

Biospheric Engineering Ltd.
NOISE

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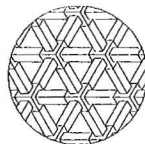
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Killarney Waste Disposal Ltd.

Report on Noise levels

Report Ref: - 497-2004

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**Report on Noise levels at
Killarney Waste Disposal Ltd.
For Waste Licence application to the EPA**

Report Ref: - 497/2004

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1 INTRODUCTION

This Report was prepared by Biospheric Engineering Ltd as part of a waste licence application to the Environmental Protection Agency.

It is anticipated that the following conditions may be imposed as part of a licence:

Noise Limits

There shall be no clearly audible tonal component or impulsive component in the noise emissions from the activity at the noise sensitive locations.

Noise Emissions:

| Day dB (A) L_{Aeq} (30 minutes) | Night dB(A) L_{Aeq} (15 minutes) |
|-----------------------------------|------------------------------------|
| 55 | 45 |

Monitoring Locations

Monitoring locations are generally required at the site boundary and at a nearby noise sensitive location. This site is located remote from any significant residential development in a farmland setting. The two nearest residences are located to the northeast and southwest of the site, with a number of houses in a ribbon development on the nearby county road.

Noise Monitoring

It is anticipated that noise monitoring will be required on an annual frequency with the following parameters to be reported:

| Parameter | Monitoring Frequency | Analysis Method/Technique |
|---|----------------------|----------------------------|
| $L(A)_{EQ}$ [30 minutes] | Annual | Standard ^{Note 1} |
| $L(A)_{10}$ [30 minutes] | Annual | Standard ^{Note 1} |
| $L(A)_{90}$ [30 minutes] | Annual | Standard ^{Note 1} |
| Frequency Analysis (1/3 Octave band analysis) | Annual | Standard ^{Note 1} |

Note 1: "International Standards Organisation. ISO 1996. Acoustics – description and Measurement of Environmental noise. Parts 1, 2 and 3".

2 MEASUREMENT METHODOLOGY

Measurements were taken using a Bruel & Kjaer model 2260 and a Bruel & Kjaer type 2238 type 1 sound level meters with modular real-time analysis using BZ7210 noise analysis module. The instruments were calibrated using a Bruel & Kjaer model 4231 sound level calibrator. No drift in calibration was evident during the monitoring period. Post Measurement analysis was carried out using Bruel & Kjaer Noise Explorer software. During measurement the height of the microphone was 1.3 metres above ground at the sampling location.

Weather data was compiled using Prosser model Weathertrend digital barometer, Rotronic model A1 Hygrometer and Silva digital anemometer.

Noise measurements were taken in accordance with International Standards Organisation ISO 1996 – Acoustics – Description and Measurement of environmental noise.

Noise measurements were taken at the site entrance and the two nearest noise sensitive locations. Measurements were also taken close to all the noise sources operating on the site. The Noise monitoring locations are outlined on drawing No. DG0001-05.

The noise climate is influenced by traffic movements in the area in addition to activities on site. For this reason an extended monitoring period was used and the log of the monitoring data at each of the noise sensitive locations is reproduced.

3 NOISE CLIMATE – Current and Future

The area in which the Materials Recovery Facility is located is a rural area. Noise sources noted during the course of the survey included: Noise emanating from site activities, traffic noise, agricultural activity including traffic and farm animal noise, domestic activity including gardening, lawnmowers etc.

Noise levels in the area can generally be regarded as “low” with occasional peaks due to specific activities as outlined above. The generally acceptable noise levels for such an area are outlined in Environmental Protection Agency and National Roads Authority Policy.

The Environmental Protection Agency noise guidelines for on site activities are outlined in Section 1 and it is expected that the noise limits of 55dB(A) and 45dB(A) will be applied for the day and night periods respectively.

Current National Roads Authority design criteria for new road schemes is to limit the $L_{10\ 18\ \text{hour}}$ to 68^1 dB(A). This is an equivalent to an L_{eq} value of 65^2 dB(A). This noise level is the design level at the nearest noise sensitive location, in this case the nearest residences.

The appropriate noise limits therefore for the activity when measured on a L_{Aeq} index are as follows:

| | |
|------------------------------------|----------|
| Noise from site related activities | 55 dB(A) |
| Noise from traffic | 65 dB(A) |

The extension to the facility will comprise a large building, which will completely envelope the current structure. This will have the effect of enclosing the loading and unloading operations which currently take place in the open yard. Enclosing these activities will further reduce noise emissions in gross terms. However the equipment is likely to be required to operate for longer periods and at a greater level of throughput so that the reductions due to enclosure will be offset by increases due to activity levels.

With regard to traffic levels peak hourly HCV traffic will increase from 10 to 17 movements – less than doubling of the traffic. This will result in an increase of about 3 dB due to traffic noise to and from the site on the adjacent roads network.

It is not anticipated that noise levels will change significantly as a result of the increased activity.

¹ N6 Galway- East Ballinasloe road Scheme. Environmental Impact Statement, August 2004

² Converting the UK traffic noise index LA10,18h to EU indices for noise mapping, Abbott & Nelson, TRL Limited, 2002
Biospheric Engineering Ltd. 497/2004

4 WEATHER DATA

| 4th August, 2004 | Weather Conditions | Temperature °C | Relative Humidity % | Wind speed & Direction |
|--|-------------------------------|---------------------------|------------------------------------|---------------------------------------|
| 12.35 hrs | Hazy sunshine | 22 | 62 | Calm |

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5 NOISE EMISSIONS AT SITE BOUNDARY AND NOISE SENSITIVE LOCATIONS

| Emission point reference No. | Location | Octave bands (Hz) Sound Pressure Levels dB (unweighted) per band | | | | | | | | Impulsive or tonal qualities | Periods of Emission | |
|------------------------------|------------------------|--|----|-----|-----|-----|----|----|----|------------------------------|---------------------|---------------|
| | | 31.5 | 63 | 125 | 250 | 500 | 1K | 2K | 4K | | | 8K |
| N 1 | Entrance Gate | 16 | 29 | 33 | 34 | 44 | 48 | 46 | 35 | 27 | No | Working hours |
| N 2 | NSL North east of site | 23 | 39 | 39 | 44 | 48 | 52 | 51 | 46 | 40 | No | Working hours |
| N 3 | NSL South west of site | 17 | 25 | 33 | 31 | 43 | 47 | 46 | 38 | 38 | No | Working hours |

Note:

Normal Working Hours

07:00 to 20:00 Monday to Saturday

Identification of Tones

A prominent tonal component can be identified by one-third-octave band analysis, where the level of a one-third-octave band exceeds the levels of the adjacent bands by 5 dB or more.

Identification of impulsive characteristics

An impulsive characteristic can be determined by measuring the difference between the A-weighted sound pressure level, with time-weighting characteristic I, averaged over the same time interval, and $LA_{e,T}A$ value of greater than 2 dB ($LA_{Im}-LA_{eq}$) would indicate an impulsive characteristic.

6 NOISE EMISSIONS – ON SITE EQUIPMENT

Equipment on Site Measured Noise Levels

| Emission point reference No. | Location | Octave bands (Hz) Sound Pressure Levels dB (unweighted) per band | | | | | | | | | | Impulsive or tonal qualities | Periods of Emission | Other Comments |
|------------------------------|-----------------------------------|---|----|-----|-----|-----|----|----|----|----|---------------------------|------------------------------|---------------------|----------------|
| | | 31.5 | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | | | | |
| 1 | Baling equipment @ 5 m | 57 | 56 | 47 | 45 | 45 | 45 | 42 | 39 | 34 | No | Operating hours only | Located indoors | |
| 2 | Cat 226 Loader @ 2m | 78 | 83 | 76 | 76 | 75 | 81 | 70 | 65 | 61 | Reversing beacon is tonal | Operating hours only | Located indoors | |
| 3 | Generator @ 2m | 84 | 86 | 81 | 79 | 69 | 63 | 59 | 53 | 45 | No | Operating hours only | | |
| 4 | Eurec S2000 running empty @ 3m | 69 | 87 | 88 | 79 | 78 | 70 | 68 | 64 | 58 | No | Operating hours only | Located indoors | |
| 5 | Eurec S2000 running on load @ 3m | 72 | 81 | 72 | 73 | 75 | 68 | 68 | 63 | 61 | No | Operating hours only | Located indoors | |
| 6 | Eurec sorter on load @ 3m | 77 | 82 | 80 | 79 | 80 | 76 | 75 | 70 | 66 | No | Operating hours only | Located indoors | |
| 7 | Manitou Loader MLT 678 Turbo @ 5m | 58 | 54 | 45 | 42 | 41 | 39 | 35 | 31 | 28 | Reversing beacon is tonal | Intermittent | | |

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7 ENVIRONMENTAL NOISE INDICES

| Location | National Grid Reference (6N, 6E) | Sound Pressure Levels | | |
|--|--|-----------------------|--------------------|--------------------|
| | | L(A) _{eq} | L(A) ₁₀ | L(A) ₉₀ |
| SITE MEASUREMENTS | | | | |
| Location 1: N1 Entrance Gate | | 52 | 56 | 42 |
| Location 2: N2 NSL northeast of site | | 59 | 54 | 29 |
| Location 3: N3 NSL southwest of site | | 52 | 47 | 35 |
| COMMENTS | | | | |
| All locations can be considered to be well within accepted limit for traffic noise | | | | |
| Location 1: N1 Entrance Gate | Within EPA guideline values for daytime operation | | | |
| Location 2: N2 NSL northeast of site | Noise levels at N2 include traffic on county road LAeq reduces to ~ 40 dB(A) excluding traffic | | | |
| Location 3: N3 NSL southwest of site | Within EPA guideline values for daytime operation – including traffic noise Currently exceeds EPA guideline value for night-time operation even with traffic excluded. This location is on the site boundary. The two nearest dwellings are over 100 metres from the site boundary and occupied by the brother and mother of the Managing Director of Killarney Waste Disposal Ltd. | | | |

8 DISCUSSION OF RESULTS

Three monitoring locations were chosen:

1. At the site entrance
2. At the nearest noise sensitive location to the North east
3. At the nearest noise sensitive location to the South west

These locations offer the best monitoring locations as the sites are easily accessible and offer a representative view of noise emissions from the site.

The noise levels at the noise sensitive location are determined by the road traffic noise on local road rather than any noise arising from the licensed activities and so the licensed activity complies with EPA guidance for licenced activities during the day time.

Noise levels are below the NRA guideline values for traffic noise and the projected increase in traffic levels as a result of the proposed extension will not significantly increase traffic noise levels.

Noise levels due to on site activities at the site boundary do not exceed EPA guidance values for daytime operation. The generator and site activity noise can exceed the night-time limit on the eastern site perimeter. Mitigation is required if the site is to operate outside the hours 08:00 to 22:00 hrs.

Location N1

- site based noise level in compliance with EPA requirements

Location N2

- noise climate predominantly influenced by road traffic noise on local road. No tonal or impulsive components. No audible noise from licensed activities
- complies with licence conditions.

Location N3

- site based noise level in compliance with EPA requirements. Note L_{90} level is higher than that recorded at N2 at plant is audible at this location.
-

9 CONCLUSION

The mitigation measures required for night time working are outlined in the following section.

No significant noise generating activity takes place prior to 08:00 hrs and with the mitigation measures proposed for night time working the facility can be considered to be in compliance with the likely licence conditions.

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10 MITIGATION MEASURES

The Three significant noise sources on site that contribute to off-site noise levels are:

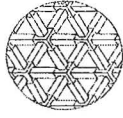
1. The Generator
2. Loading and Unloading Activities in the yard
3. Timber Shredding

These latter two of these noise sources will be enclosed by the new extension to the building and so will reduce as part of the proposed extension.

With regard to the generator, it is currently located in an acoustic enclosure but unfortunately is located very close to the site boundary (and the monitoring point).

It is recommended that the generator be enclosed in an open enclosure (no roof required) on the south-western corner of the existing building. This enclosure to comprise of two walls to a height of 300mm above the top of the exhaust pipe and enclosing the generator at a distance of not less than 1 metre to allow access for maintenance etc.

The entrance to the enclosure can be open provided the walls overlap.

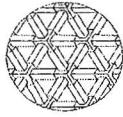


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Frequency Analysis Table

| Client: | Killarney Waste Disposal Ltd | | | |
|------------------------|-------------------------------------|-----------|------------------------------------|--------|
| Site: | Aughnacurreen, Killarney, Co. Kerry | | | |
| Location: | Entrance Gate | | | |
| Survey Date: | 4th August 2004 | | | |
| Frequency Hz | ¹ / ₃ Octave | | ¹ / ₁ Octave | |
| | dBA | dB lin | dBA | dB lin |
| 25 | 3 | 48 | | |
| 31.50 | 9 | 48 | 16 | 54 |
| 40 | 15 | 50 | | |
| 50 | 19 | 49 | | |
| 63 | 27 | 53 | 29 | 55 |
| 80 | 24 | 46 | | |
| 100 | 30 | 49 | | |
| 125 | 27 | 43 | 33 | 50 |
| 160 | 27 | 40 | | |
| 200 | 27 | 38 | | |
| 250 | 28 | 36 | 34 | 43 |
| 315 | 32 | 39 | | |
| 400 | 37 | 41 | | |
| 500 | 37 | 40 | 44 | 47 |
| 630 | 42 | 44 | | |
| 800 | 43 | 44 | | |
| 1000 | 44 | 44 | 48 | 48 |
| 1250 | 44 | 43 | | |
| 1600 | 43 | 42 | | |
| 2000 | 40 | 39 | 46 | 45 |
| 2500 | 37 | 35 | | |
| 3150 | 33 | 32 | | |
| 4000 | 28 | 27 | 35 | 34 |
| 5000 | 26 | 26 | | |
| 6300 | 21 | 21 | | |
| 8000 | 20 | 21 | 27 | 26 |
| 10000 | 24 | 21 | | |
| Leq Sound Level | 51 | 59 | | |

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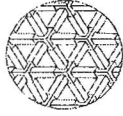


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Frequency Analysis Table

| Client: | Killarney Waste Disposal Ltd | | | |
|------------------------|-------------------------------------|-----------|----------------------|--------|
| Site: | Aughnacurreen, Killarney, Co. Kerry | | | |
| Location: | East of Site at crossroads | | | |
| Survey Date: | 4th August 2004 | | | |
| Frequency Hz | $\frac{1}{3}$ Octave | | $\frac{1}{1}$ Octave | |
| | dBA | dB lin | dBA | dB lin |
| 25 | 9 | 54 | | |
| 31.50 | 15 | 55 | 23 | 60 |
| 40 | 21 | 56 | | |
| 50 | 29 | 59 | | |
| 63 | 33 | 60 | 39 | 64 |
| 80 | 37 | 60 | | |
| 100 | 33 | 53 | | |
| 125 | 34 | 50 | 39 | 56 |
| 160 | 36 | 49 | | |
| 200 | 38 | 49 | | |
| 250 | 39 | 48 | 44 | 53 |
| 315 | 40 | 46 | | |
| 400 | 42 | 46 | | |
| 500 | 43 | 46 | 48 | 51 |
| 630 | 45 | 47 | | |
| 800 | 47 | 47 | | |
| 1000 | 47 | 47 | 52 | 52 |
| 1250 | 47 | 47 | | |
| 1600 | 47 | 46 | | |
| 2000 | 45 | 44 | 51 | 49 |
| 2500 | 45 | 43 | | |
| 3150 | 43 | 42 | | |
| 4000 | 40 | 39 | 46 | 45 |
| 5000 | 38 | 38 | | |
| 6300 | 36 | 36 | | |
| 8000 | 34 | 35 | 40 | 40 |
| 10000 | 36 | 34 | | |
| Leq Sound Level | 56 | 67 | | |

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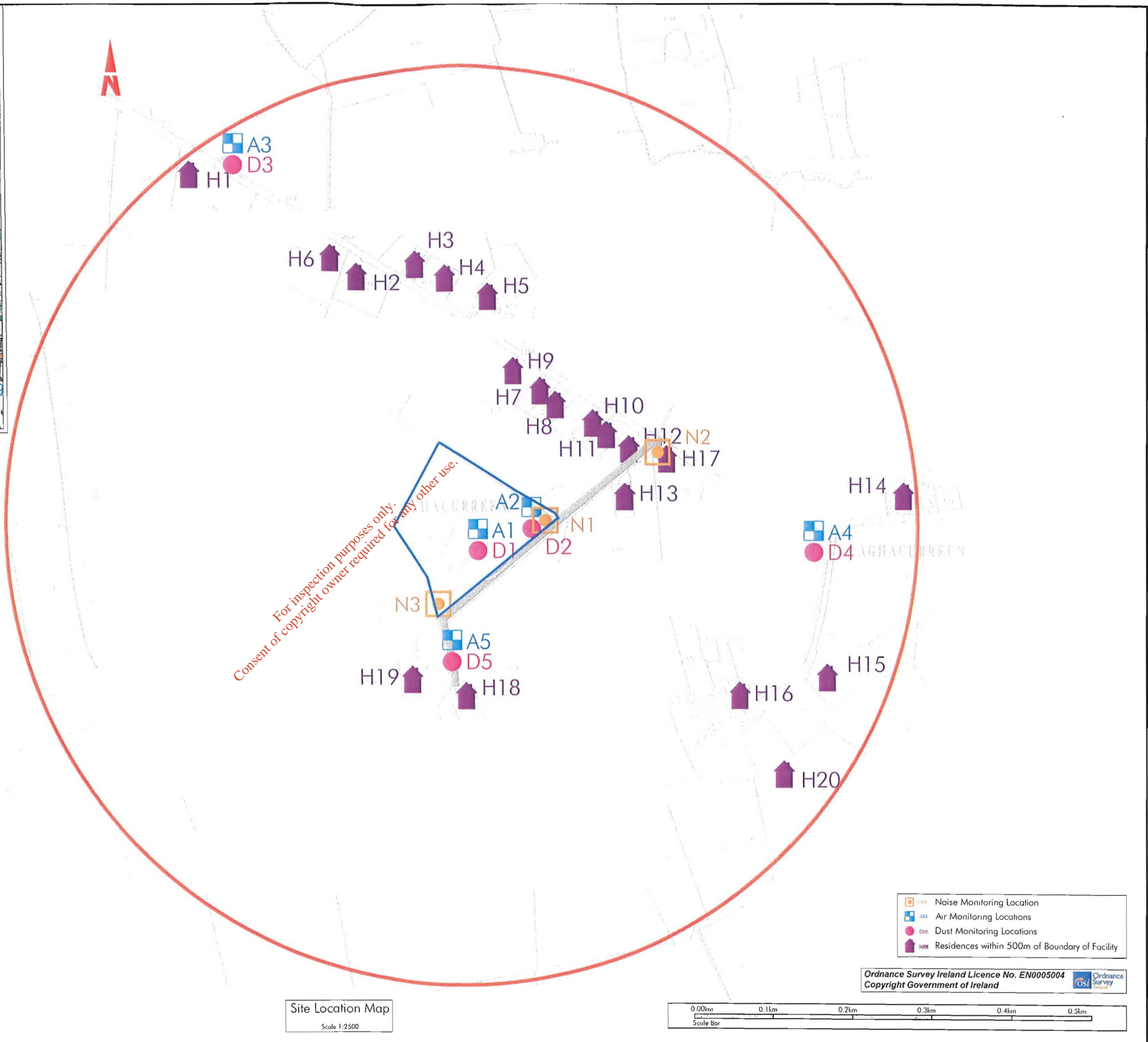
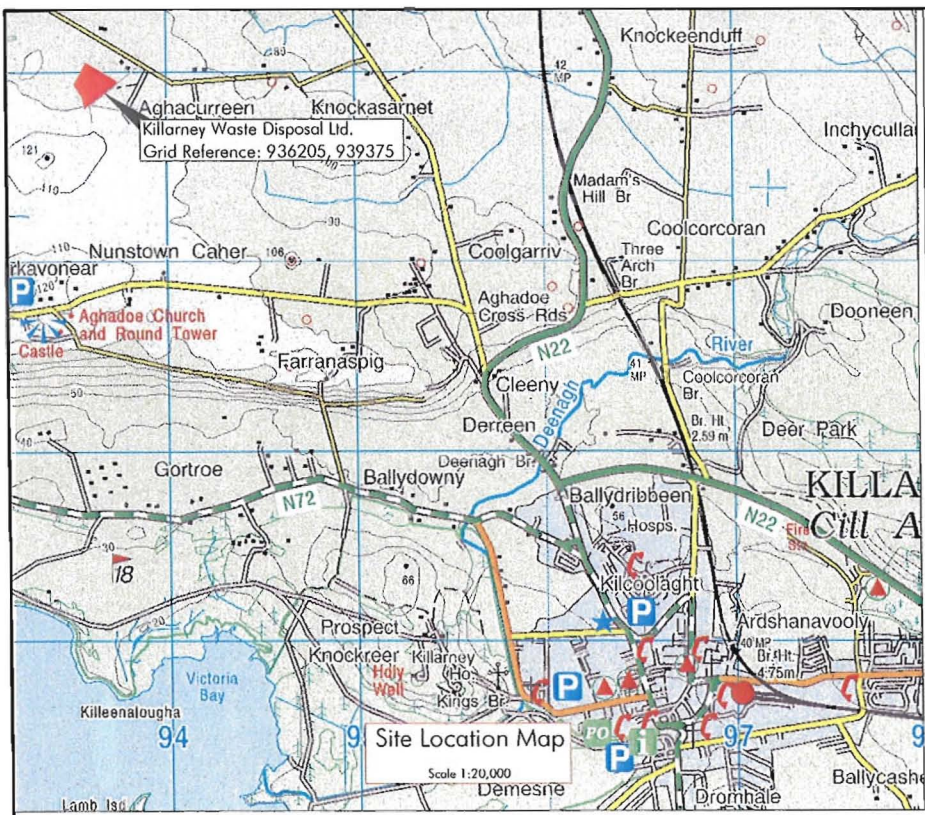


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Frequency Analysis Table

| Client: Site: Location: Survey Date: | Killarney Waste Disposal Ltd Aughnacurreen, Killarney, Co. Kerry NSL at west of site 4th August 2004 | | | |
|---|---|-----------|----------------------|--------|
| Frequency Hz | $\frac{1}{3}$ Octave | | $\frac{1}{1}$ Octave | |
| | dBA | dB lin | dBA | dB lin |
| 25 | 5 | 49 | | |
| 31.50 | 9 | 48 | 17 | 54 |
| 40 | 16 | 50 | | |
| 50 | 18 | 48 | | |
| 63 | 18 | 45 | 25 | 51 |
| 80 | 22 | 45 | | |
| 100 | 31 | 50 | | |
| 125 | 25 | 41 | 33 | 51 |
| 160 | 24 | 37 | | |
| 200 | 23 | 34 | | |
| 250 | 23 | 32 | 31 | 39 |
| 315 | 29 | 36 | | |
| 400 | 36 | 40 | | |
| 500 | 38 | 42 | 43 | 46 |
| 630 | 40 | 41 | | |
| 800 | 42 | 43 | | |
| 1000 | 44 | 44 | 47 | 48 |
| 1250 | 42 | 41 | | |
| 1600 | 44 | 43 | | |
| 2000 | 41 | 40 | 46 | 45 |
| 2500 | 37 | 36 | | |
| 3150 | 33 | 32 | | |
| 4000 | 33 | 32 | 38 | 37 |
| 5000 | 33 | 32 | | |
| 6300 | 32 | 32 | | |
| 8000 | 31 | 32 | 38 | 37 |
| 10000 | 35 | 32 | | |
| Leq Sound Level | 51 | 58 | | |

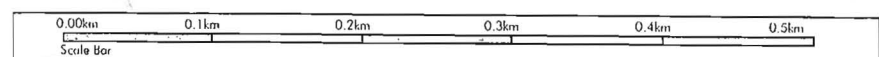
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- Noise Monitoring Location
- Air Monitoring Locations
- Dust Monitoring Locations
- Residences within 500m of Boundary of Facility

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Site Location Map
Scale 1:2500



KWD RECYCLING

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NOTES

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- All Levels refer to Ordnance Survey Datum, Malin Head.
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| No. | Date | Amendment / Issue | App. |
|-----|----------|-------------------|------|
| F02 | 07/01/05 | Final Issue | W.M. |
| F01 | 17/09/04 | Final Issue | W.M. |

Killarney Waste Disposal LTD.
Waste Licence Application

Title
**Monitoring Locations
Dust, Air & Noise**

| | | | |
|--------------|-------------|-----------|---------------|
| Drawn by: | C.N | Job No. | MGE0031 |
| Checked by: | S.A | File No. | MGE0031DG0001 |
| Approved by: | W.M | Org. No. | Rev |
| Scale: | 1:2500 @ A1 | DG0001-05 | F02 |
| Date | Jun.'04 | | |

Roger Goodwillie & Associates
TERRESTRIAL ECOLOGY

E

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1. INTRODUCTION

The proposed development is an enlargement of an existing recycling facility which is situated in agricultural land north-west of Killarney at a height of about 98m OD. It was visited in August 2004 to describe the existing ecology and assess its value, and to discuss the impact of the enlargement. Some of the necessary stream and stormwater treatment works appears to have been undertaken already.

The site is described in terms of a Phase I Habitat Survey (JNCC 1990) using the habitat types of the Heritage Council publication (Fossitt 2000). The fieldwork consisted of a walkover to examine the flora and vegetation and the vertebrate life present.

2. HABITATS & VEGETATION

The site is level and based on a peaty soil so that most fields are surrounded or cut across by drains. Some of the area has been reclaimed to pasture - improved agricultural grassland (GA1 in Fossitt 2000) - while there is also a coniferous plantation (WD4), wet grassland (GS4), drainage ditch (FW4) or stream and a treeline (WL1) along the road on the SE boundary. Existing activities occur in a yard with some unpaved ground to the north-east which is recolonising bare ground (ED3).

2.1 Improved grassland

The site is roughly triangular in shape and the northern half consists of fairly intensively managed grassland dominated by ryegrass *Lolium perenne* and rough meadowgrass *Poa trivialis* but with some meadow foxtail *Alopecurus pratensis*, timothy *Phleum pratense* and a few plants of soft rush *Juncus effusus*. It is grazed by cattle and is pipe-drained into a marginal ditch along the northern side. It has no vegetation of interest.

2.2 Wet grassland

A small section of the site south-west of the existing building is still in grass though it has been planted recently with small conifers on ridges. It has mineral soil and slopes down to the conifer area. Grasses *Holcus lanatus*, *Arrhenatherum elatius*, *Agrostis stolonifera* and soft rush *Juncus effusus* form the bulk of the vegetation with such more obvious species as

| | |
|--------------------------------|------------------|
| <i>Lathyrus pratensis</i> | meadow vetchling |
| <i>Rumex acetosa</i> | sorrel |
| <i>Cirsium palustre</i> | marsh thistle |
| <i>Scrophularia auriculata</i> | water figwort |

| | |
|---------------------------|---------------------------|
| <i>Calystegia sepium</i> | bindweed |
| <i>Stachys palustris</i> | marsh woundwort |
| <i>Stellaria graminea</i> | field stitchwort |
| <i>Lotus pedunculatus</i> | greater birdsfoot trefoil |
| <i>Galium palustre</i> | marsh bedstraw |

2.3 Drainage ditch

This field runs eastward into a seasonally wet channel on a shaley subsoil in which bog stitchwort *Stellaria uliginosa* and lesser spearwort *Ranunculus flammula* are found. Typical annual species also grow there, for example

| | |
|------------------------------|------------------|
| <i>Persicaria hydropiper</i> | water pepper |
| <i>P. maculosa</i> | redshank |
| <i>Cardamine flexuosa</i> | wavy bittercress |
| <i>Juncus bufonius</i> | toad rush |
| <i>Gnaphalium uliginosum</i> | cudweed |

This enters the stream which flows NE through the site in a new channel. (The former course was altered to move it away from the buildings). The established channels lie within the conifers and on each side of the grassland field described in 2.1. Some of the same plants occur here: water purslane *Lythrum portula* is an additional species grows in mud at the edge of the forest. There are more perennials in well-lit situations, for example field and water horsetails *Equisetum arvense*, *E. fluviatile*, sweet grass *Glyceria fluitans*, water mint *Mentha aquatica* and tufted hairgrass *Deschampsia cespitosa*, usually with some alder *Alnus glutinosa* and grey willow *Salix cinerea*.

Water from the site flows eastwards on low gradients to the Glanooragh River which then turns NW and descends to enter the Laune 5km above Killorglin.

2.4 Treelines

Trees occur along the ditches on both the NE and SE boundaries of the site. Alder *Alnus glutinosa* dominates in the wet ground but there is some planted Italian alder *A. cordata* on the southern side as well as ash *Fraxinus excelsior*, birch *Betula pubescens*, hawthorn *Crataegus monogyna*, holly *Ilex aquifolium*, elder *Sambucus nigra* and rowan *Sorbus aucuparia*. The ground flora is split between dry-ground and aquatic species, for example

| | |
|------------------------------|----------------|
| <i>Rubus fruticosus</i> | bramble |
| <i>Lonicera periclymenum</i> | honeysuckle |
| <i>Pteridium aquilinum</i> | bracken |
| <i>Hedera helix</i> | ivy |
| <i>Digitalis purpurea</i> | foxglove |
| <i>Alliaria petiolata</i> | garlic mustard |
| <i>Torilis japonica</i> | hedge mustard |

| | |
|----------------------------|------------------|
| <i>Urtica dioica</i> | nettle |
| <i>Angelica sylvestris</i> | wild angelica |
| <i>Epilobium hirsutum</i> | great willowherb |

Hemlock *Conium maculatum* and welsh poppy *Meconopsis cambrica* occur along the southern margin, the latter derived probably from garden planting.

2.5 Conifer plantation

The trees are of the order of 20 yrs old and have achieved a closed canopy so that ground vegetation is limited. However at the edges of clearings or along the margins ferns are quite common, especially *Athyrium filix-femina*, *Blechnum spicant* and *Dryopteris dilatata*. An almost-overgrown clearing within the trees maintains some moorgrass *Molinia caerulea* and common gorse *Ulex europaeus* while bramble *Rubus fruticosus*, foxglove *Digitalis purpurea* and bittercress *Cardamine flexuosa* are scattered throughout. Most of the ground is covered by conifer needles but there is a little moss - *Thuidium tamariscinum* and *Atrichum undulatum*.

2.6 Bare ground and loose soils

Considerable excavation of the stream channel beside the lagoon on the northern side of the central road has yielded bare peat which like the ground beside the paved areas is being colonised by a suite of agricultural weeds such as

| | |
|----------------------------------|-------------------|
| <i>Sinapis arvensis</i> | charlock |
| <i>Chenopodium album</i> | white goosefoot |
| <i>Atriplex patula</i> | orache |
| <i>Senecio vulgaris</i> | groundsel |
| <i>Stellaria media</i> | chickweed |
| <i>Matricaria discoidea</i> | pineapple weed |
| <i>Tripleurospermum inodorum</i> | scentless mayweed |
| <i>Sisymbrium officinale</i> | hedge mustard |
| <i>Rumex obtusifolius</i> | broad-leaved dock |
| <i>Coronopus didymus</i> | swine's cress |

A line of dead Sitka spruce still stands beside this drain, killed probably by soil being pushed onto their root area.

3. FAUNA

There was no evidence of large mammals in the area though foxes would be likely to visit at times as would the hare and badger. Pygmy shrew were heard at the edge of the conifers while brown rat and house mouse probably frequent the built areas. The

tree cover of conifers does not suit bats but a few animals are likely to feed in the marginal trees on the southern boundary.

The bird fauna was more diverse, probably because of the presence of the larger area of trees to the west which acts as a local reservoir of wildlife. In this way birds may visit the site but are not solely dependant on it. Large birds in this category were hooded crow, rook, magpie, pheasant and woodpigeon. The rooks were feeding in the grassland field where, west of the development area, there were also three mallard. Small species that are generally associated with trees included blackbird, robin, wren, blue tit, coal tit, goldcrest, bullfinch, linnnet and redpoll.

Butterflies seen were meadow brown, peacock and small white.

4. EVALUATION

The site supports typical communities and species for the heavy soils of north Kerry and west Limerick. It has none of the diversity associated with the lakes and hills of Killarney and, as far as is known, no rare species either of plant or animal.

4.1 Designations

The area is not included by any ecological designation (pNHA, cSAC or SPA) and has no features that make this likely in future. It does not support habitats or species with special listing in the EU Habitats Directive nor birds included in Annex I of the Birds Directive. Most of the bird species have general protection under the Wildlife Act 1976.

5. IMPACT OF DEVELOPMENT

A general enlargement of the facility and improvement of the stormwater treatment system will have very limited impacts on the existing ecology of the area. The creation of a small reedbed and percolation area will tend to diversify the invertebrate fauna as they are replacing existing intensive grassland. The increase in building and paved area will occupy the hard stand already created and not cover current habitat.

Neither impact can be regarded as significant on a regional scale. Even locally the changes in plant and animal life will scarcely be noticed because of the persistence of large areas of the present habitats outside the site boundaries.

Water quality will be improved in the medium term by the proposed arrangements though there may be additional suspended matter released during construction. This has probably largely occurred with the placement of hard core and stream alterations done recently.

6. MITIGATION MEASURES

The trees along the SE and NE boundaries will be maintained and augmented by planting of willows and other native species within the site. Alder is already widespread in the area.

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.

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