

ATTACHMENT I.1

Assessment of Atmospheric Emissions

Emissions arising on-site, as per the existing waste licence, are described in Section E, and there are no proposed changes to environmental emissions with regard to the application for the Technical Review.

- As discussed in Section E.1 above, the only emissions existing/expected to atmosphere at the site are:
 1. Typical exhaust emissions from Hitachi 200 excavator and from the haulage trucks delivering material to the site for recovery/reclamation.
 2. Dust from the unloading of material from the haulage trucks, and the subsequent movement/spreading of the inert material over the area of the deposition site.

Baseline dust monitoring took place between 08 December 2008 and 07 January 2009 (30 Days), at the three locations illustrated on Drawing No.2084-2606 Rev D (attached in 'Application Drawings'). Total dust deposition was measured at the site using Bergerhoff gauges specified in the German Engineering Institute VDI 2119 document entitled "Measurement of Dustfall Using the Bergerhoff Instrument (Standard Method)". The three dust gauges were set up such that the glass containers were approximately 2m above the ground surface.

The glass jars containing the dust were submitted to Complete Laboratory Solutions, Ros Muc, Co. Galway. The results are presented below:

Sample Location	Settlement Dust (mg/m ² /day)
D1	657
D2	130
D3	194

Currently in Ireland, there are no statutory limits for dust deposition. The following thresholds for point and fugitive emission respectively are suggested by ICF, EPA and the DoEHLG for dust arising from quarrying operations:

Point Emissions:

The concentration of particulate matter in emissions to air should not exceed 100mg/m² (in effect meaning that there should be no visible dust plume).

Fugitive Emissions:

The amount of dust deposited anywhere outside the plant boundary, when averaged over a 30-day period, should not exceed:

- 130mg/m² per day when measured according to the BS method which takes account of insoluble components only, or
- 350mg/m² per day when measured according to TA Luft, which includes both soluble and insoluble matter. (EPA compliance monitoring is based on the TA Luft method)

The measurements from D2 & D3 are below the 350 mg/m²/day threshold. The measurement taken at D1 is above the 350 mg/m²/day threshold. This is probably due to the proximity of the monitoring location to a small roadway along the western boundary of the site. No deposition of material has taken place in this area to date, so it is not expected that these dust levels are in any way related to the existing site.

Biannual dust deposition monitoring is taking place in 2012 as part of the current licence requirements and monitoring results from 2012 will be submitted per the reporting requirements of the licence.

• **Potential Impacts**

As stated in Section D.1.d above, it is estimated that up to a maximum of approximately 90 truckloads of inert material will be accepted at the facility per week. This low level of traffic movement to/from the site will mean very low emissions from haulage truck exhausts to the atmosphere. The plant on site, Hitachi 200 excavator, is used intermittently on daily/weekly basis, thus does produce high levels of emissions to the atmosphere.

There are a number of features relating to the site that have the potential to generate dust and the potential to affect the air quality in the vicinity of the site. These are:

- Unloading of material by haulage trucks;
- Storage of stockpiles of material, prior to spreading over deposition area
- Site roads

- Traffic entering and leaving the site

- **Mitigation Measures**

In relation to exhaust emissions from the site plant, Hitachi 200 excavator, this machine is serviced regularly to ensure exhaust emissions are kept to a minimum. The engine is turned off when not in use.

The operators take all reasonable steps as far as is practical to minimise dust emissions from material handling operations and use reasonable techniques for minimising the release of dust into the atmosphere.

There are certain measures that are adhered to in effectively minimising dust emissions from the proposed operations. Air emission abatement measures are achieved through the following on site measures:

- Reduction in the volume of the stockpiles
- Water spraying stockpiles and access roads during prolonged dry periods;
- Dust monitoring will be carried out biannually, per licensed requirements.

If the level of dust is found to exceed $350\text{mg}/\text{m}^2/\text{day}$ in the vicinity of the site, further mitigation measures will be incorporated into the operation of the facility.

It is expected that some dust generation can arise as a result of continuing material recovery/reclamation activities on the site. However, it is likely that dust generation will remain below the accepted EPA emission limit, with proper site management. With the above mitigation measures in place, no likely significant effects on air quality are envisaged.

Client : Emma Sweeney
 Tobin Consulting Engineers
 Market Square
 Castlebar
 Co. Mayo

Report No. : 86546
 Date of Receipt : 07/01/2009
 Start Date of Analysis : 08/01/2009
 Date of Report : 09/01/2009
 Order Number :
 Sample taken by : Client

CERTIFICATE OF ANALYSIS

Results

Lab No	Sample Description	Test	Result	Units
195412	DS 1. 7/12/07 @ 11am	Settleable Dust (Bergerhoff Method)	657. Very dusty	mg/sq.M/Day
195413	DS 2. 7/12/07 @ 11am	Settleable Dust (Bergerhoff Method)	130	mg/sq.M/Day
195414	DS 3. 7/12/07 @ 11am	Settleable Dust (Bergerhoff Method)	194	mg/sq.M/Day

Authorised by:

Barbara Lee
Environmental Scientist

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ATTACHMENT I.2

Assessment of Impact on Receiving Surface Water

- **Existing Environment:**

There are no changes to the surface water environment, surface water monitoring proposals or to the potential impact to surface waters arising from the application for the Technical Review and the currently licensed requirements relating to surface water, per W0256-01, will continue to be maintained.

The site is drained by a number of open surface water drains, as can be seen on Drawing No. 2084-2601 Rev B & Drawing No. 2084-2613 Rev C (attached in 'Application Drawings'). An open surface water drain surrounds the perimeter of the entire deposition site (with the exception of the northwest corner of the site), and a no. of open drains are cut through the deposition site in a north-south direction. All of the open drains, drain into the local Clooneen River (which runs along the northern site application boundary in an easterly direction), at five locations.

The five locations (as shown on Drawing No 2084-2613 Rev C, attached in 'Application Drawings') refer to the five no. currently licensed emission points to surface water (Clooneen River) from the site (EMSW-1, EMSW-2, EMSW-3, EMSW-4 & EMSW-5).

Baseline Surface water monitoring was undertaken (December 2008) for the application for the existing licence. Water samples (grab samples) were collected from the Clooneen River at 3 no. sampling locations (SW-1, SW-2 & SW-3, as shown on Drawing no. 2084-2606 Rev D, attached in 'Application Drawings') on 08 December 2008. SW-1 is located upstream of the site. SW-2 is located along the northern boundary of the site, downstream of the main surface water drainage outlet from the site and SW-3 is located at the northwest corner of the site, downstream of a surface water drain outlet from the site. These data are presented in the application form along with 2012 monitoring data.

Monitoring was undertaken in April 2012, per the licence requirements, at 5 no. sampling locations (SW-1, SW-2, SW-3, SW-4 & SW-5, as shown on Drawing no. 2084-2606 Rev D, attached in 'Application

Drawings'). Monitoring results from the water sampling are presented in the application form. The laboratory test certificate is given in Attachment I.2.

In completing the soil deposition works, the Deputy Facility Manager/Machine Operative has the opportunity to re-examine the material and to identify any non-compliant material. Should suspect materials be discovered during this process, they will be immediately removed to the site Quarantine skips for authorised removal from the facility and appropriate disposal/recovery.

- **Potential Impacts**

The inert Soil & Stone recovered at the site have the potential to increase the 'Total Suspended Solids' concentration of the surface water draining from the site (through open surface water drains) into the Clooneen River. The inert nature of the material being recovered/reclaimed should not result in other chemical contaminants having a potential impact to surface water.

- **Mitigation Measures**

5 no. 'Settlement Ponds' have been put in place on the drainage channels, prior to their emission to the main surface water body (Clooneen River), as shown on Drawing No. 2084-2614 Rev D (attached in 'Application Drawings'). The purpose of these Settlement Ponds is to allow suspended solids drop out of solution, prior to the surface water discharging from the site, into the Clooneen River.

Surface water monitoring of the Clooneen River continues on a quarterly basis, per the existing licence requirements, in order to identify any possible contamination to the river.



Complete Laboratory Solutions
 Ros Muc, Co. Galway.
 [Tel] 091 574355
 [Fax] 091 574356
 [Email] services@cls.ie
 [web] www.completelabsolutions.com

Client : Dermot Lennon
 Lennon's Quarries
 Glen Castle
 Bunnahoeen
 Ballina, Co.Mayo

Report No. : 160525
 Date of Receipt : 04/04/2012
 Start Date of Analysis : 04/04/2012
 Date of Report : 17/04/2012
 Order Number :
 Sample taken by : Client

CERTIFICATE OF ANALYSIS

Results

Lab No	Sample Description	Test	Result	Units
368194	Surface Water 1. Downstream	Antimony, total	<0.5	ug/l
		Arsenic, total	<0.5	ug/l
		Beryllium, total	<0.5	ug/l
		Cadmium, total	<0.5	ug/l
		Chromium, total	0.5	ug/l
		Cobalt, total	<0.5	ug/l
		Conductivity @ 20C	378	uS/cm
		Copper, total	<1	ug/l
		Extractable HC/ DRO (C8-C40) total and dissolved	210 Unknown Pattern*	ug/l
		Lead, total	<0.5	ug/l
		Mineral Oil (by calculation)	210	ug/l
		Molybdenum, total	<0.5	ug/l
		Nickel, total	<0.5	ug/l
		pH	6.8	pH Units
		Selenium, total	<0.5	ug/l
		Suspended Solids	8	mg/l
		Tellurium, total	<0.5	ug/l
		Thallium, total	<0.5	ug/l
		Tin, total	<0.5	ug/l
		Total Heavy Metals	1.3	ug/l
Vanadium, total	0.8	ug/l		
Zinc, total	<5	ug/l		

* Note: The comment expressed here is an interpretation and is not INAB accredited



Approved by:

Barbara Lee

Barbara Lee
 Environmental Scientist

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Complete Laboratory Solutions
 Ros Muc, Co. Galway
 (Tel) 091 574355
 (Fax) 091 574356
 (Email) services@cls.ie
 (web) www.completelaboratory.com

Derrant Lendon
 Lendon's Quarries
 Glen Castle
 Bannahoeen
 Galina, Co. Mayo

Report No 160526
 Date of Receipt 04/04/2012
 Start Date of Analysis 04/04/2012
 Date of Report 17/04/2012
 Order Number
 Sample taken by Client

CERTIFICATE OF ANALYSIS

Results

Lab No	Sample Description	Test	Result	Units
5A3195	Surface Water 2. Downstream	Antimony, total	<0.5	ug/l
		Arsenic, total	<0.5	ug/l
		Beryllium, total	<0.5	ug/l
		Cadmium, total	<0.5	ug/l
		Chromium, total	0.7	ug/l
		Cobalt, total	0.6	ug/l
		Conductivity @ 25°C	369	uS/cm
		Copper, total	<1	ug/l
		Extractable Oil (by C/ DRO (C8-C40))	<100	ug/l
		Total Acid Dissolved		
		Lead, total	0.8	ug/l
		Metal Oil (by calculation)	<100	ug/l
		Molybdenum, total	<0.5	ug/l
		Nickel, total	<0.5	ug/l
		pH	6.7	pH Units
		Selenium, total	<0.5	ug/l
		Suspended Solids	5	mg/l
		Tellurium, total	<0.5	ug/l
		Thallium, total	<0.5	ug/l
		Tin, total	<0.5	ug/l
		Total Heavy Metals	4.1	ug/l
		Vanadium, total	2	ug/l
		Zinc, total	<5	ug/l

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Barbara Lee

Barbara Lee
 Environmental Scientist

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Complete Laboratory Solutions

Complete Laboratory Solutions

Bus Mac, Co. Galway

Tel) 091 574355

Fax) 091 574356

Email) services@qls.ie

Web) www.complete-lab.com

Client: Dermot Lennon
Lennon's Quarries
Glen Castle
Bunnahmeen
Ballina, Co Mayo

Report No. : 160527
Date of Receipt : 04/04/2012
Start Date of Analysis : 04/04/2012
Date of Report : 17/04/2012
Order Number
Sample taken by : Client

CERTIFICATE OF ANALYSIS

Results

Lab No	Sample Description	Test	Result	Units
368196	Surface Water 3, Downstream	Antimony, total	<0.5	ug/l
		Arsenic, total	<0.5	ug/l
		Beryllium, total	<0.5	ug/l
		Cadmium, total	<0.5	ug/l
		Chromium, total	0.9	ug/l
		Cobalt, total	0.6	ug/l
		Conductivity @ 25°C	370	uS/cm
		Copper, total	<1	ug/l
		Extractable HC/ DRO (C8-C40)	<100	ug/l
		Total Hardness dissolved		
		Lead, total	1	ug/l
		Mineral Oil (by calculation)	<100	ug/l
		Molybdenum, total	<0.5	ug/l
		Nickel, total	<0.5	ug/l
		pH	6.7	pH Units
		Selenium, total	<0.5	ug/l
		Suspended Solids	<2	mg/l
		Tellurium, total	<0.5	ug/l
		Thallium, total	<0.5	ug/l
		Tin, total	<0.5	ug/l
Total Heavy Metals	10.5	ug/l		
Vanadium, total	2	ug/l		
Zinc, total	6	ug/l		

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Barbara Lee

Barbara Lee
Environmental Scientist

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Complete Laboratory Solutions
 Ros Muc, Co. Galway.
 [Tel] 091 574355
 [Fax] 091 574356
 [Email] services@cls.ie
 [web] www.completelabsolutions.com

Client : Dermot Lennon
 Lennon's Quarries
 Glen Castle
 Bunnahoeen
 Ballina, Co. Mayo

Report No. : 160528
 Date of Receipt : 04/04/2012
 Start Date of Analysis : 04/04/2012
 Date of Report : 17/04/2012
 Order Number :
 Sample taken by : Client

CERTIFICATE OF ANALYSIS

Results

Lab No	Sample Description	Test	Result	Units
368197	Surface Water 4. Downstream	Antimony, total	<0.5	ug/l
		Arsenic, total	<0.5	ug/l
		Beryllium, total	<0.5	ug/l
		Cadmium, total	<0.5	ug/l
		Chromium, total	0.8	ug/l
		Cobalt, total	0.6	ug/l
		Conductivity @20C	369	uS/cm
		Copper, total	<1	ug/l
		Extractable HC/ DRO (C8-C40) total and dissolved	<100	ug/l
		Lead, total	0.9	ug/l
		Mineral Oil (by calculation)	<100	ug/l
		Molybdenum, total	<0.5	ug/l
		Nickel, total	<0.5	ug/l
		pH	6.7	pH Units
		Selenium, total	<0.5	ug/l
		Suspended Solids	<2	mg/l
		Tellurium, total	<0.5	ug/l
		Thallium, total	<0.5	ug/l
		Tin, total	<0.5	ug/l
		Total Heavy Metals	10.3	ug/l
Vanadium, total	2	ug/l		
Zinc, total	6	ug/l		

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Approved by:

Barbara Lee

Barbara Lee
 Environmental Scientist

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Complete Laboratory Solutions
 Ros Muc, Co. Galway.
 [Tel] 091 574355
 [Fax] 091 574356
 [Email] services@cls.ie
 [web] www.completelabsolutions.com

Client : Dermot Lennon
 Lennon's Quarries
 Glen Castle
 Bunnahoeen
 Ballina, Co. Mayo

Report No. : 160529
 Date of Receipt : 04/04/2012
 Start Date of Analysis : 04/04/2012
 Date of Report : 17/04/2012
 Order Number :
 Sample taken by : Client

CERTIFICATE OF ANALYSIS

Results

Lab No	Sample Description	Test	Result	Units
368198	Surface Water 5. Downstream	Antimony, total	<0.5	ug/l
		Arsenic, total	<0.5	ug/l
		Beryllium, total	<0.5	ug/l
		Cadmium, total	<0.5	ug/l
		Chromium, total	0.8	ug/l
		Cobalt, total	0.6	ug/l
		Conductivity @20C	370	uS/cm
		Copper, total	<1	ug/l
		Extractable HC/ DRO (C8-C40) total and dissolved	132 Unknown Pattern *	ug/l
		Lead, total	0.6	ug/l
		Mineral Oil (by calculation)	132	ug/l
		Molybdenum, total	<0.5	ug/l
		Nickel, total	<0.5	ug/l
		pH	6.7	pH Units
		Selenium, total	<0.5	ug/l
		Suspended Solids	5	mg/l
		Tellurium, total	<0.5	ug/l
		Thallium, total	<0.5	ug/l
		Tin, total	<0.5	ug/l
		Total Heavy Metals	4	ug/l
Vanadium, total	2	ug/l		
Zinc, total	<5	ug/l		

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Approved by:

Barbara Lee

**Barbara Lee
 Environmental Scientist**

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ATTACHMENT I.3

Assessment of Impact on Sewage Discharge

- Not Applicable

ATTACHMENT I.4

Assessment of Impact of Ground/Groundwater Emissions

The soil recovery facility, licensed per licence W0256-01, does not have existing or proposed Emissions to Groundwater any and does not propose to have Emissions to Groundwater through the application for a Technical Review.

ATTACHMENT I.5

Ground and/or Groundwater Contamination

- Not Applicable. There are no Emissions to Ground/Groundwater (existing or proposed) from the site, and the inert nature of the material accepted at the facility would not contain any potential contaminants to groundwater. Therefore, an 'Assessment of Ground and/or Groundwater Contamination' is not required.

ATTACHMENT I.6

Noise Impact

- An Independent Report - '*Noise Assessment at a Material Recovery Facility in Tallagh, Belmullet, Co. Mayo*', dated January 2009 is given in Attachment I.6.

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LENNON QUARRIES LTD

**NOISE ASSESSMENT AT A MATERIAL RECOVERY FACILITY
IN TALLAGH, BELMULLET, CO. MAYO**

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JANUARY 2009

TOBIN CONSULTING ENGINEERS



REPORT

PROJECT: **Noise Assessment at a waste recovery facility in Tallagh, Belmullet, Co. Mayo.**

CLIENT: **Lennon Quarries Ltd**
Tallagh,
Belmullet
County Mayo

COMPANY: **TOBIN Consulting Engineers**
Block 10-4
Blanchardstown Corporate Park
Dublin 15

www.tobin.ie

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DOCUMENT AMENDMENT RECORD

Client:	Lennon Quarries Ltd
Project:	Noise Assessment
Title:	Noise Assessment at a waste recovery facility in Tallagh, Belmullet, County Mayo

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PROJECT NUMBER: 2084				DOCUMENT REF: 2084-01			
Revision	Description & Rationale	Originated	Date	Checked	Date	Authorised	Date
B	Final Report	AA	14/01/09	BS	16/01/09	DG	16/01/09
A	Draft Report	AA	09/01/09	BS	14/01/09		
TOBIN Consulting Engineers							

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Appendices

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1 NOISE AND VIBRATION

1.1 INTRODUCTION

TOBIN Consulting Engineers were requested to undertake a Noise Assessment for a waste recovery facility in Tallagh, Belmullet, County Mayo by Lennon Quarries Ltd.

This report will accompany a Waste Licence Application to the EPA for an inert waste recovery facility on a 27.22ha (including entrance road) site. This site currently operates under a Waste Permit (Ref: PER 144) recovering material from within the local area, with a consequential benefit for improving land for agricultural use.

Acoustic Terminology

Sound is simply the pressure oscillations that reach our ears. These are characterised by their amplitude, measured in decibels (dB), and their frequency, measured in Hertz (Hz). Noise is unwanted or undesirable sound, it does not accumulate in the environment and is normally localised. Environmental noise is normally assessed in terms of A-weighted decibels, dB (A), when the 'A-weighted' filter in the measuring device elicits a response, which provides a good correlation with the human ear.

The criterion for environmental noise control is one of annoyance or nuisance rather than damage. In general a noise level is liable to provoke a complaint whenever its level exceeds by a certain margin the pre-existing noise level or when it attains an absolute level. A change in noise level of 3 dB (A) is 'barely perceptible', while an increase in noise level of 10 dB (A) is perceived as a twofold increase in loudness.

1.2 METHODOLOGY

1.2.1 Instrumentation Used

The following instrumentation was used in the baseline survey:

- One Larson Davis 824 Precision Integrating Sound Level Analyser/Data logger with Real-Time Frequency Analyser Facility
- Wind Shield Type: Larson Davis 2120 Windscreen.
- Calibration Type: Larson Davis Precision Acoustic Calibrator Model CAL200.

1.2.2 Measurement Procedure

Noise monitoring was carried out on 7th January 2009 during the day (for 30 minute intervals) at three site boundary locations and two noise sensitive locations (nearest residential dwellings). Noise monitoring was undertaken at these 5 no. locations when the site was non-operational and again when the site was operational. All the environmental noise analysers had data logging facilities set on real-time, the logged data was later downloaded via a personal computer using software. The measurement locations were all away from reflecting surfaces and at 1.5m height above local ground.

All acoustic instrumentation was calibrated before and after the survey period and no drift of calibration was observed (calibration level 114dB at 1000Hz).

1.3 THE EXISTING ENVIRONMENT

1.3.1 Introduction

The site is located approximately 3km north of Belmullet town centre, County Mayo. The location is rural in nature with a low population density consisting of one-off dwellings located along local roads. The site is bordered to the north, south and west by adjacent bog habitat and to the immediate southeast by a mushroom factory. A derelict Roman Catholic chapel is also located immediately east of the site entrance road. Planning permission is currently being sought to develop Gaelic Athletic Association (GAA) facilities immediately outside the western site boundary. Access to the site is by an entrance road leading off a regional road to the south which runs from Belmullet to Ballyglass.

The site comprises approximately 27.22ha (including entrance road) of which will include a deposition area of approximately 20.48ha and a buffer zone adjacent the northern site boundary comprising approximately 4.46ha.

1.3.2 Receptors

Housing in the vicinity of the site is of low density and is separated from the site boundaries by areas of bogland habitat. All the closest receptors identified are located off the local roads around the site. Noise monitoring was conducted at the two closest residential dwellings along these roads, and at three site boundary locations (Refer to Figure 1.1). The local landscape is undulating with the current working area positioned behind a hill to its immediate south, therefore acting as a buffer between the site and the closest residential dwelling located to the southwest.

1.3.3 Existing Noise Environment

The existing noise environment in the vicinity of the existing waste recovery site at Tallagh, Belmullet, County Mayo, has been characterised by a series of baseline noise measurements completed at the site boundaries and at two noise sensitive receptors in the surrounding area. The measurements were completed in accordance with the requirements of ISO1996: Acoustics - Description and measurement of environmental noise and with reference to the EPA publication Environmental Noise Survey, Guidance Document.

In total, measurements were taken at 5 no. locations in the vicinity of the site as described in Table 1.1. Noise measurements were taken for a period of 30 minutes at each location when the facility was non-operational and again when it was operational. A Hitachi 200 excavator is the only piece of plant equipment on site and works intermittently throughout the day.

The noise measurement results are presented in Tables 1.2 and 1.3 of this report. The noise monitoring locations are marked as N1 to N5 on Figure 1.1.

Table 1-1 Noise Monitoring Locations

Monitoring Location	Description
N1	Western Site Boundary
N2	Southern Site Boundary
N3	Eastern Site Boundary
N4 (Noise Sensitive Location)	Residential Dwelling located to the northeast
N5 (Noise Sensitive Location)	Residential Dwelling located to the southwest

It was established during the course of completing the noise survey that the area in the vicinity of the site is primarily influenced by passing road traffic on local roads and general environmental noise. According to the EPA BATNEEC Guidance Note on Noise, if the total noise level from all sources is taken into account, noise levels at noise sensitive receptors should be kept below a level of 55dB(A) during the daytime and below 45dB(A) during the night-time in order to avoid noise nuisance or disturbance as reflected in the EPA Guidelines. Therefore it is to these commonly applied noise limit values, that the potential noise impact of the waste recovery site has been assessed.

The proposed operating hours for the site will be limited to the daytime period between 08:00 – 18:00hrs Monday to Friday and 08.00 – 14.00pm on Saturday. Waste acceptance will be from 08.30 – 17.30pm Monday to Friday and 08.30 – 13.30pm Saturday. The noise survey was conducted between these hours in order to categorise the existing noise climate in the vicinity of local receptors and to establish the current noise impact the existing facility has.

The baseline noise levels recorded at the 5 no. monitoring locations (N1-N5) when the facility was non-operational ranged between 39.0 – 55.4dB(A) LAeq, 30mins (the equivalent continuous sound level recorded over 30 minutes). The noise levels recorded at the 5 no. monitoring locations (N1-N5) when the facility was operational ranged between 37.9 – 56.9dB(A) LAeq, 30mins (the equivalent continuous sound level recorded over 30 minutes). The dominant noise sources observed in the vicinity of all receptors was identified as being intermittent passing road traffic comprised mainly of private cars and agricultural vehicles. Passing aircraft and farm animals also contributed to general noise levels in the area. In addition, the influence of agricultural machinery operating in the southwest area also contributed to the noise climate of the area.

The background noise levels (expressed as LA90 values) recorded during both the non-operational and operational monitoring were consistent ranging from 33.6 to 36.1dB(A) LA90, 30mins are typical of the expected range of background noise values for a rural environment.

The results of the noise survey are typical of the levels expected for a rural environment, which is not significantly influenced by any continuous or dominant noise source. The noise monitoring results undertaken during both the non-operational and operational periods of the facility are presented overleaf in Tables 1.2 and 1.3.

Table 1-2 Noise Monitoring Results when facility is non-operational –dB(A) and 30 minute intervals

Location	Date	Time	Leg	L ₁₀	L ₅₀
N1	07/01/09	11:53	39.0	40.5	34.5
N2	07/01/09	08:56	40.9	43.9	35.6
N3	07/01/09	09:45	41.6	42.9	33.6
N4	07/01/09	10:35	55.4	40.0	34.2
N5	07/01/09	11:15	54.6	58.6	35.8

Table 1-3 Noise Monitoring Results when facility is operational –dB(A) and 30 minute intervals

Location	Date	Time	Leg	L ₁₀	L ₅₀
N1	07/01/09	15:23	37.9	39.3	35.4
N2	07/01/09	12:45	55.1	57.9	45.6
N3	07/01/09	13:24	38.9	40.9	35.4
N4	07/01/09	14:11	48.1	41.9	34.2
N5	07/01/09	14:47	56.9	60.6	36.1

There were no impulsive noise components or tonal noise components audible at any of the noise monitoring locations.

However, after downloading the noise measurement data the results (Appendix 1) indicate that a pure tone was present (at 63Hz) during the non-operational period at monitoring location N4 which is a NSL to the northeast. This pure tone was not recorded at N4 during the operational period. During the operational period pure tones were present at N1 (at 80 Hz and at 125Hz), N2 (at 63Hz) and N3 (at 63Hz). No tonal components were recorded during this period at either NSL. As a pure tone at 63Hz was recorded at N4 during the non-operational period it is therefore not a result of site activities. It is considered that the pure tone (at 63Hz) recorded at N2 and N3 during the operational period are also not from site activities. The pure tones recorded at N1 (at 80 Hz and at 125Hz), during the operational period is also considered not to be from site activities as this location is positioned at a greater distance from the source of site noise than N2 or N3. These pure tones were not audible during monitoring.

Legend

- Waste Licence Application
- Site Boundary
- Noise Monitoring Points
- Noise Source

0 0.040.08 0.16 0.24 0.32
Kilometers

NOTES

1. PLOTTED DIMENSIONS MAY VARY FROM THIS DRAWING.
2. ALL DIMENSIONS TO BE CHECKED BY THE CLIENTS SURVEYOR.
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Date	Drawn	Checked	By	Date
11.11.09	W. J. J.	A. A.		11.11.09

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NOISE ASSESSMENT

NOISE MONITORING LOCATIONS

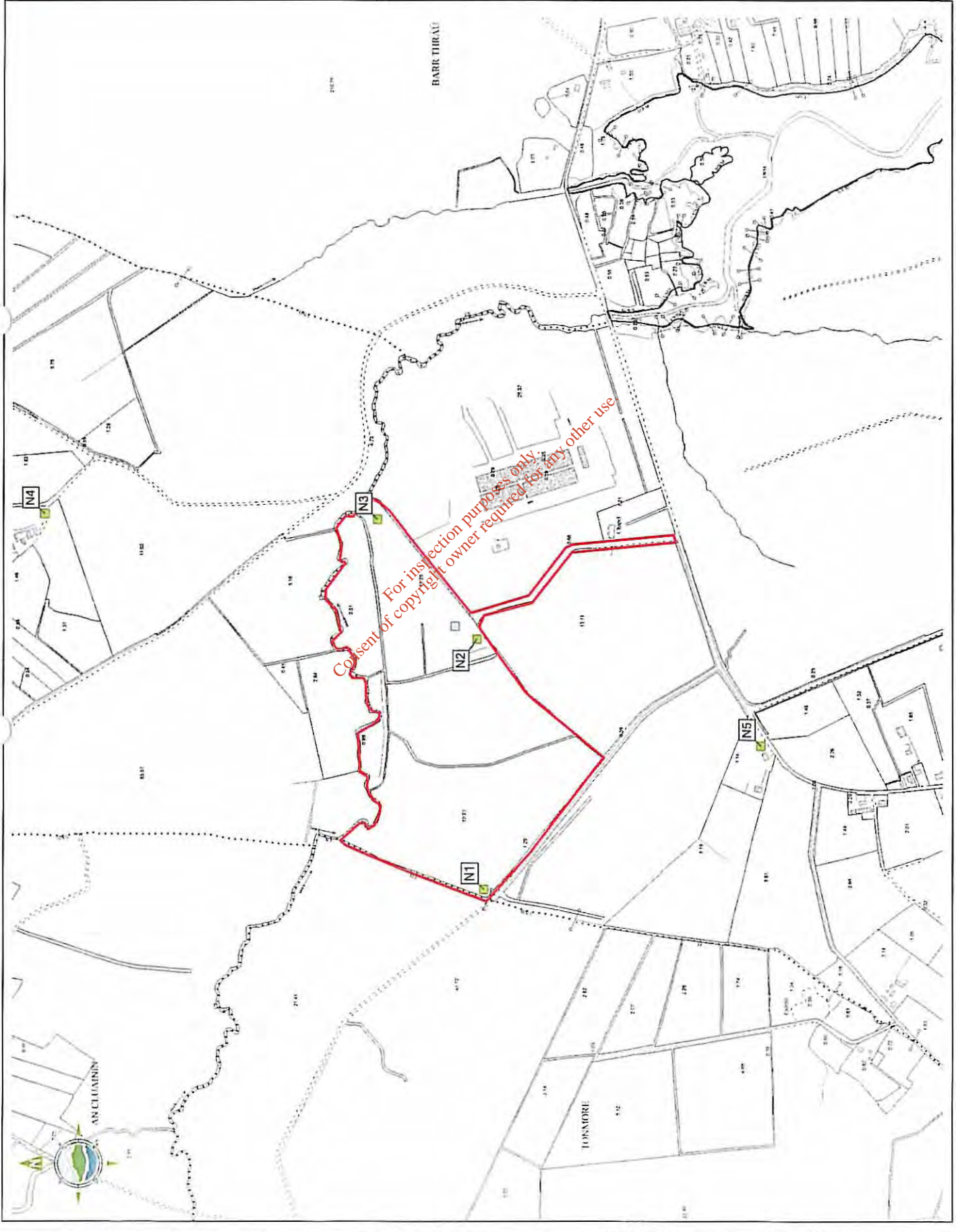
Scale: G 43 1:7,500

Prepared by: Checked by: Date: A. GIBNEY A. AULIN Jan 2009

Project Director: D. Gibney

TOBIN
Consulting Civil and Structural Engineers
Block 15.4, Enockstown Corporate Park
Dublin 15, Ireland
Tel: +353 (0)1 8334500
www.tobin.ie

Drawing No: **Figure 1.1** A



1.4 POTENTIAL IMPACT

Potential impacts from the waste recovery facility will be from the operational phase only. There are no construction works proposed to take place at the site.

1.5 OPERATIONAL PHASE

1.5.1 Noise impacts

Working hours during the operational phase of the facility will be from 08:00 – 18:00pm, Monday to Friday and 08.00 to 14.00pm Saturday. Waste will be accepted at the site between 08.30 – 17.30pm Monday -Friday and 08.30 – 13.30pm Saturday. It is not proposed to operate the facility on Sundays or Public Holidays.

Noise from site operations will be associated with the deposition and levelling of inert materials. The predicted noise levels that will be experienced at the nearest residences to the site as a result of facility activities have been calculated using the activity LAeq method outlined in BS 5228: Part 1: *Noise and vibration control on construction and open sites*.

The noise limits which apply to industrial developments under the EPA Integrated Pollution Control Licensing system are defined in the EPA BATNEEC Guidance Note for noise as LAeq, 1hr = 55 dB (A) and LAeq, 15 min = 45 dB (A) for daytime and night time operation respectively. These limits are widely recognised as representing BATNEEC for industrial developments and are commonly imposed by Local Authorities in Ireland.

Night time hours are normally specified to occur between 22:00hrs to 08:00hrs and therefore no night time operations are proposed at this site. Daytime hours are specified to occur between 08.00hrs to 22.00hrs and therefore all activities at the site will occur within the daytime period.

The maximum predicted value of noise impact from site operations on the existing noise climate of local receptors is presented below in Table 1.4.

Table 1-4 Noise impacts of site operation activities on the existing noise climates of local receptors between 08:00 and 22:00

FACILITY PLANT NOISE (No attenuation for berms allowed here)		
BS5228 Calculations	Estimated Construction noise levels at varying distances LAeq 1 hour	
	N5	N4
Plant	412m	701m
Tracked excavator	47	41

1.6 TRAFFIC IMPACTS

There is potential for noise impact from HGV traffic associated with the facility in the operational phase.

The predicted noise level at the nearest noise sensitive receptors to the site boundaries as a result of HGV traffic movements on local roads has been calculated using the method outlined in BS 5228: Part 1: 1997, D3.5 Method for mobile plant using a well defined route. The calculation assumed a worst case scenario of 1 HGV movements per hour at 50km/hr, a maximum Sound Power Level of 104dB(A) for the trucks and the minimum distance between the site entrance road and the nearest noise sensitive receptors.

$$\text{SPL} = \text{SWL} - 33 + 10 \cdot \log_{10}(\text{Flow rate}) - 10 \cdot \log_{10}(\text{Velocity}) - 10 \cdot \log_{10}(\text{Distance})$$

The maximum predicted $L_{Aeq, 1hr}$ as a result of the traffic movements at the closest residences to the site is 27dB(A).

The predicted maximum noise level of 27dB (A) attributable to HGV movements at the site is significantly lower than the NRA criterion of 65dB (A) for acceptability of traffic noise. The maximum predicted values are presented below in Table 1.5.

Table 1-5 Average Noise impact of internal road traffic at local receptors

Noise Sensitive receptor	Predicted average Internal Traffic Noise dB(A)
N5	27
N4	25

Road traffic noise from the site along local roads will be low intensity and will be in keeping with existing ambient noise levels as a result of traffic. This is not considered a significant noise impact.

1.6.1 Combined impact of all on-site operations

The combined noise impact of all site activities including deposition / levelling of material and internal traffic movements was assessed at each noise sensitive receptor. The results of these calculations are presented in Table 1.6.

The maximum predicted noise levels at the 2 assessment locations will not exceed the commonly applied daytime limit of 55dB(A). The predicted noise levels in Table 1.6 are likely to overestimate the actual noise experienced, since the maximum noise levels associated with the item of plant was used, and simultaneous operation of this plant item was assumed. This is unlikely to be the working scenario during the operation of the facility even during busy periods.

Table 1-6 Combined noise levels predicted as a result of the facility operation

Noise Sensitive Location	Predicted operational noise at full production, dB(A)	Predicted internal traffic noise at full production, dB(A)	Combined noise level, dB(A)
N5	47	27	47
N4	41	25	41

NOTE

[1] All values represent $L_{Aeq, 1 \text{ hour}}$

1.6.2 Vibration Impacts

Ground vibration at sensitive receptors is measured as peak particle velocity (PPV) in mm/sec. The acceptable vibration limit at sensitive receptors in Ireland is 12mm/sec (peak particle velocity, PPV) as defined in the Environmental Protection Agency BATNEEC Guidance Note for Noise in respect of Scheduled Activities. There will be no significant sources of vibration as a result of site activities and therefore the vibration limit at the surrounding sensitive receptors can be expected to be within the above mentioned limit.

1.7 MITIGATION MEASURES

A quantitative assessment of the potential noise impacts at nearby noise sensitive receptors as a result of the operation phase of the waste recovery facility has shown that no adverse nuisance impacts will occur as a result of its operation.

The proposed hours of operation are 08.00 to 18.00pm, Monday to Friday and 08.00 to 14.00pm Saturday. The proposed hours for accepting waste are 08:30 to 17:30 Monday to Friday and 08.30 to 13.30pm Saturday. No works will be undertaken on Sunday or bank holidays. Potential impacts on the noise environment in the vicinity of the site are therefore limited to daytime hours.

Traffic associated with the facility will involve approximately 1 HGV movements per hour. Noise associated with this notably low number of vehicle movements will be not have an adverse impact on the noise climates at local receptors.

1.7.1 Noise Mitigation

The considerable distance between source and receptor will result in significant noise attenuation and subsequently minimise impacts at local receptors. The undulating topography surrounding the site also assists noise attenuation.

Working hours during the operational phase of the facility will be from 08:00 – 18:00, Monday to Friday and 08.00 -14.00pm on Saturday. The site will not be open on Sunday or public holidays. Potential impacts on the noise climate in the vicinity of the site are therefore limited to the daytime period, which will reduce the impacts on local residents.

The following recommended practices will also ensure that noise generated by the site operations will be minimised wherever possible:

- Regular maintenance of items of plant to ensure that they are operating efficiently;
- Turn off vehicles when not in use;
- Reduce turn-over time for deliveries to site;
- Maintenance of site vehicles so that they are not excessively noisy
- Items of plant and equipment used at the site will conform to the noise emission limits as specified in *Statutory Instrument SI No. 359 of 1996 European Communities (Construction Plant and Equipment)(Permissible Noise Levels)(Amendment) Regulations, 1996*
- The use of vehicle horns will be discouraged during the daytime period and will be banned during the early morning periods before 09:00hrs

1.8 CONCLUSIONS

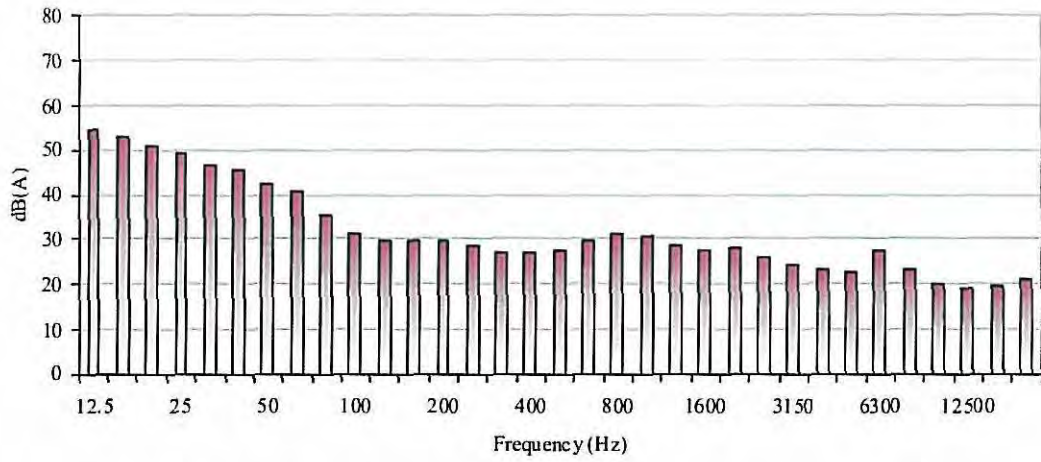
A comprehensive assessment of the potential noise and vibration impacts associated with the waste recovery site has been completed. Site activities will be effectively managed to ensure that all potential noise and vibration impacts are minimised to acceptable levels. There are no significant adverse or unacceptable noise or vibration impacts predicted at local sensitive receptors in the vicinity of the site as a result of the waste recovery facility operating.

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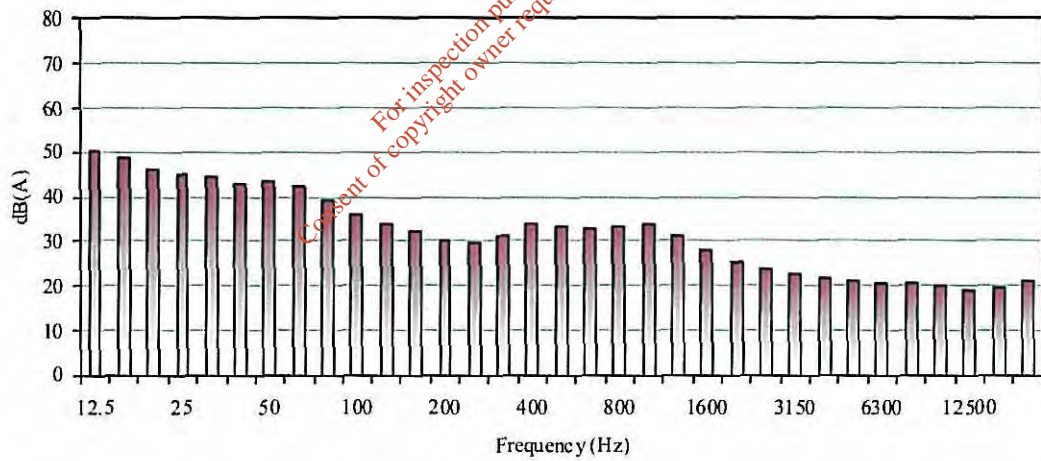
Appendix 1

Frequency Analysis

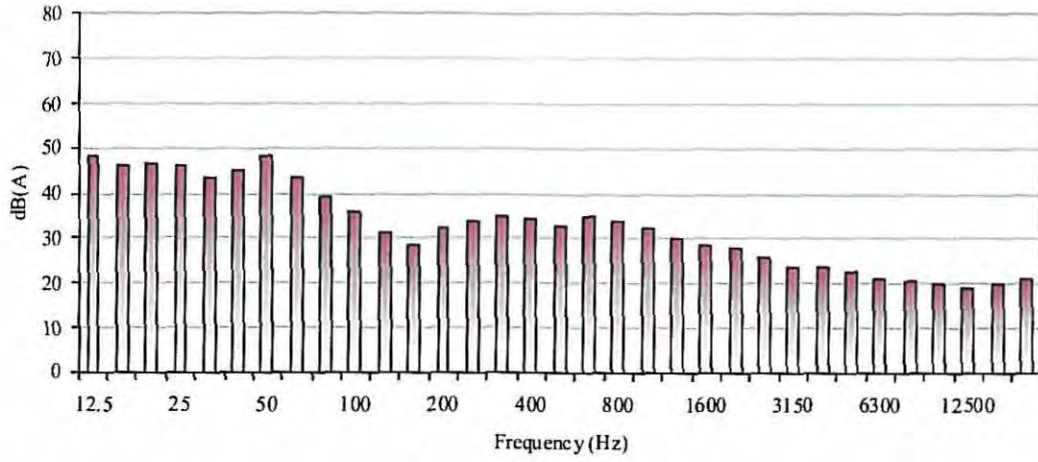
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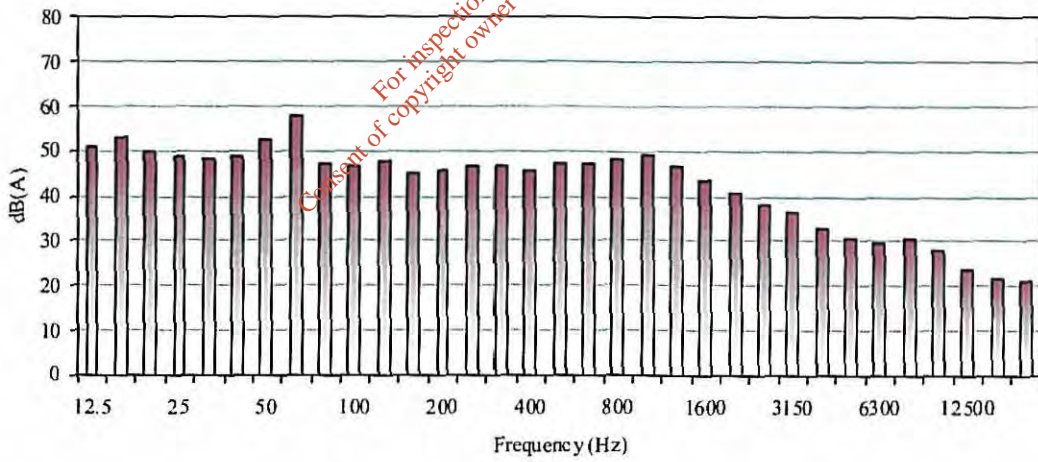
Frequency Analysis at N1 (Site Non – operational)



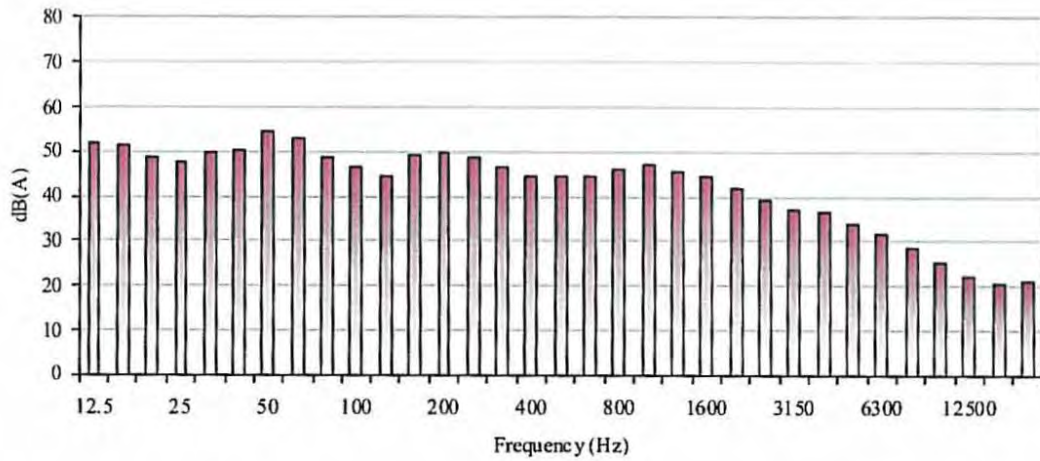
Frequency Analysis at N2 (Site Non – operational)



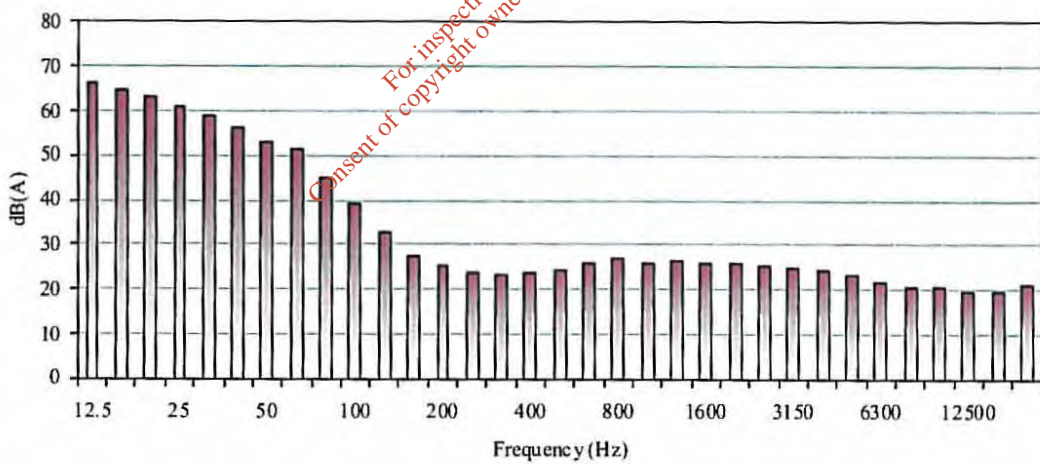
Frequency Analysis at N3 (Site Non - operational)



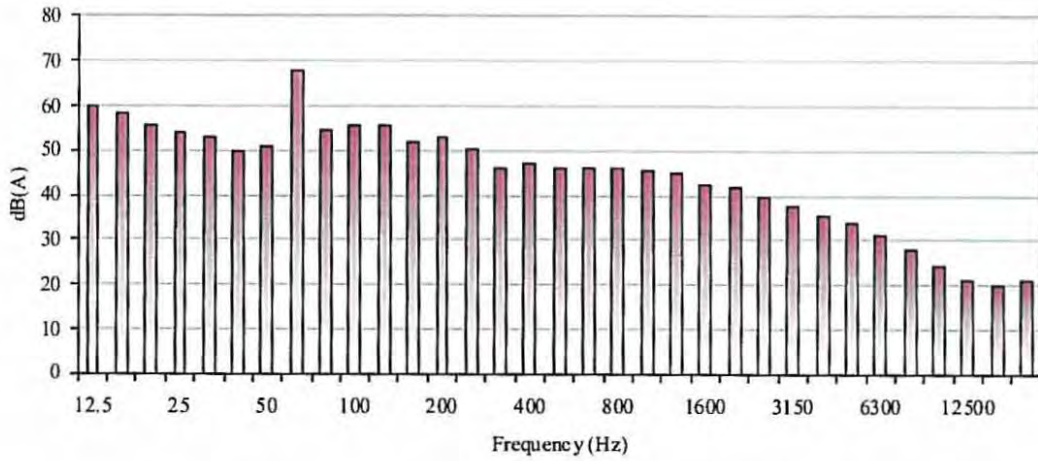
Frequency Analysis at N4 (Site Non - operational)



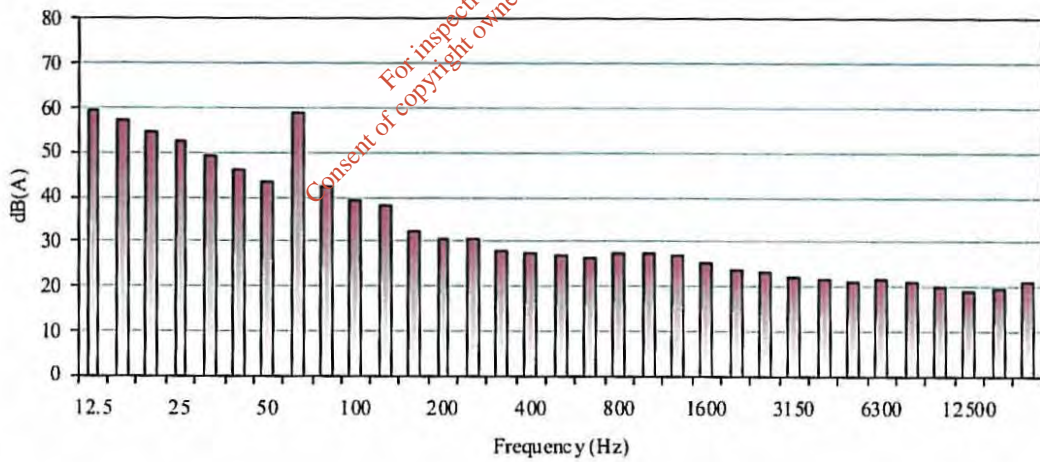
Frequency Analysis at N5 (Site Non – operational)



Frequency Analysis at N1 (Site Operational)

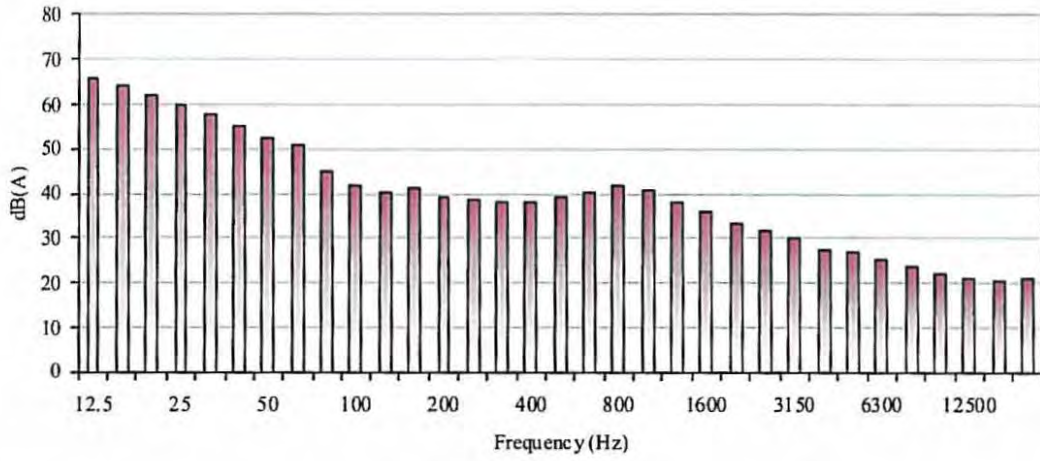


Frequency Analysis at N2 (Site Operational)

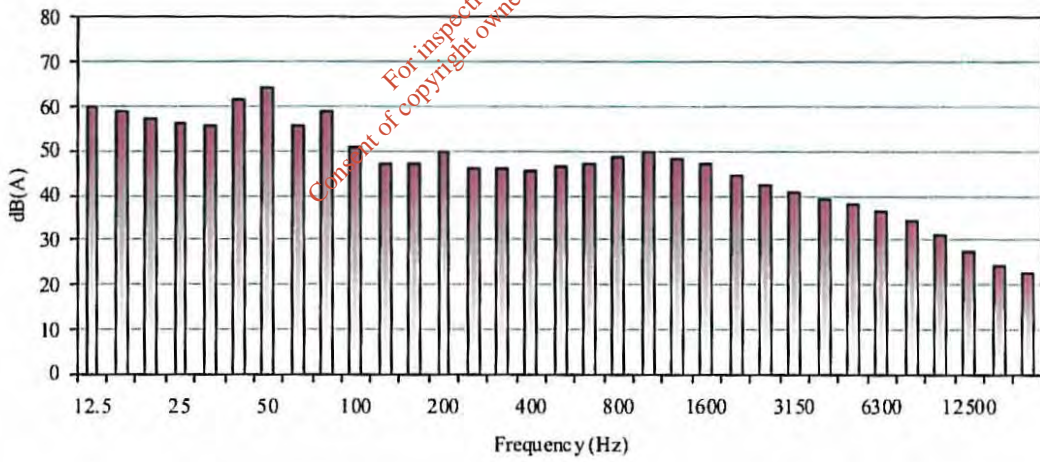


Frequency Analysis at N3 (Site Operational)

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Frequency Analysis at N4 (Site Operational)



Frequency Analysis at N5 (Site Operational)

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TOBIN
Patrick J. Tobin & Co. Ltd.

NATIONAL NETWORK

Galway
Fairgreen House,
Fairgreen Road,
Galway.
Ph +353 (0)91 565211
Fax +353 (0)91 565398
E-mail galway@tobin.ie

Dublin
Block 10-4,
Blanchardstown Corporate
Park,
Dublin 15.
Ph +353 (0)1 803 0406
Fax +353 (0)1 803 0409
E-mail dublin@tobin.ie

Cork
Northpoint House,
New Mallow Road,
Cork.
Ph +353 (0)21 4308 624
Fax +353 (0)21 4308 625
E-mail cork@tobin.ie

Limerick
Bedford Place,
Howley's Quay,
Lower Shannon Street,
Limerick.
Ph +353 (0)61 415 757
Fax +353 (0)61 409 378
E-mail limerick@tobin.ie

Castlebar
Market Square,
Castlebar,
Co. Mayo.
Ph +353 (0)94 902 1401
Fax +353 (0)94 902 1534
E-mail castlebar@tobin.ie

Dundalk
2nd Floor, Elgee Building
Market Square
Dundalk
Co. Louth.
Ph +353 (0)42 933 5107
Fax +353 (0)42 933 1715
E-mail dundalk@tobin.ie

visit us @ www.tobin.ie

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ATTACHMENT I.7

Assessment of Ecological Impacts & Mitigation Measures

- An Independent Report - '*Ecological Assessment at a Material Recovery Facility in Tallagh, Belmullet, Co. Mayo*', dated January 2009 is given in Attachment I.7.

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LENNON QUARRIES LTD

ECOLOGICAL ASSESSMENT AT A MATERIAL RECOVERY FACILITY IN TALLAGH, BELMULLET, CO. MAYO

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JANUARY 2009

TOBIN CONSULTING ENGINEERS



REPORT

PROJECT: **Ecological Assessment at a material recovery facility in Tallagh, Belmullet, Co. Mayo.**

CLIENT: **Lennon Quarries Ltd**
Tallagh,
Belmullet
County Mayo

COMPANY: **TOBIN Consulting Engineers**
Block 10-4
Blanchardstown Corporate Park
Dublin 15

www.tobin.ie

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DOCUMENT AMENDMENT RECORD

Client:	Lennon Quarries Ltd
Project:	Ecological Assessment
Title:	Ecological Assessment at a material recovery facility in Tallagh, Belmullet, County Mayo

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PROJECT NUMBER: 2084				DOCUMENT REF: 2084-01			
Revision	Description & Rationale	Originated	Date	Checked	Date	Authorised	Date
B	Final Report	AA	12/01/09	RMn	12/01/09	DG	16/01/09
A	Draft Report	AA	5/01/09	RMn	12/11/09		
TOBIN Consulting Engineers							

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APPENDICES

Appendix 1	C.A. Farrell- Ecological Impact Assessment of proposed waste disposal site at Tallagh, Belmullet, Co. Mayo. June 2005
Appendix 2	Site Evaluation Scheme
Appendix 3	Site Synopses

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1 FLORA & FAUNA

1.1 INTRODUCTION

TOBIN Consulting Engineers were requested to undertake an ecological assessment of lands at Tallagh, Belmullet, County Mayo by Lennon Quarries Ltd. This ecological assessment updates an original ecological assessment undertaken by C.A. Farrell in June 2005, produced as part of the existing Waste Permit Application (Refer to Appendix 1).

This report will accompany a Waste Licence Application to the EPA for an inert material recovery facility on a 27.22ha (including entrance road) site. This site currently operates under a Waste Permit (Ref: PER 144) recovering material from within the local area, with a consequential benefit of improving land for agricultural use.

1.2 PROPOSED SITE WORKS

It is proposed to continue disposal of inert material within the site under the conditions of an EPA Waste Licence. The drainage pattern within the site will also be upgraded to provide for adequate runoff and treatment of waters draining the site. Settlement lagoons will be installed to ensure that any water draining the site will be treated before entering local watercourses. The placement of inert material will be restricted to the deposition area leaving a buffer zone to the north of the site (Refer to Drawing No. 2084 2603, of the main Waste Licence Application Drawings). The deposition of this material will be staggered over a number of years and at irregular intervals.

1.3 METHODOLOGY

This ecological assessment comprised both a desktop study and a field survey. The desk study comprised the following elements:

- Identification of all sites designated for nature conservation within 5km of the site.
- Review of Ordnance Survey maps and aerial photography in order to determine broad habitats that occur within the existing site.
- Review of relevant reports and literature (C.A Farrell, Ecological Impact Assessment of proposed waste disposal site at Tallagh, Belmullet, Co. Mayo. June 2005 – Appendix 1)

TOBIN Consulting Engineers undertook a site visit to carry out a habitat assessment along with a general mammal and bird assessment in January 2009.

The habitat assessment was conducted within the site boundary in accordance with The Heritage Council's draft methodology, A Standard Methodology for Habitat Survey and Mapping in Ireland (Natura Environmental Consultants, 2002) and habitats were classified according to The Heritage Council's A Guide to Habitats in Ireland (Fossitt, 2000). Aerial photography assisted habitat delineation and interpretation. Plant identification and nomenclature principally follows Webb *et al.* (1996) and Rose

(2006). The predominant plant species for each habitat type were recorded in order to accurately determine habitats present on the site.

Habitats were rated according to the Site Evaluation Scheme contained in the National Roads Authority's Guidelines for Assessment of Ecological Impacts of National Road Schemes (National Roads Authority, 2006). Refer to Appendix 2 for qualifying criteria.

The general mammal and bird survey primarily involved searching the site for evidence/signs of mammals and birds (e.g. tracks, scats, dwellings and occasionally direct sightings). An assessment of the habitats in terms of their importance for mammals and birds was also undertaken.

Survey Constraints

The habitat assessment took place on one date in January 2009, which is outside the flora growing season. It is possible, therefore, that some plant species may have been overlooked or under-recorded due to seasonal factors.

A comprehensive faunal survey was not a practical proposition due to natural mammalian behaviour. Most mammals are small and shy of human presence. Therefore, it would take a more detailed study to confirm their presence. Also mammals often tend to be more active at night making their presence more difficult to detect.

The survey was also undertaken outside the breeding bird season.

1.4 EXISTING ENVIRONMENT

1.4.1 Review of previous survey

An ecological assessment of the site was undertaken in June 2005 by C.A Farrell as part of a Waste Permit Application, which was subsequently granted (Mayo County Council Ref: PER 144). This assessment recorded that the site was degraded and was being used for peat cutting, a local gun club and grazing. Habitats similar to the present day were recorded with the overall site considered to have a negligible value. This includes low grade and widespread habitats. No mammals were recorded using the site. Several birds were recorded using the site including Skylark (*Alauda arvensis*) and Stonechat (*Saxicola torquata*) which are Amber listed bird species on the Birds of Conservation Concern in Ireland (Lynas P., Newton S.F. & Robinson J.A. 2007. The status of birds in Ireland: an analysis of conservation concern 2008-2013. *Irish Birds* 8 :149-166).

1.4.2 Nature Designated Areas

The National Parks and Wildlife Services database of designated nature conservation areas was reviewed. The database was searched for designated sites within 5km of the site location. The nearest designated site is the Broadhaven Bay Complex proposed Natural Heritage Area (pNHA) and Special Area of Conservation (SAC) which is located approximately 0.2km to the southeast of the site. Table 1.1 and Figure 1.1 present the designated areas within 5km of the site location.

Table 1-1 Nature Conservation Designations within 5 km of the site location

Name	Site Code	Designation	Distance from site (km)
Broadhaven Bay	000472	pNHA	0.2
Broadhaven Bay	000472	SAC	0.2
Mullet / Blacksod Bay complex	000470	pNHA	2.1
Mullet / Blacksod Bay complex	000470	SAC	2.1
Blacksod Bay / Broadhaven	004037	SPA	0.5
Erris Head	001501	pNHA	3.2
Erris Head	001501	SAC	3.2
Termoncarragh Lake and Annagh Machair	004093	SPA	2.1

SPA = Special Protection Area

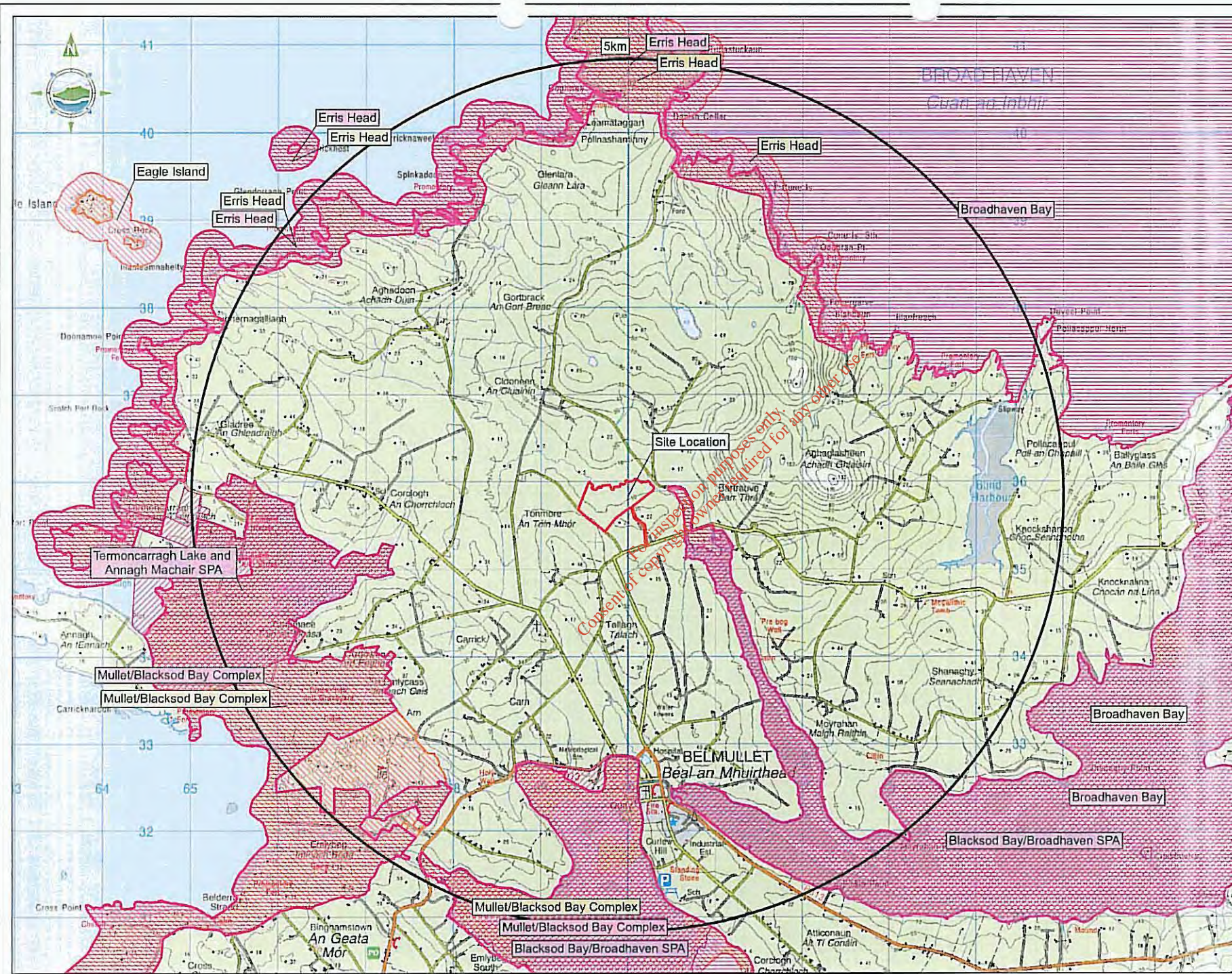
SAC = Special Area of Conservation

pNHA = proposed Natural Heritage Area

The site itself is not included within a conservation designated site but it is included within the catchment of the Broadhaven bay complex draining into Moyrahan Bay.

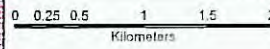
Designated sites detailed in the wider area are of high conservation importance as they are representative of a number of habitats listed on Annex I of the Habitats Directive (92/43/EEC), notably aquatic (large shallow bays, freshwater lakes and rivers, coastal dunes, marine caves, estuarine and marine habitats). In addition some of these areas have ornithological importance for breeding and wintering birds.

Site synopses from the National Parks and Wildlife Services (NPWS) database for sites proposed/designated for nature conservation are contained in Appendix 3 (downloaded from www.npws.ie).



LEGEND

- Waste Licence Application Site Boundary
- 5km Buffer
- Proposed Natural Heritage Areas
- Special Areas of Conservation
- Special Protection Areas



- NOTES**
1. PLISHED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
 2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
 3. REQUIREMENTS TO BE IMPROVED OR ANY OTHER REQUIREMENTS FOR ANY WORK COMPLETED
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Total	Date	Description	By	Drawn

LENNON QUARRIES LTD

ECOLOGICAL ASSESSMENT

DESIGNATED CONSERVATION AREAS

Scale @ A3: 1:40,000
 Prepared by: A. Gruschka
 Checked by: A. Austin
 Date: Jan 2009
 Project Director: D. Gahan

TOBIN
 Consulting Civil and Structural Engineers
 Block 10.4, Blanchardstown Corporate Park,
 Dublin 15, Ireland
 Tel: +353 (0)1 4033400
 Fax: +353 (0)1 4033406
 e-mail: info@tobin.ie
 www.tobin.ie

Drawing No: **Figure 1.1** A

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1.4.3 Habitat Assessment

General site description

The site is located approximately 3km north of Belmullet town centre, County Mayo. The location is rural in nature with low intensity housing scattered throughout the surrounding area. Access to the site is from an entrance road leading off a regional road, which runs from Belmullet to Ballyglass. The site is bordered to the north, south and west by adjacent bog habitat and to the immediate east by a mushroom factory. A derelict Roman Catholic chapel is also located to the immediately east of the entrance road. Planning permission is currently being sought to develop Gaelic Athletic Association (GAA) facilities immediately outside the western site boundary.

The site comprises approximately 27.22ha (including entrance road) of which will include a deposition area of approximately 20.48ha and a buffer zone adjacent the northern site boundary comprising approximately 4.46ha. The site is triangular in shape and slopes from the highest point in the south (105m) to the lowest point in the northeast (87m). A network of drainage ditches run through the site leaving it for the most part well drained. The site is dominated by cutover bog habitat containing a mosaic of habitats due to the landuse history, which has included widespread peat cutting, previous use as a firing range for the local gun club and sheep grazing. The site continues to be heavily sheep grazed.

6 No. habitat classes occur within the site and are as follows:

- Spoil and bare ground (ED2)
- Cutover bog (PB4)
- Dry humid acid grassland (GS3)
- Wet Grassland (GS4)
- Drainage ditches (FW4)
- Depositing / Lowland Rivers (FW2)

The location and extent of these habitats is presented on Figure 1.2.

Spoil and bare ground (ED2)

This habitat is present south of the site within the present deposition area. It is the current working area of the site and consists of recovered inert material that has been brought to the site. The recovered material is currently being levelled out onto the existing slope. This habitat also includes the site entrance road, which is unpaved. Due to the ongoing disturbance vegetation cover is very minimal with annual meadow grass (*Poa annua*), Yorkshire fog (*Holcus lanatus*), daisy (*Bellis perennis*), creeping thistle (*Cirsium arvense*) and gorse (*Ulex europaeus*) beginning to re-colonise at the edge.

This habitat type is artificial and of low ecological value.

Cutover bog (PB4)

This is the dominant habitat type within the site. Prior to human activity this would have been Atlantic blanket bog. However, the land-use history of the site has resulted in the degradation of this habitat.

This habitat is currently characterised by a continuous mosaic of bare and vegetated peat with patches of acid grassland and wet grassland habitat occurring. Peat cutting on site has ceased with peat banks remaining a common feature. These are becoming re-vegetated with typical peatland vegetation grading to acid grassland, which is also present along drainage ditches. Wet grassland is present, predominantly along drainage ditches and the site boundary. Species present within this habitat include heather (*Calluna vulgaris*), creeping bent (*Agrostis stolonifera*), sweet vernal grass (*Anthoxanthum odoratum*), bell heather (*Erica cinerea*) and purple moor grass (*Molina caerulea*). Various Sphagnum moss species are found growing throughout the site.

This habitat is degraded with the occurrence of typical Atlantic blanket bog species being patchy and discontinuous throughout the site. The site also continues to be intensively grazed. This cutover bog habitat is therefore considered of low - moderate ecological value, locally important.

Dry-humid acid grassland (GS3)

This habitat is predominantly to the north of the site (within the buffer zone) and is intensively sheep grazed. This habitat also occurs within the cutover bog habitat in areas that are beginning to re-colonise after peat cutting and where grazing occurs. Species present are dominated by low growing grasses such as sweet vernal grass and mat grass (*Nardus stricta*). Creeping bent, purple moor-grass and soft rush (*Juncus effusus*) also occur, along with occasional creeping buttercup (*Ranunculus repens*), heather and gorse. Moss cover is often extensive.

This habitat is intensively grazed and is of low ecological value, locally important.

Wet Grassland (GS4)

This habitat covers a small area of the site, predominantly along drainage ditches and areas not intensively grazed. Soils are wet but not waterlogged as the site is fairly well drained. It appears to be present on material previously dredged from the adjacent ditches and as a result soon grades into acid grassland. Some rubbish is also present within this area. This habitat is dominated with soft rush, which is the main feature with tussocks ranging from 0.5- 1m in height. Jointed rush, creeping bent, Yorkshire fog, creeping thistle, creeping buttercup and purple moor-grass also occur.

This habitat is small and disturbed. It is considered of low ecological value, locally important.

Drainage Ditches (FW4)

This habitat forms the site boundaries along with several artificial drainages ditches running internally through the site in a south – north direction. These internal drainage ditches connect with a main interceptor drain, also artificial, to the north, which runs from west – east and connects with the small river forming the northern site boundary. The drainage ditches are generally 2-3m deep with an approximate width of 2m. The channels are intermittently dredged to maintain flow. During the habitat assessment water was present in a few of the channels ranging from 10-30cm. It is likely water levels within these channels fluctuate with seasonal rainfall. Species present within the drain and their banks include soft rush, which is encroaching in some, jointed rush (*Juncus articulatus*), starwort sp., mosses,

carnation sedge (*Carex panicea*) and marsh thistle (*Cirsium palustre*). Brambles (*Rumbus sp.*), heather, ferns and gorse are also present along the western site boundary bank.

This habitat is artificial with no significant current fisheries value. It is considered of low ecological value, locally important.

Depositing / lowland rivers (FW2)

A small river forms the northern site boundary and flows in an easterly – south easterly direction. It comprises a meandering channel approximately 2-3m wide and is slow moving. Water depth varies from 10cm to pools up to 1m deep. It has a silt substrate with some gravel and larger stones in places. The banks of the river are predominantly grassy gradually sloping to a height of approximately 2m.

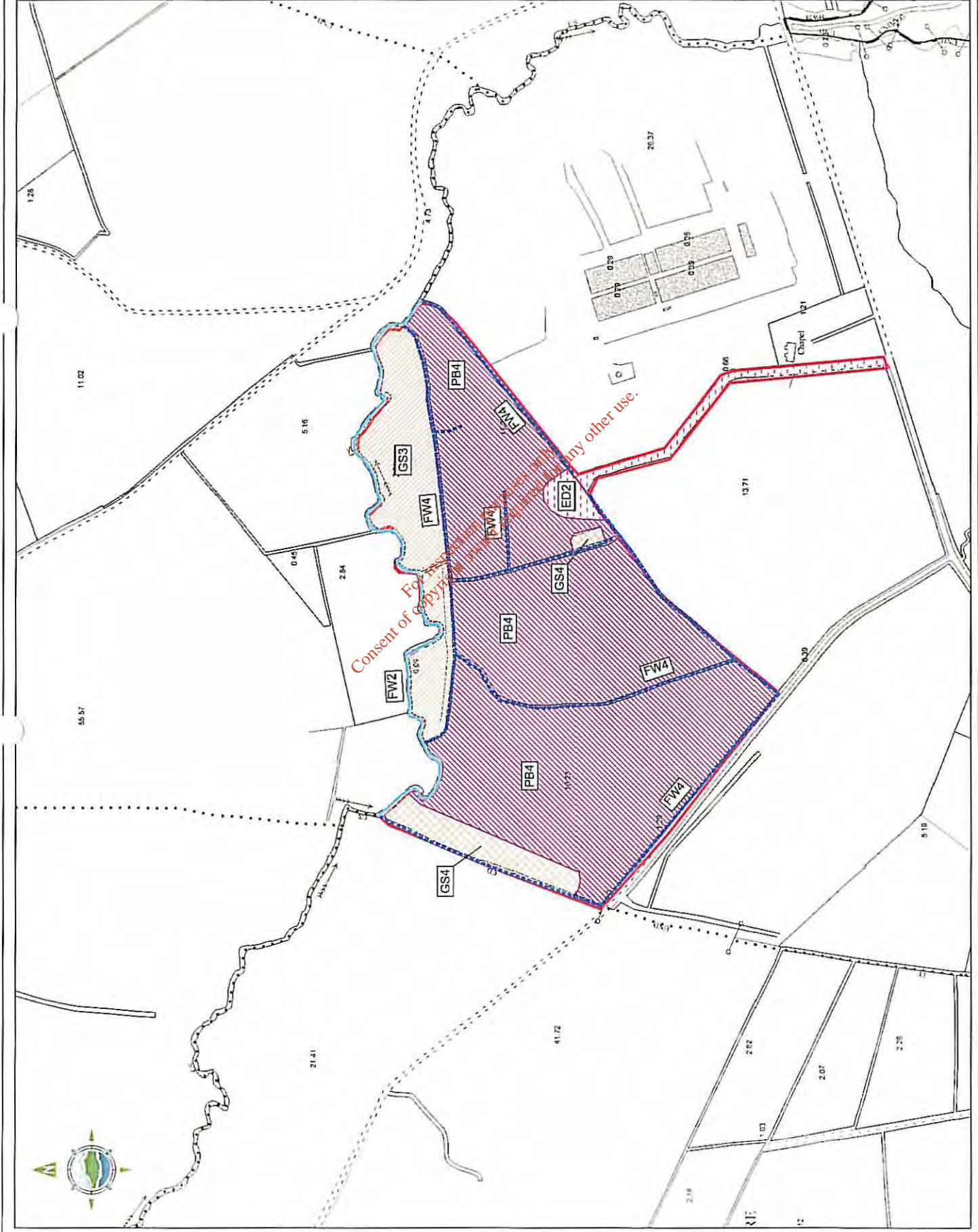
The stream is generally not shaded but little aquatic vegetation is present mainly floating reed grass (*Glyceria fluitans*) and starwort sp. in places.

Otter may utilise the river for commuting purposes but no breeding sites (holts) were noted during the survey. This river contains some semi-natural habitat and will potentially be utilised by brown trout although none were recorded.

This river eventually drains to the Moyrahan Bay which is within the catchment area of the Broadhaven Bay complex (pNHA & SAC) and therefore its importance needs considered.

This habitat contains semi-natural habitat and may be important for local wildlife. It is considered of moderate ecological value, locally important.

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- Legend**
- Waste Licence Application
 - Site Boundary
 - FW4 Drainage ditch
 - FW2 Depositing/lowland river
 - ED2 Spoil and bare ground
 - GS3 Dry-humid acid grassland
 - GS4 Wet grassland
 - PB4 Calcareous bog



NOTES

1. PROTECTIVE DIMENSIONS ONLY TO BE TAKEN FROM DISTANCE TO THE EDGE OF THE SITE BOUNDARY.
2. PROTECTIVE DIMENSIONS ONLY TO BE TAKEN FROM DISTANCE TO THE EDGE OF THE SITE BOUNDARY.
3. PROTECTIVE DIMENSIONS ONLY TO BE TAKEN FROM DISTANCE TO THE EDGE OF THE SITE BOUNDARY.
4. PROTECTIVE DIMENSIONS ONLY TO BE TAKEN FROM DISTANCE TO THE EDGE OF THE SITE BOUNDARY.

Area	Code	Area (ha)	No.	DA
A	ED2	0.25	1	AA
B	ED2	0.25	1	AA
C	ED2	0.25	1	AA
D	ED2	0.25	1	AA

LENNON QUARRIES LTD

ECOLOGICAL ASSESSMENT

HABITAT MAP

Scale 1:5,000

Prepared by: A. Gauscho

Checked by: A. Gauscho

Date: Jan 2009

Project Director: D. Gowan

TOBIN

Consulting Civil and Structural Engineers
 Block 10-4, Bencherbinster Corporate Park
 M1 +353 (0)1 4233445
 www.tobin.ie

Drawing No: **Figure 1.2**

12/2008

1.4.4 Faunal Assessment

Mammals

A rabbit (*Oryctolagus cuniculus*) burrow was identified to the southeast of the site. Rabbits are common and widespread in Ireland and often considered as pests (Hayden and Harrington, 2000). A fox (*Vulpes vulpes*) scat was also identified to the east of the site. Fox thrive in a variety of locations and have no particular habitat requirements (Hayden & Harrington, 2000). They are common and widespread in Ireland.

No protected mammals were recorded on site and the site has no potential for bat roosts, although the site may be utilised as foraging habitat particularly the stream.

No other signs of mammals were recorded. Other common species likely to occur include wood mouse (*Apodemus sylvatica*), pygmy shrew (*Sorex minutus*), hare (*Lepus timidus hibernicus*) and brown rat (*Rattus norvegicus*). The otter (*Lutra lutra*) may use the river to the north of the site for commuting purposes but it does not appear to offer any likely holting sites. No signs of otter were found.

Amphibians

Common frog (*Rana temporaria*) and Smooth newt (*Triturus vulgaris*) may use the site for feeding purposes but no potential breeding areas were noted during the survey as drains were mostly dry. Amphibians are protected under the Wildlife Acts (1976 and 2000). The Common Frog is also listed in the Red Data Book.

Birds

During the site visit several bird species were recorded. Species noted include Robin (*Erithacus rubecula*), Wren (*Troglodytes troglodytes*), *carduelis*, Blackbird (*Turdus merula*), Meadow pipit (*Anthus pratensis*) and Snipe (*Gallinago gallinago*). Snipe is Amber listed breeding species on the Birds of Conservation Concern in Ireland.

The site may potentially be utilised by breeding bird species including snipe, skylark and meadow pipit.

All birds and their nesting places are protected under the Irish Wildlife Act (1976) and under the Irish Wildlife Amendment Act, (2000) (except for excluded species). It is an offence to kill, trap or harm these birds. It is also an offence to wilfully disturb these birds on or near a nest containing eggs or unfledged young.

1.4.5 Rare or Protected Flora

The site is located in the Ordnance Survey National Grid 10km squares F73. A plant species list for this 10km square was generated from the CD-Rom version of the New Atlas of British and Irish Flora (Preston *et al.*, 2002). This list was then compared to the list of species protected under the Flora (Protection) Order, 1999 and those which are included in the Irish Red Data Book (Curtis and McGough, 1988). There are no records for any rare or protected flora within this site or immediate surrounding area.

No rare or protected flora was recorded on site during the field survey.

1.4.6 Overall site evaluation

Six no. habitat types were identified within the site. These habitats are summarised in Table 1.2 together with their evaluation rating. Cutover bog habitat (PB4) occupies the greatest area within the site and is of low ecological value as it has been highly modified.

Table 1-2 Habitat Ratings

Habitat Classification	Rating	Evaluation
Spoil and bare ground (ED2)	E	Low Value, locally important
Cutover bog (PB4)	E-D	Low – Moderate Value, Locally Important
Acid Grassland (GS3)	E	Low Value, Locally Important
Wet Grassland (GS4)	E	Low Value, Locally Important
Drainage ditches (FW4)	E	Low Value, locally important
Depositing / Lowland Rivers (FW2)	D	Moderate Value, Locally Important

With the exception of the depositing / lowland rivers habitat which forms the northern site boundary, the site can be considered to have a low ecological value. This category includes highly modified habitats with a low species diversity with water bodies of no current fisheries value and no significant potential fisheries value. This assignment is justified for the following reasons:

1. There are no records for any rare or protected flora for this site or surrounding area.
2. No protected mammals were noted to be using the site.
3. The proposed site and immediate surrounding area are not designated for nature conservation or likely to be for their ecological value.
4. Previous land uses such as turf production and shooting are evident within the degraded habitats. The site continues to be intensively sheep grazed.
5. The greater part of the site comprises of degraded cutover bog habitat, which is not of conservation importance either at a national, regional or local context.
6. The cut over bog habitat has been well drained and is unlikely to revert to peat forming habitat without restoration measures. It is likely to remain degraded peatland habitat and with continued grazing it will convert to acid grassland.

However, the river forming the northern site boundary is of note as it drains to the Moyrahan Bay which is within the catchment area of the Broadhaven Bay complex (pNHA & SAC). The location and importance of this river must be taken into consideration when assessing the potential impacts of future works at the site.

1.5 POTENTIAL IMPACTS

1.5.1 Nature Designated Sites

There are 8 no. Nature Conservation Designated sites located within 5km of the site (Refer to Table 1.1). The nearest designated site is the Broadhaven Bay Complex (pNHA and SAC) which is located at a distance of approximately 0.2km. There will be no direct impacts from the material recovery facility on these sites given the low-intensity of activity with inert material gradually being deposited over a number of years and an appropriate surface water treatment management plan being implemented.

1.5.2 Habitats

Future works will involve complete loss of existing habitats within the deposition area of the site. The recovered materials will be placed on the existing habitats, compacted and shaped. This will be a gradual loss of habitat as material is deposited within the site. Existing drainage channels will be directed and maintained to allow for the treatment of drainage waters in settlement lagoons. There will be no impact on habitats within the surrounding area given that the activity will be restricted within the deposition area of the site.

Table 1.3 lists the habitats directly affected and their impact evaluation.

Table 1-3 Habitats Directly Impacted by the proposed works

Habitat Classification	Evaluation	Impact
Cutover Bog (PB4)	Low - Moderate Value, locally important	Minor negative
Wet grassland (GS4)	Low Value, Locally Important	Neutral
Spoil and bareground	Low Value, locally important	Minor positive
Dry humid acid grassland (GS3)	Low Value, locally important	Neutral

*This assessment of the impact follows NRA guidance (NRA 2006).

Indirect impacts may occur on sections of drainage ditch habitat that is to be retained through damage and disturbance arising from vehicular activities and positioning of materials, incurring a neutral impact. Indirect impacts may also occur on the river habitat incurring a minor – neutral impact.

1.5.3 Rare or Protected Flora

There are no records for any rare or protected flora in this area and no rare or protected flora was recorded on site during the field survey. Therefore it is considered there will be no impact on rare or protected flora from site operations.

1.5.4 Fauna and Birds

The loss of habitat will reduce potential feeding and breeding areas for birds including skylark, meadow pipit and snipe within the local area. No protected mammals were recorded using the site. Snipe stonechat and skylark are recorded as Amber listed breeding species on the Birds of Conservation Concern list. These birds have been recorded using the site. Similar habitats are present immediately adjacent the site and within the surrounding area so the impact on mammals and birds will be minimal. The loss of habitat will also be gradual due to the low intensity of activity from proposed works.

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1.6 MITIGATION MEASURES

Several mitigation measures are listed below in order to reduce the impact of proposed works on the site and surrounding area.

- Settlement lagoons should be installed and properly located to ensure that any water draining the site will be treated before entering the local watercourses.
- Regular sampling of treated waters should be carried out to ensure sediment levels remain within prescribed limits and that settlement lagoons are acting effectively. This will be subject to requirements set by the EPA in Waste Licence Conditions.
- A planned programme of material recovery should be put in place to reduce the impact of activities on the site, therefore reducing the disturbance to any mammal or bird life using the site.
- The deposited material should be allowed to re-colonise naturally to keep in character with the surrounding area.
- A yearly breeding bird survey would be recommended if material is to be placed on site between start April and the end of August as a number of birds of Conservation Concern in Ireland potentially breed on the site including skylark, stonechat and snipe. All birds and their nesting places are protected under the Irish Wildlife Act (1976) and under the Irish Wildlife Amendment Act, (2000) (except for excluded species). It is an offence to kill, trap or harm these birds. It is also an offence to wilfully disturb these birds on or near a nest containing eggs or unfledged young. Recommendations from this yearly survey will allow effective management of the site to comply with Irish wildlife legislation.

1.7 CONCLUSION

In conclusion the habitats on site are considered to be of low ecological value. Mitigation measures have been suggested to avoid impacts on the Broadhaven Bay complex (pNHA & SAC) which is the nearest designated site located at a distance of 0.2km from the site. Suggested mitigation measures will also minimise any impacts on local fauna, particularly as a number of Birds of Conservation Concern in Ireland including snipe, skylark and stonechat have been recorded utilising the site.

APPENDIX 1

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**ECOLOGICAL IMPACT ASSESSMENT
OF PROPOSED WASTE DISPOSAL SITE AT
TALLAGH, BELMULLET, CO. MAYO**

Compiled by

**C. A. Farrell,
B.Sc. (Environmental Sc., Hons.),
Ph.D. (Botany), Dip EIA Mgmt, MIEEM**

June 2005

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1 INTRODUCTION

An application has been made to Mayo County Council on behalf of Lennon Quarries Ltd. for a waste permit for lands at Tallagh, Belmullet, Co. Mayo. The application outlines the proposed disposal of recovered material from development sites within the local area on a 25.5ha site. The activity will be staggered over a period of ten years. Given the location of the proposed development site and the potential impacts on the adjacent Broadhaven Bay complex, a number of issues of concern were raised by the Development and Applications Section (DAS) of the National Parks and Wildlife Service (NPWS). Dr. C.A. Farrell was commissioned to undertake an appropriate assessment of the development for Lennon Quarries Ltd. The aim of this assessment is to evaluate the site and proposed activity, and address the issues of concern.

2. SCOPE

The scope of the study was developed through consultation with (a) the developer, (b) regional NPWS staff (Denis Strong, Deputy Regional Manager) and (c) consideration of the issues of concern raised through the DAS, NPWS (letter dated 22/10/2004, Ref.: E2004/120).

The main issues of concern highlighted were (a) potential loss of blanket bog habitat, (b) impact of run-off on the adjacent Broadhaven Bay complex and (c) cumulative impacts.

This study considers the proposed waste disposal development in the context of (a) the existing ecology at and around the site and (b) the potential impacts of the development on these features. Areas of scientific and/or conservation interest, as well as the presence of protected plant and animal species within the vicinity of the proposed development site are investigated. On the basis of consideration of the interactions of these factors, the predicted impact of the development is assessed.

Recommendations are made as to the mitigation of potential impacts and appropriate monitoring of the activity. The cumulative impact of the development in light of existing land-use in the area is also considered.

3 METHODOLOGY

The site of the proposed development was visited in June 2005 to provide data on habitats and fauna. The fieldwork consisted of a walkover survey of the site. The main habitats were identified and the species composition listed. Fauna noted at the site (actual sightings and observed tracks) were also recorded. The main surface drainage network was surveyed and assessed.

The habitats are classified according to Fossitt (2000). The habitats are described in the text and habitat codes (after Fossitt 2000) are presented in parentheses. A habitat map is also presented (Fig. 1). This was compiled using field survey and aerial photographs. Nomenclature for vascular plants follows Webb *et al.* (1996). Nomenclature for bryophytes follows Smith (1978).

National Parks and Wildlife (NPWS) were consulted for relevant ecological information relating to the site and surrounding areas.

The proposed development site is evaluated for its ecological significance based on the outcome of desk and field studies and consultation with statutory bodies to date. The temporary and permanent impacts of the development are evaluated using the *Guidelines for Ecological Evaluation and Impact Assessment* (Regini 2000). An outline of the decision framework is provided in Table 2 (within the text) and Tables 3 and 4 (see **Appendix**).

4 RECEIVING ENVIRONMENT

4.1 General site description

The development site is located in north-west Mayo, on the Belmullet peninsula (Erris region) in the townland of Tallagh approximately 3km due north of Belmullet town. Access to the site is from a trackway that leads from the regional road that links Belmullet with Ballyglass. The aspect of the proposed development site is northerly, and as such the activity will not be visible from the main access road. A gravel trackway is the main access to the site and is currently utilised by heavy machinery accessing the site for turf production and transport.

The development site is 25.5ha and triangular in shape. The site is intensively utilised for turf production (sausage machine and hand-cut) and grazing (predominantly sheep). The site is also utilised as a firing range for the local gun club. The site is dominated by cutover bog habitat. The land-use history has resulted in a mosaic of habitats ranging from bare peat, operating turf banks, access trackways, drainage channels with patches of acid grassland and heavily grazed cutover bog in revegetated areas that are not currently utilised for turf production. The peat depth is on average 0.5m but with deeper pockets on flat areas where turf production is ongoing (1m average). A fence surrounds the site but otherwise the area is exposed with no shelter, and the aspect is northerly. The general fall from the site is in a north easterly direction, with the highest point at 105m to the south and the lowest along the main drainage channel at 87m. The local landscape is undulating with patches of low-lying bog and drier rush-dominated slopes.

There is low-intensity rural settlement in the area and the land-use is largely turf production and agricultural. There is a small industrial base just east of the proposed development site and this comprises a number of tunnels and associated facilities for commercial mushroom production. There is extensive turf production in the general area particularly to the west of Moyrahan Bay. This activity is conducted right up to the edge of the bay.

There are a number of drainage channels on site, draining in a north easterly direction into an artificial interceptor drain that flows into the main natural drainage channel, that meanders to the north of the site (see Fig.1). The flow in both the interceptor drain and the natural stream channel is slow. The interceptor drain enters the main stream just east of the proposed development site, and the stream flows into Moyrahan Bay. Moyrahan Bay is part of the greater Broadhaven Bay complex. The slope of the site and the intensive drainage network results in the site being well drained. This is amenable to the current turf production activity.

4.2 Designated areas and rare species records

There are no records for rare plants or animals within the development area and no rare or restricted distribution plants or animals were recorded during the survey of the site¹.

Areas of conservation interest located within 10km of the development site are outlined in Table 1. In total 11 designated areas occur within 10km or at the 10km boundary from the development site. These areas are representative examples of a number of habitats listed in Annex I of the Habitats Directive (92/43/EEC), notably aquatic (freshwater lakes and rivers and coastal dunes, machair, estuarine and marine habitats).

There are records of Annex II species listed in the Habitats Directive for designated areas within 10km of the site. These include otter (*Lutra lutra*), salmon (*Salmo salar*), white-clawed crayfish (*Austropotamobius pallipes*) and brook lamprey (*Lampetra planeri*) in freshwater systems. The surrounding designated areas are of particular conservation owing to their ornithological importance for breeding and wintering birds.

¹ It should be noted that all flora and fauna are protected in Ireland under the Wildlife and Amendment Acts (1976 and 2000).

Table 1. Designated conservation areas within 10Km of the development site

	Name	Site Code	Designation	Approximate distance from development site
1	Broadhaven Bay complex	000472	pNHA	0.5 km
2	Mullet/Blacksod Bay complex	000470	pSAC	1 km
3	Erris Head	001501	pSAC	1 km
4	Carrowmore lake complex	000476	pSAC	8 km
5	Glenamoy Bog complex	000500	pSAC	9 km
6	Stags of Broadhaven	000546	pNHA	9 km
7	Inishkea Islands	000507	pSAC	9 km
8	Pollatomish Bog	001548	pNHA	9.5 km
9	Tullaghan Bay and Tullaghanashammer Bog	001567	pNHA	10 km
10	Owenduff/Nephin complex	000534	pSAC	10 km
11	Slieve Fyagh Bog	000542	pSAC	10 km

4.2.1 The ecological significance of adjacent designated areas

The north west Mayo coastline, and in particular the Erris peninsula and its associated coastal habitats is recognised as being of significant ecological value. This is based on the incidence of a number of habitats listed as priority habitats under the EU Habitats Directive such as machair and extensive sand dune systems, and the utilisation of these areas by noteworthy species. In particular, these coastal areas are rich in bird species. The coastal areas have therefore warranted a number of designations as outlined above.

Broadhaven Bay and the Mullet/Blacksod Bay areas are of particular conservation value. The designations within these areas include pSAC, pNHA, SPA, IBA and Ramsar sites. SPAs (Special Protection Areas) are areas designated for their ecological significance based on the presence of bird species and, as such are statutory designations under the EU Birds Directive. IBAs are Important Bird Areas, outlined by *BirdWatch Ireland* to indicate areas that are significant for their bird species complement. They are not statutory designations, but in general, most of IBA areas are included in SPAs. *Ramsar* refers to an international convention in relation to wetland sites, which was ratified by Ireland in 1985. The *Ramsar Convention* has its roots in the protection of wetland wildfowl and for many sites it is species-associated. While the convention has no statutory basis it is generally operated through EU or national legislation. In the case of the Blacksod Bay and Broadhaven Bay *Ramsar* site, the EU Birds Directive and EU Habitats Directive through the Wildlife and Amendment Acts (1976 and 2000) covers the statutory status of the site.

The proposed development site is not included within a conservation-designated area, but the site is included within the catchment of the Broadhaven Bay complex, draining into Moyrahan Bay. Salt marsh occurs along the sheltered inlet within the Tallagh townland and comprises fringe marshes on peat that are typical of the Atlantic salt meadow type. Activity within the proposed development site must take the proximal location of these significant ecological sites into consideration at design and operation phase.

4.3 Habitats

4.3.1 Introduction

The habitats recorded from the development site are outlined below. The habitats included are those from the actual development site and those that are located within immediate proximity of the development site, with a brief description provided of those in the surrounding area. The extent of these habitats can be viewed from the habitats map (Fig. 1). An overview is also provided in Fig.2, which is a photograph of the site showing the main habitat type.

Table 2. Summary of the habitat types recorded at and adjacent to the development site (after Fossitt 2000).

Habitat type	Habitat name and code
Cutover bog	PB4
Acid grassland	GS3
Wet grassland	GS4
Poor fen	PF2
Tall herb swamps	FS2
Lowland rivers	FW2
Drainage ditches	FW4

4.3.2 Habitat descriptions

Cutover Bog, PB4

The greater part of the proposed development site is assigned to the cutover bog habitat class. The original bog type was Atlantic blanket bog. However, the land-use history, which involved intensive turf production, both historically and at present has resulted in the degradation of this habitat type. The current condition comprises a mosaic of poor fen, wet grassland, acid grassland with remnant features of the original vegetation in patches (Fig. 2 & 3). In the areas that are currently utilised for turf production, the habitat is bare peat for spreading and drying turf, turf banks and bare peat faces, with associated trackways to transport the turf from the site.

These habitats form a continuous mosaic across the greater part of the site. Bare peat areas grade into acid grassland. This vegetation is characterised by sweet vernal grass, *Anthoxanthum odoratum*, mat grass *Nardus stricta*, with depauperate ling, *Calluna vulgaris* and *Rhytidiadelphus squarrosus* in the bryophyte layer. This can grade into wet grassland, dominated by soft rush, *Juncus effusus* and in wetter parts, poor fen, with *Sphagnum* species and *Polytrichum commune* in the bryophyte layer. In some instances black bog rush *Schoenus nigricans* and deer sedge *Trichophorum caespitosum* with purple moor grass *Molinia caerulea* occur. The occurrence of these typical Atlantic blanket bog species however is discontinuous and patchy.

Acid grassland, GS3

This habitat largely occurs along drainage channels and trackways. The vegetation is characterised by low-growing grasses such as sweet vernal grass, *Anthoxanthum odoratum*, mat grass *Nardus stricta*, with depauperate ling, *Calluna vulgaris* and *Rhytidiadelphus squarrosus* in the bryophyte layer. Other species occurring are heath bedstraw *Galium saxatile* and tormentil *Potentilla erecta*. The vegetation is intensively grazed (Fig. 3).

Wet grassland, GS4

This habitat comprises wet grassland dominated by soft rush, *Juncus effusus*. Soft rush is generally indicative of poorly drained agricultural soils. The main feature of the vegetation is the soft rush tussocks that range from 0.5m to 1.0m in height. Grasses recorded include Yorkshire fog (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*) and creeping bent (*Agrostis stolonifera*). The grass species are generally low-growing and dominate the inter-tussock spaces. Herbs recorded

include: creeping buttercup (*Ranunculus repens*), sorrel (*Rumex acetosa*), daisy (*Bellis perennis*), marsh thistle (*Cirsium palustre*), with occasional stands of iris (*Iris pseudacorus*). A number of bryophytes are present, including *Rhytidiadelphus squarrosus* and *Eurhynchium praelongum*. These are species commonly found in wet grassland habitat. This habitat is patchy in occurrence and grades into patches of poor fen.



Fig.2. This photograph, taken to the west of the development site facing northwards, illustrates the general character of site. The site is dominated by cutover bog with a range of habitats – bare peat, wet grassland, and acid grassland. This habitat complex is a common feature of northeast Mayo.



Fig.3. This photograph, taken to the south of the development site facing northwards, again illustrates the general character of site. The bare peat areas are clearly seen in the background with acid grassland habitat to the foreground.

Poor fen, PF1 and drainage ditches, FW4

The occurrence of poor fen vegetation is low and patchy throughout the site. The character species are soft rush, *Juncus effusus* and *Polytrichum commune*, with patches of *Sphagnum* throughout. This

combination is typical of the deep drainage channels throughout the site. The drainage channels are typically 2m to 3m deep and cut to the underlying acidic mineral soil. In instances where shallow water is present, other species were recorded such as pennywort *Hydrocotyle vulgaris* and floating reed grass *Glyceria fluitans*. In areas where the water is stagnant and relatively deep the vegetation is dominated by tall-herb swamp (see next).

Tall-herb swamps, FS2 and lowland rivers, FW2

The main stream draining the site is meandering and water is slow moving. The stream varied in width but was typically greater than 2m wide and relatively deep at more than 1m. The main feature of the vegetation is the tall herb: iris, *Iris pseudacorus* with pondweed, *Potamogeton polygonifolius* and starwort *Callitriche stagnalis* and cuckoo-flower, *Cardamine pratensis*.

4.4 Fauna

Mammals

There were no direct sightings of mammals during visits to the development site. There were a number of sheep grazing the site, which reflects the current land-use of the site. Mammals likely to be traversing the site are foxes (*Vulpes vulpes*) and hares (*Lepus timidus hibernicus*). Other species such as badger (*Meles meles*) may also utilise the site. There is no evidence of badger setts or fox dens. Other species that may be active in the area are pygmy shrew (*Sorex minutus*), wood mouse (*Apodemus sylvaticus*) and brown rat (*Rattus norvegicus*). All of the aforementioned mammals may use the site for hunting and/or foraging (Hayden & Harrington 2000). There are no potential bat roosts on the site.

Birds

A number of bird species were recorded on the site. These included: stonechat (*Saxicola torquata*), robin (*Erithacus rubecula*), skylark, (*Alauda arvensis*), wren (*Troglodytes troglodytes*) and over flying rook (*Corvus frugilegus*) and magpie (*Pica pica*). Other species may utilise the site such as snipe (*Gallinago gallinago*), and meadow pipit (*Anthus pratensis*). A kestrel (*Falco tinnunculus*) was observed hunting over the area.

N.B. The general area is significant for over wintering and breeding birds, as noted already. The proposed development site however, is intensively utilised for turf production and there is a lack of suitable habitat for either feeding or breeding grounds.

Other vertebrates

There are no records of vertebrates for the site, however, other vertebrates likely to utilise the area are frogs (*Rana temporaria*) in the drainage channels. Frogs are common in wet grassland areas and the drains provide breeding and feeding areas. It is unlikely that there is extensive use of the area by frogs as the drains may dry-out in spring and summer leading to lack of feeding and subsequent juvenile mortality. Frog breeding activity is more likely in deeper drains and channels.

Invertebrates

No invertebrates were recorded at the site but it is likely that the site is host to common butterflies. A range of small beetles, spiders and ants would also be found amongst the wet grassland vegetation, hedgerows and drainage channels. Invertebrate larvae may utilise the drains for over wintering and feeding.

4.5 Surface drainage

As outlined already, the proposed development site is characterised by a slope in the north easterly direction. There are two main drains flowing in this general direction. Both have been artificially deepened. These north easterly flowing drains enter either the main natural stream to the north or a canalised drain that follows an old trackway, both flowing in a west to east direction. The flow in this artificial interceptor drain is slow and the water is stagnant in parts. This drain flows into the natural stream just east of the development site (see Fig. 4).

N.B. This drain will be a key feature in the drainage scheme of the proposed development. The high retention and slow-moving water make it appropriate for settlement of sediments. Settlement ponds will be installed midway and at the endpoint of the drainage channel. All waters draining the activity area will flow through this drain and enter the natural stream at the existing outfall to the east of the development site (see later).



Fig.4 This photograph, taken to the north east of the development site facing eastwards, shows the main artificial interceptor drain that runs to the south of the natural stream. Water movement is slow.

4.6 Habitats and land use in the surrounding area

The habitats adjacent to those within the development site are largely comprised of similar types. There is a high level of turf production in the area and this continues to the shores of Moyrahan Bay. The dominant habitat is therefore cutover bog PB4, with associated turf banks, bare peat, acid grassland, dry heath and poor fen. Other habitats present are scrub, WS1 and built artificial habitats BL3. A derelict Roman Catholic Church to the south of the site may serve as a local bat roost site. There is a small-scale industrial activity to the east of the site. The Broadhaven Bay complex is directly adjacent to the proposed development site just east of the most easterly point of the site.

4.7 Habitats map

The habitats map illustrates the extent of the habitats as outlined above. The dominant habitat is cutover bog with associated habitat. The main artificial drain is fringed by acid grassland, while the natural course of the main draining stream meanders to the north of the site (Fig.1).

4.8 Evaluation of the ecological value of the site and surrounding area

An attempt is made here to provide an evaluation of the habitats within the proposed development site, and also in the context of the habitats recorded directly adjacent to the development site. The evaluation follows the Regini (2000) guidelines for ecological evaluation. This evaluation considers the presence/absence of noteworthy species and a judgement of the viability of the habitat present. The levels of ecological value are listed in Table 2.

Table 2. Levels of Ecological Value

Ecological Value	
A	International value
B	National value
C	Regional Value
D	High local value
E	Moderate local value
F	Low local value
G	Negligible

The proposed development site is considered to have **Negligible value, G**. This category includes 'low grade and widespread habitats' (Regini 2000). This assignment is justified for the following reasons:

- There are no records or sightings of rare plants or animals within the proposed development site and/or the surrounding area.
- The proposed development site and/or the surrounding area do not include any areas designated, or that will be potentially designated, for their ecological value.
- The site is currently utilised for turf production and there is also a high level of sheep grazing ongoing.
- The greater part of the site comprises cutover bog habitat that is widespread throughout the area and not considered of conservation value, either at a national, regional or local context.
- The cutover bog area is intensively drained and unlikely to revert to peat-forming habitat without significant restoration measures. The hydrology has been altered significantly and the area is likely to remain a degraded peatland habitat with potential for expansion of acid grassland communities.

Nonetheless, the site drains into the Broadhaven Bay complex, an area that is covered under 5 conservation designations for its ecological significance. While the proposed development site is considered to be of negligible value, its proximal location to this sensitive complex is noted. The site is considered in this context in relation to potential impacts.

5 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

5.1 General features

The proposed development is for the establishment of a waste disposal area on an area of cutover bog at Tallagh, Belmullet, Co. Mayo. The site covers 25.5ha, of which 22ha will be utilised for the activity. A buffer zone will remain un-developed between the interceptor drain and the stream north of the site (3.5ha). The development will involve the upgrade of the existing main access route and trackways throughout the site. The drainage pattern will also be upgraded to provide for adequate run-off and treatment of waters leaving the site. Settlement lagoons will be installed to ensure that any water leaving the site will be treated before entering the local watercourses.

5.2 Disposal of recovered material

The developer proposes to dispose of recovered material from development sites within the local area. The nature of the recovered material will be peat/clay/silt/sands/gravel/cobbles/boulders. The maximum volume of material disposed at the site will be 162,000 m³. The activity will be on a staggered basis over a period of 10 years. Recovery will involve the loading of the material using 360 degree 25 tonne to 35 tonne excavators into A25 or A40 or HGVs to be transported into the designated areas where they will be tipped and controlled by a D6 dozer to ensure compaction and confinement of the material. The recovered material will be deposited on site to a depth of 1m maximum over the current surface. Disposal will commence at the west of the site, and gradually move in an eastward direction as the area is covered.

5.3 Surface water drainage

The activity will be restricted to the area outlined in Fig. 5, to the south of the artificial interceptor drain (22ha of total 25.5ha area). This will be the main drainage channel from the site, and settlement lagoons² will be established along this drain for treatment of surface run-off. A number of superficial drains will also be excavated, the location depending on contours. A sketch of the proposed drainage pattern is outlined in Fig. 5. The drainage plan will be adapted as areas are covered (relating to new levels, material type and settling of material). A 2m buffer zone along these drains will remain undisturbed.

The settlement lagoons will be maintained for the life-time of the activity and beyond if considered necessary by the licensing authority. The recommended locations of the settlement lagoons and drainage pattern are shown on Fig. 5. Water will enter the main drainage channel of the natural stream east of the development site at the existing outfall point. Therefore, all water draining the site will be treated before leaving the site. Water sampling will be conducted at regular intervals to ensure sediment loads are within prescribed limits.

5.4 Traffic

The material will be disposed at irregular intervals and the traffic that will be generated is considered to be low intensity and at irregular intervals. Vehicles leaving the site will be cleaned to reduce the requirement for road cleansing.

5.5 Stabilisation of disposed material

As the proposal involves staggered disposal of recovered material over a period of 10 years, it is anticipated that the recovered material will colonise naturally with local species over that period and therefore stabilise in a sustainable manner. This will be a gradual process, but it is likely that the material will be colonised within the first growing season by soft rush, *Juncus effusus*, with a slower colonisation of other species typical of disturbed habitats and grassland communities.

² The size of the silt ponds will be related to the catchment area and based on a standard formula.

6 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

The levels of magnitude of impact are assessed according to the Regini (2000) guidelines (see **Appendix**). Impacts are considered as (a) temporary (0-25 years) and (b) permanent (from 25 years) following from the initiation of development (Regini 2000).

6.1 *Temporary impacts during proposed activity*

There will be a number of temporary impacts on the site during the upgrading of the required transport and drainage infrastructure and the actual disposal of the recovered material.

Designated conservation areas

There are a number of designated conservation areas within 10km of the proposed development site and these are listed in Table 1. The most proximal area of potential impact is Moyrahan Bay, which is part of the Broadhaven Bay complex. There will be no temporary impacts on any designated conservation areas, given that the developer intends to introduce the recovered material over a period of 10 years at a low-intensity of activity, and an appropriate surface water treatment management plan is implemented.

There will be no impact from development of the site on any species listed as rare or scarce. There will be no effect on species listed under Annex II and IV of the Habitats Directive.

Habitats

There will be a high magnitude temporary impact on the habitats within the development site. The development involves the introduction of recovered material to a maximum depth of 1m over 90% of the site area. The material will be compacted and shaped using heavy machinery. This will result in complete loss of the existing habitat. Drainage channels will be re-directed and maintained to allow for treatment of the drainage waters in settlement lagoons.

As the activity may continue at the site for up to 10 years, the impacts will remain of high magnitude over discrete areas within the site as the area is covered gradually over this period. A completely new habitat will be created in place of the cutover bog habitat. There will be no temporary impacts on habitats in the surrounding area, given that the activity will be restricted to the development site.

Fauna

There will be **high magnitude** impact on the fauna present in the development area. This will be largely due to the loss of habitat from the site.

6.2 *Permanent impacts of the development*

Under the Regini (2000) guidelines, the permanent impacts are considered in the period after 25 years of onset of the development.

Designated conservation areas

There will be **no permanent impacts** on any designated areas within 10km of the proposed development site.

Habitats and fauna

There will be no negative permanent impacts on habitats and fauna from the development. As stated previously, the development will result in a replacement artificial habitat that may with time form part of the greater SAC-NHA network either as a wildlife sanctuary/reserve. The potential permanent impact is therefore considered to be of **very low magnitude**.

7 DO-NOTHING SCENARIO

If the proposed development does not proceed, the site will continue to be utilised for turf production and sheep grazing. The site will remain as a cutover bog habitat. There is potential for this habitat to increase in ecological value over time and cutover bogs can be diverse systems. However, there is no *timeframe for cessation of activity* and the site will continue to be degraded through current land-use. There would be no changes in the ecological value of the site and/or the surrounding area and no impacts on current populations of species.

8 MITIGATION MEASURES

In any planning application mitigation measures should be included as appropriate to avoid or reduce any *negative impacts on flora, fauna, habitats and aquatic systems*.

Proposed mitigation measures outlined in the planning application are (a) the provision of settlement lagoons for treatment of water before leaving the site (see Fig. 5) and (b) a planned programme of disposal to minimise the footprint of activity at any time during the 10 year period of use. It is also recommended that disposal commence in the most westerly parts of the site with gradual movement over the 10 year period in an eastward direction. It is not anticipated that there will be a high sediment load from the *disturbed cutover bog habitats*. However, *drainage channels* will be re-directed and maintained to allow for treatment of the water in settlement lagoons before leaving the site.

These proposed measures will respectively, mitigate against elevated silt entering drainage waters and affecting the adjacent designated area, while reducing the impact footprint at all times of activity within the area.

Operating hours could also be restricted to *between 8am to 6pm* to reduce the impact of disturbance on faunal activity.

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9 PREDICTED IMPACT OF THE PROPOSED DEVELOPMENT

9.1 Direct and indirect impacts

The impact of the development will be a product of (a) traffic onto the site, (b) the loss of habitat, (c) the development of artificial habitat in its place, and (d) the mitigation measures incorporated into the design and operating phases.

Based on the field and desk studies presented here, it is predicted that the impact of the development on the proposed development site will be of **minor or negligible ecological significance** (Regini 2000, see *Table 4 in Appendix*). This evaluation is based on consideration of:

- The negligible ecological value of the proposed development site.
- The widespread occurrence of similar habitat type within the local area and directly adjacent to the development site.
- The implementation of the outlined mitigation measures.
- The installation of settlement ponds for treatment of water leaving the thereby mitigating against potential impacts on the Broadhaven Bay complex.
- The restriction of activity to the minimal footprint area for the duration of the activity.
- The relatively staggered and slow covering of the area over a 10 year period (low-intensity operation), thereby reducing the level of disturbance to discrete parts of the site at any time over the 10 year period.

The main negative impacts as outlined previously will be the loss of cutover bog habitat, which is common in the local area, and disturbance of faunal activity through loss of habitat and disturbance. These are viewed as temporary and direct impacts, restricted to the duration of activity on the site. As outlined they will be high magnitude impacts on the actual development area, but considering the **negligible ecological value** of this habitat, the overall predicted impact is of **minor or negligible significance**.

Treatment of water will mitigate against any potential impacts on the adjacent designated areas thereby reducing the overall predicted impact. In the permanent impact view, natural colonisation of the site will allow the area to blend with the surrounding landscape. This in turn will lead to indirect effect through provision of an alternative semi-natural habitat and potential enhancement of local biodiversity of habitats and species.

There are no negative indirect effects foreseen from the development on the flora and fauna within the local, regional and national context. The worst-case scenario prescribed would be no treatment of water leaving the site. Even at this, the impact would be considered to be of low magnitude due to the low intensity of the activity. The inclusion of the mitigation measures minimises the effects to direct effects on the development site only.

9.2 Cumulative impacts

The development should be considered in the context of land-uses in adjacent areas. In particular the low-intensity industrial activity to the east of the proposed development site. The commercial mushroom production unit is restricted to a small footprint and is enclosed. The site was probably cleared of habitats and may have been used for sand/gravel quarrying prior to its current use. There has been no loss of ecologically significant habitat from the area. Disturbance through noise and traffic has not impacted negatively and there is no run-off from the site (consultation with NPWS). The main impact is visual, relating to the number of tunnels present on site.

Given that the proposed development will also be of low-intensity and screened from the existing main roadway, the cumulative impacts of both developments are therefore considered to be of low impact magnitude. This is given the absence of activity other than the current levels described and the implementation of the outlined mitigation measures.