

# CLARINBRIDGE COW PARK

## Habitats and Heritage Report

Prepared for Clarinbridge Cow Park Steering Committee

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## CONTEXT and INTRODUCTION

Clarinbridge village is situated on the main Limerick road to the south of Oranmore, some 12 km south east of Galway City. The outfall of the River Clarin (with its old bridge), debouching into an inlet of Galway Bay, is a prominent feature. Indeed, the attractive bucolic feel of the village is attributable to its rural features - the river, the wooded backdrop of Kilcornan and the proximity of the sea. In contrast, the rapidly developing hinterland on either side of Clarinbridge (at Oranmore and Kilcolgan) is strongly 'urban' in character. Though subjective, the term 'unspoilt' has frequently been applied, (in the context of South Galway), to both Kinvara and Clarinbridge.

It might be argued that the village layout – as created by the Reddingtons, some two centuries ago – owes more to English estate influence than to a more ancient or traditional layout. However, with the total assimilation of the Anglo-influence into west of Ireland culture and disappearance of a more 'traditional' alternative, the argument may nowadays be regarded as irrelevant.

It is clear, therefore, that the modern character of Clarinbridge village has already been determined and that this should at least suggest a template against which future development should take place.

This report is an attempt to assess the heritage value of Clarinbridge's Cow Park, a seventeen hectare (42 acre) commonage to the east of the village proper, on the edge of the Kilcornan estate. The question of the Park's worth would have been an entirely practical one until relatively recently, corresponding, more or less, to the economic value of the grazing for livestock (cattle) and the benefit accrued to a small number of individuals utilising the commonage. Presently about a dozen beasts are facilitated but as many as forty or fifty animals may have been accommodated (at least temporarily) in the past.

Nowadays with much less emphasis on pastoral agriculture – particularly in developing areas – and greater concentration on conservation of habitats such as unmodified meadowland, commonage has taken on a new significance. This is especially true in circumstances where parcels of land have a broad heritage

dimension. The Cow park is one such place: it is a substantial area which has been little altered through centuries of traditional grazing practice; it provides a window into the past, to the time when the hillfort adjacent to the river Clarin was constructed to protect people and cattle from marauding rivals and wolves, perhaps fifteen hundred years ago.

Places of such heritage significance are rapidly disappearing throughout Ireland. It is significant that, overlooked in the inventory of Special Area of Conservation, it has no statutory protection and as such is vulnerable to radical change through neglect or development.

The Cow Park constitutes a valuable piece of real estate. In the context of rapidly developing South Galway any parcel of land adjacent to a town or village is seen as potential building land – for houses, industrial estates, hotels, etc. The recent rapid growth of Oranmore clearly illustrates this trend. The existence of extensive wetland to the east of Oranmore has, to an extent, restricted development in this direction: no such restriction exists in Clarinbridge. In developer-driven circumstances balanced consideration of all options may not win out: new housing and employment are the usual priorities. Amenity and recreation aspects are, understandably, also to the fore. The Cow Park has been viewed as a potential sports ground for a variety of sporting arenas and stadia; proximity to the village being an obvious attraction. Again the temptation to develop in this most worthwhile direction, is hard to resist. Alternative arguments challenging, for instance, suitability of location can seem trivial and non-progressive.

As highlighted in the Hoor Heritage Report (1989), Clarinbridge could make much more of its amenity potential in the form of walking circuits and picnic areas. There is undoubtedly scope in and around the Cow Park for sensitive development of this kind. Combining amenity, recreation and wildlife conservation interests is an ongoing but worthwhile community challenge.

It is clear, however, that the Cow Park is no ordinary parcel of land. This report hopefully highlights its exceptional natural and social heritage. The surveys show that the grassland is rich and species diverse (undoubtedly as a consequence of

the traditional grazing regime) and that the area, in conjunction with the Kilcornan estate, has an enviable wealth of wildlife.

Besides highlighting the above, this report also deals with the potential use of the Cow Park, putting the case for protection and conservation but also suggesting ways in which it can be developed sensitively to cater for recreational, educational and other needs, without radically changing its traditional function.

## **CONSULTATION and ACKNOWLEDGEMENTS**

A number of ecologists provided useful advice in the compilation of this report. The National Parks and Wildlife Service was consulted on a number of occasions. Killarney National Park staff provided verbal background as regards the suitability and requirements of Kerry cattle. Doneraile Park, Co Cork, which has a herd of Kerry's in circumstances similar to the Cow Park, was also helpful in this regard.

The Environmental Heritage Plan for Clarinbridge, prepared for the Clarinbridge Development Group (1998), provided primary consultative material.

Aerial photographs were also made available by the Development Group.

Material in the form of previous surveys and maps was consulted in the Nun's Island Library, Galway. A number of historical and archaeological references provided background material.

My thanks are due to a number of individuals who helped in one way or another with the compilation of this report. Dr Cilian Roden and Sabine Springer who provided professional and technical assistance, Paddy O'Sullivan and Pat Foley from Killarney National Park. Michael O'Sullivan, Environmental Consultant, Doneraile, Michael O'Donoghue, farmer, Boston, Zena Hoctor, Environmental Consultant for the Clarenbridge Heritage Report.

Paul Gosling, archaeologist, and local expert.

## FIELDWORK AND SURVEYS

A preliminary survey was carried out on 14<sup>th</sup> May. This early morning walk throughout the Cow Park and adjacent woods had three main aims (a) to establish an overview of the main habitats (b) to gain some idea of species richness (c) to prepare for the survey proper.

This was carried out on 14<sup>th</sup> June as follows:

[1] An auger soil survey; [2] a habitat survey; [3] a walked botanical (floral) survey; [4] a faunal survey.

An ecological survey of Hillpark and of the Clarin River was undertaken on 22<sup>nd</sup> June. Further field and river surveys were carried out on 27<sup>th</sup> June and 14<sup>th</sup> and 17<sup>th</sup> July,

The surveys, extending over a period of more than two months on either side of mid-summer, provided a reasonable overview of the range of the resident flora and fauna.

Autumn flowering plants, late hatching insects, migrant birds and winter visitors are of course not represented in the inventories but their addition is unlikely to add significantly to the overall conservation and heritage value of the Park.

[1] The soil survey was carried out using a metal hand auger. Samples were taken and examined in the field. The auger was driven to refusal in each case. The location of the auger holes was such that an approximate north/south cross-section was provided. (Results and location map in Appendix).

A soil pH test was not taken. It is clear, however, from the adjacent bedrock (Carboniferous Limestone) and the overwhelming abundance of calcicolous plants that the soils are base-rich or alkaline (pH >7).

[2] The study area fell into four habitat types - A, B, C, (terrestrial) and D (aquatic), (see Map in Appendix) - each of which was ecologically investigated.

[3] The **flora** (botanical) survey was carried out in the context of the various habitats represented. Species were identified and habitats classified. Most higher plants were identified: lower species were listed primarily where their presence was obvious or where they were thought to be important as indicators. Undoubtedly, despite the surveys, species will have been overlooked: this is inevitable in a study of this kind. (Lists arranged in the Appendix).

[4] The **fauna** species list, particularly that of invertebrates, is incomplete. It would be impossible, given time constraints and other factors, to complete such a list. It is likely nevertheless, that many of the higher species are accounted for. Emphasis was placed on indicator species and local densities rather than a comprehensive inventory. Nor was the listing applied strictly to habitat (as in the flora). However, distinction was drawn between terrestrial and aquatic and between open landscape and woodland species. (Species lists in Appendix).

### **Habitats:**

Dry calcareous and neutral (mesotrophic) grassland (GS1) is the dominant habitat type of Cow Park. This habitat category is equated with semi-natural dry grassland facies on calcareous substrates, described as (Festuco-Brometea) in the EU Annex 1 Habitats Inventory, (Fossitt, Natura 2000). More than half the area (c 9ha) falls into this category. A good deal of the remainder, presently degraded meadowland (c 6ha), also potentially falls into this category. The grassland, overall, is thus of the highest priority, in conservation terms.

The other habitats represented: scattered trees and parkland (WD5); scrub/transitional woodland (WS1&2); riparian woodland (WN5); exposed sand and gravel or till (ED1), though of significance for conservation are not Annex 1 listed.

The Clarin River is categorised as depositing/ lowland river (FW2), also not Annex 1 listed.

The habitat survey resulted in the subdivision of the Park into three zones:



[A] An approximate 3ha area encompassing the western end north of the River, the hillfort and the esker slope at the northern boundary. A substantial part is presently overgrown by scrub and trees. This is considered separately below. The area is characterised by well-drained glacial deposits with thin overlying calcareous (rendzina) soils. The Carboniferous bedrock is near the surface and may form a core to the esker.

The plant community is at its most diverse in this zone. It is characterised by a suite of western esker species, the majority of which are calcicoles. Typical examples are *Euphrasia*, *Galium*, *Anthyllis*, *Hieracium*, and grasses such as *Briza*, *Koeleria*, *Triticum*. Colourful herbs *Polygala*, *Lotus*, *Centaureum*, *Blackstonia*, are at their most obvious in the barer places – on the outer, south-facing vallum of the fort, for instance. The zone is particularly rich in orchids: at least six species are represented; *Dactyloriza fuschii* is found in profusion; *Orchis mascula* was located only here in the Park. Known from other similar morainic habitats *Plantago maritima*, thrives here, well removed from the sea. *Ononis repens* occurs in several places and in some profusion. This is the most important species in the Park in conservation terms. Although formerly widespread in its Irish distribution, Rest-harrow is decidedly scarce in the west of Ireland. A familiar species in sand dune systems of Wicklow and Wexford, its range was described by a leading botanist as follows: ‘Frequent in the South and East [of Ireland], rare elsewhere’, (Webb, 1967). Since then it has declined further. The New Atlas of the British & Irish Flora (2000) indicates contraction of its midlands distribution and only three locations west of the Shannon.

[B] The remainder of the sector to the north of the River and a thirty to fifty metre fringe to the south of the River – one side of the old flood plain – comprise a separate zone of some 5ha. The soils of this zone, influenced by episodes of post-glacial inundation, (see core result) have thin grey clay alluvial deposits overlying the glacial till and bedrock. While undoubtedly calcareous, these soils are obviously less well-drained than those of the esker. The plant community, though still impressive, is therefore less diverse than on the better-drained soils.

Many of the calcicolous herbs occur, *Galium*, *Hieracium*, *Euphrasia*, *Achillea*, but there is a greater presence of more 'ordinary' meadow plants – *Rumex*, *Prunella*, *Rhinanthus*, *Lathyrus* etc. *Carex* species reflect the drainage characteristics of the zone. Orchids (*Dactyloriza*) are particularly profuse on the River bank but decline where they are out-competed by grasses, further back. Sandy surface deposits – the result of recent flooding – may be responsible for this distribution. A number of bee orchids (*Ophrys apifera*) were found in this zone.

Grass diversity is at its height in the zone. At least seventeen species are represented and there may be several more. *Festuca*, *Poa*, *Agrostis*, *Alopecurus*, *Dactylis*, *Brachypodium*, *Cynosorus*, *Anthoxanthum*, *Briza*, are dominant. *Lolium* may be a recent invader from the silage field at the western extremity of the Park. Presently it forms only a minor element in the Gramineae. Less common grasses – representative of old pasture - were found including, *Trisetum flavescens* (Yellow oat-grass). The luxuriance of the grassland (as distinct from species diversity) on the south part of this zone (compared with the north) may be a reflection of the infrequency of grazing here.

[C] The largest habitat zone (9ha) is that to the south of the Park. It is generally higher and drier than [B] and underlain by fertile, well-drained brown earth, overlying the glacial deposits. This open ground with copses of trees and isolated scattered 'standards' is typical abandoned pasture.

Grasses dominate though with less species than in [B]. Noticable herbs include *Veronica*, *Potentilla* spp., *Rumex* etc. The sward is ranker and contains robust species such as *Plantago*, *Cirsium*, *Centaurea* and prolific umbellifers (*Daucus*, *Heracleum*, *Conopodium*). The abundance of *Pteridium* and *Stellaria* show that this once well-grazed area has, for some years, seen little livestock activity.

The OS maps (1840 and 1920) indicate that in earlier times the Parkland was well tended, the mature trees and copses being discretely separated from the pasture. Recent aerial photography shows invading scrub encroaching from the

boundaries and engulfing the mature trees. (See Habitat Map in Appendix ). Overall, there may be as much as 3ha of blackthorn and whitethorn scrub, bramble and bracken, the majority in sector [C]. This encroaching scrub (ultimately forming woodland), though botanically less diverse than the pasture proper, nevertheless makes for an interesting transitional habitat for other wildlife.

### **Woodland:**

The abundance of native tree species, shrubs and ground storey woodland plants indicate that Kilcornan has been an extensive woodland for a long time. It may well have survived as secondary or tertiary woodland since or before medieval times. The 1838 OS map shows that, in the interim, there have been considerable changes in the boundaries of the woodland enclosures, (different also in the 1920 revision), and the number of 'standards' (much more in 1838). The (one hectare) silage field adjacent to the bridge at Clarinbridge, for instance, is shown as deciduous woodland in the original OS map.

Many of the remaining standards and indeed a significant number of those in the Old Wood are reaching the end of their lifespan. A few (notably a dead elm in the open pasture) have been afflicted by bark beetle disease. Others, (including young elms), look perfectly healthy and most of the mature hardwoods in Kilcornan appear unaffected.

Both OS maps show that the Cow Park to the north of the Clarin River was, (as today) more or less treeless. Presently the 100+ ha of Kilcornan woods are managed by Coillte, the State Forestry Organisation. Though formerly, primarily deciduous, the woods are nowadays mixed with commercial conifers such as Sitka Spruce (*Picea stichensis*). There is a policy to gradually diminish the percentage of commercially grown conifers and replace with hardwoods, for the sake of wildlife and amenity.

This forest backdrop, particularly that section of the Old Wood adjoining the eastern fringe, has considerable significance in terms of the overall ecology of Cow Park.

The extreme west of the Park is significantly treed. A bank of mature hardwoods (*Fagus, Ulmus, Fraxinus, Ilex*, etc.) lines the northern bank at the edge of the church property.

These provide a miniature riparian habitat linking linearly with the edge of the village. A small plantation of hardwoods (*Acer, Ulmus, Corylus, Alnus* etc.) has been created on the south side of the river, complimenting the church trees. Shrubs include *Rosa* and *Euonymus*. The overall effect is of shade and shelter in contrast to the openness of the pastureland.

Some small trees (*Alnus, Salix*) and scrub (*Ulex, Rubus*) occur linearly along the side of the river.

**Watercourse:**

The Clarin River (shown originally as a discrete watercourse rising by way of a swallow hole a few km to the east of Clarinbridge) is now the surface confluence of the Lavalley and the Eiscir Rivers, whose catchment occupies many square km to the east of the outflow at Clarinbridge. It takes in many hectares of farmland to the east of Athenry.

The river is entirely fresh though the OS map indicates that tidal influence extends almost to the bridge at the village. High spring tides may cause backup within the Park and render the water brackish, at least at the western end. The river is normally free flowing and reasonably well oxygenated due to two shallow drops in the bed level. The original OS map shows it to be much less confined than at present. Its width varied considerably and a longitudinal island is shown directly below the fort. Drainage and containment was presumably carried out by the Reddingtons in the 19<sup>th</sup> century. Finely constructed dry stone embankments are evident along the south side of the river within Kilcornan estate,

The river on its route through the Park flows on limestone and glacial till (boulder clay). The glacio-fluvial deposits of the soils investigation, (point 2 on the Map), indicate that the river was considerably wider in post-glacial times. A post-glacial embankment is clearly detectable on the south side, some thirty to fifty metres back from the watercourse. This coincides with the edge of habitat section (B).

Shelving rock outcrops near the surface (evident close to the river in two places) may be responsible for the minor drops in level.

Abundant calcicolous mosses (*Cinclidotus* and *Fontinalis*) reflect the river's limy content. Other noticeable species are *Ranunculus aquatilis* and *Berula erecta*. The latter grows in profusion along both sides of the river.

The river is undoubtedly affected by artificial enrichment, perhaps as a result of fertiliser or cattle slurry entering the water upstream of the Cow Park. This is manifest in the quantity of algae coating the benthos and extending in stringy fashion beneath the surface, especially at the western end.

It is significant that a fairly thorough visual search of the river, within the Park, failed to locate any significant fishlife. The only species encountered was the three-spined stickleback, (*Gasterosteus*). It would be inconceivable that the river does not have some trout (*Salmo trutta*) and migratory species such as eel (*Anguilla*) but they were not seen in the course of the survey. Investigation of the banks failed also to show any sign of recent otter (*Lutra lutra*) activity. This is significant in view of their frequency along the coast and on other freshwater bodies in south Galway. They are common, for instance, on the Dunkellin River. (Otter spraints were recorded on the Clarin some years ago, ca 2000, in the course of an earlier survey. Pers comm. Sabine Springer).

The occurrence of Grey heron (*Ardea cinerea*) may indicate the presence of more fishlife than was noted though they probably feed on small fish and frogs. Grey wagtails (*Motacilla cinerea*) appear to be resident. They feed on the abundant insect life adjacent to the river and its banks and are not a reliable indicator of the quality of the river itself. The appearance of a dipper (*Cinclus cinclus*) during a period of low flow and profuse algal contamination indicates that, even in these circumstances, the river still supports some invertebrate life such as caddisfly (*Trichoptera*) larvae.

## COMPARATIVE ANALYSIS

Meadowland was at one time so widespread in Ireland (as in other parts of western Europe) as to be taken for granted. At a time when horses were the main beasts of burden and were intricately bound up with the agricultural cycle, hay was grown in meadows as the main fodder. Cutting and forming into haystacks was a mid-summer ritual governed by the vagaries of the weather. Pasture for cattle was more or less maintained and fertilised by the cattle themselves.

Widespread change from hay to silage coincided with more efficient practice directives under the EEC in the 1980's. Agricultural Intensification including widespread use of artificial fertilisers have seen sweeping change in the former regime. Nowadays the bulk of Ireland's grassland has been converted from species-diverse meadow to a virtual mono-culture of ryegrass.

A patchy distribution of semi-natural grassland still exists in most counties but it is a diminishing resource. Some of the better known, more extensive tracts are still to be found at the Clonmacnoise callows – winter flooded meadowland – in the Burren and on the western islands but the familiar ubiquitous meadowlands of fifty years ago are, other than in small fragments, a thing of the past.

The Cow Park in Clarinbridge is one such fragment. Artificial fertilising – if it has occurred at all – has left no mark on this patch of grassland.

The seventeen or so species of grass compares favourably with twenty-two counted in a similar area of hay meadow on Inishbofin Island, (July 2005).

Naturally there is considerable species contrast: quaking grass, dominant in the Cow Park was absent in Bofin while species like wild oat, missing from the Clarinbridge site, featured on the Island. Associated plants also differed: dock, hogweed and wild carrot being notably commoner on the Island than in Cow Park. Inishbofin soils are classified as acid organo-mineral soils unlike those of the Cow Park which are shallow brown earths and rendzinas and predominantly basic or alkaline. A relaxed, traditional agricultural regime is nevertheless common to both places and may be as important a factor in species diversity as

other physiographic factors. The Burren, with thousands of hectares of limestone grassland, supports more than fifty species of grass. Some species, (*Danthonia decumbens*, *Desmazeria rigida* etc.), widespread in the Burren, have not been noted in the Cow Park.

The Cow Park, its habitats and species were compared with similar habitats in the south Galway region and in greater Galway City. These included grassland habitats, having undergone radical transformation through development. Dooiska M35 26, a limestone grassland habitat on the edge of Galway City, despite containing rare plants such as *Dryas octopetala* and *Leucorchis albida* has been radically altered by development in recent years. The area of the former habitat has been reduced to the extent that it may no longer support viable populations of either species. Ballybrit Racecourse M33 28 (protected by default, lying within the course boundary) is an orchid-rich grassland habitat. It is unlikely to undergo radical alteration unless the racecourse location changes.

Clarinbridge Cow Park differs in that it represents semi-abandoned parkland rather than remnant undeveloped limestone heath and grassland. Examples of the latter are to be found at (often threatened) satellite locations around Galway city. Frenchfort heath, near Oranmore and Laurclavagh on the west side of the N17 between Galway and Tuam are (vulnerable) examples of the latter.

The area representing most valid comparison is Hillpark on the northwestern outskirts of Clarinbridge. Hillpark constitutes an extension of the moraine habitat, forming the northern edge of the Cow Park. It is less interesting, however, since it is more exposed, does not have the same variety of adjoining habitats and is removed from the river.

Despite the above, the Hillpark resembles the Cow Park in being commonage for grazing cattle. In contrast, however, it was clear that the 20 or so ha had been heavily overgrazed. Even on the higher ground but particularly on the damper lowland common the ground was severely poached from cattle footprints. A veneer of organic brown silt, some 8 or 9 cm thick covers the glacial till or moraine rendering the surface sticky in places.

The flora is less remarkable than that of the Cow Park. Grasses are less diverse (ca ten species noted) and much less prolific. However some of these *Briza*, *Koeleria*, were well represented on the esker ridge.

A suite of mainly calcicolous meadow plants and herbs – *Anthyllis*, *Lotus*, *Rhynanthus*, *Euphrasia*, *Polygala*, *Galium*, – pointed to continuity from the esker flora of the Cow Park. *Rosa pimpinellifolia*, apparently rare in the Cow Park, was quite widespread on the south-facing slope of the hill. On the ranker, damper pasture of the lower commonage, *Cirsium*, *Centaurea*, *Rumex* and *Plantago*, were prolific in the plant community. *Pteridium* was common in places and showed signs of expansion, perhaps engulfing much of the area. About thirty plant species were identified: the total for the area would probably be of the order of fifty.

Ecologically, the Hillpark has much less to offer than the Cow Park. The open circumstance favoured few invertebrates, though white butterflies and grasshoppers were noted. Birds (probably breeding) included meadow pipit (*Anthus pratensis*) and skylark (*Alauda arvensis*). Most of the avian interest appeared to be confined to the hedgerows and walls bounding the park commonage.

## **CONCLUSIONS and RECOMMENDATIONS**



## **Conclusions:**

The Cow Park in Clarinbridge is an interesting composite of habitats. Primarily abandoned parkland, where originally it would have been managed and manicured, it is much more ecologically rich nowadays. The open meadow pasture with its scattering of mature deciduous trees (some dead or dying), its encroaching scrub, the adjacent mixed forest, esker bank, and free-flowing river combine to create a wildlife refuge of considerable variety and richness.

The pasture is of variable quality but throughout is rich in herbs and grasses. It is most ecologically rich in and around the hillfort and along the esker bank. More than fifty plants were recorded here alone. This diversity, with its abundant orchids and particularly with the presence of rest-harrow a plant rare in the west of Ireland, renders this quarter high priority in botanical terms. Invertebrates such as grasshoppers, burnet moths, common blue butterflies and visiting, feeding birds (swallows and martins) are well represented. The lower-lying pasture is less exciting but is still herb-rich and contains orchids, including the scarce bee orchid. Mammals including hare and fox were noted here. The worked-out esker quarry immediately to the north-east, through which the north-bounding bohereen runs, is a considerable ecological reservoir. The exposed calcareous substrate supports many of the esker plants and some interesting invertebrates.

Hillpark is somewhat larger than the Cow Park (ca24ha) though it is less species-rich and due to overgrazing, much less interesting. It is nevertheless a habitat worthy of conservation if only for its potential. It is also worthy as a repository of now-local plants and invertebrates, common to both Parks.

The more expansive meadow on the south side of the River in the Cow Park varies considerably in species content from the low zone, within 50m of the bank (grass and orchid rich). The wider, higher, middle zone (up to 200m from the bank), ranker, with thistle, knapweed and bracken much in evidence, is insect rich with many day-flying moths and butterflies. Open country birds such as meadow pipit are clearly nesting here. The meadow, degenerating into open, rank patches between scrub (blackthorn and whitethorn) is generally species-poor compared with the lower ground. Here, however, the habitat mosaic with its

shelter/glade effect has abundant and diverse fauna. Invertebrates such as spiders and diurnal moths abound. Birds such as whitethroat, willow warbler, dunnock, robin, song thrush are in residence and obviously nesting. Forage marks of badger were noted and it is likely that bats feed over this area at night. The woodland, of less importance in EU conservation terms is nevertheless diverse and interesting. The mature 'standards' (though non-native species in most instances) are wildlife repositories in their own right. This holds particularly for Sycamore, supporting abundant invertebrates, and therefore insect-eating birds (warblers, goldcrests, tits). Probable long-eared owl feathers were found indicating that they may be resident in the Park— perhaps in one of the dead trees. The riparian woodland is best represented at the western end of the Park, near the bridge. Here a line of mature beech with occasional elm and oak , forms an impressive shelter belt to the river. Canopy song birds (chiff-chaff, mistle thrush, great tit) and others associated with the village edge (magpie, collared dove, woodpigeon) occur here. A small covert of immature trees and shrubs – hazel, elm, whitethorn, alder etc. has been created here. Flowering dog rose and blackberry provide important feeding stations for insects (bees, hoverflies, butterflies). This sheltered corner of the Park has, besides its ecological richness, considerable aesthetic appeal. The edge of the 'Old wood' abuts the River at the eastern end and may therefore be considered riparian. Scots pine, beech and alder are represented. A rich variety of spring woodland floor species (lesser celandine, wood sorrel, violets etc.) flower here, in season.

The Kilcornan estate, which surrounds the Cow Park, comprises more than a hundred ha of mature deciduous and coniferous trees. Large birds such as jay, sparrow hawk, and animals such as pine marten and red squirrel are known to inhabit this woodland. They may also visit or reside in the greater Cow Park. This backdrop, with the diversity it offers, greatly enhances the ecological potential of the Park.

The River Clarin belies its attractive appearance in being somewhat polluted. It is clear from the abundance of stringy algae in the water that the lower reaches, between the fort and the bridge present a considerable ecological deficit. High

spring tides, rendering the outflow brackish as far as the bridge, must give rise to some algal growth but tidal ingress is surely not responsible for the present abundance and extent of benthic alga. Visual inspection indicates that the remainder of the watercourse, within the Park, is noticeably less interesting ecologically than would be expected. The dozen or so cattle presently being grazed in the north meadow drink and refresh themselves from two or three ramped accesses into the river. They were also noted walking into the stream to feed on the dense swards of water parsnip and defecating into the water. In normal circumstances (except in drought) this would only intermittently foul the water. It is more likely that the main pollution emanates from agricultural (and/or domestic sources) upstream: significantly, profuse benthic algal growth was noted upstream of the Park. Dumped domestic refuse, including fragments of non-biodegradable appliances are clearly visible in the bed of the river over a one hundred-metre stretch at the eastern end. That said, aquatic plants (water crowfoot, water parsnip), upstream of the location, indicate that that particular problem is somewhat confined. The zoned aquatic limestone mosses, *Cinclidotus* and *Fontinalis* indicate considerable fluctuations in water table, though lack of debris on the meadow bank suggest that flow is mainly confined to the constructed channel, even in winter. The considerable flush-factor of the river in spate periodically dilutes harmful infusions. Pollution is at its height in periods of low summer flow.

Fish appear to be in short supply. The fact that (breeding) sticklebacks were seen (not 'belly-up') suggests that – at present – pollution is slight. However, the scarcity or absence of aquatic birds such as kingfisher and dipper (though one, a visitor no doubt, was seen) and the complete absence of otter spraints, point to an impoverished fish and aquatic invertebrate fauna and confirm its degraded state.

The condition of the river – in the context of the otherwise 'unspoiled' Park - gives cause for concern. Whatever the future holds for the Park the improvement of the water quality and its future protection should be prioritised.

It seems strange, given the current level of attention being afforded to this section of the Clarin river: monthly tests for water quality carried out by the maintenance dept of Kilcornan house, evaluated by the U.C.G.laboratories; regular water tests carried out by Galway Co. Council; angling potential study carried out by Michael Carey, participant in the Kilcornan Development Association CE scheme (Hector 1998) – that it remains in such a patently sub-optimal condition.

### **Recommendations:**

There appear to be six realistic options for the future of Clarinbridge Cow Park. They are as follows: Do nothing; Give the area over to development; Develop for amenity and sport; Conserve as existing wildlife reserve; Develop agriculturally; Restore/conservate as a livestock reserve. While other options may arise it is suggested that one of these (or a combination of two or more) is the most likely future scenario.

#### **1. Do nothing:**

While the Park will continue to be a nature oasis in a rapidly developing South Galway region, its potential will undoubtedly diminish in time. The steady encroachment of scrub and bracken will ultimately engulf the majority (south sector). Species diversity – particularly grasses and associated species will diminish. New hardwoods will eventually establish themselves but it will be many years (decades) before light-shy clearances will develop with attendant ground-storey plants. Some wildlife will prosper – certain canopy birds, ground mammals - but in general the habitat will be less interesting than at present.

The removal of grazing from the northern pasture will result in the invasion of gorse and blackthorn scrub. (This can already be seen within the hillfort *Iios*). The pasture itself will become rank and full of robust species such as bracken, thistles and knapweed. Evidence for this is clearly visible in the southern sector, on the drier soils.

Long-term woodland will develop but given that the Park is adjoined by more than 100 ha of just such a habitat, 17 open ha are clearly of greater value than additional woodland.

Continuing neglect of the river in conjunction with upstream agricultural, industrial and domestic development will result in the elimination of all fish life. Rampant algal growth will cause de-oxygenation and destruction of most benthic life.

Invertebrate diversity will be limited to certain pollution resistant worms. The river runs the risk of becoming an open sewer. Downstream ramifications (shellfish farming, bathing, disease) may be significant.

## **2. Give the area over to development**

As Clarinbridge develops and grows pressure is placed on marginal and unutilised areas for building land. The evidence throughout the South Galway region is compelling, particularly in the hinterland of Oranmore. Localities such as Creganna, Stradbally, Kilcolgan, Castlegar, near Clarinbridge, have been transformed in the past decade.

The 20+ha of the Hillpark pastureland is presently under developmental scrutiny. No doubt the Cow Park represents valuable real estate land, more desirable again, than the Hillpark, due to its seclusion and shelter, as well as its proximity to the village. An exclusive housing estate of thirty or so residences would seem a likely scenario.

Such a development would emphasise the pastoral ambience and highlight the centrality of the river the elegant backdrop of the woodland. Some landscape enhancing measures, to accommodate the desirable setting would undoubtedly occur - creation of lawns, use of herbicides/ pesticides, introduction of shrubs, exotic trees etc. Such attempts at aesthetic enhancement, would undoubtedly result in permanent ecological damage.

Runoff and pollution from sprayed areas, septic tanks and concrete areas and discarded domestic refuse could also present serious problems, particularly for the quality of the river.

The siting of an industrial concern in the Cow Park would naturally impact dramatically on the ecology of the Park. It would also be very much at odds with

the uses to which the Kilcornan estate is being put at present (Kilcuan centre etc.), which emphasise peace and serenity. In addition, the possibility of ongoing interference with the famous Clarinbridge festival (aerial, aquatic, noise pollution) would be an important consideration.

### **3. Develop for amenity and sport:**

This scenario, in the context of rapidly growing (young) population, has strong widespread appeal. Sport may be (cynically) described as the 'panacea of the masses' but there is no doubting its capacity to provide a benign and healthy outlet for people in general and youth in particular. Leisure facilities at Oranmore are, by all accounts, highly utilised and local GAA and golf clubs have no problems in recruiting participants. The development of the Cow Park for such a purpose is as attractive as it is obvious. The draft layout presents a comprehensive sport complex incorporating no fewer than five sports grounds, courts and tracks (in addition to the existing GAA pitch), and a landscaped leisure facility/centre.

The question underlying this option is not about public value (this goes without saying); but rather, location. Such a facility would benefit any community but need it be placed in a secluded area on the edge of a wood? There are several potential locations for such a Sports Park but only one for the Cow Park.

Given that permanent residences and other possible pollutant sources are not envisaged, the possibility of the river being directly affected is low. However, the conversion of perhaps half of the existing area to open all-weather surfaces with attendant rapid runoff could pose considerable problems for the capacity of the Clarin and the possible sedimentation of the riverbed, the outfall estuary and perhaps the Shellfish beds beyond.

In all development wildlife tends to loose out. In a plan such as that presented here the impact on the wildlife would be much more significant than in, for instance, a housing development. The disturbance to birds and mammals, would effectively banish secretive, sensitive species such as warblers, jays, owls, squirrels, martens, bats, from this quarter of the Kilcornan estate.

### **4. Conserve as existing wildlife habitat:**

The conservation value of the habitat composite of the Cow Park lies primarily in its importance as semi-natural grassland. Additional significance exists in the various woodland fragments and in the River Clarin: these subsidiary elements, however, do not constitute, of themselves, high priority conservation status.

The grassland (as mentioned earlier) is of high conservation status. It is listed under Annex1 of the EU Habitats Directive. The status of this area is undoubtedly enhanced by the addition of the surrounding woodland and the river. In addition the existence of a viable population of a locally rare plant species (rest-harrow), serves to consolidate its special rating. The Park thus represents a most valuable tract of wild habitat, worthy of SAC (Special Area of Conservation) status.

Left as at present, the conservation value would diminish – for the reasons outlined above. It is necessary, therefore, to continue with the grazing regime, as existing on the north side of the river, and to introduce a more vigorous regime into the south side.

The water quality of the River Clarin would be improved and maintained to maximise the conservation potential of the Park as a whole.

Management within and beyond the bounds of the Park, including cooperation with council and fisheries officials would therefore be necessary.

Conservation, by definition, is more directly concerned with protection of endangered species and habitats than with education and enlightenment. It would, however, defeat the purpose of conserving such a rich area so close to a village, were it not to involve the public. Any conservation programme should, encourage the involvement of local people, of all ages and backgrounds in ‘ownership’ of the Park. The wildlife attributes of the Park should be presented to local schools and field trips for pupils organised and undertaken by local wildlife rangers. Similarly there would be opportunities to present the Park to adults coinciding with local events and festivals. It would be necessary, in the event of f this option being adopted, that the Clarinbridge Development Group maintain and assert their views as to how they would wish conservation and local interests to be amalgamated.

## **5. Develop for agriculture:**

The Park was created for agricultural purposes. It may have been used in this manner for more than a thousand years. It would seem obvious therefore to continue to use it thus.

It may have had a life as arable land, in the distant past. However there are no signs of cultivation ridges and there is a lack of ruderal plants – fat hen, corn marigold, etc.– often associated with such a former use. Vegetables and even crops may have been grown adjacent to the fort during times of occupation but all such traces (if they existed) are now gone. The seventeen or so ha constituting the Cow Park does not present a particularly attractive arable option in the present context. Grain, still grown around Athenry is of diminishing importance in the west of Ireland and with the collapse of the beet industry it does not seem likely that an upsurge in other root crops is on the horizon. In the present agricultural climate it makes no economic sense to continue to farm in old-fashioned ways. The onus is on intensification and on expanding holdings to make them viable. The planting of silage in the field near the road reflects the modern trend. Many of the emerald-green silage fields around Clarinbridge – formerly meadowland for hay – also reflect the trend. These fields, heavily fertilised with nitrates and phosphates, are virtual wildlife deserts – devoid of grasshoppers and butterflies. Hedgerows have taken on vital significance, becoming linear repositories and ‘corridors’ for wildlife.

The intensive application of chemical fertilisers are having a detrimental affect on water quality in the ground water reservoir, particularly in limestone country – like south Galway.

The conversion of the Cow Park pasture to silage would represent a local ecological disaster. The many species of herbs, orchids etc. would be virtually eliminated and the diverse grasses reduced to one – ryegrass. The wealth of invertebrate and vertebrate fauna would evaporate.

Serious pollution of the Clarin River, due to run-off of fertiliser and slurry would be unavoidable.

## **6. Restore/ conserve as a livestock reserve:**



As mentioned under conservation, the habitats of Cow Park require grazers, even to maintain the existing richness. The continuing influence of a herd, perhaps on a rotating basis, is therefore vital. Up to twenty healthy cattle in the south pasture would have the effect of enhancing the pasture richness and of browsing back the encroaching scrub and other invasive growth. The dozen or so cattle presently grazing the north pasture are already operating in an ecologically balanced manner. They are a mixture of breeds - Hereford, Aberdeen Angus and Continental strains. The original cattle of Ireland, i.e. the cattle which maintained Irish pastures from prehistoric times to the introduction of British breeds in colonial times, were Kerry cattle – small black animals with white horns; At one time considered to be diminutive descendants of the aurochs, the original wild cattle of Europe which became extinct in the 17<sup>th</sup> century, recent genetic investigation has revealed this not to be the case: the genetic source for Irish cattle (as in all western Europe) is the near East, near where domestication first took place some 10 millenaea ago; the aurochs was apparently never domesticated. Kerry's were gradually replaced in Early Modern times by more bulky beef-producers such as Ayrshires and Herefords. The 'native' breed continued to be used in smaller, more traditionally managed holdings. There were some Kerry cows – kept for the superior quality of their milk – into the 1950's in South Galway. (per M.O'Donoghue). They have apparently disappeared from the region in recent decades. Kerry cattle still thrive and are bred and nurtured in Killarney National Park, where they are a considerable attraction. The cattle kept by the hillfort occupiers of Cow Park would have been black Kerry-type beasts. There are many historical references to these animals in the annals etc. (see notes in Appendix).

The reintroduction of Kerry cattle would have the effect of managing the ecology of the pasture in that they would maintain and enhance its quality and diversity: they favour grass but also browse a wide variety of herbs. This would be botanically beneficial to the Park; conservation would thus be virtually automatic. The ramifications of such a plan would be far-reaching including:

1. A tourist attraction for the village; a special feature on festive occasions.

2. An historical educational facility for local schools.
  3. A product-maker (organic Kerry cattle milk, butter etc.) for sale in local fairs, shops. This could be given an attractive Clarinbridge brand.
  4. An opportunity for local farmers to consider similar initiatives (under REPs?)
- A further consideration might be the introduction of primitive sheep. Soay sheep were the sheep before white-fleeced animals were developed (apparently by the Romans). Jacob's sheep – brown and white – were intermediate strains, (widespread in Medieval times, before replacement by modern breeds. It is conceivable that the occupiers of the fort in the Park kept flock of Jacobs-type sheep along with a herd of Kerry-type cattle.

Red deer would have been the native browser of the Kilcornan woods. Though less attractive as a reintroduction option due to difficulties of containment, they are worthy of consideration. A deerpark (probably for fallow deer) is shown on the 1838 OS map of Kilcornan estate.

Nowadays 'exotic' farming is in vogue. Herds of llamas and alpacas are being maintained for their fleece and other reasons. Emus and ostriches are being farmed for meat. Even zebras and pot-bellied pigs have appeared in Irish fields. It is important to distinguish between this sort of novelty enterprise and the reintroduction of livestock (such as Kerry cattle). Unlike 'trial and error' agri-business, the latter has a successful track record. It has also an ecological *rationale* being tied into conservation and habitat restoration.

## **MANAGEMENT PLAN**

Some degree of management is implicit in each of the six options offered for the Cow Park. Each management plan will differ in emphasis and will reflect support

and economic considerations. The following outline is merely a comparative presentation, not an analysis.

Option one (Do nothing), by definition, suggests no additional management other than that already in place. The board of Trustees, the Kilcornan management authority and Clarenbridge Development Association would continue to have responsibility. Livestock owners would continue to liaise with the Trustees for ongoing use of the land for grazing. In reality there would have to be some more attention given to long term habitat degradation such as encroachment of scrub, the effect of cattle erosion of the fort, the heavily poached river access points on the north side of the river and other adverse aspects of the status quo.

The condition of the River Clarin, apart from continuing regular removal of litter etc., must improve. As a minimum, a barrier/ grill should be installed at the upstream end of the Park to collect alga. This would need to be cleared at regular intervals otherwise the measure could prove counterproductive. Who should do this is another question. Ideally, such a measure would involve coordinated action from the County Council, the Fisheries Board and the Office of Public Works who have responsibility for the river from source to the sea.

Options two (Development) and three (Amenity and Sport) would require a detailed Environment Impact Statement before being undertaken: this report is not such a document. Both options would result in radical change in use from that at present and would thus require detailed management projections to monitor and help minimise the adverse ecological and social impacts. One point applying to any comprehensive development, whether housing, industrial, sporting or similar, should be made here. No matter what measures are taken to integrate some elements of the existing grassland into the development, it is difficult to see how this could be, long-term, anything other than a cosmetic exercise. The implementation, for instance, of the proposed sports complex (shown on the aerial photograph of the sports proposals) would effectively banish the authentic wildlife value of the Park and put meaningful harmonisation of social and ecological interests beyond the potential of any management plan.

Option four (Conservation) would require a transference of management from the present arrangement to a new management body involving the County Council and the National Parks and Wildlife Service. In the event of continued use of the land for grazing, (as part of a properly structured conservation programme) it would be necessary to have the involvement of the Dept. of Agriculture and Teagasc in liaising with livestock owners.

The pressing requirement would be to maintain the meadowland at its present (optimum?) richness. The present regime of grazing up to twenty animals with some rotation would have to be maintained. To act against the encroachment of scrub would require a more intensive grazing regime on the south side of the river. This would need to be carefully monitored. The issue of contamination of the river would necessarily be addressed: it might be necessary to establish some alternative watering station for the livestock, at least temporarily, in order that the damage to the river might be tackled and ultimately eliminated.

Though not designated a Special Area of Conservation (SAC) the Cow Park is eligible for this designation – on botanical criteria. As previously discussed, most of the area is defined as being of EU Annex1 importance: orchid-rich limestone grassland. The existence of rest-harrow (*Ononis*) as a component of the grassland adds considerably to the Park's conservation status. Implicit in the designation of SAC status are certain restrictions. Any development with potential adverse impacts, including amenity and public access would come under scrutiny and might be curtailed. However, given that the area is adjacent to the village and has long been used (at least informally) for walks, picnics etc. it would seem reasonable that some compromise would be reached whereby amenity access would continue.

Conservation, though undoubtedly for social benefit, does not necessarily also entail public awareness and enjoyment; its primary concern is safeguarding and promoting biodiversity. This may not generally be a bad thing but in the context of the proximity of Clarinbridge a healthy balance must surely be sought with educational needs, for instance, being given priority.

The fifth option, (Agricultural development), assumes conversion of the meadowland to silage: there does not seem to be another viable agricultural option, at present. Again, the Dept. of Agriculture and Teagasc would be involved. Presumably a link up could be established with existing silage operations in and around Kilcornan (the small area at the extreme west end of the Park, for instance) and the silage could be sold locally.

Such conversion, of hay-meadow to silage, implies of course, complete elimination of conservation potential of the Park. Silage, a mono-culture of ryegrass (*Lolium*) is virtually devoid of ecological diversity. The Board of Trustees should give serious consideration to the ramifications, before permitting this option.

One major consideration is the problem of silage pollution of the river. Measures to avoid this would be expensive and of themselves, not particularly environmentally friendly. The Rural Environmental Scheme (REPS) option would seem, on the face of it, a good one for the Park. This EU initiative has raised awareness to wide range of improvements to the Irish farming environment. Fertilising of the meadowland would be greatly restricted to reduce nitrate and phosphate run-off. However, given that it is a farming, as distinct from a conservation scheme, the livestock element would take precedence over the ecological, in contrast to the conservation option, which would have a reverse emphasis. In the free-draining limestone country of south Galway REPS has helped to counter the steady decline in surface and ground water-quality by focusing on the problem and offering incentives to compliant landowners. In the circumstance of the Cow Park, with cattle being watered directly from the river, REPS would insist on another watering regime being established. An unfortunate, compartmentalised outcome due to the erection of new fencing, is however likely, ultimately limiting access to the Park.

Some mention should be made also of the potential for forestry and the growing of some combustable species (*Salix?*) as biomass for energy production. On the former issue it is difficult to see the need for planting up an additional seventeen hectares in addition to the hundred or so ha of the present Kilcornan estate.

Access, including the need for a new bridge crossing would probably eliminate it as an option. The economics of small-scale biomass production would render unviable the second option.

Option six, (Restore/conservate as a livestock reserve), requires more detailed management consideration given the degree of projection implied.

In effect both elements – meadowland conservation and traditional grazing practice are interconnected: reintroduction of a properly weighted herd of Kerry cattle would have the effect of maintaining the entire habitat at its optimum. Grazing and circulation of animals in the pasture, on both sides of the river, would retard the encroachment of naturally regenerating shrubs such as blackthorn. Constant movement and trampling would prevent further spread of bracken and retard the extensive patches presently in place. Grass and herb growth would be reinvigorated without decrease in diversity. Natural fertilisation from random deposition of dung would ensure the continuance of the quality of the pasture. In effect the pasture with its optimally weighted herd would be a self-sustaining unit requiring little direct management other than occasional shifting of animals from one side of the river to the other and occasional movement of the herd to the Hillpark pasture or other site to allow for a brief ‘fallow’ period for the Cow Park and a healthy change of grazing for the livestock.

The procedure for the introduction of a herd of Kerry cattle would require the initial involvement of the Department of Agriculture and ongoing advice of Teagasc. It would be important at the outset to have discussions with representatives of both bodies.

Following registration and the allocation of a herd number with the Dept., consideration of animal welfare needs would be discussed.

Subsequent to clearance, beasts could be sought from the main herd at Muckross, Co. Kerry. Small herds have been transferred to localities such as Doneraile, Co. Cork in accordance with this procedure.

The ideal initial herd for Cow Park (per Muckross) would be about twenty animals: a bull, ten or eleven cows and seven or eight calves. The beasts are

smaller than those of the existing mixed species herd so, in theory, more animals could be accommodated. The 17 or so ha of the Park could probably support up to forty beasts in the long term though the impact on the quality and species diversity of the grassland would need to be monitored carefully.

Kerry cattle keep their (white) horns – it is a distinctive breed characteristic. Despite their recognised docile nature and manageable size, transportation and subsequent public access to the Park would require consideration: corralling the animals would however be unnecessary and would defeat the purpose of the exercise.

Access to observe the herd is already in existence along the esker bohereen at the northern edge but the possibility exists for another access, coinciding with the amenity access linking to Old Wood and Walk 1 shown on Map 5 of the Environmental Heritage Plan. It would be necessary in this eventuality to segregate public access from the cattle and meadowland. This could be done subtly, however, with a drystone wall or some similarly appropriate barrier that would be both effective and aesthetically acceptable.

Despite the fact that the Cow Park has been traditionally commonage some consideration might also be given to the introduction and management of a flock of primitive sheep, perhaps on the south side of the River where they could be easily segregated from the north side cattle pasture. Jacobs or Soay sheep are obvious candidates. While Jacobs, (the dappled, four horned sheep of medieval times), would require much of the care and attention given to a modern flock, Soay are much more independent and will more or less sustain themselves. Small flocks of Jacobs sheep are maintained at many localities throughout Ireland (Cloghan Castle, Co. Offaly, for instance) but their importance is primarily as an historical throwback, evocative of early agriculture, rather than as functional (meat producing) beasts. The Soay does not require the attention of a shepherd. It can survive on land of low fertility and can utilise poor quality vegetation, not enough nourishment for a modern breed. It will fend for itself in winter when other breeds need to be supplied with fodder. It does not need to be sheared, ( it sheds its wool naturally), gives birth naturally and does not suffer

from common sheep disorders such as foot rot. Cheap in labour costs it is also cheap in relation to input/output: it can be installed in the ratio of more than two to one in relation to its modern counterparts. Soay sheep are typical of more barren circumstances, the Scottish islands, for instance, and their introduction to the Cow Park would be somewhat artificial in that their like would probably not have been seen in the vicinity for millenaea rather than centuries. Like the Kerry cattle, however, they would have considerable functional value (browsing) and tourist appeal.

Red deer reintroduction is a less inviting option. Deer of all species are difficult to contain. A deer park must have a high wall or fence ( more than two metres high) for containment: whether built of stone or of post and wire fencing a structure of this kind would normally be regarded as being prohibitively expensive. Costs could, however, be offset by culling, for venison. However, experimentation locally has demonstrated that the market does not presently exist for such a venture. The OS map shows that an extensive deer park (probably Fallow Deer) existed in the Kilcornan estate.

This exploration of the options has no pretensions at being exhaustive. It makes no attempt, for instance, to compare each option economically – as is normally done in cost/benefit analyses. This is not because the figures required are unavailable at present (though this is, in the main, the case) but because economic evaluation may in fact mislead, sometimes occluding real value in its directness. As stated in the introduction, the Cow Park has value beyond its potential for say, industrial development, which can be readily quantified in economic terms. An assessment of this other value is far from straightforward: it involves such elusive aspects as: linking with the past; green relief on the edge of the village; rich repository of wildlife; aesthetically pleasing area for walks and picnics; area of quiet study; retreat for those seeking peace etc.

Most of these will not stand up to hard economic scrutiny yet they are real and highly regarded by society.



One final consideration: it is widely believed that all land must be used; that an area not used for one purpose or another – agriculture, housing, industry etc. – is wasteland. The concept of stepping back from increasing utility is anathema to many. Wetlands must be drained, woodland must be cleared (or used profitably), old fields must be fertilised, made productive. The end result of such a policy (evident throughout the world) is an uninteresting, regularised landscape, lacking in biodiversity and colour – sameness.

The Cow Park's saving grace is that it is an area of under-utilisation: its ecological richness is as a consequence of that fact and its future depends on the careful harmonisation of its by-default ecological richness with the demands of a developing society on its doorstep.

## APPENDICES, MAPS, PHOTOGRAPHS

### Appendix 1

- Flora:** significant species list
- Mosses Algae etc.** Turlough moss *Cinclidotus fontinaloides*  
Rope moss *Fontinalis antipyretica*
- Ferns and Allies:** Bracken *Pteridium aquilinum*  
Hart's-tongue fern *Asplenium scolopendrium*  
Male-fern *Dryopteris sp.*  
Rustyback fern *Ceterach officinarum*  
Wall Rue *Asplenium ruta-muraria*  
Horsetail *Equisetum sp.*
- Conifer trees:** Scots pine *Pinus sylvestris*  
Yew *Taxus baccata*
- Deciduous trees:  
&shrubs** Goat willow *Salix caprea*  
Alder *Alnus glutinosa*  
Hazel *Corylus avellana*  
Pedunculate oak *Quercus robur*  
Elm *Ulmus glabra*  
Sycamore *Acer pseudoplatanus*  
Lime *Tilia sp.*  
Ivy *Hedera helix*  
Whitebeam *Sorbus sp.*  
Holly *Ilex aquifolium*  
Hawthorn *Crataegus monogyna*  
Blackthorn *Prunus spinosa*  
Guelder rose *Viburnum opulus*  
Wayfaring-tree *Viburnum lantana*  
Spindle *Euonymus europaeus*  
Elder *Sambucus nigra*  
Bramble *Rubus fruticosus*  
Gorse *Ulex europaeus*
- Flowering plants :**  
Nettle *Urtica dioica*  
Docks and sorrels *Rumex spp.*  
Chickweed *Stellaria media*  
Lesser stitchwort *Stellaria graminea*  
Wood anemone *Anemone nemorosa*  
Buttercup spp. *Ranunculus spp.*  
Lesser celandine *Ranunculus ficaria*  
Water-crowfoot *Ranunculus aquatilis*

Cuckoo flower *Cardamine pratensis*  
 Rue-leaved saxifrage *Saxifraga tridactylites*  
 Meadowsweet *Filipendula vulgaris*  
 Bramble *Rubus fruticosus*  
 Burnet rose *Rosa pimpinellifolia*  
 Dog rose *Rosa canina*  
 Agrimony *Agrimonia eupatoria*  
 Salad burnet *Sanguisorba minor*  
 Silverweed *Potentilla anserina*  
 Tormentil *Potentilla erecta*  
 Creeping cinquefoil *Potentilla repentens*  
 Barren strawberry *Potentilla sterilis*  
 Wild strawberry *Fragaria vesca*  
 Bush vetch *Vicia sepium*  
 Tufted vetch *Vicia cracca*  
 Meadow vetchling *Lathyrus pratensis*  
 Rest-harrow *Ononis repens*  
 Black medick *Medicago lupulina*  
 White clover *Trifolium repens*  
 Hop trefoil *Trifolium campestre*  
 Lesser trefoil *Trifolium dubium*  
 Red clover *Trifolium pratense*  
 Zigzag clover *Trifolium medium*  
 Bird's-foot-trefoil *Lotus corniculatus*  
 Kidney vetch *Anthyllis vulneraria*  
 Wood-sorrel *Oxalis acetosella*  
 Herb-Robert *Geranium robertianum*  
 Fairy flax *Linum catharticum*  
 Common milkwort *Polygala vulgaris*  
 Slender St. John's-wort *Hypericum pulchrum*  
 Wood violet *Viola reichenbachiana*  
 Dog violet *Viola riviniana*  
 Rosebay willowherb *Epilobium angustifolium*  
 Cow parsley *Anthriscus sylvestris*  
 Pignut *Conopodium majus*  
 Lesser water parsnip *Berula erecta*  
 Angelica *Angelica sylvestris*  
 Hogweed *Heracleum sphondylium*  
 Wild carrot *Daucus carota*  
 Primrose *Primula vulgaris*  
 Cowslip *Primula veris*  
 Yellow-wort *Blackstonia perfoliata*  
 Centaury *Centaurium erythraea*  
 Squinancywort *Asperula cynanchica*  
 Lady's bedstraw *Galium verum*  
 Cleavers *Galium aparine*

Self heal *Prunella vulgaris*  
 Wild thyme *Thymus praecox*  
 Ivy-leaved toadflax *Cymbalaria muralis*  
 Germander speedwell *Veronica chamaedrys*  
 Field speedwell *Veronica persica*  
 Eyebright *Euphrasia sp.*  
 Lousewort *Pedicularis sylvatica*  
 Red bartsia *Odontites verna*  
 Yellow-rattle *Rhinanthus minor*  
 Greater plantain *Plantago major*  
 Sea plantain *Plantago maritima*  
 Ribwort plantain *Plantago lanceolata*  
 Honeysuckle *Lonicera periclymenum*  
 Daisy *Bellis perennis*  
 Harebell *Campanula rotundiflora*  
 Yarrow *Achillea millefolium*  
 Oxeye daisy *Leucanthemum vulgare*  
 Common ragwort *Senecio jacobaea*  
 Carlina thistle *Carlina vulgaris*  
 Spear thistle *Cirsium vulgare*  
 Greater knapweed *Centaurea scabiosa*  
 Common knapweed *Centaurea nigra*  
 Dandelion spp. *Taraxicum spp.*  
 Mouse-ear hawkweed *Hieracium pilosella*  
 Bluebell *Hyacinthoides non-scripta*  
 Ramsons *Allium ursinum*  
 Wood-rush *Luzula spp.*  
 Fescues *Festuca spp.*  
 Perennial ryegrass *Lolium perenne*  
 Meadow-grass *Poa spp.*  
 Cock's-foot *Dactylis glomerata*  
 Crested dog's-tail *Cynosurus cristatus*  
 Quaking grass *Briza media*  
 Brome grass *Bromus spp.*  
 False brome *Brachypodium sylvaticum*  
 False oat-grass *Arrhenatherum elatius*  
 Crested hair-grass *Koeleria macrantha*  
 Yellow oat-grass *Trisetum flavens*  
 Sweet vernal-grass *Anthoxanthum odoratum*  
 Yorkshire-fog *Holcus lanatus*  
 Bent grass *Agrostis spp.*  
 Timothy *Phleum spp.*  
 Meadow foxtail *Alopecurus pratensis*  
 Purple moor-grass *Molinia caerulea*  
 Lord's-and-ladies *Arum maculatum*  
 Sedge *Carex spp.*

Gramineae (Grasses)

Lesser-butterfly orchid *Platanthera bifolia*  
Common spotted orchid *Dactyloriza fuchsii*  
Early purple orchid *Orchis mascula*  
Pyramidal orchid *Anacamptis pyramidalis*  
Fragrant orchid *Gymnadenia conopsea*  
Bee orchid *Ophrys apifera*

## Appendix 2

### Fauna:

### Species list

#### Invertebrates:

This list is no more than indicative, based on species observed in the course of the field trips. A trapping programme would be required for a more comprehensive inventory.

Many of the usual groups of invertebrates were seen. Orb-web, tube web, wolf spiders were common. Tube-web spiders were particularly common on the esker bank.

Frog/leaf hopper bugs, chafers and grasshoppers were noticeable in the meadowland. Hoverflies, craneflies, (biting) horse flies and midges were common throughout. A number of bee species were notice including carder and small red-tailed species. Other related species included wasps and solitary wasps. Red and black ants were common in the sandy mounds (often with *Thymus*). Soldier beetles were noted feeding on the flower heads of umbellifers.

The river was disappointing in the number of invertebrates present. It was interesting that the Odonata species identified were in the bracken well away from the river and that the River appeared rather devoid of insects in general. However, a coupled pair of Red darter dragonflies was noted dropping eggs into the water, on one occasion. Caddisfly larvae were noted on stones at the riverside during a period of low flow. Some pond snail shells (*Lymnaea*) were also noted at this time.

The most noticeable invertebrates were butterflies and dragonflies as follows:

#### Butterflies:

Common blue *Polyommatus icarus*  
Meadow brown *Maniola jurtina*  
Ringlet *Aphantopus hyperantus*  
Small tortoiseshell *Aglais urticae*  
Small white *Artogeia rapae*  
Green-veined white *Artogeia napi*  
Large white *Pieris brassicae*  
Small heath *Coenonympha pamphilus*

Micro-moths were too numerous to list. Some diurnal (macro)moths were identified.

Transparent burnet *Zygaena purpuralis*  
Burnet companion *Euclidia glyphica*  
Carpet & Pug moth spp.  
Large noctuid moth spp.

#### Dragonflies:

Common aeshnea (hawker) *Aeshna sp.*  
Four-spot libellula (chaser) *Libellula quadrimaculata*  
Red darter *Sympetrum striolatum*

**Fauna:**

## Vertebrates

## Fish:

Three-spined stickleback (male and female seen)

## Birds:

Moorhen (*Gallinula chloropus*) (footprints)Mallard (*Anas platyrhynchos*)Grey heron (*Ardea cinerea*)Wood pigeon (*Columba palumbus*)Collared dove (*Streptopelia decaocto*)Pheasant (*Phasianus colchicus*)Sparrow hawk (*Accipiter nisus*)Swift (*Apus apus*)Swallow (*Hirundo rustica*)House martin (*Delichon urbica*)Cuckoo (*Cuculus canorus*)Starling (*Sturnus vulgaris*)Mistle thrush (*Turdus viscivorus*)Song thrush (*Turdus philomelos*)Blackbird (*Turdus merula*)Robin (*Erithacus rubicula*)Dipper (*Cinclus cinclus*)Wren (*Troglodytes troglodytes*)Dunnock (*Prunella modularis*)Great tit (*Parus major*)Blue tit (*Parus caeruleus*)Blackcap (*Sylvia atricapilla*)Whitethroat (*Sylvia communis*)Willow warbler (*Phylloscopus trochilus*)Chiffchaff (*Phylloscopus collybita*)Goldcrest (*Regulus regulus*)Grey wagtail (*Motacilla cinerea*)Greenfinch (*Carduelis chloris*)Linnet (*Carduelis cannabina*)Chaffinch (*Fringilla coelebs*)Goldfinch (*Carduelis carduelis*)Jackdaw (*Corvus monedula*)Rook (*Corvus frugilegus*)Hooded Crow (*Corvus corone*)Jay (*Garrulus glandarius*)Raven (*Corvus corax*)Magpie (*Pica pica*)

## Mammals:

Irish hare (*Lepus timidus h.*) (several seen)Fox (*Vulpes vulpes*) (signs and scent)Badger (*Meles meles*) (forage marks and scratch marks on wall)

### Appendix 3

### Historical References

There is an interesting historical reference to cattle and Clarinbridge (Annals of the Four Masters, pp 2195, 2201). It concerns Red Hugh O' Donnell's raid in midsummer 1600. It states that O'Donnell having plundered South-east Galway and Thomond for cattle, camped overnight on Knockagarranbaun hill north of Clarinbridge. [Could this be Hillpark?]. 'On the following day they divided spoils and booty among one another at that place; and each party of them were then guiding and closely driving their own lawful portions of the property along the roads of the fair province of Connaught.' (per Lucas, 1989).

Hillpark is suggested as the site of an old cattle fair (*Fair an Cnoic*) by Father P. Murphy (Oyster Country, 1989).

The Kerry is the only surviving native cattle breed, and as its name suggests, it is now largely confined to the south-west, though it was probably dominant throughout Ireland up to the early 19<sup>th</sup> century. It is a small animal, hardly more than a metre high at the shoulder, ... It is primarily a dairy animal, though much less productive than modern breeds, which is why it is one of the 65 breeds of European cattle in danger of extinction; it produces only 700 gallons of milk per lactation (at about 4% butterfat), compared with an average modern milk yield of 2,500 litres per annum. Its great merit in the past was its hardiness – especially on the poorer land of the west of Ireland: its ability to withstand cold and harsh conditions and to survive on a poor diet. The food required to support two cows of the larger breeds favoured in the early 20<sup>th</sup> century would easily maintain three Kerry cows... Such an encomium notwithstanding, no more than 20 herds of Kerry cattle survive today, with a total population of perhaps 250 breeding cows ... Modern breeding strategies were applied to Kerry cattle from 1840 on, but a Kerry herd-book was not established until 1890. (Feehan, 2003)

Their [Kerry cattle] power of enduring with indifference the most severe weather conditions has now grown proverbial; but besides giving them this hardy constitution, their struggle for existence on the bleak unsheltered slopes of their mountain homes – where vegetation is of the coarsest description – has also inured them to the necessity of subsisting on the most scanty fare ...

Though generally allowed an unrestricted range on its native hills, and naturally of a roving disposition, it bears confinement extremely well, and suffers little on being transferred to the limited area of the cottage plot or lawn. Docile at all times it responds readily to generous treatment, and gives more than adequate return in both milk and beef for the food it consumes. Its very appearance gives every indication of deep milking capacity. The experienced dairyman at once recognises in the orthodox, wedge-shaped outline of body – embracing all the good qualities of the dairy cow – an animal which promises to give every satisfaction at the pail (Wilde, 1862)



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