	37.7	20	15	Healthy / fertile
Lough Lea f	M	41.2	22.3	20	Healthy / fertile
Lough Lea f	M	45.2	24.6	30	Healthy / fertile
Lough Lea f	F	34.2	18.6	11	Healthy / fertile
Lough Lea f	F	36.3	18.7	13	Healthy / fertile
Lough-a-Hache	F	30.2	15.1	8	Healthy
Lough-a-Hache	F	15	7.4	1	Healthy / fertile
Lough-a-Hache/Moorlough Lake	M	44	25	30	Dark brown / white joints, fertile
Mill Lough f	M	46	26.4	31	Healthy / fertile
Moorlough Lake c	F	32.6	18	10	Lost one eye
Summerhill Lough c	F	50	27.3	34	Healthy
Summerhill Lough c	F	43.7	25.2	25	Healthy
Summerhill Lough c	F	48	21.8	30	Healthy
Summerhill Lough d	M	44.4	24.6	27	Healthy
Summerhill Lough d	M	55.4	32.6	57	Healthy
Summerhill Lough d	F	44.3	25.4	26	Healthy

NORTHERN IRELAND CRAYFISH SURVEY					
B. Rivers	Sex	Length (mm)	Width (mm)	Weight (grams)	Comments
Ballinamallard River/Ballinamallard	M	35.5	19.6	15	Healthy / fertile
Ballinamallard River/Ballinamallard	F	20.2	9.9	2	Healthy
Ballinamallard River/Ballinamallard	F	35.9	18.7	13	Healthy / fertile
Ballinamallard River/Ballinamallard	M	31.4	16.1	8	Healthy / fertile
Blackwater Tributary/Brights Hill	F	24.2	12.1	3	Health / fertile
Finn River/Rosslea	M	20.3	10.9	2	Healthy
Fury River/Belastera Bridge	M	20.9	9.8	3	Healthy
Fury River/Belastera Bridge	F	34.5	19	14	Healthy / fertile
Fury River/Belastera Bridge	M	34	18.8	13	Healthy / fertile left claw slightly underdeveloped
Fury River/Belastera Bridge	F	10.7	6.3	<1	Healthy
Fury River/Derrydrummond Hill	M	44.3	23.4	27	One claw / fertile
Fury River/Derrydrummond Hill	F	33.6	18	11	Healthy / fertile
Fury River/Lisbane	M	32.9	17.3	12	Healthy / fertile
Fury River/Lisbane	F	30.3	15.2	8	Healthy / fertile
Fury River/Lisgorran	F	30.2	16	10	Healthy / fertile
Hollybrook River/Hollybrook	M	16.6	8.2	2	Healthy
Manyburns River/Manyburns Bridge	M	23.2	10.9	2	Slightly soft body
Manyburns River/Manyburns Bridge	F	19.5	9.6	2	Healthy / possibly fertile
R. Cleen	M	21	11	2	Healthy
R. Colebrooke	F	11	6	<1	Healthy
R. Colebrooke	M	13	7	1	Healthy
R. Colebrooke	F	15	8	2	Healthy
R. Colebrooke	M	13	6	<1	Healthy
R. Doora	m	22	11	5	Healthy
R. Doora	M	11	6	1	Healthy
R. Doora	F	7	3	1	Healthy
R. Finn	F	14	7	1	Healthy
R. Finn	F	11	6	<1	Healthy
R. Finn	F	14	6	<1	Healthy
R. Tempo	F	28	14	6	Healthy
R. Tempo	F	13	13	5	Healthy
R. Upper Blackwater	M	35	18	15	Healthy
R. Upper Blackwater	M	37	20	18	Healthy
R. Upper Blackwater	M	41	22	22	Healthy
R. Upper Blackwater	M	33	17	12	Healthy
R. Upper Blackwater	M	30	15	8	Healthy
R. Upper Blackwater	M	24	12	5	Healthy
R. Upper Blackwater	F	32	17	10	Healthy
R. Upper Blackwater	M	37	20	18	Healthy
R. Upper Blackwater	M	28	14	6	bacterial infection + parasite
R. Upper Blackwater	F	28	14	8	bacterial infection + parasite
River Blackwater/Abels Bridge	M	22.6	10.9	3	Shell soft appears fertile
River Blackwater/Ballymagowan Br a	F	39.5	22.2	20	Burn spot fertile
River Blackwater/Ballymagowan Br a	F	39.2	21.4	18	Healthy / fertile
River Blackwater/Ballymagowan Br a	M	40.7	23.4	24	Healthy / fertile
River Blackwater/Killybrick House	M	21.9	10.1	3	Healthy / fertile
River Blackwater/Killybrick House	F	20.9	10	3	Healthy / fertile
River Blackwater/Moy Bridge	M	34.7	19.5	15	Healthy / fertile
River Blackwater/Ravella Bridge	M	26.1	13.2	5	Healthy / fertile
Sillees River/Carrick Lough	?	6.8	3	<1	Opaque body red claws
Sillees River/Correl Glen	F	33.8	17.3	11	Opaque at joints could be fertile
Sillees River/Correl Glen	F	36.9	18.6	12	Some opaqueness definitely fertile
Sillees River/Derrygonnelly School a	M	40.3	25.3	29	Healthy
Sillees River/Derrygonnelly School a	F	33.7	18.2	10	Healthy
Sillees River/Derrygonnelly School a	F	32.4	17.8	10	Healthy / fertile
Sillees River/Derrygonnelly School a	M	35.8	19.6	16	Healthy / fertile
Sillees River/Derrygonnelly School a	F	29.6	15.5	6	Healthy / fertile
Sillees River/Derrygonnelly School a	F	30.3	16.5	9	Healthy / fertile
Sillees River/Derrygonnelly School a	F	22.8	11.7	5	Healthy
Sillees River/Derrygonnelly School a	F	36.9	20.3	17	Healthy / fertile
Sillees River/Derrygonnelly School a	F	35.7	18.7	11	Healthy / fertile right claw growing
Sillees River/Derrygonnelly School a	F	36.1	18.5	13	Healthy / fertile

NORTHERN IRELAND CRAYFISH SURVEY					
B. Rivers	**Sex**	**Length**	**Width**	**Weight**	**Comments**
		(mm)	**(mm)**	**(grams)**	
Sillees River/Derrygonnelly School a	F	28.5	14.6	6	Healthy / fertile
Sillees River/Derrygonnelly School a	M	29.7	17.3	8	Healthy / fertile
Sillees River/Derrygonnelly School a	F	32.3	17.9	12	Healthy / fertile
Sillees River/Derrygonnelly School b	M	27.8	14.1	8	Healthy / fertile
Sillees River/Derrygonnelly School b	M	40.9	22.5	26	Healthy
Sillees River/Drumanure Bridge a	F	26.1	13.5	4	Healthy / fertile
Sillees River/near Drumary a	M	37.8	21.8	14	Lost a claw
Sillees River/near Glenlevan a	M	51.4	30.2	50	Healthy / fertile
Sillees River/near Glenlevan b	M	39.2	21.4	18	Healthy / small left claw
Sillees River/near Glenlevan b	F	35.2	19.8	14	Healthy / fertile
Sillees River/near Glenlevan b	F	34.2	18.2	11	Healthy / fertile
Sillees River/Stratore Bridge a	M	44.8	15.6	32	Healthy Dark body due to silt?
Sillees River/Stratore Bridge a	M	40.9	22.9	24	Healthy
Sillees River/Stratore Bridge a	F	42	22.8	20	Healthy/ fertile and broad tail ready for eggs
Sillees River/Stratore Bridge a	F	34.5	20	14	Healthy / fertile
Sillees River/Stratore Bridge a	M	30	15.5	7	Healthy
Sillees River/Stratore Bridge a	F	34.6	18.8	13	Healthy / fertile
Sillees River/Stratore Bridge a	F	26.4	13.7	7	Healthy / fertile
Sillees River/Stratore Bridge a	M	36.1	18.7	15	Healthy / fertile
Sillees River/Stratore Bridge a	F	33.6	18.2	11	Healthy / fertile, green colour
Sillees River/Stratore Bridge a	F	31.7	15.9	8	Healthy / fertile, broad tail
Sillees River/Stratore Bridge b	M	29	16	8	Healthy
Sillees River/Stratore Bridge b	M	19.9	10	2	Healthy / fertile
Tempo River/near Letton	F	33.6	17.8	11	Healthy / fertile
Tempo River/Tempo	F	39	21.5	13	No claws / fertile
Termon River/Lurganboy Bridge	F	20.3	10.3	2	Healthy soft body

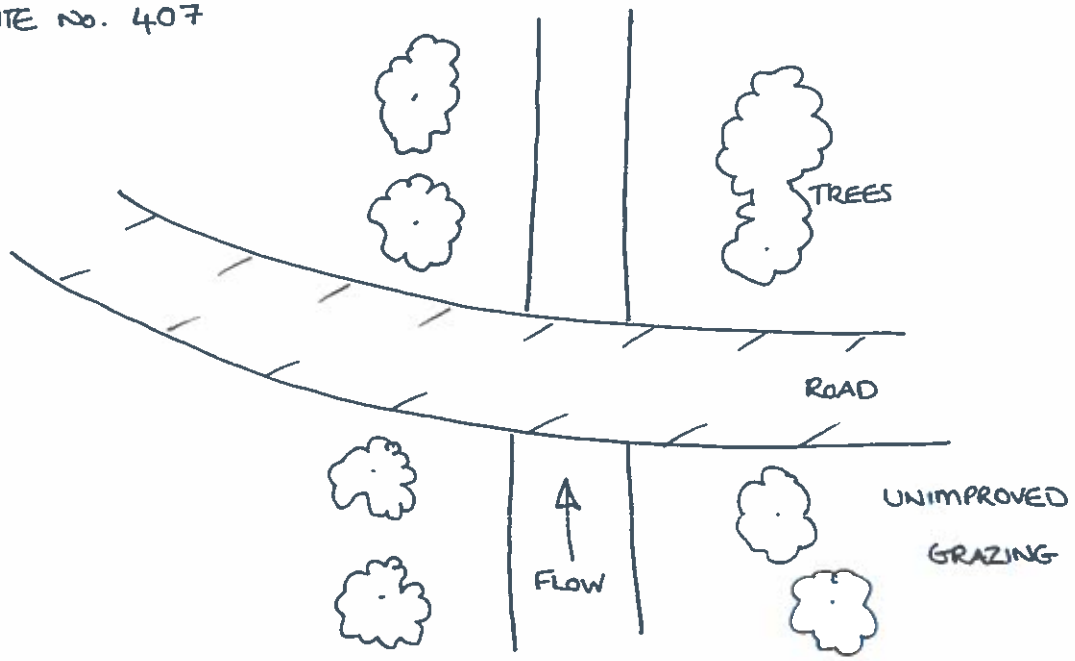
APPENDIX 4

SKETCH MAPS SHOWING LOCATIONS OF CREELS DEPLOYED IN LAKES

RIVER BALLYMULLY

H810 859 (NGR)

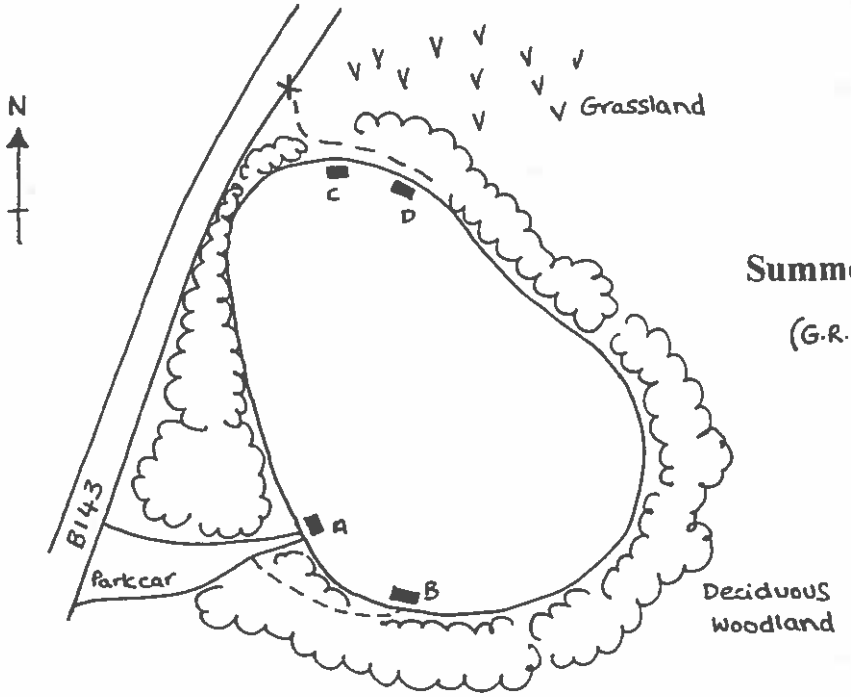
SITE No. 407



LOUGH DERG

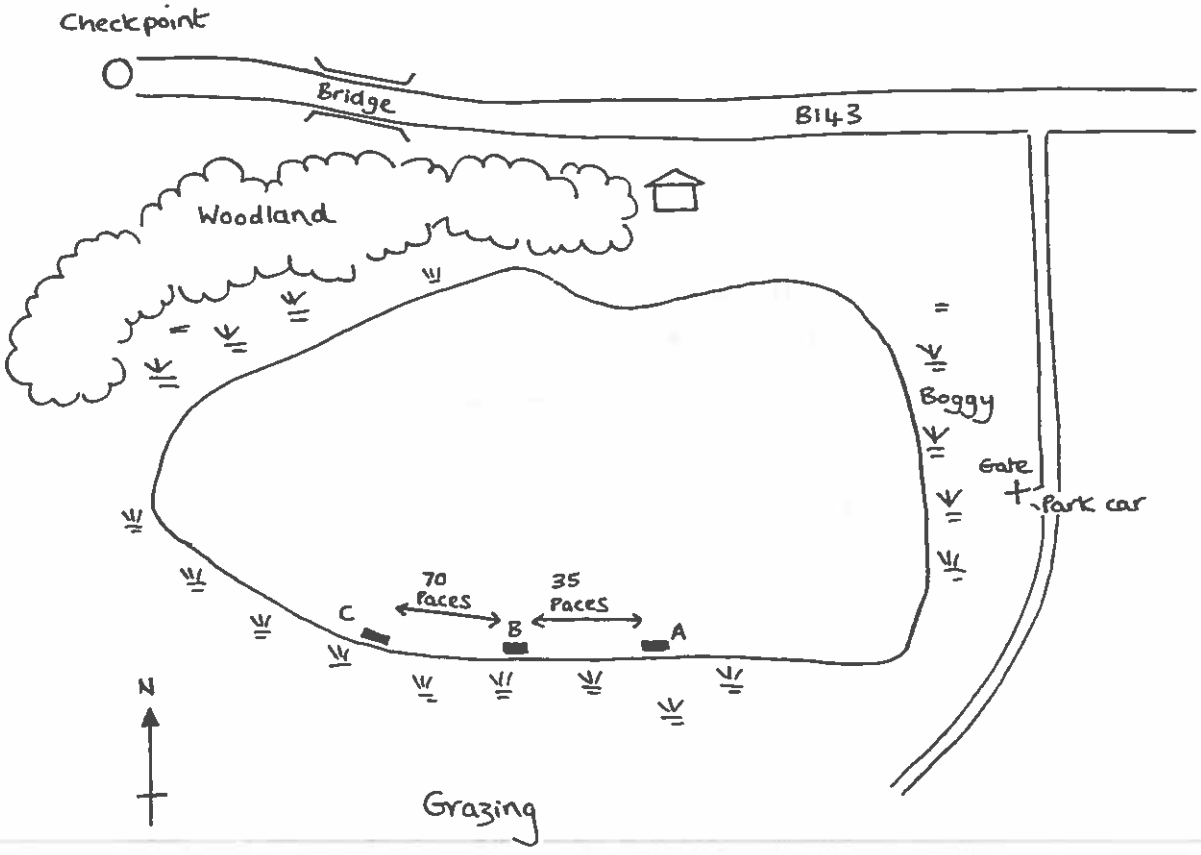
H091 760 (NGR)

SITE No. 410, 411, 412, 413



Summerhill Lough

(G.R. H491 279)

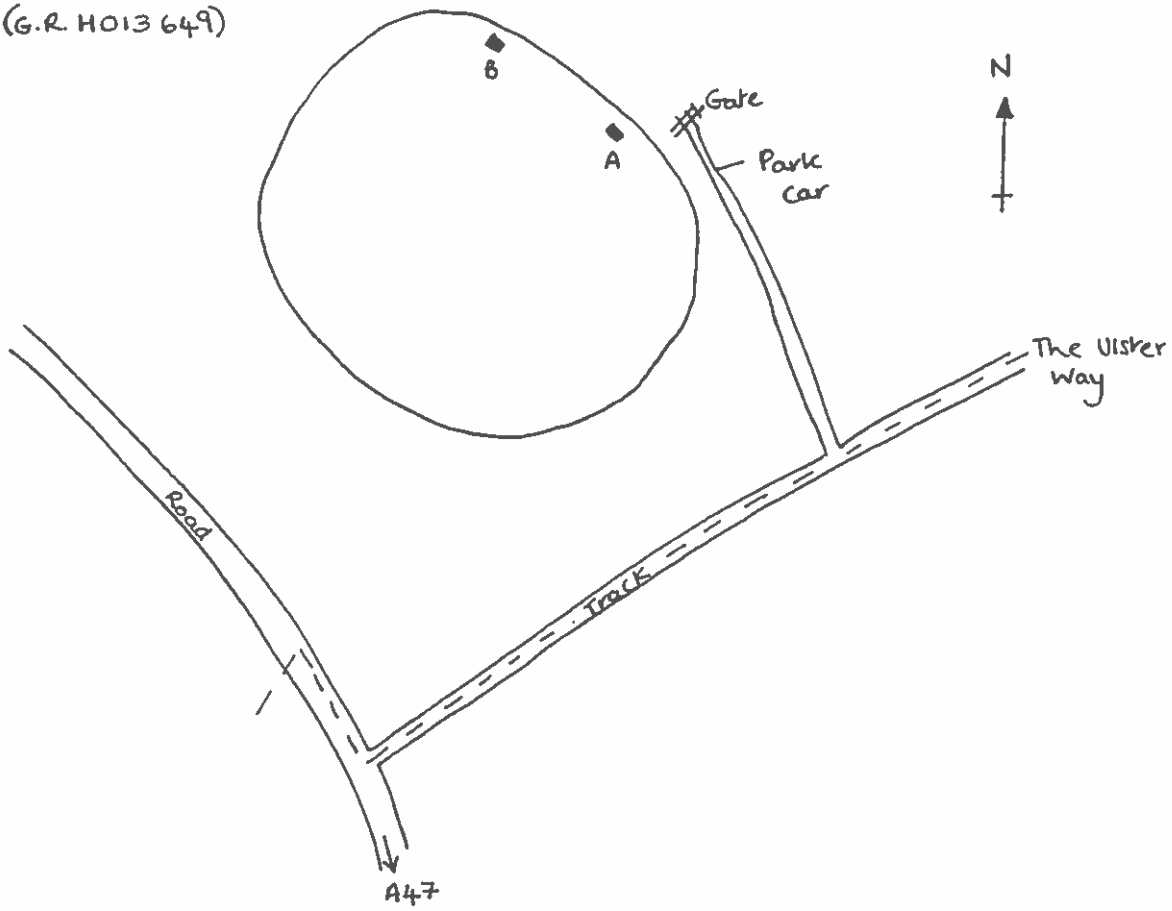


Knockballymore Lough

(G.R H478 269)

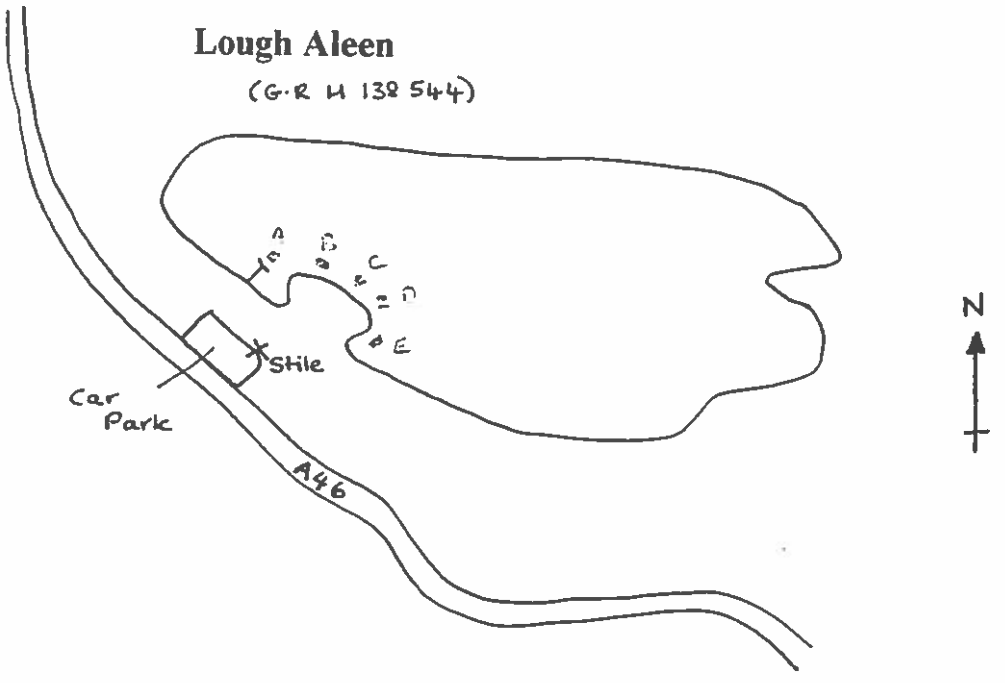
Fir Lough

(G.R. H013 649)



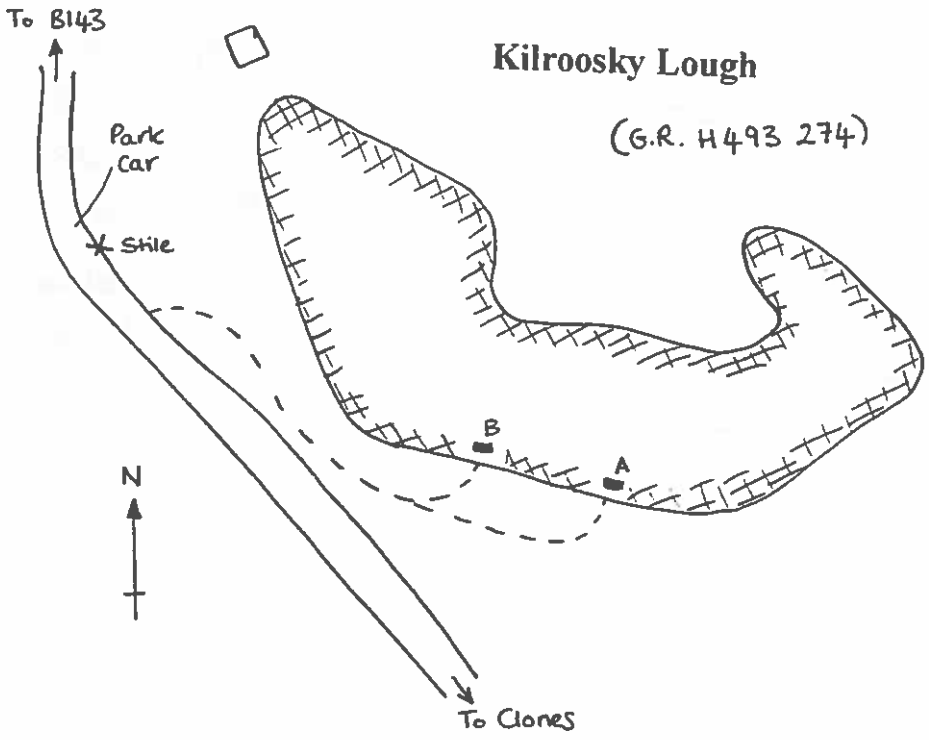
Lough Aleen

(G.R H 138 544)



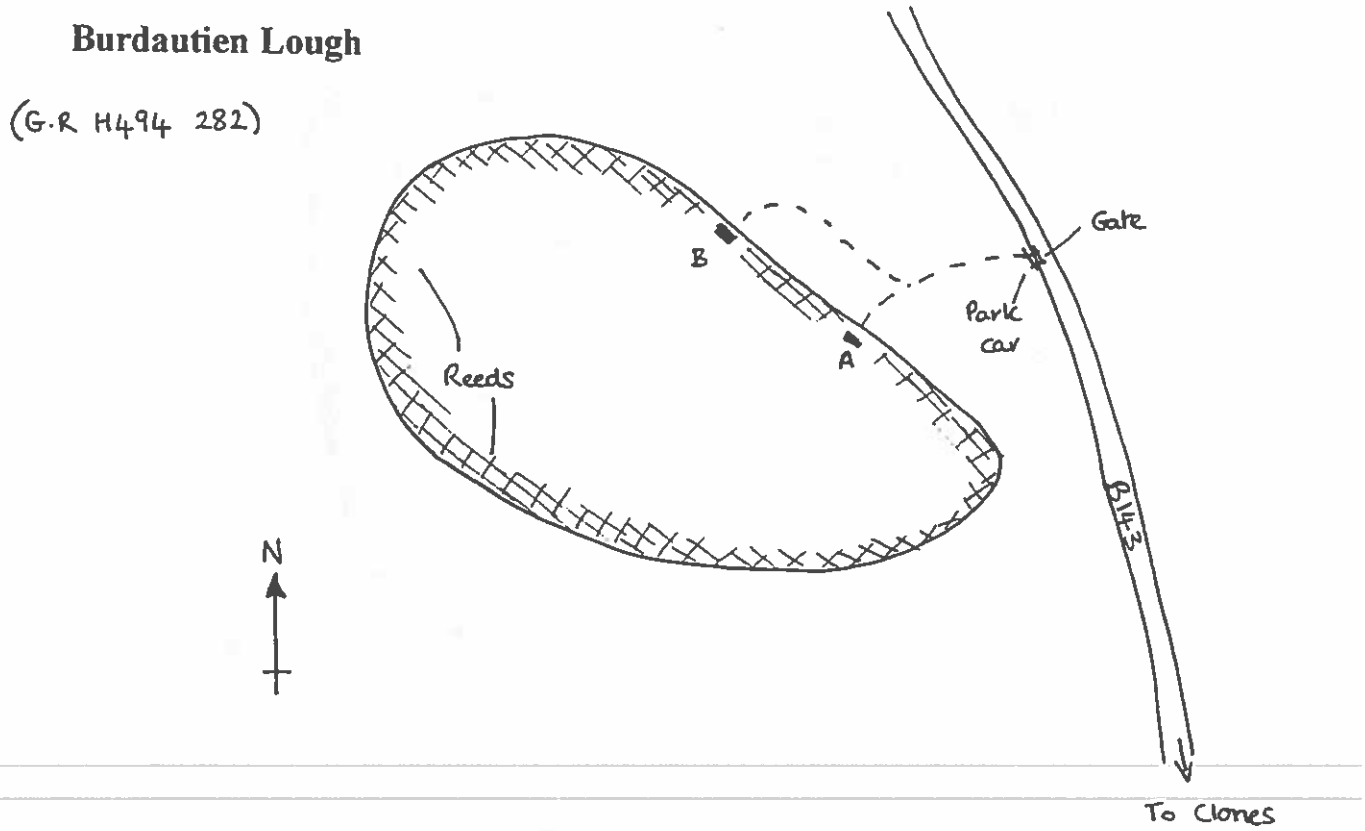
Kilroosky Lough

(G.R. H493 274)



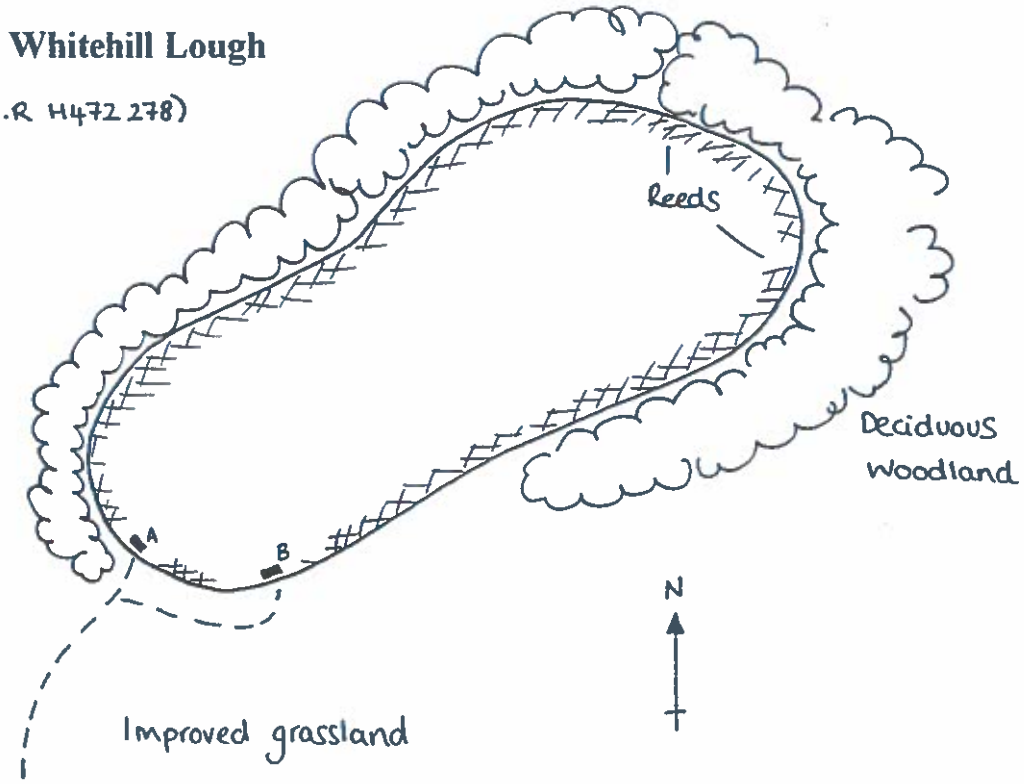
Burdautien Lough

(G.R H494 282)



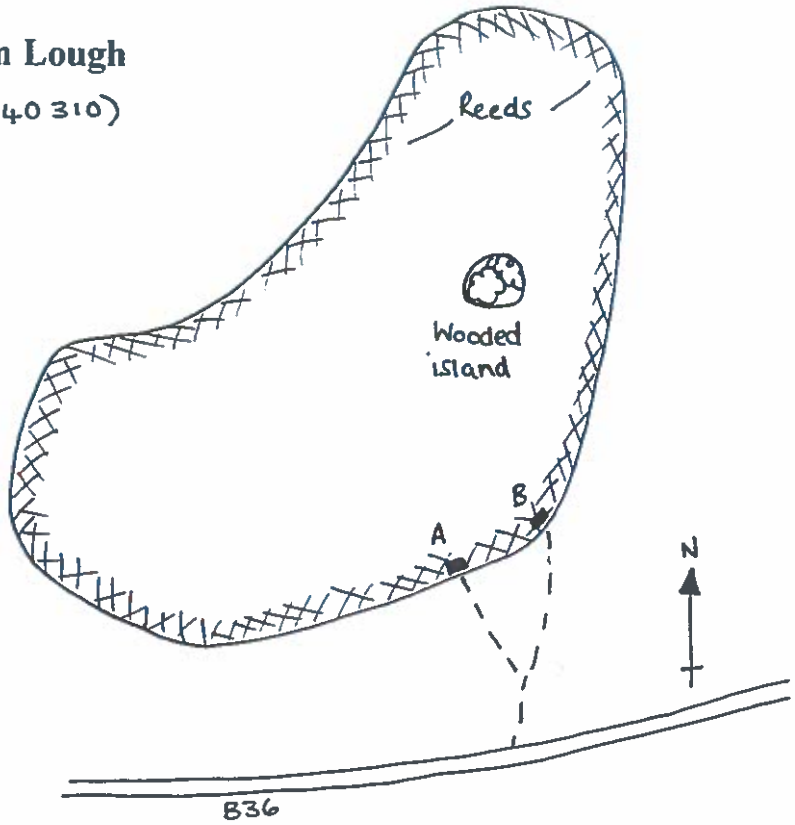
Whitehill Lough

(G.R H472 278)



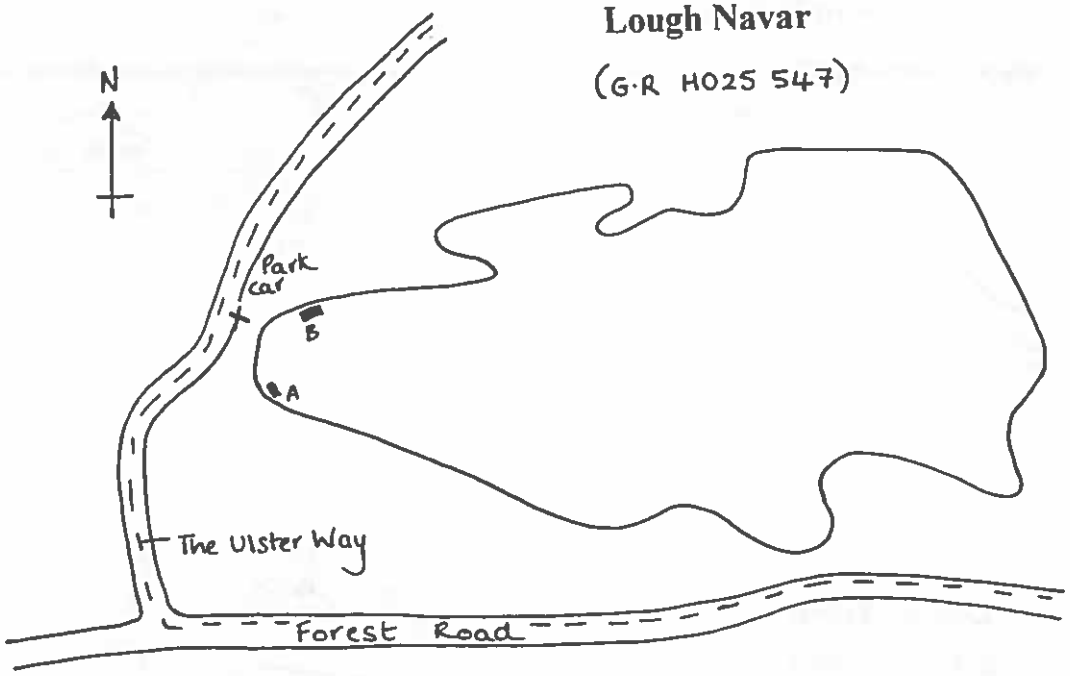
Tattycam Lough

(G.R H440 310)



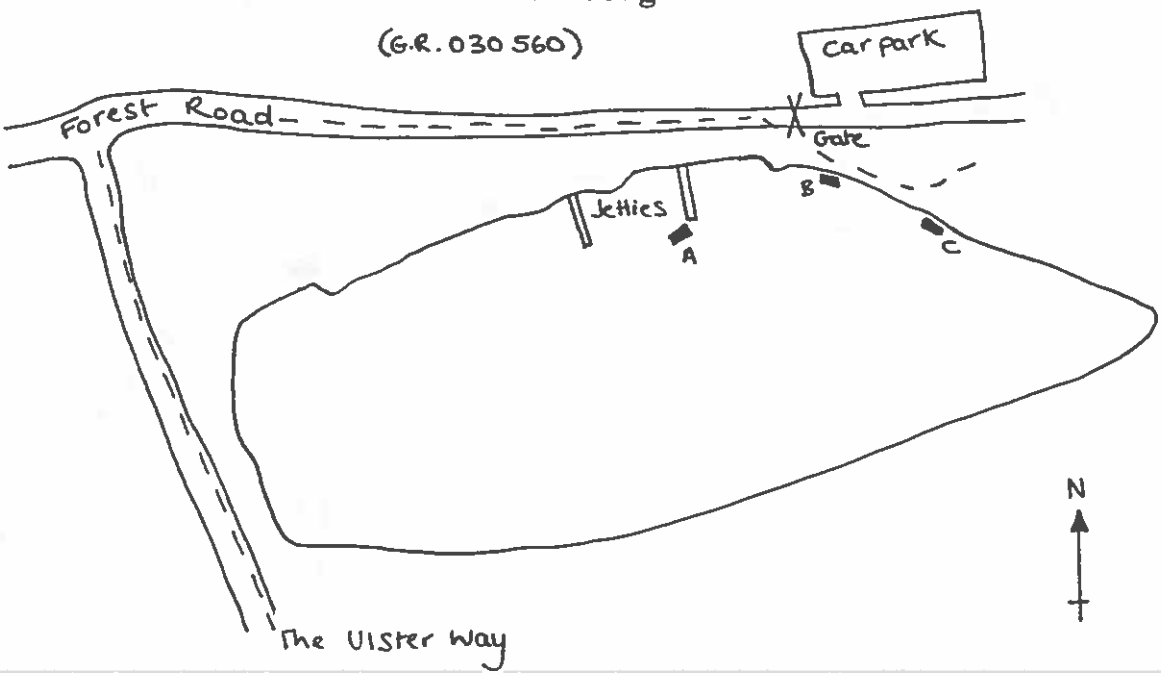
Lough Navar

(G·R H025 547)



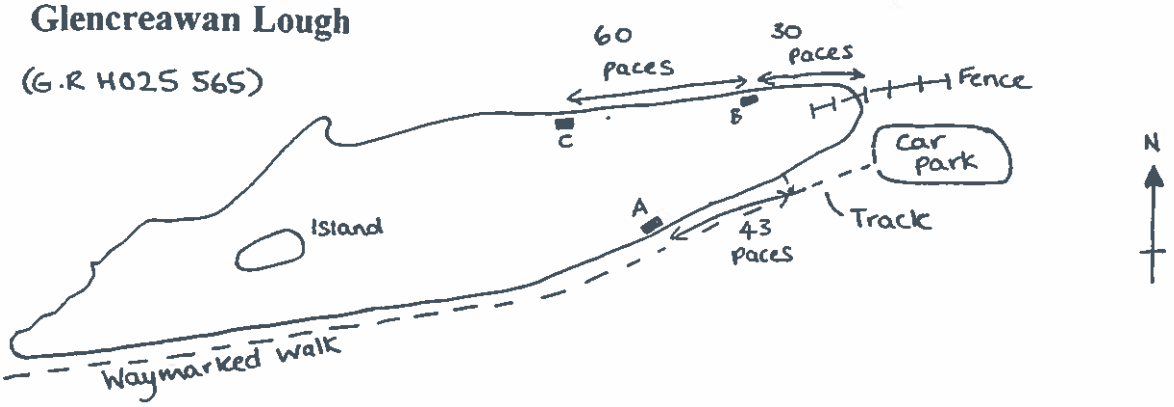
Meenameen Lough

(G.R. 030 560)



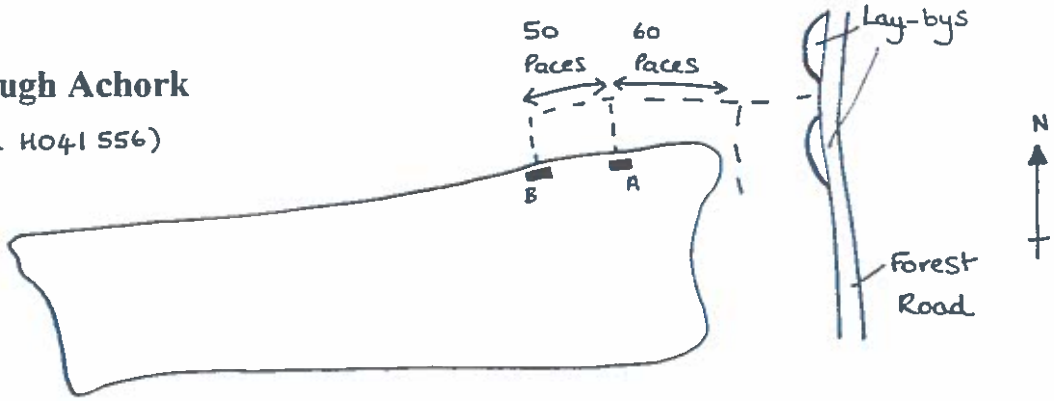
Glencreawan Lough

(G.R H025 565)



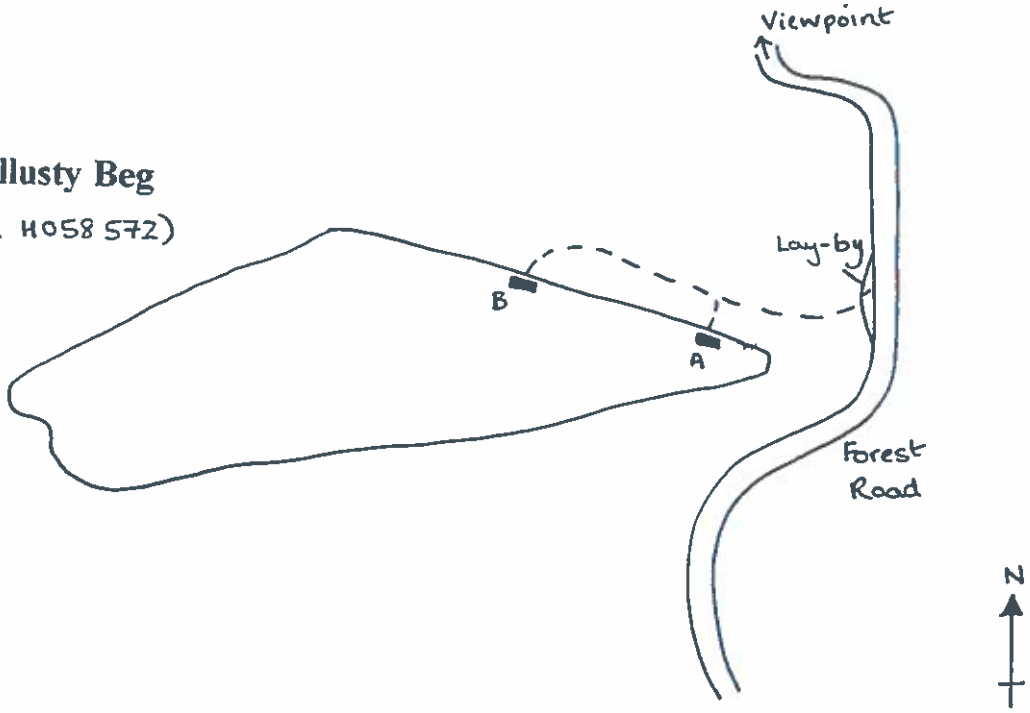
Lough Achork

(G.R H041 556)



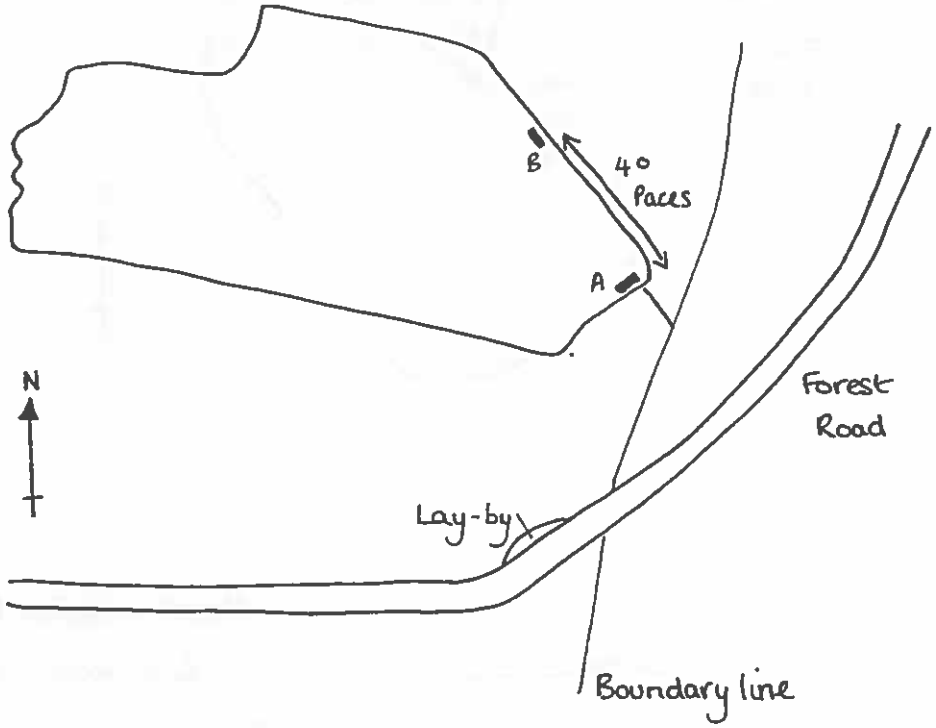
Bollusty Beg

(G.R H058 572)



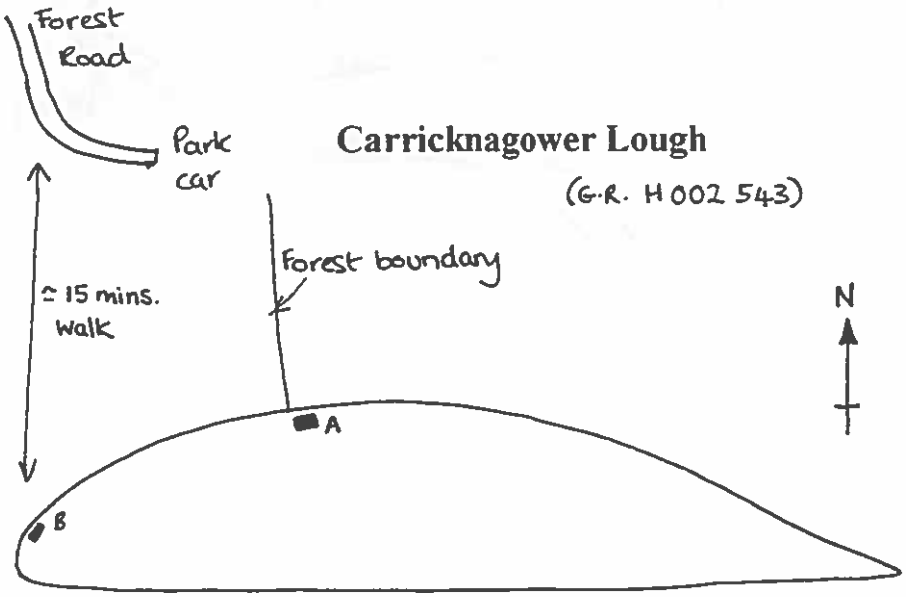
Lough Anlaban

(G.R. H053 563)



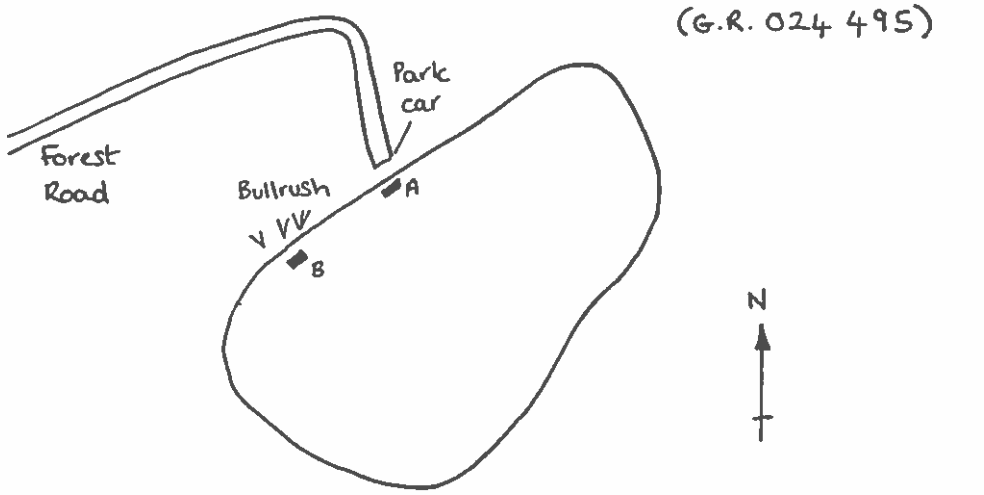
Carricknagower Lough

(G.R. H002 543)



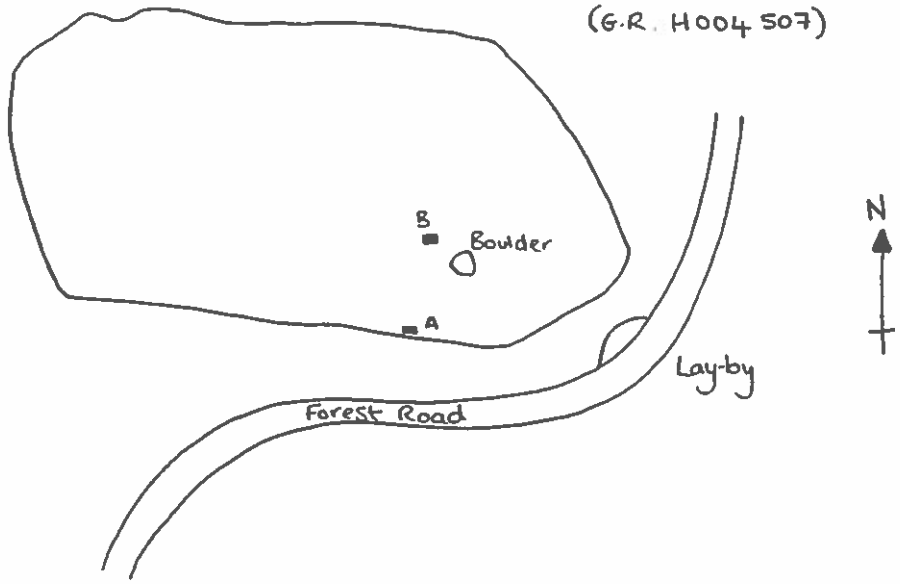
Bigdogs Lough

(G.R. 024 495)



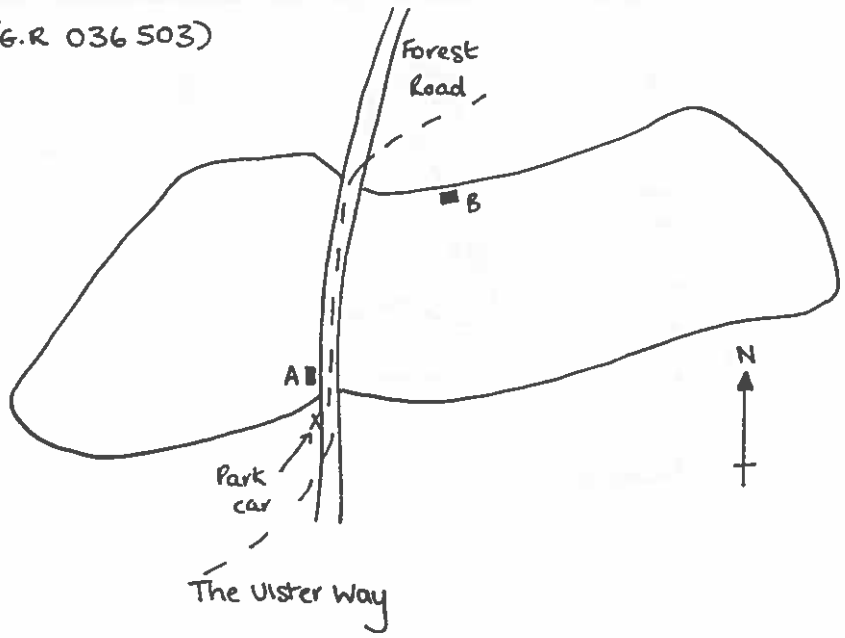
Derrynacarbit Lough

(G.R. H004 507)



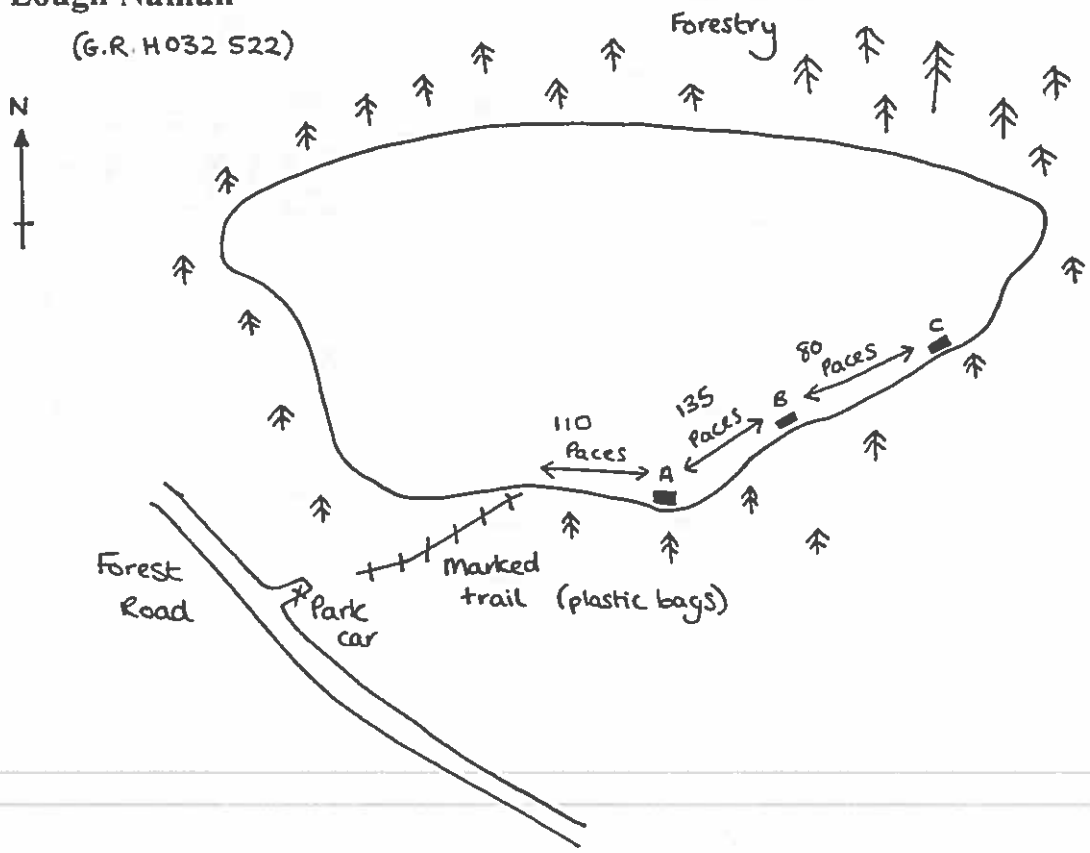
Lough Nabrickboy

(G.R 036 503)



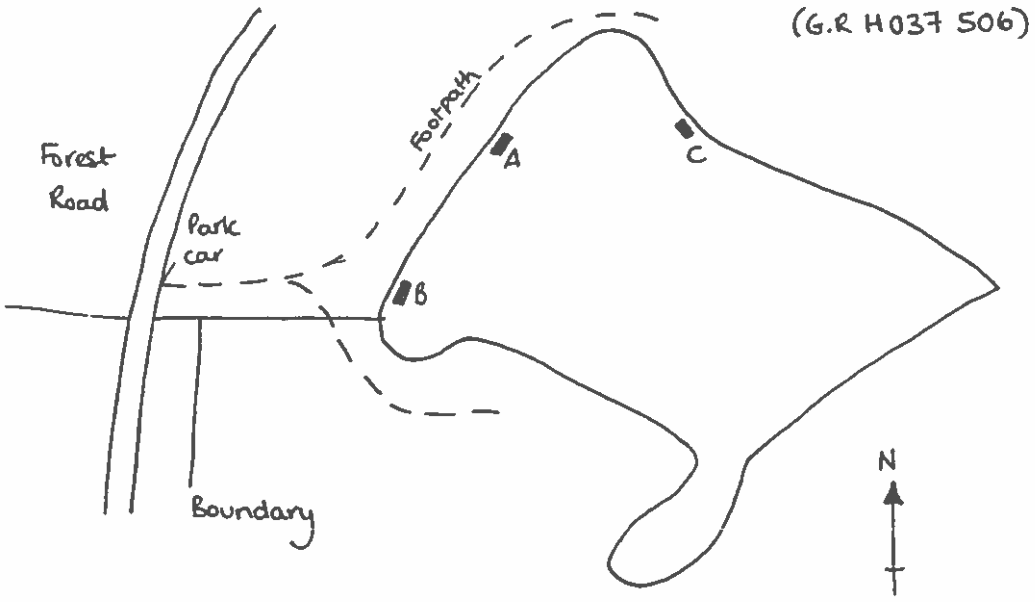
Lough Naman

(G.R. H032 522)



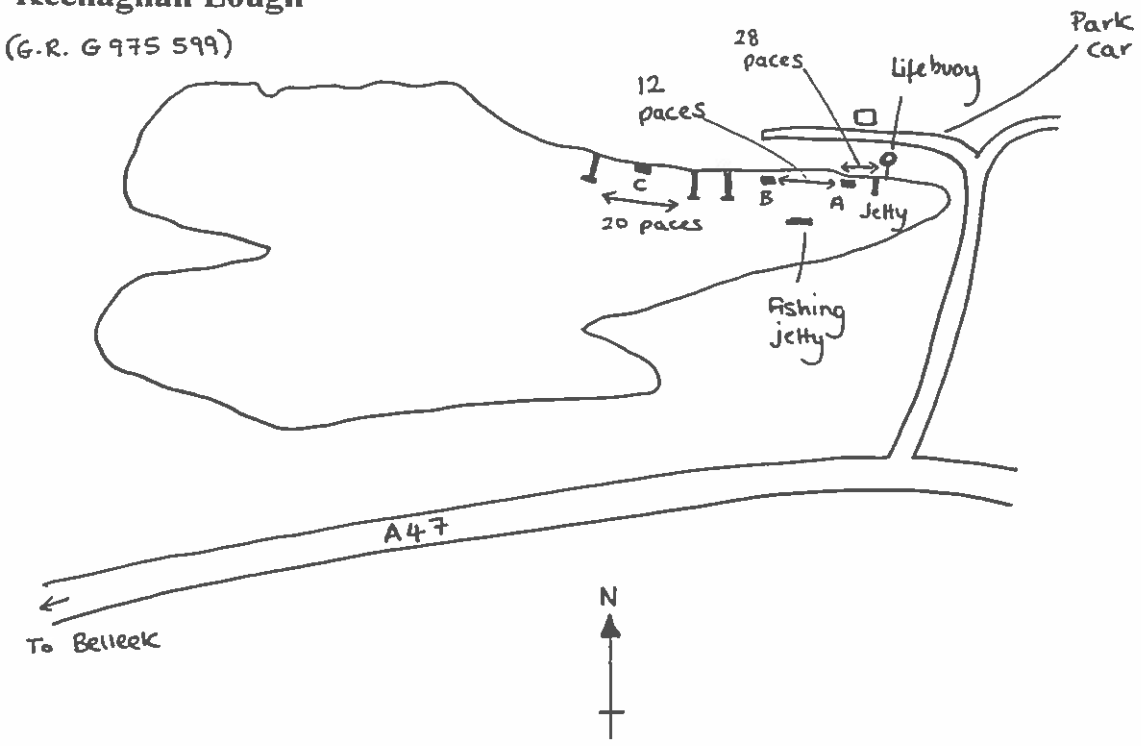
Lough Doo

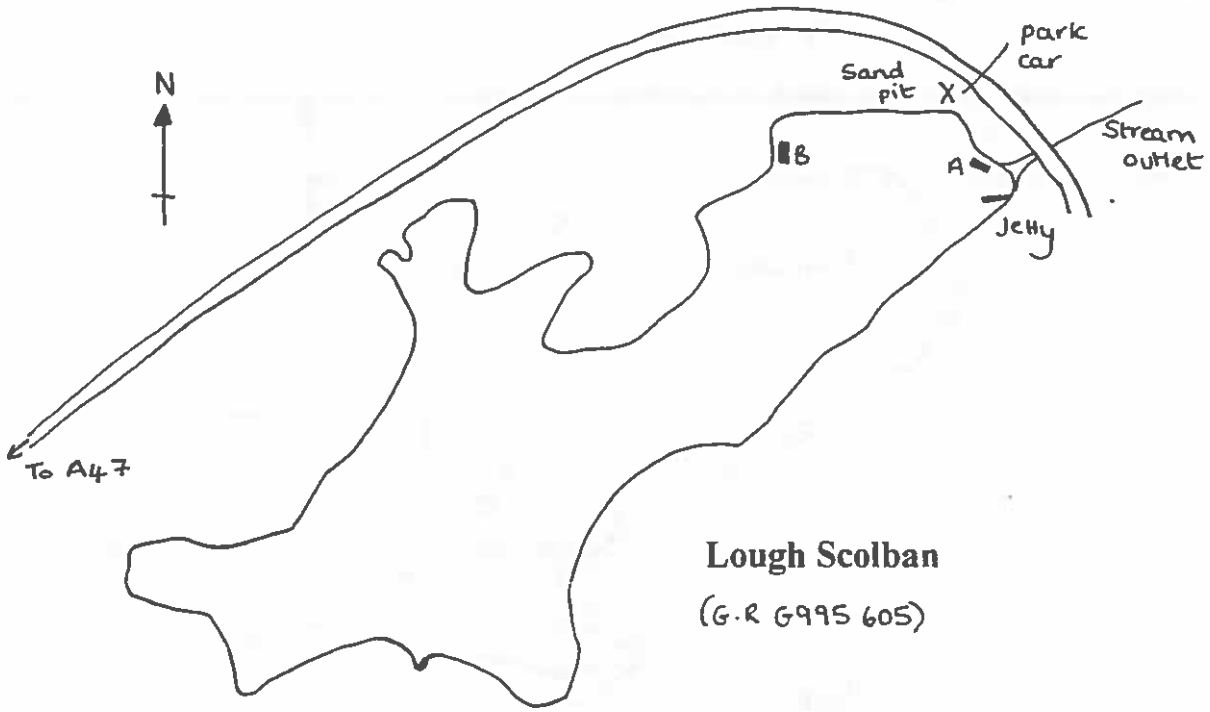
(G.R H037 506)



Keenaghan Lough

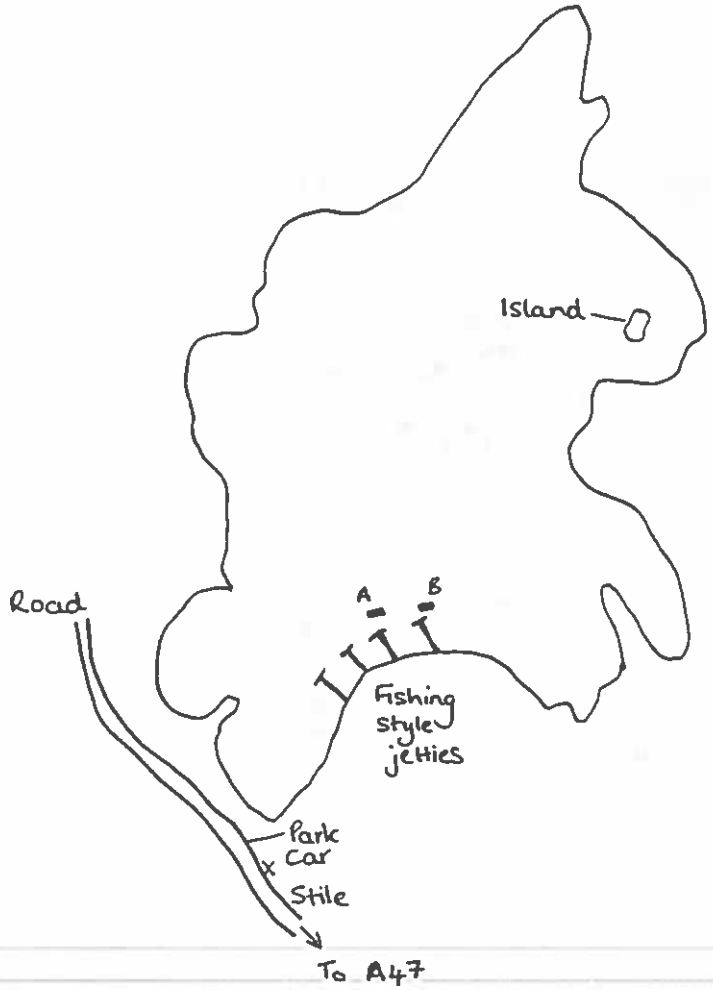
(G.R. G975 599)





Lough Scolban

(G.R G995 605)

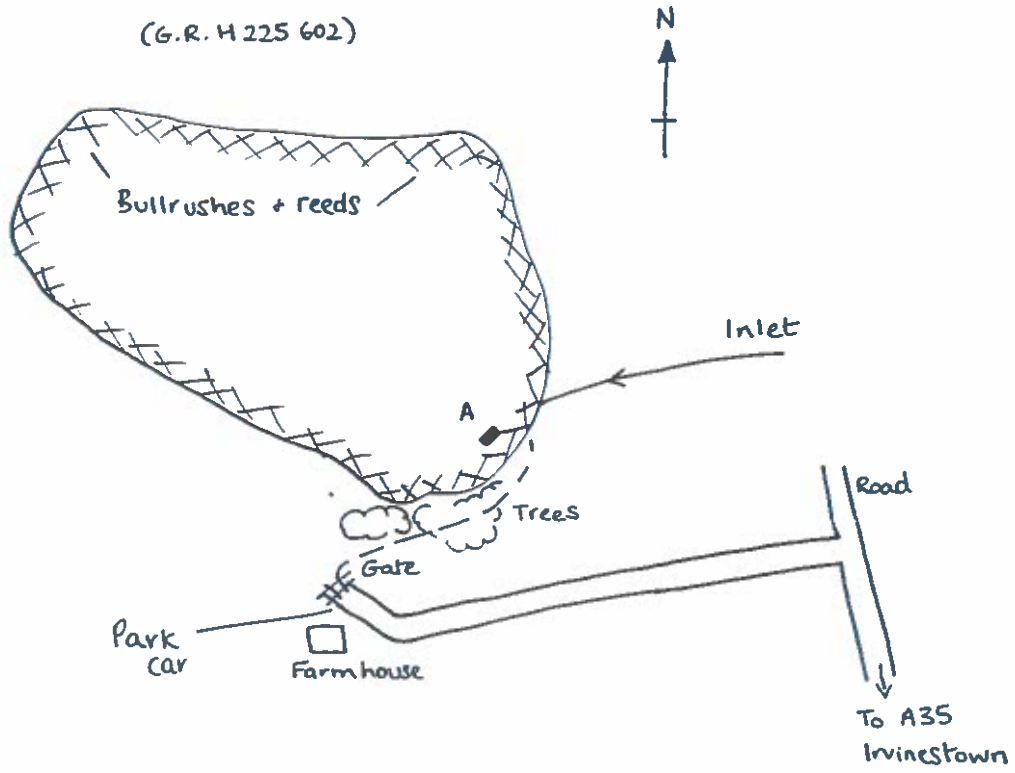


Lough Vearty

(G.R. 994 660)

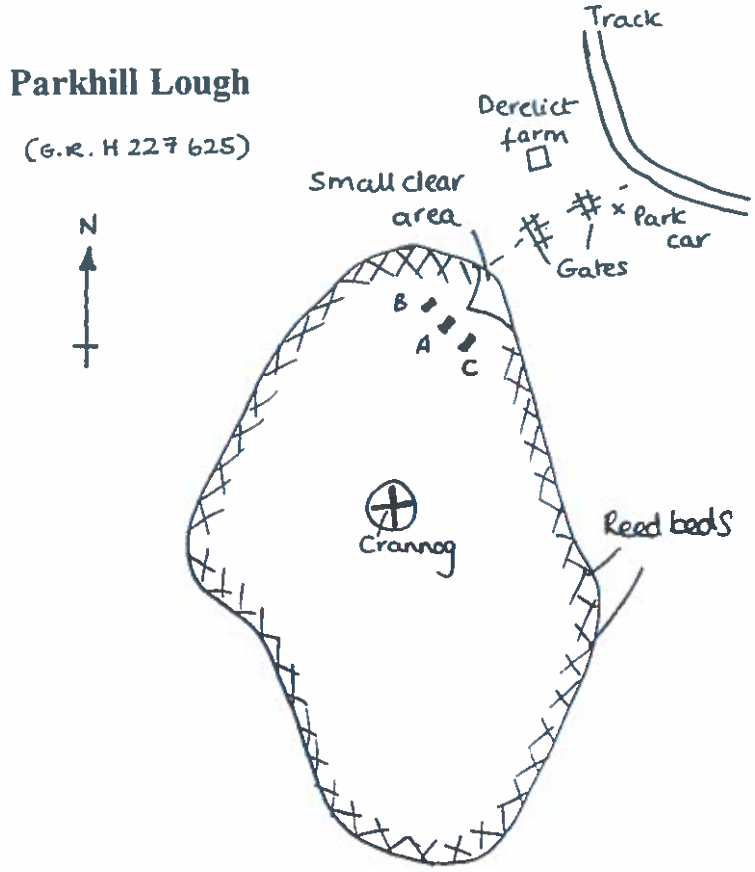
White Lough

(G.R. H 225 602)



Parkhill Lough

(G.R. H 227 625)



Castlehume Lough

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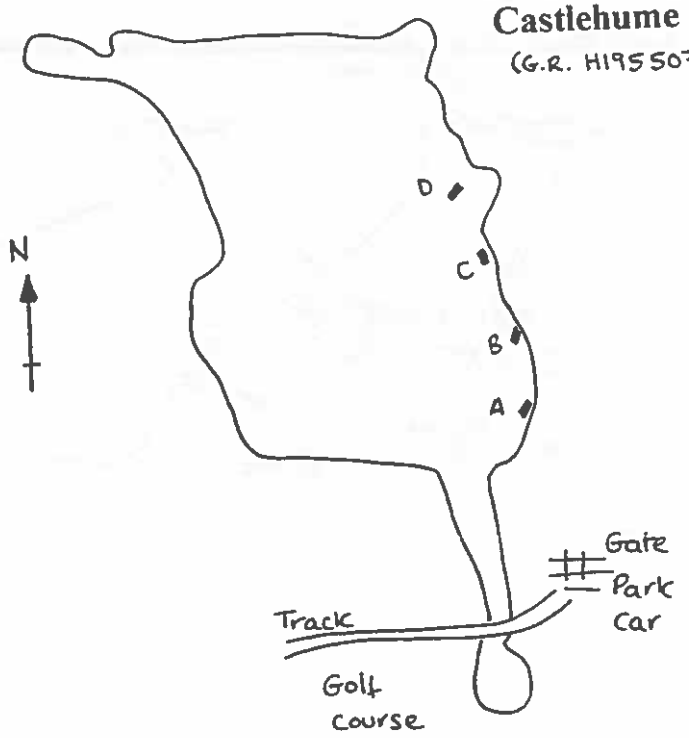
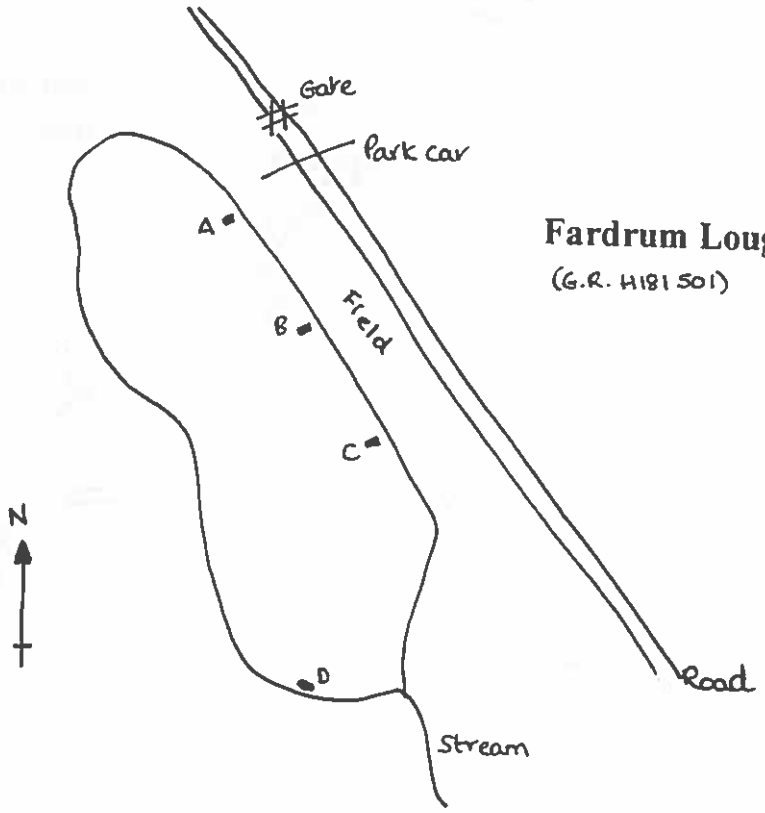
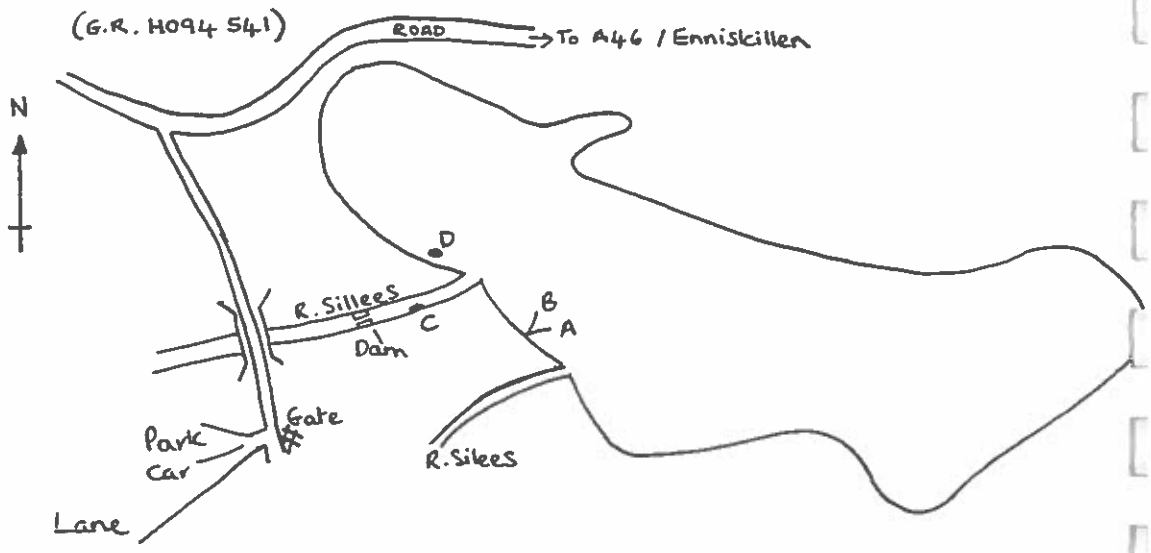


Fardrum Lough

(G.R. H181 501)

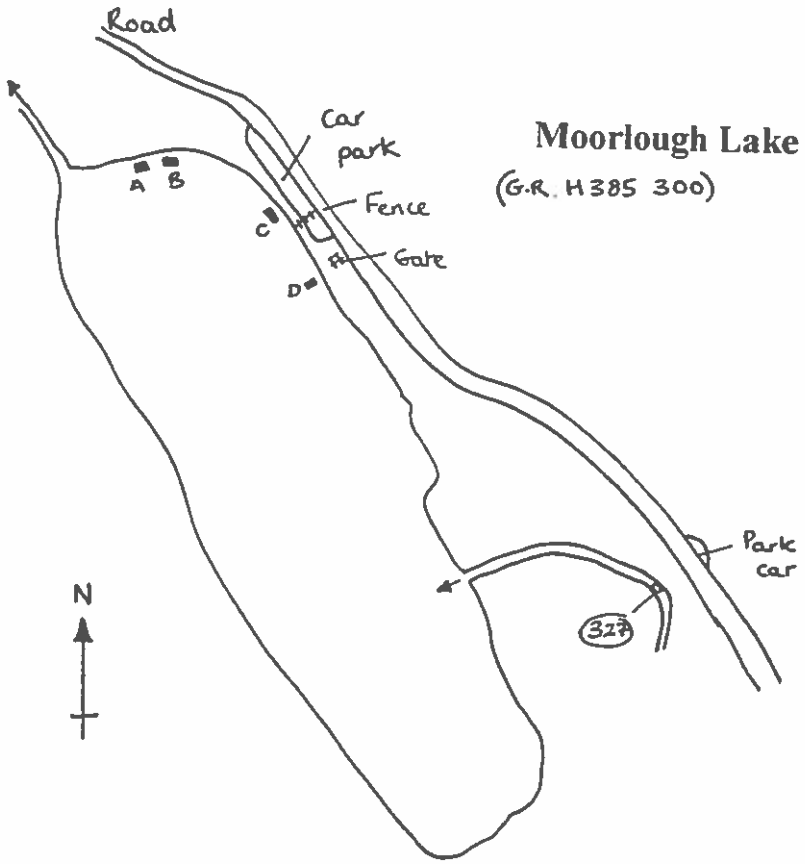


Carrick Lough



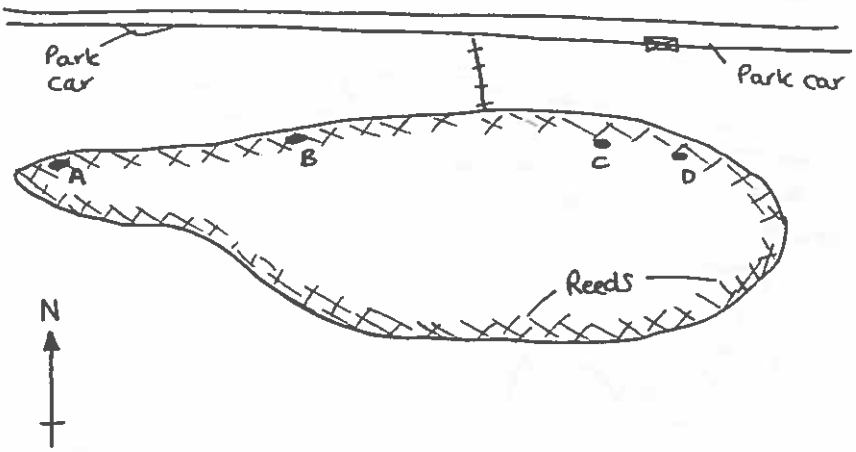
Moorlough Lake

(G.R. H385 300)



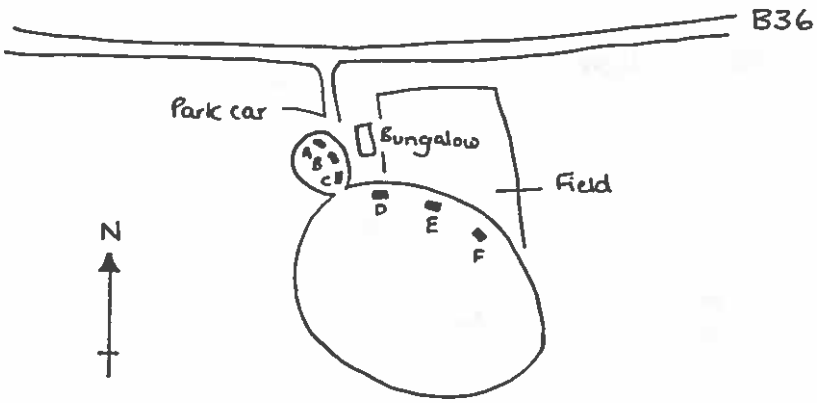
Kilmacbrack Lough

(G.R. H406 295)



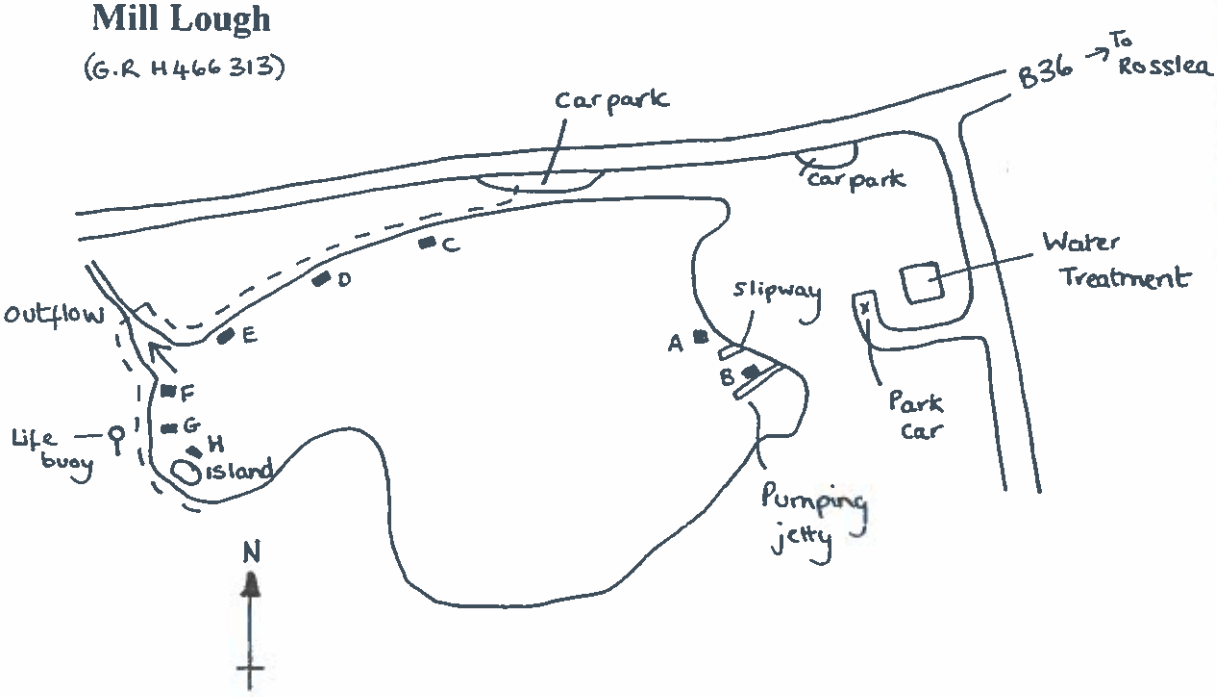
Lisnamallard Lough

(G.R. H434 307)



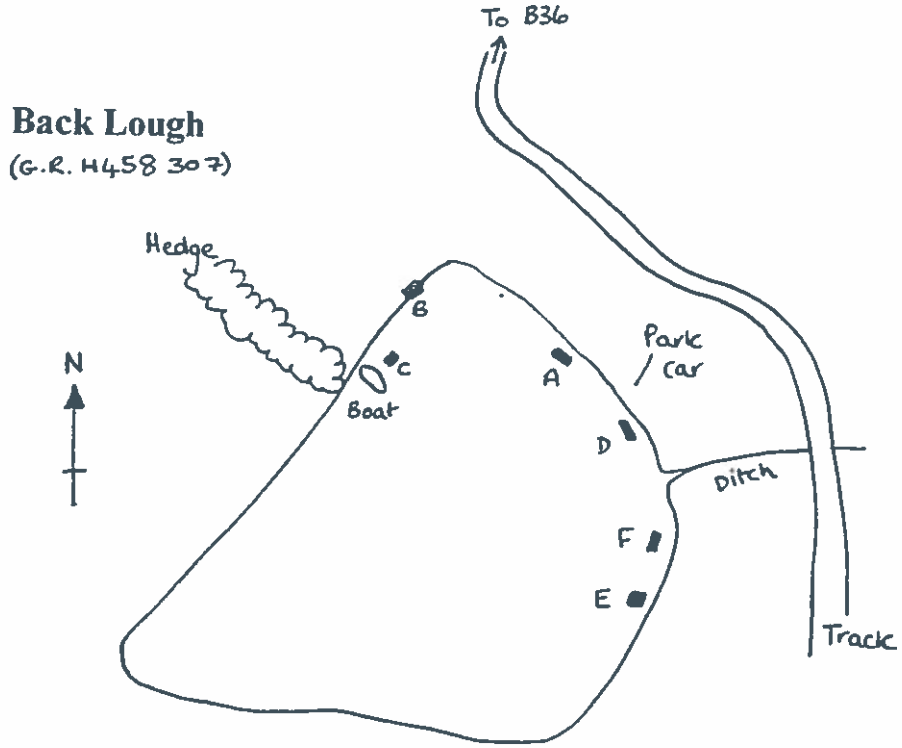
Mill Lough

(G.R H466 313)



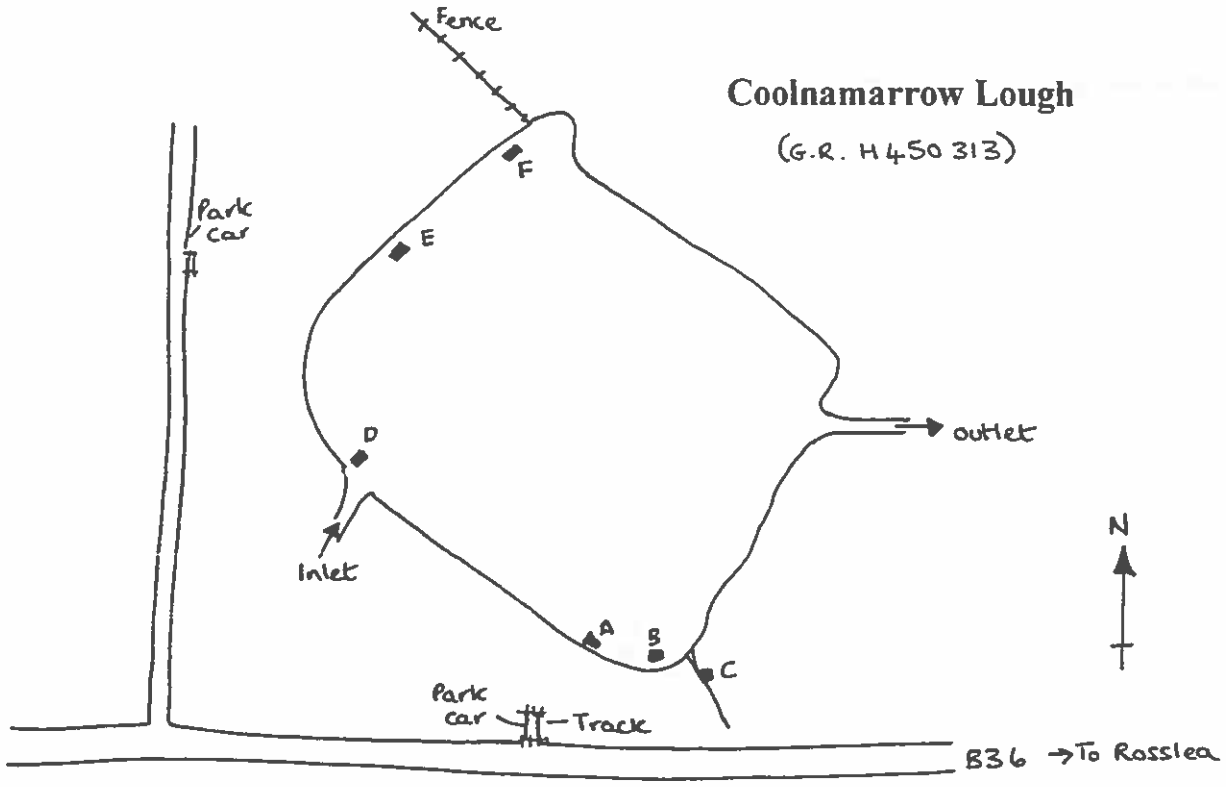
Back Lough

(G.R. H458 307)



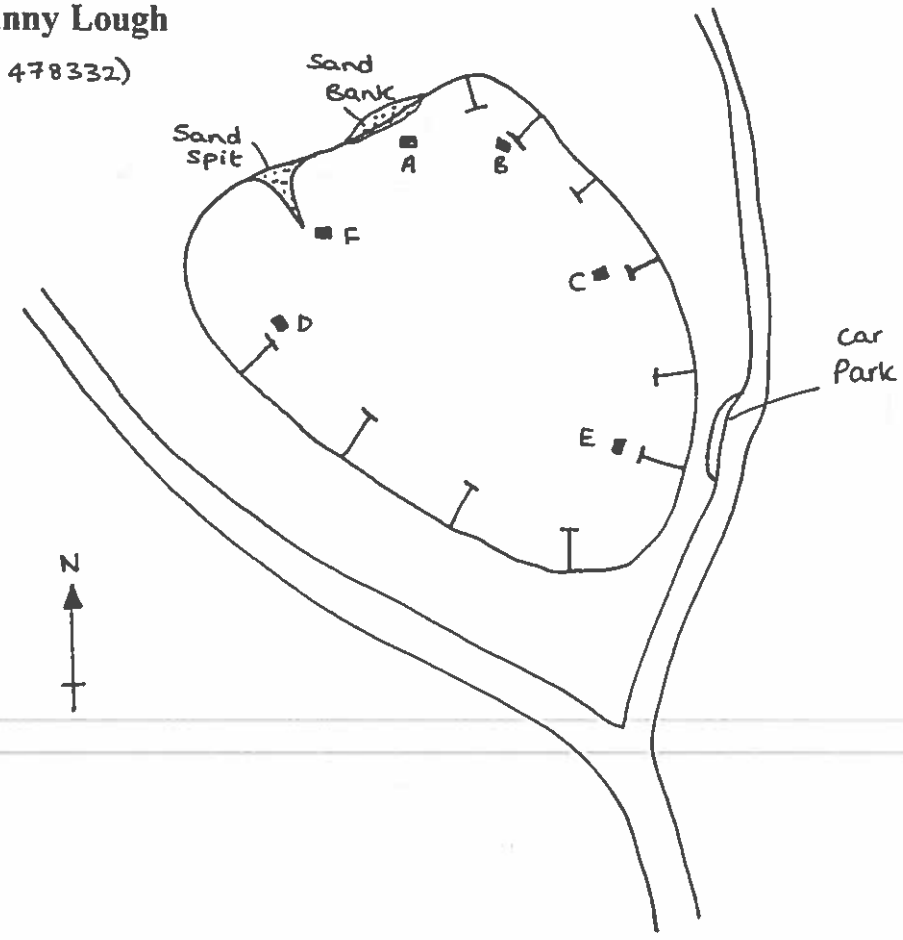
Coolnamarrow Lough

(G.R. H450 313)



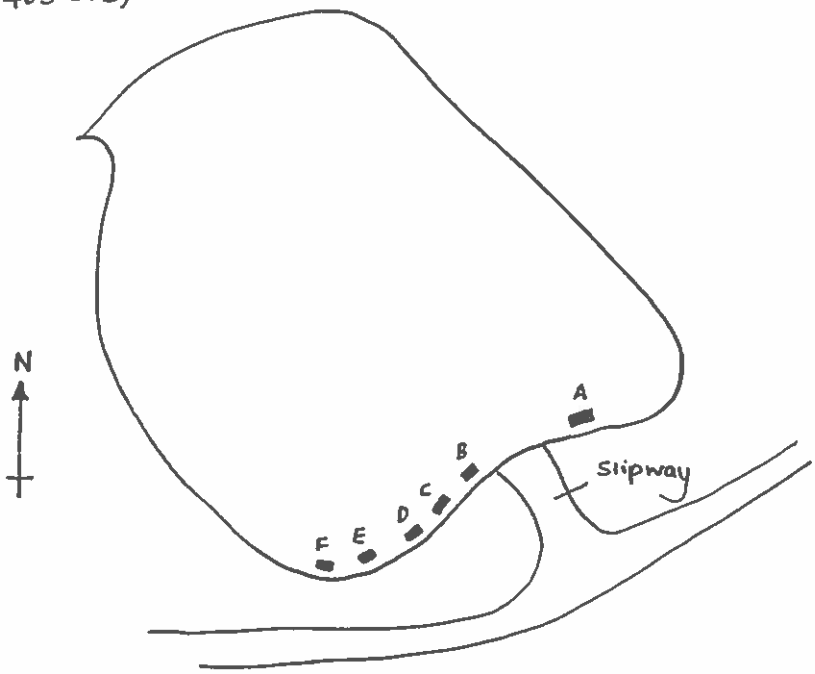
Coranny Lough

(G.R. H 478332)



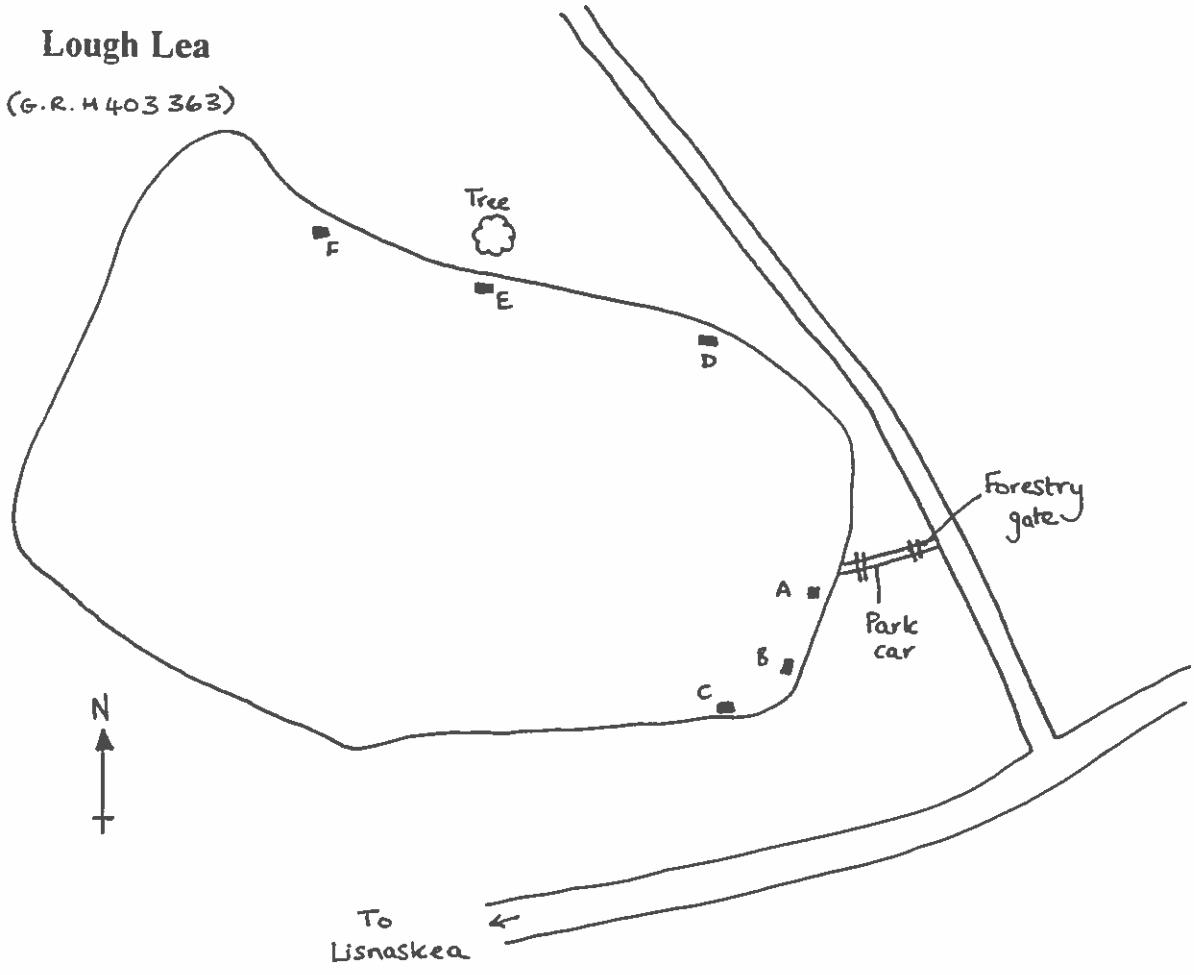
Lough Corry

(G.R. H465 363)



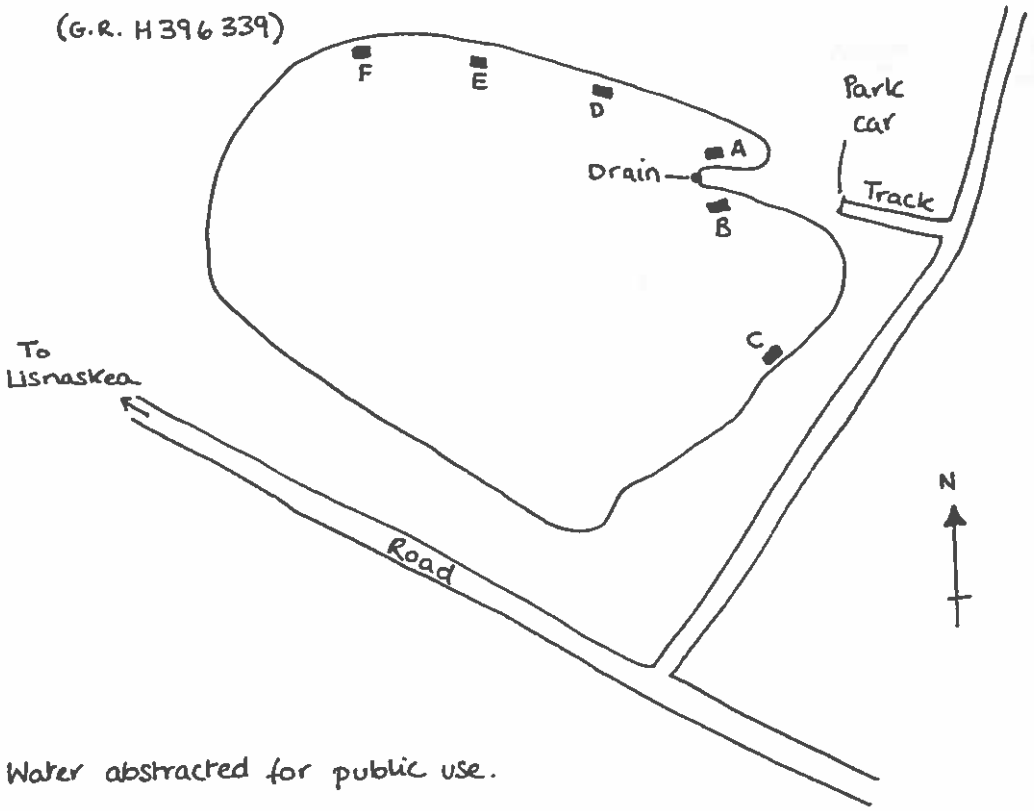
Lough Lea

(G.R. H403 363)



Lough Narye

(G.R. H 396 339)

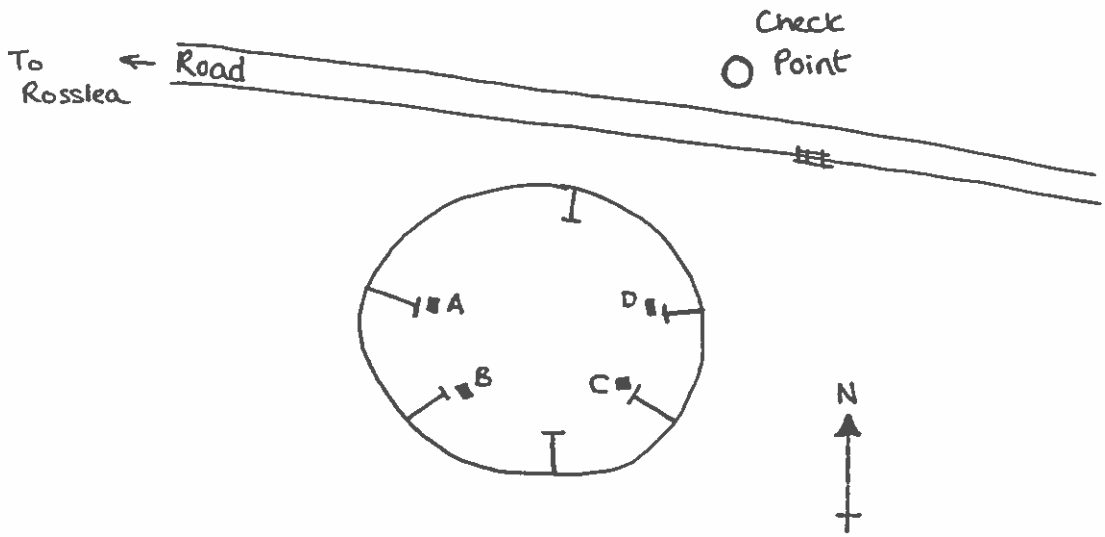


Water abstracted for public use.

Many crayfish found in the pipes and tanks at the purification plant.

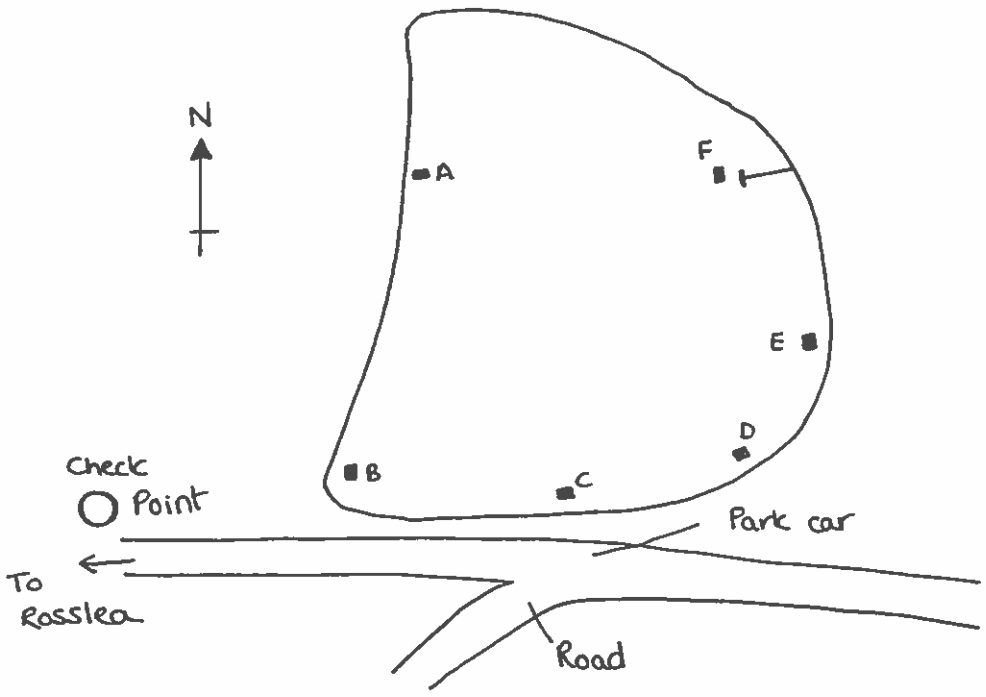
Annashanco Lough

(G.R. H549 319)



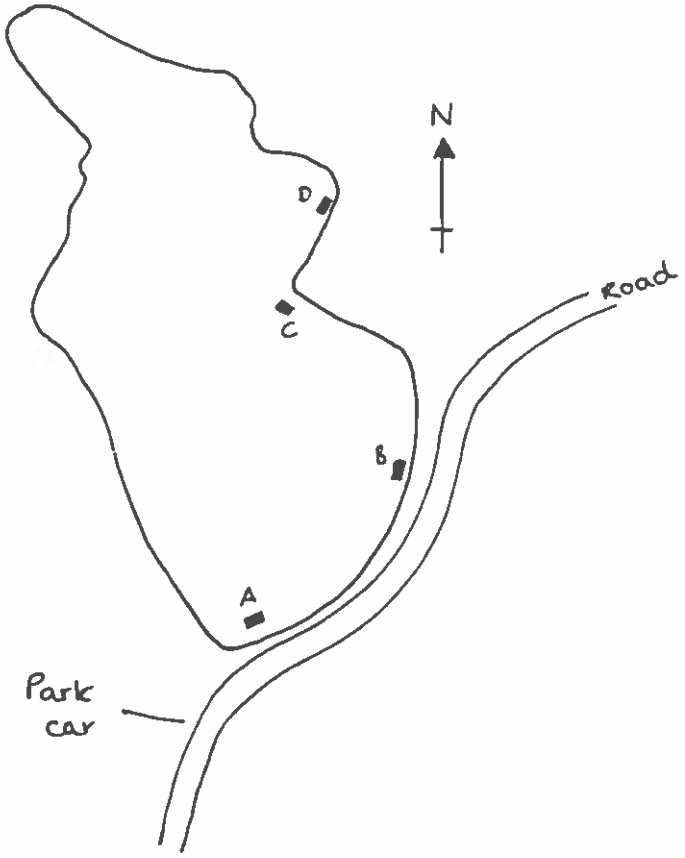
Unshinagh Lough

(G.R. H552 321)



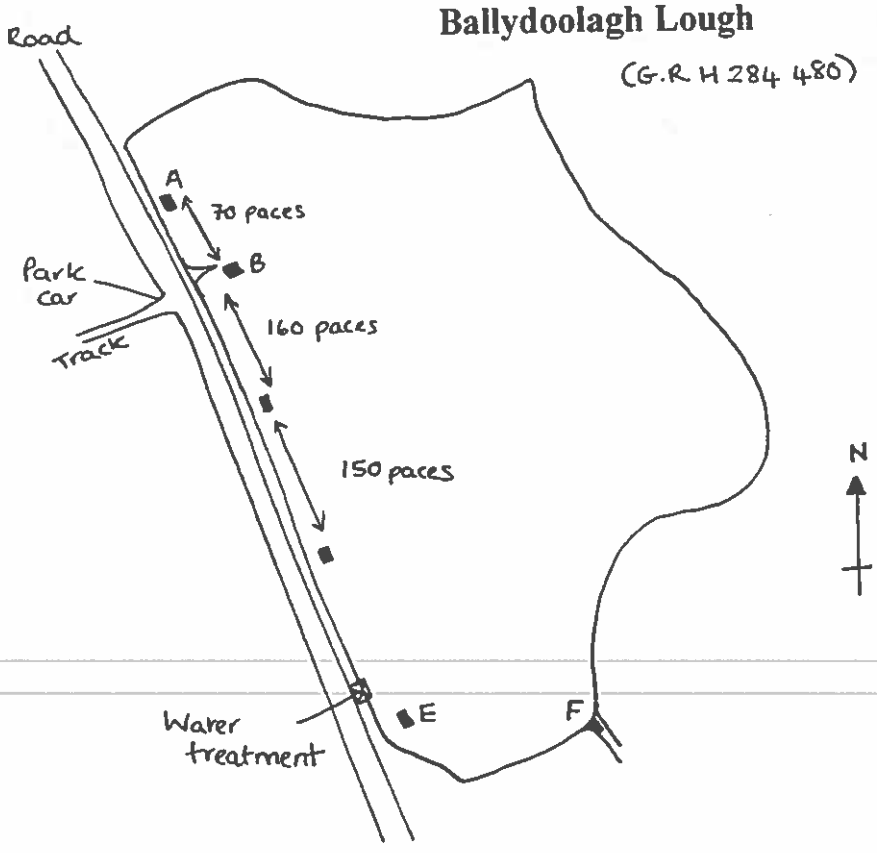
Drumacrittin Lough

(G.R. H549 319)



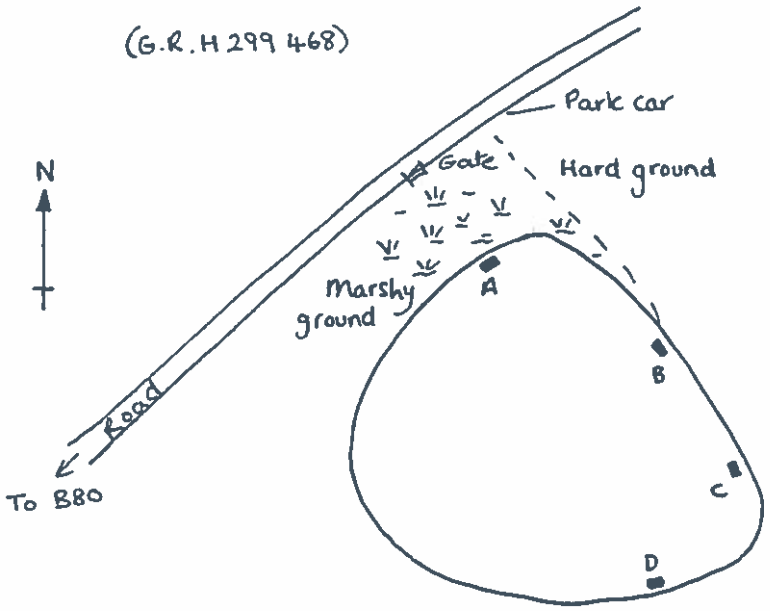
Ballydoolagh Lough

(G.R H 284 480)



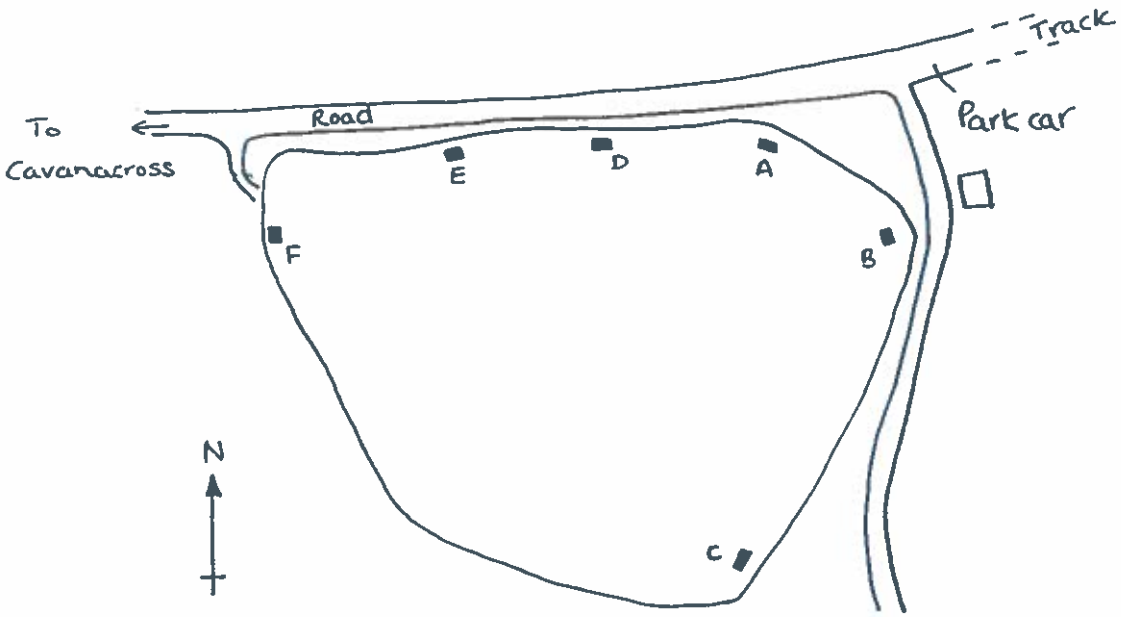
Largy Lough

(G.R. H 299 468)



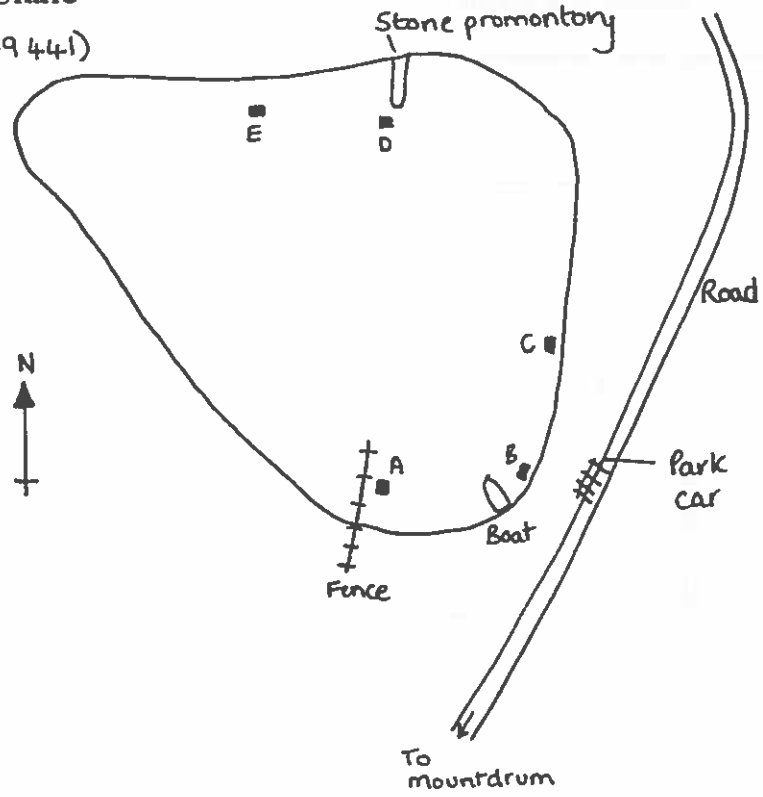
Topped Mountain Lough

(G.R. H 308 453)



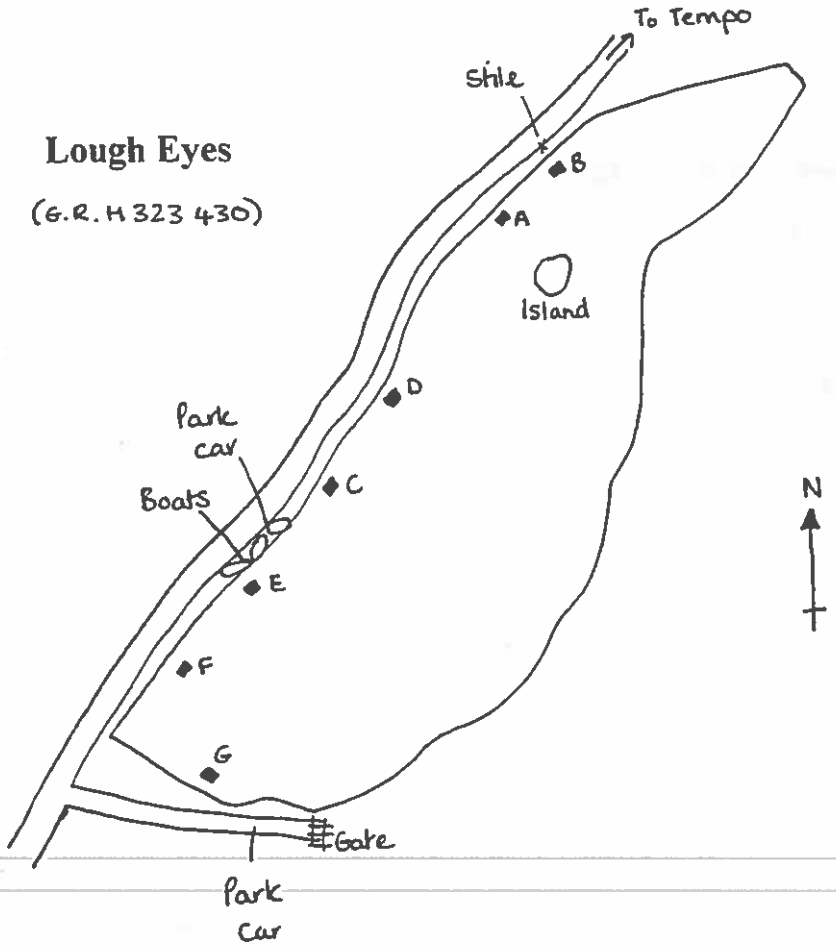
Lough Skale

(G.R H 309 441)



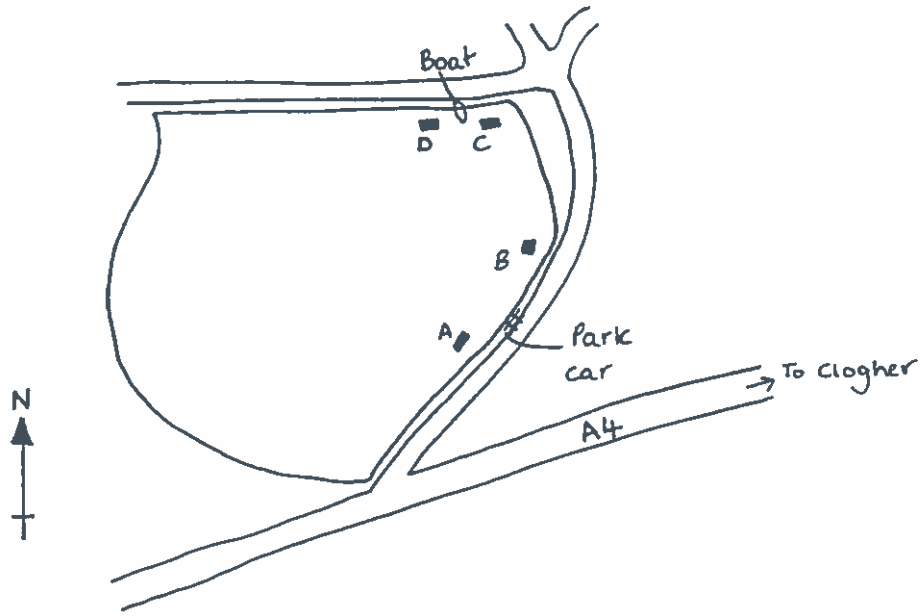
Lough Eyes

(G.R. H 323 430)



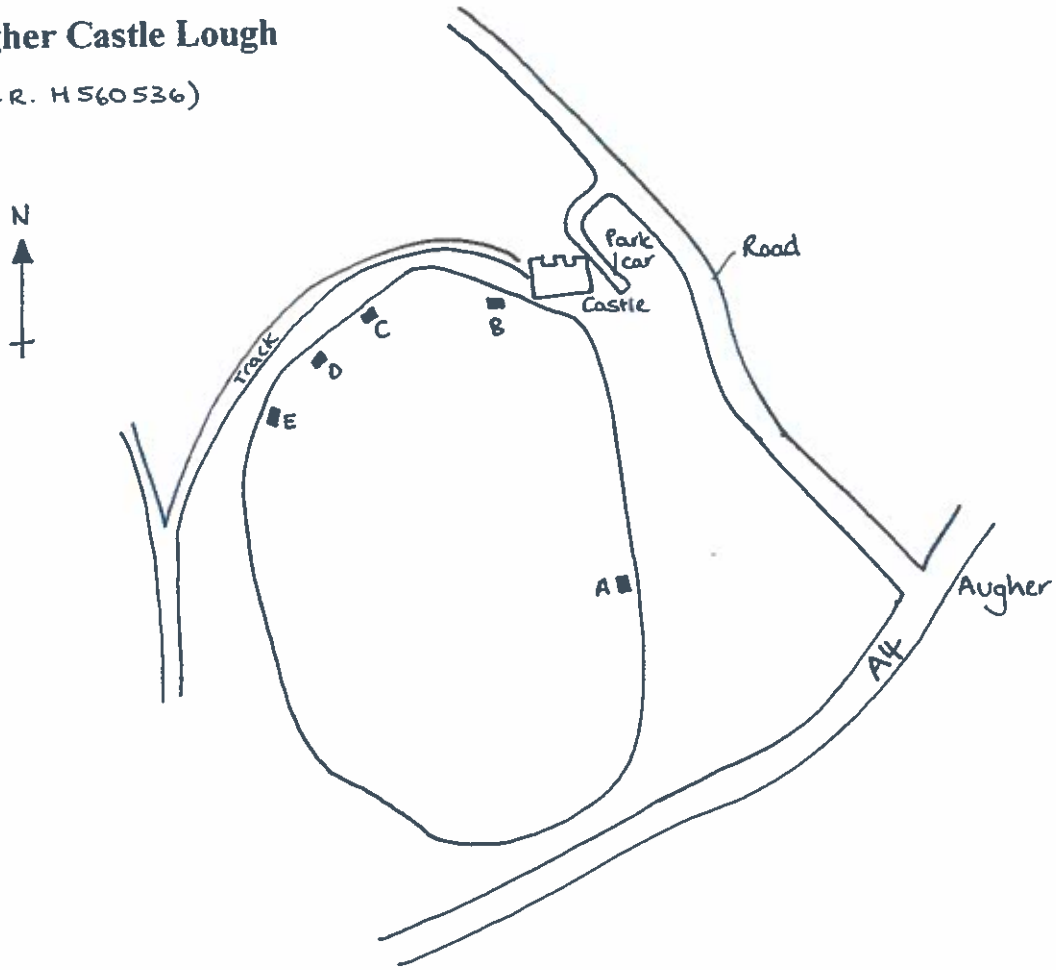
Bellagh Lough

(G.R. H500 500)



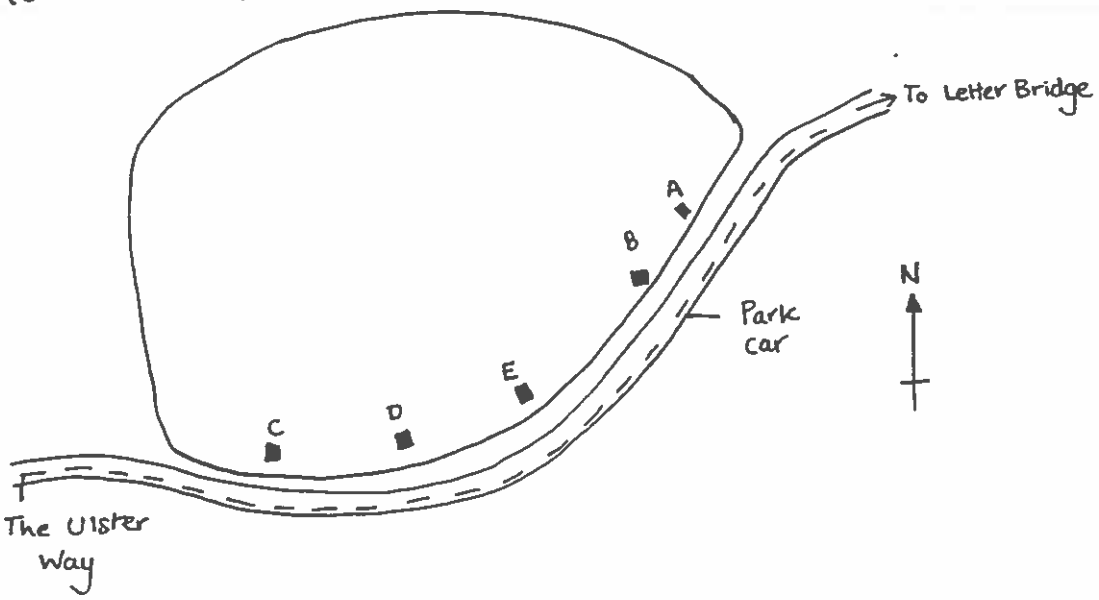
Augher Castle Lough

(G.R. H560536)



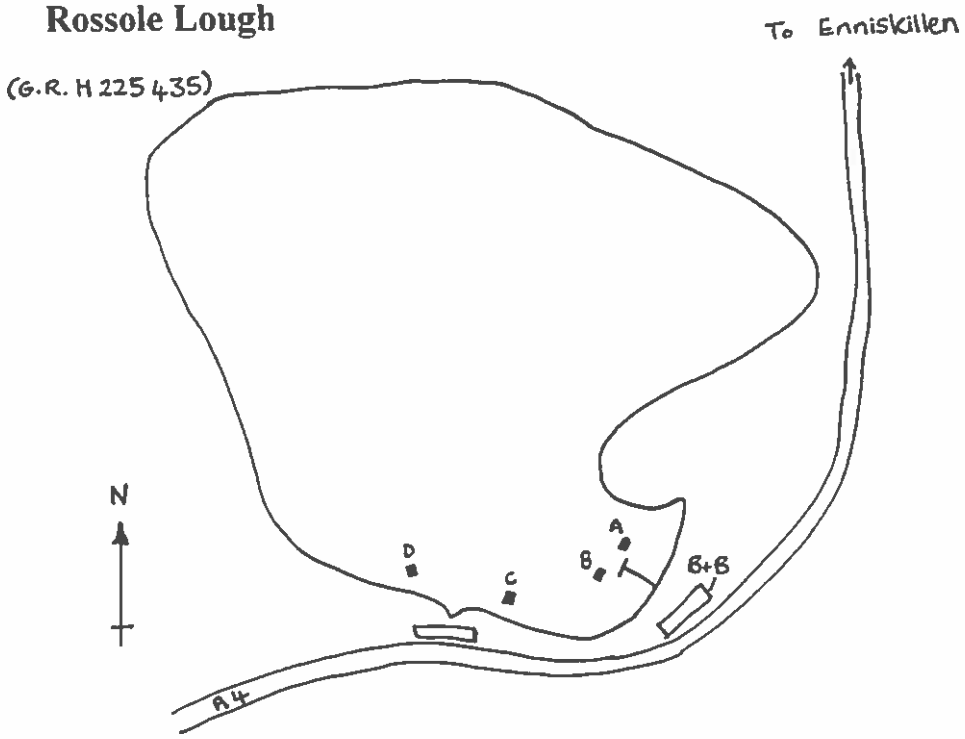
Tullyvocady Lough

(G.R. H 060 647)



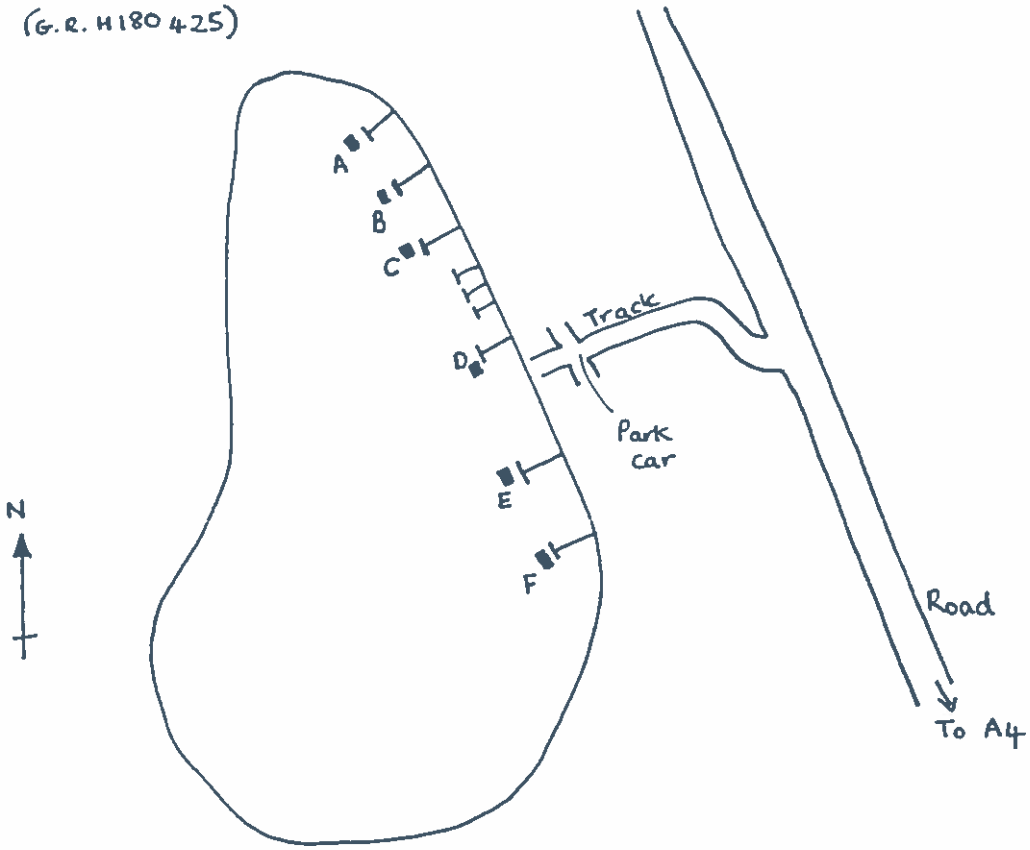
Rossole Lough

(G.R. H 225 435)



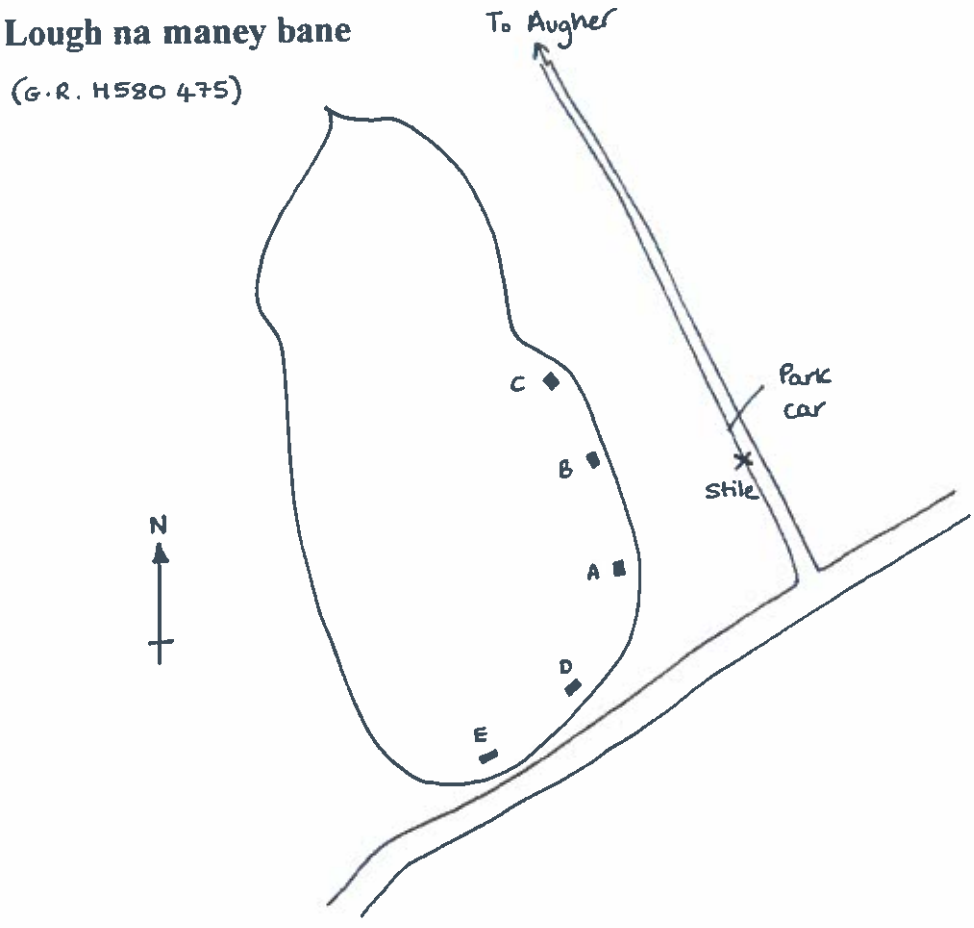
Coolyermer Lough

(G.R. H180 425)



Lough na maney bane

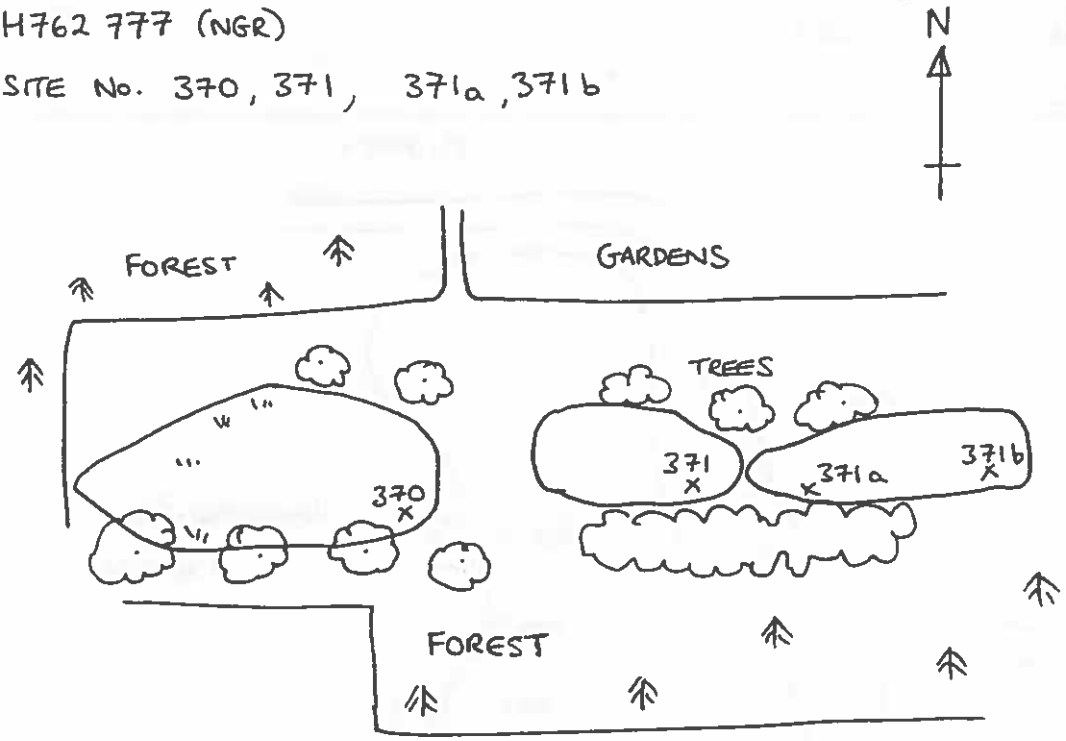
(G.R. H580 475)



LOUGH DRUM MANOR (FOREST PARK)

H762 777 (NGR)

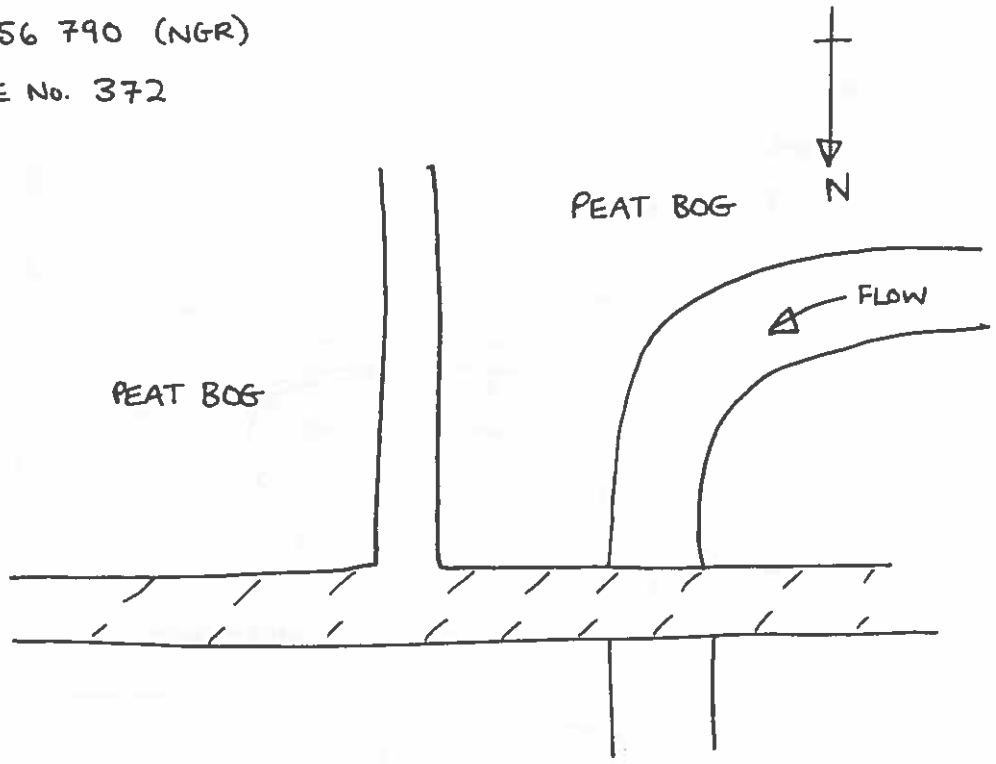
SITE No. 370, 371, 371a, 371b



RIVER BALLINDERRY

H656 790 (NGR)

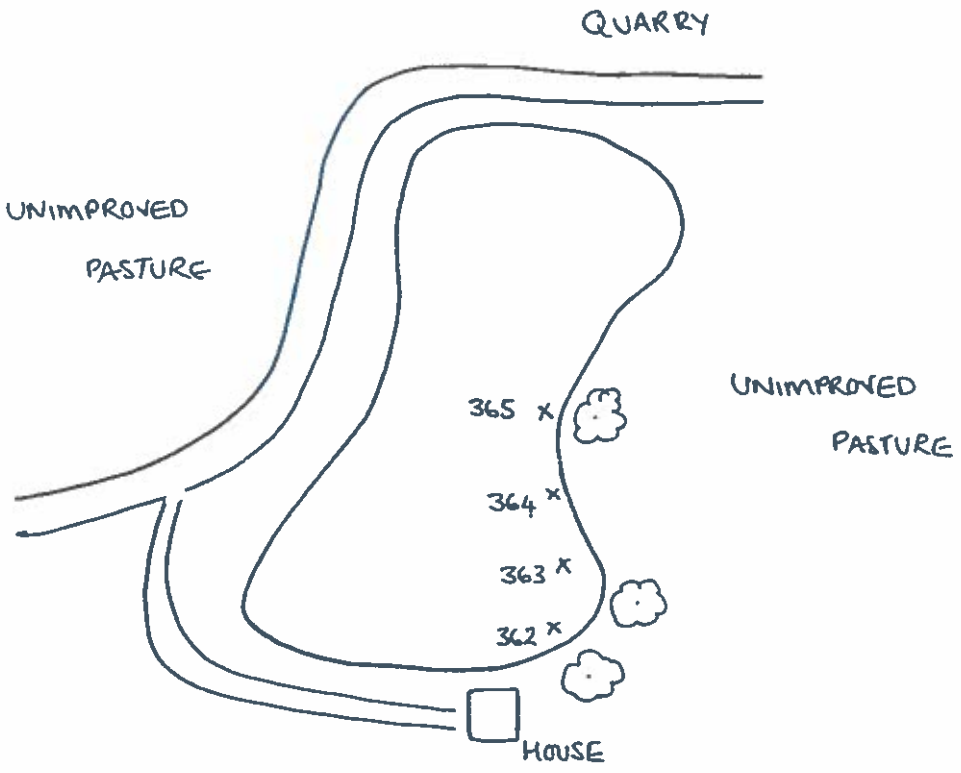
SITE No. 372



LOUGH CAM

H667 767 (NGR)

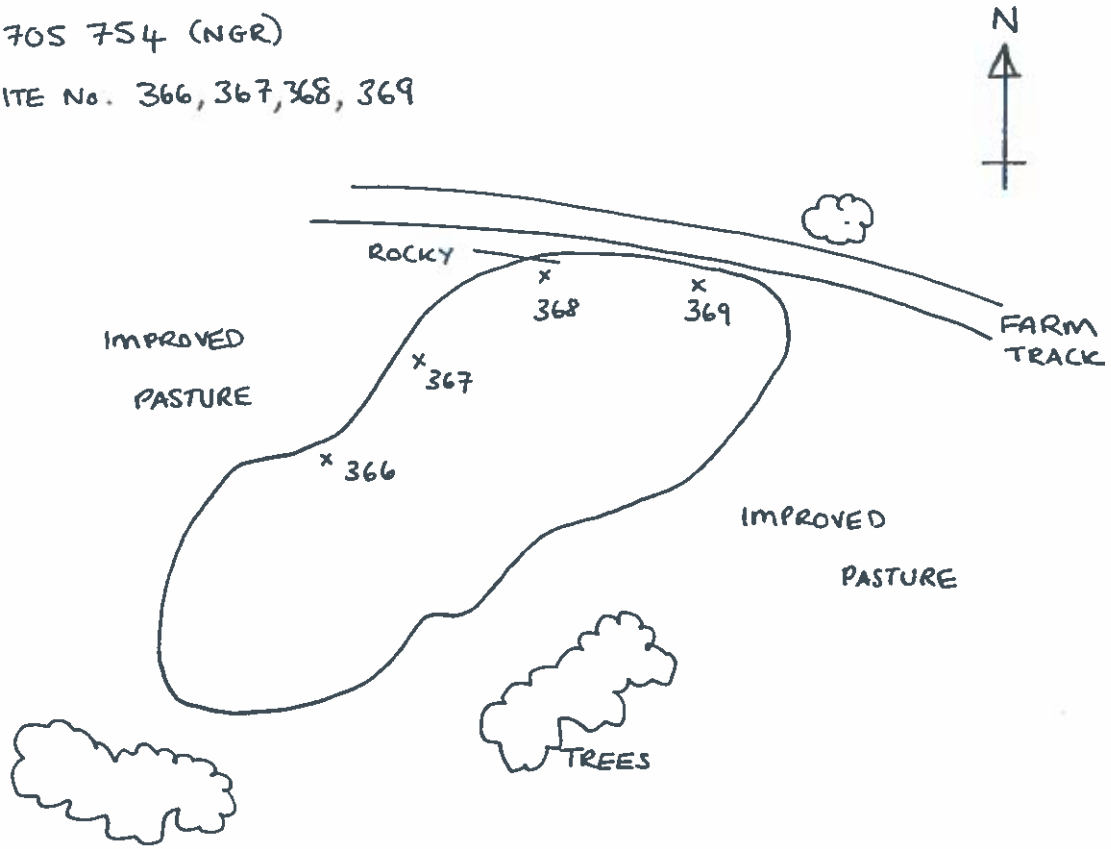
SITE No. 362, 363, 364, 365



LOUGH BRACKEN

H705 754 (NGR)

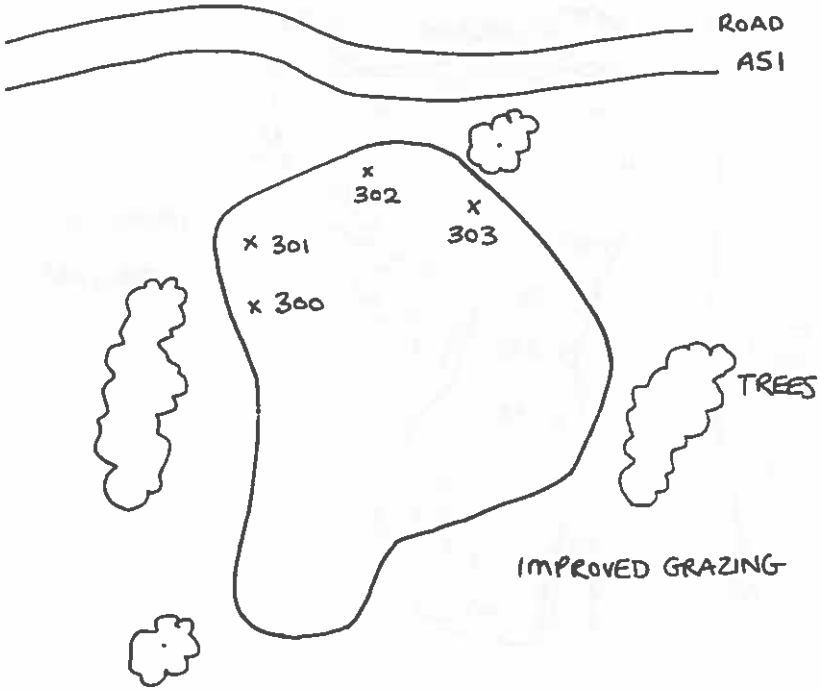
SITE No. 366, 367, 368, 369



LOUGH LOWRYS

H912 447 (NGR)

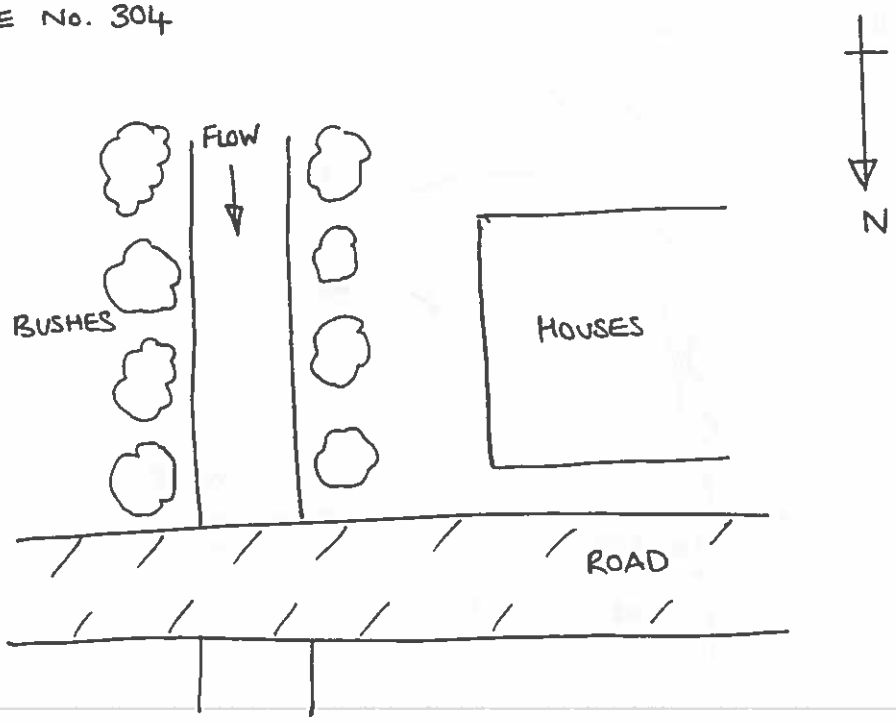
SITE No. 300, 301, 302, 303



TRIBUTARY OF UPPER BLACKWATER RIVER

H 507 483 (NGR)

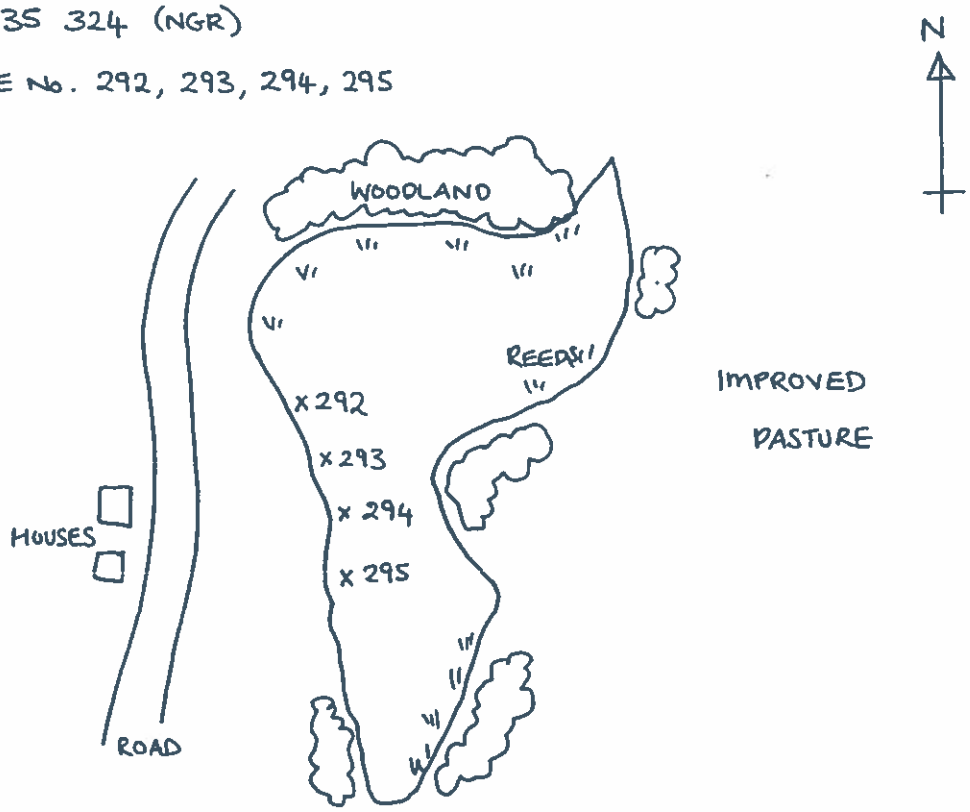
SITE No. 304



LOUGH CLAY

H835 324 (NGR)

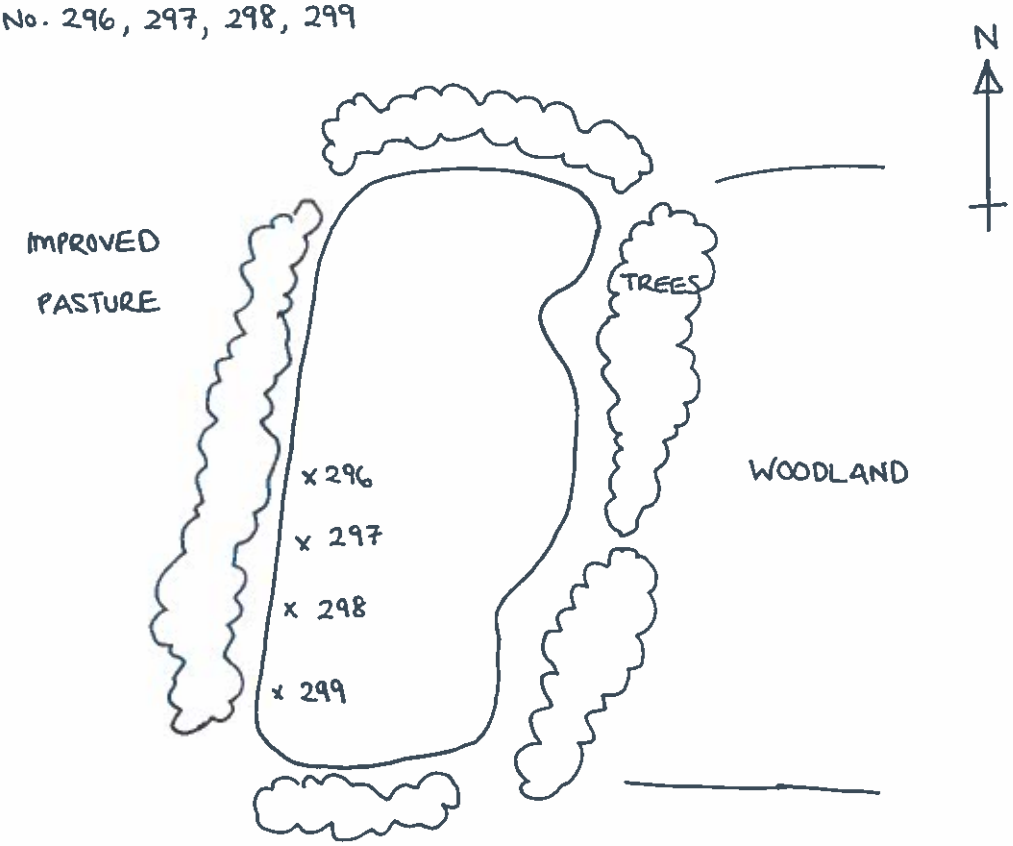
SITE No. 292, 293, 294, 295



LOUGH GALL

H909 515 (NGR)

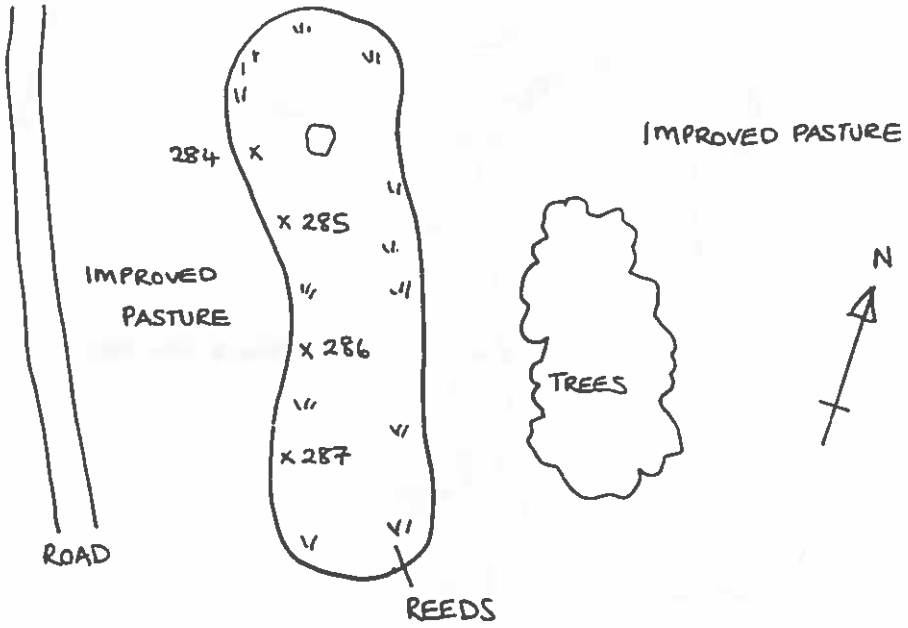
SITE No. 296, 297, 298, 299



LOUGH FAR

H815 664 (NGR)

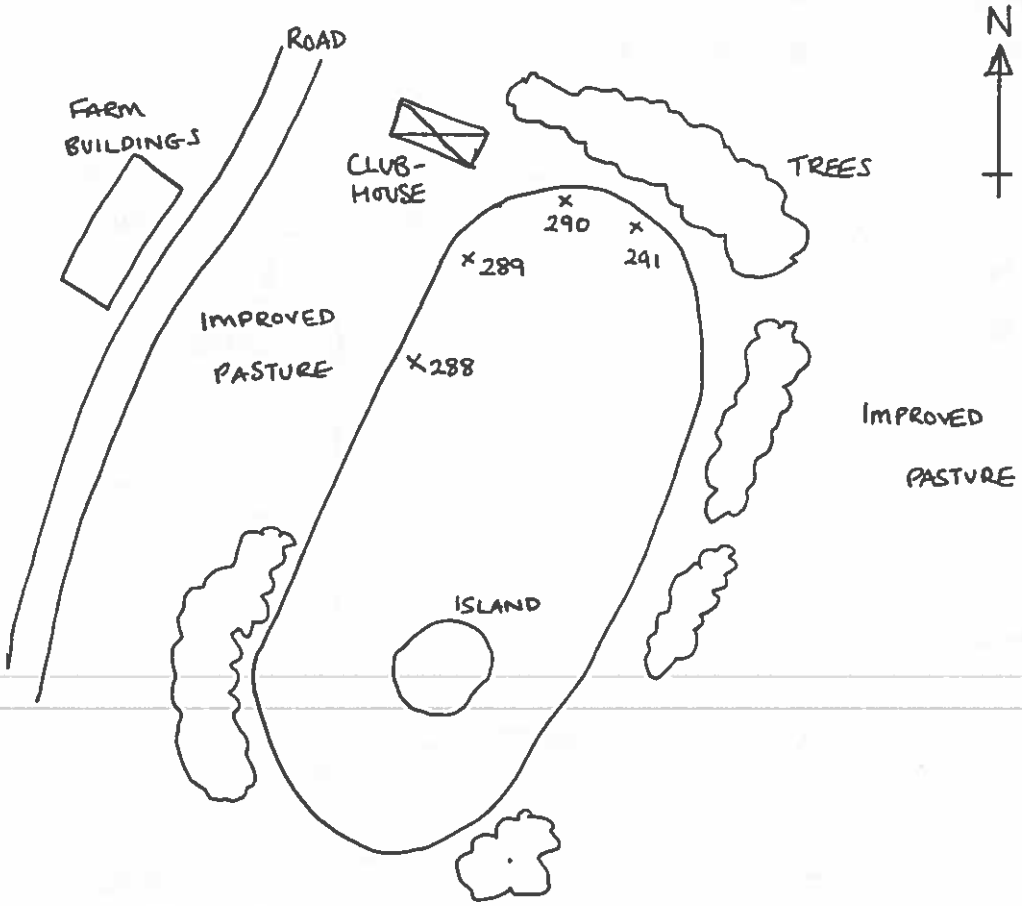
SITE No. 284, 285, 286, 287



LOUGH ROUGHAN

H828 688 (NGR)

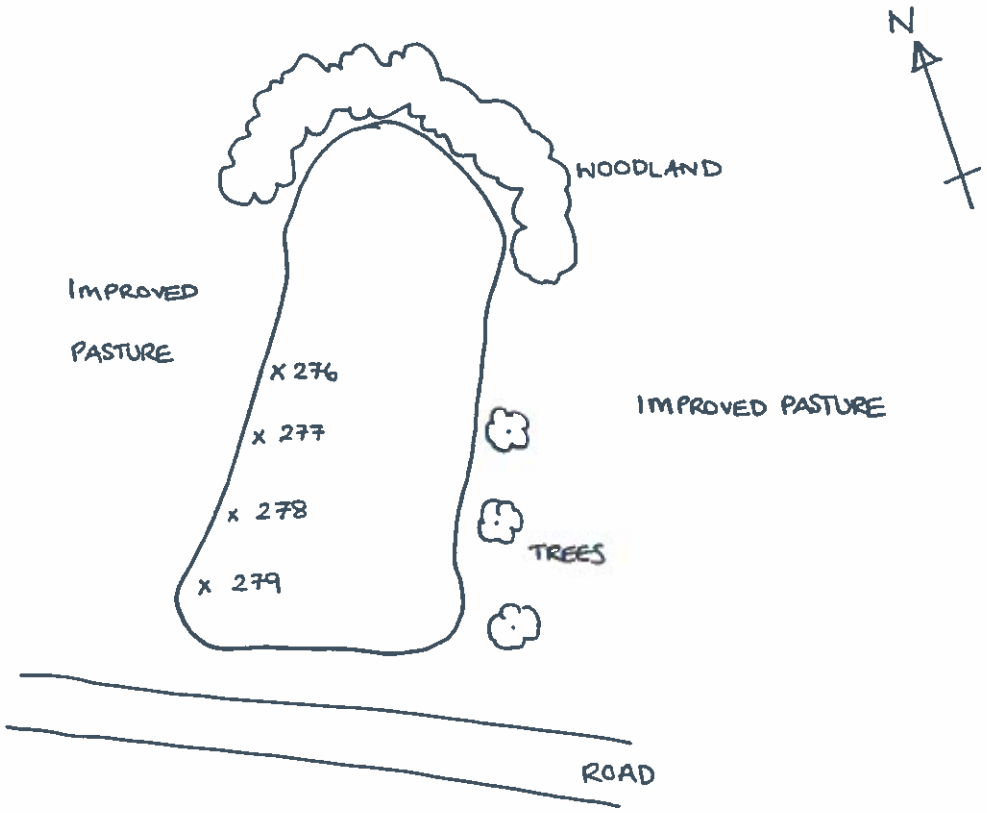
SITE No. 288, 289, 290, 291



LOUGH ESKRAGH

H772618 (NGR)

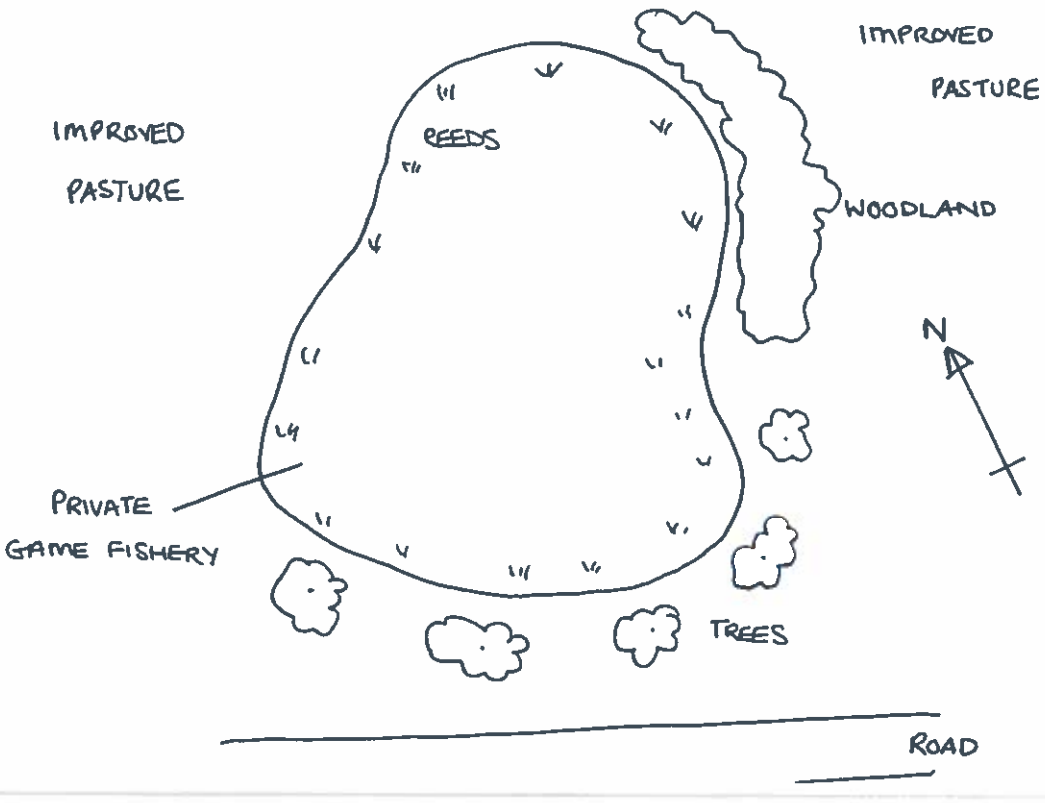
SITE No. 276, 277, 278, 279



LOUGH MULLAGHMORE

H754 638 (NGR)

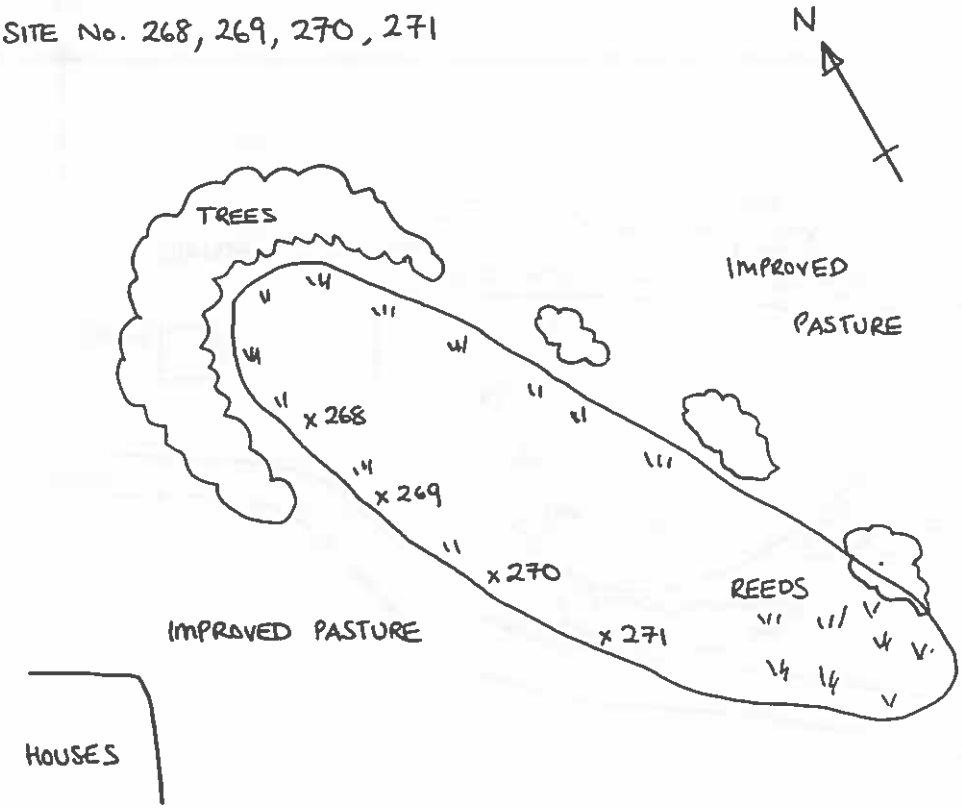
SITE No. 280, 281, 282, 283



LOUGH MULLAGHBANE MOSS

H735589 (NGR)

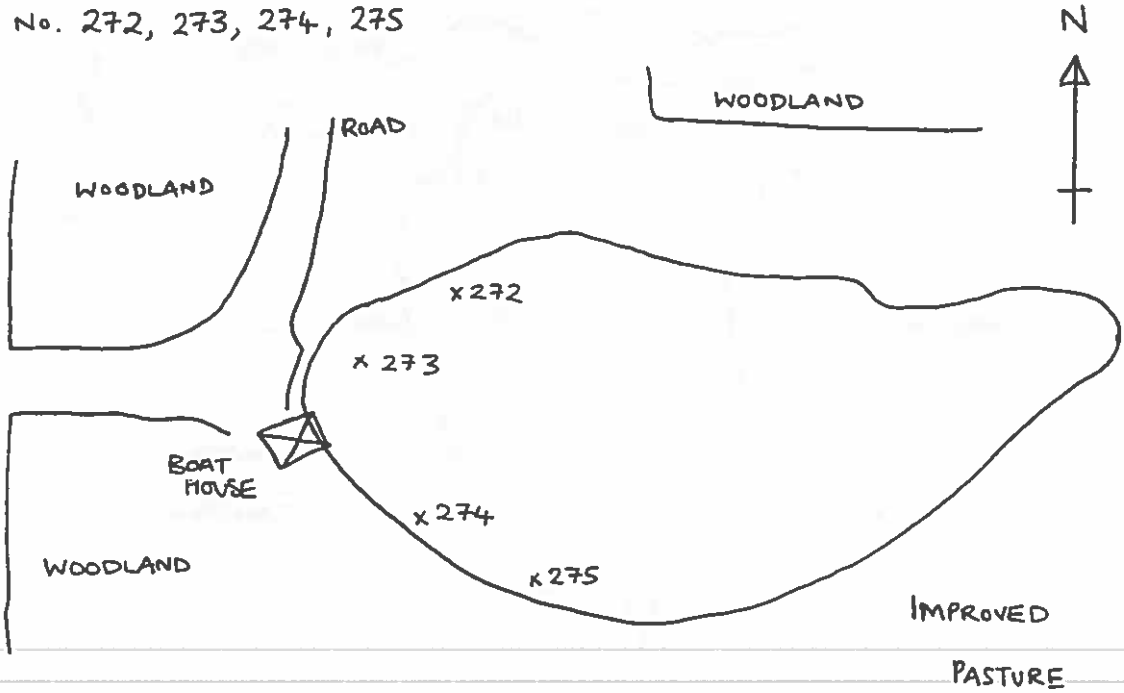
SITE No. 268, 269, 270, 271



LOUGH MALTRAY

H641584 (NGR)

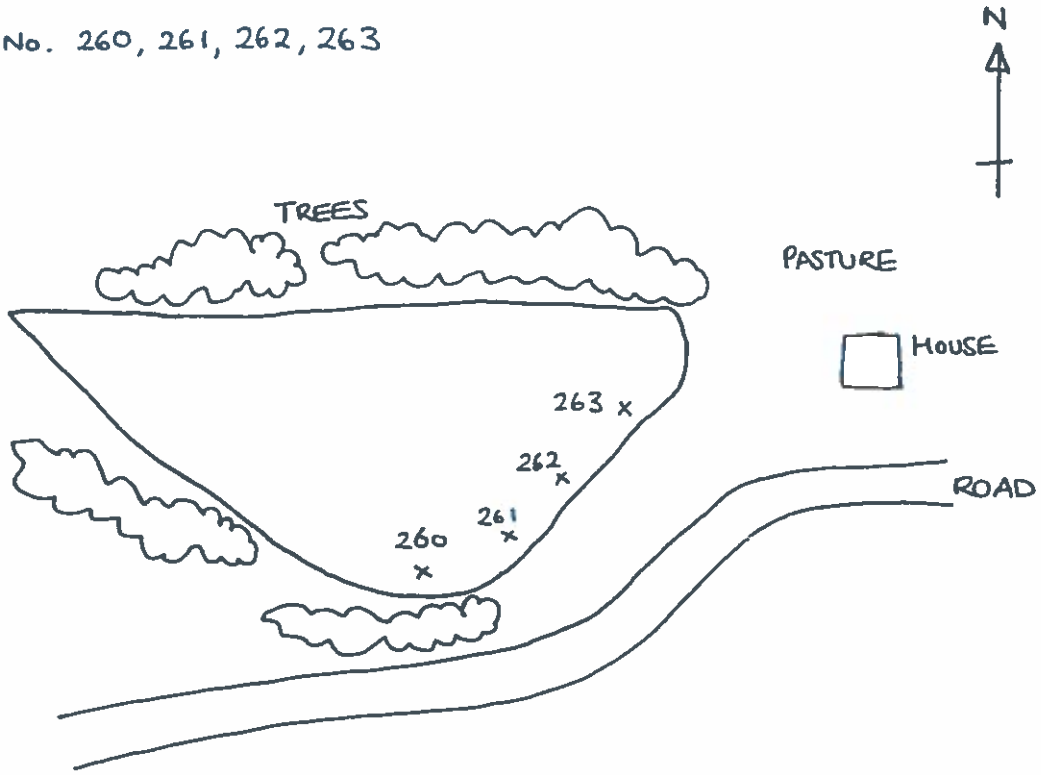
SITE No. 272, 273, 274, 275



LOUGH MULLYCAR

H 743 569 (NGR)

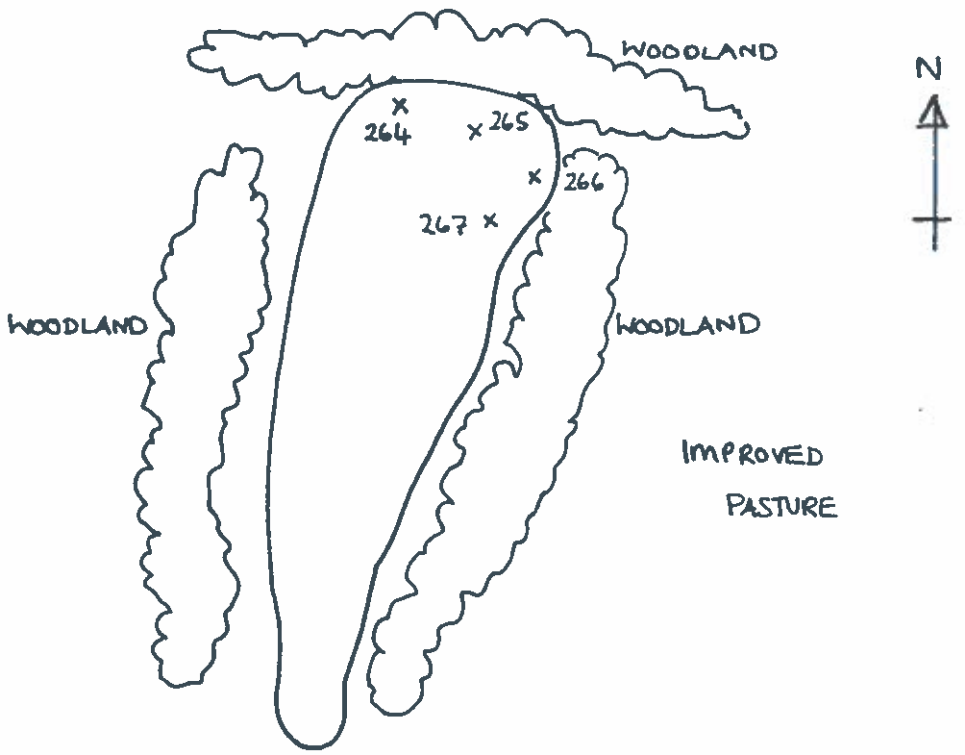
SITE No. 260, 261, 262, 263



LOUGH WOOD

H760 601 (NGR)

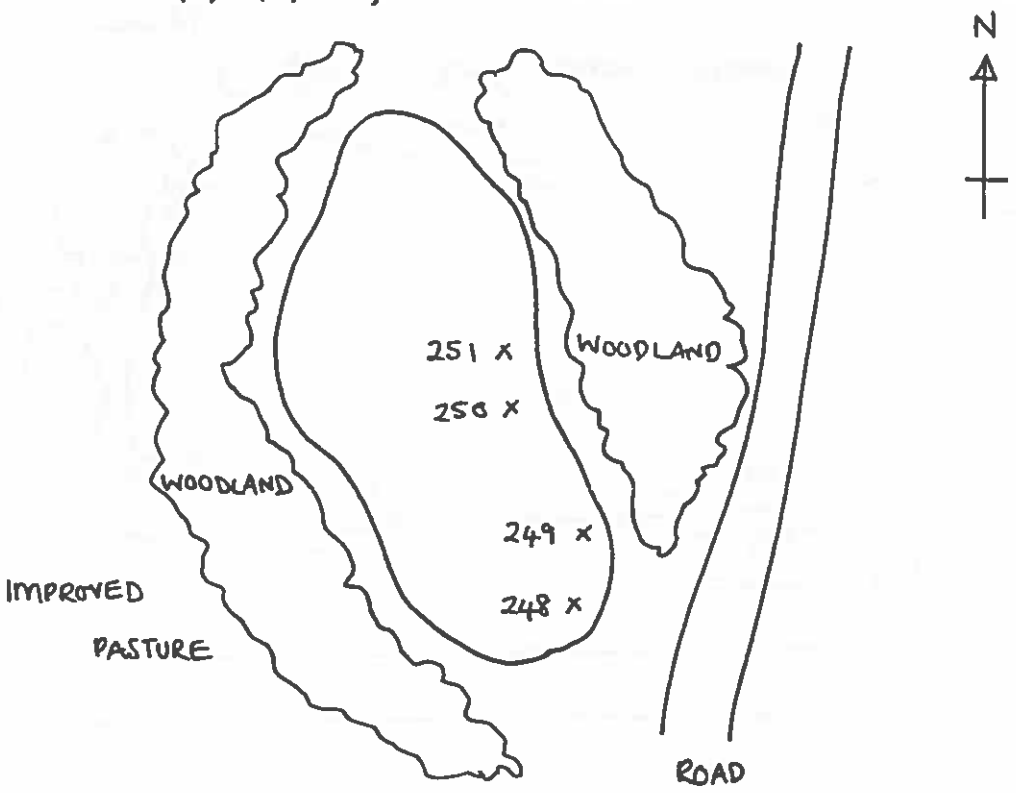
SITE No. 264, 265, 266, 267



LOUGH BRANTRY

H 748 538 (NGR)

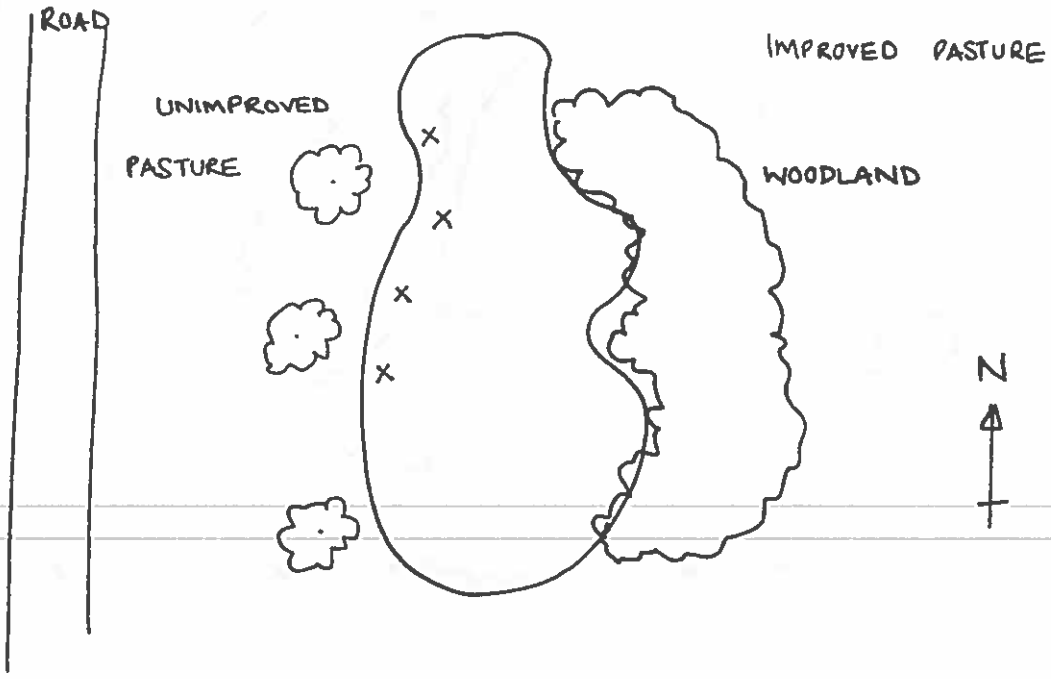
SITE No. 248, 249, 250, 251



LOUGH ENAGH

H757 464 (NGR)

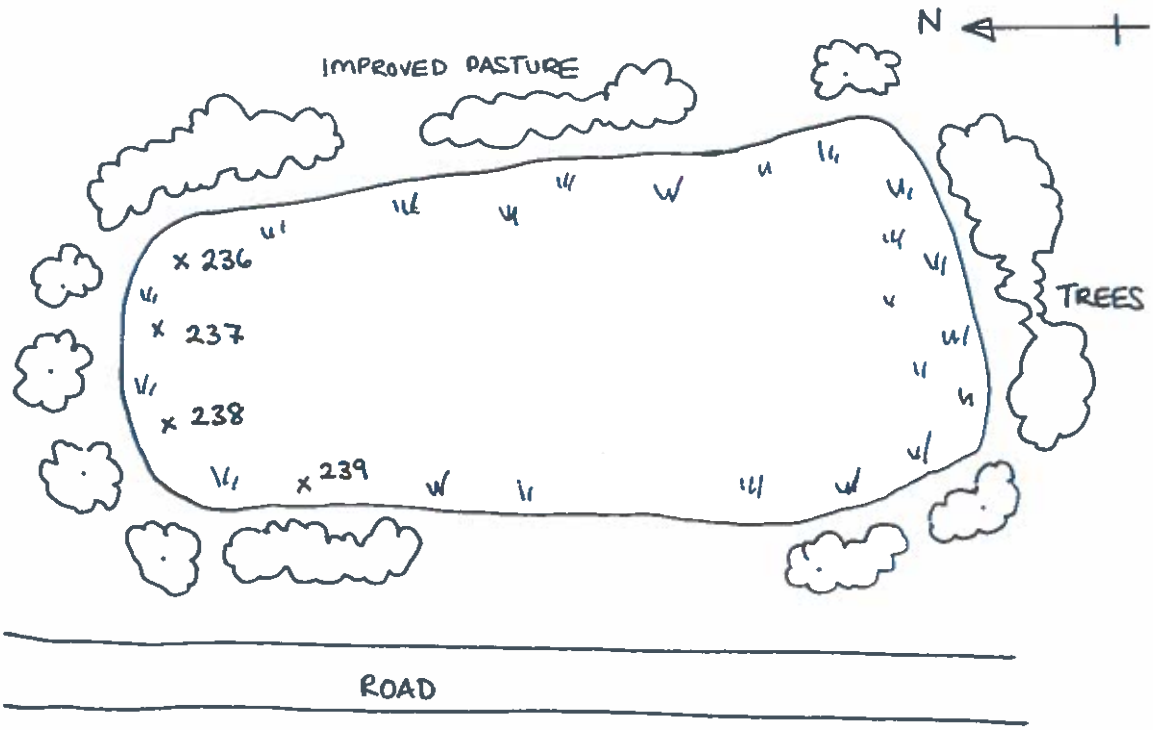
SITE No. 252, 253, 254, 255



LOUGH WHITE

H705 524

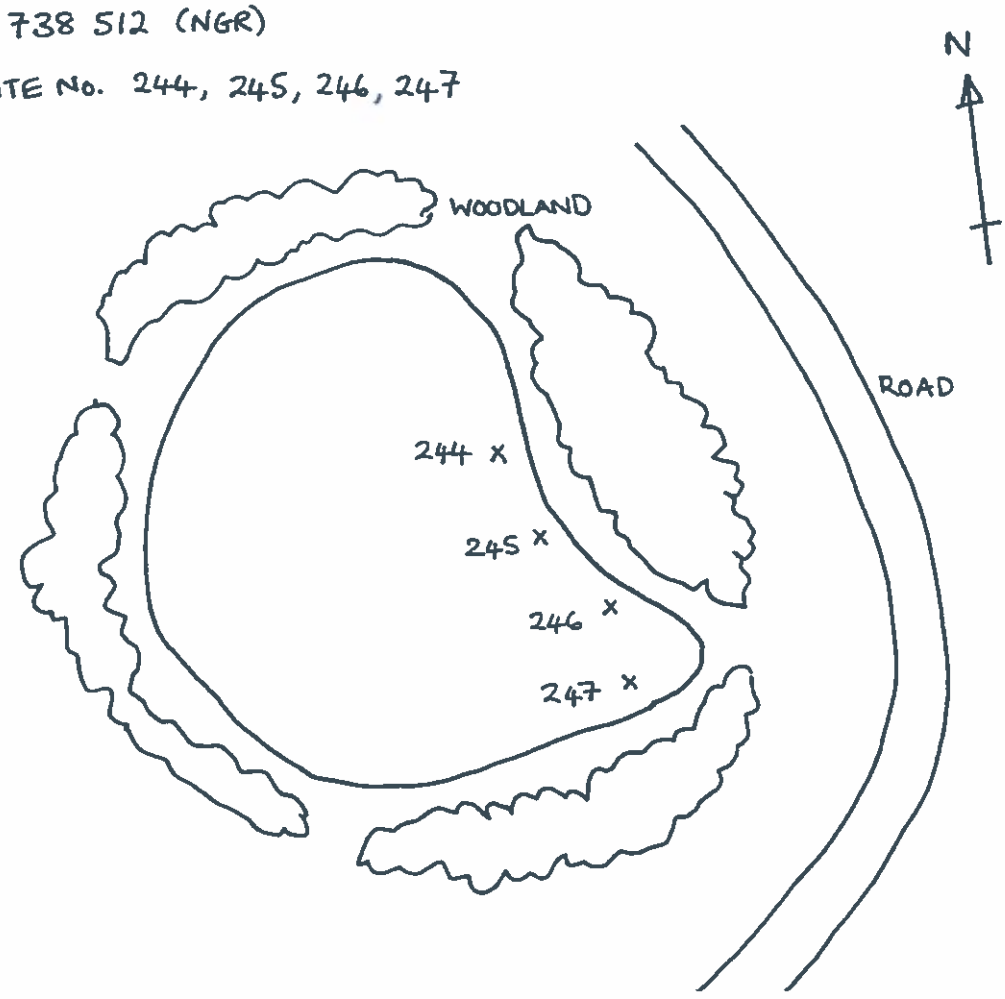
SITE No. 236, 237, 238, 239



LOUGH CREAVE

H 738 512 (NGR)

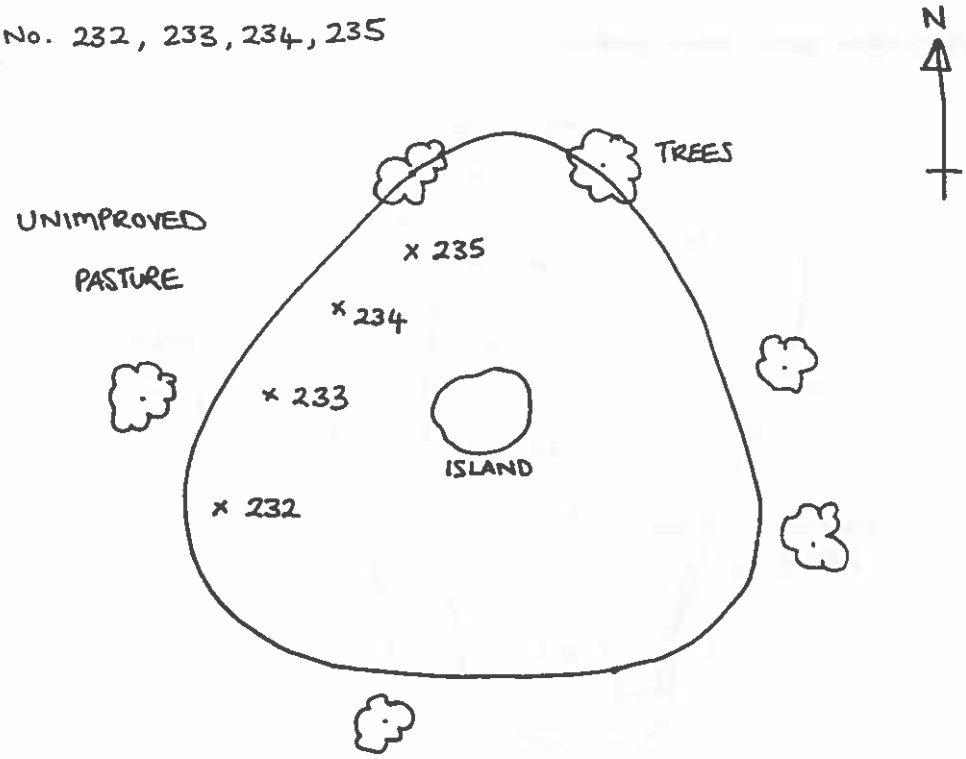
SITE No. 244, 245, 246, 247



LOUGH FYMORE

H595 579 (NGR)

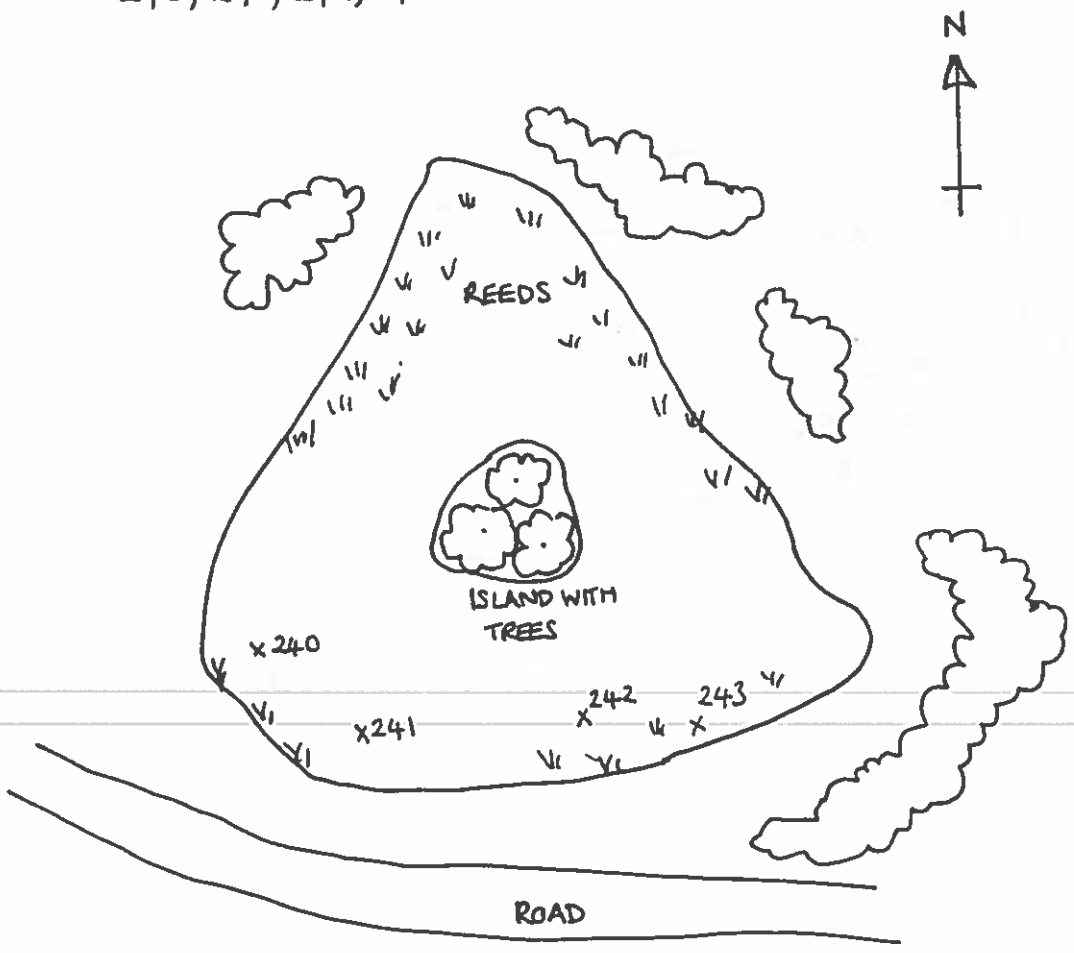
SITE No. 232, 233, 234, 235



LOUGH CARNTEY

H699 548 (NGR)

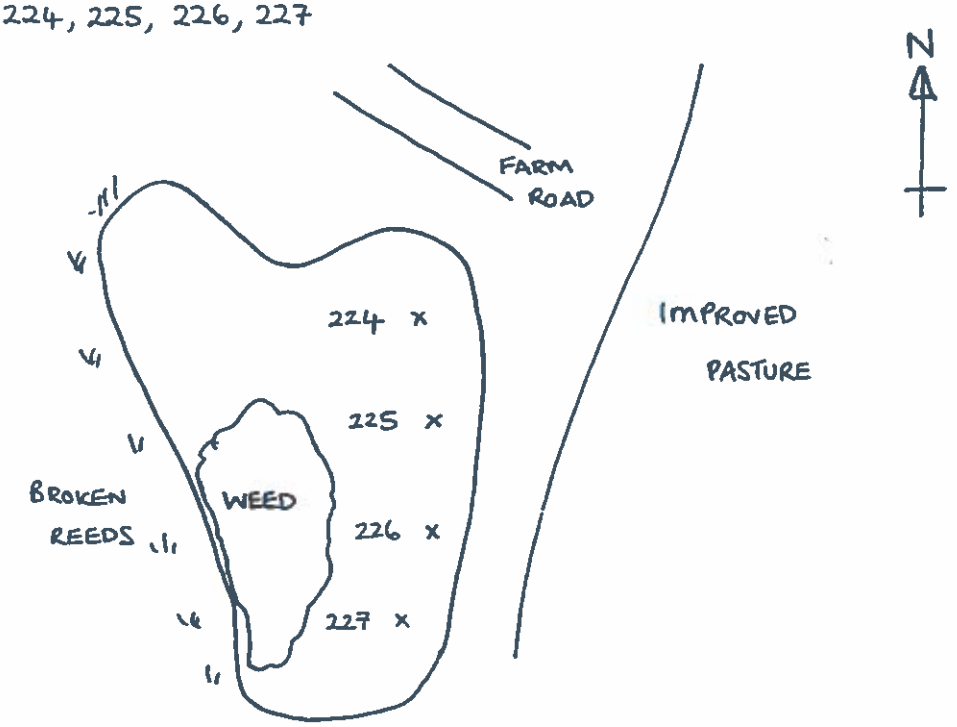
SITE No. 240, 241, 242, 243



LOUGH SKREABY

H 469 496 (NGR)

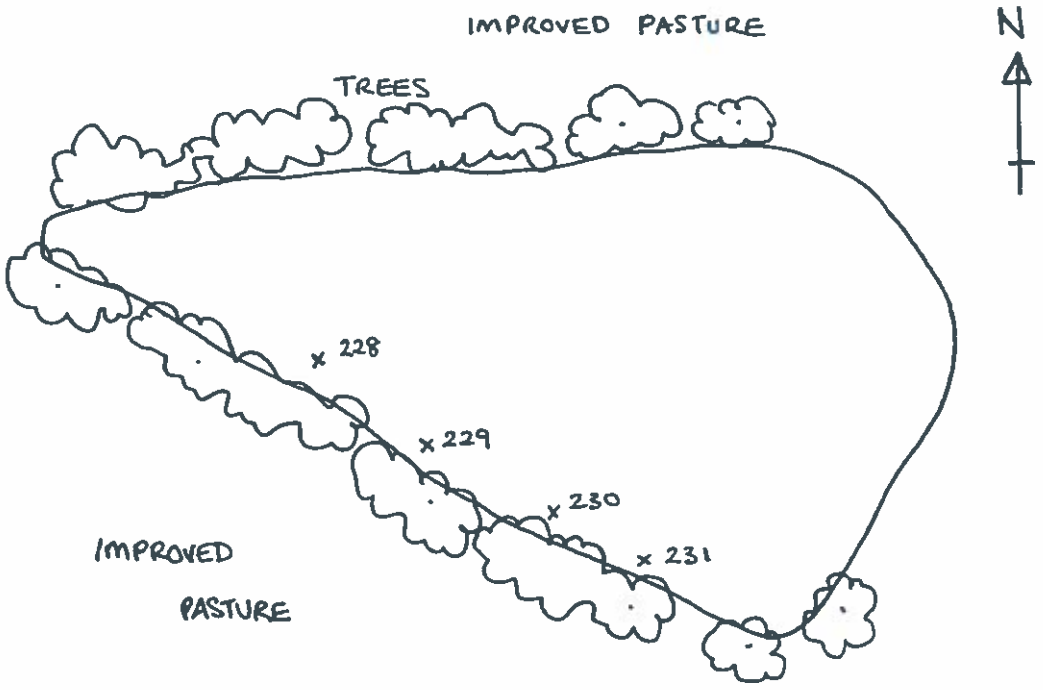
SITE No. 224, 225, 226, 227



LOUGH KILLYRADDY

H526 538 (NGR)

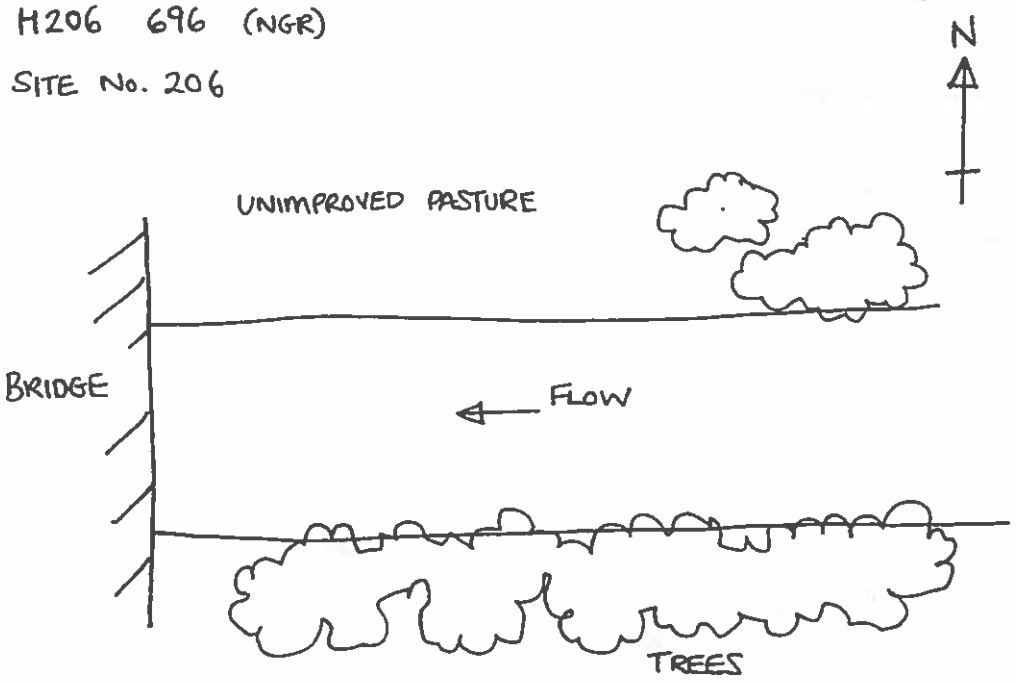
SITE No. 228, 229, 230, 231



RIVER BANNAGH

H206 696 (NGR)

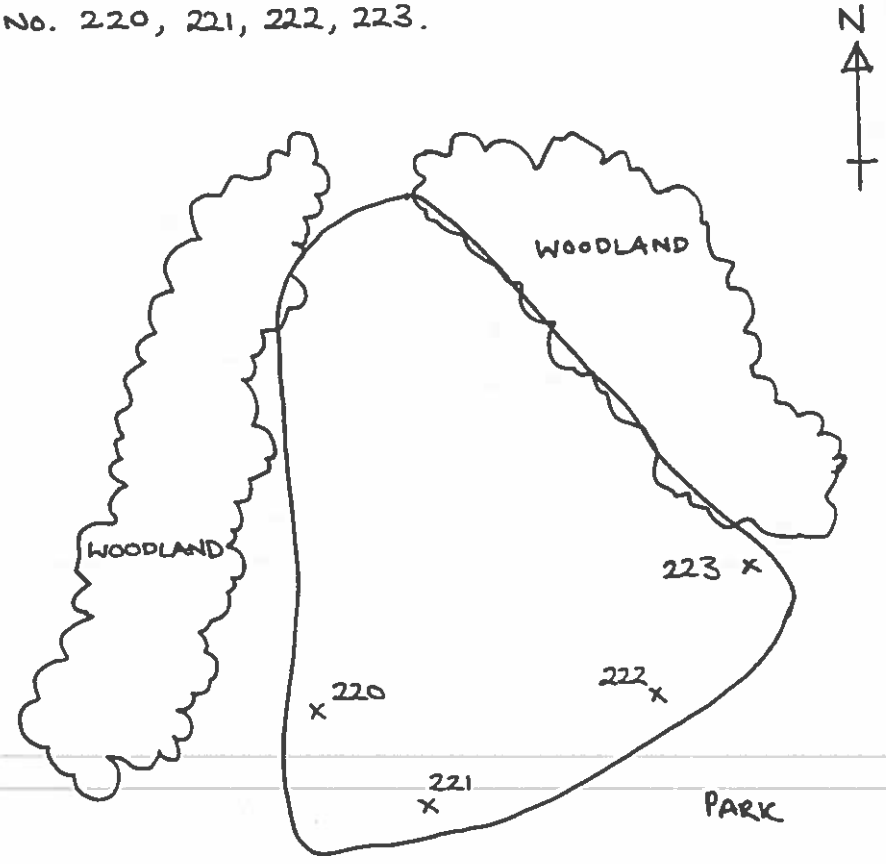
SITE No. 206



LOUGH AGHINATAIN

H462 517 (NGR)

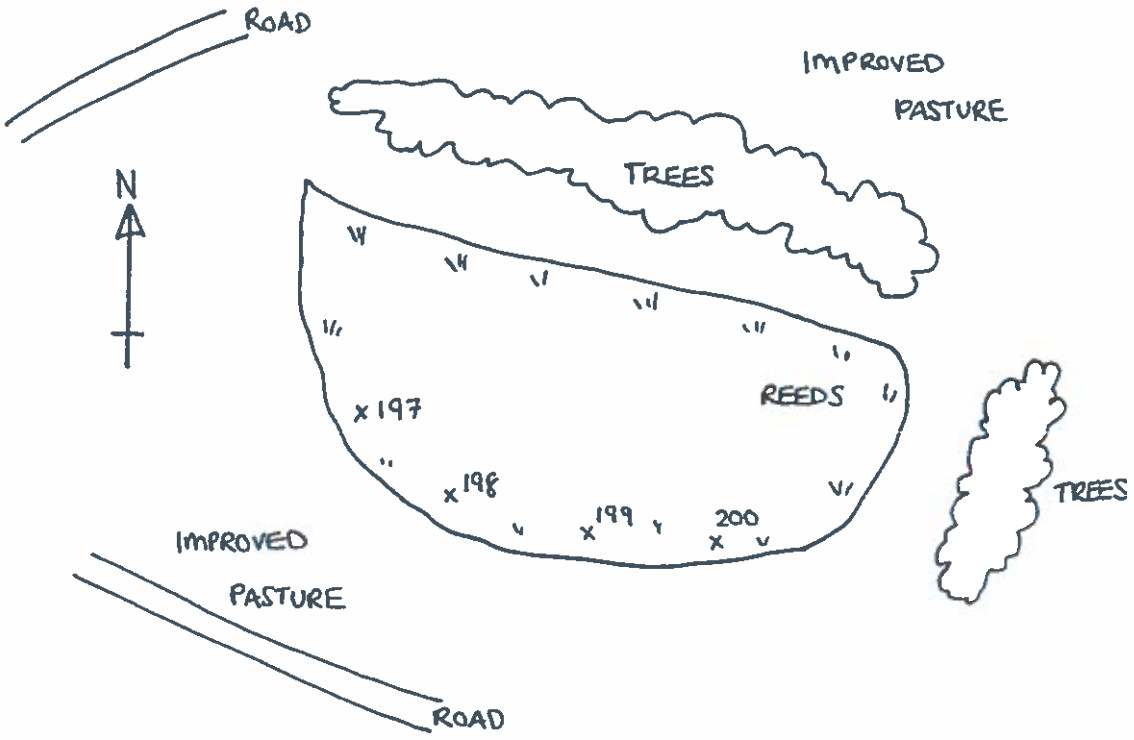
SITE No. 220, 221, 222, 223.



LOUGH CROMAGHY

H513 308 (NGR)

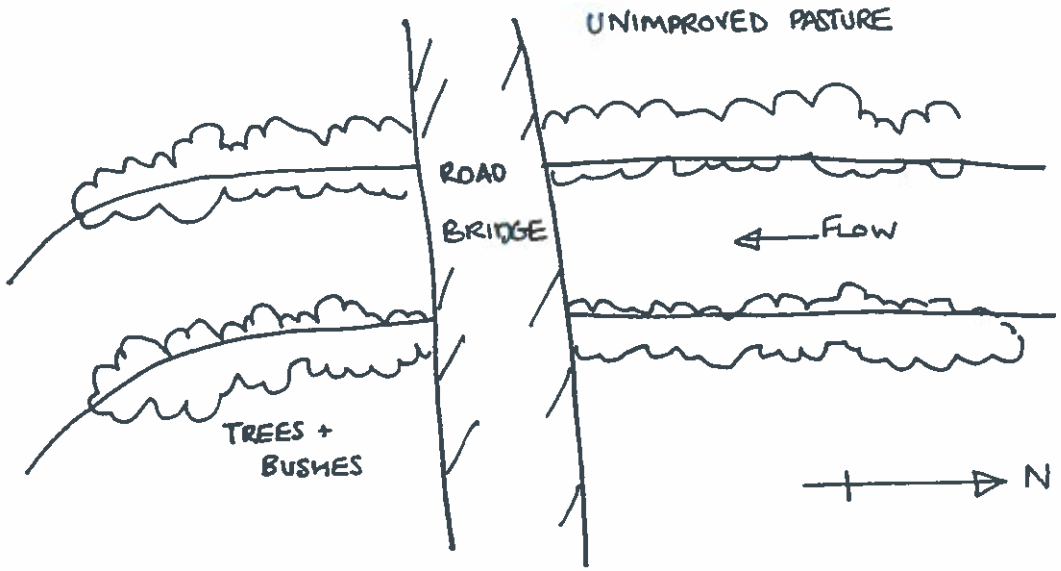
SITE No. 197, 198, 199, 200



RIVER OMINEY

H115 689 (NGR)

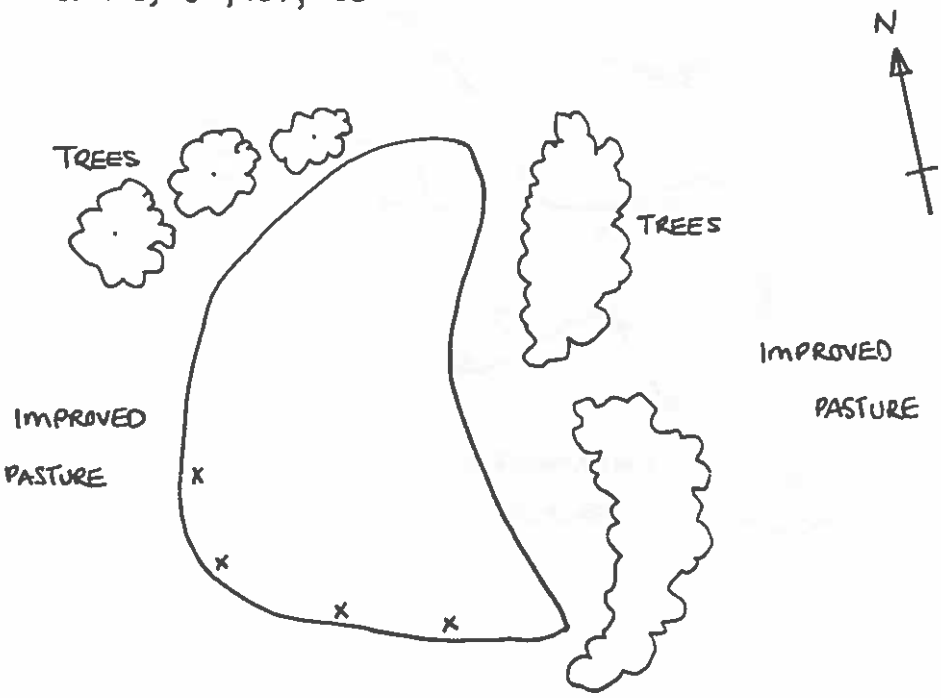
SITE No. 201



LOUGH CULLENTRA

H476 475 (NGR)

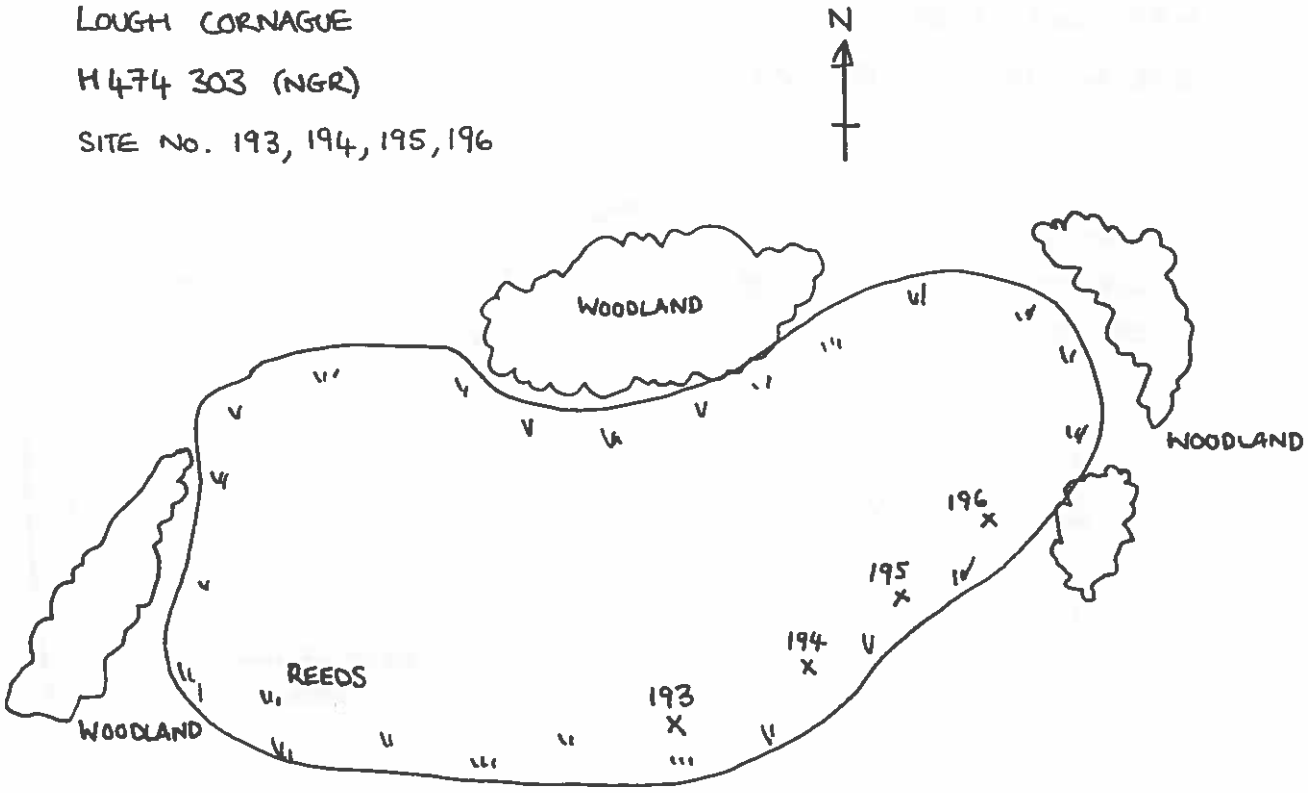
SITE No. 185, 186, 187, 188



LOUGH CORNAGUE

H474 303 (NGR)

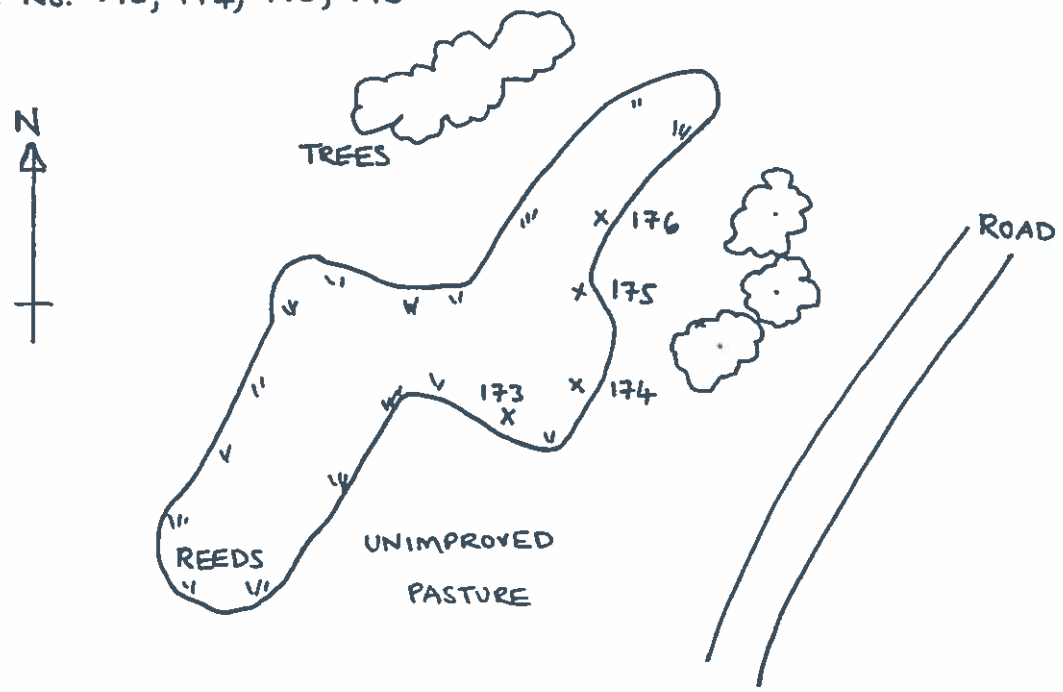
SITE No. 193, 194, 195, 196



LOUGH CARGIN

H360 273 (NGR)

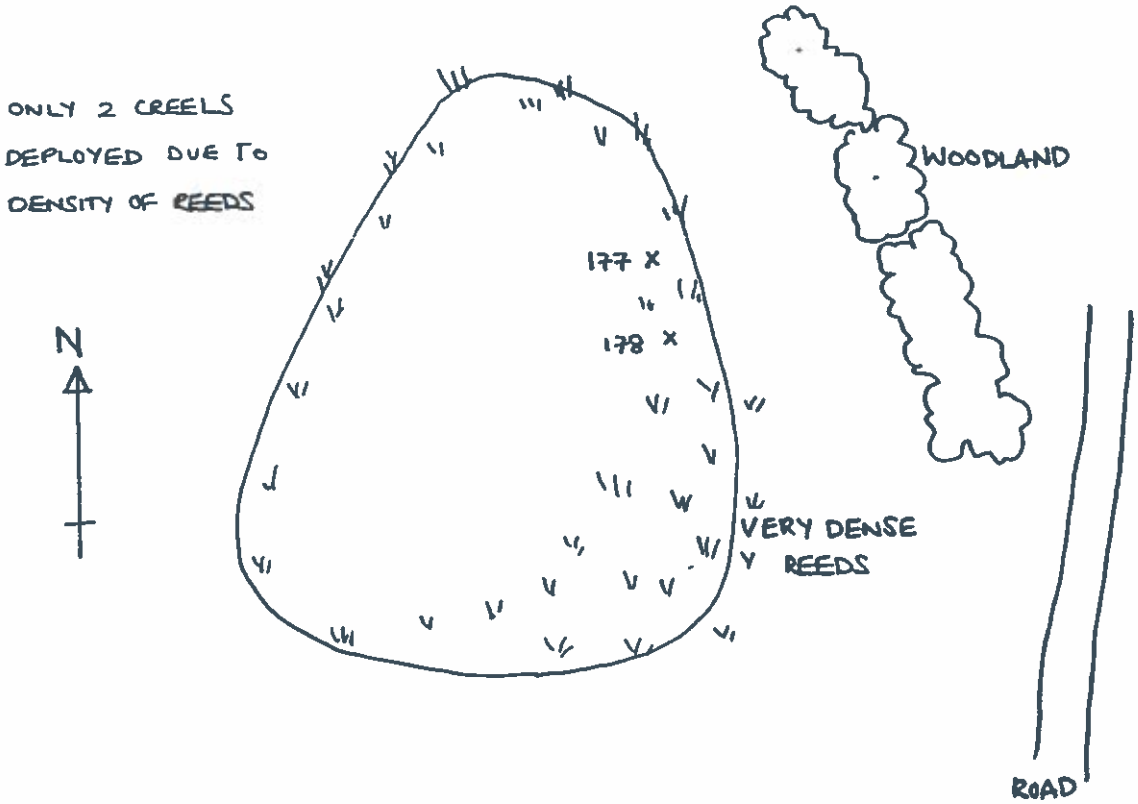
SITE No. 173, 174, 175, 176



LOUGH LEHINCH

H391 267 (NGR)

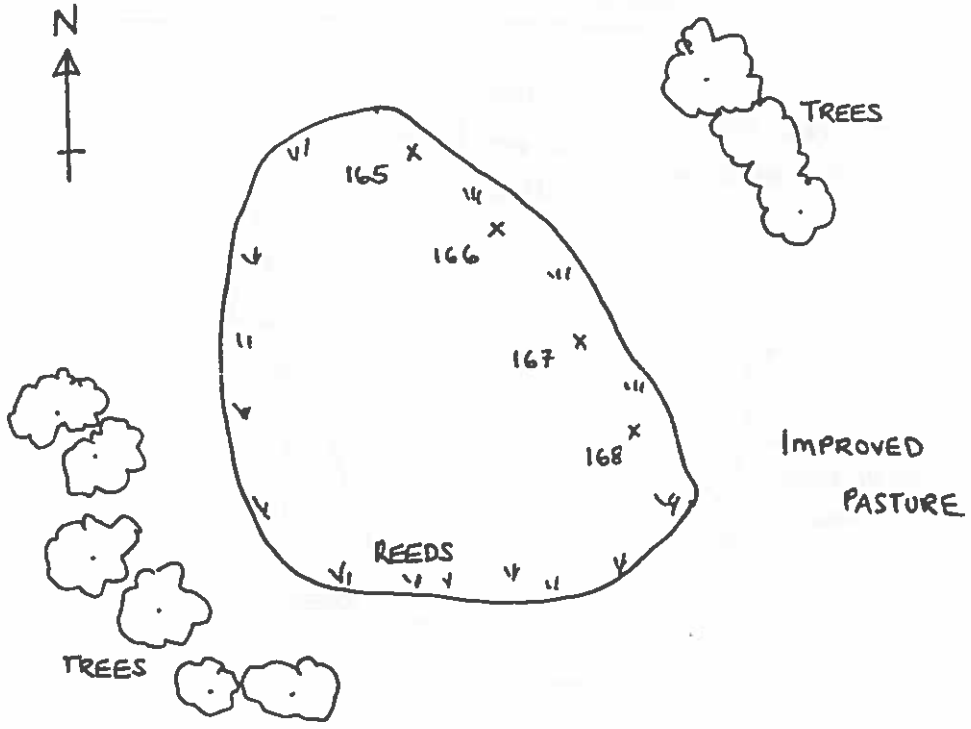
SITE No. 177, 178, 179, 180



LOUGH ABACON

H 334 255 (NGR)

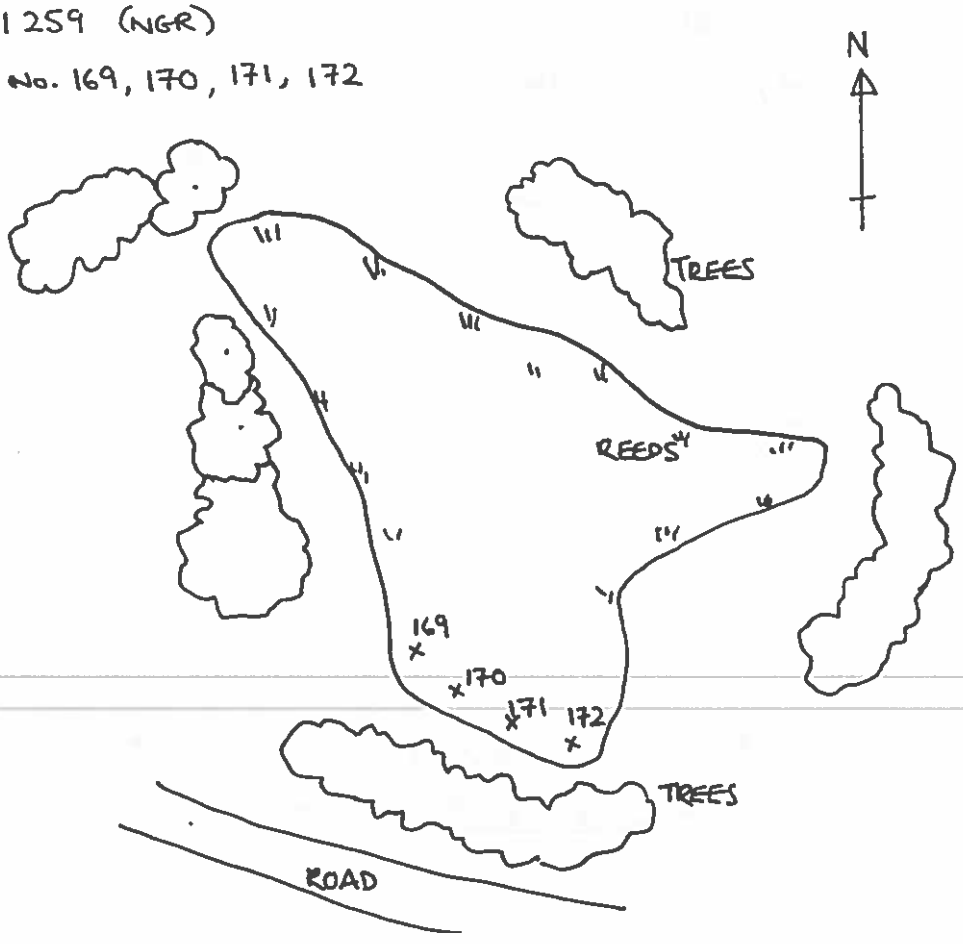
SITE No. 165, 166, 167, 168



LOUGH KILTURK

H371 259 (NGR)

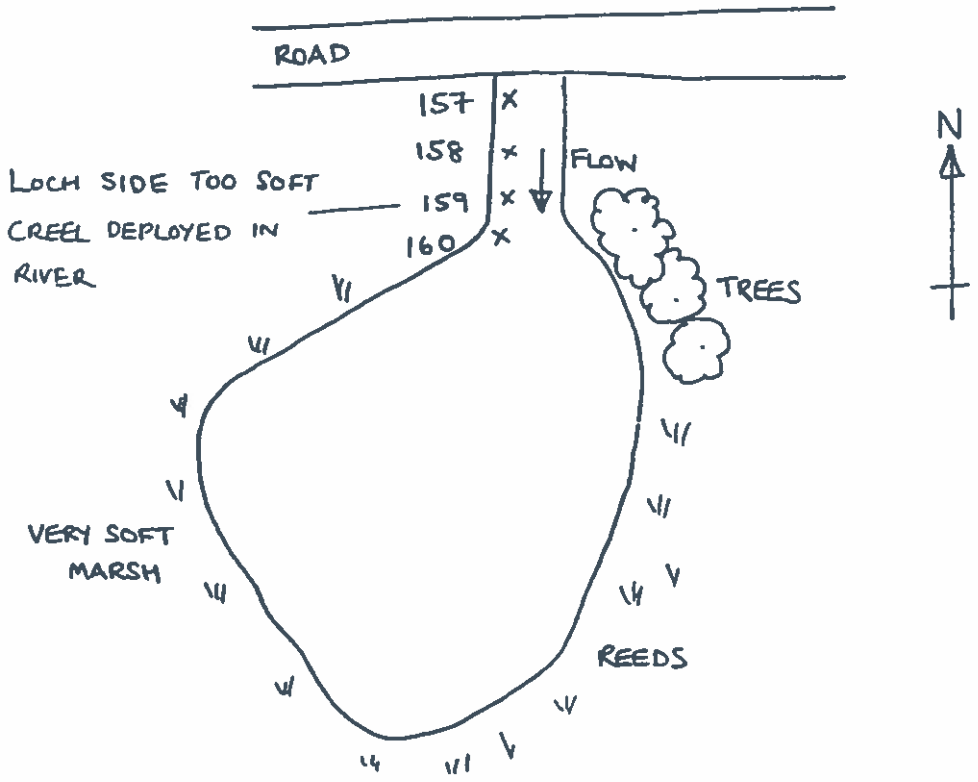
SITE No. 169, 170, 171, 172



LOUGH DERRYCANON

H 323 252 (NGR)

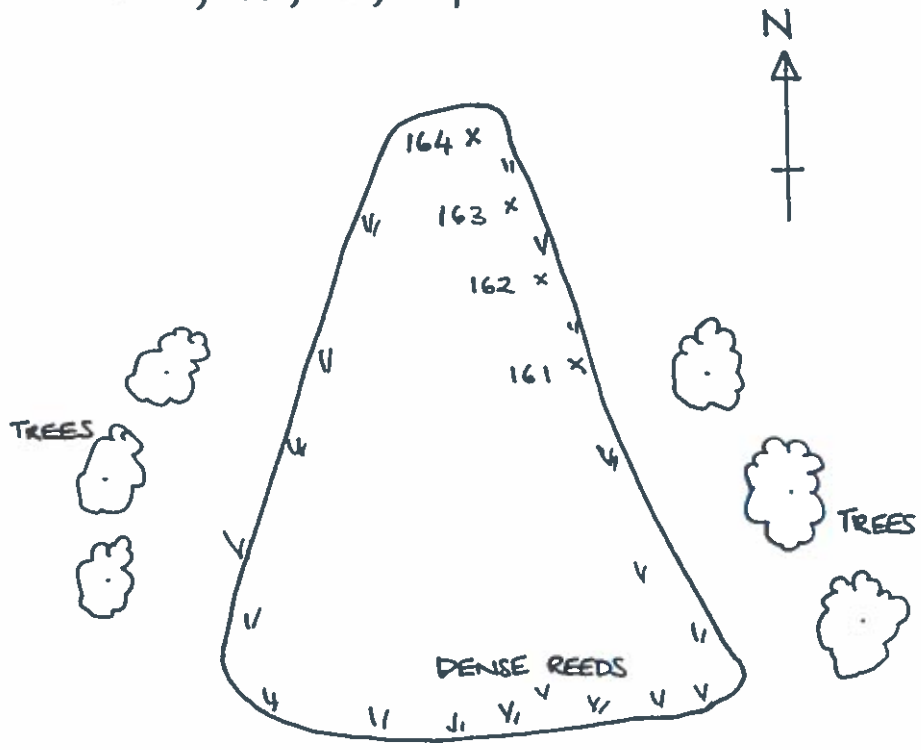
SITE No. 157, 158, 159, 160



LOUGH DRUMROOSK

H 346 334 (NGR)

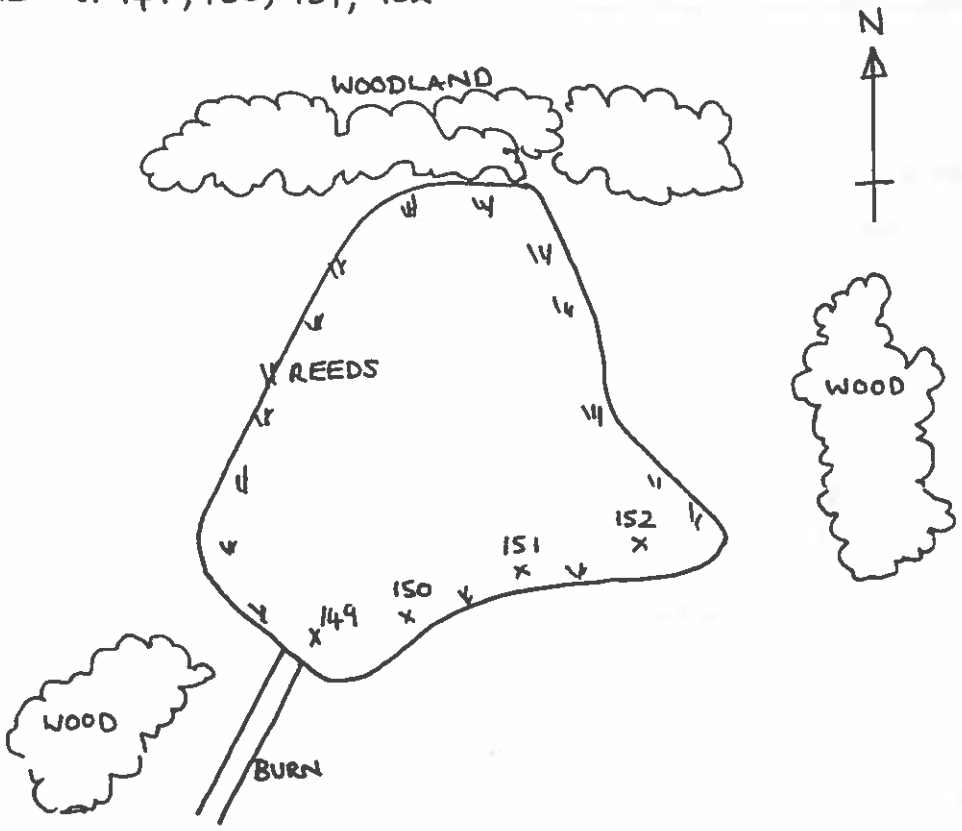
SITE No. 161, 162, 163, 164



LOUGH SHANKILL

HS69 309 (NGR)

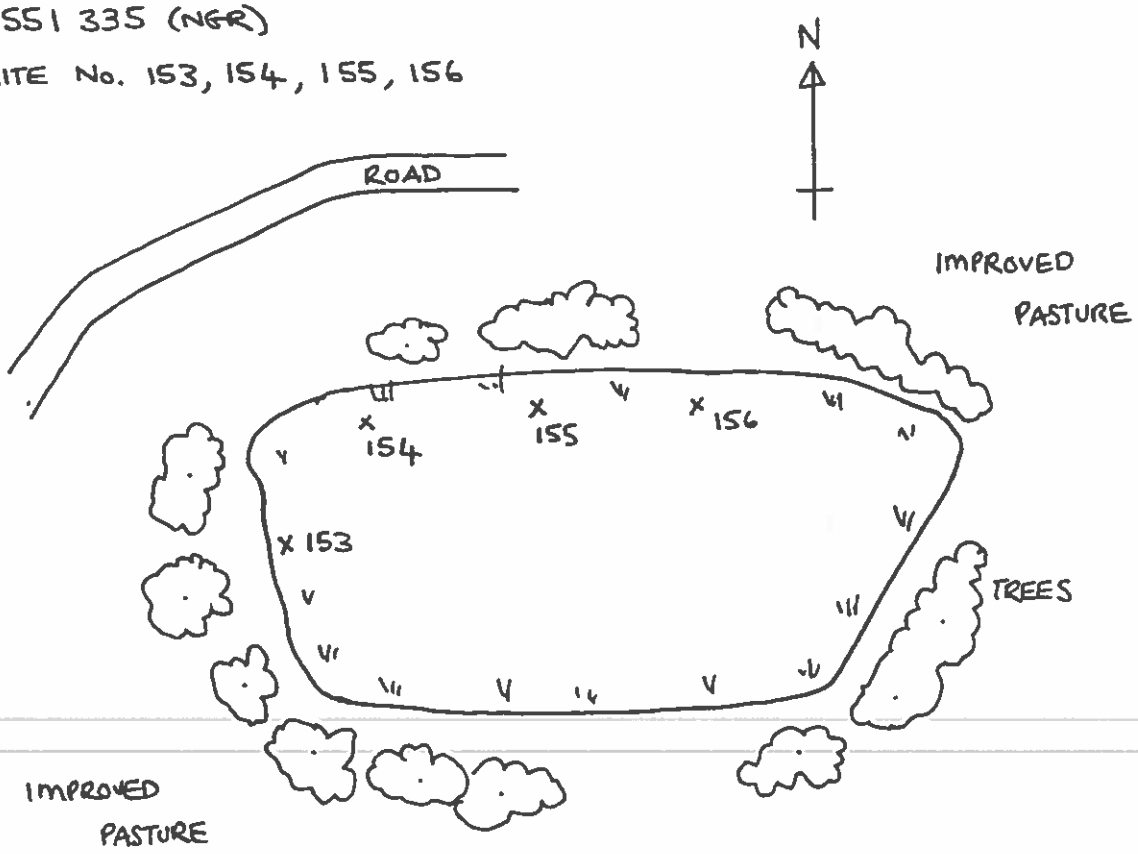
SITE No. 149, 150, 151, 152



LOUGH KILLYVILLY

HS51 335 (NGR)

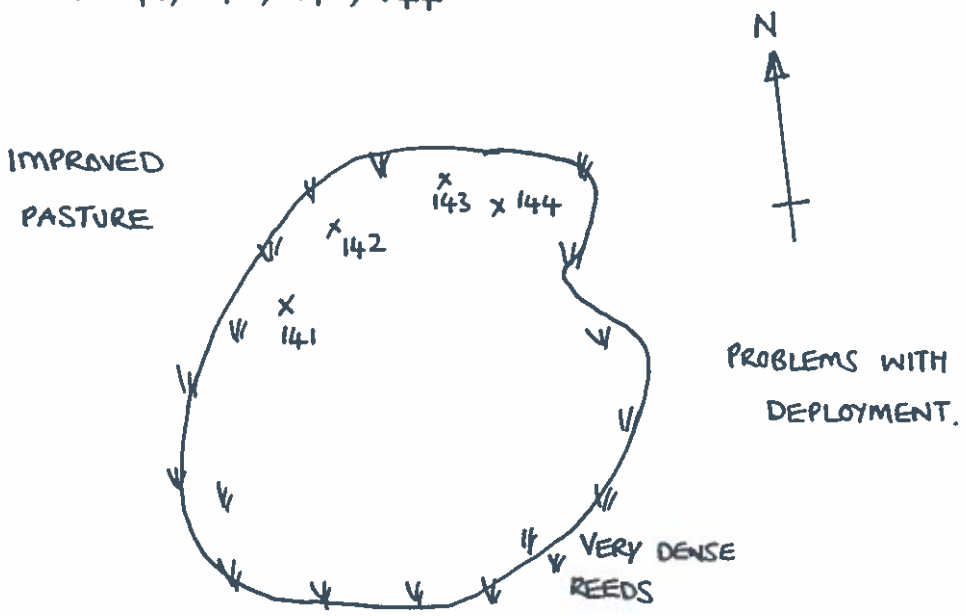
SITE No. 153, 154, 155, 156



LOUGH CORRAGH

H367 297 (NGR)

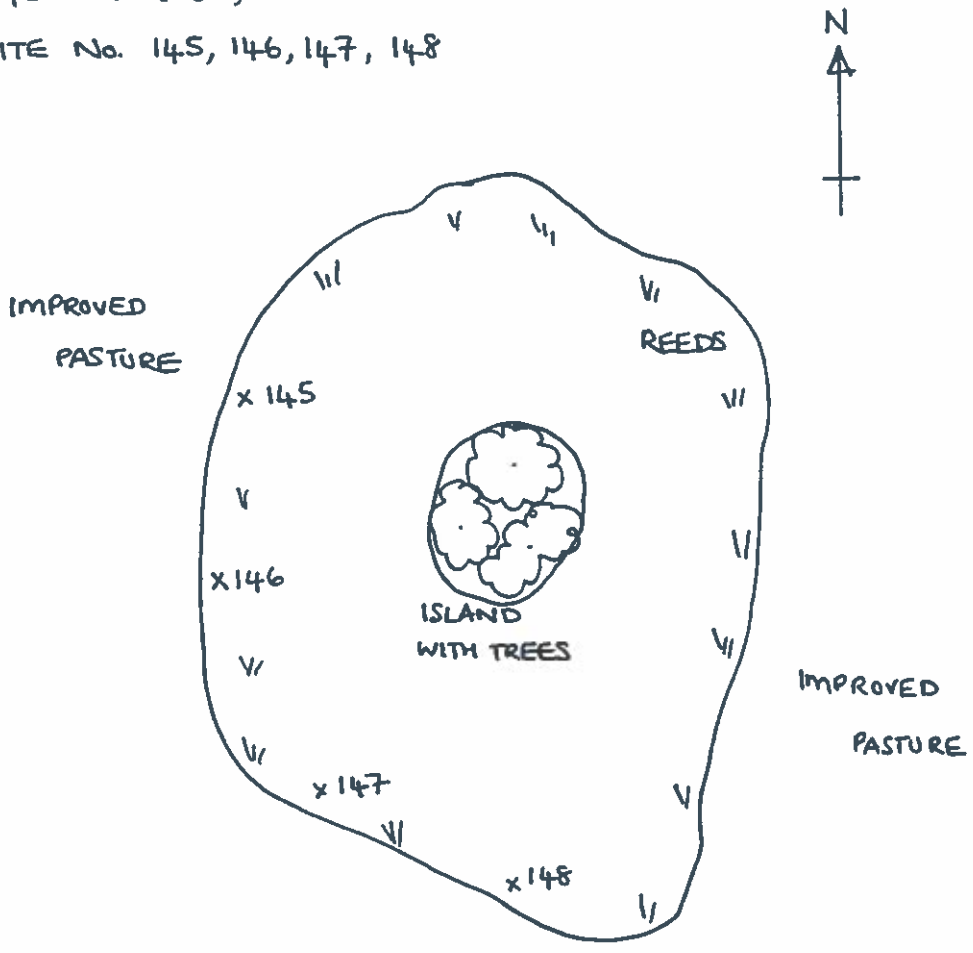
SITE No. 141, 142, 143, 144



LOUGH MULLYNAGAWAN

H431 266 (NGR)

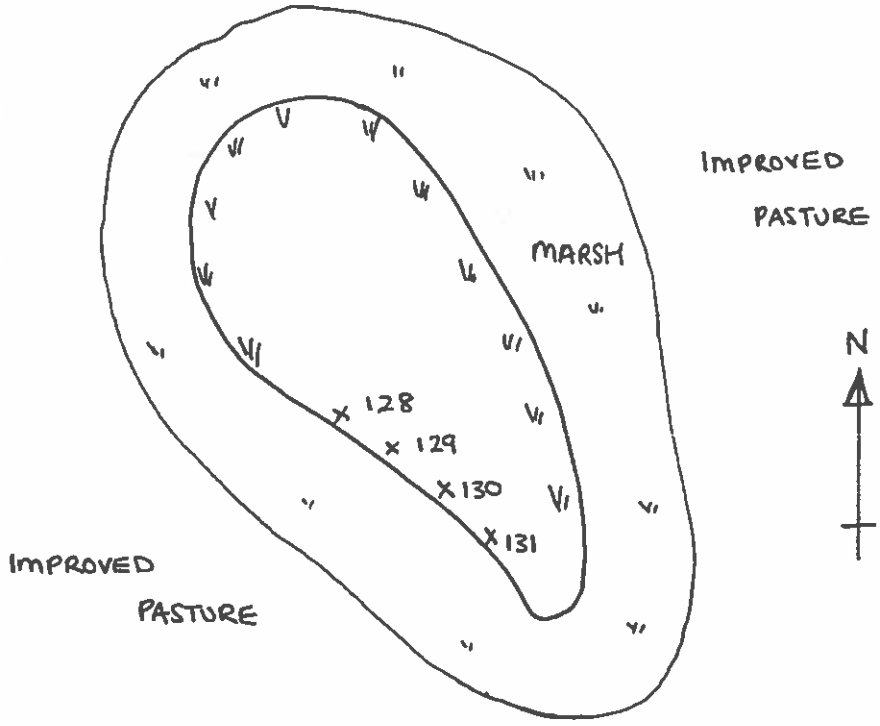
SITE No. 145, 146, 147, 148



LOUGH KILLYNUBBER

H 388 242 (NGR)

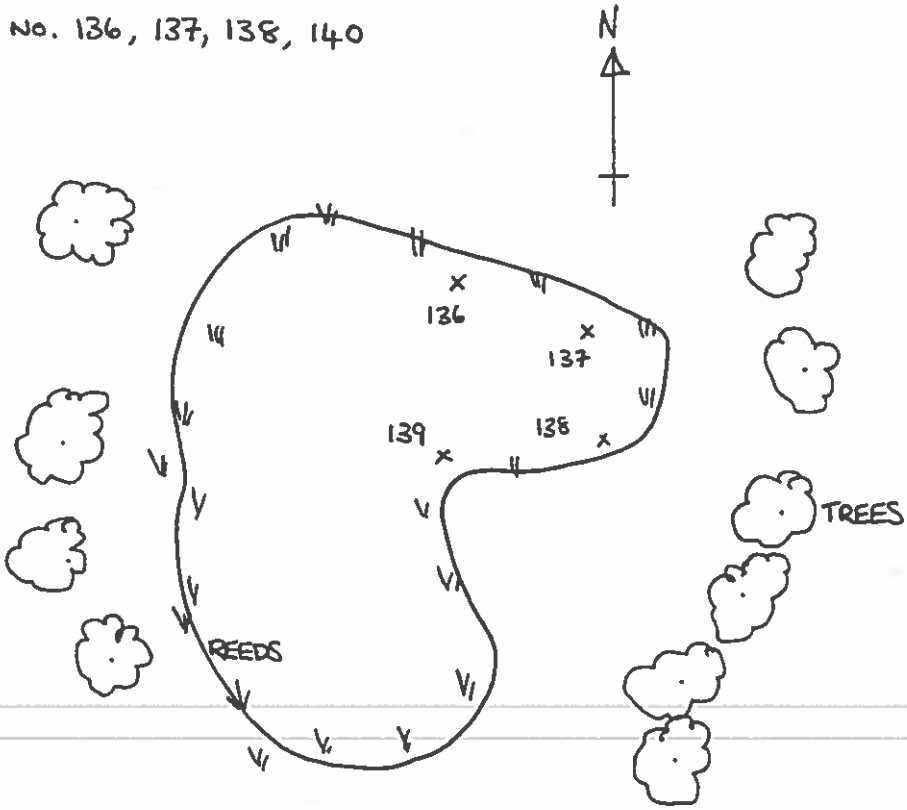
SITE No. 128, 129, 130, 131



LOUGH DERRYCHREE

H 330 265 (NGR)

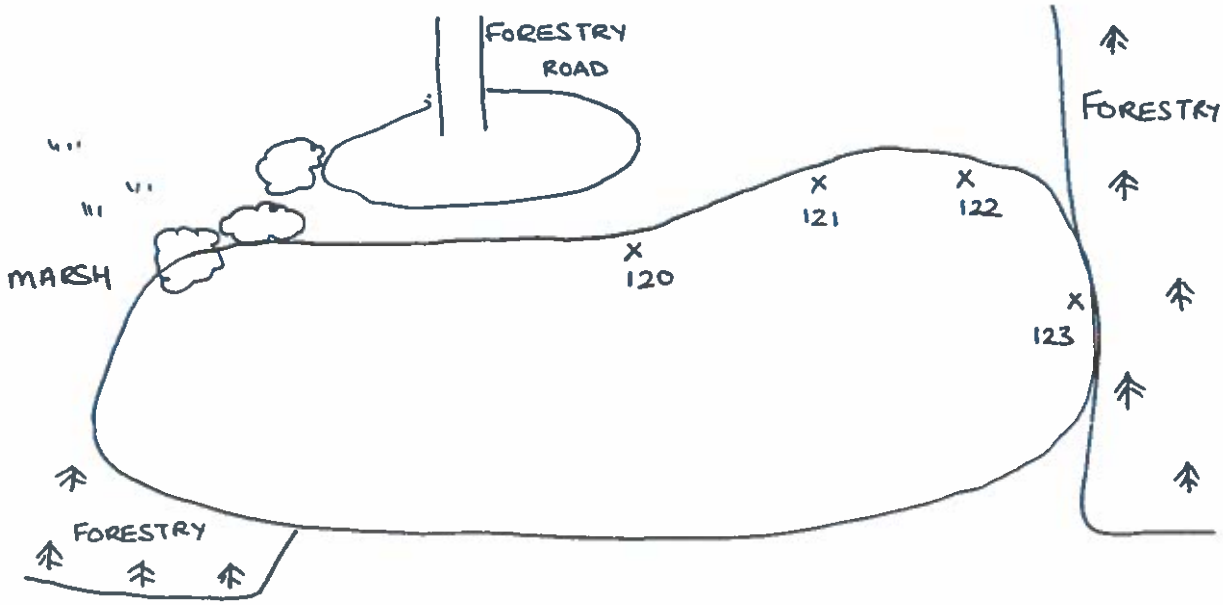
SITE No. 136, 137, 138, 140



LOUGH JENKIN

H483 400 (NGR)

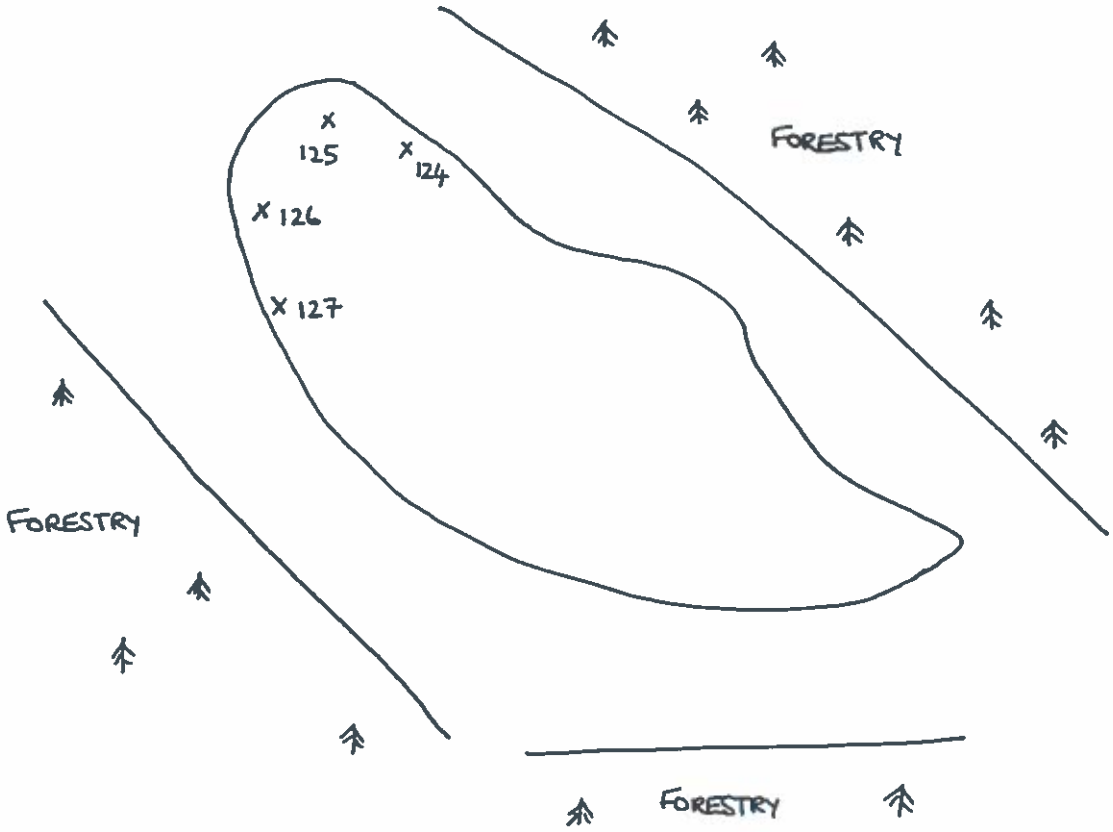
SITE No. 120, 121, 122, 123



LOUGH CROCKALEAVEN

H484 443 (NGR)

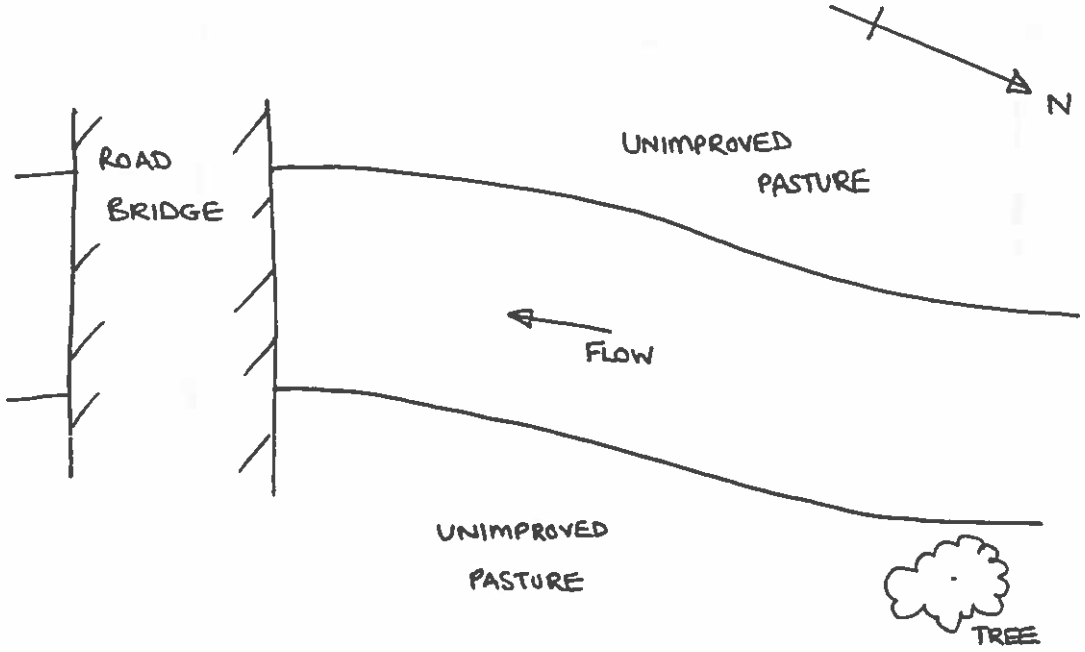
SITE No. 124, 125, 126, 127



RIVER LACKEY

H505 304 (NGR)

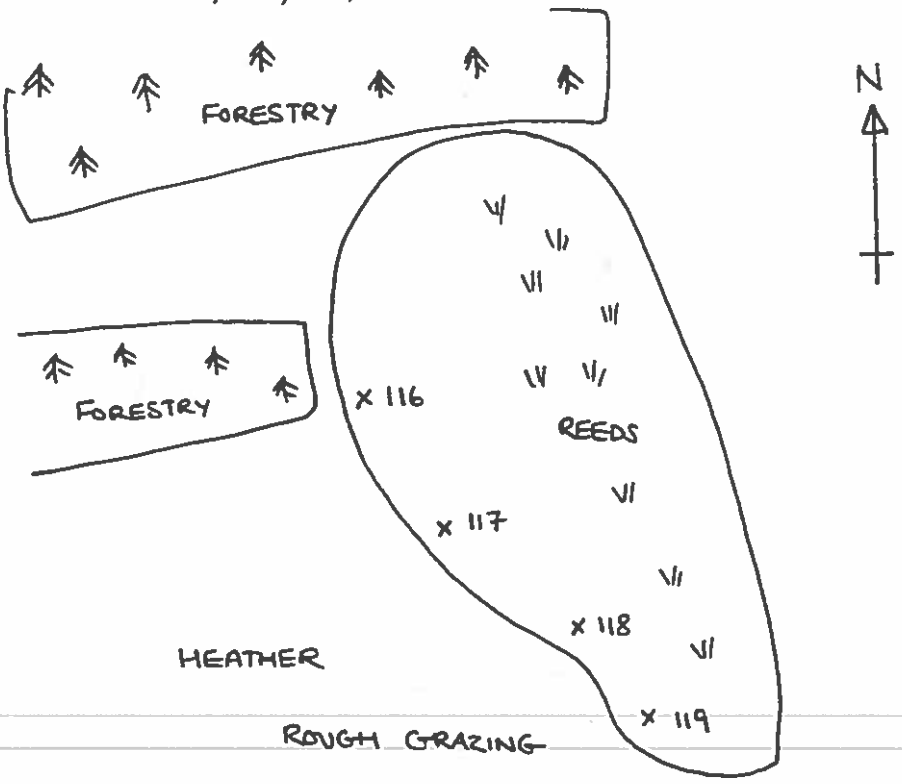
SITE No. 115



LOUGH CARNMORE

H472 358 (NGR)

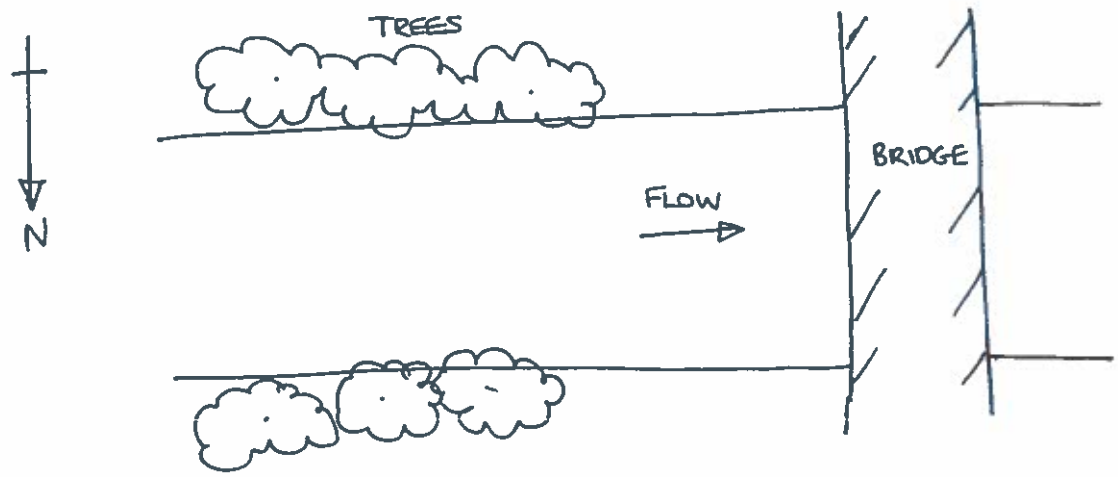
SITE No. 116, 117, 118, 119



RIVER CLEEN

H474 481 (NGR)

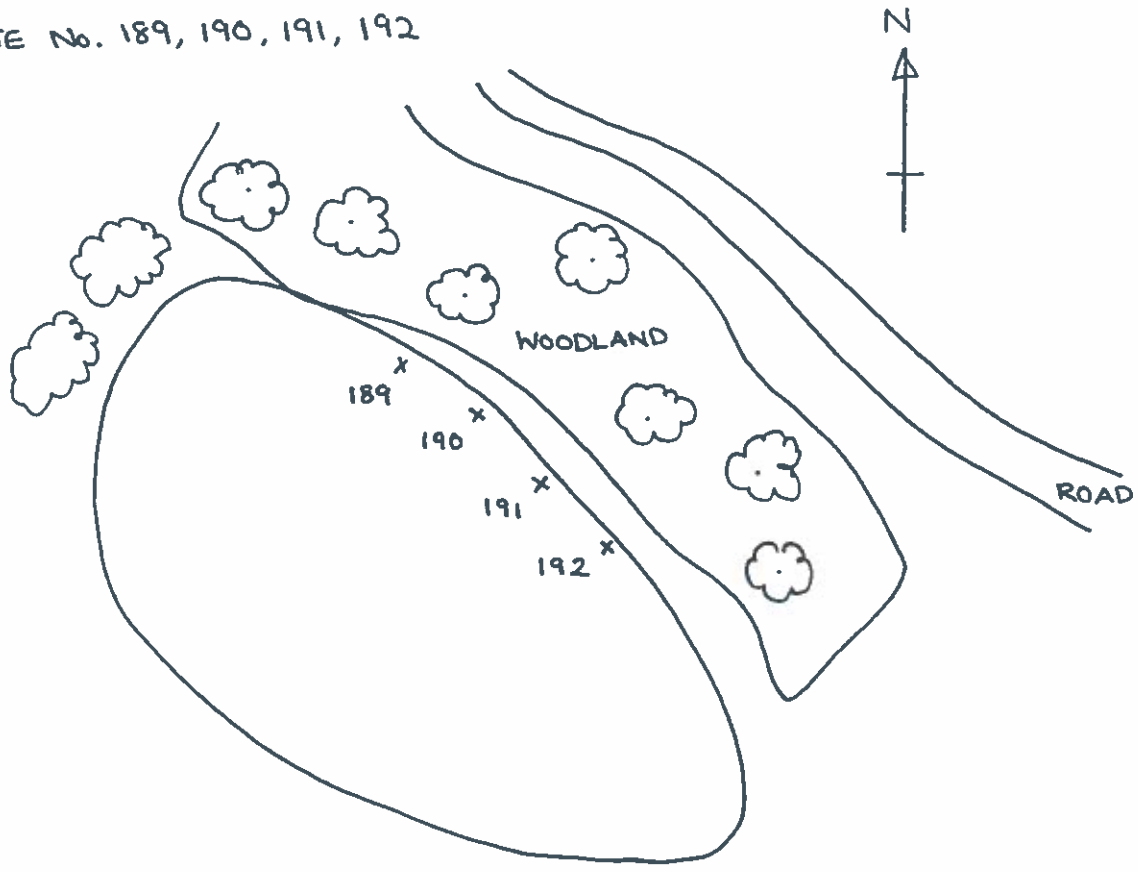
SITE No. 110



LOUGH AGHNAHINCH

H422 239 (NGR)

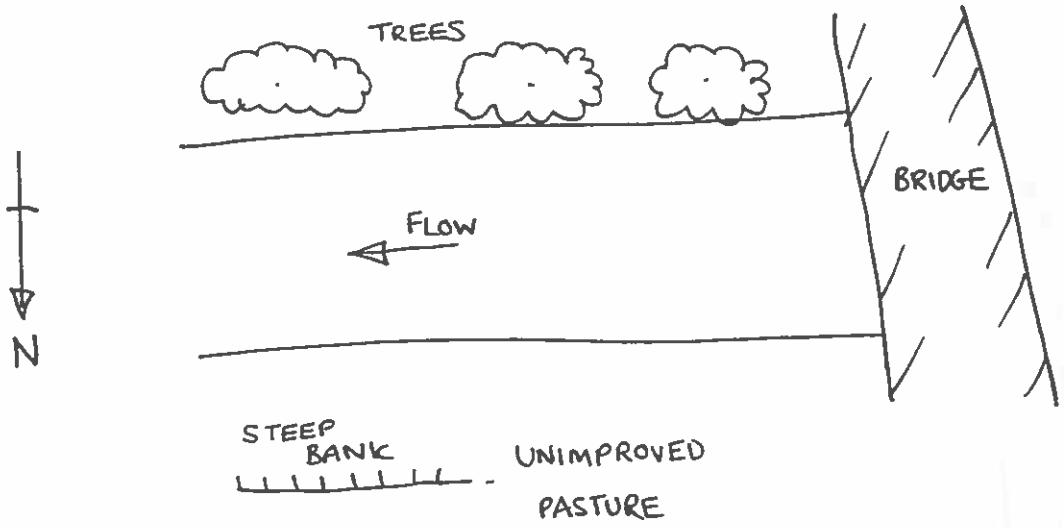
SITE No. 189, 190, 191, 192



RIVER GAVARY

H000 647 (NGR)

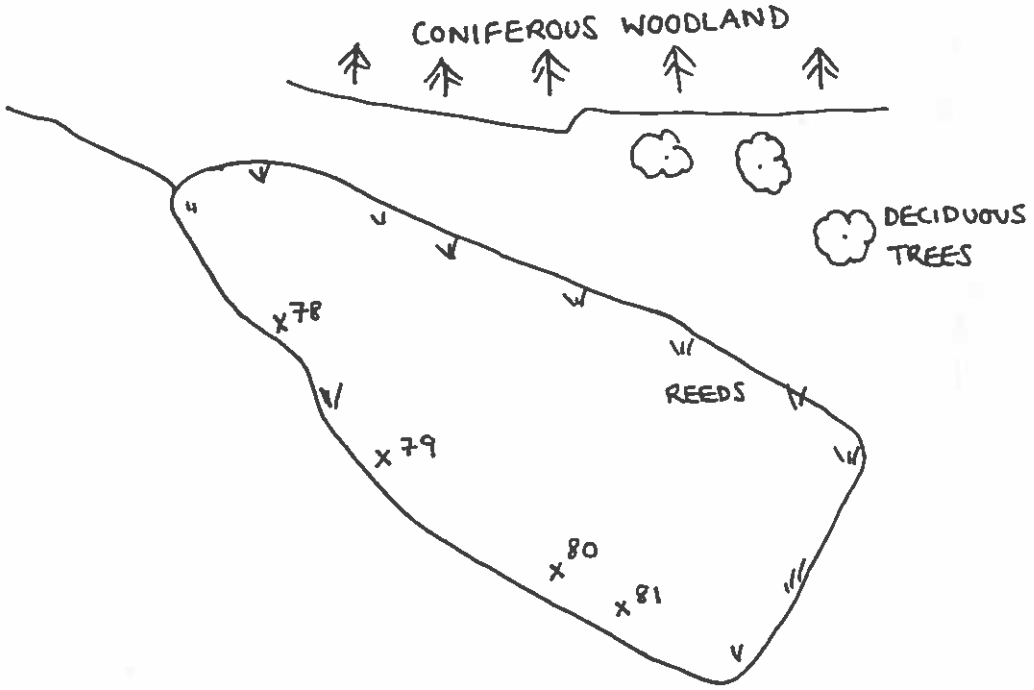
SITE No. 77



LOUGH HAMUL

H067 413 (NGR)

SITE No. 78, 79, 80, 81.

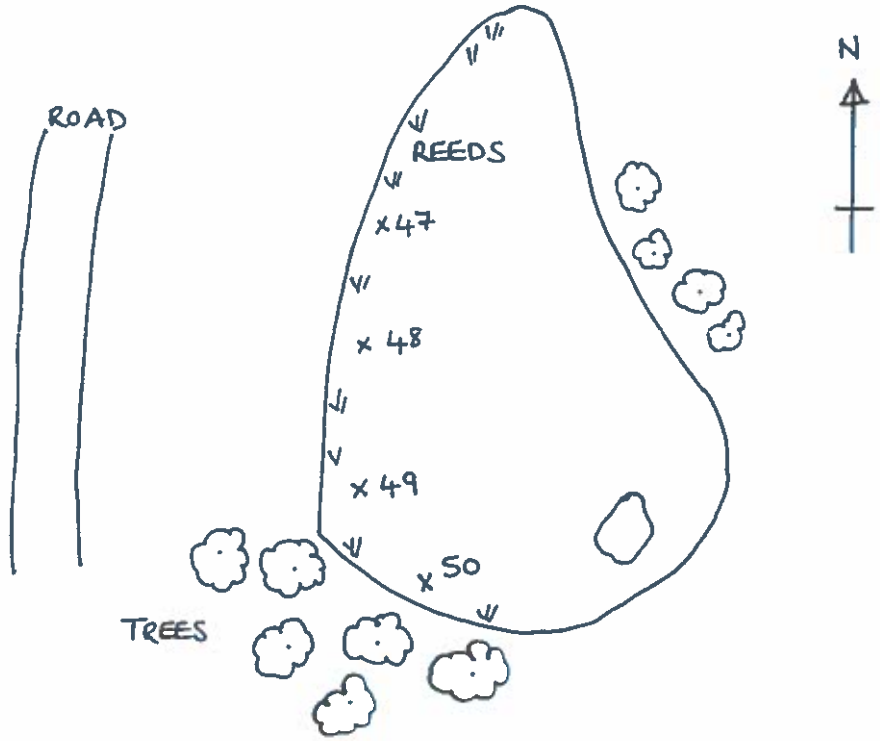


EXPOSED LOCATION, FEW REEDS.

LOUGH DERRYHOWLAGHT

H300 365 (NGR)

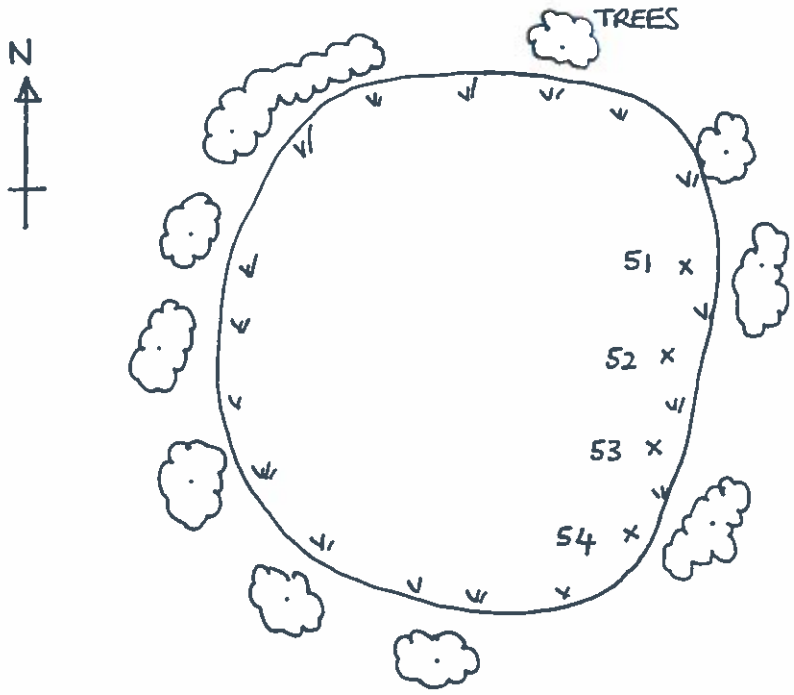
SITE No. 47, 48, 49, 50



LOUGH RAYMOND

H287 387 (NGR)

SITE No. 51, 52, 53, 54

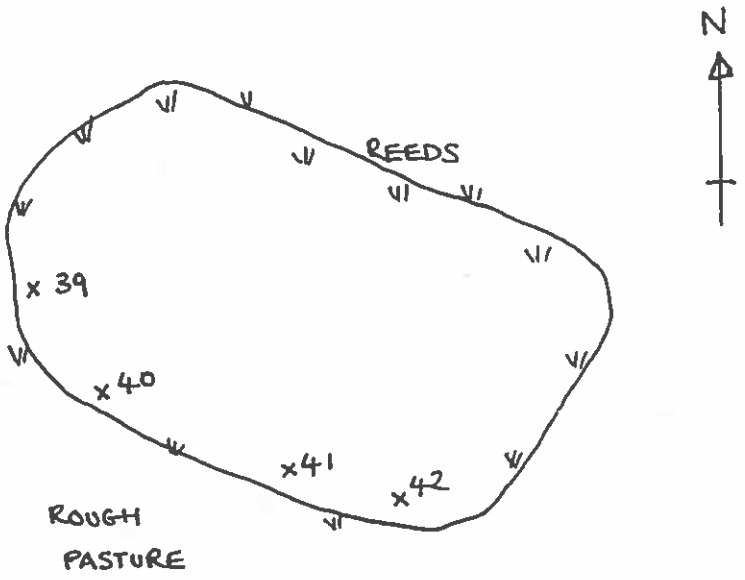


VERY DIFFICULT TO GET TO THE WATER BECAUSE OF REEDS + SOFT BOTTOM.

LOUGH ARDA

H 284 375 (NGR)

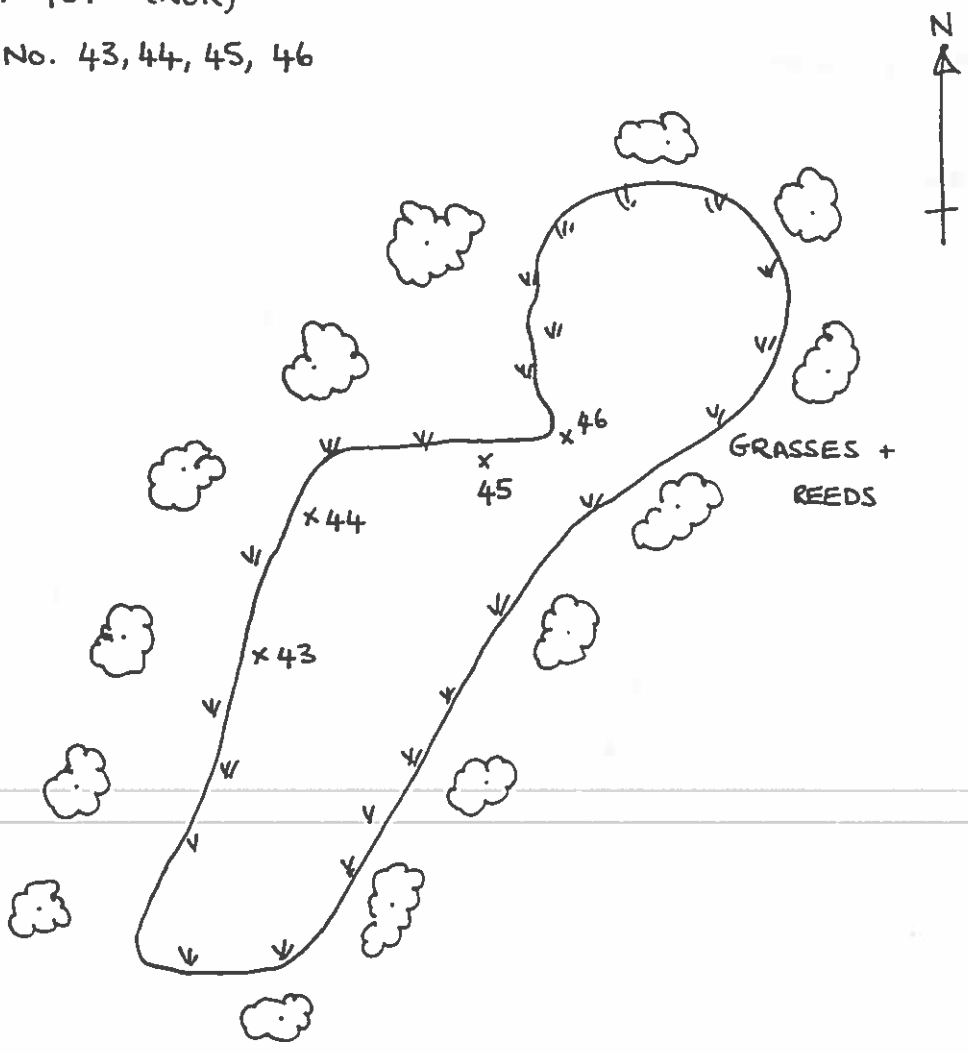
SITE No. 39, 40, 41, 42.



LOUGH TEMPO

H 357 481 (NGR)

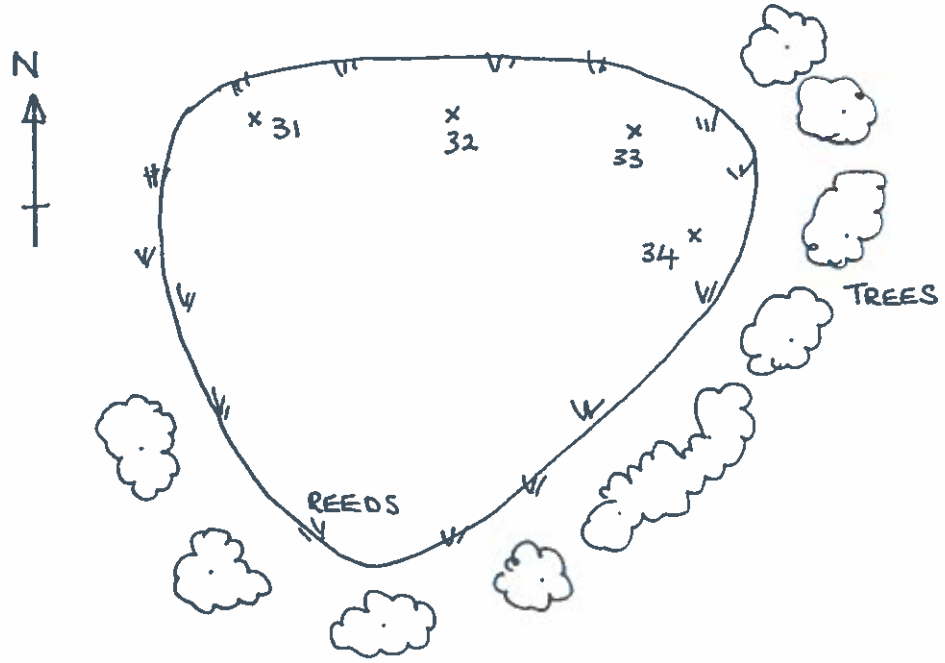
SITE No. 43, 44, 45, 46



LOUGH CORRACOASH

H 247 340 (NGR)

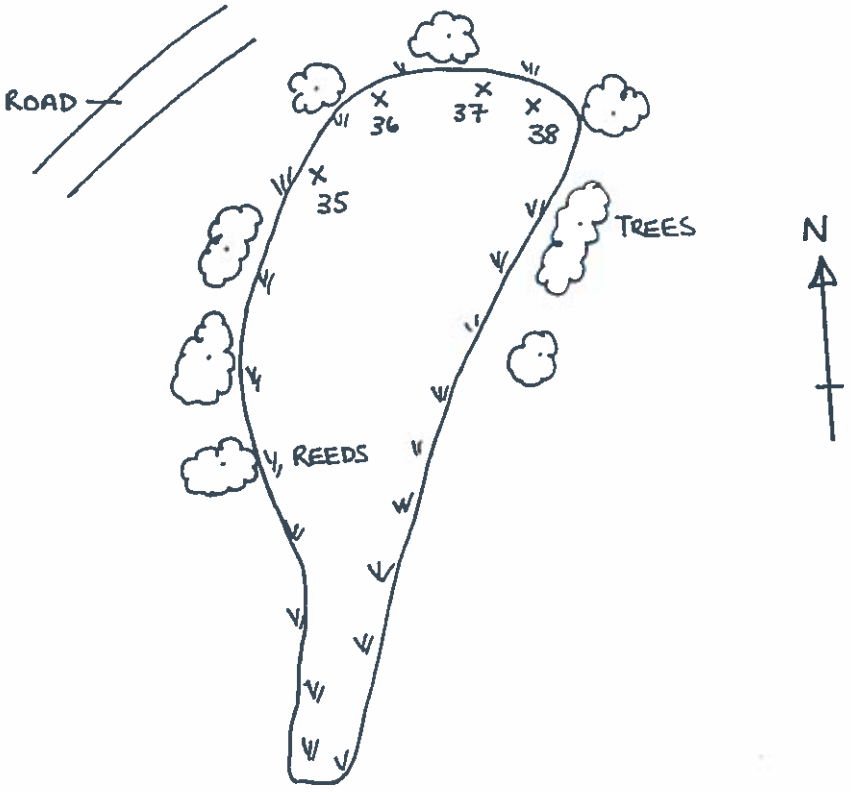
SITE No. 31, 32, 33, 34



LOUGH SESSIAGH EAST

H 26 34 (NGR)

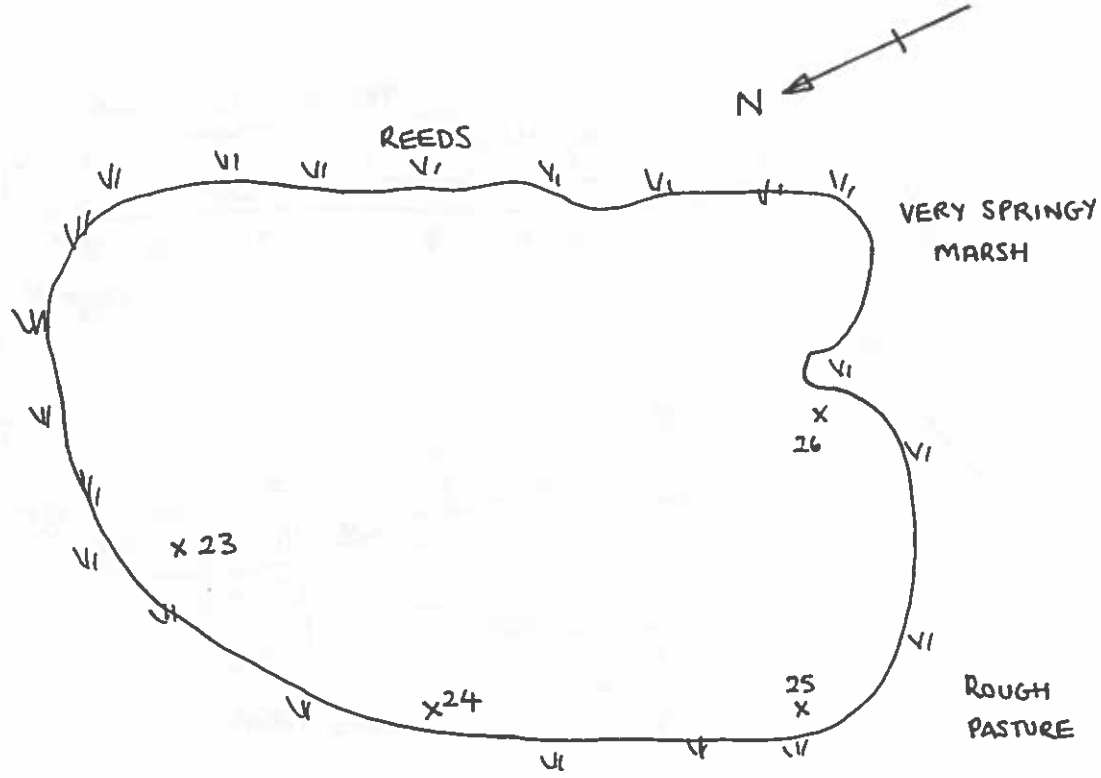
SITE No. 35, 36, 37, 38



LOUGH DOOLETTER

H097 430 (NGR)

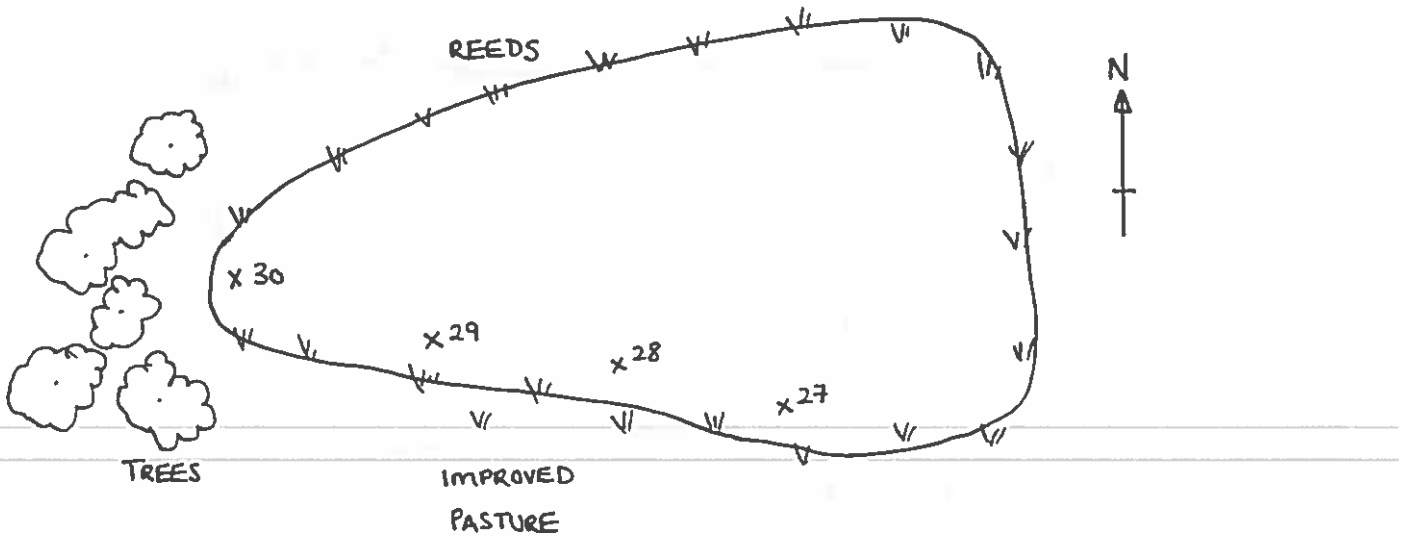
SITE No. 23, 24, 25, 26



LOUGH DERRYALLEN

H241 332 (NGR)

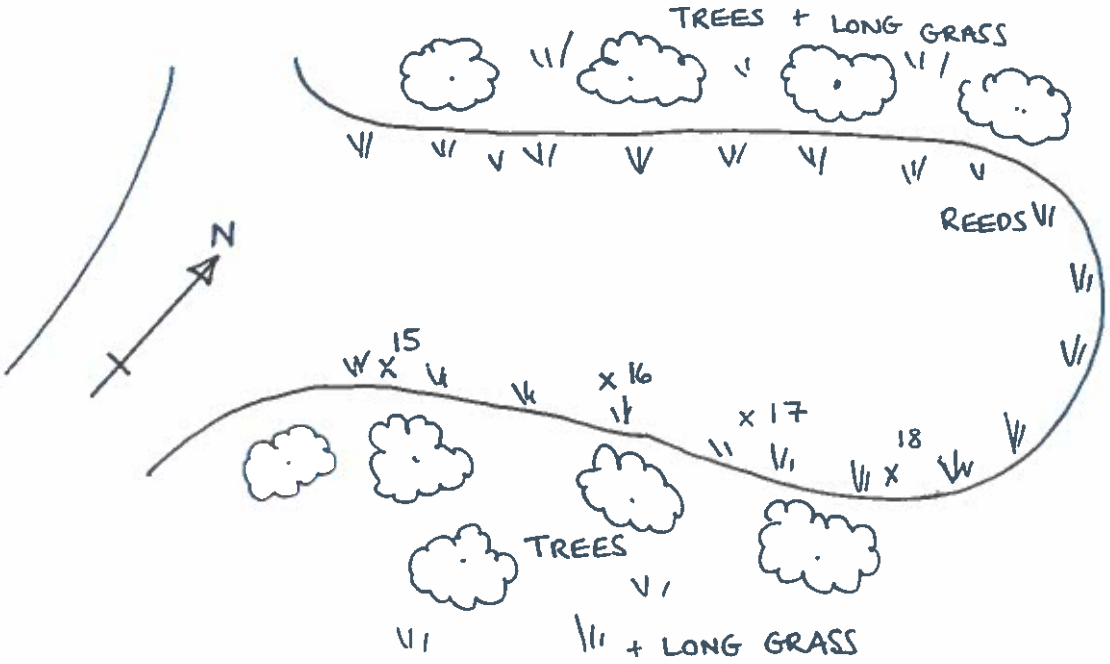
SITE No. 27, 28, 29, 30



LOUGH BACK

H231 452 (NGR)

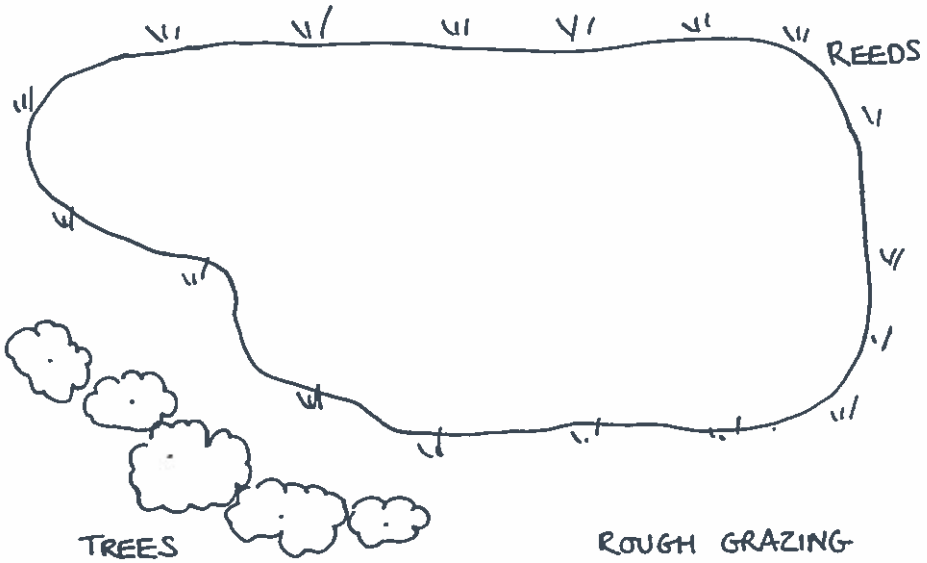
SITE No. 15, 16, 17, 18



LOUGH CARRAN

H231 452 (NGR)

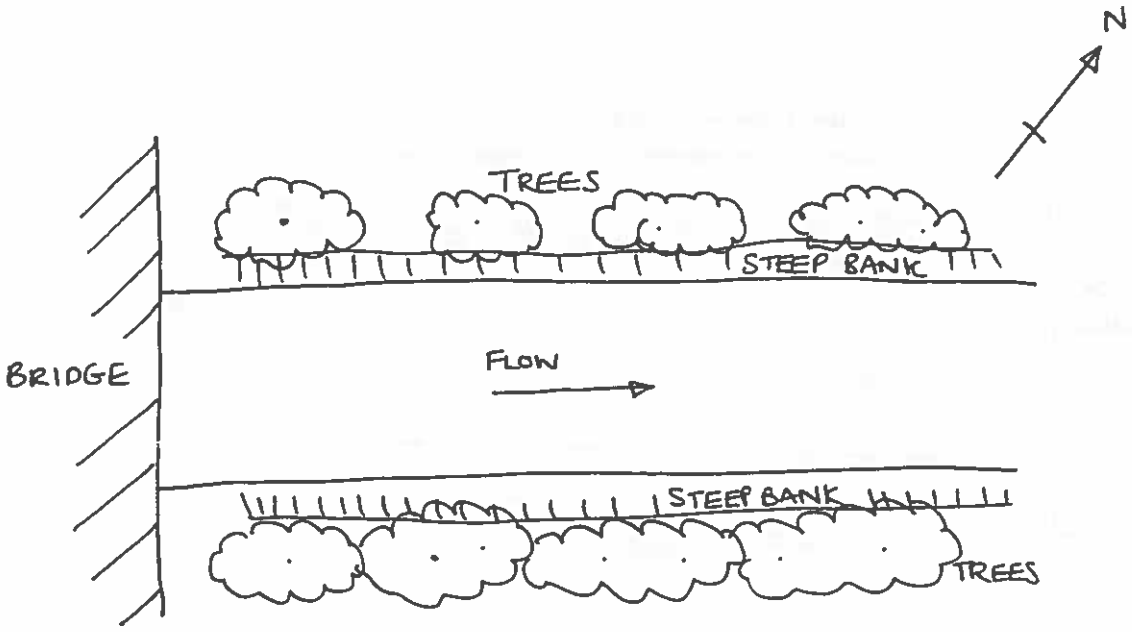
SITE No. 19, 20, 21, 22



RIVER TEMPO

H378 517 (NGR)

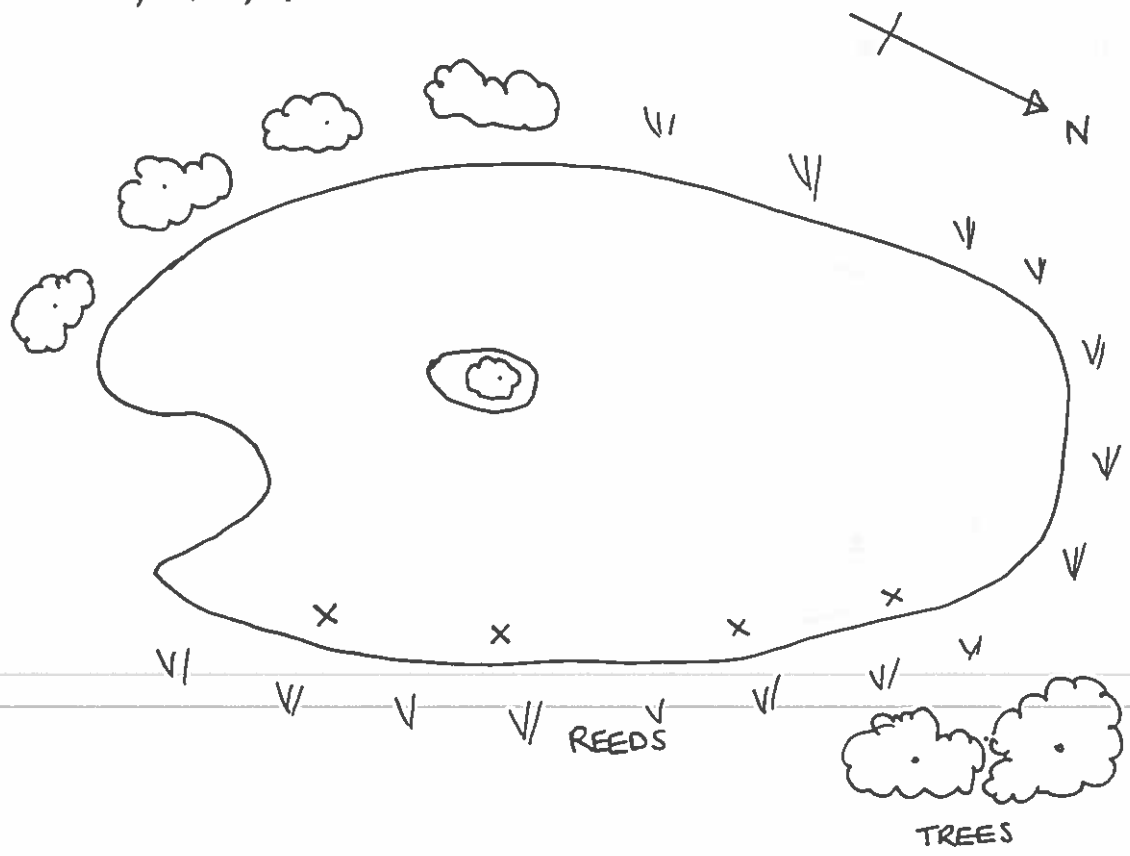
SITE No. 10



LOUGH DRUMGAY

H245 476 (NGR)

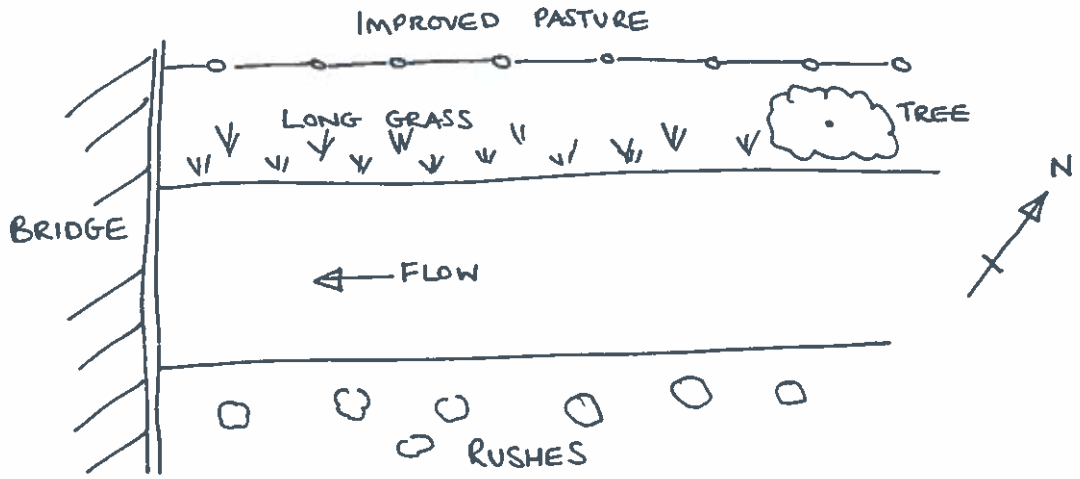
SITE No. 11, 12, 13, 14



BALLINAMALLARD RIVER

H334 597 (NGR)

SITE No. 3.

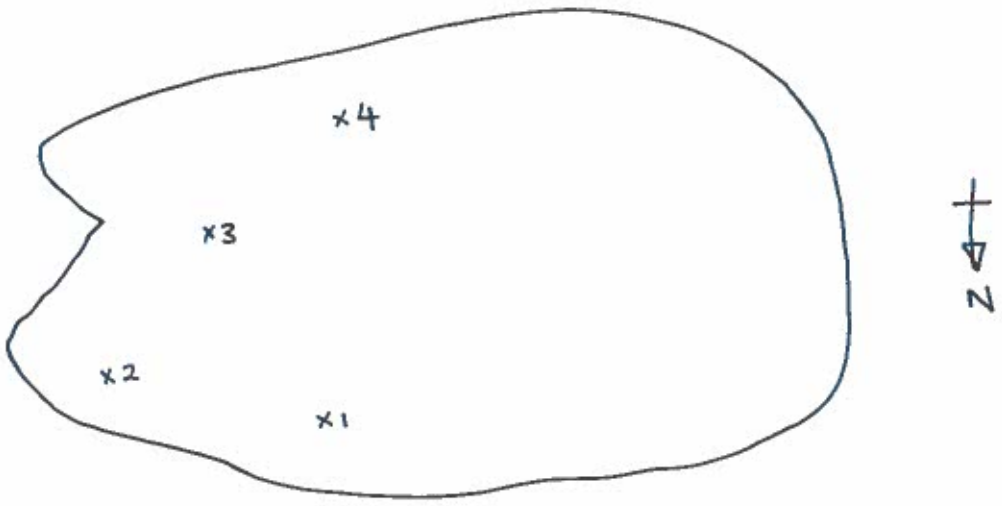


ROUGH PASTURE

LOUGH MULSHAW

H319 509 (NGR)

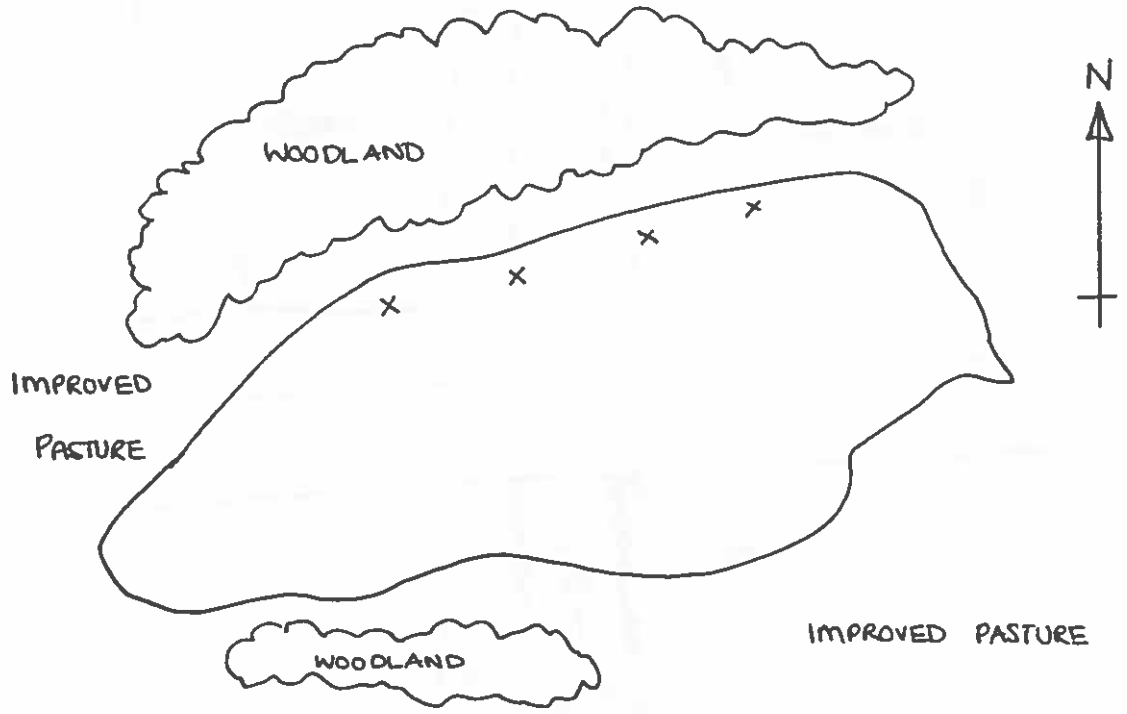
SITE No. 4, 5, 6, 7.



LOUGH MULLYGRUERN

H757 650 (NGR)

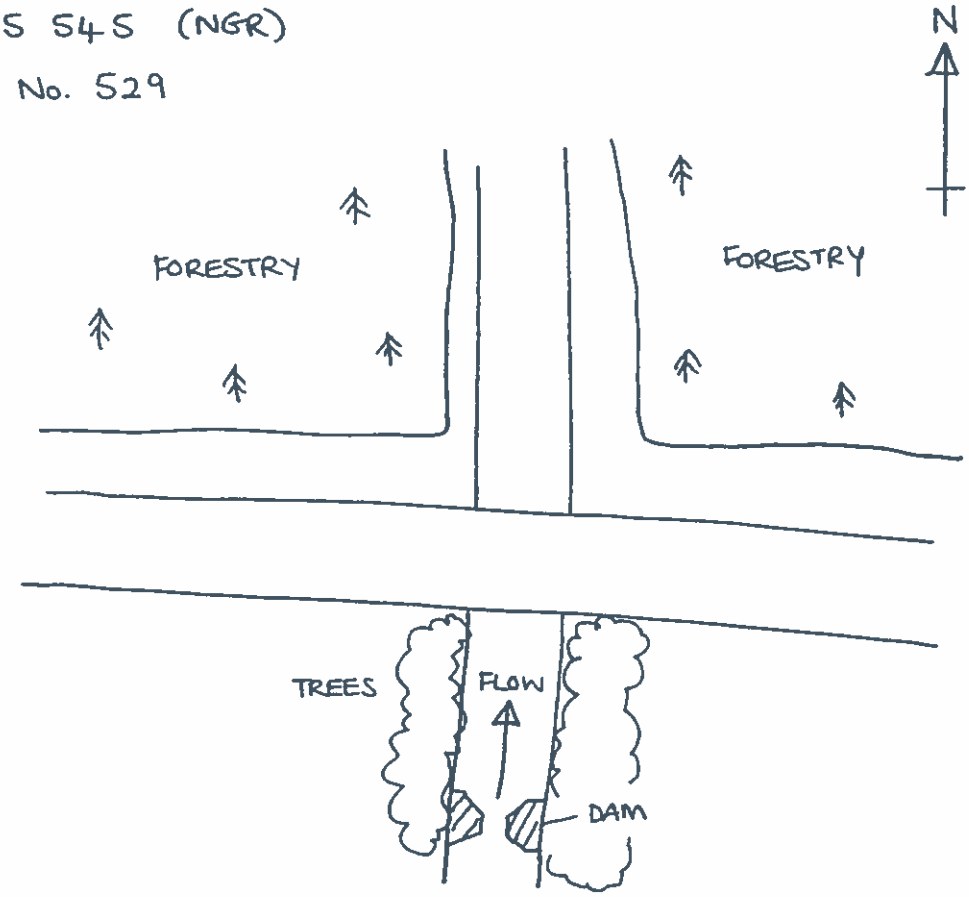
SITE No. 530 (NOT ON LIST)



LOUGH N.E OF CARRICK LOUGH

H 085 545 (NGR)

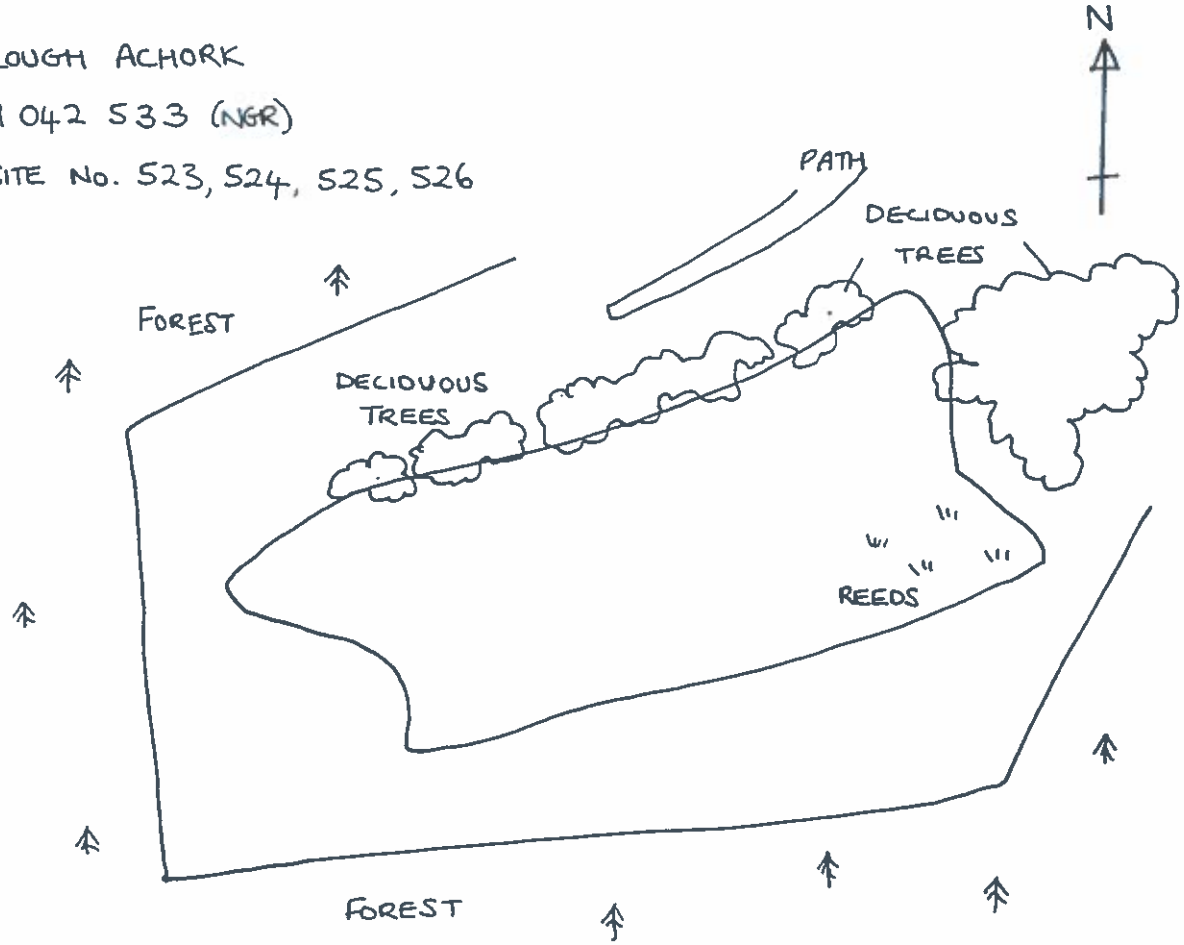
SITE No. 529



LOUGH ACHORK

H 042 533 (NGR)

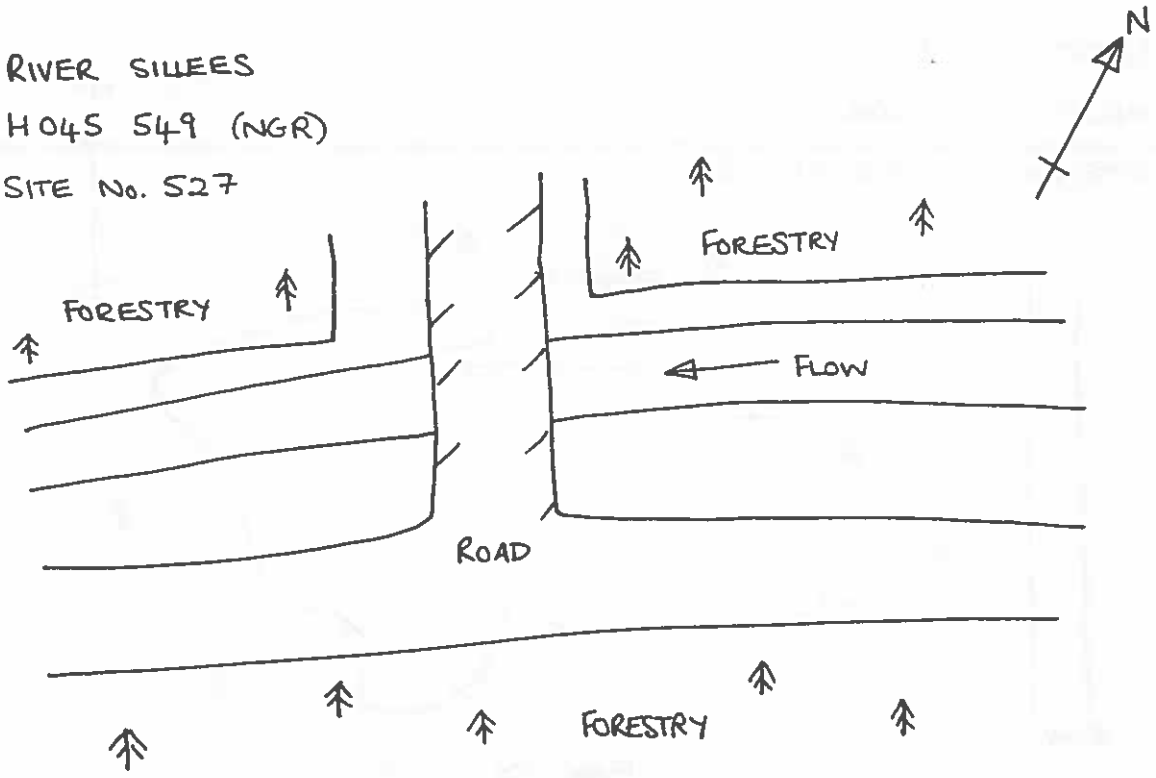
SITE No. 523, 524, 525, 526



RIVER SILLEES

H 045 549 (NGR)

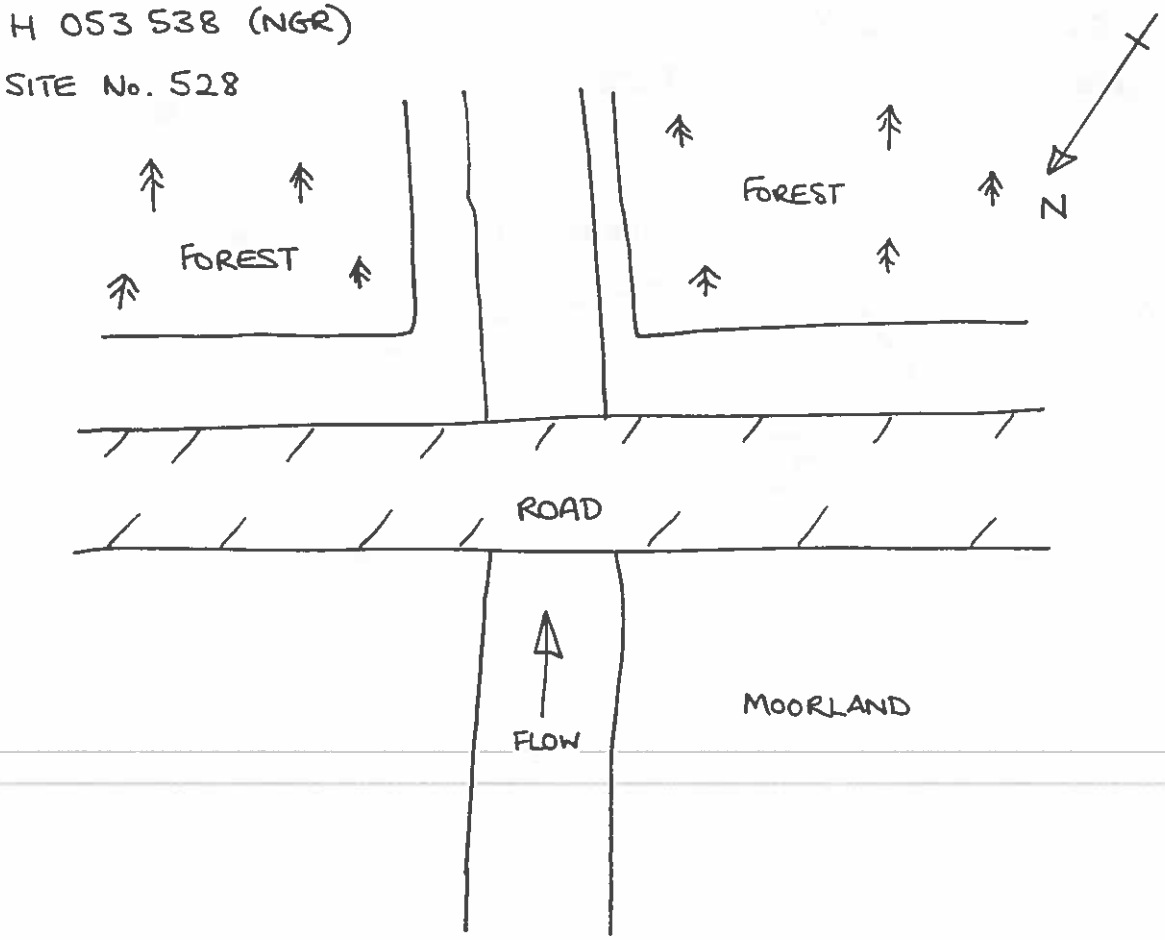
SITE No. 527



RIVER SILLEES

H 053 538 (NGR)

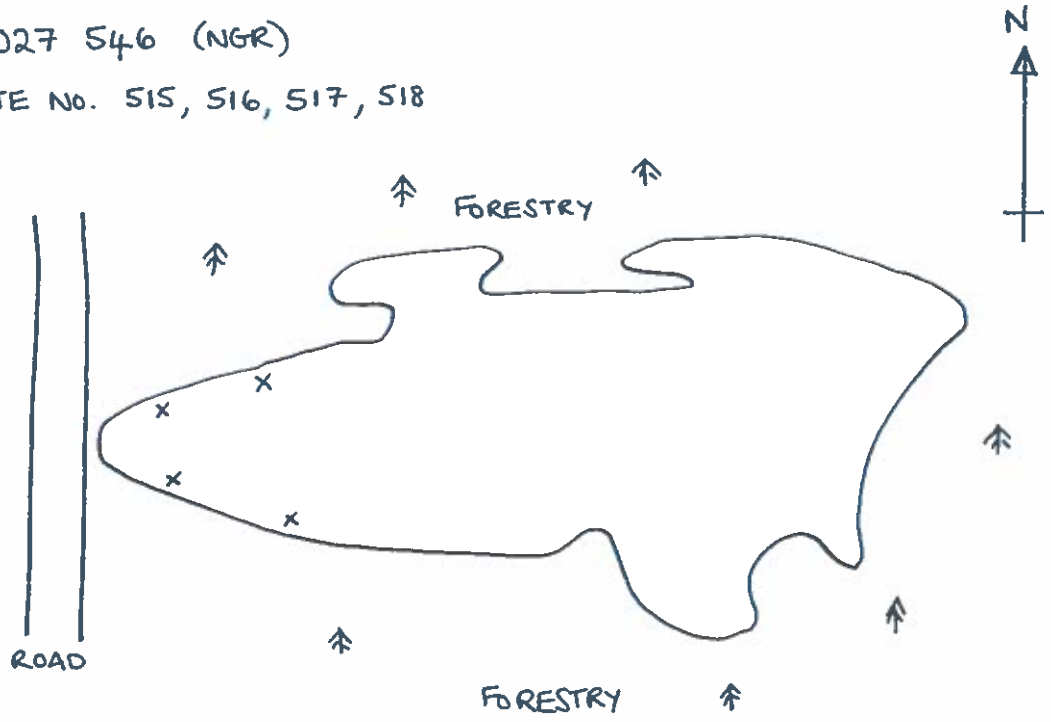
SITE No. 528



LOUGH NAVAR

H027 546 (NGR)

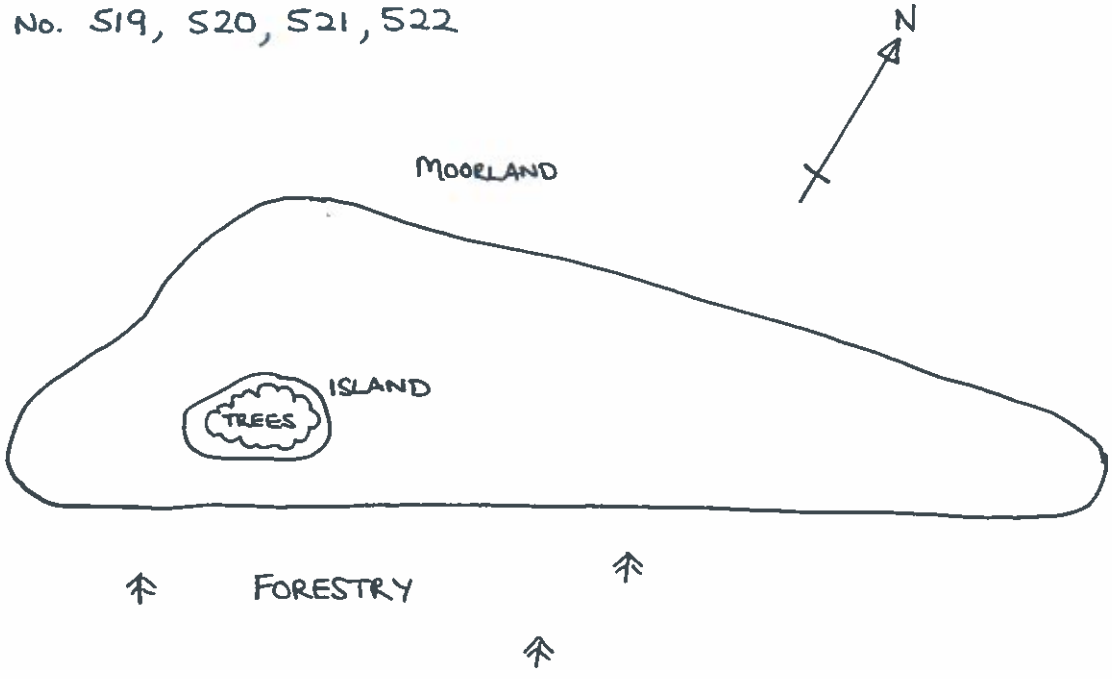
SITE No. 515, 516, 517, 518



LOUGH GLENCREAWAN

H025 565 (NGR)

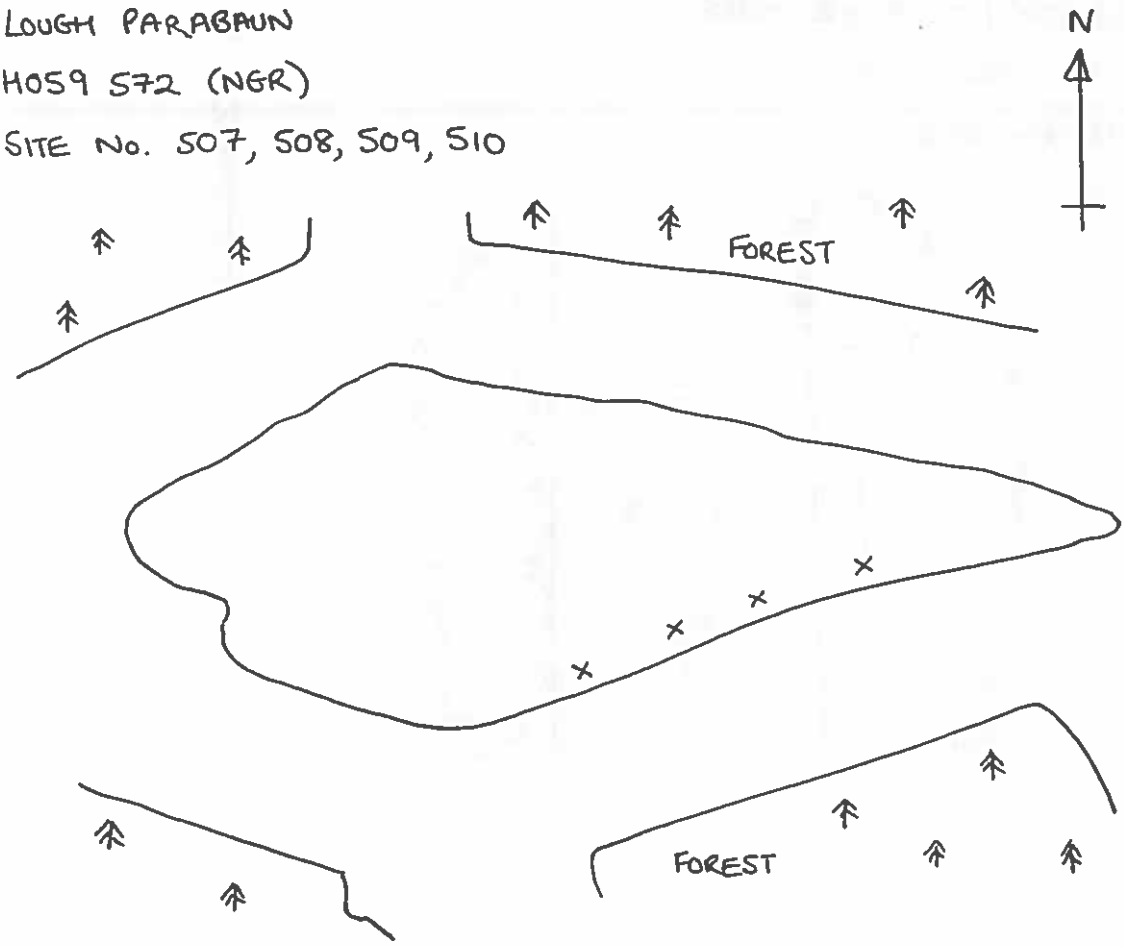
SITE No. 519, 520, 521, 522



LOUGH PARABAUN

H059 572 (NGR)

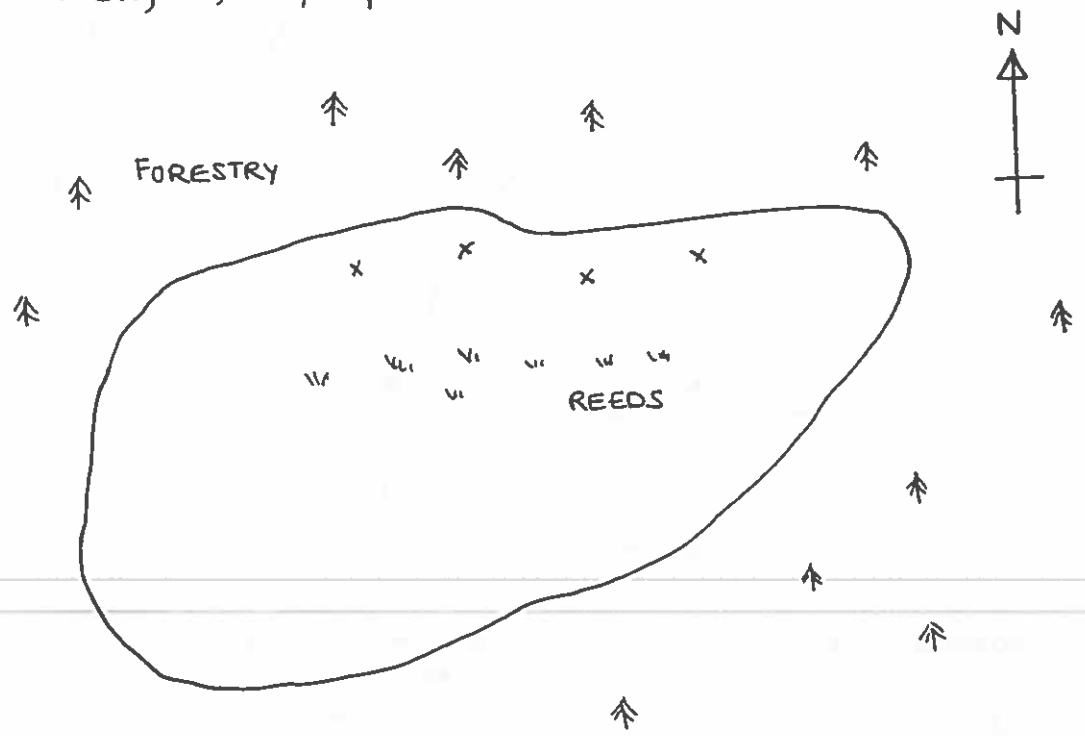
SITE No. 507, 508, 509, 510



LOUGH MEENAMEEN

H028 559 (NGR)

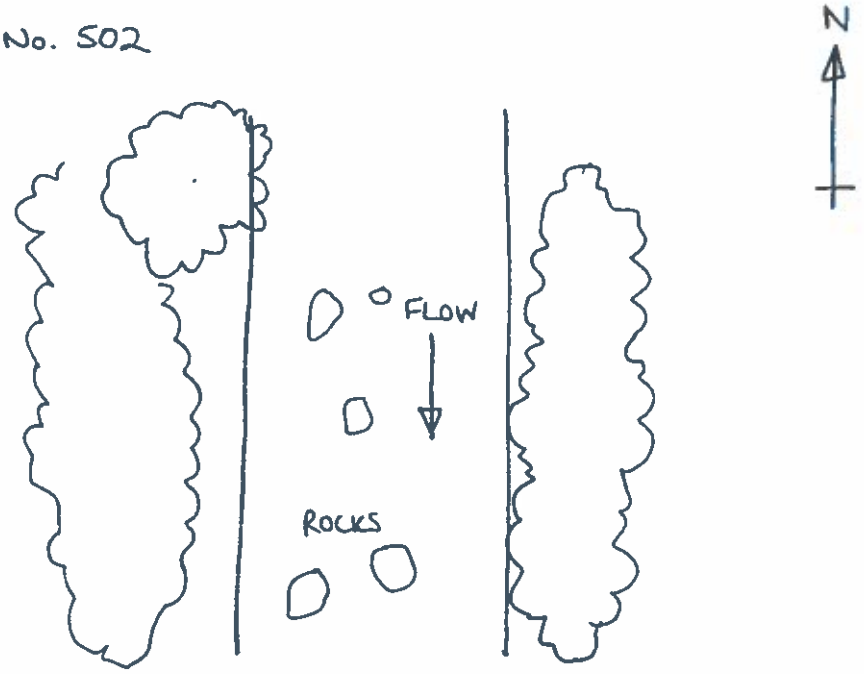
SITE No. 511, 512, 513, 514



TRIBUTARY OF RIVER DERG

H170 794 (NGR)

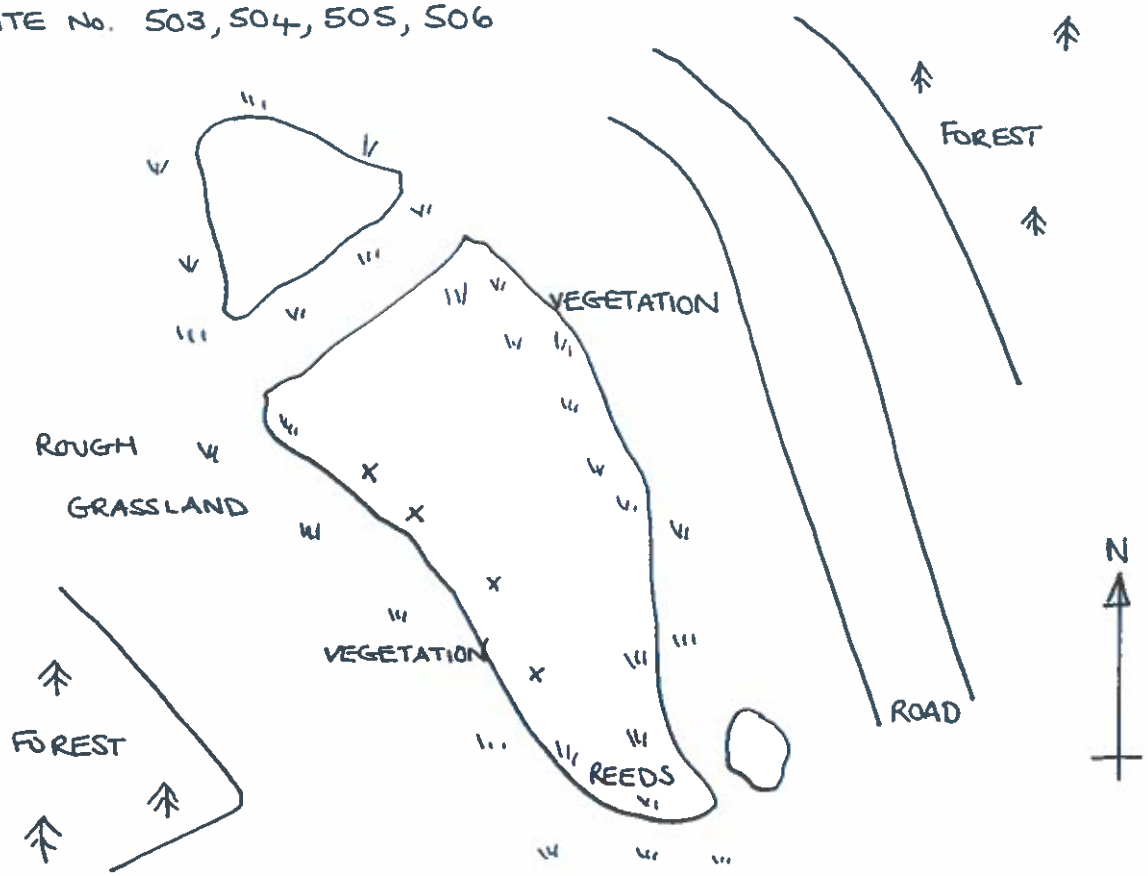
SITE No. 502



LOUGH (NO NAME)

H 068 566 (NGR)

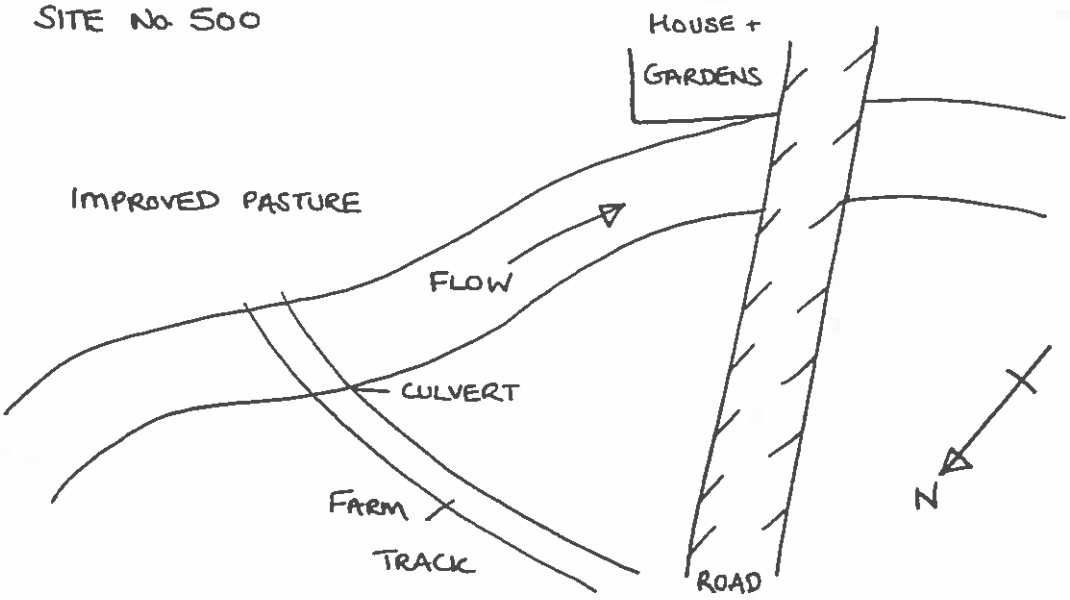
SITE No. 503, 504, 505, 506



RIVER BALLINDERRY

H773 854 (NGR)

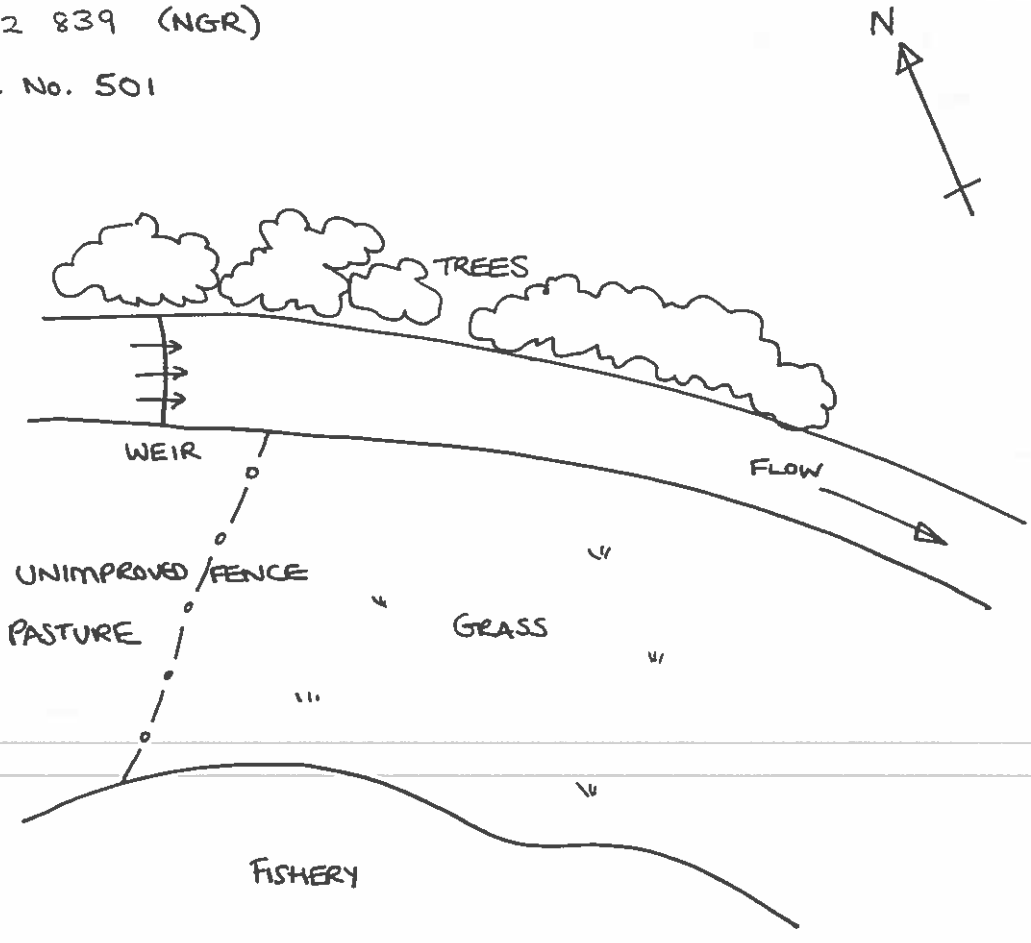
SITE No 500



RIVER BALLINDERRY

H832 839 (NGR)

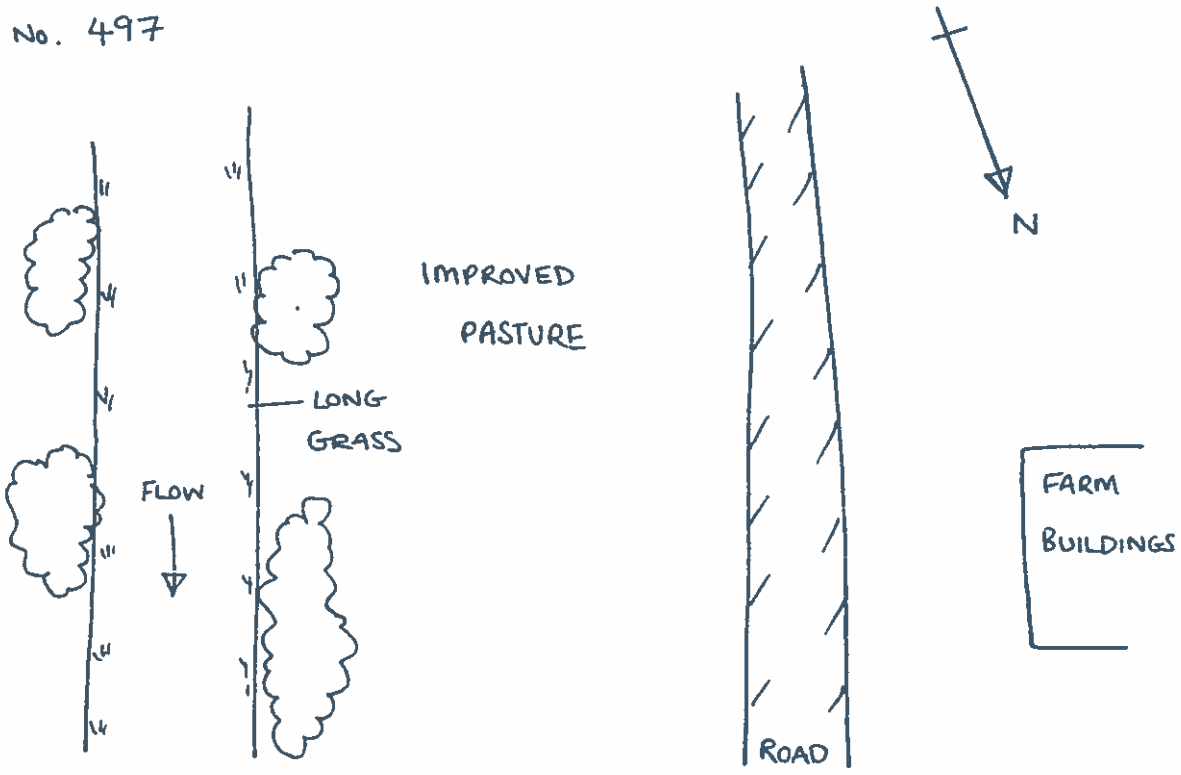
SITE No. 501



RIVER BALLINDERRY

H942 801 (NGR)

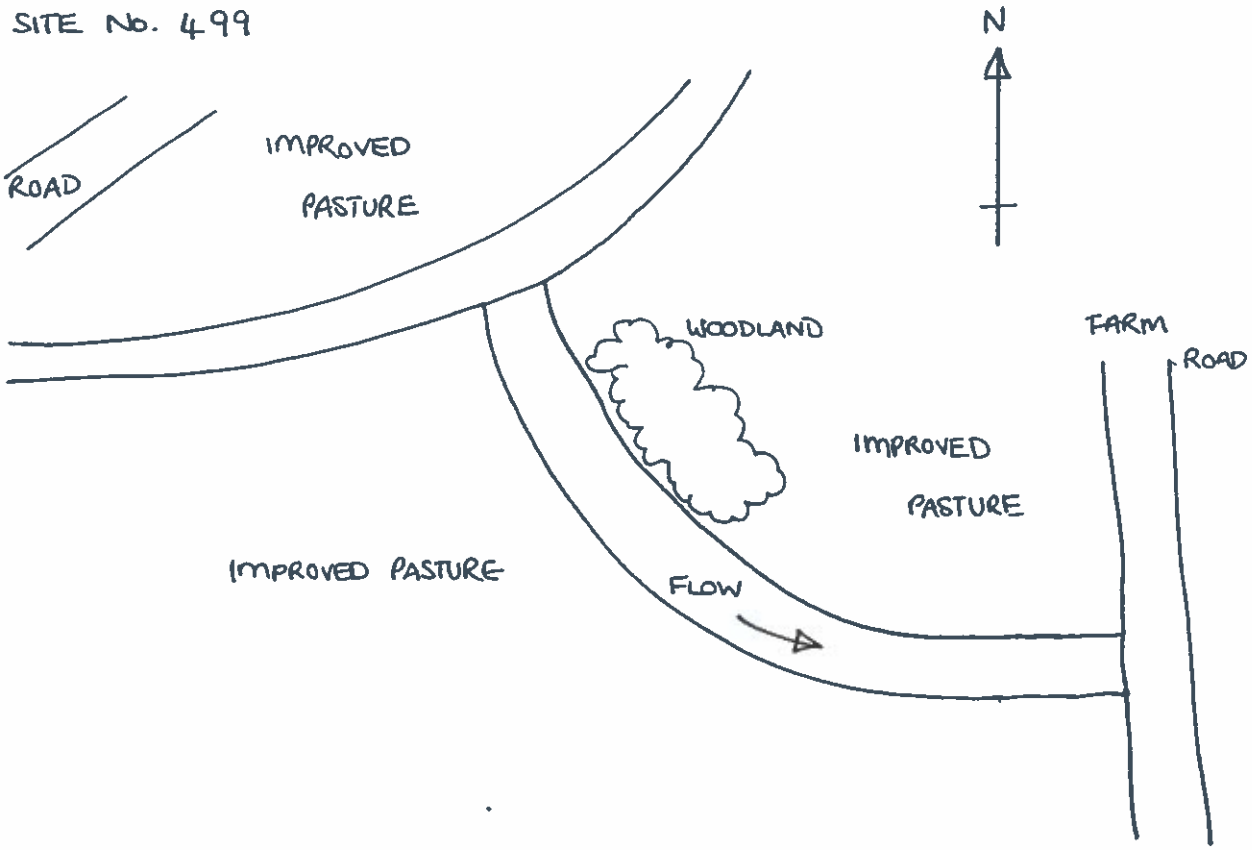
SITE No. 497



TRIBUTARY OF RIVER BALLINDERRY

H742 833 (NGR)

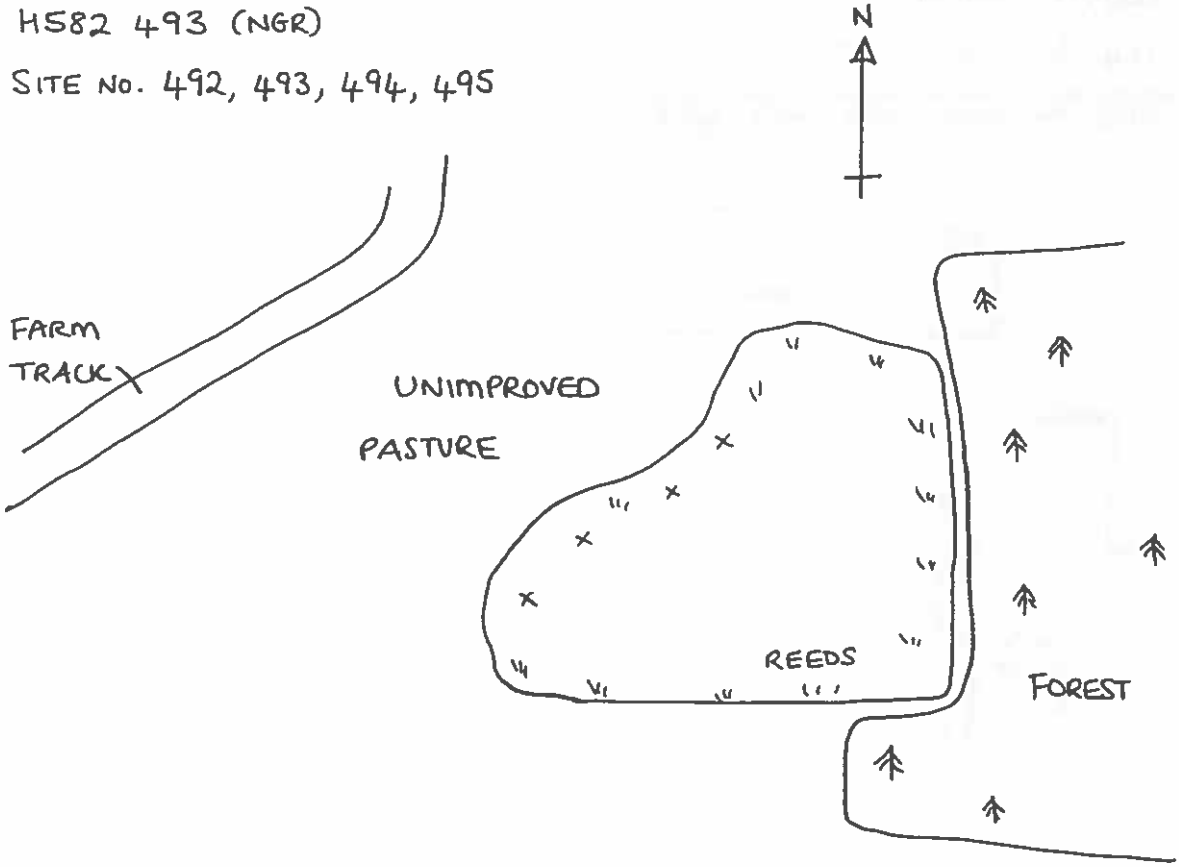
SITE No. 499



LOUGH CARRICKANOY

H582 493 (NGR)

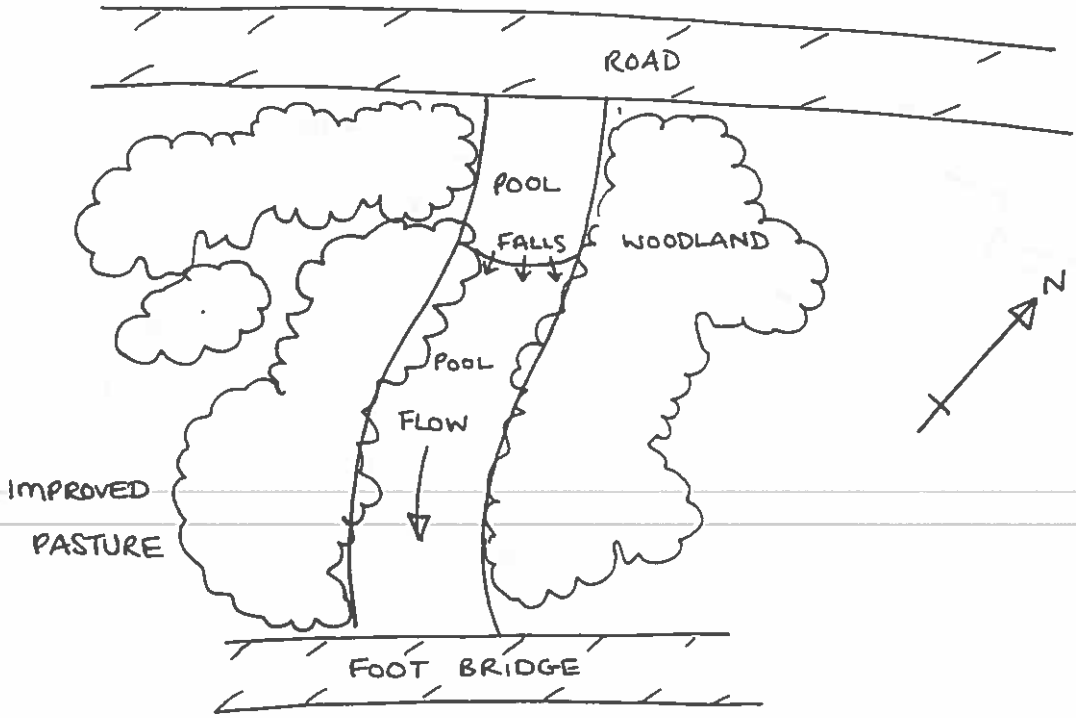
SITE No. 492, 493, 494, 495



RIVER GORTIN WATER

H774 796 (NGR)

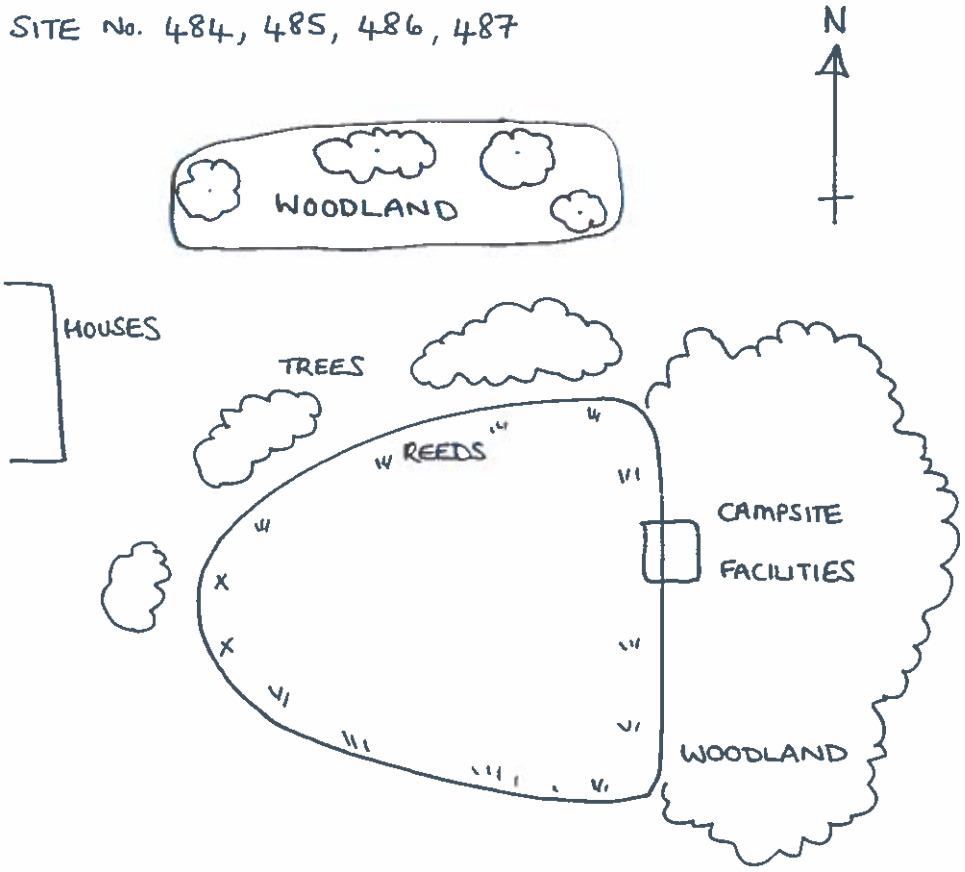
SITE No. 496



LOUGH POUND

H444 484 (NGR)

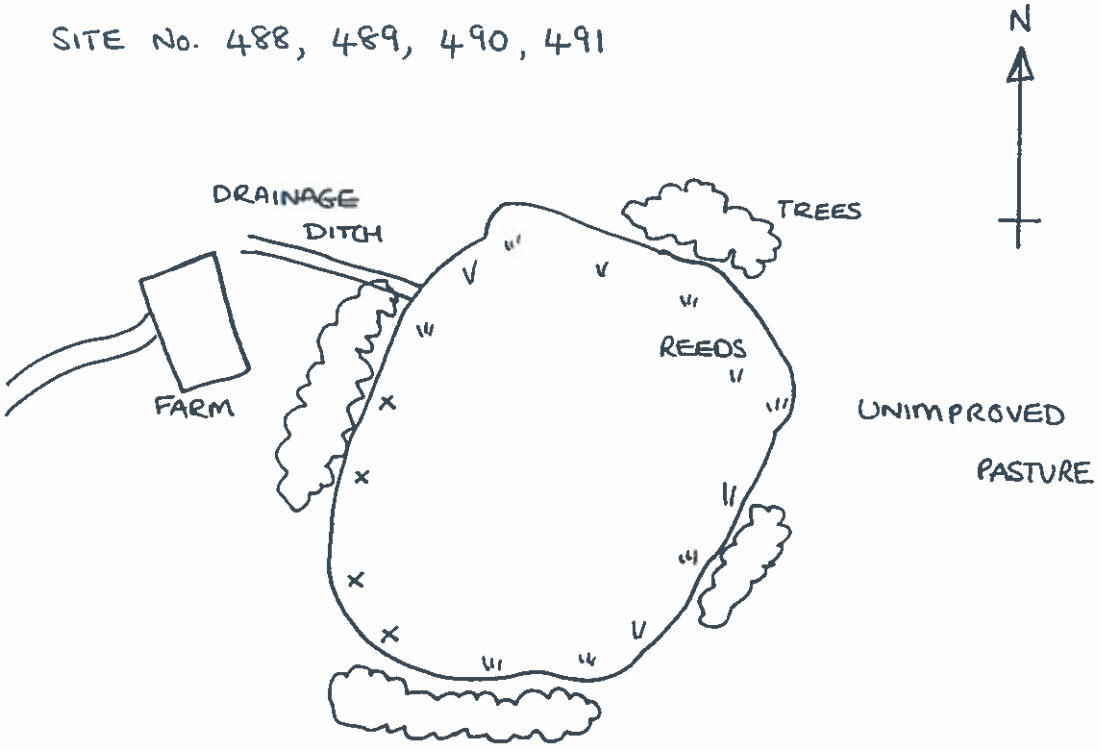
SITE No. 484, 485, 486, 487



LOUGH DERRYCLOONY

H585 508 (NGR)

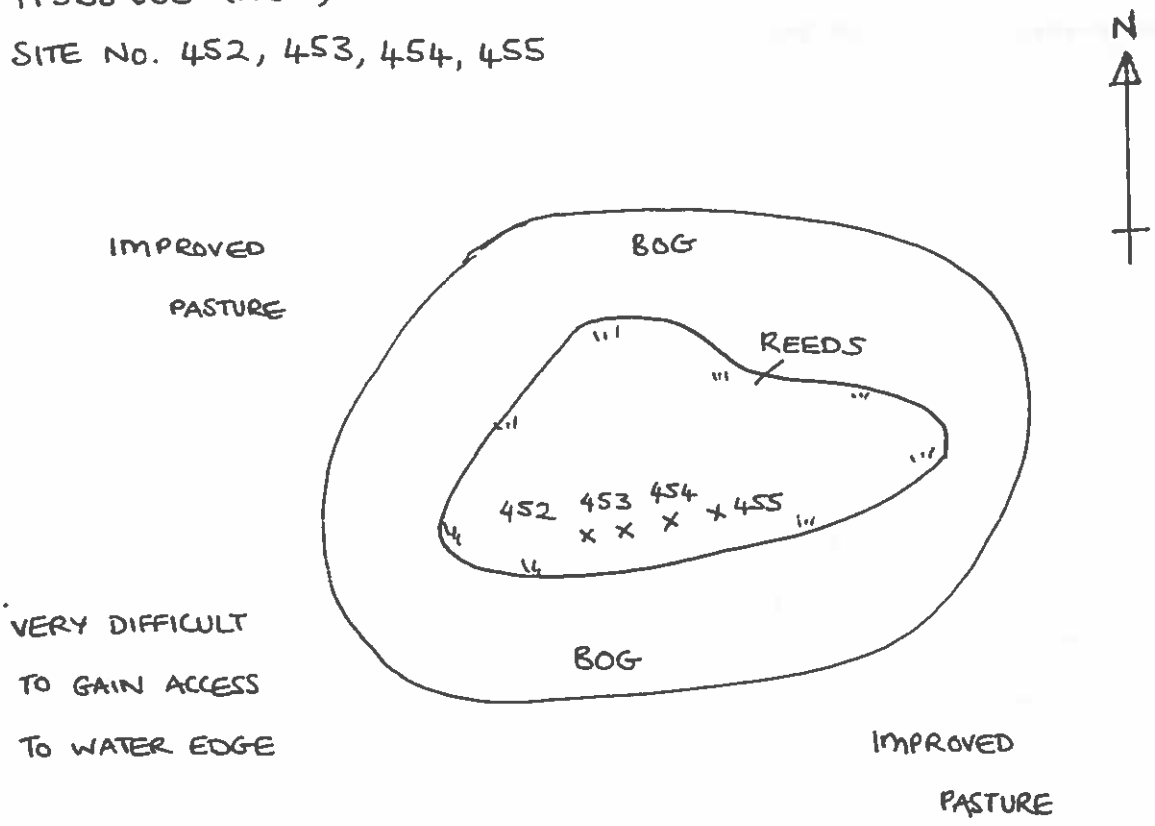
SITE No. 488, 489, 490, 491



LOUGH GALBALLY

H338603 (NGR)

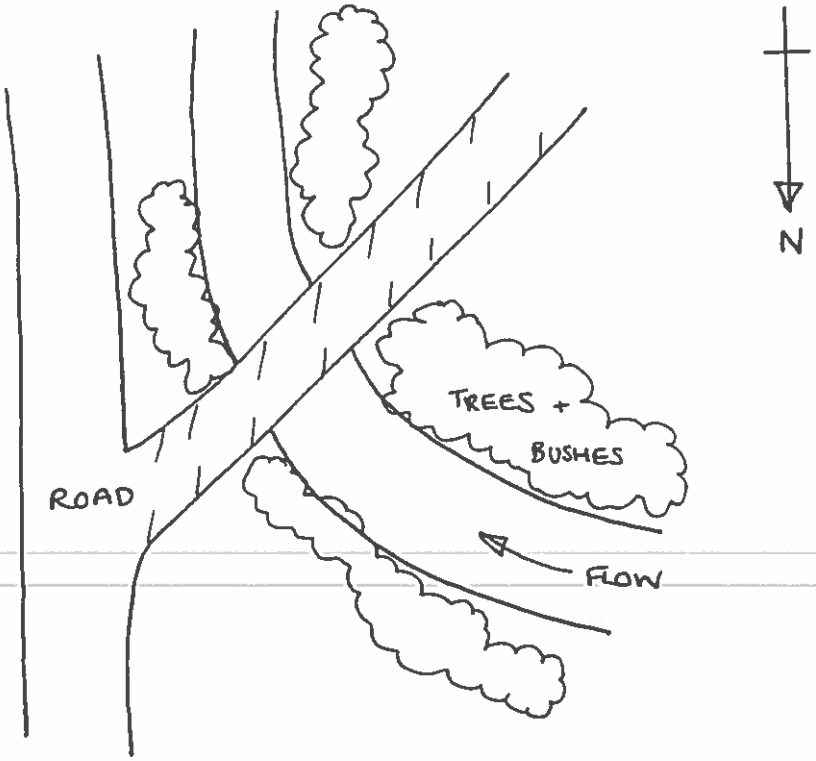
SITE No. 452, 453, 454, 455



RIVER OMINEY

H105714 (NGR)

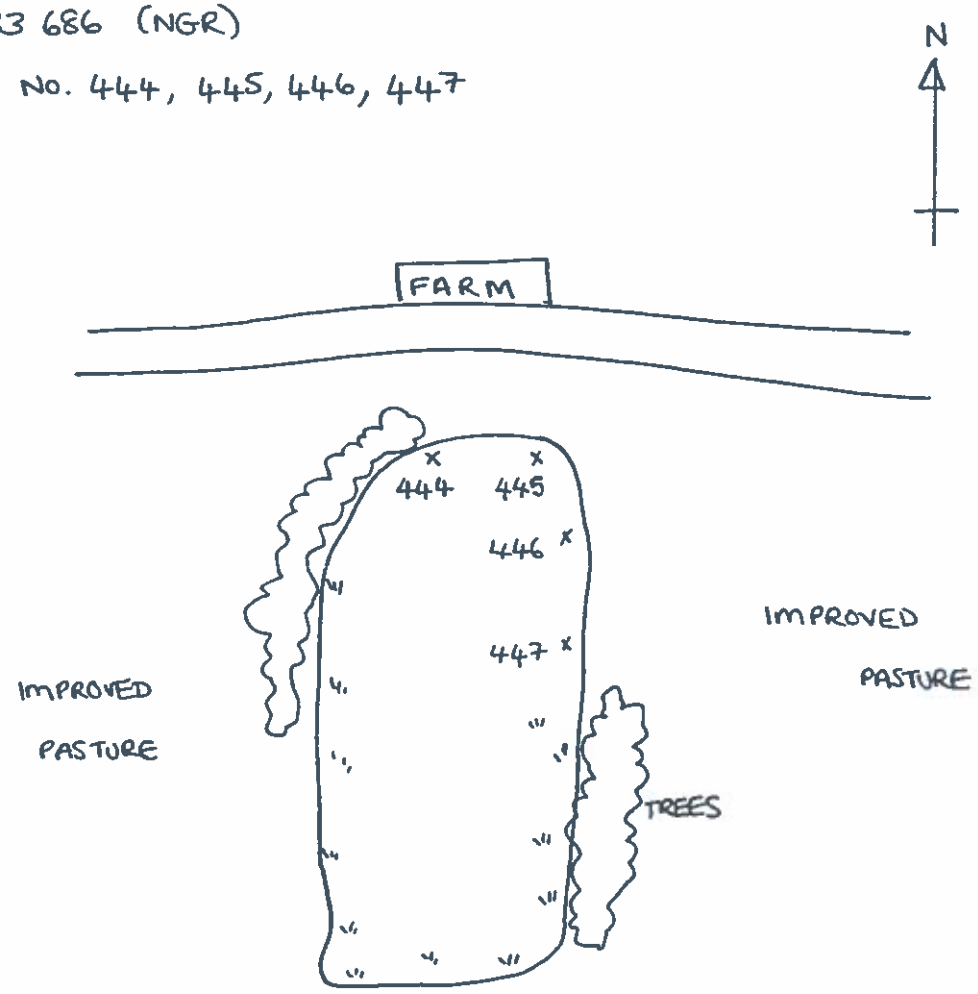
SITE No. 456



LOUGH MUCK

H433 686 (NGR)

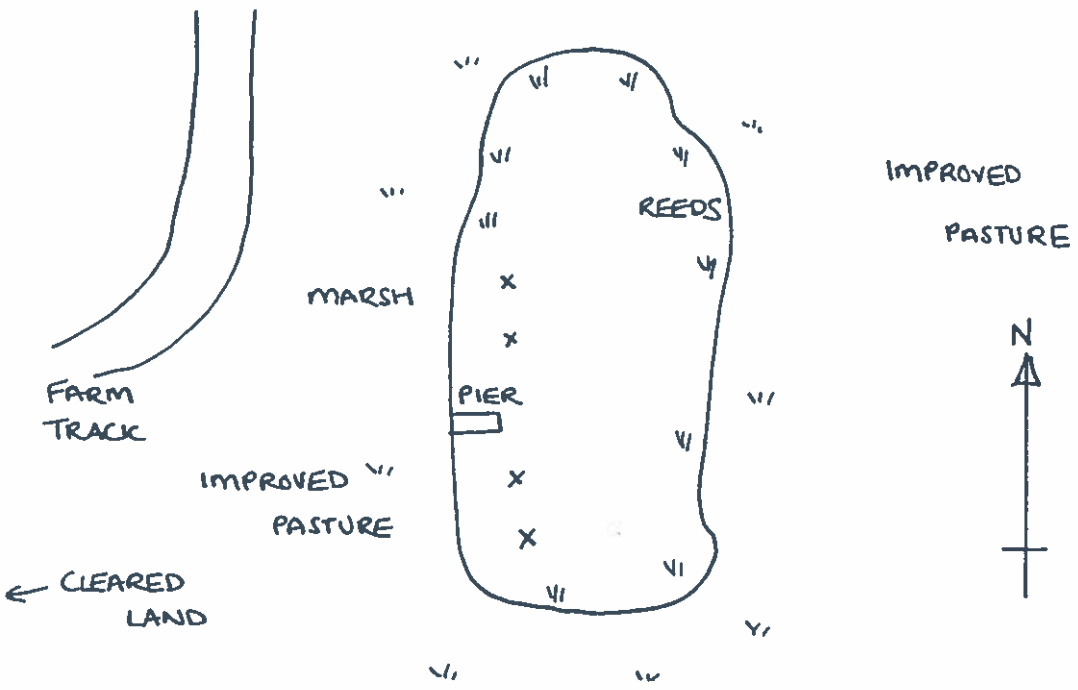
SITE No. 444, 445, 446, 447



LOUGH AGHILISK

H363 621 (NGR)

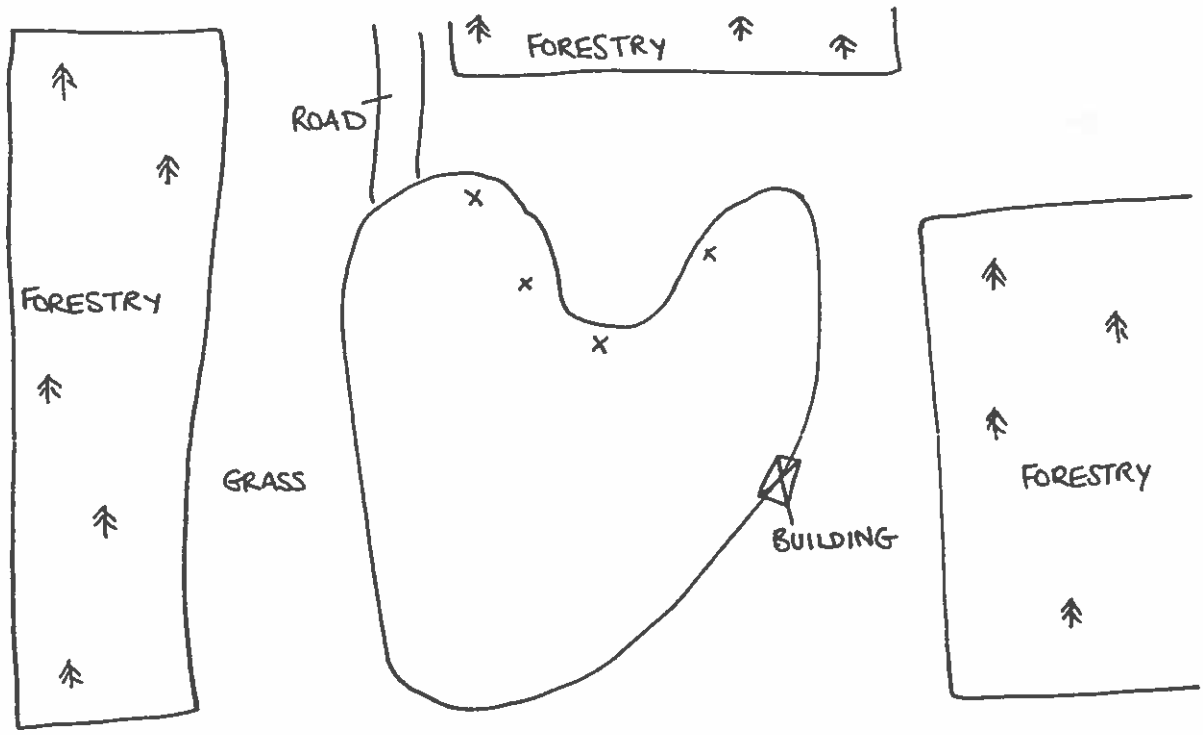
SITE No. 448, 449, 450, 451



LOUGH BRADON

H259 713 (NGR)

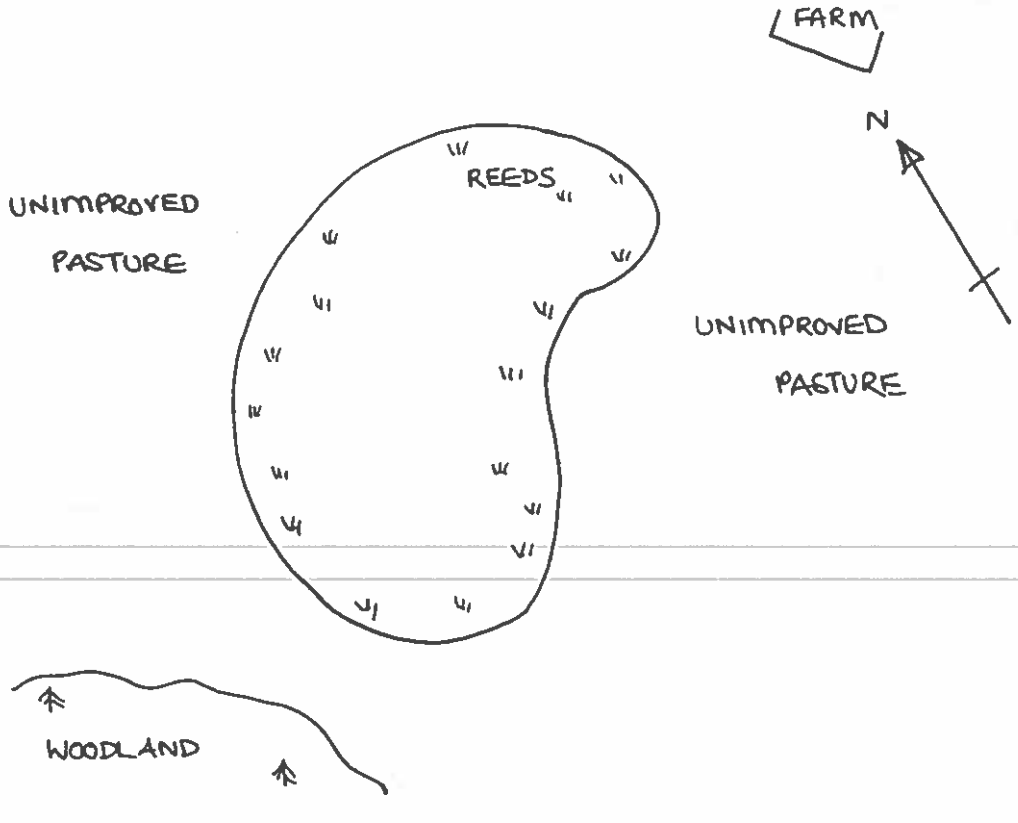
SITE No. 436, 437, 438, 439



LOUGH DRUMQUIN

H326 749 (NGR)

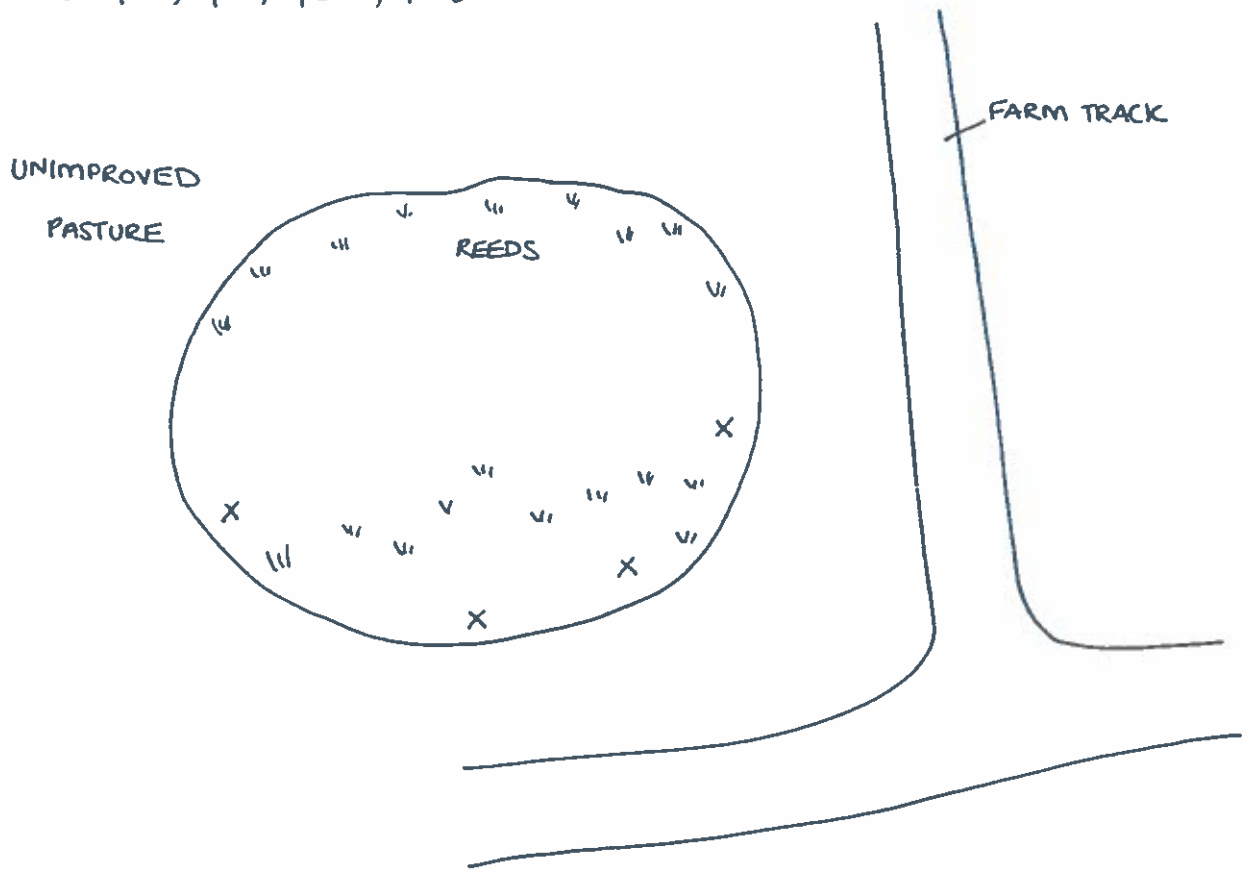
SITE No. 440, 441, 442, 443



LOUGH CARR

H290 709 (NGR)

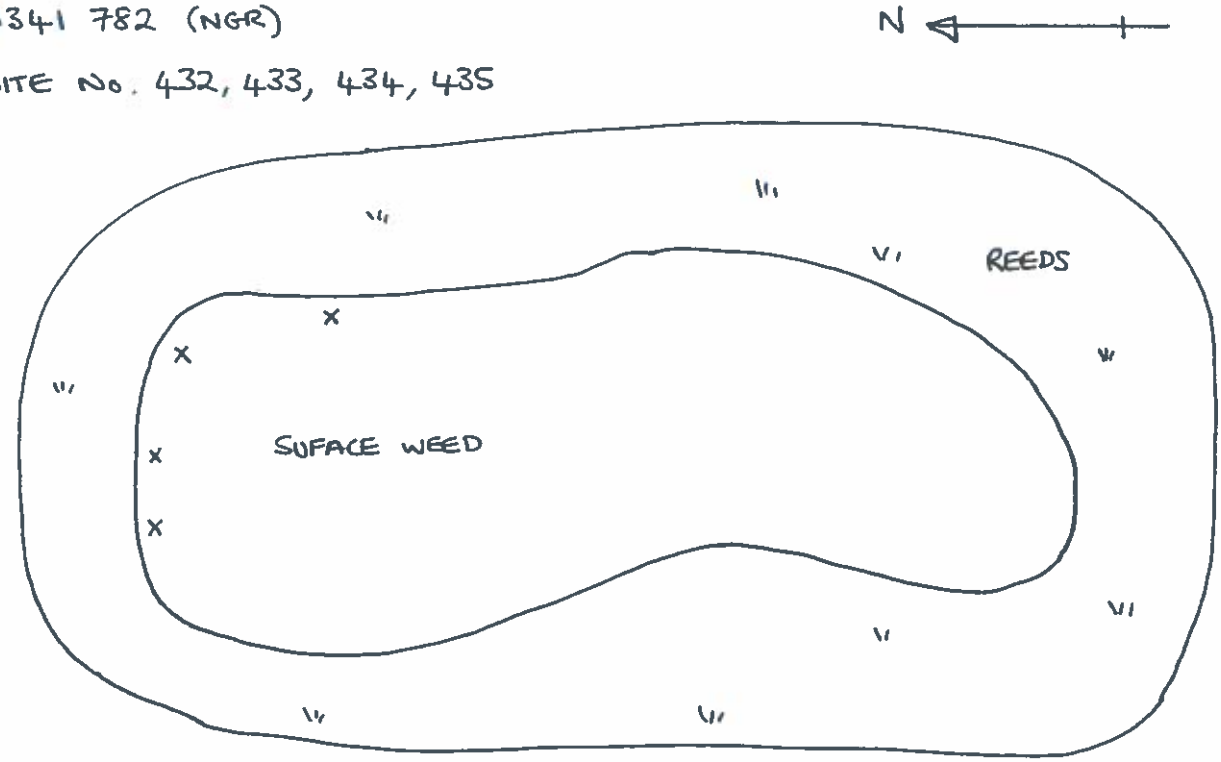
SITE No. 430, 431, 431a, 431b



LOUGH ENVAGH

H341 782 (NGR)

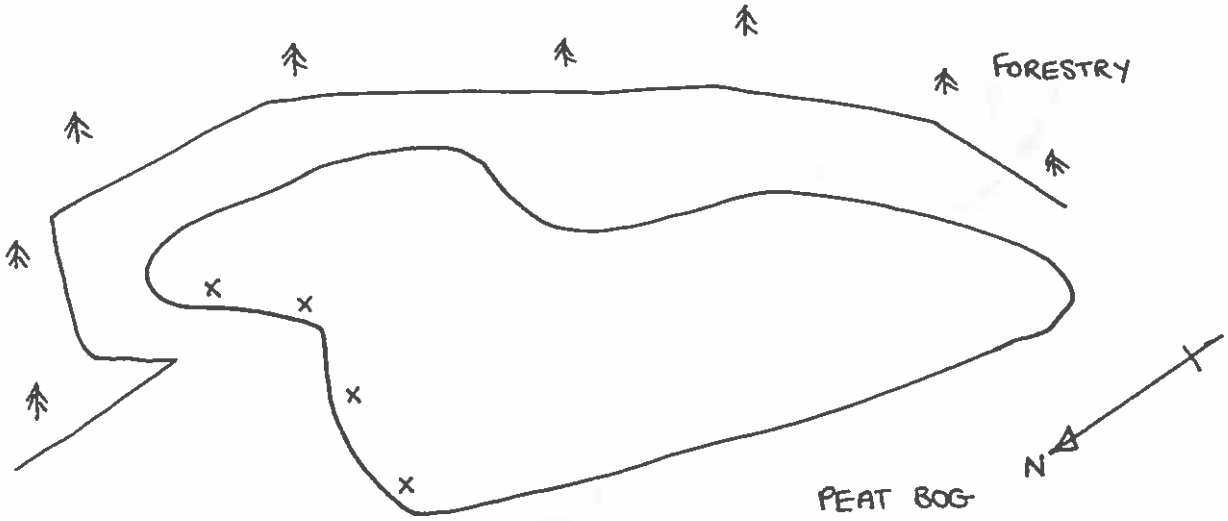
SITE No. 432, 433, 434, 435



LOUGH LACK

H230 735 (NGR)

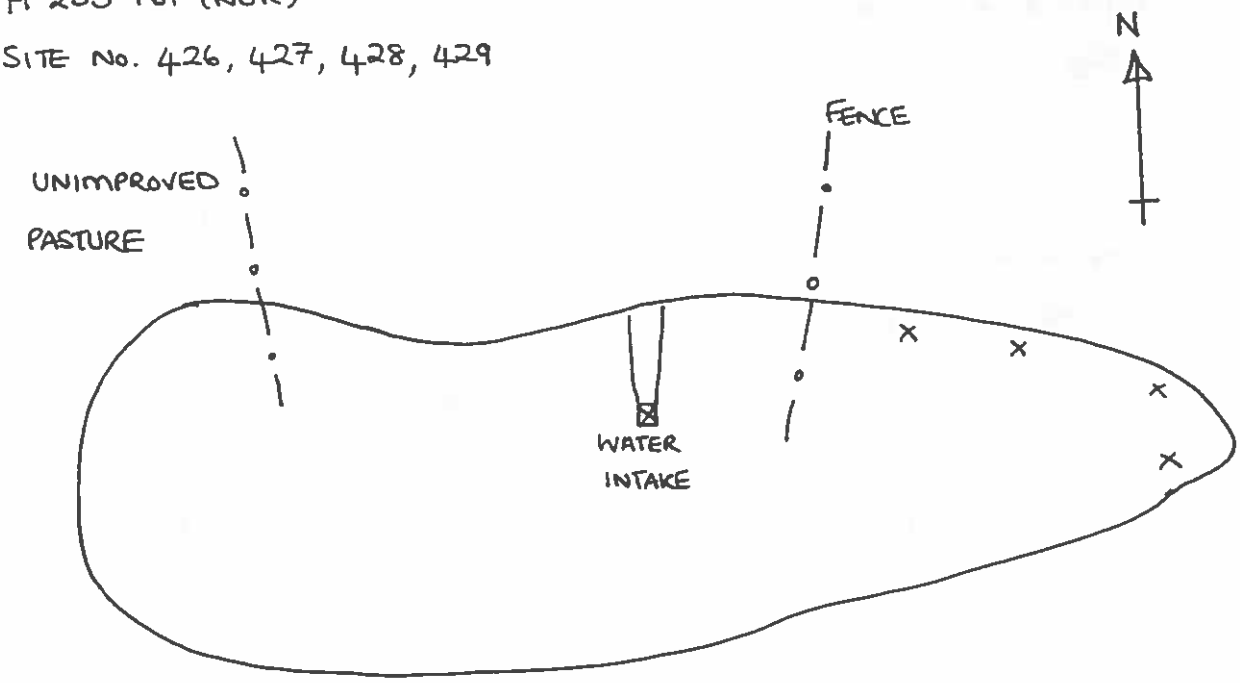
SITE No. 422, 423, 424, 425



LOUGH LEE

H 255 761 (NGR)

SITE No. 426, 427, 428, 429

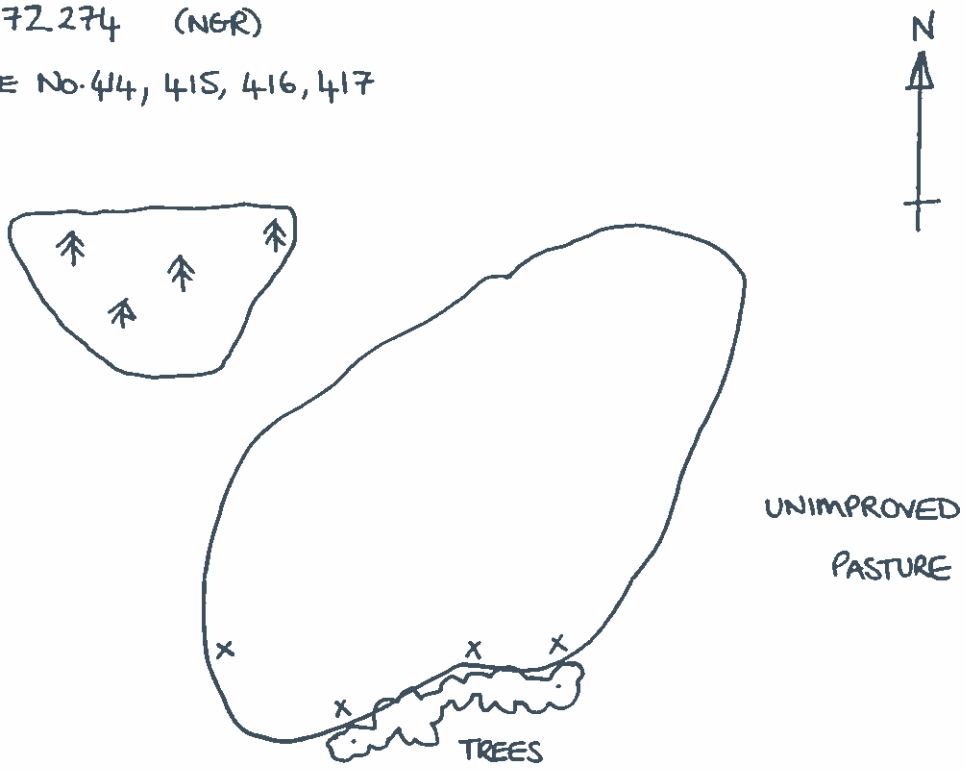


UNIMPROVED PASTURE

LOUGH NAGEAGUE

H172274 (NGR)

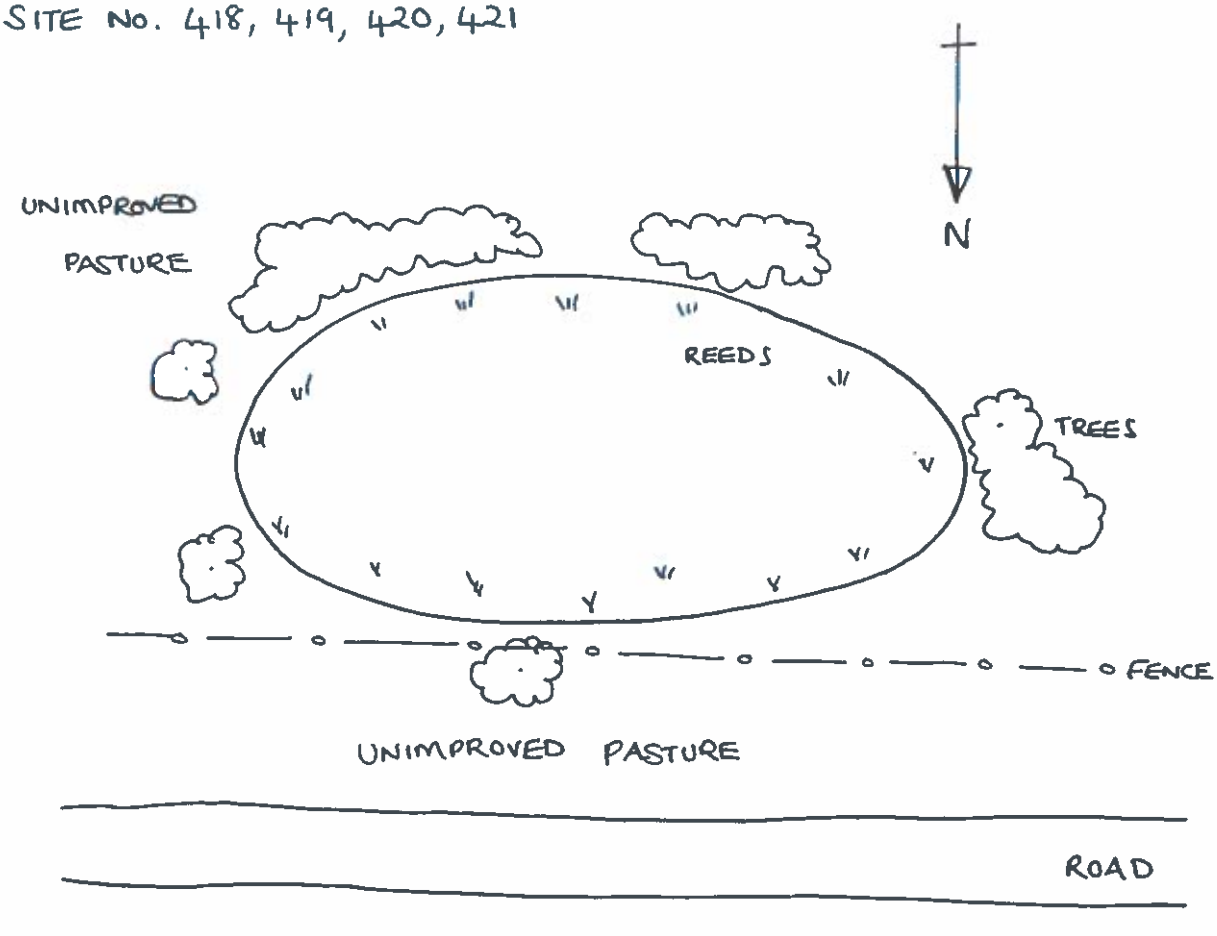
SITE No. 414, 415, 416, 417



LOUGH CACK

H170728 (NGR)

SITE No. 418, 419, 420, 421



Appendix 5 Crayfish research undertaken by the Game Conservancy Trust

The formerly abundant white-clawed crayfish (*Austropotamobius pallipes*), the only species of crayfish native to the British Isles, is currently an endangered species. Many native crayfish populations have been greatly reduced or lost entirely as a result of habitat degradation and of a fungal disease introduced with foreign crayfish. Direct competition with the introduced crayfish is also thought to be a factor.

Native crayfish still occur in the River Piddle and we are currently conducting research into the habitat requirements of the species and methods of habitat improvement. Preliminary research indicates that modern land-use practices may be having a significant impact on crayfish numbers, but that restoration techniques aimed specifically at brown trout may be very beneficial.

This research is continuing so that prescriptions for habitat restoration may be developed which benefit the aquatic ecosystem in general, not just a single species or group of species.

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http://www.game-conservancy.org.uk/fishhome.htm