

Appendix I

Terrestrial Ecology
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1. INTRODUCTION

This report is written at the request of RPS-MCOS Ltd. as part of the EIS for the proposed extension to Gortadroma landfill.

The site had been visited in May 2002 and was seen again in June 2003 for the purposes of this application.

The report describes the flora and fauna of the area and assesses possible impacts from the proposals. Habitats description corresponds to a Phase I Habitat Survey (JNCC, 1990) but uses the classification of Fossitt (2000).

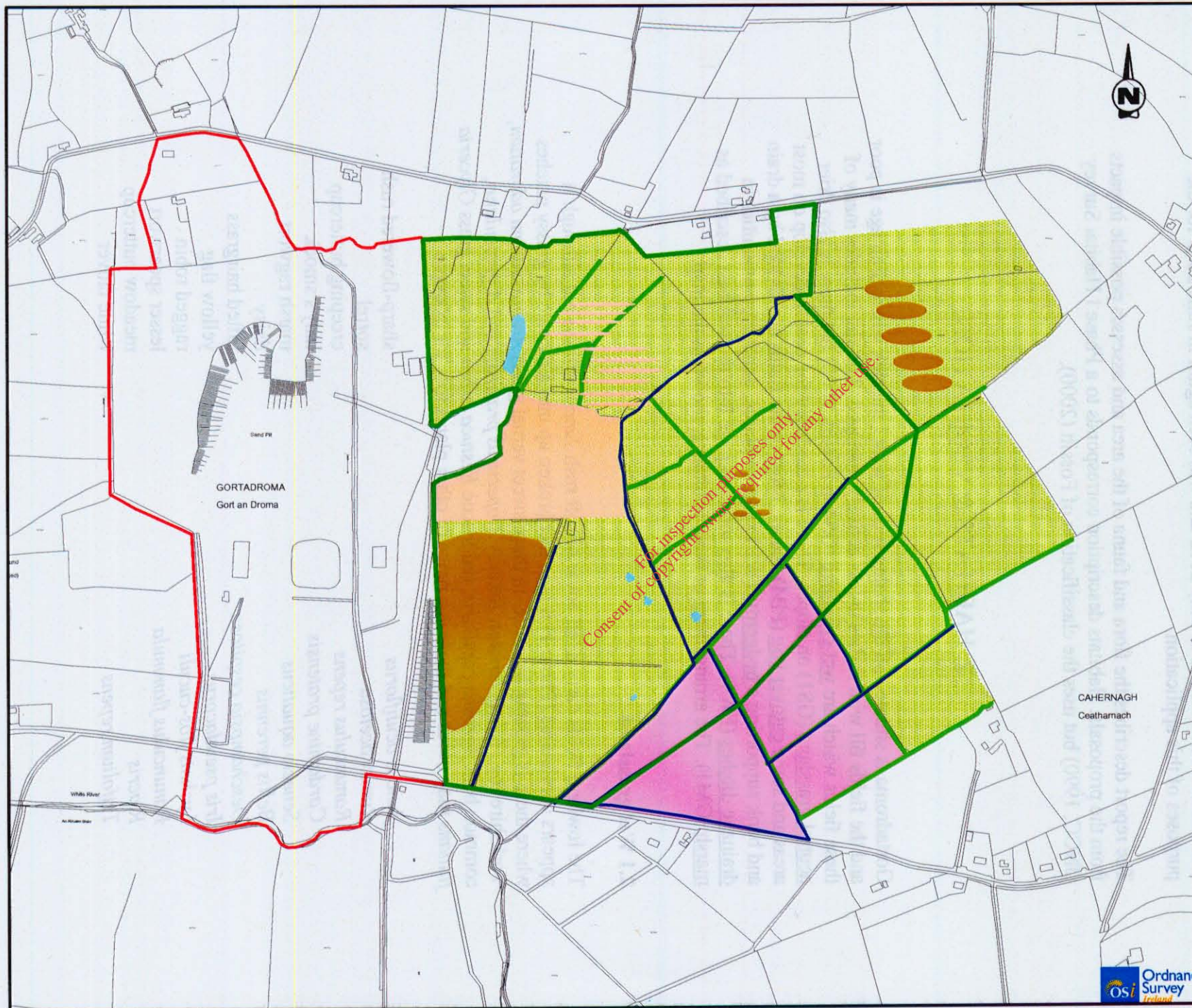
2. HABITATS & VEGETATION

Gortadroma is situated on the shaley soils of west Limerick where drainage is poor and the fields fill with rushes unless actively managed. The site includes many of these fields which are wet grassland (GS4 in Fossitt, 2000) but there is also drier neutral grassland (GS1) on slopes. There is a tendency for peat to develop on most areas and some cutover bog (PB4) occurs. Most of the fields are divided by a drain and bank supporting a hedgerow (WL1) and, in places, aquatic communities in drainage ditches (FW4). There is also some seepage into the soil best described as marsh (GM1). The arrangement of these habitats is shown in the map.

2.1 Wet grassland

The lowland fields carry a tall cover of soft rush *Juncus effusus* but although it appears continuous (Photo 1) it is in fact broken up into a mosaic by grassy patches where there is grazing by cattle. In these sweet vernal grass *Anthoxanthum odoratum*, Yorkshire fog *Holcus lanatus*, foxtails *Alopecurus pratensis* and *A. geniculatus*, common bent *Agrostis capillaris*, red fescue *Festuca rubra* and sweet grass *Glyceria fluitans* may occur and there is a range of other plants too, for example

<i>Juncus acutiflorus</i>	sharp-flowered rush
<i>Rumex acetosa</i>	sorrel
<i>Ranunculus repens</i>	creeping buttercup
<i>Cardamine pratensis</i>	lady's smock
<i>Senecio aquaticus</i>	marsh ragwort
<i>Bellis perennis</i>	daisy
<i>Deschampsia cespitosa</i>	tufted hairgrass
<i>Iris pseudacorus</i>	yellow flag
<i>Lychnis flos-cuculi</i>	ragged robin
<i>Ranunculus flammula</i>	lesser spearwort
<i>R. acris</i>	meadow buttercup
<i>Trifolium repens</i>	white clover



Legend

- Drains
- Existing Landfill Boundary
- Proposed Extension
- Hedgerow
- Broken Hedgerow
- Cutover Bog
- Marsh
- Neutral Grassland
- Woodland
- Wet Grassland



Limerick County Council

Project **Gortadroma Landfill Extension EIS**

Title **Habitat Arrangement**

Figure 1



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Photo 1

<i>Carex nigra</i>	common sedge
<i>C.panicea</i>	carnation sedge
<i>C.echinata</i>	star sedge
<i>C.ovalis</i>	oval sedge

Where there are particularly wet spots bog stitchwort *Stellaria uliginosa*, forget-me-nots *Myosotis secunda* and *M.laxa*, marsh bedstraw *Galium palustre*, marsh willowherb *Epilobium palustre* and the moss *Calliergon cuspidatum* are characteristic and these tend to be marshy in the centre.

Some of the fields on a slight slope have been subject to mowing in the past (Photos 2,3) and have an emphasis on sharp-flowered rush *Juncus acutiflorus*, meadow foxtail *Alopecurus pratensis* and sweet vernal grass *Anthoxanthum odoratum*. These also supply a habitat for crested dogtail *Cynosurus cristatus*, changing forget-me-not *Myosotis discolor*, yellow trefoil *Trifolium dubium*, yellow rattle *Rhinanthus minor*, self-heal *Prunella vulgaris* and devilsbit *Succisa pratensis*. There is also a peaty variant tending to heath with the appearance of lousewort *Pedicularis sylvestris*, catsear *Hypochoeris radicata*, woodrush *Luzula campestris* and squirrel-tail fescue *Vulpia bromoides* amongst the clovers *Trifolium repens* and *T.pratense*.

2.2 Dry grassland

The two fields under the site of the former farm are sufficiently sloping to support grassland without rushes. Instead the vegetation consists of Yorkshire fog *Holcus lanatus*, meadowgrass *Poa trivialis*, *P.pratensis*, meadow foxtail *Alopecurus pratensis* and creeping bent *Agrostis stolonifera* with creeping buttercup *Ranunculus repens*, white clover *Trifolium repens* and mouse-ear *Cerastium fontanum*. Previous overgrazing has led to the invasion of tall pasture weeds such as the docks *Rumex obtusifolius* and *R.crispus*, ragwort *Senecio jacobaea* and creeping thistle *Cirsium arvense*.

Traces of a similar community also occur in the flattened space around the farm where yellow trefoil *Trifolium dubium* and soft brome *Bromus hordeaceus* are found.

2.3 Cutover bog

An area of dry bog surrounded by ditches remains east of the present landfill (Photos 4,5). Within a fringe of soft rush *Juncus effusus*, there is a stand of ling *Calluna vulgaris*, cotton grass *Eriophorum vaginatum*, heath rush *Juncus squarrosus* and the mosses *Polytrichum commune*, *Sphagnum recurvum* and *S.capillifolium*, containing such additional species as

<i>Erica tetralix</i>	cross-leaved heath
<i>Molinia caerulea</i>	moorgrass
<i>Potentilla erecta</i>	tormentil
<i>Pedicularis sylvestris</i>	lousewort
<i>Polygala serpyllifolia</i>	heath milkwort
<i>Dactylorhiza maculata</i>	heath spotted orchid



Photo 2

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Photo 3



Photo 4

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Photo 5

<i>Aulacomnium palustre</i>	a moss
<i>Pleurozium schreberi</i>	”
<i>Cladonia portentosa</i>	reindeer lichen
<i>Rhytidiadelphus loreus</i>	”
<i>Peltigera cf lactucifolia</i>	dog lichen

Pools or low places have a little bog moss *Sphagnum cuspidatum* or *S.papillosum*, sundew *Drosera rotundifolia* and bog cotton *Eriophorum angustifolium* but the overall impression is of dryness with an effect of the calcareous underlying substrate shown by marsh horsetail *Equisetum palustre* and common sedge *Carex nigra*.

Some common gorse *Ulex europaeus* is scattered through the stand but becomes more frequent to the south, along with autumn gorse *U.gallii*. There is also fraochan *Vaccinium myrtilus*.

2.4 Hedgerows

Hedges occur around most fields and also around the site of the former farm. Most are based on hawthorn *Crataegus monogyna* and gorse *Ulex europaeus* with some blackthorn *Prunus spinosa*, ash *Fraxinus excelsior* and locally hazel *Corylus avellana*. Honeysuckle *Lonicera perichlymenum* is relatively frequent and there is some wild rose *Rosa canina*. The richest hedge follows the stream valley that cuts NE-SW through the site and here, beneath trees of hazel and the willow *Salix cinerea*, *S.aurita*, the ground flora includes

<i>Ranunculus ficaria</i>	celandine
<i>Stellaria holostea</i>	greater stitchwort
<i>Conopodium majus</i>	pignut
<i>Oxalis acetosella</i>	wood sorrel
<i>Fragaria vesca</i>	wild strawberry
<i>Potentilla sterilis</i>	barren strawberry
<i>Dryopteris dilatata</i>	buckler fern
<i>Athyrium filix-femina</i>	lady fern
<i>Chrysosplenium oppositifolium</i>	golden saxifrage
<i>Viola riviniana</i>	violet
<i>Brachypodium sylvaticum</i>	false brome
<i>Polystichum setiferum</i>	shield fern

Other hedges add foxglove *Digitalis purpurea*, figwort *Scrophularia nodosa*, greater horsetail *Equisetum telmateia* and germander speedwell *Veronica chamaedrys*.

The site of the farm is surrounded by planted hedging involving ash, laurel *Prunus laurocerasus*, elder *Sambucus nigra*, privet *Ligustrum vulgare* and holly *Ilex aquifolium* as well as a few spruce.

2.5 Ditches

Two small streams descend through the site and where they meet the lowlands they take the form of drainage ditches, largely grown over by tall-growing plants, for example great willowherb *Epilobium hirsutum*, yellow flag *Iris pseudacorus*, fool's watercress *Apium nodiflorum*, marsh valerian *Valeriana officinalis*, wild angelica *Angelica sylvestris* and water figwort *Scrophularia auriculata*. Any open water areas carry water starwort *Callitriche* sp and duckweed *Lemna minor*.

2.6 Marsh

The impervious soil means that small springs and seepages are obvious in many places through the fields giving rise to soft patches for much of the year. In the NW corner of the site for instance a stream flows between seeping slopes of soft rush *Juncus effusus*, marsh horsetail *Equisetum palustre* and meadow sweet *Filipendula ulmaria* with expanses of

<i>Lychnis flos-cuculi</i>	ragged robin
<i>Lathyrus pratensis</i>	meadow vetchling
<i>Ranunculus flammula</i>	lesser spearwort
<i>Stellaria uliginosa</i>	bog stitchwort
<i>Carex panicea</i>	carnation sedge
<i>C. flacca</i>	glaucous sedge
<i>C. laevigata</i>	smooth-stalked sedge
<i>Epilobium palustre</i>	marsh willowherb
<i>Hypericum tetrapterum</i>	St John's wort

There is also a more defined spring in the farm area which adds the mosses *Cratoneuron commutatum*, *Calliergon cuspidatum*, hoary willowherb *Epilobium parviflorum*, coltsfoot *Tussilago farfara* and bog stitchwort *Stellaria uliginosa*.

3. FAUNA

The mammal fauna of the site includes the badger which has an active sett east of the former farm. In addition there was evidence of fox, hare, pygmy shrew and brown rat with the probability of stoat and hedgehog in small numbers. There is some bat habitat west of the present landfill but in general the area is unsuited to these animals, being open without tree lines and tall hedges.

The breeding bird fauna of the area is varied, the wet fields being used by reed bunting, sedge warbler, grasshopper warbler and meadow pipit. Most of the smaller species use scrub and hedges also where stonechat, blackbird, cuckoo, willow warbler, bullfinch and linnet are found. Trees in the vicinity of the old farm add woodpigeon, goldcrest, blue tit, mistle thrush, dunnock, goldfinch and greenfinch. Feeding swallows are numerous also.

In winter many of these species are absent through migration but it is likely that meadow pipit, starling, and crow species associated with the landfill become more prominent. In this way jackdaw, rook, hooded crow and magpie would spend some time in the fields, occasionally with black-headed or lesser black-backed gulls. Hen harrier and merlin are likely to be occasional visitors also but would not spend significant time in the area.

4. EVALUATION

The habitats in the proposed site are typical of the shale uplands of west Limerick and north Kerry where the wet soil is a dominant factor in controlling the type of land use that is possible and the plant and animal communities that occur. In the absence of intensive farming a significant amount of wildlife persists in the fields with the bird fauna in particular being well developed.

Although the habitats and species found are widespread in the surrounding area the site does include significant diversity with peaty as well as mineral communities. The cutover bog is a small feature of local ecological interest though its persistence in the absence of development is unlikely. It is becoming overgrown by scrub. The badger sett is also a feature of note: although the animals are by no means rare in the general area there are relatively few sites that are suitable for sett construction.

These items are not of significance in county or regional terms. There are no scarce or rare species of plant or animal as far as is known.

4.1 Designations

No parts of the area or its surroundings have been included in an ecological designation (Natural Heritage Area, Special Area of Conservation or Special Protection Area) and none are likely to be so. There are no habitats or species listed as of special concern in the EU Habitats Directive (92/43/EEC) or Birds Directive (79/509/EEC) and no plants included in the Flora Protection Order 1999. The badger and most of the bird species mentioned are protected under the Wildlife Act 1976.

5. IMPACTS OF DEVELOPMENT

5.1 Construction & Operation

The landfill operation involves three main parts - the removal and storage of spoil to level the site, the construction of refuse cells and the final capping and restoration of these when they are filled. The overall effect is one of obliteration: the habitat underlying the new landfill will be permanently removed while that beneath the stored

soil will be covered for several years. After that time restoration measures will be able to restore a balanced ecology to the surrounding fields. Grassland or other vegetation will also be re-established on the capped landfill.

Construction work on these soils has the potential to release quantities of silt and clay to surface waters and it is possible that some material will enter the local streams despite countermeasures. The streams are relatively eutrophic at present so this will not cause undue problems. The flat profile of the lower section of the site also means that there is room for effective sediment traps.

The presence of refuse and disturbed soils will continue the attraction for opportunistic species of plant and animal and the birdlife is likely to be skewed in this direction as long as the site operates. A landfill in this location is unlikely to be critical to the survival of most species but by making food readily available it concentrates a number of birds that would otherwise be spread out over a much greater area of countryside.

All the birds have an ecological effect in enriching the surrounding area with their droppings, encouraging vegetative growth.

5.2 Restoration

The growth of woody plants on capped landfills is sometimes difficult because of the escape of gas. With adequate management however shallow rooted species such as willows, hazel, blackthorn and gorse will form a significant area of scrub and lead to an increase in the local populations of linnet, redpoll, stonechat and willow warbler.

6. MITIGATION MEASURES

The badger sett will be dealt with before the construction of cells in conjunction with the Heritage Service of the Dept of the Environment (Dúchas) by either re-establishing it outside the site or by trapping and removing the animals.

Effective sediment traps will be constructed to prevent all export of suspended solids in the outflowing streams.

Soil storage will be kept away from the main stream flowing NE-SW through the site and its bankside growth of scrub will be maintained.

The site will be restored with additional planting of native woody species to form scrub and woodland.

5.2 Restoration after site closure

The flora and fauna dependent on the landfill is a transitory feature that will die out or move away after site closure.

No special measures seem required during the restoration phase on ecological grounds though the use of the naturally occurring trees, especially birch *Betula pubescens* and willows *Salix cinerea*, *S. caprea* would do much to camouflage its presence.

References

Fossitt, J.A. 2000 *A guide to habitats in Ireland*. Heritage Council.

JNCC (Joint Nature Conservation Committee) 1990 *Handbook for Phase I habitat survey - a technique for environmental audit*. Peterborough.

NON-TECHNICAL SUMMARY

The habitats that will be used for the landfill extension are quite diverse with cutover bog, scrub-lined stream valleys and hedges, mown fields as well as the wet, rushy grassland typical of the area. All these are widespread generally and although they contain a good range of species none of these is rare or scarce.

The impact of the extension will be one of obliteration - permanent in the disposal area and temporary in the surroundings used for soil storage. The main stream line will be kept intact during the work and effective sediment trapping will be designed to prevent sediment loss. In addition the badgers currently on the site will be moved.

Restoration measures will result in an increase in the amount of scrub communities locally which will in turn increase certain small birds.

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