

CYNGOR
CEFN GWLAD
CYMRU



COUNTRYSIDE
COUNCIL
FOR WALES

Rhanbarth De Cymru
South Wales Region

43 The Parade, Roath, Caerdydd / Cardiff CF2 3UH
Tel: 0222 485111 Fax: 0222 473527



A BOTANICAL SURVEY OF REENS
ON THE GWENT LEVELS

J Winder
J Spencer
A Wood

1991

CONTENTS

ABSTRACT

1. INTRODUCTION

2. METHODS

2.1 SITE SELECTION

2.2 SURVEY METHODS

2.3 PROBLEMS OF THE SURVEY

3. RESULTS

3.1 SITE RATING

3.2 NOTABLE SPECIES

4. DISCUSSION

4.1 DISCUSSION ON SELECTED REENS

4.1.1 NRA/IDB Reens

4.1.2 Field Ditches

4.2 ASSESSMENT OF BANK-SIDE VEGETATION

4.2.1 Rare Species

4.2.2 Banks with High Diversity and Interest

4.2.3 Banks with Low Interest

4.2.4 Discussion

4.3 COMPARISON WITH 1982/1983 FLORAL MONITORING SURVEY

4.3.1 Reen Quadrats

4.3.2 Reen Walks

4.3.3 Rare Species

4.3.4 Conclusions

4.4 COMPARISON WITH 1988 FLORAL MONITORING SURVEY

5. BIBLIOGRAPHY

6. APPENDICES

LIST OF FIGURES

- | | |
|-----------|--|
| Figure 1 | Map of the Gwent Levels |
| Figure 2 | Ditch Data Sheet |
| Figure 3a | Conservation Gradings for Each SSSI Unit
(shown as percentages) |
| Figure 3b | Diversity Scores for Each SSSI Unit
(shown as percentages) |
| Figure 3c | Rarity Scores for Each SSSI Unit
(shown as percentages) |
| Figure 4a | Frequency of Diversity Scores for the Sites Surveyed |
| Figure 4b | Frequency of Rarity Scores for the Sites Surveyed |

LIST OF APPENDICES

- 1 Maps Showing Sampling Sites
- 2 Total Species List
- 3 Tables - Main Reens 1991
- 4 Tables - Field Ditches 1991
- 5 Summary of Results
- 6 Tables - Assessment of Bank-side Vegetation 1991
- 7 Tables - Main Reens 1982/1983 Survey
- 8 Tables - Main Reens 1988 Survey

LIST OF MAPS

(Separate from report maps held in Gwent Levels Room, Cardiff office)

- 1 a, b, c, d, e Rumney and Peterstone
- 2 a, b, c, d, e St Brides
- 3 a, b, c, d, e Nash and Goldcliff
- 4 a, b, c, d, e Whitson
- 5 a, b, c, d, e Redwick and Llandevenny
- 6 a, b, c, d, e Magor and Undy

KEY

- a - Main Reens - Conservation Grade
- b - Main Reens - Species Diversity and Rarity Score
- c - Field Ditches - Conservation Grade
- d - Field Ditches - Species Diversity and Rarity Score
- e - All Ditches - Distribution of Rare Species

ABSTRACT

On the Gwent Levels during May, June and July 1991, a botanical survey was carried out on 197 selected main reens and field ditches.

For each site, a 20 metre length was surveyed, species present and their abundance was recorded.

These sites were rated for their conservation value, species diversity and species rarity.

The presence of notable species, sites of high and poor quality were discussed, and a brief comparison was made with the 1982/1983 and 1988 floral monitoring surveys.

Ditch width, water depth and water quality appear to be the most important factors influencing the aquatic flora of the reens on the Gwent Levels.

In general, it was found that in 1991 the Wentlooge Level was of higher interest than the eastern part of the Caldicot Level.

From the comparisons with previous surveys, it appears that there has been relatively little change on the Wentlooge Level. The Caldicot Level appears to be slightly of lower floristic interest.

1. INTRODUCTION

The Gwent Levels is the area of flat, low lying land depicted in Figure 1, which borders the Severn Estuary between Cardiff and Sudbrook Point near Caldicot. This area consists of two extensive tracts, the Wentlooge Levels between Cardiff and Newport, and the Caldicot Levels extending between Newport and Sudbrook Point.

Historically, the land has been reclaimed from the sea by the erection of sea walls and the construction of drainage ditches.

These drainage ditches are locally known as reens. The main reens are managed by the Caldicot and Wentlooge Internal Drainage Board (IDB) or the National Rivers Authority (NRA). The smaller reens or field ditches are privately owned and managed by individual owners and occupiers.

In the early 1980s, after a series of surveys on the Levels, it was determined by the then Nature Conservancy Council (NCC) that the reen flora and fauna were of special scientific interest.

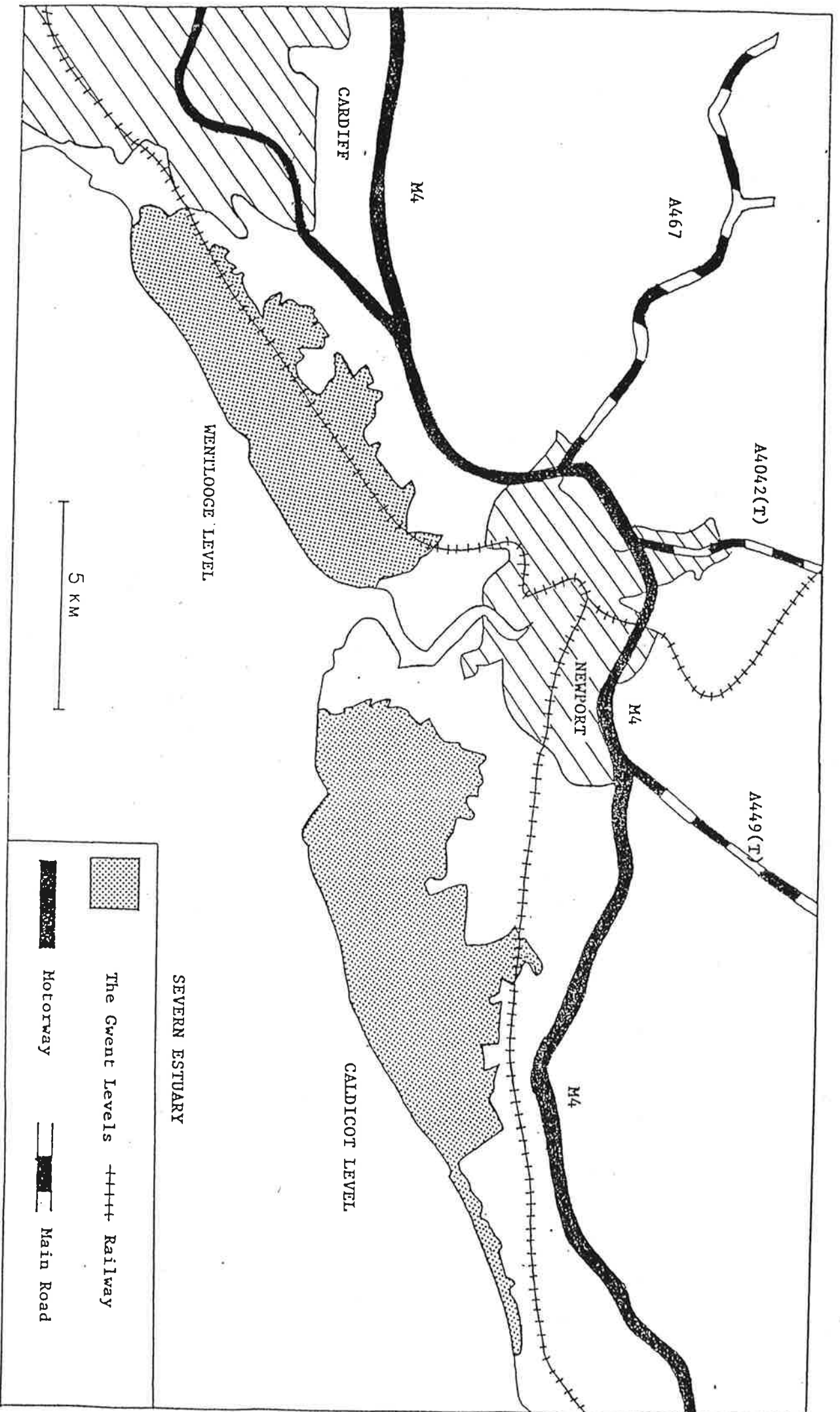
Consequently, the Caldicot Levels, dissected into 4 units: Nash and Goldcliff; Whitson; Redwick and Llandeveyney, and Magor and Undy, have been designated Site of Special Scientific Interest (SSSI) status. The smaller Wentlooge Levels have been dissected into two units: St Brides which was notified as a SSSI in May 1991 and due to be confirmed in February 1992, and Rumney and Peterstone to be notified as a SSSI in the early part of 1992.

The objectives of the survey are:

1. to update existing scientific information with regard to the aquatic plant communities in the reens and ditches;
2. to collate scientific information to assist the Gwent Levels Project in future consultation work;
3. to reappraise the botanical interest on Rumney and Peterstone proposed SSSI to enable the Gwent Levels Team to reassess the boundary;
4. to establish a monitoring baseline for future survey work;
5. to compare results as far as is practicable with previous monitoring work.

During the same period, an invertebrate survey was undertaken on selected main reens and field ditches on the Levels.

FIGURE 1 MAP OF THE GWENT LEVELS



2. METHODS

2.1 SITE SELECTION

In order to achieve the objectives listed in section 1, main reen sampling sites were selected across the Gwent Levels on the basis of a number of criteria.

Some Floral Monitoring Stations from the 1988 survey have been re-selected for this survey (these results have been compared, see section 4.2).

In order to provide any correlation between water quality and the nature of the reen flora, sites from the 1991-1992 Water Quality Programme have been included.

Sample points were also selected within management agreement areas to obtain a baseline from which any improvement in reen flora may be monitored.

Land use was another consideration for site selection. Reens on underdrained, gripped, arable and recreational land were sampled in order to assess their effect on reen flora.

In order to monitor the effects of future physical development, reens which border or lie within proposed development areas were sampled.

The field ditch sampling sites were selected at random across the Levels, although certain ditches within management agreement areas were selected to provide a baseline for future monitoring.

Maps showing the location of the sampling points can be seen in Appendix 1.

2.2 SURVEY METHODS

One hundred and ninety-seven sites were surveyed on the Gwent Levels during the period May to August 1991, consisting of 133 main reen and 64 field ditch sites. Twenty-two sites were Floral Monitoring Stations for the 1988 survey, 40 sites were reen quadrat sites for the 1983 survey and 6 sites coincided with the 1991-1992 Water Quality Programme. Although the main reens are of a greater botanical interest than the smaller field ditches, the latter were surveyed as they provide a habitat for a rich invertebrate fauna.

The sites were surveyed randomly across the Levels to ensure that ephemeral species, if any, would be observed.

At each site, a 20 m length of reen was surveyed in detail by usually two, but occasionally one or 3 surveyors. All data was recorded on a data sheet, an example of which is shown in Figure 2.

Various physical parameters of the reen and bank were noted, including nature of water, nature of bank and percentage shade.

Nature of water was scored on an arbitrary scale of 1-5,

FIGURE 2 - DITCH DATA SHEET.

PERMANENT 20M QUADRAT DITCH FLORA DATA

DITCH NUMBER WW OR WATER SAMPLE DATE GRID REF
IDB NUMBER

SITE NAME LEVEL SURVEYOR

PHYSICAL PARAMETERS

VALID CODES

(1) Substrate (GR, MS, CL, MU, PE)
(2) Water Depth (cm) (1=<25, 2=26-50, 3=51-75, 4=76-100, 5=>100)
(3) Nature of Water
(4) Ditch Width (m) (1=<1, 2=1-2, 3=2-4, 4=>4)

BANKS

Bank (1)
(N, SE, NE, E)

Bank (2)
(S, SW, NW, W)

Bank Alignment
Bank Type
Bank Depth (cm)	(PE, EA, MU, CL, AT)
.....	(1=0-50, 2=51-100, 3=101-150, 4=151-200, 5=>200)
Bank Slope (o)	(1=<30, 2=31-60, 3=61-90, 4=>90)
Nature of Bank	(BA, SH, MO, MX)
Land Use	(PP, LEY, AR, PL)
Drainage	(GR, UD, MD, TL, OT)
Stock Proof Fence	(Continuous/intermittent)
Degree of trampling	(Untrampled, Part, Heavy)
Degree of grazing	(Ungrazed, Part, Heavy)
Hedging	(Continuous/intermittent)
Hedge height (m)	(1=<1, 2=1-2, 3=2-4, 4=>4)
% Shade	(1=<25, 2=25-50, 3=50-75, 4=75-100)
Type and date of last ditch management	(C = Cast, S = Sprayed)
.....	(W = Weeded)
Type and date of last bank management	(C = Cast, M = Mown)
.....	(S = Sprayed)
% Cover - Emergent
% Cover - Bank
Total % Cover - Submerged	Emergent
..... Floating	Bank

one corresponding to clear down the scale in diminishing clarity to 5, corresponding to turbid.

Percentage shade was recorded as shade on the banks from trees or hedges, not due to emergent vegetation such as Phragmites.

Nature of bank was described as bare = BA, short herbs = SH, monocots and herbs = MO, mixed vegetation including hedges and trees = MX.

Species present on the bank and in the reed were noted. Submerged species were sampled by the use of a grapnel. At each site numerous dips were undertaken to provide a full assessment as possible of the submerged vegetation.

As can be seen in Figure 2, the species list has a corresponding set of 4 columns to indicate the presence of species on the bank (column 1), the emergent (column 2), floating (column 3), and submerged (column 4). Species abundance was noted using the DAFOR abundance rating system (D = dominant, A = abundant, F = frequent, O = occasional, R = rare), with the DAFOR abundance score being entered in the column corresponding to the community in which it was found in the reed profile.

If a species occurred both on the bank and the emergent fringe, this was noted using the above method.

A conservation grading was established by the surveyors in the field, on an arbitrary scale from A to D (A = excellent, B = good, C = average, D = poor). This grading, although arbitrary, took the whole site, banks and locally uncommon species into account.

Throughout the survey, each SSSI unit has been numbered as follows: Rumney and Peterstone (01), St Brides (02), Nash and Goldcliff (03), Whitson (04), Redwick and Llandeveyney (05), Magor and Undy (06).

The sample points have been numbered as follows:

<u>Sample Numbers</u>	<u>SSSI Unit</u>
1-36	Rumney and Peterstone
37-75	St Brides
76-103	Nash and Goldcliff
104-134	Whitson
135-166	Redwick and Llandeveyney
167-195	Magor and Undy

All data from the recording sheets was entered on the Gwent Levels Data Base, OMNIS, Title: Ditch Flora.

2.3 PROBLEMS OF SURVEY

On occasion, due to access problems, it was possible to survey only one bank in detail. In these cases, although what could be seen from across the reed was noted, some less abundant bank species may have been overlooked.

Similarly, some banks were too steep and deep that surveying was treacherous, again some less conspicuous species may have been overlooked.

3. RESULTS

3.1 SITE RATING

In addition to the conservation grading (see section 2), sites were scored for species diversity and species rarity using the methods outlined by Glading (1984).

The results from the grading and scoring of sites are illustrated in Maps 1-6 (see separate map file) using the colouring system outlined below. The maps are labelled such that the number relates to the SSSI unit and the letter indicates grading for both main reens and field ditches.

<u>Map No</u>	<u>SSSI Unit</u>
---------------	------------------

01	Rumney and Peterstone
02	St Brides
03	Nash and Goldcliff
04	Whitson
05	Redwick and Llandevenny
06	Magor and Undy

<u>Letter</u>	<u>Site and Grading System</u>
---------------	--------------------------------

a	Main reens:	conservation grade
b	Main reens:	species diversity and rarity score
c	Field ditches:	conservation grade
d	Field ditches:	species diversity and rarity score
e	All ditches:	distribution of rare species

For example, Map 4c = the conservation grades for field ditch sites on Whitson.

The main reen and field ditch data have been presented on separate maps. Although the field ditches have been analysed using the same scoring system, they are not comparable habitats because of their different management regimes.

Conservation Grading

Sites on the conservation grading maps have been highlighted by a circle in the corresponding category colour.

<u>Colour</u>	<u>Grading</u>	<u>Category</u>
Red	A	Excellent
Blue	B	Good
Green	C	Average
Yellow	D	Poor

Species diversity and rarity score have been presented on the same map for each SSSI unit.

Diversity Score

The number of aquatic species (ie. species with their shoot bases at or below the reën water level) were counted for each 20 m length. No account was taken of the relative abundance of species. The diversity score for each site has been highlighted by a circle in the corresponding category colour on the maps.

<u>Colour</u>	<u>No of Species</u>	<u>Category</u>
Yellow	0-10	Low Diversity
Green	11-15	Moderate Diversity
Blue	16-20	Moderate Diversity
Red	21-25	High Diversity
Purple	26-30	High Diversity

Rarity Score

For each site, rare and local species occurring on the Levels were scored from 1-10. On the maps, the rarity score for each site has been highlighted by a triangle in the corresponding category colour.

<u>Colour</u>	<u>Score</u>	<u>Category</u>
Grey	0-5	Low
Yellow	6-10	Low
Green	11-15	Moderate
Blue	16-20	Moderate
Red	21-25	High
Purple	26-30	High
Black	31+	Very High

Distribution of Rare Species

The distribution of selected species are shown on the maps using the following colour codes.

<u>Colour</u>	<u>Category</u>
Red	Rare throughout Britain
Blue	Rare in Wales
Green	Rare in Gwent
Yellow	Frequent in Gwent, local in Wales

Species scores were assessed upon consideration of their distribution within Gwent (based on Wade, 1970), Wales, and Britain as a whole (Perring and Walters, 1976). Widespread and common species were not considered. Species local in Wales or Britain scored 1; local species rare in the county scored 2 or 3 - the higher score was given to those species regarded by Palmer and Newbold (1983) as needing special protection in the Welsh Water Authority Region. Species rare in Wales though more frequent in England were scored from 4 to 6, the higher scores were given to those species rare at the county level. Species

which were nationally rare were scored from 7-10, these were all species occurring in less than 100 10 km grid squares in Britain (values from Palmer and Newbold, 1983).

The species and their scores are listed below.

Species local in Wales and/or England, frequent in the county:

<u>Species</u>	<u>Score</u>	<u>Symbol</u>
Butomus umbellatus <i>flowering rush</i>	1	Bu
Lemna gibba	1	Lg
Lemna trisulca	1	Lt
Rumex hydrolapathum <i>water dock</i>	1	Rh
Veronica catenata <i>pink water speedwell</i>	1	Vc

Species rare in Gwent, local in Britain:

Potamogeton berchtoldii	2	Pb
Carex pseudocyperus	3	Cp
Catabrosa aquatica	3	Ca
Ceratophyllum demersum	3	Cd
Ranunculus circinatus	3	Rc

Species rare in Wales, local or frequent in England:

X Hydrocharis morsus-ranae	4	Hm
X Lemna polyrhiza	4	Lp
Potamogeton obtusifolia	4	Po
X Potamogeton pusillus	4	Pp
Sagittaria sagittifolia	4	Ss
Zannichellia palustris	4	Zp
Lathyrus nissolia	5	Ln
Ranunculus trichophyllus	5	Rt
Alisma lanceolata	6	Al
Oenanthe aquatica	6	Oa

Species rare throughout Britain:

Ranunculus baudotti	7	Rb
Potamogeton trichoides	8	Pt
Ceratophyllum submersum	9	Cs
Wolffia arrhiza	10	Wa

In addition to Maps 1-6, main reed data is summarised as percentages for each unit in Figures 3a-c. In Figure 3c, an extra category has been introduced to highlight the presence of sites where species rarity was zero.

The conservation grades, diversity and rarity scores for each site and a summary of the results can be seen in Appendix 2.

3.2 NOTABLE SPECIES

The following species are noted to be regionally and nationally rare.

The above mentioned maps show the location of selected species.

Alisma lanceolata (Map 6e)

Noted once at Greenwall Reen near Undy, north of site 181.

Butomus umbellatus (Map 1e, 2e, 4e, 6e)

Recorded at eight sites across the Levels, the main concentration is on Rumney and Peterstone (01) at 4 sites, Faendre Reen 14, Torwick Reen 13, and Pil-du Reen 11 and 112, these sites are quite close together. It also grows near Marshfield in Drenewydd Reen 43, and in Wharf Reen 69. On the Caldicot Level, it was recorded twice, Middle Road Reen 124 and Ifton Reen 193.

Carex pseudocyperus (Map 5e)

Recorded twice near Redwick, on Rush Wall Reen 163 and Cockenton Reen 140.

Catabrosa aquatica

Fairly widespread across the Levels, mostly on St Brides (02). It was recorded at four sites on Redwick and Llandevenny (05) and two sites on Magor and Undy (06), and not recorded on Nash and Goldcliff (03), or Whitson (04).

Ceratophyllum demersum Hornwort

Widespread throughout the Levels, although only found twice on Magor and Undy (06).

Ceratophyllum submersum (Map 3e)

Found at one site, Cross Reen 78, near Nash on the Caldicot Level.

Hydrocharis morsus-ranae Frogbit

Widespread throughout the Levels recorded at 67 sites. However, it was not recorded on Magor and Undy (06).

Lathyrus nissolia (Map 4e)

Recorded once on the banks at Newport Road Reen 112.

Lemna polyrrhiza

Widespread throughout the Levels.

Oenanthe aquatica (Map 5e)

Recorded once in a field ditch near North Court Farm, Redwick. The ditch was otherwise poor.

Potamogeton berchtoldii

Fairly widespread throughout the Levels, though not recorded on Magor and Undy (06) and only once on Redwick and Llandevenny (05).

Potamogeton obtusifolius (Map 1e, 6e)

Recorded twice, at Rhosog Fawr Reen 18 near Peterstone, and at Mill Reen 170 near Magor Pill Farm.

Potamogeton pusillus

Widespread throughout the Levels at 33 sites.

Potamogeton trichoides (Map 2e, 3e, 4e, 6e)

Recorded at 13 sites throughout the Levels. It was not recorded on Rumney and Peterstone (01) or Redwick and Llandevenny (05).

Ranunculus baudotii (Map 1e, 4e, 5e, 6e)

Recorded at four sites, all of which are spaced along the sea wall, in the brackish water, from transect 1 on the Wentlooge to 195 at the far end of the Caldicot Level.

Ranunculus circinatus (Map 4e)

Recorded at four sites all within a small area near Whitson, in Crabtree Reen, Bowleaze Reen and twice on Elver Pill Reen.

Ranunculus trichophyllus (Map 1e, 2e, 3e, 4e, 6e)

Recorded at eight sites throughout both Levels, though not recorded on Redwick and Llandevenny (05).

Rumex hydrolapathum (Map 1e)

Recorded at one site on Ty-ffynnon Reen 21 near Marshfield.

Sagittaria sagittifolia (Map 2e, 4e, 5e)

Found at sites both on the Wentlooge and Caldicot Levels. At Drenewydd Reen 42B near Marshfield, Percoed Reen 53, and New Dairy Reen 67 near St Brides and at Middle Road Reen 124 and New Cut Reen 155 on the Caldicot Level.

Vicia bithynica (Map 2e)

Recorded at one site on the banks of Percoed Reen 53, north of St Brides.

Wolffia arrhiza (Map 3e)

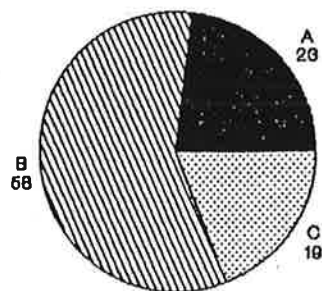
Recorded at two sites just south of Goldcliff at Peterstone Great Wharf 77 and Cross Reen 78.

Zannichellia palustris (Map 1e, 2e, 3e, 4e, 5e, 6e)

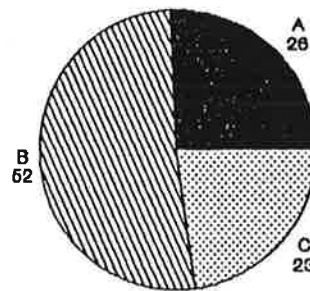
Fairly widespread, found at 15 sites throughout the Levels.

FIGURE 3a CONSERVATION GRADINGS FOR EACH SSSI UNIT (SHOWN AS PERCENTAGES)

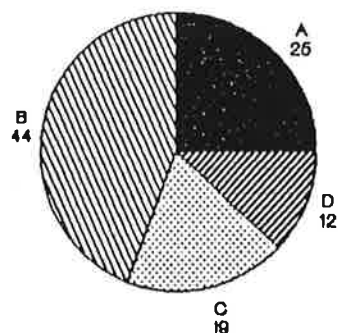
Rumney and Peterstone (01)



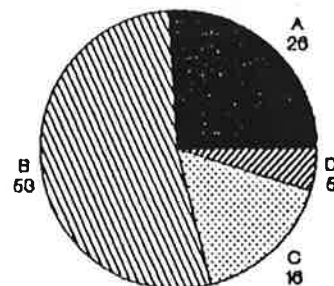
St Brides (02)



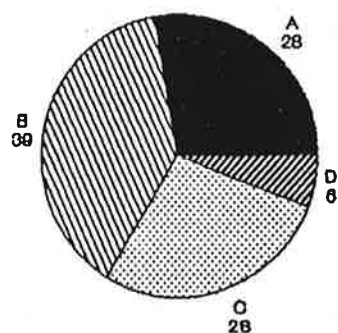
Nash and goldcliff (03)



Whitson (04)



Redwick and Llandeveyeny (05)



Magor and Undy (06)

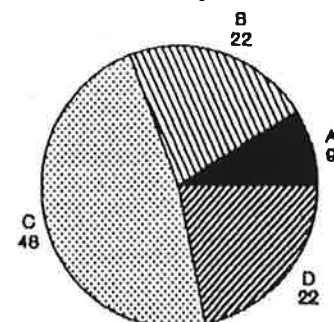
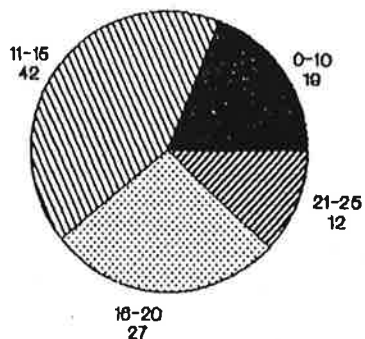
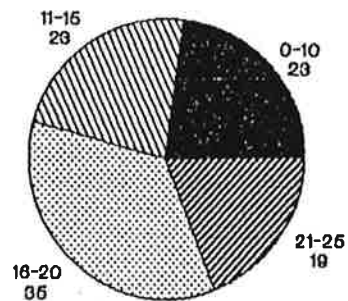


FIGURE 3b DIVERSITY SCORES FOR EACH SSSI UNIT (SHOWN AS PERCENTAGES)

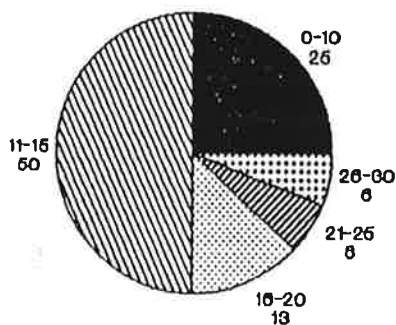
Rumney and Peterstone (01)



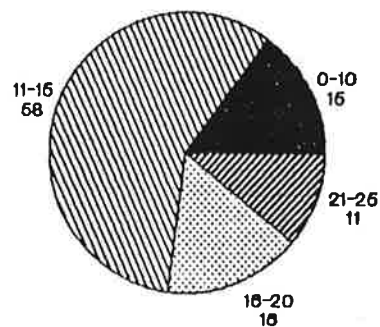
St Brides (02)



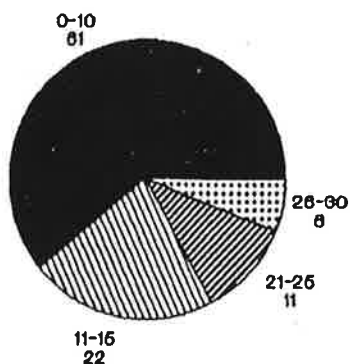
Nash and Goldcliff (03)



Whitson (04)



Redwick and Llandeveyney (05)



Magor and Undy (06)

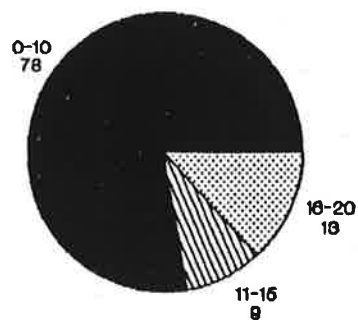
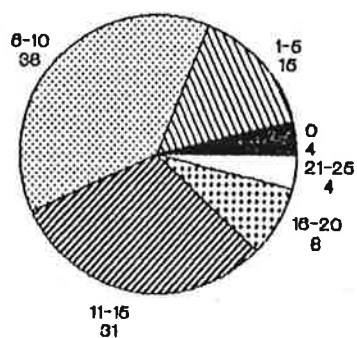
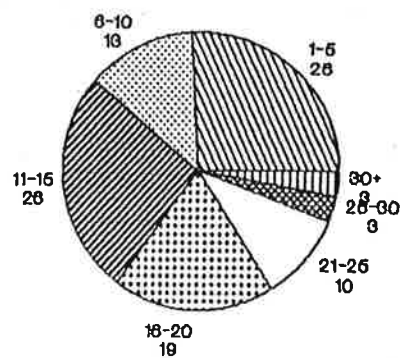


FIGURE 3c RARITY SCORES FOR EACH SSSI UNIT (SHOWN AS PERCENTAGES)

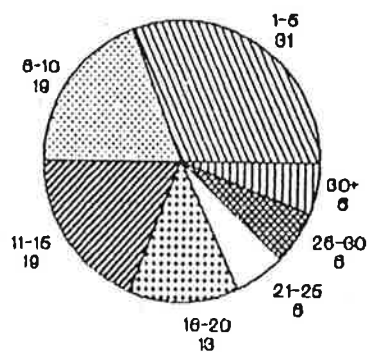
Rumney and Peterstone (01)



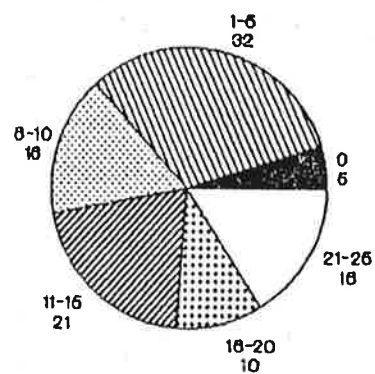
St Brides (02)



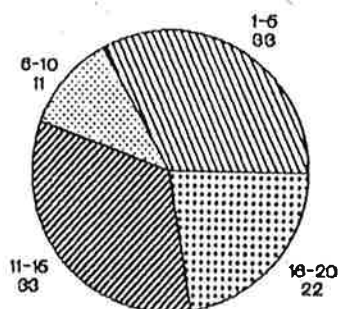
Nash and Goldcliff (03)



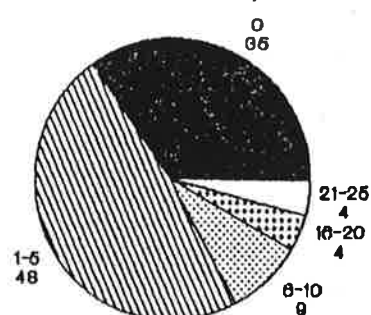
Whitson (04)



Redwick and Llandeveyney (05)



Magor and Undy (06)



4. DISCUSSION

4.1 DISCUSSION ON SELECTED REENS

4.1.1 NRA/IDB Reens

Thirty out of a total of 133 sampling sites were rated 'A' (excellent). Six of these sites out of 26 were found on Rumney and Peterstone; eight out of 31 on St Brides; four out of 16 on Nash and Goldcliff; five out of 19 on Whitson; five out of 18 on Redwick and Llandeenny; and two out of 23 on Magor and Undy. This data is illustrated in Figure 3a.

Nine out of a total of 133 sampling sites were rated 'D' (poor).

Two of these sites were found on Nash and Goldcliff; one on Whitson; one on Redwick and Llandeenny; and five on Magor and Undy. No sites on St Brides or Rumney and Peterstone were rated 'D' (see Figure 3a).

i. Rumney and Peterstone

'A' rated sites:

14	Faendre Reen
18	Rhosog Fawr Reen
21	Ty-ffynnon Reen
25	Wood Ditch Reen
26	Cross Reen
32	Rhosog Fawr Reen

All six 'A' rated sites are found on the eastern half of the Level.

All the sites have a good water depth, five are over 100 cm deep, and all the reens are over 2 m wide. The surrounding land use is permanent pasture or road, and none of the banks are heavily grazed.

Rhosog Fawr Reen scores the highest for rarity and diversity scores (see section 3.1). Four sites were sampled on this reen - 7, 8, 18 and 32, all of which had a good diverse aquatic flora, species including Potamogeton pusillus, Potamogeton berchtoldii, Potamogeton obtusifolia, Zannichellia palustris.

Hand pondweed

ii. St Brides

'A' rated sites:

42B	Drenwydd Reen
47	Penning Reen
48	Summerway Reen
50	Horsecroft Reen
53	Percoed Reen
60	Sealand Reen

- 62 Wheel Lane Reen
65 Pont-y-cwch Reen

The eight above sites are randomly scattered across the Level.

The sites have a variable water depth, none are less than 25 cm, two are over 100 cm deep, the ditch width too is variable, no site is less than one meter wide.

The surrounding land use varies, permanent pasture, ley, arable and roads/tracks are found, no sites are heavily grazed.

Horsecroft Reen scores the highest, it is described as "an excellent, diverse reen with six submerged species, six floating species and a good emergent fringe".

Potamogeton trichoides was recorded at five of the sites on St Brides.

iii. Nash and Goldcliff

'A' rated sites:

- 77 Peterstone Great Wharf
78 Cross Reen
45 Monkscroft Reen
100 Chapel Reen

The four above sites are found on the southern half of the Level.

The sites have a variable water depth, all are over 25 cm deep and all are over 2 m wide.

The surrounding land use is permanent pasture except one which is road and another which is a ley; only one bank is heavily grazed.

Chapel Reen is the largest and deepest of these four reens and supports a rich diversity of aquatics with five submerged Potamogeton species including Potamogeton trichoides. However, Cross Reen scores very high for rarities, having Wolffia arrhiza, Ceratophyllum submersum and Potamogeton trichoides.

'D' rated sites:

- 92 Common Reen
99B Monks Ditch

Both the above reens are over one metre deep and over 76 cm wide.

The surrounding land use is permanent pasture except one

site which has ley. Common Reen is heavily grazed and trampled on both banks, Monks Ditch is ungrazed and untrampled on one bank and lightly on the other bank.

Monks Ditch is the worst of the two, seemingly polluted, and supporting few aquatics. Common Reen is heavily grazed on the banks with a poor emergent cover.

iv. Whitson

'A' rated sites:

- 109 Mireland Pill
- 117 Crabtree Reen
- 123 Elver Pill Reen
- 124 Middle Road Reen
- 127 Elver Pill Reen

These five sites are scattered across the Whitson Level, two sites are on Elver Pill Reen.

All reens have a good water depth, that is over 75 cm and all are over 2 m wide. Two sites are on permanent pasture, one is on ley and two are on derelict (steelworks) land. None have heavily grazed banks.

Crabtree Reen scores very high, having an excellent diversity of aquatic species, four submerged Potamogeton species and three floating Ranunculus species, therefore having a very high rarity value too.

Elver Pill Reen also scores well, it is a deep, wide reen and supports a good diversity of species including Potamogeton trichoides.

Middle Road Reen has Butomus umbellatus and Sagittaria sagittifolia and on the bank Ophioglossum vulgatum.

'D' rated reens:

108 Monks Ditch. This reen was surveyed further north on Nash and Goldcliff and it too was rated 'D'. Both sites lack aquatics and seem polluted. However, this site is directly behind the farm buildings at Samson Court.

v. Redwick and Llandevenny

'A' rated sites:

- 142 Redwick Sea Wall
- 143 Cold Harbour Reen
- 144 South Row Reen
- 155 New Cut Reen
- 164 Rushwall Reen

Three of these 'A' rated sites were found on the south east

corner of the Level, the other two in the northern half.

Rushwall and New Cut reens are over 100 cm deep and over 2 m wide, the other 3 sites have a depth of 26-50 cm and are over one metre wide.

The surrounding land is variable, arable, ley, road and permanent pasture, most of the banks are ungrazed except for two which are partly.

Rushwall and New Cut reens score the highest, being rich and varied, although they are slightly short on aquatic species.

'D' rated sites:

153 Cock Street Reen. Seventy-six to 100 cm deep and 2-4 m wide, the surrounding land is ley and is not grazed or trampled. This reen is polluted with slurry type effluent, there are no submerged species, although it is dominated by Lemna polyrrhiza.

There is definitely a pollution problem in this area around North Court Farm, Ynys Mead Reen has also been affected.

vi. Magor and Undy

'A' rated reens:

170 Mill Reen
185 Collister Pill Reen

Mill Reen is over one metre deep and over 4 m wide, Collister Pill is 26-50 cm deep and over 4 m wide.

The surrounding land is permanent pasture and Mill Reen is by the road, neither sites are grazed.

Mill Reen has an excellent diversity with eight submerged aquatics, five of which are Potamogeton species including Potamogeton trichoides and Potamogeton obtusifolia.

'D' rated reens:

173 Old Convenient Reen. Grange Farm is very intensive, having arable and ley fields that are underdrained.

Water depth is less than 25 cm and the width of ditch is 1-2 m, the water is very murky and no floating or submerged species were found. The banks are ungrazed and untrampled.

174 Whitewall Reen. Also on Grange Farm. Whitewall has shallow water, less than 25 cm and is 2-4 m wide, the water is very murky and dominated by Lemna minor. The surrounding land is arable and ley, underdrained and the banks are not grazed or trampled.

180 Sea Wall Reen. This reen is dry, 1-2 m wide and surrounded by permanent pasture and ley, the banks are ungrazed and untrampled. The reen is dominated by grass species.

190 Moor Ditch. This reen is also dry, 1-2 m wide and surrounded by permanent pasture, both banks are ungrazed and untrampled. The reen is hedged.

193 Ifton Reen. Water depth is 26-50 cm and 1-2 m wide, the water is quite murky, it is surrounded by permanent pasture and arable, and is partly grazed and trampled on the pasture bank. Very few aquatics were recorded, though Butomus umbellatus was found.

Although there are five 'D' rated reens on Magor and Undy, two of these are totally dry. Therefore, the problem reens in this area are on Grange Farm land.

Conclusion

'A' rated reens are well represented across every Level. However, St Brides comes out the best with high rated reens and Magor and Undy have the least high rated reens.

It seems that the 'D' rated reens on the whole are suffering, they have a good water depth and ditch width (with the exception of the two dry sites on Magor and Undy) with no other clear reason for them to be so poor other than the water quality.

There seems little correlation to the quality of reen with the surrounding land use, road, arable, ley or permanent pasture seems to make little difference.

Grazing and trampling is hard to judge as few of the IDB/NRA managed reens are heavily trampled.

However, the deeper and wider the reen is, the more diverse aquatic flora it can support.

4.1.2 Field Ditches

Out of 64 field ditches, 36 were rated 'D', 23 were rated 'C', four were rated 'B' and only one was rated 'A'.

Rated 'A':

The 'A' rated ditch is site number 84 on Nash and Goldcliff.

This is one of the few field ditches that has a good water depth, 76-100 cm, the width is 1-2 m. The surrounding land is ley and permanent pasture, it is ungrazed and untrampled on one bank and partly grazed and partly trampled on the other bank, it also has an intermittent hedge on one bank. The reen is aquatically rich and diverse, species include Ceratophyllum demersum, Hydrocharis morsus-ranae, Potamogeton berchtoldii, Potamogeton crispus,

Potamogeton trichoides, Ranunculus aquaticus and Zannichellia palustris.

Rated 'B':

Four were rated 'B': 20 on Rumney and Peterstone; 55 and 58 on St Brides; and 121 on Whitson.

Field ditch 20 is in fact not typical as it is near the new Business Park and has been reprofiled, now it is over one metre deep and 2-4 m wide. It therefore supports a fairly good aquatic flora.

Field ditch 55 has a water depth of 26-50 cm and is 2-4 m wide, surrounded by ley it is ungrazed and untrampled. The ditch is lacking in aquatics but has a good emergent vegetation creating a good habitat.

Field ditch 58 is quite deep, 76-100 cm and 2-4 m wide it is permanent pasture and a road on one side, partly grazed and trampled on the pasture bank. Like 55, it is a good reën for emergent and floating species, though lacking in submerged.

Field ditch 121 is quite deep, over 100 cm and 2-4 m wide, the surrounding land is arable and it is not grazed or trampled on either bank. Similar to the above ditches, it is good for emergents and is lacking in submerged aquatics.

'D' and 'C' rated field ditches are evenly distributed across the Levels. 'B' rated ditches were found in Rumney and Peterstone (one site), St Brides (two sites) and on Whitson (one site). The 'A' rated ditch was on Nash and Goldcliff.

Therefore, Magor and Undy and Redwick and Llandeveyney have no field ditches of 'A' or 'B' ratings.

Conclusion

It is important to note that from a botanical point of view the field ditches cannot be compared with the NRA/IDB managed reens as the majority of field ditches are very narrow and shallow.

Over 50% of the field ditches are rated poor, these poor sites are mostly hedged and dry lacking any aquatics at all and some are dominated by emergent species such as Phragmites.

4.2 ASSESSMENT OF BANK-SIDE VEGETATION

The bank-side vegetation is an important and integral part of the reën.

This section makes a basic assessment of the banks looking at diversity, species richness and rarity.

The assessment is based on a qualitative decision by the field workers on site and backed up by an assessment of the number, abundance and rarity of species from recorded data.

4.2.1 Rare Species

Lathyrus nissolia (Map 4e)

Found at two sites.

Percoed Reen No 53 28918390

The banks are quite steep, not grazed or trampled and noted as "excellent" by the surveyors. The reen follows a green lane. Vicia bithynica is also recorded.

Newport Road Reen No 112 38828342

The banks are quite steep, not grazed or trampled and the reen follows a green lane.

Vicia bithynica (Map 2e)

Found at 3 sites.

Field Ditch No 24 25558128

The banks are interesting and diverse, partially grazed and trampled and quite heavily shaded.

Percoed Reen No 45 28538357

The banks are diverse and not grazed or trampled and the reen follows a road.

Percoed Reen No 53 28918390

This is also a Lathyrus nissolia site.

Ophioglossum vulgatum

Found only once.

Middle Road Reen 38868564

The banks are quite steep and deep, extremely rich in species and not grazed or trampled.

Carex pseudocyperus (Map 5e)

Found on one bank.

Cockenton Reen No 140 41358450

The banks are rich in sedges and partially grazed and trampled.

4.2.2 Banks With High Diversity and Interest

Twenty-one sites have banks of high interest. These have been

tabulated in Appendix 6a.

Nine sites are IDB reens and 11 are NRA reens. Only one site is a field ditch, number 24 near Marshfield. On this site, only the banks are of interest, supporting a good range of species including Carex flacca, Carex remota, Vicia cracca, Vicia bithynica. The banks are on permanent pasture, are partially grazed and quite heavily shaded by a broken hedge.

i. Number of Species - Diversity

The number of species as a single factor does not necessarily reflect the quality of the bank. For example, Percoed Reen has an excellent range of species including Lathyrus nissolia, Vicia bithynica, Carex acutiformis, yet has only 24 bank species.

Middle Road Reen supports the highest number of species totalling 56. These banks are very rich and diverse. Ophioglossum vulgatum is found.

ii. Shade

Nineteen of the 21 sites have less than 25% shade. Only two sites have over 50% shade.

iii. Grazing

Fourteen sites are not grazed on either bank. Two sites are partly grazed on both banks and 5 sites are partly grazed on one bank and not on the other.

iv. Surrounding Land

Thirteen of the sites are alongside a road or lane. Twelve of the sites have at least one bank on permanent pasture. Four sites have one bank on ley. One site has a bank on arable and two sites are on unmanaged scrub land. Two banks have woodland/scrub.

v. Notable Species

See section 4.2.1

4.2.3 Banks with Low Interest

Twenty-eight sites have banks of low interest. These have been tabulated in Appendix 6b.

Twenty-three of the sites are field ditches, and five are main reens. These five main reens are described below:

Monks Ditch (108). The banks are poor due to the disturbance caused by being directly behind farm buildings. Urtica dioica, Cirsium arvense and coarse grass species are abundant.

Old Convenient Reen (173). Quite a deep bank, ungrazed and surrounded by arable and ley with a hedge on one side. Rubus fruticosus, Urtica dioica, Oenanthe crocata and coarse grass species are abundant.

Whitewall Reen (174). Similar to Old Convenient Reen.

Prat Reen (178). A deep, steep bank, ungrazed, surrounded by permanent pasture. The banks are recorded as "very poor" by the surveyors with an abundance of Arrhenatherum elatius, Urtica dioica and Galium aparine.

Seawall Reen (180). The banks of this reen are just like part of the field, with an abundance of grasses. Also Capsella bursa-pastoris, Matricaria matricarioides.

i. Number of Species - Diversity

Three sites have 30 or more species. The highest score is 33. Twelve sites have 20-30 and 13 sites have less than 20 species.

As with the high interest banks, it is not necessarily a good bank just because of the number of species. For example, field ditch number 5 has 33 species, which were mostly grasses - Cirsium arvense is abundant and the site was recorded as "very poor" by the surveyors. Such banks are often very grassy and lack a good range of species.

ii. Shade

Nine sites have less than 25% shade. Eleven are heavily shaded (over 75%) and eight sites have 50-75% shade.

iii. Grazing

Fifteen sites are not grazed on either bank. Six are partly grazed on both banks. Six are partly grazed on one bank and not on the other, and one site is heavily grazed.

iv. Surrounding Land

Twelve sites have ley at least on one bank. Nineteen have at least one bank on permanent pasture. Three have one bank on arable and one site has a bank near the farmyard.

v. Notable Species

None found.

4.2.4 Discussion

In this section, the banks have been assessed separately as the aquatic flora of the reen is independent of the bank flora.

Various factors have become apparent in determining the quality

and diversity of the bank-side vegetation.

Size of the Bank

The larger the bank, the greater the potential to support more species, whereas field ditches with small banks are generally poor and often little different to the surrounding pasture.

Shade

Many of the field ditches are heavily shaded by hedges. Species diversity is generally lower along such banks. These banks may be used for shelter by stock resulting in trampling.

The main reens generally have minimum shade.

Adjacent Land Use

Many of the interesting banks are bounded by a road or track. The interest is possibly a result of minimum agricultural disturbance and the cutting regime by the IDB and NRA.

The banks of high interest are found throughout the Levels, with a cluster to the north east of St Brides.

The banks of low interest are also found across the Levels with a cluster around Goldcliff. Four of the main reens which were poor were found around Magor and Undy.

In conclusion, the high interest banks tend to be large, lightly grazed or mown with low level shade and away from intensively managed fields.

4.3 COMPARISON WITH 1982/1983 FLORAL MONITORING SURVEY

During 1982 and 1983, a comprehensive survey of the reens across the Gwent Levels was carried out (Glading, 1984).

Comparisons have been made in the next three sections from the following survey data:

- a. Reen quadrats - 20 m lengths of the main reens were surveyed by the same methods as in 1991.
- b. Reen walks - all the main reens were walked and surveyed and divided into sections where appropriate, ie. when the vegetation type changed. The reen walks can be compared generally to give an indication of major changes.
- c. Distribution of rare species - in 1982/1983 maps were compiled locating the rare species (for definition of rare species, see section 3.1). These can be compared with the 1991 survey.

To carry out the following comparisons, it has to be assumed that the standards of the two surveys was the same.

4.3.1 Reen Quadrats

A total of 40 reen quadrat sites surveyed in 1982/1983 were resurveyed in 1991. This data has been compared and the sites have been tabulated in Appendix 7. The tables give the site name (as named in 1991 with the 1982/1983 name in brackets), the grid references (1982/1983 in brackets), the diversity score, the rarity score, rare species recorded and notes on the comparison.

The comparison is based on species diversity, rarity and any comments made by the surveyors.

Over a period of nine years, slight changes are inevitable. The major differences are of more interest and further investigations may need to be made.

The following sites were notably different.

Sites of Lower Floristic Interest in 1991

- 97 Wainbridge Reen. Potamogeton trichoides found in 1982/1983 and not in 1991. Richer for aquatics in 1982/1983.
- 99B Monks Ditch. Richer for aquatics in 1982/1983. Very poor in 1991. Potamogeton perfoliatus and Potamogeton pectinatus found only in 1982/1983.
- 140 Cockenton Reen (Stallhouse Reen). Potamogeton trichoides found only in 1982/1983. Very poor for aquatics in 1991.
- 143 Cold Harbour Reen. Although good in 1991, in 1982/1983 it was even better with Potamogeton trichoides and Myriophyllum spicatum.
- 168 Mill Reen. More species-rich in 1982/1983 than in 1991.
- 194 Common Sea Reen (Rogiet Moor Reen). More species-rich in 1982/1983. Ranunculus trichophyllus abundant in 1982/1983 and not found in 1991.

Sites of Higher Interest in 1991

- 8 Rhosog Fawr. Much higher rarity score in 1991.
- 16C Wood Ditch Reen. Much higher diversity score in 1991.
- 32 Rhosog Fawr. Higher rarity score in 1991.
- 40 Tyn-y-bryn. Higher diversity and rarity scores in 1991.
- 48 Summerway Reen. Potamogeton trichoides and Potamogeton berchtoldii found in 1991 only. Scores higher in 1991 for both diversity and rarity.

- 62 Wheel Lane Reen. Abundant Potamogeton trichoides in 1991. Not found in 1982/1983. Much richer in 1991.
- 73 Sealand Reen. Higher rarity and diversity scores in 1991.
- 98 Clift Reen. Higher diversity score in 1991.
- 100 Chapel Reen. Many more species found in 1991 including Potamogeton trichoides.
- 117 Crabtree Reen. Higher diversity and rarity scores in 1991.
- 123 Elver Pill Reen. Potamogeton trichoides found in 1991 only, and scores higher for rarity and diversity.
- 124 Middle Road Reen. High diversity and rarity scores in 1991. Poor by comparison in 1982/1983.

Twelve sites are of higher interest in 1991. On the Wentlooge Level, the seven sites are found throughout, and on the Caldicot Level, five sites are found quite close to Whitson.

Six of the sites are of lower floristic interest in 1991 and found across the Caldicot Level. No sites on the Wentlooge Level were of lower interest in 1991.

The remaining 22 sites had no major changes.

Unfortunately, there were only 40 reen quadrat sites which were comparable. However, in general, it appears that the Levels have improved slightly.

4.3.2 Reen Walks

This is a comparison of the species diversity and rarity scores of the main reens using the 1982/1983 reen walk data and the 1991 quadrat data.

The reen walks (1982/1983) covered a greater length than the reen quadrats (1991) which must result in a general higher diversity and rarity score in 1983. It is therefore impossible to compare diversity score.

The trends and major changes on each SSSI unit have been studied in this section.

The graphs in figures 4a and 4b show the frequency of diversity and rarity scores for the sites surveyed for each SSSI unit (given as percentages of the total).

i. Rumney and Peterstone

The differences are very slight and there is no major change in diversity and rarity.

ii. St Brides

For both surveys, this area scores high and shows the most interest compared to the other SSSI units.

Again the differences are very slight and there is no major change in diversity and rarity.

iii. Nash and Goldcliff

Very similar results on both surveys, generally lower diversity scores in 1991.

iv. Whitson

Again very similar on both surveys with generally lower diversity scores in 1991.

v. Redwick and Llandeenny

This area shows a major change for diversity and rarity. In 1983 only 12% of the sites resurveyed in 1991 had less than 10 species. By 1991, this figure had risen to 61%.

vi. Magor and Undy

Similar to Redwick and Llandeenny, this area too shows a dramatic fall in diversity. In 1983, 30% of the sites resurveyed in 1991 had less than 10 species. By 1991, this figure had risen to 78%.

In 1983 (from the sites resurveyed in 1991), St Brides has the most sites with high diversity. Nash and Goldcliff and Magor and Undy have the least sites with high diversity. However, these differences are relatively small and interest is not concentrated in any one place.

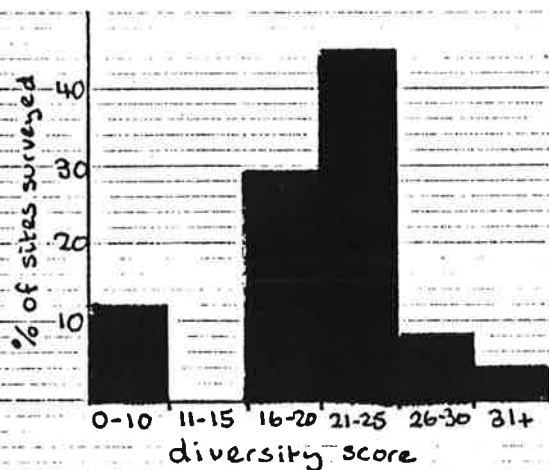
From the 1991 survey, St Brides has the most sites with high diversity. Redwick and Llandeenny and Magor and Undy have the least sites with high diversity.

The small differences noted in 1983 are more exaggerated in 1991.

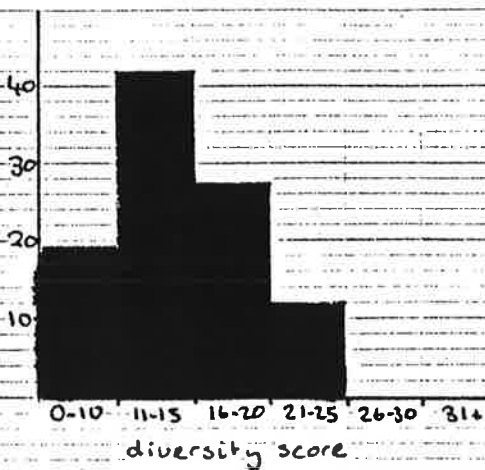
Unlike the 1982/1983 survey, in 1991 no site had over 25 aquatic species. In a 20 m reën quadrat, 25 aquatic species would be of exceptional quality.

Therefore, it is impossible to conclude changes in diversity between the 1982/1983 reën walk data and the 1991 survey unless the changes are great. Differences between the surveys for Redwick and Llandeenny and Magor and Undy indicate a change in the floristic quality of the reëns which requires further investigation.

1982/3

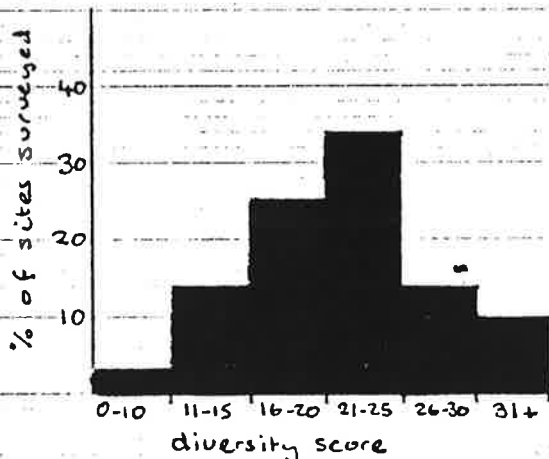


1991

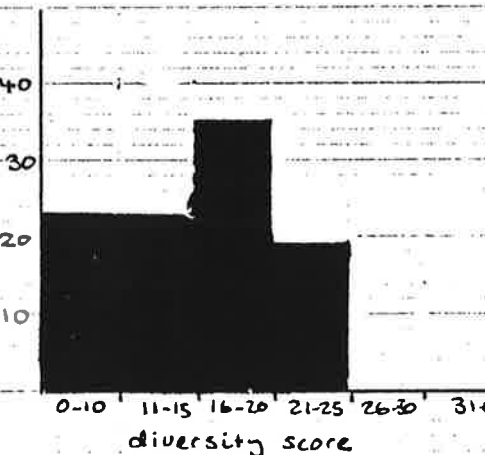


RUMNEY & PETERSTONE (total of 24 sites surveyed)

1982/3

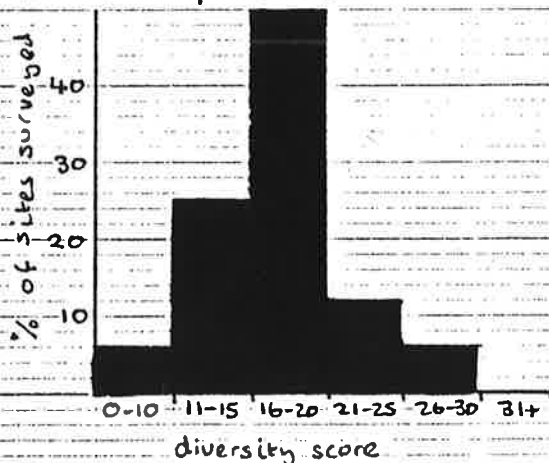


1991

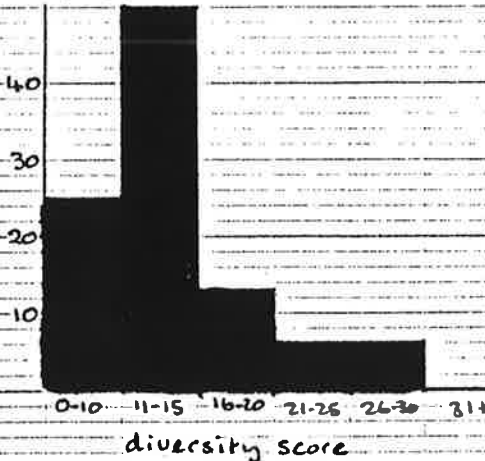


ST. BRIDES (total of 29 sites surveyed)

1982/3

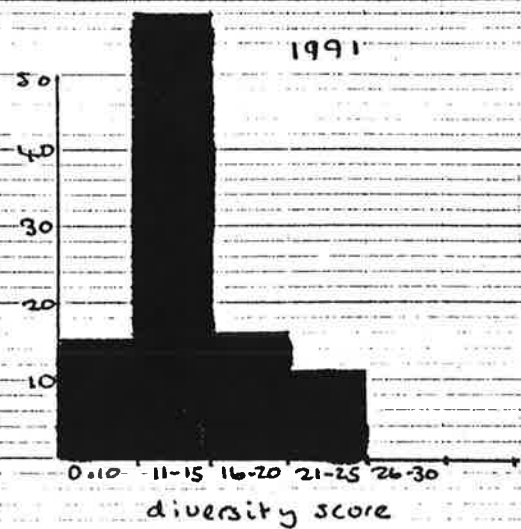
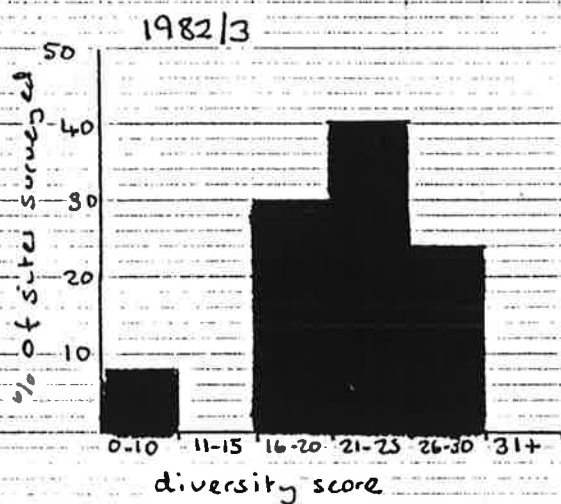


1991

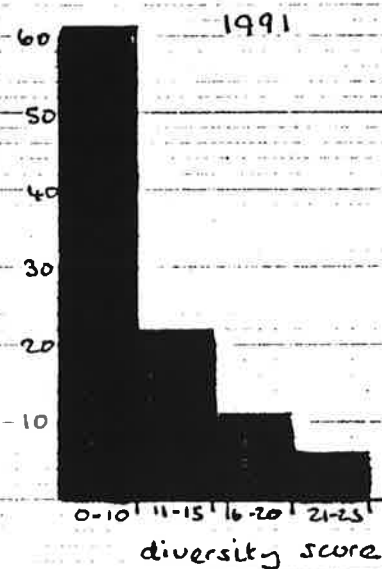
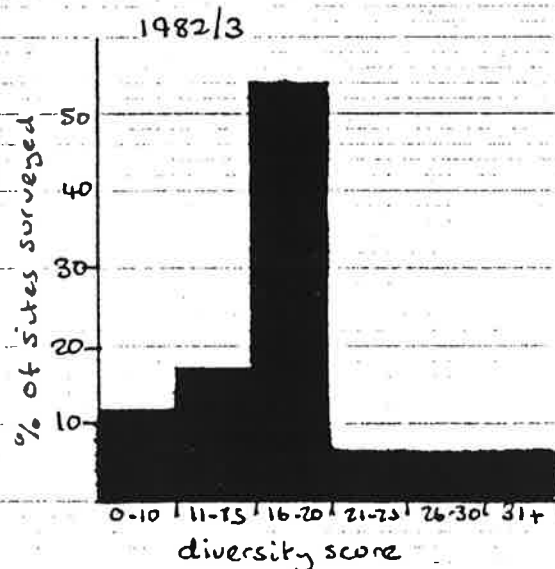


NASH & GOLDCLIFFE (total of 16 sites surveyed)

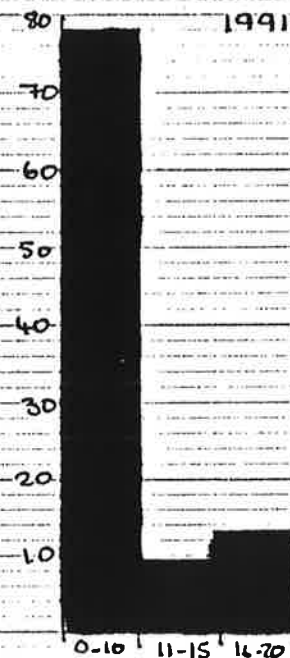
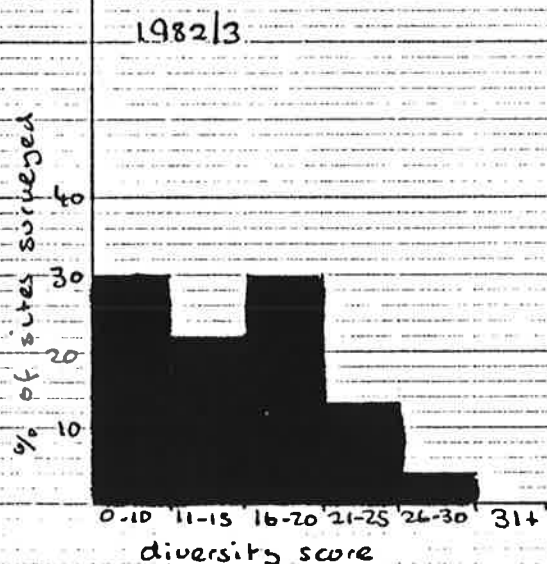
FIG 4A FREQUENCY OF DIVERSITY SCORES FOR THE SITES SURVEYED



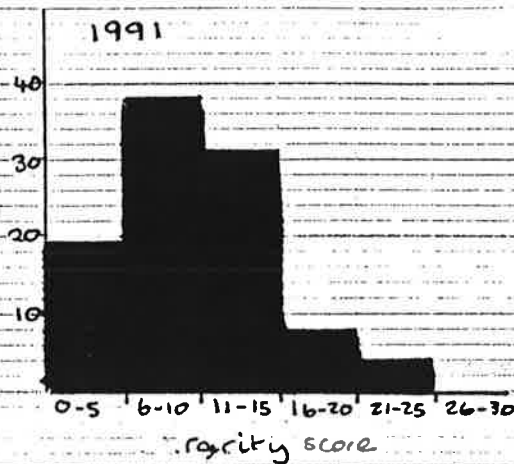
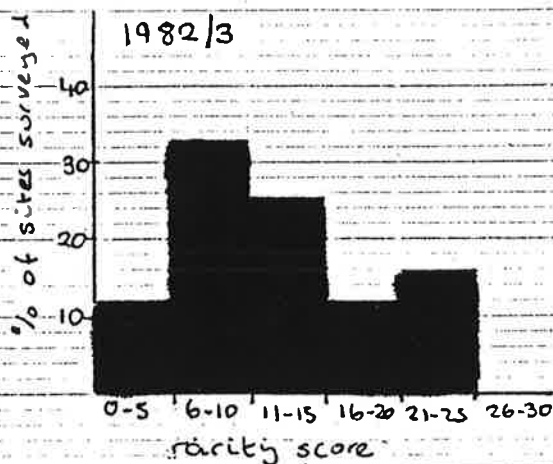
WHITSON (total of 13 sites surveyed)



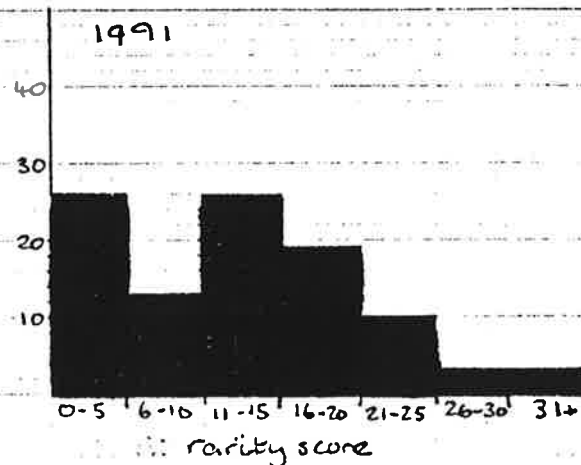
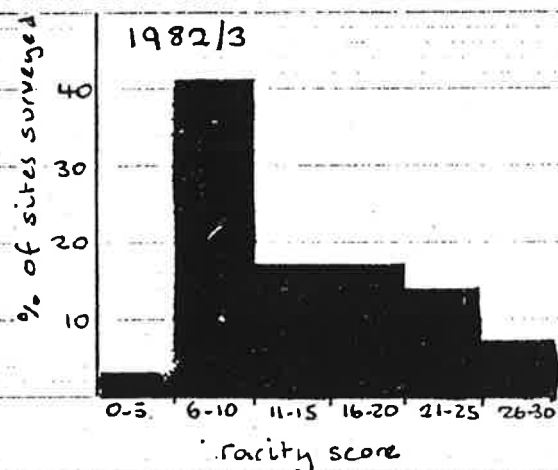
REDWICK & LLANDEVENNY (total of 17 sites surveyed)



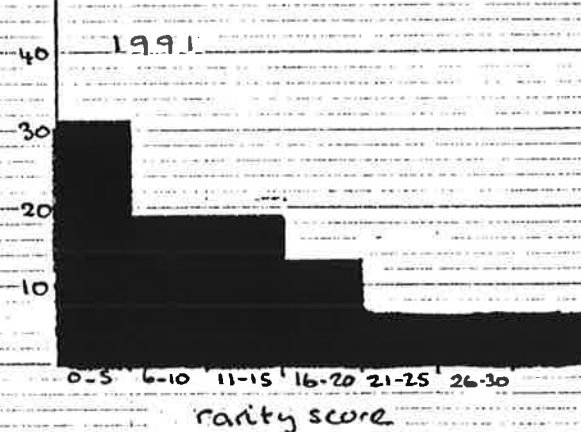
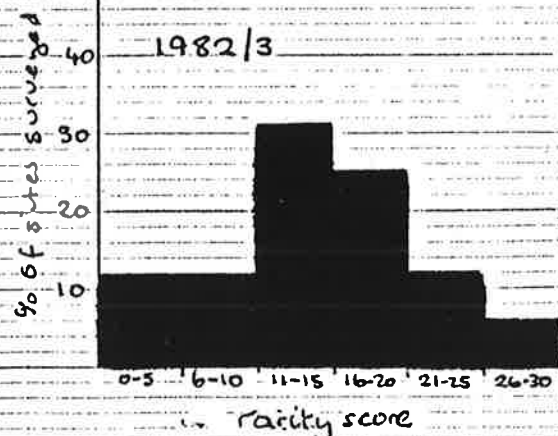
MAGOR & UNDY (total of 23 sites surveyed)



RUMNEY & PETERSTONE (total of 24 sites surveyed)

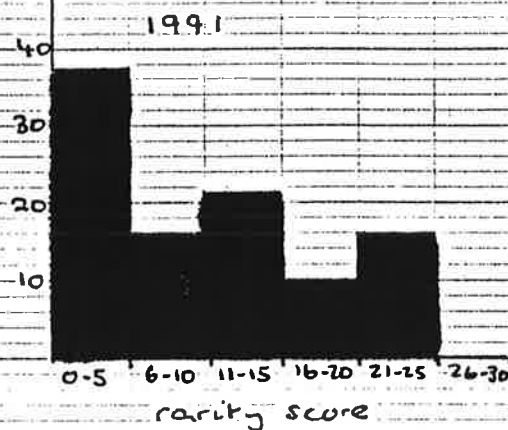
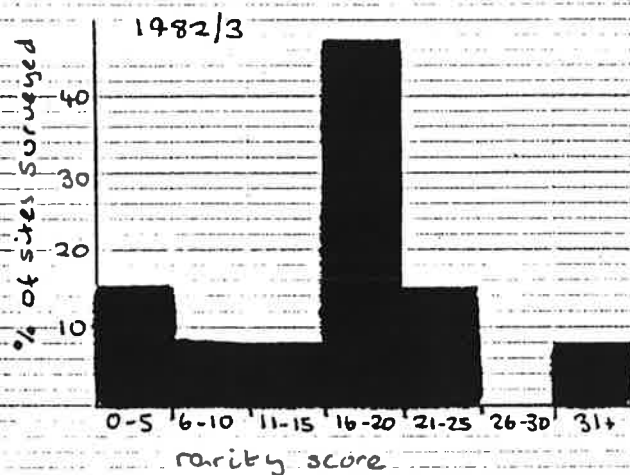


ST. BRIDES (total of 29 sites surveyed)

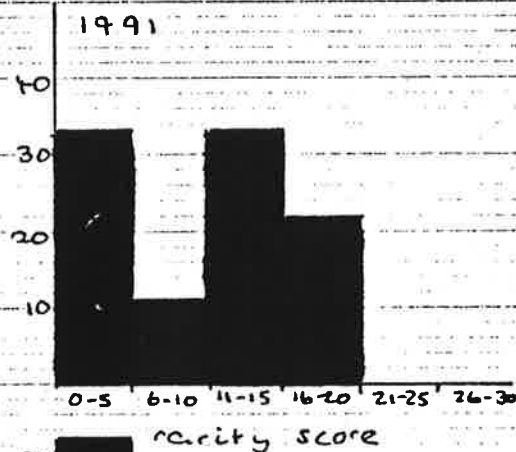
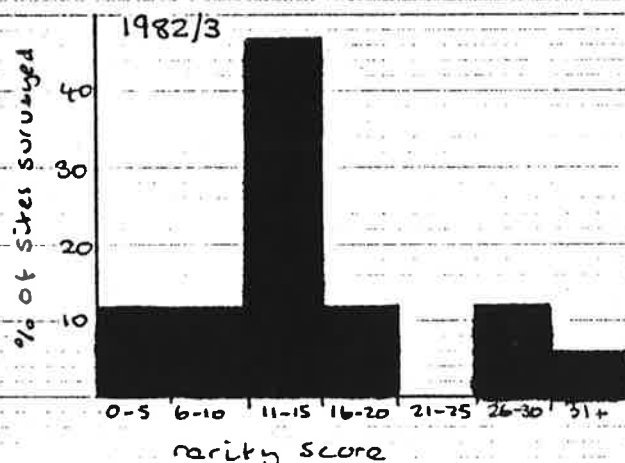


NASH & GOLDCLIFFE (total of 16 sites surveyed)

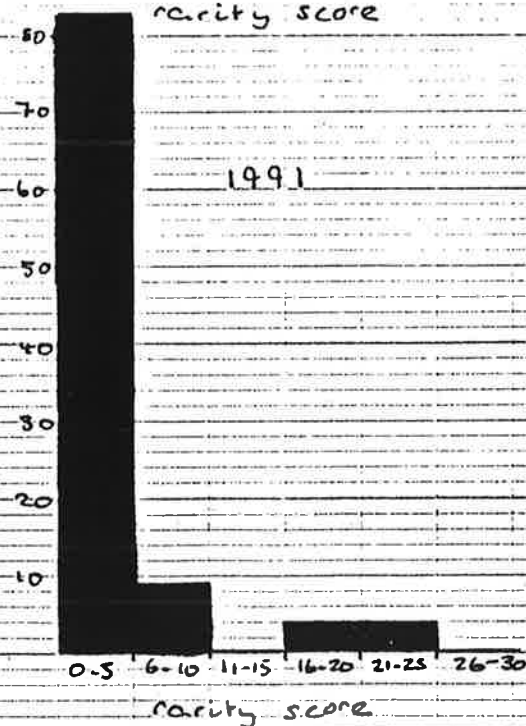
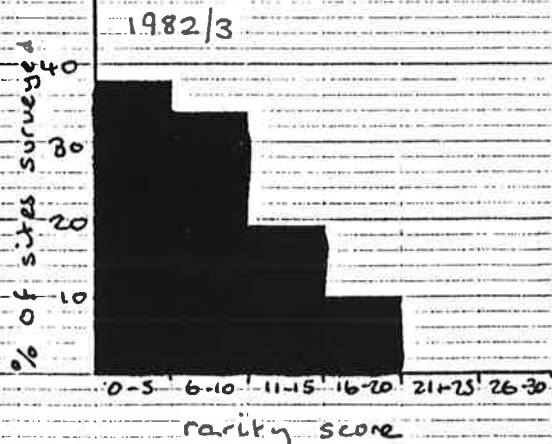
FIG 4B FREQUENCY OF RARITY SCORES FOR THE SITES SURVEYED



WHITSON (total of 13 sites surveyed)



REDWICK & LANDEVENNY (total of 17 sites surveyed)



MAGOR & UNDY (total of 23 sites surveyed)

FIG 4b FREQUENCY OF RARITY SCORES FOR THE SITES SURVEYED

4.3.3 Rare Species

The 1982/1983 survey covered every main reen, and rare species distribution maps were drawn up. From this data, firstly the species locations from the 1982/1983 survey were checked to see if in 1991 that particular point was surveyed (or close to it) and if that species was recorded then too.

Secondly, the locations of the species from the 1991 survey were checked to see if they were also recorded in 1982/1983.

Comparisons could be made with the following species:

Alisma lanceolatum

Distribution was restricted on both surveys. It was abundant on Collister Pill in 1982/1983 and not recorded there in 1991. It was recorded on Greenwall Reen in 1991 and not in 1982/1983.

Butomus umbellatus

Shows a similar distribution in both years, and Pil-du Reen seems to be its stronghold on both visits.

Carex pseudocyperus

The two sites this species was found at in 1991 it was also found in 1982/1983. Although it was recorded at many more sites in 1982/1983. None of these sites were surveyed in 1991.

Ceratophyllum submersum

Recorded only once in 1991, Cross Reen, and in 1983 it too was confined to this area.

Potamogeton perfoliatus

In 1983 it was confined to Monks Ditch, and the large population of this reen was known for years (Wade, 1977). In 1991, the species was not recorded, although the same stretch of reen was surveyed.

Potamogeton trichoides

Well distributed across the Levels in both years.

Ranunculus baudotii

Distribution very similar. In both years, this nationally rare species was confined to several sites on the back ditch in the brackish water.

Ranunculus circinatus

Very similar distribution in both years, found on the Caldicot Level just south of Llanwern Steelworks.

Ranunculus trichophyllus

This was recorded more frequently in 1991 than in 1982/1983.

Rumex hydrolapathum

Found throughout the Levels in 1983, but recorded only once in 1991 on the Wentlooge Level.

Sagittaria sagittifolia

In both surveys, this species was local and usually abundant, and in 1991 still found in the same localities as in 1982/1983.

Samolus valerandi

Recorded only once in 1983. Not found in 1991, although the site from 1983 was not surveyed in 1991.

Sparganium emersum

Not recorded in 1991. It was found at 14 sites across the Levels. None of these sites on the Caldicot Levels were surveyed in 1991. However, it was recorded all along Drenwydd and Percoed reens in 1982/1983 and at the same locations not recorded in 1991.

Wolffia arrhiza

Found in abundance in Saltmarsh Reen in 1982/1983 and in 1991. (Wade, 1977 did not record it).

Zannichellia palustris

Well distributed in both years.

It appears from the data available, that the distribution of the above species has changed very little over the years, including the national rarities Ceratophyllum submersum, Potamogeton trichoides, Ranunculus baudotii and Wolffia arrhiza. However, Rumex hydrolapathum and Sparganium emersum appear to have declined.

4.3.4 Conclusions

For comparisons between surveys to illustrate change, it is imperative that a standard method of survey is adopted using fixed survey points. Much of the 1991 survey data was not comparable with the 1983 survey sites.

However, general trends have been identified.

The comparison of the 40 reen quadrat sites has shown an improvement in the diversity of the aquatic flora. No sites on the Wentlooge Level have shown a reduction in floristic quality. Six sites on the Caldicot Level show a reduction in floristic

value, but five of these sites still remain good. The exception is Monks Ditch which is now very poor. However, only two sites on Monks Ditch were identified for survey in 1991. Further survey is required to assess the quality of Monks Ditch.

The comparison with the 1982/1983 re-en walks and the 1991 survey indicates a reduction in floristic value of the Redwick and Llandeenny SSSI and the Magor and Undy SSSI. These areas require further survey using Glading's survey methods so that a full comparison with the 1982/1983 survey can be made.

The comparison of rare species has shown little difference between the 1982/1983 and 1991 surveys with particular references to the nationally rare species, the locations of which are very similar.

4.4 COMPARISON WITH 1988 FLORAL MONITORING SURVEY¹

In 1988, a number of floral samples were recorded across the Wentlooge and Caldicot Levels.

Twenty-two of these sampling sites were re-surveyed as part of this 1991 survey, these sites have been listed and discussed below.

The comparison is based on species diversity (number of species) and rarity score (see Appendix 3 for tabulated data). For the explanation of this scoring system, see section 3.1.

The names of the reens sometimes differ in the two surveys, therefore the 1991 names are used.

It must be noted that the results may vary depending on the time of year the survey took place, the timing of the survey in relation to the ditch management cycle, and that there may have been a slight difference in the position of the transect.

i. Rumney and Peterstone 01

Rhosog Fach 1988 No 1, 1991 No 1

Similar flora, both surveys score 13 for rarity value. Potamogeton berchtoldii, Potamogeton pectinatus and Ranunculus baudotii were found on both surveys. Zannichellia palustris was found in 1991 only.

Rhosog Fawr 1988 No 8, 1991 No 8

Similar flora, though in 1991 it scores a lot higher for rarity and diversity. Zannichellia palustris was found only in 1991.

¹The 1987 floral monitoring survey was not comparable as it was carried out too late in the season when submerged vegetation had begun to decompose, and it was therefore impossible to survey that section of the vegetation.

Faendre Reen 1988 No 22, 1991 No 14

Higher score in 1991, and Butomus umbellatus recorded on both surveys.

Wood Ditch Reen 1988 No 13, 1991 No 23

Very similar, low scores, no rarities found on either visit.

Rhosog Fawr 1988 No 12, 1991 No 32

Very similar species on both surveys, but lower diversity score in 1988.

ii. St Brides 02

Drenwydd Reen 1988 No 3, 1991 No 42

Results compare well, Potamogeton pusillus, Potamogeton trichoides, Sagittaria sagittifolia were found on both visits.

Hawse Reen 1988 No 5, 1991 No 57

Both surveys recorded Potamogeton pusillus, but otherwise the results are not very similar.

Wheel Lane Reen 1988 No 16, 1991 No 62

Similar species, but more diversity in 1991 and Zannichellia palustris recorded only in 1991.

New Dairy Reen 1988 No 20, 1991 No 67

Not very similar results, Potamogeton berchtoldii, Potamogeton pusillus and Potamogeton trichoides recorded only in 1988, Sagittaria sagittifolia recorded only in 1991.

Wharf Reen 1988 No 7, 1991 No 70

Similar but lacking in Potamogeton species in 1991. Potamogeton pusillus and Potamogeton berchtoldii recorded only in 1988.

iii. Nash and Goldcliff 03

Blackwall Reen 1988 No 34, 1991 No 94

A poor reen in 1988, in 1991 a good diverse reen with Potamogeton pusillus. No rarity score in 1988.

Clift Reen 1988 No 36, 1991 No 98

Similar, but higher rarity score in 1988, Potamogeton pusillus, Potamogeton trichoides and Rumex hydrolapathum found only in 1988.

Chapel Reen 1988 No 23, 1991 No 100

Very similar on both visits, though slightly more diverse in 1991. Potamogeton pusillus and Potamogeton trichoides found on both surveys.

iv. Whitson 04

Bowleaze Reen 1988 No 37, 1991 No 118

Not very similar, but higher scores in 1991. Ranunculus circinatus found only in 1991.

v. Redwick and Llandevenny 05

Cockenton Reen 1988 No 40, 1991 No 140

Similar, having lots of Potamogeton crispus on both visits. Lemna species found in 1988 but not in 1991.

Cold Harbour Reen 1988 No 28, 1991 No 143

Quite different for rarity species, Butomus umbellatus and Zannichellia palustris found only in 1991 and Potamogeton trichoides found only in 1988.

Rushwall South Reen 1988 No 41, 1991 No 164

Fairly similar, but more aquatics recorded in 1991. Potamogeton trichoides found only in 1988.

Stutwall Reen 1988 No 44, 1991 No 165

Similar but more aquatics in 1991.

vi. Magor and Undy 06

Mill Reen 1988 No 30, 1991 No 175

Very similar, lacking totally in aquatics on both visits.

West Mead Reen 1988 No 46, 1991 No 177

Very similar, both visits show low scores.

Chapel Reen 1988 No 48, 1991 No 188

Very similar, both visits show low scores, lacking in aquatics.

Sites of Poorer Quality in 1991

These sites have lower diversity and rarity values in 1991. Numbers are from 1991 survey:

- 67 New Dairy Reen
- 70 Wharf Reen

98 Clift Reen

Sites of Better Quality in 1991

These sites have higher diversity and rarity values in 1991. Numbers are from 1991 survey:

8	Rhosog Fawr Reen
14	Faendre Reen
32	Rhosog Fawr Reen
62	Wheel Lane Reen
94	Blackwall Reen
118	Bowleaze Reen
164	Rushwall South Reen
165	Stutwall Reen

Generally, the results from both surveys are similar, although many of the sites had a more diverse flora in 1991, 3 sites were of poorer quality in 1991.

The sites on Magor and Undy compare very well, they were just as poor in 1988.

5. BIBLIOGRAPHY

1. Glading, P R (1984). A Survey of the Flora of the Reens (Drainage Ditches) of the Gwent Levels 1982-83.
2. Clapham, A R, Tutin T G and Warberg, E F (1987). Excursion Flora of British Isles. Cambridge University Press.
3. Jeremy, A C, Chater, A O and David, R W. Sedges of the British Isles. BSBI Handbook No 1.
4. Haslam, S, et al (1975). British Water Plants Vol 4, No 2.
5. Rich, T C G and Rich M D B (1988). Plant Crib. BSBI.
6. Wigginton, M J and Graham, G G (1981). Guide to the Identification of Some of the More Difficult Vascular Plant Species. Nature Conservancy Council.
7. Ellis, R G (1983). Flowering Plants of Wales. National Museum of Wales.

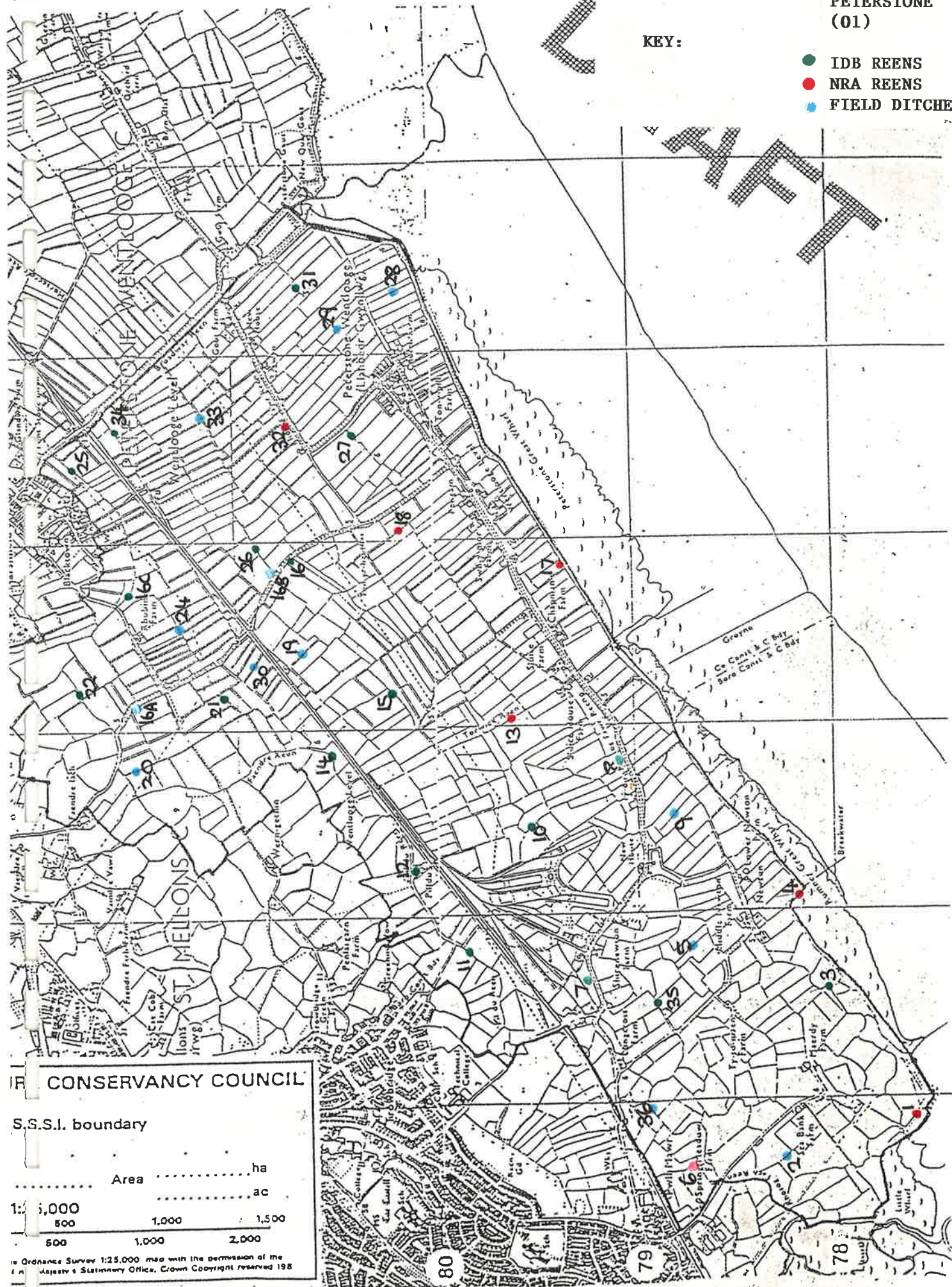
LEVELS - RUMNEY & PETERSTONE or - GWENT

APPENDIX 1

SAMPLING SITES ON RUMNEY AND PETERSTONE (01)

KEY:

- IDB REENS
- NRA REENS
- FIELD DITCHES

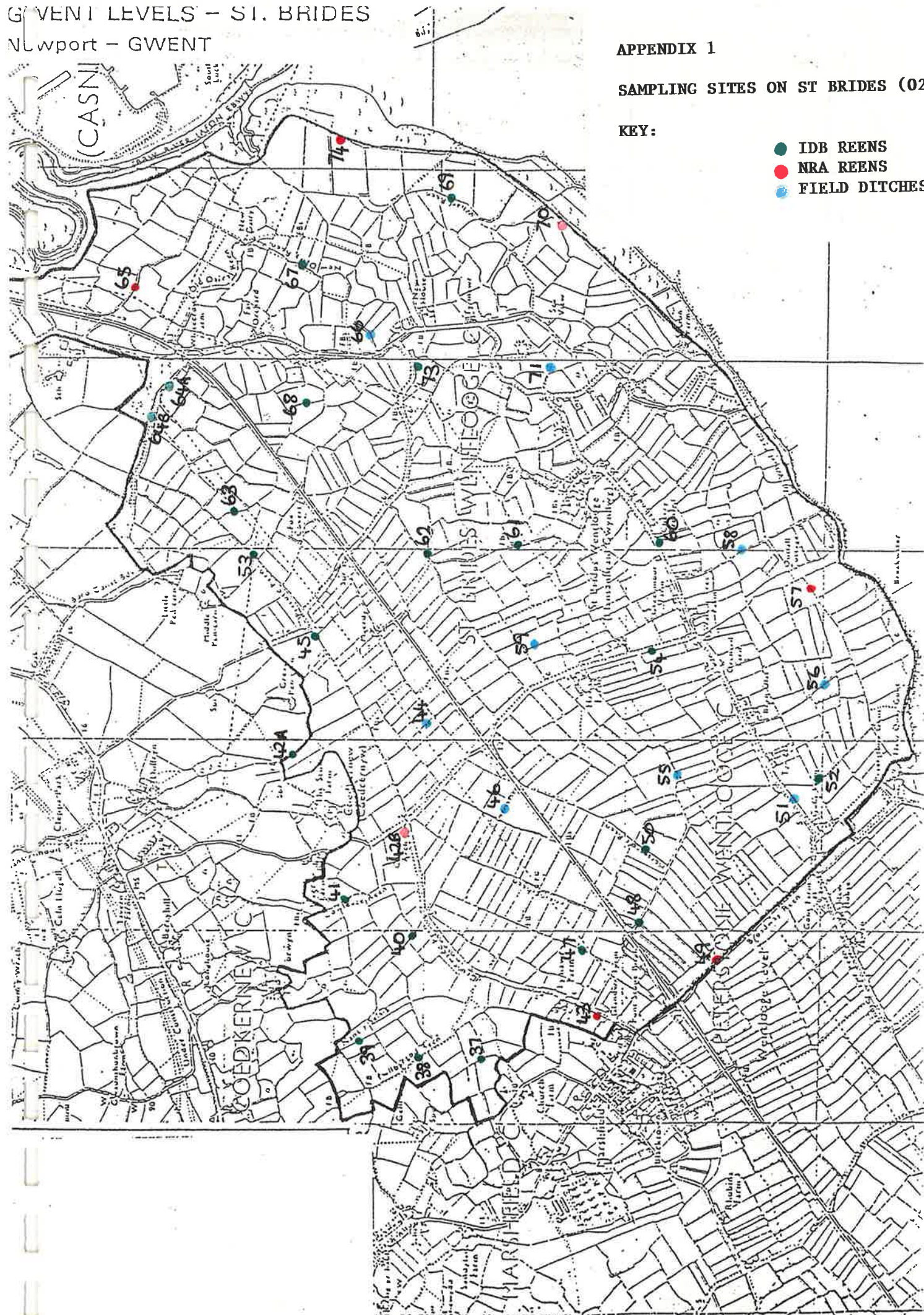


APPENDIX 1

SAMPLING SITES ON ST BRIDES (02)

KEY:

- IDB REENS
- NRA REENS
- FIELD DITCHES



GWENT LEVELS - NASH & GOLDCLIFF

Newport - GWENT

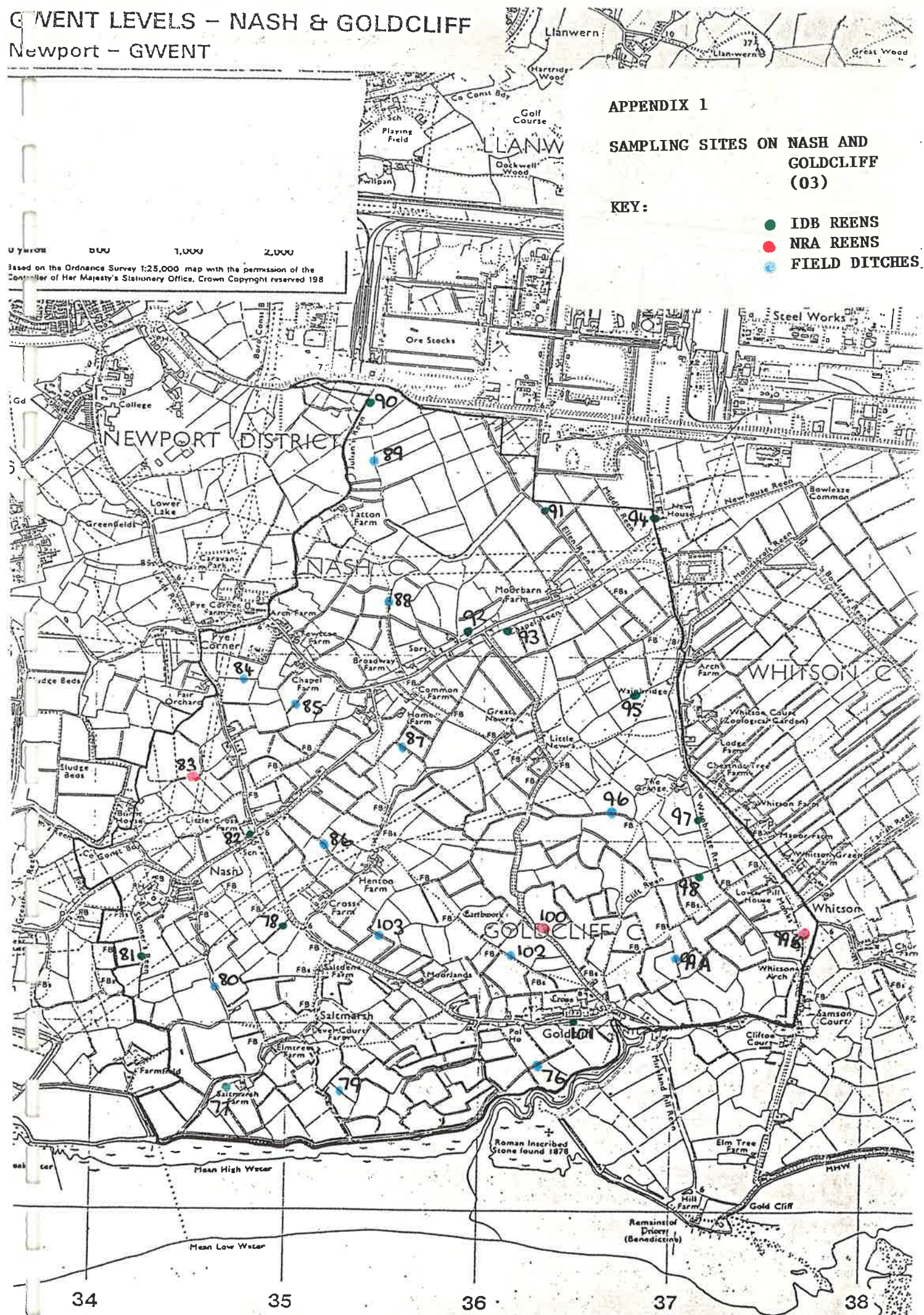
APPENDIX 1

SAMPLING SITES ON NASH AND GOLDCLIFF (03)

KEY:

- IDB REENS
- NRA REENS
- FIELD DITCHES

Based on the Ordnance Survey 1:25,000 map with the permission of the Controller of Her Majesty's Stationary Office, Crown Copyright reserved 198



GWENT LEVELS - WHITSON

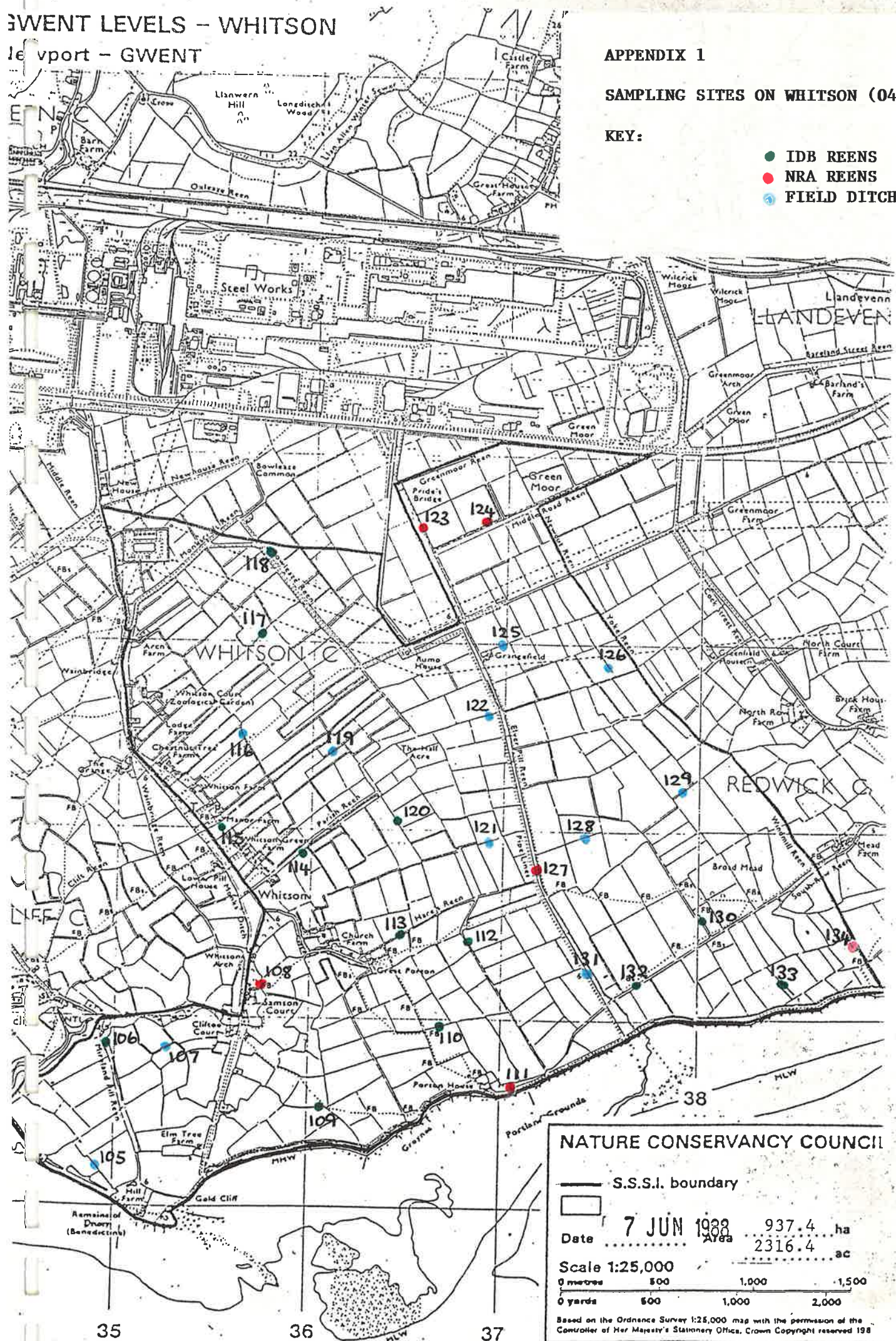
Levport - GWENT

APPENDIX 1

SAMPLING SITES ON WHITSON (04)

KEY:

- IDB REENS
- NRA REENS
- FIELD DITCHES



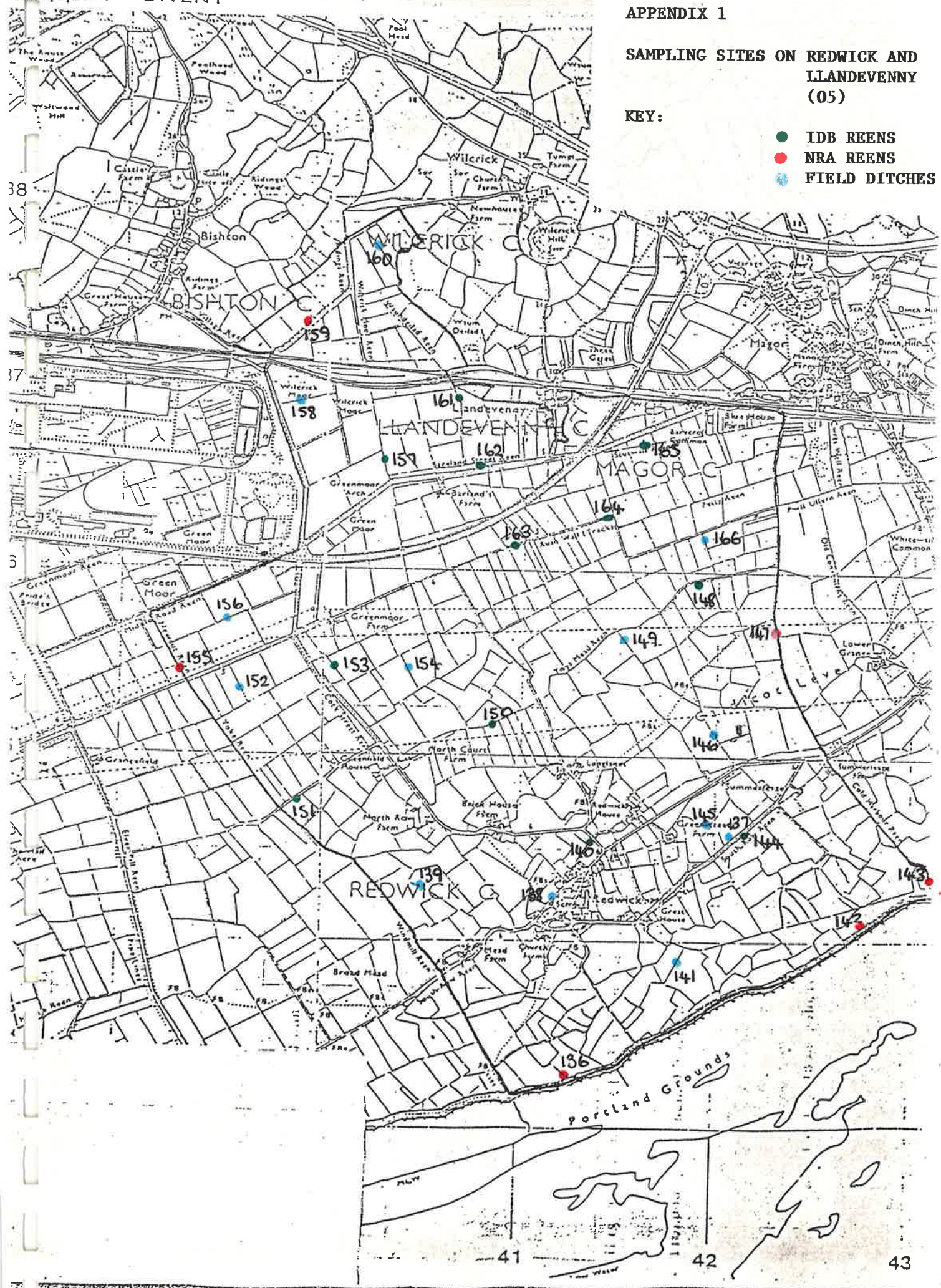
GWENT LEVELS - REDWICK & LLANDEVENNY Newport - GWENT

APPENDIX 1

SAMPLING SITES ON REDWICK AND LLANDEVENNY (05)

KEY:

- IDB REENS
- NRA REENS
- FIELD DITCHES



NATURE CONSERVANCY COUNCIL

S.S.I. boundary

Date

Area

Scale 1:25,000

0 metres

500

1000

1500

2000

2500

3000

3500

4000

4500

5000

5500

6000

6500

7000

7500

8000

8500

9000

9500

10000

10500

11000

11500

12000

12500

13000

13500

14000

14500

15000

15500

16000

16500

17000

17500

18000

18500

19000

19500

20000

20500

21000

21500

22000

22500

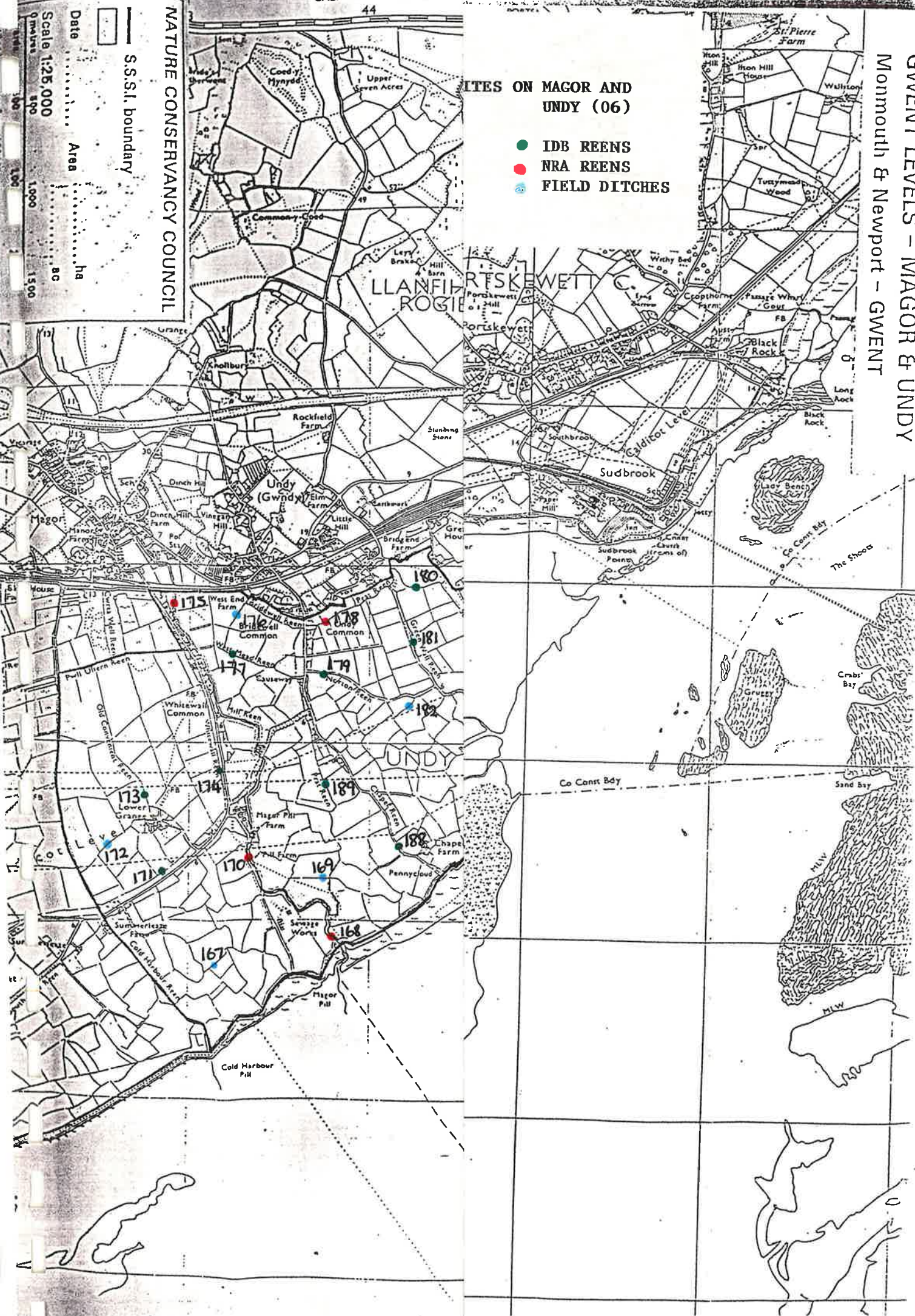
23000

23500

24000

SITES ON MAGOR AND
UNDY (06)

- IDB REENS
- NRA REENS
- FIELD DITCHES

GWENT LEVELS - MAGOR & UNDY
Monmouth & Newport - GWENT

APPENDIX 2

TOTAL SPECIES LIST

Acer campestre
Acer pseudoplatanus
Achillea millefolium
Agrimonia eupatoria
/ Agrostis capillaris
/ Agrostis stolonifera
Algae sp.
Alisma lanceolata
/ Alisma plantago-aquatica
Alnus glutinosa
Alopecurus bulbosus
Alopecurus geniculatus
Alopecurus pratensis
/ Angelica sylvestris
Anthoxanthum odoratum
Anthriscus sp.
Anthriscus sylvestris
Apium graveolens
Apium nodiflorum
Arctium lappa
Arrhenatherum elatius
Artemisia vulgaris
Arum maculatum
Aster tripolium
Athyrium filix-femina
Atriplex hastata
Azolla filiculoides

Barbarea vulgaris
Bellis perennis
/ Berula erecta
Beta vulgaris
Betula sp.
Bidens tripartita
Brachypodium sylvaticum
Brassica sp.
Briza media
Bromus commutatus
Bromus hordeaceus
Bromus sterilis
Bryonia dioica
Butomus umbellatus

Callitriche brutia
Callitriche platycarpa
Callitriche stagnalis
/ Callitriche sp.
Calystegia sepium
Capsella bursa-pastoris
Cardamine flexuosa
Cardamine hirsuta
Cardamine pratensis

Carex acutiformis
Carex flacca
Carex hirta
Carex otrubae
Carex ovalis
Carex panicea
Carex pseudocyperus
Carex remota
Carex riparia
Carex spicata
Carex sp.
Carex vesicaria
Catabrosa aquatica
Centaurea nigra
Centaureum erythraea
Cerastium fontanum
Ceratophyllum demersum
Ceratophyllum submersum
Chaerophyllum temulentum
Chara sp.
Chenopodium album
Chrysanthemum leucanthemum
Circaea lutetiana
Cirsium arvense
Cirsium palustre
Cirsium vulgare
Clematis vitalba
Cochlearia officinalis
Conium maculatum
Convolvulus arvensis
Corylus avellana
Crataegus monogyna
Crepis biennis
Crepis capillaris
Crepis sp.
Crepis vesicaria
Cynosurus cristatus

Dactylis glomerata
Dactylis sp.
Daucus carota
Deschampsia cespitosa
Dipsacus fullonum
Dryopteris affinis
Dryopteris borreri
Dryopteris filix-mas

Eleocharis palustris
Elodea canadensis
Elodea nuttallii
Elymus repens
Epilobium hirsutum
Epilobium montanum
Epilobium parviflorum
Epilobium tetragonum
Equisetum arvense
Equisetum fluviatile
Equisetum palustre

Lythrum salicaria

Matricaria matricarioides

Matricaria occidentalis

Medicago lupulina

Melilotus sp.

Mentha aquatica

Moss sp.

Myosotis arvensis

Myosotis laxa

Myosotis scorpioides

Myosotis sp.

Myosoton sp.

Myriophyllum spicatum

Nasturtium officinale

Oenanthe aquatica

Oenanthe crocata

Oenanthe fistulosa

Ononis repens

Ononis spinosa

Ophioglossum vulgatum

Phalaris arundinacea

Phleum pratense

Phragmites australis

Phyllitis scolopendrium

Picris echioides

Plantago lanceolata

Plantago major

Poa annua

Poa pratensis

Poa subcaerulea

Poa trivialis

Polygonum amphibium

Polygonum aviculare

Polygonum hydropiper

Polygonum lapathifolium

Polygonum persicaria

Polygonum sp.

Potamogeton berchtoldii

Potamogeton crispus

Potamogeton natans

Potamogeton obtusifolius

Potamogeton pectinatus

Potamogeton pusillus

Potamogeton trichoides

Potamogeton sp.

Potentilla anserina

Potentilla reptans

Potentilla sterilis

Primula veris

Prunella vulgaris

Prunella sp.

Prunus spinosa

Pulicaria dysenterica

Quercus robur

Ranunculus acris
Ranunculus baudotii
Ranunculus bulbosus
Ranunculus circinatus
Ranunculus ficaria
Ranunculus omiophyllus
Ranunculus peltatus
Ranunculus repens
Ranunculus sardous
Rorippa palustris
Rorippa sp.
Rosa canina
Rosa sp.
Rubus fruticosus
Rumex acetosella
Rumex acetosa
Rumex conglomeratus
Rumex crispus
Rumex hydrolapathum
Rumex obtusifolius
Rumex sanguineus
Rumex sp.

Sagittaria sagittifolia
Salix caprea
Salix fragilis
Salix sp.
Salix viminalis
Sambucus nigra
Scirpus maritimus
Scrophularia nodosa
Scutellaria galericulata
Senecio jacobea
Silene dioica
Sison amomum
Sison sp.
Sisymbrium officinale
Sisymbrium sp.
Solanum dulcamara
Sonchus asper
Sonchus arvensis
Sonchus oleraceus
Sparganium erectum
Stachys palustris
Stachys sylvatica
Stellaria alsine
Stellaria graminea
Stellaria media
Stellaria neglecta
Symphytum officinale
Symphytum sp.

Tamus communis
Taraxacum sp.
Torilis japonica
Trifolium campestre

Trifolium dubium
Trifolium pratense
Trifolium repens
Tripleurospermum inodorum
Tripleurospermum maritimum
Trisetum flavescens
Tussilago farfara
Typha angustifolia
Typha latifolia

Ulmus glabra
Ulmus sp.
Urtica dioica

Veronica beccabunga
Veronica catenata
Veronica persica
Veronica serpyllifolia
Vicia bithynica
Vicia cracca
Vicia hirsuta
Vicia sativa
Vicia sepium
Vicia sylvatica
Vicia tetrasperma
Vicia sp.
Viola sp.
Viscum album

Wolffia arrhiza

Zannichellia palustris

KEY TO APPENDICES 3-8

Al:	<i>Alisma lanceolatum</i>
Bu:	<i>Butomus umbellatus</i>
Cp:	<i>Carex pseudocyperus</i>
Ga:	<i>Catabrosa aquatica</i>
Cd:	<i>Ceratophyllum demersum</i>
Hm:	<i>Hydrocharis morsus-ranae</i>
Ln:	<i>Lathyrus nissolia</i>
Lg:	<i>Lemna gibba</i>
Lp:	<i>Lemna polyrhiza</i>
Lt:	<i>Lemna trisulca</i>
Oa:	<i>Oenanthe aquatica</i>
Pb:	<i>Potamogeton berchtoldii</i>
Po:	<i>Potamogeton obtusifolia</i>
Pp:	<i>Potamogeton pusillus</i>
Rc:	<i>Ranunculus circinatus</i>
Rt:	<i>Ranunculus tricophyllus</i>
Rh:	<i>Rumex hydrolapathum</i>
Ss:	<i>Sagittaria sagittifolia</i>
Vc:	<i>Veronica catenata</i>
Zp:	<i>Zannichellia palustris</i>
Mv:	<i>Myriophyllum verticillatum</i>
Rb:	<i>Ranunculus baudotii</i>
Ao:	<i>Althaea officinalis</i>
Pt:	<i>Potamogeton trichoides</i>
Cs:	<i>Ceratophyllum submersum</i>
Wa:	<i>Wolffia arrhiza</i>

APPENDIX 3

NRA/IDB REENS - MAGOR AND UNDY

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	IDB/ NRA	NOTES
168	Mill	43828495	8	3	B	Cd	NRA	
170	Mill	43368536	17	24	A	Cd Lp Lt Po Pp Pt	NRA	Potamogeton obtusifolia Potamogeton trichoides
171	Whitewall	42858527	5	0	C-		IDB	
173	Old Convenient	42758572	3	0	D		IDB	
174	Whitewall	43158596	4	0	D		IDB	
175	Mill	42928677	7	0	C		NRA	
177	West Mead	43258649	7	4	C	Lp	IDB	
178	Prat	43798672	9	3	C-	Ca	NRA	
179	Norton	43768639	3	5	B-	Lg Lp	IDB	Poor for aquatics Good banks
180	Seawall	44268687	8	0	D		IDB	
181	Greenwall	44258650	8	2	C	Lg Lt	IDB	Alisma lanceolata found nearby
183	Moor Ditch	44698694	16	5	B-	Ca Lt Vc	IDB	
185	Collister Pill	44848624	20	10	A	Lp Lt Pp Vc	NRA	
186	Rogiet Moor	45318580	14	7	B	Lt Rt Vc	NRA	

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	IDB/ NRA	NOTES
187	Petty	44508595	5	5	C	Lg Lp	IDB	
188	Chapel	44158545	2	1	C-	Lg	IDB	Polluted
189	Prat	43778574	9	5	C	Lg Lp	IDB	
190	Moor Ditch	45648604	5	0	D		IDB	
191	Rogiet Moor	46518638	13	0	C		NRA	
192	Town Pil	46548672	2	0	C-		IDB	
193	Ifton	47128674	4	1	D	Bu	NRA	
194	Common Sea	47128674	5	1	C	Lt	NRA	
195	Common Sea	48558724	9	19	B+	Pt Rb Zp	NRA	

NRA/IDB REENS - NASH AND GOLDCLIFF

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	IDB/NRA	NOTES
77	Saltmarsh	34708264	12	16	A-	Lg Lt Zp Wa	IDB	Wolffia arrhiza
78	Cross	34958350	21	34	A	Cd Cs Lg Lt Pb Pt Wa	IDB	Wolffia arrhiza, Cerato-phyllum submersum, Potamogeton trichoides
81	Skimmers	34278336	12	18	B+	Cd Lg Lt Pt Rt	IDB	Potamogeton trichoides?
82	Windmill	34808402	5	4	C-	Cd Lg	IDB	
83	Julians	34478433	13	14	B-	Hm Lg Lp Lt Pp	NRA	
90	Julians	35368636	12	1	C	Lg	IDB	
91	Ellen	36278584	8	5	C	Hm Lg	IDB	
92	Common	35918514	7	4	D	Cd Lg	IDB	
93	Chapel	36123515	14	18	B	Hm Lg Lp Pp Rt	IDB	
94	Blackwall	36853580	12	12	B	Hm Lp Pp	IDB	
95	Monkscroft	36778478	17	22	A	Hm Lp Pb Pp Pt	IDB	Potamogeton trichoides

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	IDB/NRA	NOTES
97	Wainbridge	37138413	18	10	B-	Hm Lg Lp Lt	IDB	
98	Clift	37138383	15	9	B	Hm Lg Lp	IDB	
99B	Monks Ditch	37668353	9	4	D	Lp	NRA	Apparently polluted
100	Chapel	83328351	27	28	A	Cd Hm Lg Lp Lt Pb Pp Pt	NRA	Potamogeton trichoides
101	Saltmarsh	36538303	11	7	B-	Pb Vc Zp	IDB	

NRA/IDB REENS - REDWICK AND LLANDEVENNY

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	IDB/NRA	NOTES
136	Redwick Seawall	41253328	10	1	B	Lt	NRA	
140	Stallhouse	41358450	2	3	B	Cp	IDB	
142	Redwick Seawall	42778410	11	11	A	Rb Zp	NRA	
143	Cold Harbour	43128433	10	11	A	Bu Hm Lt Vc Zp	NRA	
144	South Row	42138456	10	16	A-	Cd Hm Lp Lt Pp	IDB	
147	Cold Harbour North	42308569	8	12	C	Ca Hm Lg Lp	NRA	
148	Ynyswall	41898595	10	12	B-	Hm Lp Pp	IDB	
150	Ynysmead	40868520	11	5	C	Lg Lp	IDB	
151	Ynysmead	39888475	7	11	C-	Ca Hm Lp	IDB	
153	Cockstreet	40053545	5	4	D	Lp	IDB	Polluted water
155	Newcut	39288547	22	17	A	Cd Hm Lg Lp Lt Ss	NRA	
157	Wilcrick Moor	40298658	10	9	B	Lp Lt Pp	IDB	
159	Ridings	39858729	7	4	C+	Lp	NRA	
161	Waundellad	40653693	4	4	C	Lp	IDB	
162	Bareland Street	40768657	11	17	B+	Cd Hm Lg Lp Lt Pp	IDB	

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVA-TION GRADE	RARE SPECIES	IDB/NRA	NOTES
163	Rushwall	40958614	23	17	B+	Cp Hm Lp Lt Vc Zp	IDB	
164	Rushwall	41388628	26	14	A-	Ca Hm Lp Lt Pb	IDB	
165	Stutwall	41478666	14	9	B	Hm Lp Lt	IDB	

NRA/IDB REENS - RUMNEY AND PETERSTONE

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	IDB/ NRA	NOTES
1	Rhosog Fach	22947767	7	13	B-	Pb Rb Zp	NRA	
3	Pil Melyn	23597805	13	4	B	Cd Lt	IDB	
4	Rumney Great Wharf	24077820	8	1	C-	Lg	NRA	
6	Rhosog Fach	22667875	22	13	C-	Cd Hm Lg Lp Lg Vc	NRA	
7	Rhosog Fawr	23667925	15	9	B+	Cd Lp Pb	IDB	
8	Rhosog Fawr	24827906	17	22	B+	Ca Cd Hm Lp Pp Zp	IDB	
10	Ty-du	24467954	13	6	B-	Ca Cd	IDB	
11	Pil-du	23807985	19	8	B	Bu Cd Pp	IDB	
12	Pil-du	24238015	12	8	C+	Bu Cd Pp	IDB	
13	Torwick	25027965	10	1	C-	Bu	NRA	
14	Faendre	24858054	18	9	A	Bu Hm Pp	IDB	
16	Greenlane	25918072	17	11	B	Hm Lp Lt Pp	IDB	
16C	Wood Ditch	25688155	21	8	B	Lp Zp	IDB	
17	Peterstone Great Wharf	25877936	10	7	B+	Pb Rt	NRA	
18	Rhosog Fawr	26068017	17	19	A-	Ca Cd Hm Lg Lp Po	NRA	

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	IDB/NRA	NOTES
21	Ty-ffynon	25178105	17	15	A-	Cd Hm Lp Lt Pb Rh	IDB	
22	Little Greenlane	25218177	22	11	B	Cd Hm Lp	IDB	
23	Wood Ditch	25418228	2	0	C-		IDB	
25	Wood Ditch	26378175	17	12	A-	Cd Hm Lg Lp	IDB	
26	Cross	25988090	18	12	A-	Cd Hm Lp Lt	IDB	
27	Peterstone Watercourse	26588041	10	2	C+	Lg Lt	IDB	
31	Peterstone Watercourse	27358067	12	7	B-	Hm Lg Lt Vc	IDB	
32	Rhosog Fawr	26638070	17	17	A	Ca Hm Lg Lp Lt Pp	NRA	
34	Blackwater	26608157	12	9	B	Hm Lp Lt	IDB	
35	Longcross	23527894	14	11	B-	Ca Cd Hm Lg	IDB	

NRA/IDB REENS - ST BRIDES

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	IDB/NRA	NOTES
37	Church	26228275	18	5	B	Vc Zp	IDB	
38	Pwllbargod	26368300	9	8	B	Hm Lp	IDB	
39	Nant-y-selsig	26428334	6	4	C-	Lp	IDB	
40	Tyn-y-Brwyn	26958309	13	13	C	Cd Hm Lg Lt Lp	IDB	
41	Cowleaze	27138343	13	12	B-	Cd Hm Lp Lt	IDB	
42A	Nant-y-Moor	27928367	15	1	C+	Lg	IDB	
42B	Drenewydd	27438310	19	31	A	Ca Hm Lp Pp Pt Ss Zp	NRA	
43	Drenewydd	26588215	13	15	C+	Ca Hm Lp Pp	NRA	
45	Percoed	28538357	19	16	B+	Hm Lp Lt Pb Rt	IDB	
47	Penning	26908220	22	13	A-	Ca Hm Lg Lp Lt	IDB	
48	Summerway	27068190	21	23	A	Cd Hm Lg Lp Lt Pb Pt	IDB	
49	Broadway	26858150	24	16	B+	Cd Hm Lp Lt Pp	NRA	

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	IDB/NRA	NOTES
50	Horsecroft	27418188	23	25	A	Ca Hm Lg Lp Lt Pt Zp	IDB	
52	Summerway	27798101	6	1	C-	Lg	IDB	
53	Percoed	28918390	20	18	A-?	Ca Hm Lp Lt Pb Ss	IDB	Vicia bithynica
54	Hawse	28468185	16	12	B+	Hm Lp Pp	IDB	
57	Hawse	28818120	11	9	B	Hm Lg Pp	NRA	
60	Sealand	29008180	18	26	A	Ca Cd Hm Lg Lp Lt Pb Pt	IDB	Potamogeton trichoides
61	Sunnybank	29028252	10	4	B	Ca Lg	IDB	
62	Wheellane	28988303	16	17	A	Hm Lp Lt Pt Zp	IDB	Potamogeton trichoides
63	Morfa Gronw	29198397	19	14	B+	Ca Hm Lp Lt Pb	IDB	
64A	Old Dairy	29838437	9	4	C	Hm	IDB	
64B	Old Dairy	29738438	8	5	B	Hm Lg	IDB	
65	Pont-y-Cwch	30368450	19	15	A	Hm Lg Lp Pb Pp	NRA	
67	New Dairy	30478365	15	17	B	Ca Hm Lg Lp Lt Ss	IDB	

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	IDB/NRA	NOTES
68	Morfa Gronw	29778363	16	10	B	Hm Lg Lp Lt	IDB	
69	Wharf	30868283	21	21	B+	Bu Ca Cd Hm Lg Lp Lt Pp	IDB	
70	Wharf	30708230	22	12	B	Ca Cd Hm Lg Lt	IDB	
73	Sealand	29978307	16	16	B	Cd Hm Lg Lp Pp	IDB	
74	Wharf	31178350	13	9	B+	Hm Lt Zp	NRA	
75	Seawall	30238525	10	5	C	Hm Lg	IDB	

NRA/IDB REENS - WHITSON

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	IDB/NRA	NOTES
106	Mireland Pil	36948285	11	11	B	Cd Lp Pp	IDB	
108	Monks Ditch	37768317	9	4	D	Lp	NRA	
109	Mireland Pil	38058253	11	14	A-	Cd Lg Lp Pb Pp	IDB	
110	Porton	38668297	15	5	C-	Lg Pp	IDB	
111	Portland Seawall	39078264	14	20	B+	Lt Ms Pp Rb Zp	NRA	
112	Newport Road	38828342	11	11	B+	Hm Lg Lt Ln	IDB	Lathyrus nissolia
113	Hares	38463345	12	10	C	Hm Lg Lp Lt	IDB	
114	Parish	38468343	6	0	C-		IDB	
115	Parish	37548399	21	10	B	Hm Lp Pb	IDB	
117	Crabtree	37688500	23	24	A	Hm Lg Lp Lt Pb Pp Rc Rt	IDB	
118	Bowleaze	37758548	17	12	B+	Hm Lp Lt Rc	IDB	
120	Whitson	38448404	10	6	B-	Hm Lg Lt	IDB	
123	Elver Pill	38588559	15	20	A	Hm Lt Pp Pt Rc	NRA	

1988 SURVEY - WHITSON

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
37 (118 1991)	Bowleaze	377855	9	5	Hm Lt	Not very similar in 1991

1988 SURVEY - ST BRIDES

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
03 (42 1991)	Drenowydd	275831	13	24	Hm Lp Pp Pt Ss	
07 (70 1991)	Wharf	307824	14	20	Cd Hm Lt Pp Pt	
05 (57 1991)	Hawse	288811	11	11	Cd Lp Pp	
16 (62 1991)	Summerway (Wheel Lane)	278810	11	13	Hm Lg Lp Pp	
20 (67 1991)	New Dairy	305835	12	27	Cd Hm Lg Lp Lt Pb Pp Pt	

1988 SURVEY - RUMNEY AND PETERSTONE

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
22 (14 1991)	Faendre	248805	13	4	Bu Cd	
01 (01 1991)	Peterstone Great Wharf (Rumney Great Wharf)	229776	4	13	Pp Pb Rb	
08 (08 1991)	Rhosog Fawr	248791	10	12	Cd Lt Pt	
12 (32 1991)	Rhosog Fawr	266807	11	13	Hm Lp Lt Pp	
13 (23 1991)	Wood Ditch		3	0		

1988 SURVEY - REDWICK AND LLANDEVENNY

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
28 (143 1991)	Cold Harbour	431843	11	13	Lp Pt Rh	
40 (140 1991)	Stallhouse	413845	10	5	Lg Lp	
41 (164 1991)	Rushwall South	414863	12	17	Hm Lp Lt Pt	
44 (165 1991)	Stutwall	415807	8	4	Hm	

1988 SURVEY - NASH AND GOLDCLIFF

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
23 (100 1991)	Chapel	363835	16	21	Hm Lg Lp Pp Pt	
34 (94 1991)	Blackwall	368858	6	0		In 1991 a good diverse reen - no similarity
36 (98 1991)	Clift		13	21	Hm Lp Pp Pt Rh	

1988 SURVEY - MAGOR AND UNDY

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
30 (1991 175)	Mill	429868	3			Similar, lacking aquatics and no rarities on both visits
46 (1991 177)	West Mead	432865	6	4	Lp	Very similar
48 (1991 188)	Chapel	441854	3	2	Lg Rh	Very similar. Species poor

APPENDIX 8

1982/83 SURVEY - WHITSON

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
106	Mireland Pill	36948285 (369829)	9	1	Lg	Similar, Potamogeton pusillus and Potamogeton crispus found in 1991 only
114	Parish	38468343 (381840)	10	8	Hm Lp	Similar. Hydrocharis morsus-ranae not found in 1991
117	Crabtree	37688500 (376850)	12	15	Hm Lp Pp Rc	Very similar, but higher rarity and diversity scores with Ranunculus trichophyllus in 1991
123	Elver Pill	38588559 (387854)	16	13	Hm Pb Pp Rc	Higher rarity scores in 1991 with Potamogeton trichoides
124	Middle Road	38868564 (390857)	11	5	Hm Lt	Higher diversity and rarity scores in 1991, poor by comparison 1983
134	Windmill	40848340 (406838)	13	10	Hm Lg Lp Vc	Similar but Hydrocharis morsus-ranae and Veronica catenata not found in 1991

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
70	Wharf	30708230 (307824)	16	17	Cd Hm Lg Lt Zp Pp	Similar but lower rarity score in 1991. Zannichellia palustris and Potamogeton pusillus not recorded in 1991
73	Sealand	29978307 (301832)	8	4	Lp	Scores much higher in 1991 with frequent Potamogeton pusillus and Potamogeton crispus
75	Sea Wall	30238525 (303853)	15	3	Lg Pb	Very similar banks. Less aquatics in 1991, Hydrocharis morsus-ranae in 1991

1982/83 SURVEY - ST BRIDES

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
37	Church	26228275 (263827)	18	9	Hm Lp Lt	Fairly similar species composition, but totally different 'rarities'
40	Tyn-y-bryn	26958309 (269831)	6	5	Lg Lp	Higher scores in 1991, with more aquatics recorded
47	Penning	26908220 (270825)	11	12	Cd Hm Lg Lp	1991 site 200 m SW. Very similar with Potamogeton natans on both visits, but less species recorded in 1982/83
48	Summerway	27068190 (271819)	19	12	Cd Hm Lg Lp	Scores a lot higher for rarity in 1991 having Potamogeton berchtoldii and Potamogeton trichoides
50	Horsecroft	27418188 (275819)	24	13	Ca Hm Lg Lp Vc	Similar, but Potamogeton trichoides and Zannichellia palustris found only in 1991
52	Summerway	27798101 (278812)	8	1	Lg	Very similar to 1991
57	Hawse	28818120 (289810)	14	5	Lg Lp	Very similar. Hydrocharis morsus-ranae only found in 1991
62	Wheel Lane	28988303 (289829)	9	1	Lg	Scores much higher in 1991 with abundant Potamogeton trichoides
64A	Old Dairy	29838437	7	8	Ca Hm Lg	Quite similar, but lower rarity score in 1991
64B	Old Dairy	29738438 (296844)	5	8	Ca Hm Lg	Very similar in 1991

1982/83 SURVEY - RUMNEY AND PETERSTONE

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
8	Rhosog Fawr	24827906 (249791)	23	7	Cd Hm	Similar diversity on both surveys. Higher rarity, Zannichellia palustris, Potamogeton pusillus, in 1991
16C	Wood Ditch	25688155 (257815)	6	4	Lp	Water a lot clearer in 1991. Higher scores in 1991 (21 diversity). Zannichellia palustris found only in 1991
32	Rhosog Fawr	26638070 (266807)	13	8	Cd Hm Lg	Higher diversity and rarity scores in 1991 with Potamogeton pusillus

1982/83 SURVEY - REDWICK AND LLANDEVENNY

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
140	Stallhouse	41358450 (414845)	8	12	Cp Lt Pt	Much lower interest in 1991, dominated by Potamogeton crispus. Potamogeton trichoides only recorded in 1982/1983
143	Cold Harbour	43128433 (431844)	22	23	Bu Cd Hm Lp Lt Pb Pt	Myriophyllum spicatum and Potamogeton trichoides not found in 1991. Still quite similar. Zannichellia palustris found only in 1991
147	Cold Harbour	42308569 (423857)	11	8	Hm Lp	Not very similar species composition. Catabrosa aquatica found in 1991 only
151	Ynys Mead	94888475 (398847)	12	4	Lp	Very similar
155	New Cut	39288547 (393854)	7	15	Cd Hm Lp Ss	Similar species composition
161	Waundeilad	40653693 (405872)	8	4	Lp	Not very similar species composition but similarly poor

1982/83 SURVEY - NASH AND GOLDCLIFF

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
83	Julians	34478433 (344843)	12	3	Lg Lt Vc	Similar, but higher rarity score in 1991
90	Julians	85368636 (853862)	15	10	Hm Lg Lp Lt	Very similar on both visits, slightly poorer in 1991
92	Common	35918514 (358852)	7	5	Cd Lg	Similarly poor on both visits
95	Monkscroft	36778478 (365845)	15	25	Cd Hm Lg Lp Lt Pp Pt	Very similar Potamogeton trichoides found on both surveys
97	Wainbridge	37138413 (372839)	13	18	Hm Lp Pb Pt	Poorer for aquatics in 1991. Potamogeton trichoides found only in 1982/1983
98	Clift	37138383	6	7	Cd Lp	Not very similar. Richer in 1991, but quadrat not in the same place
99B	Monks Ditch	37668353 (374840)	13	4	Lp	Potamogeton perfoliatus and Potamogeton pectinatus found only in 1982/1983. Very poor for aquatics in 1991
100	Chapel	36308355 (365833)	12	7	Cd Hm	Greater diversity in 1991. Potamogeton trichoides found only in 1991

1982/83 SURVEY - MAGOR AND UNDY

SAMPLE NO	REEN NAME	GRID REF	DIVERSITY SCORE	RARITY SCORE	RARE SPECIES	NOTES
168	Mill (Chapel Farm sea wall)	43828495 (440849)	13	4	Ca Lg	Less species-rich in 1991, quite different species composition
171	Whitewall (Pill Street)	42858527 (431853)	5	4	Lp	Similarly poor on both visits
173	Old Convenient	42758572 (425861)	5	1	Lg	Similarly poor on both visits
194	Common Sea (Rogiet Moor)	47128674 (473868)	12	2	Lg Lt	Less species-rich in 1991. Ranunculus trichophyllus abundant in 1983. Scirpus maritima, Carex otrubae and Alisma plantago- aquatica present on both visits

APPENDIX 7

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
129	Field Ditch 39923422	17	50-75%	SE - no NW - part	SE - no NW - part	Ley		Hedged

ASSESSMENT OF BANKS

BANKS WITH LOW INTEREST - WHITSON

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
105	Field Ditch 36918222	12	Minimal	No	No	Permanent pasture		Species poor. Phragmites dominated reed
107	Field Ditch 37268284	26	75-100%	SE - no NW - part	No	Permanent pasture		Dominated by Crataegus monogyna
108	Monks Ditch 37768317 NRA	32	Minimal	E - part W - no	E - part W - no	E - permanent pasture W - farm-yard		Banks disturbed, behind farm buildings
116	Field Ditch 37648463	19	NE - 75-100% SW - 25-50%	No	No	Ley		Shows little interest
122	Field Ditch 38878462	21	75-100%	S - part N - no	S - part N - no	S - permanent pasture N - ley		Dominated by Crataegus monogyna hedge
125	Field Ditch 38998499	17	75-100%	No	No	Permanent pasture		Hedged. Botanically uninteresting
126	Field Ditch 39568489	25	75-100%	No	No	Ley		Hedged. Lots of Urtica dioica

ASSESSMENT OF BANKS

BANKS WITH LOW INTEREST - ST BRIDES

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
46	Field Ditch 27648260	24	NE - , minimal SW - 50-75%	No	No	Ley		Species include Phragmites communis, Crataegus monogyna
66	Field Ditch 30148333	26	75-100%	No	SE - part NW - no	Permanent pasture		Hedged with Prunus spinosa and Crataegus monogyna

ASSESSMENT OF BANKS

BANKS WITH LOW INTEREST - RUMNEY AND PETERSTONE

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
2	Field Ditch 22677827	27	Minimal	No	No	Ley		Disturbed and seems polluted. Species include Oenanthe crocata, Phragmites australis, Bidens tripartita
5	Field Ditch 23857870	33	Minimal	Part	Part	Ley		"Very poor bank", although relatively species-rich.
19	Field Ditch 25408069	21	85%	Part	Part	Permanent pasture		Hedged and heavily shaded with Salix sp.
29	Field Ditch 27188041	13	Minimal	No	No	NE - arable SW - permanent pasture		Poor banks. Reen dominated by Phragmites communis

ASSESSMENT OF BANKS

BANKS WITH LOW INTEREST - REDWICK AND LLANDEVENNY

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
145	Field Ditch 41948463	25	75-100%	Part	Part	Permanent pasture		Hedged, very shaded
146	Field Ditch 41998512	20	50-100%	NE - part SW - no	No	Ley		Hedged
156	Field Ditch 39548573	18	75-100%	No	No	Permanent pasture		Hedged and species poor
160	Field Ditch 40228776	16	50-100%	No	No	NE - permanent pasture SW - ley		Hedged and species poor

ASSESSMENT OF BANKS

BANKS WITH LOW INTEREST - NASH AND GOLDCLIFF

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
76	Field Ditch 36308278	22	75-100%	SE - part NW - no	No	Permanent pasture		Hedged with Crataegus monogyna, poor reën
79	Field Ditch 35278264	17	50-75%	Part	Part	Permanent pasture		Hedged with Crataegus monogyna
103	Field Ditch 35628341	21	90-100%	Part	Part	Permanent pasture		Hedged with Crataegus monogyna

ASSESSMENT OF BANKS

BANKS WITH LOW INTEREST - MAGOR AND UNDY

SAMPLE NO	REEN NAME AND GRID REF	ND OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
167	Field Ditch 43168478	20	50-100%	No	No	Permanent pasture		Hedged
169	Field Ditch 43748524	14	50+%	Heavy	Heavy	Permanent pasture		Very heavily trampled and grazed, therefore species poor
173	Old Con- venient 42758572 IDB	14	Minimal	No	No	E - arable W - ley		Hedged on one bank. Very species poor
174	White- wall 43158596 IDB	17	Minimal	No	No	E- arable W - ley		Species poor. A generally poor rean
178	Prat 43798672 NRA	14	Minimal	No	No	Permanent pasture		"Banks very poor"
180	Sea Wall 44268687 IDB	30	Minimal	No	No	N - permanent pasture S - ley		Arable weeds on bank. Poached. Poor
182	Field Ditch 44178621	17	75-100%	Part	No	Permanent pasture		Hedged. Species poor

APPENDIX 6B

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
64B	Black-wall 29738438 NRA	33	Minimal	No	No	NE - woodland SW - road		"Lovely banks". Species include Filipendula ulmaria, Phalaris arundinacea, Vicia hirsuta
65	Pont-y- cwcw 30368450 NRA	35	Minimal	NE - no SW - part	NE - no SW - part	NE - road SW - permanent pasture		"Good diverse banks". Species include Filipendula ulmaria, Mentha aquatica, Lotus uliginosus, Stachys palustris

ASSESSMENT OF BANKS

BANKS WITH HIGH DIVERSITY AND INTEREST - ST BRIDES

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
53	Percoed 28918390 IDB	24	Minimal	No	No	S - lane N - ley	Lathyrus nissolia, Vicia bithynica	Excellent banks, quite steep. Species include Carex acutiformis, Filipendula ulmaria, Iris pseudacorus, Lathyrus nissolia, Vicia bithynica, Vicia cracca
61	Sunny-bank 2908252 IDB	45	Minimal	E - no W - part	E - no W - part	E - lane W - ley		Species-rich banks. Species include Carex remota, Iris pseudacorus, Lycopus europaeus, Vicia hirsuta, Vicia cracca
64A	Black-wall 29838437 NRA	37	Minimal	No	No	NE - scrub SW - road	Vicia sylvatica	Scrub with lush flora. Species include Filipendula ulmaria, Dryopteris borrealis, Athyrium filix-femina, Vicia hirsuta, Vicia sylvatica

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
25	Wood Ditch 25958150 IDB	40	Minimal	S - part N - no	No	S - permanent pasture N - residential		Rich and diverse banks. Species include Angelica sylvestris, Carex otrubae, Carex riparia, Filipendula ulmaria, Lathyrus pratensis
32	Rhosog Fawr 26638070 NRA	49	Minimal	N - part S - no	No	S - road N - ley		Extremely species- rich banks. Species include Filipendula ulmaria (abundant), Lathyrus pratensis, Vicia cracca, Vicia sativa

ASSESSMENT OF BANKS

BANKS WITH HIGH DIVERSITY AND INTEREST - RUMNEY AND PETERSTONE

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
10	Ty-Du 24467954 IDB	40	Minimal	No	No	Permanent pasture		Good diverse banks. Species include Carex otrubae, Phragmites communis, Vicia sativa, Vicia cracca, Lathyrus pratensis
18	Rhosog Fawr 26068017 NRA	29	Minimal	No	S - part N - no	Permanent pasture		"Very good banks". Species include Carex otrubae, Lycopus europaeus, Lathyrus pratensis
24	Field Ditch 25558128	31	75-100%	Part	N - part S - No	Permanent pasture	Vicia bithynica	Banks interesting, though reed itself not very good. Species include Carex flacca, Carex remota, Vicia cracca and Vicia bithynica

ASSESSMENT OF BANKS

BANKS WITH HIGH DIVERSITY AND INTEREST - REDWICK AND LLANDEVENNY

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPFS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPFS	NOTES
140	Cocken-ton 41358450 IDB	40	Minimal	Part	NW - no SE - part	Permanent pasture	Carex pseudocyperus	Bank is good for sedges. Species include Carex pseudocyperus, Carex sp. (hybrid), Filipendula ulmaria
142	Redwick Sea Wall 42778410 NRA	37	Minimal	No	No	SE - road NW - AR		Species rich, deep banks with calcareous influence. Species include Carex flacca, Primula veris, Daucus carota, Agrimonia eupatoria
144	South Row 42138456 IDB	38	Minimal	No	No	SE - permanent pasture NW - road		"Good bank". Species-rich. Species include Filipendula ulmaria, Lathyrus pratensis, Agrimonia eupatoria
163	Rushwall 40958614 IDB	37	Minimal	No	N - no S - part	N - track S - permanent pasture		Good diverse banks. Species include Filipendula ulmaria, Lathyrus pratensis

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
132	Headlane 39703320 IDB	40	Minimal	No	No	SE - lane NW - permanent pasture		Rich and interesting lane with Lathyrus nissolia. Species include Vicia cracca, Vicia tetrasperma, Lathyrus pratensis

ASSESSMENT OF BANKS

BANKS WITH HIGH DIVERSITY AND INTEREST - NASH AND GOLDCLIFF

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
100	Chapel 83328351 NKA	40	Minimal	NE - part SW - no	NE - part SW - no	NE - permanent pasture SW - road		Rich banks. Species include abundant Filipendula ulmaria, Lycopus europaeus
123	Elverpil 38588559 NRA	38	Minimal	No	No	Derelict/ scrub		Species-rich. Species include Daucus carota, Trisetum flavescens, Stachys palustris
124	Middle Road 38868564 NRA	56	Minimal	No	No	SE - turf stripped NW - scrub	Ophioglossum vulgatum	Very rich diverse banks. Species include Carex remota, Mentha aquatica, Lotus uliginosus and Ophioglossum vulgatum

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
195	Common Sea 48558724 NRA	43	50-75%	No	No	N - ley S - sea wall		"Species-rich banks". Some calcareous influence. Species include Carex panicea, Carex flacca, Primula veris, Daucus carota, Centaureum erythraea
144	South Row 42138456	38	Minimal	No	No	SE - permanent pasture NW - road		"Good bank". Species-rich. Species include Filipendula ulmaria, Lathyrus pratensis, Agrimonia eupatoria.

ASSESSMENT OF BANKS

BANKS WITH HIGH DIVERSITY AND INTEREST - MAGOR AND UNDY

SAMPLE NO	REEN NAME AND GRID REF	NO OF SPPS	SHADE	GRAZING	TRAMPLING	SURROUNDING LAND	NOTABLE SPPS	NOTES
179	Norton 43768639 IDB	46	Minimal	No	No	N - road S - permanent pasture		Banks quite different. Road bank good, tall herb community. Species include Carex riparia, Mentha aquatica, Scrophularia aquatica, Filipendula ulmaria. Species-rich.
185	Collister Pill 44848624 NRA	42	Minimal	No	No	Permanent pasture		"East bank luxuriant". Species include Hypochaeris radicata, Vicia hirsuta, Ranunculus sceleratus

APPENDIX 6A

SUMMARY OF RESULTS				
	MAIN REENS			FIELD DITCHES
	TOTAL SAMPLED	NO. IDB	NO. NRA	TOTAL SAMPLED
Rumney and Peterstone	25	18	7	13
St Brides	31	24	7	9
Nash and Goldcliff	16	13	3	13
Whitson	19	13	6	11
Redwick and Llandevenny	18	12	6	13
Magor and Undy	23	13	10	6
TOTAL	133	97	36	64

	NO. OF FIELD DITCH SITES WITH CONSERVATION GRADE					NO. OF FIELD DITCH SITES WITH DIVERSITY SCORES					NO. OF FIELD DITCH SITES WITH RARITY SCORE						
	A	B	C	D	0-10	11-15	16-20	21-25	0	1-5	6-10	11-15	16-20	21-25	26-30		
Rumney and Peterstone	0	3	3	7	9	2	1	1	6	5	1	1	0	0	0		
St Brides	0	2	3	4	7	2	0	0	5	4	0	0	0	0	0		
Nash and Goldcliff	1	0	6	6	7	4	2	0	6	5	0	1	0	0	1		
Whitson	0	1	3	7	8	2	1	0	9	1	0	1	0	0	0		
Redwick and Llandeveyney	0	0	4	9	12	0	1	0	11	2	0	0	0	0	0		
Magor and Undy	0	0	3	3	4	2	0	0	6	0	0	0	0	0	0		

	NO. MAIN REEN SITES WITH CONSERVATION GRADE					NO. MAIN REEN SITES WITH DIVERSITY SCORE					NO. OF MAIN REEN SITES WITH RARITY SCORE						
	A	B	C	D	0-10	11-15	16-20	21-25	26-30	0	1-5	6-10	11-15	16-20	21-25	26-30	30+
Rumney and Peterstone	6	13	6	0	5	10	7	3	0	1	4	9	8	2	1	0	0
St Brides	8	16	7	0	7	7	11	6	0	0	8	4	8	6	3	1	1
Nash and Goldcliff	4	7	3	2	4	8	2	1	1	0	5	3	3	2	1	1	1
Whitson	5	10	3	1	3	11	3	2	0	1	6	3	4	2	3	0	0
Redwick and Llandeveyney	5	7	5	1	11	4	0	2	1	0	6	2	6	4	0	0	0
Magor and Undy	2	5	11	5	18	2	3	0	0	8	11	2	0	1	1	0	0

APPENDIX 5

FIELD DITCHES - WHITSON

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVA-TION GRADE	RARE SPECIES	NOTES
105	Field Ditch	36918222	4	0	D+		Phragmites dominated
107	Field Ditch	37268284	0	0	D		Hedged
116	Field Ditch	37648463	9	0	D		
119	Field Ditch	38108441	5	0	C		
121	Field Ditch	38948394	19	5	B-	Hm Lt	
122	Field Ditch	38878462	8	0	D		Hedged
125	Field Ditch	38998499	6	0	D		Hedged
126	Field Ditch	39568489	0	0	D		Hedged
128	Field Ditch	39438397	14	0	C		
129	Field Ditch	39923422	4	0	D		Hedged
131	Field Ditch	39358325	12	14	C	Lt Pt Rt	Potamogeton trichoides

FIELD DITCHES - ST BRIDES

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	NOTES
44	Field Ditch	28078300	6	0	D		Hedged
46	Field Ditch	27648260	5	5	D	Hm Lg	
51	Field Ditch	27688113	6	0	C		Phragmites dominated
55	Field Ditch	27838170	11	0	B-		
56	Field Ditch	28308100	6	5	C-	Lt Zp	
58	Field Ditch	29028136	13	5	B	Hm Lt	
59	Field Ditch	28498243	1	0	D		Hedged ditch
66	Field Ditch	30148333	0	0	D		Hedged
71	Field Ditch	30008240	5	1	C	Lg	

FIELD DITCHES - RUMNEY AND PETERSTONE

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	NOTES
2	Field Ditch	22677827	11	0	D		Polluted
5	Field Ditch	23857870	2	0	D		Phragmites dominated
9	Field Ditch	24557879	5	4	D	Hm	Phragmites dominated
16A	Field Ditch	25148147	14	13	B	Cd Hm Lp Pb	
16B	Field Ditch	25828082	24	9	B-	Hm Lp Lt	
19	Field Ditch	25408069	3	0	D		
20	Field Ditch	25378090	6	3	B-	Lg Pb	
24	Field Ditch	25558128	17	0	C+		
28	Field Ditch	27348018	2	0	D		Phragmites dominated
29	Field Ditch	27188041	3	4	D	Hm	Phragmites dominated
30	Field Ditch	25378090	6	1	D	Vc	
33	Field Ditch	26688115	6	0	C		
36	Field Ditch	22957895	10	4	C	Lp	

FIELD DITCHES - REDWICK AND LLANDEVENNY

SAMPLE NO	REKEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	NOTES
137	Field Ditch	42108456	0	0	D		
138	Field Ditch	41208420	7	1	C-	Lg	
139	Field Ditch	40503427	3	0	D		Hedged
141	Field Ditch	41818389	2	0	D		Hedged
145	Field Ditch	41948463	6	0	D		Hedged
146	Field Ditch	41998512	0	0	D		Hedged
149	Field Ditch	41558559	1	0	D		Phragmites dominated
152	Field Ditch	39618634	7	0	C		Phragmites dominated
154	Field Ditch	40403545	10	9	D	Ca Oa	Oenanthe acquatica
156	Field Ditch	39548573	2	0	D		Hedged
158	Field Ditch	39888683	8	0	C-		
160	Field Ditch	40228776	1	0	D		
166	Field Ditch	41918616	16	5	C	Hm Lt	

FIELD DITCHES - NASH AND GOLDCLIFF

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVA-TION GRADE	RARE SPECIES	NOTES
76	Field Ditch	36308278	5	2	D	Lg Lt	Hedged
79	Field Ditch	35278264	12	0	D		Hedged
80	Field Ditch	34648318	5	0	D		Hedged
84	Field Ditch	34738486	18	27	A	Cd Hm Lg Lp Lt Pb Pt Zp	Good diversity, Potamogeton trichoides
85	Field Ditch	35048474	0	0	D		
86	Field Ditch	35188396	3	1	C-	Lg	
87	Field Ditch	35568450	12	12	C	Cd Lg Lp Pp	
88	Field Ditch	35508530	6	0	D		
89	Field Ditch	35428604	16	0	C+		
96	Field Ditch	36778478	12	4	C	Lp	Hedged
99A	Field Ditch	37028335	9	2	C	Lg Lt	
102	Field Ditch	36158337	11	5	C-	Rt	
103	Field Ditch	35628341	6	0	D		Hedged

FIELD DITCHES - MAGOR AND UNDY

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	NOTES
167	Field Ditch	43168478	0	0	D		Hedged
169	Field Ditch	43748524	0	0	D		
172	Field Ditch	42578544	0	0	C		Hedged
176	Field Ditch	43298674	12	0	C-		
182	Field Ditch	44178621	0	0	D		Hedged
184	Field Ditch	44758670	8	0	C		

APPENDIX 4

SAMPLE NO	REEN NAME	GRID REF	NUMBER OF SPECIES DIVERSITY SCORE	RARITY SCORE	CONSERVATION GRADE	RARE SPECIES	IDB/NRA	NOTES
124	Middle Road	38868564	19	21	A	Bu Cd Hm Lp Lt Pp Ss	NRA	Ophio- glossum vulgatum
127	Elver Pill	39208380	20	21	A	Hm Lp Lt Pt Rc Vc	NRA	Potamogeton trichoides
130	Broadmead	40003355	13	2	B-	Lg Lt	IDB	
132	Meadlane	39703320	11	5	B	Hm Lg	IDB	
133	Southmead	40448320	13	5	B	Lt Pp	IDB	
134	Windmill	40848340	14	5	B	Lp Lt	NRA	