

Mr. Michael Owens,  
Inspector,  
Environmental Protection Agency,  
Johnstown Castle Estate,  
County Wexford.

1<sup>st</sup> October 2012

File Ref: MGE0109LT0065  
Our Ref: 311

**Re: Waste Licence Review Application - W0217-02**

Dear Mr. Owens,

Further to our email correspondence of 20<sup>th</sup> September 2012, please find attached additional information for a review of waste licence **W0217-02** on behalf of Killarney Waste Disposal Ltd (KWD) for the existing Material Recovery Facility (MRF) at Aughacureen, Killarney, Co. Kerry.

Killarney Waste Disposal Ltd., as the largest recycling company in the south west of Ireland, is currently making a significant contribution towards meeting the recycling targets of the current Waste Management Plan for the Limerick/Clare/Kerry Region 2006-2011. Killarney Waste Disposal Ltd. is experiencing a growing demand from their domestic and commercial customers to increase the amount of dry recyclables collected for processing and this demand formed the basis for the additional information to be provided as part of the review application submitted in July 2010, as it cannot be currently met under the current licence.

Killarney Waste Disposal Ltd. have recently discussed the proposed increase in waste intake at the facility with Kerry County Council Planning Department. Kerry County Council indicated that there are no planning issues associated with the proposal. Kerry County Council Senior Planner, Mr Michael Lynch, can be contacted on 066 712 1111, should you require to discuss this further.

Killarney Waste Disposal Ltd. would be grateful if the EPA could provide an update on the progress of the review application as soon as possible or indicate when a decision on the application can be expected.

We trust this is satisfactory and please do not hesitate to contact the undersign should you have any further queries.

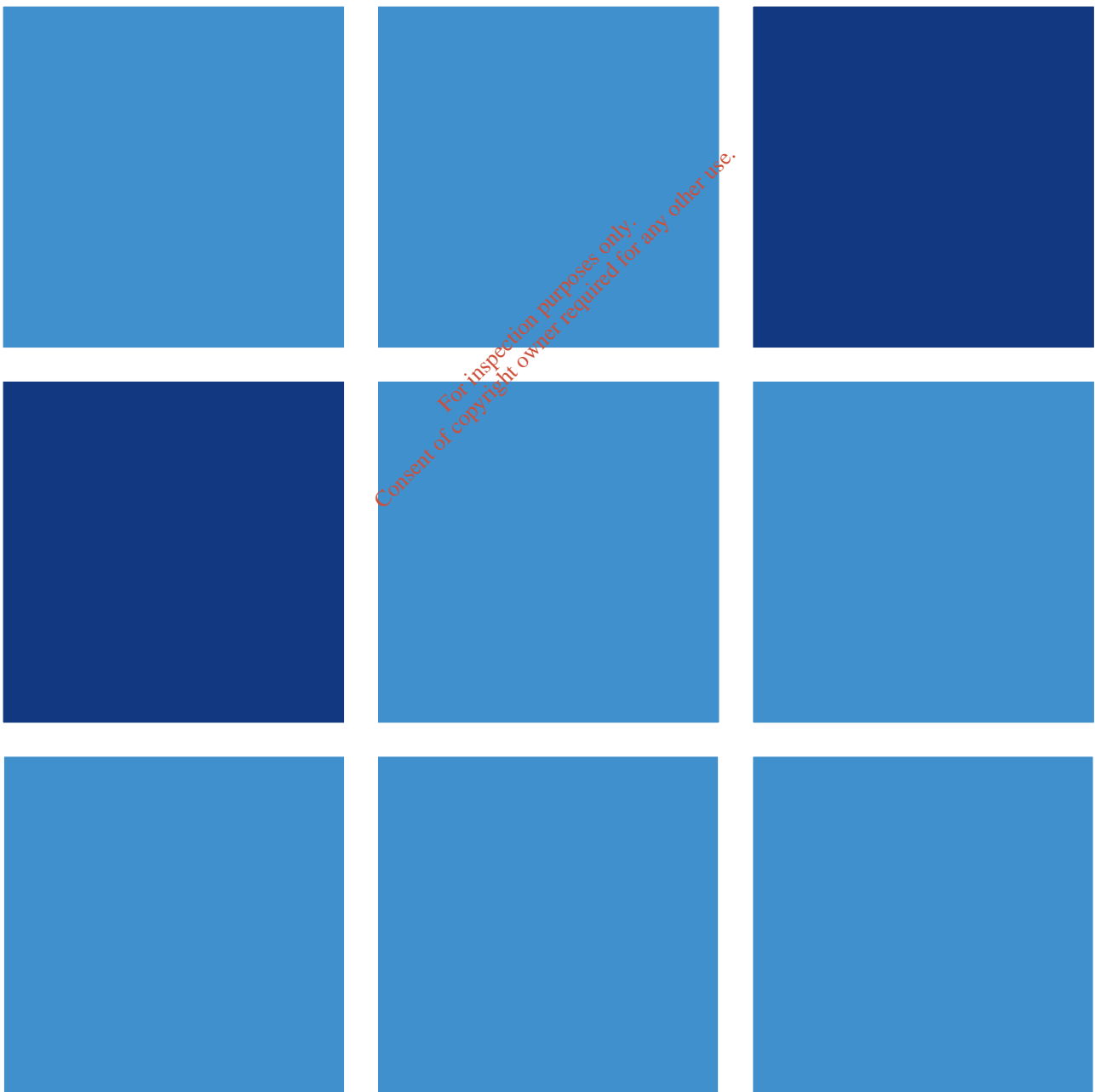
Yours sincerely,

  
**Joanne Finnegan**  
RPS

# Killarney Waste Disposal Limited Waste Licence Review Application Aughacurreen

Additional Information for Waste Licence Review Application  
(W0217-02)

October 2012



MGE0109CR0005



# Killarney Waste Disposal Limited

## Additional Information for Waste Licence Review Application (W0217-02)

# DOCUMENT CONTROL SHEET

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Project Title	Waste Licence Review Application Aughacurreen					
Document Title	Additional Information for Waste Licence Review Application (W0217-02)					
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## INTRODUCTION

The Killarney Waste Disposal Limited (KWD) site at Aughacurreen, Killarney is regulated by Waste Licence Register No. **W0217-01**. On the 14<sup>th</sup> July 2010 RPS submitted an application to the EPA for a review of waste licence **W0217-01** on behalf of Killarney Waste Disposal Ltd. This application was issued to the EPA in accordance with the requirements of the Waste Management (Licensing) Regulations, 2004, as amended and related to the proposed increase in waste intake from 40,000 to 59,000 tonnes per annum and the acceptance, appropriate treatment and recovery of End-of Life Vehicles at the existing Material Recovery Facility (MRF) at Aughacurreen, Killarney, Co. Kerry. This application was assigned a reference number **W0217-02** by the EPA.

Further to this application on the 29<sup>th</sup> August 2010 the EPA issued a Notice in accordance with Article 14(2)(b)(ii) of the Waste Management (Licensing) Regulations 2004, as amended, requesting additional information. RPS submitted a response to this request on the 10<sup>th</sup> October 2010 on behalf of the applicant. Receipt of this information was acknowledged by the EPA on the 13<sup>th</sup> October 2010.

Due to an increased demand for intake of recyclable waste, and a time delay in processing the application, KWD had a waste intake of 59,000 tonnes per annum in 2011. RPS, on behalf of KWD, now wishes to submit additional information to the waste licence application to increase the annual waste intake from 40,000 to 79,000 tonnes per annum to allow for the increased demand for processing dry recyclables in the region.

The following details are updates to the relevant sections of the Waste Licence Review Application form, affected by this application for a proposed increase in dry recyclable material intake.

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## REVISED NON TECHNICAL SUMMARY

*A Non-Technical Summary is to be submitted. The summary should include information on those aspects outlined in the Guidance Note and must comply with the requirements of Article 12 (1) (u) of the Waste Management (Licensing) Regulations, S.I. 395 of 2004.*

### (Revised Attachment A1)

#### A.1.1 Nature & Location of the Facility

Killarney Waste Disposal (KWD) operate a Materials Recovery Facility at Aughacurreen 4.5km northwest of Killarney Town under EPA Waste Licence No. W0217-01, which allows an annual waste intake of 40,000 tonnes for recovery. The site is 3.7 hectares in size and is located within a rural context. There are approximately 20 no. residences within 500m from the boundary of the facility. Most of these residences are located on a ribbon development on the nearby road from Knockasarnet to Aghalee. The primary landuse in the vicinity of the facility is agriculture.

Killarney Waste Disposal propose to increase the waste intake at the facility to 79,000 tonnes per annum.

The General Soils Map of Ireland indicates that the soil type in the area is podzolic. These are poor, acidic soils, typical of cool, damp climates. GSI Quaternary maps record Devonian Sandstone dominated Till (boulder clay) at the site location. The thickness of the subsoil deposits in the area can reach up to 30m in places while elsewhere the subsoil is absent (at outcrop) or less than a metre. The GSI has classified the shale and sandstone bedrock underlying the site as a locally important aquifer which is moderately productive only in local zones.

The KWD facility is located in the catchment of the Glancoragh River which flows to the Gweestin River c.10km downstream of the facility. The Gweestin flows for a further c. 10km before joining the River Laune.

#### A.1.2 Classes of Activities as specified in the Third and Fourth Schedules of the Act

The waste disposal activities carried out under the Third Schedule are the Classes D13, D14 and D15. The waste recovery activities carried out under the Fourth Schedule are the Classes R3, R4, R5, R11, R12 and R13. The proposed principal activity is Class R3 under the Fourth Schedule.

#### A.1.3 Quantity and Nature of the Waste

A total of 59,000 tonnes per annum of non-hazardous waste is currently accepted by KWD. It is proposed to increase the annual waste intake to 79,000 tonnes, the breakdown of which is shown below in **Table 1.1**. The proposed increase in the annual waste intake relates to an increase in the quantity of dry recyclables to be accepted at the KWD facility.

**Table 1.1 Waste Types and Quantities Proposed**

Incoming	Outgoing
60,000 tonnes segregated dry recyclables	54,000 tonnes sent for recovery (40,500 of this is paper and cardboard). 6,000 tonnes sent for disposal.
12,000 tonnes mixed municipal waste	1,200 tonnes Residue Derived Fuel (RDF) sent for energy recovery. 2,400 dry recyclables sent for recovery. 8,400 tonnes (residual and organic fines (stabilised)) sent for disposal.
4,300 tonnes C&D waste (metals 2000 tonnes, timber 1800 tonnes, other C&D waste 500 tonnes)	3,535 tonnes sent for recovery (1,045 tonnes of this is metals) 765 tonnes sent for disposal.
2,000 tonnes segregated organic waste (brown bin)	2,000 tonnes sent for recovery.
250 tonnes of ELVs	250 tonnes metal sent for recovery
250 tonnes of Waste Tyres	250 tonnes sent for recovery
200 tonnes of WEEE	200 tonnes sent for recovery
<b>Total of 79,000</b>	<b>Total for recovery 63,835</b> <b>Total for disposal 15,165</b>

#### A.1.4 Application of the EU Waste Hierarchy

The regional waste management plan for the Limerick/Clare/Kerry region is rooted in the concept of an integrated waste management policy with priority assigned in accordance with the EU Waste Management Hierarchy. Killarney Waste Disposal is one of three private Material Recovery Facilities in the region. Their role therefore is to provide recycling and recovery capacity to support the provision of an integrated waste management system in the region, which in turn supports the application of the waste hierarchy with respect to 'other recovery'.

#### A.1.5 Operations

Drawing No. DG0035-01 F02 provides details on the Detailed Site Layout Plan.

The proposed hours are outlined as follows:

	Activity	Hours	Days	Comment
MRF Building	Dry recyclable material processing (Feeding, sorting, picking, bailing and storage)	24 hours	Monday to Saturday inclusive	Dry recyclable material processing only
	All other activities (Unloading of waste from trucks, C + D trommel and picking, mixed municipal waste awaiting transfer and ELV's processing.	07:00 to 20:00	Monday to Saturday inclusive	As per current Waste Licence W0217-01
Yard	All outside activity <ul style="list-style-type: none"> <li>• Timber shredding and storage,</li> <li>• Scrap metal processing and storage,</li> <li>• Bailed aluminium and steel cans storage</li> <li>• ELV's storage and</li> <li>• Container loading</li> </ul>	07:00 to 20:00	Monday to Saturday inclusive	As per current Waste Licence W0217-01

Waste acceptance is from 07:30 to 19:30 Monday to Saturday inclusive (as per current Waste Licence W0217-01) and will be required on Bank Holidays.

The following waste types are accepted for recovery and disposal:

1. Mixed municipal waste;
2. Source segregated waste, which includes organic waste and dry recyclables (plastic (bottles and film), paper, cardboard and packaging waste);
3. Construction & Demolition waste;
4. Glass;
5. WEEE; and
6. End-Of-Life Vehicles (ELVs), and waste tyres.

Incoming waste is weighed at the weighbridge near the site entrance and the following information is recorded for the site records:

- Description of the waste including waste types, composition, form and relevant EWC Code
- The origin of the waste including customer details
- The weight of the waste load.

The waste is tipped into the Material Recovery Facility (MRF) and inspected prior to processing. Any suspect load is removed to the quarantine area for further inspection and, if non-compliant, is returned to the customer.

#### A.1.6 Emissions and Treatment

A septic tank is in use at the facility with a puraflo unit and associated percolation area. The system has been designed to cater for a discharge quantity of 2.16 cubic metres per day.

Roof water drainage from the MRF building is directed away from the concreted yard and stormwater collection/treatment system.

Runoff from the yard drains to 2 no. holding tanks from where it is pumped to the oil/water separator and then on to the aeration pond, settling pond, constructed wetland and percolation ditch. The total surface water runoff for the site is 12.8m<sup>3</sup>/day.

The processing of mixed municipal waste produces a liquid effluent. The MRF building has an effluent holding tank in the centre of the building. This precast concrete holding tank is 6,920 litres (1,500 gallons) in capacity and is lined with a 2.5mm thick HDPE liner. A bunding tank which surrounds the holding tank has a capacity of 3,500 gallons. Approximately 34,600 litres (7,500 gallons) of effluent is transported by tanker to Tralee WWTP (5 no. loads of 6,920 litres) for treatment per annum.

No increase to the roof drainage, runoff from the yard or the liquid effluent within the MRF building is expected as a result of the proposed waste increase intake as this will relate to clean dry recyclables only.

### **A.1.7 Environmental Impacts**

#### **Dust Emissions**

Dust will be potentially generated from the processing and storage of C&D waste and timber. Dust will also be generated from traffic travelling to and from the facility. Dust emissions associated with timber shredding is minimised as the timber shredder is housed on three sides. The operation of the facility in 2011 (at a waste intake level of 59,000 tonnes over the year) only exceeded the dust deposition rate of 350 mg/m<sup>2</sup>/day twice over the entire year. These two breaches in dust deposition were 398 mg/m<sup>2</sup>/day and 364 mg/m<sup>2</sup>/day and were both sampled in February 2011. These levels are associated with a dry weather period around this time. Similarly, in 2012, there was one breach in the dust deposition monitoring of 370 mg/m<sup>2</sup>/day, again in the February sampling period. The dust deposition monitoring for all other time periods were well within the limits, as per the current licence.

In order to limit dust emissions at the facility, a number of measures have been implemented including regular sweeping of the facility with the automatic sweeper, the use of surrounding trees to attenuate the dust generated, a mobile water sprayer during dry weather conditions to limit dust emissions, regular servicing of plant equipment to prevent excessive exhaust emissions of particulates and other pollutants and the installation of mist-air units in the MRF building.

Dust monitoring demonstrates that the facility is not having a negative impact on the surrounding air quality.

#### **Odour Emissions**

The processing of mixed municipal waste and the acceptance of segregated organic waste, which is a very low quantity, has the potential to emit odour. Odour emissions are minimised by measures such as indoor processing of organic and municipal waste, regular cleaning of surfaces to limit growth of anaerobic bacteria, covering of potential odour sources, limiting residence time for waste, and in the event that an odour nuisance occurs the use of an odour neutralising agent to cover the odour or counteractant to react with the nuisance odour to reduce the odour intensity.

#### **Surface Water**

##### **Process Effluent**

Process effluent from municipal waste processing in the MRF building drains to an effluent holding tank in the centre of the building and hence does not impact on surface water within the facility. The precast concrete holding tank is 6,920 litres in capacity and is lined with a 2.5mm thick HDPE liner. The liquid effluent from the holding tank is tankered to Tralee WWTP. A bunding tank which surrounds the holding tank has a capacity of 13,250 litres. The effluent holding tank inside the MRF Building is analysed on an annual basis.



## Stormwater/Surface Water Drainage

### (i) Roof

Roof water drainage from the MRF building is directed away from the concreted yard and stormwater collection/treatment system. Sampling of the roof runoff quality is carried out at monitoring points R1 and R2.

### (ii) Concreted Yard Area

Runoff from the yard area drains to 2 no. holding tanks from where it is pumped to the oil/water separator and then on to the aeration pond, settling pond, constructed wetland and percolation ditch. The discharge point SW1 is monitored to ensure that the stormwater is uncontaminated. The final discharge is to surface water.

Mitigation measures recommended to reduce the level of ammonia in the stormwater runoff which have been implemented on site include the installation of gates on the C&D waste processing area to prevent the migration of waste out onto the yard area, inspection of incoming timber waste to ensure no contamination with organic waste, inspection and maintenance of all storage bins and skips on site for leakages, cleaning of the yard with the automatic sweeper on a daily basis, regular cleaning of holding tanks and oil/water separator every 2 months or as required, and regular cleaning of the settling pond every 6 months or as required. SW1 was sampled and analysed on a weekly basis in 2012 and all parameters are within the standard emission limit values. Therefore the stormwater discharge from the site is not impacting negatively on the surface water quality.

## Depollution of End-Of-Life Vehicles (ELV's)

It is proposed to process ELV's in the MRF building on an impermeable surface in a separately bunded area with drain and sump to ensure that any potential spillages are controlled, collected and sent to a licensed facility for treatment. In addition, during the depollution process following drainage of fluids, plastic plugs will be inserted in all drain holes to prevent dripping occurring. A spill procedure and spill kits are in place on site to deal with potential spillages. All components and fluids will be suitably contained within the bunded area and sent to licensed facilities for recovery/disposal.

## Sewage Discharge

A septic tank is in use at the facility with a puraflo unit and associated percolation area. The system has been designed to treat a discharge quantity of 2.16 cubic metres per day. The puraflo unit and percolation area have been designed, located, constructed and maintained in accordance with the manufacturer's instructions. The design of the treatment system is in line with the requirements of EPA Wastewater Treatment Manual and sewage generated at the facility has not adversely impact on the environment.

## Groundwater

There are no direct groundwater emissions from the facility. The design of the domestic effluent system is in line with the requirements of EPA Wastewater Treatment Manual therefore sewage generated at the facility will not adversely impact on the environment. Process effluent drains to a holding tank, before being sent to Tralee WWTP for treatment. This holding tank passed a bund integrity test in March 2009. This shows that no leachate is being released into the environment. Control measures are in place for depollution of ELV's. Stormwater is collected and treated on site and discharged to surface water. In July 2009, 4 no. groundwater monitoring boreholes were installed at the facility. The location of the groundwater monitoring points are shown in Drawing No. DG0035-01 F02 Detailed Site Layout Plan. GW1 and GW2 are located downgradient and GW3 and GW4 are located upgradient of the facility. Elevated levels of ammonia present in an upgradient borehole indicates that other factors unrelated to the KWD facility are likely to be responsible.

## Ecology

The facility is not included by any ecological designation (NHA, SPA, SAC) and there will be no impact on ecology in the vicinity.

## Noise Emissions

Traffic using the adjacent road network and traffic movements on site have the potential to generate noise emissions, while noise generation from operations on site is curtailed, mostly due to operations taking place within the MRF building. Processing of timber waste occurs outdoors on an intermittent

basis and the timber shredder is housed on three sides to reduce noise emissions. The monitoring programme for noise ensured that standard emissions limits are not exceeded. Additionally, acoustic cladding was installed to the inside of the MRF building, with further installations planned by the end of October 2012. Resurfacing carried out on the access road also reduces the noise related to traffic movements to the facility.

A noise survey was carried out by OES Consulting in 2011 in accordance with the conditions of the waste licence and is reported in the AER 2011. The noise levels measured are below the EPA standard emission levels and it is unlikely that the facility will have a negative impact on adjacent landowners.

An additional noise survey (Appendix 1.6) was carried out by McSwiney Environmental & Safety Consulting Ltd. in September 2012 to assess the noise associated with the operation of the MRF building between the hours of 19:00 and 21:00. This survey shows that the levels measured are below the EPA standard emission levels of 45bD  $L_{Aeq}$  for night time operations and 55bD  $L_{Aeq}$  for day time operations. In conclusion the results indicate that there is no significant impact, 24 hours a day, with regard to noise outside the boundary of the site.

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## SECTION B, GENERAL

### **Table B.7.2 Maximum Annual Tonnage**

*The maximum annual tonnage of waste to be handled at the site should be indicated and the year to which the quantity relates indicated.*

<b>Maximum Annual Tonnage (tpa)</b>	79,000
<b>Year</b>	2012/2013

### Appendix B2

Detailed Site Layout Plan DG0035-01 F02

Layout of MRF Building DG0034-01 F02

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## SECTION C, MANAGEMENT OF THE FACILITY

### C.3 Hours of Operation

**Attachment C 3** should contain details of hours of operation for the waste facility, civic waste facilities and other facilities.

(a) Proposed hours of operation.

(b) Proposed hours of waste acceptance/handling.

(c) Proposed hours of any construction and development works at the facility and timeframes (required for landfill facilities).

(d) Any other relevant hours of operation expected.

#### Attachment C 3

(a) The proposed hours are outlined as follows:

	Activity	Hours	Days	Comment
<b>Within the MRF Building</b>	Dry recyclable material processing (Feeding, sorting, picking, bailing and storage), within the MRF building	24 hours	Monday to Saturday inclusive	Dry recyclable material processing only
	All other activities (Unloading of waste from trucks, C + D trommel and picking, mixed municipal waste awaiting transfer and ELV's processing.	07:00 to 20:00	Monday to Saturday inclusive	As per current Waste Licence W0217-01
<b>Outside in the Yard</b>	All outside activity <ul style="list-style-type: none"> <li>• Timber shredding and storage,</li> <li>• Scrap metal processing and storage,</li> <li>• Bailed aluminium and steel cans storage</li> <li>• ELV's storage and</li> <li>• Container loading</li> </ul>	07:00 to 20:00	Monday to Saturday inclusive	As per current Waste Licence W0217-01

(b) 07:30 to 19:30 Monday to Saturday inclusive (as per current Waste Licence W0217-01) and will be required on Bank Holidays

(c) Not applicable,

(d) Waste acceptance will be required on Bank holidays. Waste acceptance is solely from KWD vehicles (no 3<sup>rd</sup> party waste acceptance) and is to include the following activities:

- Registering information at weighbridge on entrance to facility,
- Tip waste in MRF building,
- Wash truck and fill diesel as required and
- Park vehicle.

Processing may be required on Bank holidays for dry recyclable material processing in the MRF building between 08:00 to 18:00 to facilitate customer demand, usually around the Christmas period. No operations will be carried out outdoors.

A minimal number of collection/deliveries may be required outside normal operational hours to facilitate customer requirements. These abnormal operations will be pre-approved with the Agency and recorded where necessary.

See attached copies of letters (Appendix C3) from the Tidy Towns Committee and Killarney Chamber of Tourism and Commerce to support these additional opening hours. This correspondence highlights the importance of a waste collection service on Bank Holidays to maintain the tidy appearance of the town and to protect the town as a tourism destination.

## SECTION D, INFRASTRUCTURE & OPERATION

### D.1 Infrastructure

Complete the following table detailing the site infrastructure. **Attachment D 1** should contain the appropriate documentation. Information provided should follow the sequence, and use the headings, established in Table D.1. Additional advice on completing this section is provided in the application Guidance Note.

Table D.1. Infrastructure		y/n	Comments
D.1.a	Site security arrangements including gates and fencing	Y	No change
D.1.b	Designs for site roads	Y	See Attachment D.1.b
D.1.c	Design of hardstanding areas	Y	No change
D.1.d	Plant	Y	See Attachment D.1.d
D.1.e	Wheel-wash	Y	No change
D.1.f	Laboratory facilities	N	
D.1.g	Design and location of fuel storage areas	Y	No change
D.1.h	Waste quarantine areas	Y	No change
D.1.i	Waste inspection areas	Y	No change
D.1.j	Traffic control	Y	No change
D.1.k	Sewerage and surface water drainage infrastructure	Y	See Attachment D.1.k
D.1.l	All other services	Y	No change
D.1.m	Plant sheds, garages and equipment compound	Y	No change
D.1.n	Site accommodation	Y	No change
D.1.o	A fire control system, including water supply	Y	See Attachment D.1.o
D.1.p	Civic amenity facilities	N	
D.1.q	Any other waste recovery infrastructure	N	
D.1.r	Composting infrastructure	N	
D.1.s	Construction and Demolition waste infrastructure	N	
D.1.t	Incineration infrastructure (if applicable). Provide information to fulfil Article 4 (2) & (3) of the Incineration of Waste Directive	Not App	
D.1.u	Any other infrastructure	Y	See Attachment D.1.u

### Attachment D.1

#### D.1.b Design for facility roads

The access road to the facility is shown in Drawing No. DG0035-01 F02; Detailed Site Layout Plan. This road was resurfaced in June 2008 to reduce noise emissions associated with traffic from the site.

#### D.1.d

Additional plant has been installed since the original Waste Licence Review Application dated July 2010. In May 2011, KWD upgraded the facility to accommodate the increase in waste to 59,000 tonnes per annum and the subsequent proposed increase to 79,000 tonnes per annum (please refer to Drawing No. DG0034-01 F02; Layout of MRF Building). The main source of increase in waste intake is dry recyclable materials and therefore the upgrade to the facility has concentrated on processing equipment for this waste stream. All other plant for other waste streams remains as per original Waste Licence Review Application.

Existing plant in July 2010 Waste Review Application	Current plant for proposed increased waste intake (September 2012)
1 x Baler	2 x Balers (1 baler now dedicated to paper and cardboard material)
1 x Compressor	3 x Compressors (2 in operation and 1 on duty standby) (These compressors used for optical sorters)
2 x Mechanical sorting and picking lines	3 x Mechanical sorting and picking lines
2 x Optical sorting systems	6 x Optical sorting systems
1 x Suction fan for material handling / movement on picking lines	2 x Suction fans for material handling / movement on picking lines

Improvements have also been carried out in the loading area, with the construction of a new adjustable levelling dock (as an upgrade to the old mobile loading ramp). This new area allows a container to be filled in less than 20 minutes (old filling time of approximately 45 minutes). This increases the overall efficiency of the running of the facility.

### D.1.k Sewerage and Surface Water Drainage Infrastructure

#### Stormwater/Surface Water Drainage

##### (i) Roof

Roof water drainage from the MRF building is directed away from the concreted yard and stormwater collection/treatment system. Drawing No. DG0035-01 F02; Detailed Site Layout Plan shows the emission/monitoring point locations R1 and R2 for roof water runoff.

No additional discharge will occur due to the increase in waste intake.

##### (ii) Concreted Yard Area

Runoff from the yard area drains to 2 no. holding tanks from where it is pumped to the oil/water separator and then on to the aeration pond, settling pond, constructed wetland and percolation ditch. The discharge point (SW1) from the constructed wetland to the percolation ditch is monitored to ensure that the stormwater is uncontaminated. The final disposal route is to surface water. It has been calculated that the total surface water runoff for the site is 12.8m<sup>3</sup>/day. Drawing No. DG0035-01 F02; Detailed Site Layout Plan shows the layout of the stormwater collection/treatment system.

The volume of surface water discharge will not increase due to the increase in waste intake since all additional waste will be handled with the MRF building. There will be no change to the operations or storage outside the MRF building or throughout the site.

#### D.1.o A fire control system, including water supply

Additional fire safety measures have been installed on the site to include for the proposed increase of waste to the site. These include:

- A new fire sprinkler system in the MRF building. This is divided into 6 zones with dual pump backup and is fed from a new 3" main installed to the south east of the building (see DG0035-01 F02 for locations).
- 2 no. fire hydrants installed, one at the site entrance and one adjacent to MRF building (see DG0035-01 F02 for locations).
- New fire alarm in MRF building, linked to text dialler (see DG0035-01 F02 for locations).
- 15 no. fire hoses installed around MRF building, near doors and also upstairs at picking lines.
- Backup water supply will still be provided by the settling pond.

An advantage of operating the MRF facility 24 hours a day, 6 days a week is to provide a minimum of 2 no. personnel to be responsible for fire monitoring, reducing the risk of fire during night time hours.

#### D.1.u Any other infrastructure

The MRF building has an effluent holding tank in the centre of the building. This precast concrete holding tank is 6,920 litres (1,500 gallons) in capacity and is lined with a 2.5mm thick HDPE liner. A bunding tank which surrounds the holding tank has a capacity of 13,250 litres (3,500 gallons).

The volume of effluent entering this tank will not increase as a result of the increase in waste intake, as the proposed increased waste stream is dry recyclable material.

### **D.2 Facility Operation**

*In Attachment D 2 describe the plant, methods, processes and operations of the waste facility, as required by the Guidance Note.*

#### **Attachment D 2**

This additional information for the Waste Licence Review Application relates to a proposed increase in the annual intake to 79,000 tonnes per annum. This proposed increase can be accommodated within the existing infrastructure on site, due to the upgrade in plant in May 2011. All methods, processes and operations of the waste facility remain the same as the original Waste Licence Review Application. Drawing No. DG0035-01 F02 shows the Detailed Site Layout Plan and Drawing No. DG0034-01 F02 provides details on the Layout of the MRF building, with upgraded plant.

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## SECTION E, EMISSIONS

**Give particulars of the source, location, nature, composition, quantity, level and rate of emissions arising from the activity and, where relevant, the period or periods during which such emissions are made or are to be made.**

**The applicant should address in particular any emission point where the substances listed in the Schedule of S.I. 394 of 2004 are emitted.**

### **E.1 Emissions to Atmosphere**

*Details of all point emissions to atmosphere should be supplied. Table E.1.(i) (for Landfill Gas Flare emissions) must be completed for all landfills with a flare. Complete Table E.1(ii) and E.1(iii) for all other main emission points, including stack sources (incinerator stacks, landfill gas utilisation plants, air handling unit emissions etc.). Complete Table E.1(iv) for minor/fugitive/ground emission points.*

#### **E.1 Emissions to Atmosphere**

No point sources of air emissions exist at the facility. The vortex dryer proposed in the original waste licence application was not installed at the facility.

#### **Dust Emissions**

Dust will be potentially generated from the processing and storage of C&D waste and timber. Dust will also be generated from traffic travelling to and from the facility. Dust emissions associated with timber shredding is minimised as the timber shredder is housed on three sides. The operation of the facility in 2011 (to 59,000 tonnes over the year) only exceeded the dust deposition rate of 350 mg/m<sup>2</sup>/day twice over the entire year. These two breaches in dust deposition were 398 mg/m<sup>2</sup>/day and 364 mg/m<sup>2</sup>/day and were both sampled in February 2011. These levels are associated with a dry weather period around this time. Similarly, in 2012, there was one breach in the dust deposition monitoring of 370 mg/m<sup>2</sup>/day, again in the February sampling period. The dust deposition monitoring for all other time periods were well within the limits, as per the current licence. Drawing No. DG0035-01 F02 Detailed Site Layout Plan shows the location of dust monitoring points (D1-D3). The potential for dust emissions is minimised by a series of work practices and mitigation measures at the facility which are outlined in Section I.

#### **Odour Emissions**

The processing of mixed municipal waste and the acceptance of segregated organic waste has the potential to emit odour. The potential for odour emissions is minimised by a series of work practices and mitigation measures at the facility which are outlined in Section I.

### **E.2 Emissions to Surface Waters**

*Attachment E.2 Tables E.2(i) and E.2(ii) should be completed where relevant.*

#### **E.2 Emissions to Surface Waters**

No additional emissions to surface waters will occur as a result of the increase in waste intake of dry recyclables at KWD.

#### **Roof**

Roof water drainage from the MRF building is directed away from the concreted yard and stormwater collection/treatment system. Drawing No. DG0035-01 F02 Detailed Site Layout Plan shows R1 and R2; the emission monitoring point locations for roof water runoff.

Monitoring carried out for the reporting year of 2011 (AER 2011) and to date have indicated that water quality from R1 and R2 is within limits of the National Environmental Quality Standards in accordance with S.I. NO 272 of 2009 and no adverse effects are noted on the surrounding environment.

#### **Concreted yard area**

Runoff from the yard area drains to 2 no. holding tanks from where it is pumped to the oil/water separator and then on to the aeration pond, settling pond, constructed wetland and percolation ditch. The discharge point (SW1) from the constructed wetland to the percolation ditch is monitored to ensure that the stormwater is uncontaminated. The final discharge is to surface water. It has been



calculated that the total surface water runoff for the site is 12.8m<sup>3</sup>/day. Drawing No. DG0035-01 F02 Detailed Site Layout Plan shows the location of SW1.

There are no emission limit values for surface water parameters set out in the Waste Licence. However, for the reporting period of 2011 (AER 2011) and results to date this year, where possible the results have been compared to National Environmental Quality Standards in accordance with S.I. No 272 of 2009. All emissions are well below the annual average Environmental Quality Standard for Inland Waters.

Trigger levels for water quality parameters for SW1 were agreed with the Agency and if a trigger level was reached an investigation and where required increased monitoring was undertaken to determine the causes of the increase and implement control measures as required.

The trigger level for ammonia was breached on five occasions in 2011. This was followed by subsequent monitoring events and improvements to management of the reed beds which showed that levels returned to below the trigger level by the end of 2011. Monitoring of SW1 to date for 2012 has not exceeded the trigger level.

Since January 2012, storage of bailed beverage cans (aluminium and steel cans) has commenced in the scrap metal storage area (see Drawing No. DG0035-01 F02 Detailed Site Layout Plan). Additional monitoring of surface water discharge at SW1 was undertaken to ensure no changes were noted in the water quality exiting the existing reed bed. Results from SW1 show no adverse effect from storage of the bails in the scrap metal area.

### **E.3 Emissions to Sewer**

**Attachment E.3 Tables E.3(i) and E.3(ii) should be completed, where relevant.**

### **E.3 Emissions to Sewer**

#### **Process Effluent**

The processing of mixed municipal waste produces a liquid effluent. The MRF building has an effluent holding tank in the centre of the building. This precast concrete holding tank is 6,920 litres (1,500 gallons) in capacity and is lined with a 2.5mm thick HDPE liner. A bunding tank which surrounds the holding tank has a capacity of 13,250 litres (3,500 gallons). A bund integrity test was carried out by OES Consulting in December 2011 in accordance with condition 3.11.5 of the waste licence. The results demonstrated that the bund passed the test and no leakage was observed.

Approximately 34,600 litres (7,500 gallons) of effluent is transported by tanker to Tralee WWTP (5 no. loads of 6,920 litres) for treatment per annum. Drawing No. DG0035-01 F02 Detailed Site Layout Plan shows the location of the effluent holding tank inside the MRF Building which is analysed on an annual basis (SE1).

KWD do not discharge process effluent to sewer, as it is tankered off site to Tralee WWTP, and are only required to monitor the process effluent on an annual basis as per Schedule C.4 Waste Monitoring of their current waste licence. This monitoring has been completed and is presented in the AER every year to date. There are no emission limit values for process effluent set out in the Waste Licence.

### **E.5 Noise Emissions**

**Give particulars of the source, location, nature, level, and the period or periods during which the noise emissions are made or are to be made.**

**Table E.5(i) should be completed, as relevant, for each source.**

**Supporting information should form Attachment E.5**

### **E.5 Noise Emissions**

Traffic using the adjacent road network, traffic movements on site and operations on site have the potential to generate noise emissions. However the impacts of these emissions are reduced significantly as most operations take place indoors in the MRF building. Processing of timber waste only occurs outdoors. This operation takes place on an intermittent basis and the timber shredder is

housed on three sides to reduce noise emissions. The monitoring programme for noise has ensured that standard emissions limits were not exceeded for either daytime or nighttime limits, as recorded in the AER 2011. Drawing No. DG0035-01 F02 Detailed Site Layout Plan shows the location of noise monitoring points (NSL1-NSL4).

Improvements have been carried out on the access road with resurfacing taking place in June 2008. This alleviates the noise associated with truck movements on the access road.

An additional noise survey was carried out by McSwiney Environmental & Safety Consulting Ltd. in September 2012 (Attached in Appendix I.6) to assess the noise associated with the operation of the MRF building between the hours of 19:00 and 21:00. The results demonstrate that the levels measured are below the EPA standard emission levels of 45bD  $L_{Aeq}$  for night time operations and 55bD  $L_{Aeq}$  for day time operations. In conclusion the results indicate that there is no significant impact, 24 hours a day, with regard to noise outside the boundary of the site.

### **E.6 Environmental Nuisances**

*Attachment E.6 should contain the appropriate documentation. Information provided should follow the sequence, and use the headings as relevant established in Table D.6. Additional advice on completing this section is provided in the Guidance Note.*

### **E.6 Environmental Nuisances**

#### **Litter & Dust Control**

Litter and dust control measures are as outlined in the original Waste Licence Review Application. Further to these measures, additional measures have been installed in the MRF, outlined in Section I.

#### **Fire Control**

Section J of the original waste application details the Emergency Response Procedure in case of a fire. Additional fire safety measures have been installed on the site to include for the increase of waste to the site. These include:

- A new fire sprinkler system in the MRF building. This is divided into 6 zones with dual pump backup and is fed from a new 3" main installed to the south east of the building (see DG0035-01 F02 for locations).
- 2 no. fire hydrants installed, one at the site entrance and one adjacent to MRF building (see DG0035-01 F02 for locations).
- New fire alarm in MRF building, linked to text dialler (see DG0035-01 F02 for locations).
- 15 no. fire hoses installed around MRF building, near doors and also upstairs at picking lines.
- Backup water supply will still be provided by the settling pond.

An advantage of operating the MRF facility 24 hours a day, 6 days a week is to provide a minimum of 2 no. personnel to be responsible for fire monitoring, reducing the risk of fire during night time hours.

## SECTION H, MATERIALS HANDLING

### H.1 Waste Types and Quantities – Existing & Proposed

**Provide an estimation of the quantity of waste likely to be handled in relation to each class of activity applied for. This information should be included in Table H.1(a).**

**TABLE H.1(A). QUANTITIES OF WASTE IN RELATION TO EACH CLASS OF ACTIVITY APPLIED FOR**

Waste Management Acts 1996 to 2010 3rd Schedule (Disposal) Operations			Waste Management Acts 1996 to 2010 4th Schedule (Recovery) Operations		
Class of Activity Applied For		Quantity (tpa)	Class of Activity Applied For		Quantity (tpa)
Class D 1			Class R 1		
Class D 2			Class R 2		
Class D 3			Class R 3	✓	43,700
Class D 4			Class R 4	✓	1,495
Class D 5			Class R 5	✓	18,640
Class D 6			Class R 6		
Class D 7			Class R 7		
Class D 8			Class R 8		
Class D 9			Class R 9		
Class D 10			Class R 10		
Class D 11			Class R 11	✓	63,835
Class D 12			Class R 12	✓	63,835
Class D 13	✓	15,165	Class R 13	✓	63,835
Class D 14	✓	15,165			
Class D 15	✓	15,165			

**Class R3 of 4<sup>th</sup> Schedule: 43,700 tonnes of organic waste** = 40,500 tonnes of paper and cardboard, 2,000 tonnes of segregated organic waste (brown bin) and 1,200 tonnes of Residue Derived Fuel (RDF) sent for recovery.

**Class R4 of 4<sup>th</sup> Schedule: 1,495 tonnes of metal waste** = 1,045 tonnes of metals, 200 tonnes of WEEE and 250 tonnes of ELV's sent for recovery.

**Class R5 of 4<sup>th</sup> Schedule: 18,640 tonnes of inorganic waste** = 2,400 tonnes of dry recyclables from mixed municipal process, 2,490 tonnes of C&D waste (3,535 tonnes total - 1,045 tonnes metals), 250 tonnes of waste tyres, and 13,500 tonnes segregated dry recyclables (54,000 tonnes total - 40,500 tonnes paper and cardboard) sent for recovery.

**Class R11, R12 & R13 of 4<sup>th</sup> Schedule:** Total tonnage sent for recovery = 63,835 tonnes

**Class D13, D14 & D15 of 3<sup>rd</sup> Schedule:** Total tonnage sent for disposal = 15,165 tonnes

Incoming	Outgoing
60,000 tonnes segregated dry recyclables	54,000 tonnes sent for recovery (40,500 of this is paper and cardboard). 6,000 tonnes sent for disposal.
12,000 tonnes mixed municipal waste	1,200 tonnes Residue Derived Fuel (RDF) sent for energy recovery. 2,400 dry recyclables sent for recovery. 8,400 tonnes (residual and organic fines (stabilised)) sent for disposal.
4,300 tonnes C&D waste	3,535 tonnes sent for recovery (1,045

(metals 2000 tonnes, timber 1800 tonnes, other C&D waste 500 tonnes)	tonnes of this is metals) 765 tonnes sent for disposal.
2,000 tonnes segregated organic waste (brown bin)	2,000 tonnes sent for recovery.
250 tonnes of ELVs	250 tonnes metal sent for recovery
250 tonnes of Waste Tyres	250 tonnes sent for recovery
200 tonnes of WEEE	200 tonnes sent for recovery

*In Table H. 1 (B) provide the annual amount of waste handled/to be handled at the facility. Additional information should be included in Attachment H.1. The tonnage per annum should be given of that expected for the life of the licence, with at least the next five years tonnages provided. For Landfill Review applications provide an estimate of the quantity of waste already deposited in (i) lined cells; (ii) unlined cells.*

**Table H.1(B) Annual Quantities and Nature of Waste**

Year	Non-hazardous waste (tonnes per annum)	Hazardous waste (tonnes per annum)	Total annual quantity of waste (tonnes per annum)
2004	16,500		16,500
2005	40,000		40,000
2006	40,000		40,000
2007	44,714		44,714
2008	45,234		45,234
2009	43,405		43,405
2010	59,183		59,183
2011	58,847		58,847

*A detailed inventory of the types and quantities of wastes currently handled at the site and proposed to be handled should be submitted as Table H.1 (C).*

**Table H.1 (c) Waste Types and Quantities**

WASTE TYPE	TONNES PER ANNUM (existing)	TONNES PER ANNUM (proposed)	TOTAL (over life of site) tonnes
Household	11,000	50,100	
Commercial	17,000	23,900	
Sewage Sludge			
Construction and Demolition	12,000	4,300	
Industrial Non-Hazardous Sludges			
Industrial Non-Hazardous Solids		250 (waste tyres)	
Hazardous *(Specify detail in Table H 1.2)		450	
Inert Waste imported for restoration purposes			
Total	40,000	79,000	

**\*The eventual tonnage of each waste category may vary between categories however the waste intake of 79,000 tonnes per annum will not be exceeded.**

## SECTION I, EXISTING ENVIRONMENT & IMPACT OF THE FACILITY

*Detailed information is required to enable the Agency to assess the existing environment. This section requires the provision of information on the ambient environmental conditions at the site prior to the commencement of waste management activities or prior to the receipt of a review application.*

### **I.1. Assessment of atmospheric emissions**

*Describe the existing environment in terms of air quality with particular reference to ambient air quality standards.*

*Attachment I.1 should also contain full details of any dispersion modelling of atmospheric emissions from the activity, where required.*

## **Attachment I**

### **I.1 Assessment of Atmospheric Emissions**

#### **Dust Emissions**

The processing and storage of C&D waste and timber have the potential to generate dust emissions. Dust will also be generated from traffic travelling to and from the facility. Dust emissions associated with timber shredding is minimised as the timber shredder is housed on three sides. The operation of the facility in 2011 (to 59,000 tonnes over the year) only exceeded the dust deposition rate of 350 mg/m<sup>2</sup>/day twice over the entire year. These two breaches in dust deposition were 398 mg/m<sup>2</sup>/day and 364 mg/m<sup>2</sup>/day and were both sampled in February 2011. These levels are associated with a dry weather period around this time. Similarly, in 2012, there was one breach in the dust deposition monitoring of 370 mg/m<sup>2</sup>/day, again in the February sampling period. Extra measures will be employed of February 2013 to ensure these breaches in emissions do not occur. This will include extra water spraying for the drier months of the year, especially concentrating on the spring period of 2013. The dust deposition monitoring for all other time periods were well within the limits, as per the current licence. Drawing No. DG0035-01 F02 Detailed Site Layout Plan shows the location of dust monitoring points (D1-D3).

The measures to control and reduce dust emissions at the facility include the following:

- Regular sweeping of the facility with the automatic sweeper controls the amount of dust generated.
- The surrounding trees attenuate the dust generated from the facility.
- A mobile water sprayer is employed during dry weather conditions to reduce dust emissions.
- Plant equipment used on site is regularly maintained to prevent excessive exhaust emissions of particulates and other pollutants.
- The timber shredder is housed on three sides to reduce dust being emitted into the atmosphere.
- Regular dust monitoring will indicate if the levels are exceeding the standard emission limits.
- In July 2012, 6 no. mist-air units (Specification in Appendix E.6, Location on Drawing No. DG0034-01 F02, Layout of the MRF building) were installed around the MRF building which disperses an aqueous fog (mainly constituting water particles and some odour neutralizing masking agents) to absorb dust particles, which then falls to the floor.

The most recent dust monitoring was carried out by OES Consulting in February and August 2012. Table 1.1 below presents these results. The standard emission limit of 350 mg/m<sup>2</sup>/day for total dust deposition was exceeded on one occasion at D2 in February 2012. The locations of the dust monitoring points are shown in Drawing No. DG0035-01 F02 Detailed Site Layout Plan. From these results it is shown that the facility is not having a negative impact on the surrounding air quality.

**Table 1.1: Dust Deposition Results for 2012 at Killarney Waste Disposal**

Dust Monitoring Point	Feb 2012 mg/m <sup>2</sup> /day	August 2012 mg/m <sup>2</sup> /day
D1 Front Gate	275	86
D2 Back of Shed	370	137
D3 Back Road	238	157
Emission Limit Value	350	350

### Odour Emissions

The processing of mixed municipal waste and the acceptance of segregated organic waste has the potential to emit odour. The potential for odour emissions is minimised by a series of work practices and mitigation measures at the facility.

These measures are outlined briefly below:

- All organic and mixed municipal waste is processed indoors and this significantly reduces any odour emissions from the waste.
- Storage of all materials is in the MRF building, awaiting removal by container.
- All work surfaces and floors cleaned and regularly maintained to a suitable standard to prevent the build up of anaerobic bacteria. All areas where there is a potential for the generation of odour (i.e. temporary storage areas, skips, bins, etc) covered to reduce the potential for escape of odours.
- Residence time for waste, even non-odorous waste, will be kept to a minimum before transfer.
- Odour patrols are undertaken on a weekly basis and any observations are recorded. Where necessary, remedial measures are applied.
- In the event that an odour nuisance is occurring from the facility, despite the building design and work practices, there are a number of odour mitigation measures that are employed. In July 2012, 6 no. mist-air units (Specification in Appendix E.6, Location on Drawing No. DG0034-01 F02, Layout of the MRF building) were installed around the MRF building which disperses an aqueous fog (mainly constituting water particles and some odour neutralizing masking agents) to absorb dust particles, which then falls to the floor. Mist-air units use a masking agent, which is a chemical component in an open-air spray specifically designed to mix with the fugitive odour. These masking agents have pleasant cherry odour designed to "mask" any unpleasant odour from the facility that have not been neutralised.

### **I.2. Assessment of Impact on Receiving Surface Water**

*Describe the existing environment in terms of water quality with particular reference to environmental quality standards or other legislative standards. Table I.2(i) should be completed.*

*Full details of the assessment and any other relevant information on the receiving environment should be submitted as Attachment I.2.*

### **I.2 Assessment of Impact on Receiving Surface Water**

No additional emissions to surface waters will occur as a result of the increase in waste intake of dry recyclables at KWD and therefore there is no envisaged impact on the receiving surface water.

### **Process Effluent**

The processing of mixed municipal waste produces a liquid effluent. The MRF building has an effluent holding tank in the centre of the building. This precast concrete holding tank is 6,920 litres (1,500 gallons) in capacity and is lined with a 2.5mm thick HDPE liner. A bunding tank which surrounds the holding tank has a capacity of 13,250 litres (3,500 gallons). Approximately 34,600 litres (7,500 gallons) of effluent is transported by tanker to Tralee WWTP (5 no. loads of 6,920 litres) for treatment per annum. Drawing No. DG0035-01 F02 Detailed Site Layout Plan shows the location of the effluent holding tank inside the MRF Building which is analysed on an annual basis (SE1). The process effluent is contained within the MRF building and so is not impacting on surface water at the facility. No additional discharge will occur due to the increase in waste intake.

## Stormwater/Surface Water Drainage

### (i) Roof

Roof water drainage from the MRF building is directed away from the concreted yard and stormwater collection/treatment system. Drawing No. DG0035-01 F02 Detailed Site Layout Plan shows R1 and R2; the emission monitoring point locations for roof water runoff.

Monitoring carried out for the reporting year of 2011 (AER 2011) and to date have indicated that water quality from R1 and R2 is within limits of the National Environmental Quality Standards in accordance with S.I. NO 272 of 2009 and no adverse effects are noted on the surrounding environment.

Sampling and analysis of roof water runoff was carried out in 2012 by Southern Scientific Services Ltd. in accordance with waste licence requirements. **Table 1.2** shows these results. The runoff water is below the standard emission levels for all parameters. Therefore it can be shown that there is no negative impact on the surrounding surface water quality.

**Table 1.2 Monitoring Results for Roof Water Runoff**

Parameter	Monitoring Locations		Standard Emission Level <sup>1</sup>	Unit
	R1	R2		
pH	7.3	7.3	5.5 - 8.5	-
Conductivity	15.4	14.8	1,000	µS/cm
Suspended Solids	2	2	25 <sup>2</sup>	mg/l
Total Ammonia	0.20	0.22	0.2	mg/l as NH <sub>4</sub> <sup>+</sup> -N
Sulphate	1.96	1.97	200	mg/l
Chloride	<0.5	<0.5	250	mg/l
Cadmium	<0.001	<0.001	0.005	mg/l
Chromium	<0.001	<0.001	0.05	mg/l
Copper	<0.001	<0.001	0.05	mg/l
Lead	<0.001	<0.001	0.05	mg/l
Nickel	<0.001	<0.001	-	mg/l
Tin	0.008	<0.005	-	mg/l
Mercury	<0.001	<0.001	0.001	mg/l
Arsenic	<0.001	<0.001	0.05	mg/l

<sup>1</sup>Surface Water Regulations 1989 A1 unless otherwise specified  
<sup>2</sup>Salmonid Regulations

### Concreted yard area

Runoff from the yard area drains to 2 no. holding tanks from where it is pumped to the oil/water separator and then on to the aeration pond, settling pond, constructed wetland and percolation ditch. The discharge point (SW1) from the constructed wetland to the percolation ditch is monitored to ensure that the stormwater is uncontaminated. The final discharge is to surface water. It has been calculated that the total surface water runoff for the site is 12.8m<sup>3</sup>/day. Drawing No. DG0035-01 F02 Detailed Site Layout Plan shows the location of SW1.

There are no emission limit values for surface water parameters set out in the Waste Licence. However, for the reporting period of 2011 (AER 2011) and results to date this year, where possible the results have been compared to National Environmental Quality Standards in accordance with S.I. No 272 of 2009. All emissions are well below the annual average Environmental Quality Standard for Inland Waters.

Since January 2012, storage of bailed beverage cans (aluminium and steel cans) has commenced in the scrap metal storage area. Additional monitoring of surface water discharge at SW1 was

undertaken, as agreed with the Agency, to ensure no changes were noted in the water quality exiting the existing reed bed. Results from SW1 show no adverse effect from storage of the bails in the scrap metal area.

Trigger levels for water quality parameters for SW1 were agreed with the Agency and if a trigger level was reached an investigation and where required increased monitoring was undertaken to determine the causes of the increase and implement control measures as required.

The trigger level for ammonia was breached on five occasions in 2011. This was followed by subsequent monitoring events and improvements to management of the reed beds which showed that levels returned to below the trigger level by the end of 2011. Monitoring of SW1 to date for 2012 has not exceeded the trigger level.

Mitigation measures were implemented to reduce the level of ammonia in the stormwater runoff which have been implemented on site are as follows:

- Installation of gates on the bays of the C&D waste processing area to prevent the migration of waste out onto the yard area,
- Inspection of incoming timber waste to ensure that no organic waste is contained in the stockpiles,
- Inspection of all storage bins and skips on site for leakages and their immediate replacement and repair,
- Regular cleaning of the yard with the automatic sweeper on a daily basis,
- Regular cleaning of the holding tanks, oil/water separator and settling pond (holding tanks and oil/water separator every 2 months or as required ; the settling pond every 6 months or as required), and
- Upgrading of the stormwater collection/treatment system to include for an aeration pond, settling pond and replacement and refilling of the first section of the constructed wetland.

### I.6 Noise Impact.

*Give details and an assessment of the impacts of any existing or proposed emissions on the environment, including environmental media other than those into which the emissions are to be made.*

#### *Ambient noise measurements*

*Complete Table I.6 (i) in relation to the information required below:*

- State the maximum Sound Pressure Levels which will be experienced at typical points on the boundary of the operation. (State sampling interval and duration)*
- State the maximum Sound Pressure Levels which will be experienced at typical noise sensitive locations, outside the boundary of the operation.*
- Give details of the background (or residual) noise levels experienced at the site in the absence of noise from this operation.*

*Prediction models, maps (no larger than A3), diagrams and supporting documents, including details of noise attenuation and noise proposed control measures to be employed, should form **Attachment N<sup>o</sup> I.6.***

### **I.6 Assessment of Noise Impact**

Traffic using the adjacent road network, traffic movements on site and operations on site have the potential to generate noise emissions. However the impacts of these emissions are reduced significantly as most operations take place indoors in the MRF building. Processing of timber waste occurs outdoors. This operation takes place on an intermittent basis and the timber shredder is housed on three sides to reduce noise emissions. The monitoring programme for noise has ensured that standard emissions limits were not exceeded for either daytime or night time limits, as recorded in the AER 2011.

Additionally, acoustic cladding has been installed on the outside of the MRF building to give further protection to noise levels arising from the processing machinery within the building. Further areas of the MRF building will be acoustically clad by the end of October 2012. Drawing No. DG0035-01 F02



Detailed Site Layout Plan shows the location of noise monitoring points (NSL1-NSL4) and proposed and existing acoustic cladding to MRF building.

Furthermore, the access road to the facility, as shown in Drawing No. DG0035-01 F02; Detailed Site Layout Plan, was resurfaced in June 2008 to reduce noise emissions associated with traffic from the site.

A noise survey was carried out by OES Consulting Ltd. in August 2011 in accordance with the conditions of the waste licence. The location of the noise monitoring points are shown in Drawing No. DG0035-01 F02 Detailed Site Layout Plan. The results are shown in **Table 1.3** and it is shown that the levels measured are below the EPA standard emission levels and are unlikely to give rise to any nuisance.

**Table 1.3: Noise Monitoring Results at Killarney Waste Disposal (August 2011)**

Monitoring Points	Daytime (2009)	Standard Emission Level $L_{Aeq}$ 55 dB (A)	Nighttime (2009)	Standard Emission Level $L_{Aeq}$ 45 dB (A)
	$L_{Aeq}$		$L_{Aeq}$	
NSL1	48.5		36.3	
NSL2	48.3		39.8	
NSL3	49.9		38.0	
NSL4	54.3		41.2	

The survey concluded that there are there no significant tonal components associated with site operations and each frequency analysis shows a general broadband noise spectrum which supports the conclusion that the site activities have a minimal impact on the local noise climate and minimal potential to cause noise disturbance at local receptors.

An additional noise survey was carried out by McSwiney Environmental & Safety Consulting Ltd. in September 2012 (Attached in Appendix K6) to assess the noise associated with the operation of the MRF building between the hours of 19:00 and 21:00. The results are shown in **Table 1.4** as 'A-Weighted Sound Pressure Level,  $L_{Aeq}$ ', over 15 minute measurement intervals. It is shown that the levels measured are below the EPA standard emission levels and are unlikely to give rise to any nuisance. In conclusion the results indicate that there is no significant impact, 24 hours a day, with regard to noise outside the boundary of the site.

**Table 1.4: Noise Monitoring Results at KWD for 19:00 to 21:00 (September 2012)**

Monitoring Points	Time	$L_{Aeq}$	Standard Emission Day Time Level $L_{Aeq}$	Standard Emission Night Time Level $L_{Aeq}$
NSL1	20:34 – 20:50	40	55 dB (A)	45 dB (A)
NSL2	19:21 – 19:39	41		
NSL3	19:50 – 20:06	40		
NSL4	20:09 – 20:28	39		

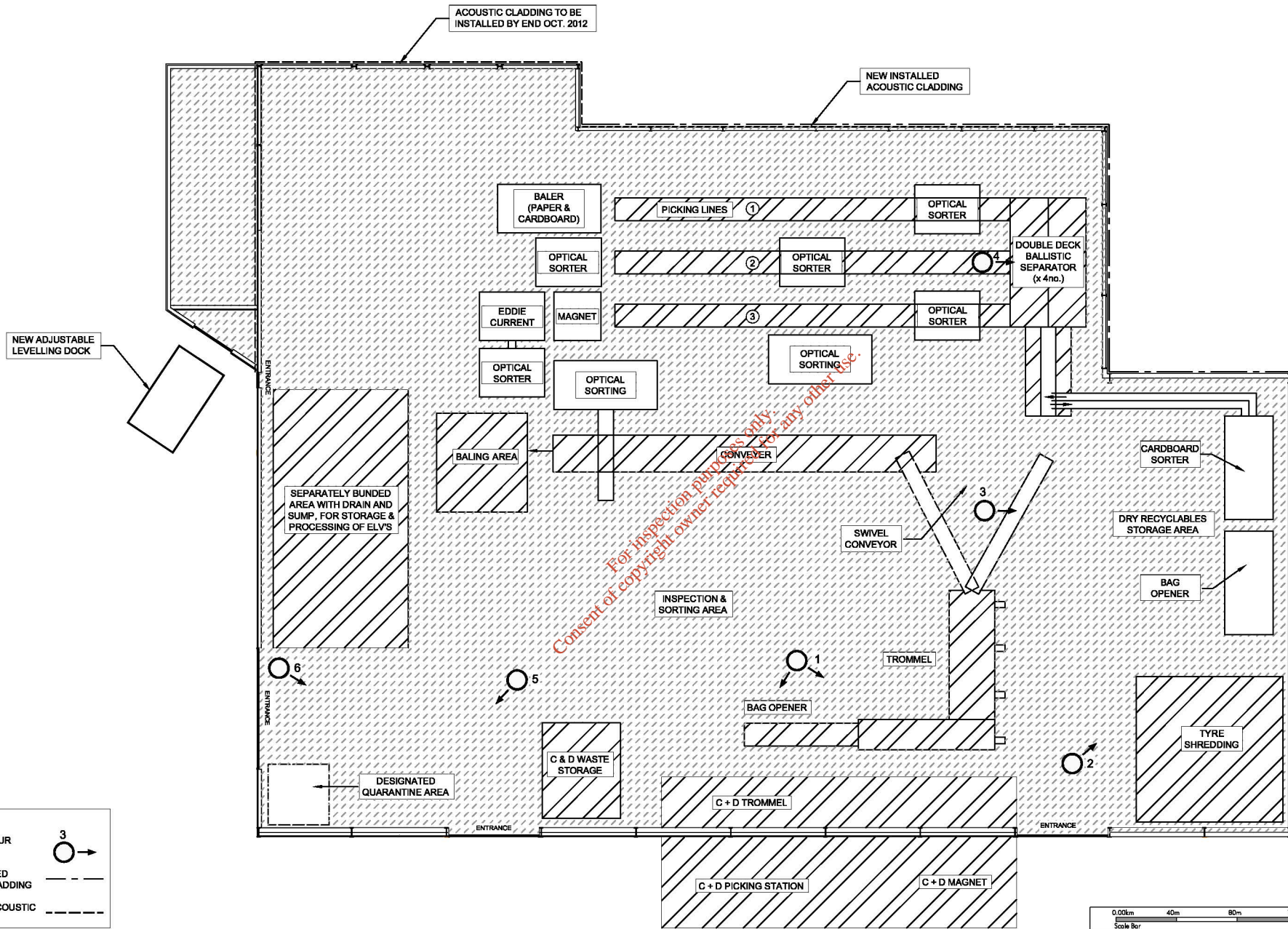
The results of this evening time noise monitoring survey clearly indicates that activities at the KWD facility do not generate unacceptable noise levels beyond site boundaries and in particular at the closest receptors.

## **Appendix B2**

**Detailed Site Layout Plan DG0035-01 F02**

**Layout of MRF Building DG0034-01 F02**

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**LEGEND**

MIST-AIR ODOUR NEUTRALIZER

NEW INSTALLED ACOUSTIC CLADDING

PROPOSED ACOUSTIC CLADDING



**KWD RECYCLING**

Killarney Waste Disposal Ltd.  
Aughacureen, Killarney, Co. Kerry.  
Tel: Killarney 064-32458, Tralee 066-7128850 | Fax: 064-38861

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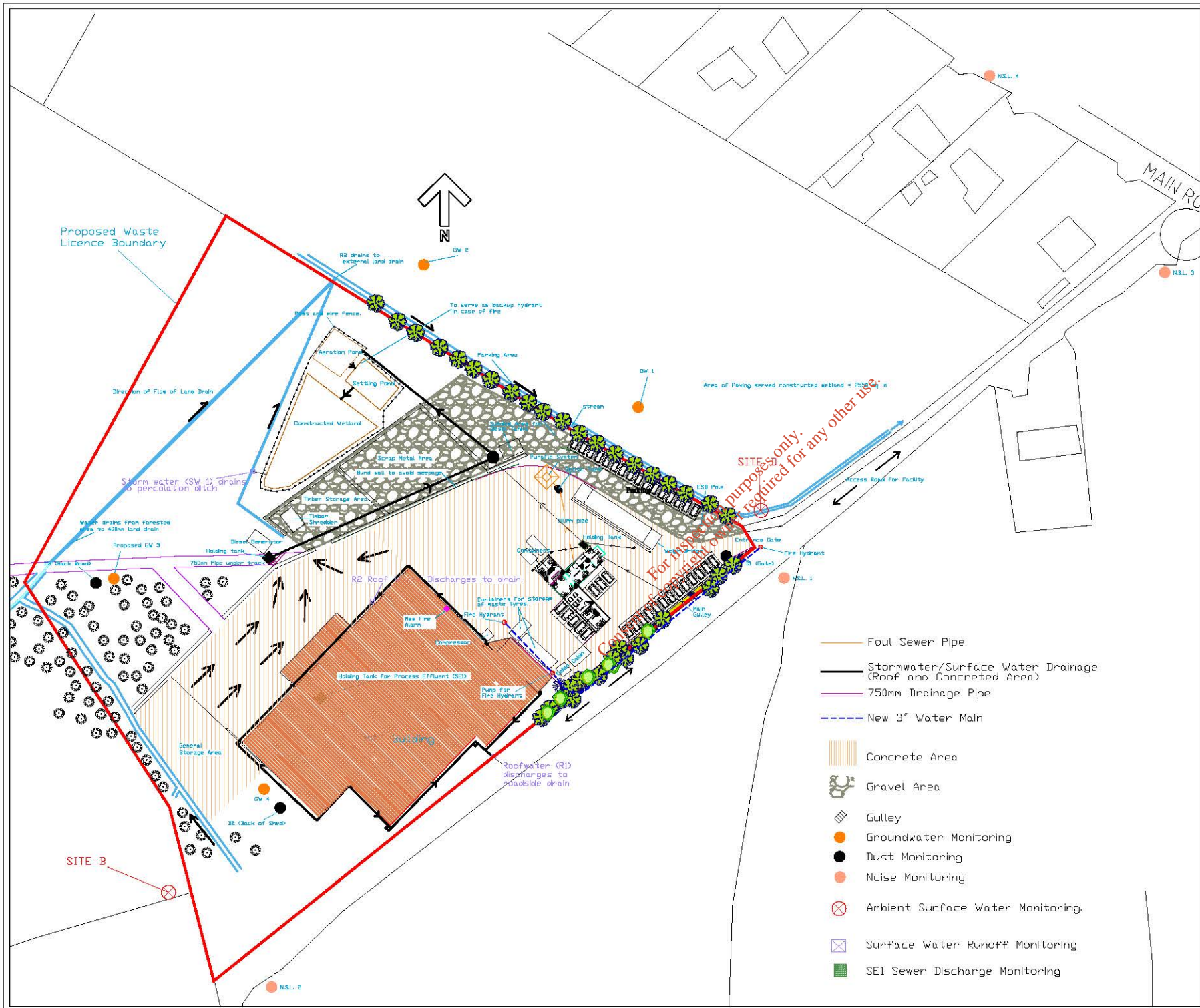
No.	Date	Amendment / Issue	App
F02	26.08.12	Waste Licence Review Application	W.M.
F01	06.07.10	Waste Licence Application	W.M.

Client  
**KILLARNEY WASTE DISPOSAL LTD.**

Drawn By: A.N. Checked By: S.G. Approved By: W.M. Date: July '10


RPS Lynn Building 12A, Business & Technology Park, Meruak, Galway T: +353 91 634100 F: +353 91 634109 E: info@rpsgroup.com www.rpsgroup.com	Drawing Number <b>MGE0109/DG0034-01</b> Rev <b>F02</b>
	Project <b>WASTE LICENCE REVIEW APPLICATION</b> Title <b>LAYOUT OF MRF BUILDING</b> (Sheet 1 of 1)
Drawing Status <b>PLANNING</b>	Scale / Sheet Size 1:125 @ A1 1:250 @ A3

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 ALL ERRORS AND OMISSIONS TO BE REPORTED TO THE ARCHITECT.



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- Foul Sewer Pipe
- Stormwater/Surface Water Drainage (Roof and Concrete Area)
- 750mm Drainage Pipe
- New 3" Water Main
- Concrete Area
- Gravel Area
- Gully
- Groundwater Monitoring
- Dust Monitoring
- Noise Monitoring
- Ambient Surface Water Monitoring
- Surface Water Runoff Monitoring
- SE1 Sewer Discharge Monitoring

REV No:	DATE:	REVISION:
F02	26.09.12	Waste Licence Review Application
 <p><b>paulie o'mahoney</b> and associates consulting engineers and architects</p> <p>general office: upper high street • kildare • co. kerry        telephone: (044) 82412 / 83441 • fax: (044) 83587        mobile: 0207 262 1300 • e-mail: paulie@paulie.ie</p>		
CUSTOMER:	Kilmerney Waste Disposal Ltd	
JOB TITLE:	Waste Licence Review Application	
DRAWING:	Detailed Site Layout Plan	
SCALE:	DATE:	
1:500	March '09	
DRAWING NO:	DRAWN:	
DG0035-01	DGM	
REV No:	DATE:	
F02		

## **Appendix C3**

### **Letters to support Bank Holiday opening hours**

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KILLARNEY  
*Looking good*



C/O Killarney Town Council,  
Town Hall,  
Killarney,  
Co Kerry.

Tel. No. 064 - 6626100  
Fax. No. 064 - 6634187

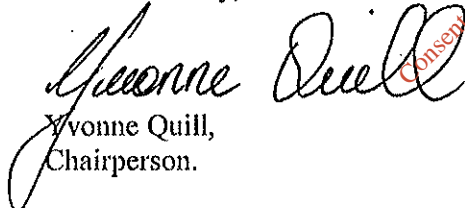
12<sup>th</sup> July, 2012.

Mr. Brian Bruton,  
KWD Waste Disposal Co.,  
Aughacureen,  
KILLARNEY.

Dear Brian,

We are very disappointed to hear that your company might be discontinuing waste collections on Bank Holiday Mondays. In a tourist town like Killarney, and especially after winning the Tidy Towns title, it is vital that no bins are left uncollected on Bank holidays. This would be very unsightly and would leave the town in a very untidy state.

Yours sincerely,

  
Yvonne Quill,  
Chairperson.

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# KILLARNEY CHAMBER of TOURISM AND COMMERCE



INCORPORATING KILLARNEY CHAMBER OF COMMERCE LTD & KILLARNEY LAKES MARKETING LTD

Tel: 353 (0) 64 6637928  
Fax: 353 (0) 64 6636623  
Email: chamber@killarney.ie  
Web: www.killarney.ie

2nd Floor,  
Tourist Information Office,  
Beech Road, Killarney,  
Co. Kerry, Ireland

Brian Bruton  
KWD Recycling  
Aughacureen  
Killarney  
Co. Kerry.

Re: Bank Holiday Monday Waste Collection

Thursday, 12 July 2012

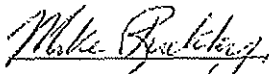
Dear Brian

On behalf of Killarney Chamber of Tourism and Commerce members, I wish to communicate the importance of having waste collected on Bank Holiday Mondays. Having full commercial bins and domestic bins left out on Bank Holiday Mondays is an eye sore and litter nuisance if they are not emptied.

As a primary tourist destination and overall winner of the Tidy Towns Awards 2011 it is imperative that we continue to be diligent in the up-keep of our town and endeavour at all times to maintain the high standards and excellent reputation that Killarney has continuously upheld. The Bank Holiday collection is crucial to this and therefore on behalf of our members I urge you to please continue with this excellent service.

Thank you for your consideration and I look forward to hearing from you in due course.

Yours Sincerely

  
Mike Buckley

President Killarney Chamber of Tourism & Commerce

# Appendix I6

## Noise Survey

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**McSwiney Environmental & Safety Consulting Ltd**

*"Specialising in environmental, health  
& safety monitoring and consultancy"*

Corner House  
Kenmare  
Co. Kerry, Ireland

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Mobile: +353 (0)86-8531903  
E-mail: [info@mcswineyenvironmental.com](mailto:info@mcswineyenvironmental.com)  
Web: [www.mcswineyenvironmental.com](http://www.mcswineyenvironmental.com)

## **Environmental Noise Survey**

***KWD Recycling, Aughacureen, Killarney, Co. Kerry***


**Prepared for:**

Mr Brian Bruton  
KWD Recycling  
Aughacureen  
Killarney  
Co. Kerry

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**September 2012**

# Noise Monitoring Report

Report Ref:	Rev. No.	Prepared by:	Checked and Approved by:	Date:
R_12_003	0	CMS		27/09/2012

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---

## 1.0 Scope

---

This report presents the results of an environmental noise survey carried out in the vicinity of the KWD Recycling site in Aughacureen, Killarney, Co. Kerry. The survey was completed in order to get an indication of the noise levels in the area during a specific evening time period (19:00 – 21:00) whilst processing activity was taking place within the building.

This noise survey was completed with reference to *ISO 1996: Acoustics - Description and Measurement of Environmental Noise* and with reference to the EPA publication: *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* which was published in April 2012.

It is noted that this noise monitoring survey was completed during the specific time period during normal operating conditions. Monitoring took place on the 26<sup>th</sup> of September 2012.

---

## 2.0 Receiving Environment

---

### 2.1 General Description

Killarney Waste Disposal (KWD) operate a Materials Recovery Facility (MRF) in Aughacureen, Killarney, Co. Kerry. They are licensed by the Environmental Protection Agency under Waste Licence W0217-01, which allows them an annual waste intake for recovery of 40,000 tonnes. The site covers an area of approximately 5.4 acres.

The facility is located in a rural area approximately 4km northwest of Killarney town. The entrance to the facility is located off a junction at Aughacureen which is on the Knockasarnet to Barleymount road. There are approximately 20 residences within 500meters of the site boundary with 13 of these being within 100meters. Most residences are located in a ribbon development fashion along the existing local road network.

The facility is made up of a Materials Recovery Facility (MFR), concrete yard, weighbridge and administration building. The MFR includes a waste quarantine area, inspection and sorting areas, storage areas and effluent storage tank. The plant equipment currently includes a bag opener, screens, balers, wrapping machine, shredder for wood and loaders, trammel, ballistic separator, picking lines and conveyors.

Other ancillary infrastructure includes fuel storage, storm water drainage system, sanitary effluent treatment system, trade effluent drainage system and car parking.

## 2.2 Receptors

There are a total of 4 agreed noise monitoring points all of which are on or are in close proximity to the boundary of the site. Three noise monitoring locations (NSL 2, NSL 3 and NSL 4) are situated in the vicinity of the private residences close to the boundary of the site. The final location, location NSL 1, is the closest location to the site and is situated at the entrance to the site beside the visitors/directors car park close to the main reception. All monitoring locations are close to the local road network. The noise monitoring locations are marked NSL 1 to NSL 4 on a map of the site presented separately in Appendix I. A description of the four monitoring locations is presented below in Table 1.

**Table 1** Description of the Noise Monitoring Locations

<b>Monitoring Location ID</b>	<b>Location details</b>
<b>NSL 1</b>	At the entrance to the site beside the visitors/directors car park and near the main reception.
<b>NSL 2</b>	Close to noise sensitive location to the south west of the site, on local access road.
<b>NSL 3</b>	Beside nearest noise sensitive location to the north west of the site and adjacent local access road.
<b>NSL 4</b>	North of the site between residential dwelling H8 and H10 and close to local road.

---

## 3.0 Survey Protocol

---

### 3.1 Choice of measurement positions

The noise monitoring locations chosen for this survey were selected in order to assess the noise impact that site activities may have on the local receiving environment. The noise monitoring locations were chosen according to the guidelines in *ISO 1996: Acoustics - Description and Measurement of Environmental Noise* and with reference to the EPA publication *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)*. In all cases the sound level meter was located 1.5m above ground and at least 3.5m away from any sound reflecting objects. A foam windshield was placed on the microphone to reduce any wind interference during measurements.

### 3.2 Instrumentation and methodology

The measurements were made according to the requirements of *ISO 1996: Acoustics - Description and Measurement of Environmental Noise* and with reference to the EPA publication *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)*. The measurements were made using Brüel & Kjaer hand held analyser Type 2250, data logging integrating sound level meter fitted with 1:1 and 1:3 Octave Band Filters. The instrument was calibrated *in situ* at 94 dB prior to use using a Brüel & Kjaer Type 4231 acoustic calibrator. A factory calibration certificates for the noise meter and for the acoustic calibrator is presented in Appendix II of this report. The sound level meter was orientated towards the noise source, mounted on an outdoor microphone stand, which in turn was mounted on a tripod at 1.5m above ground level.

### 3.3 Survey implementation

The survey was conducted on the 26<sup>th</sup> of September 2012. The measurement parameters included meteorological observations of prevailing conditions at the time of the survey. All sources of noise were noted, recorded and where possible, identified. The primary measurement parameter was the equivalent continuous A-Weighted Sound Pressure Level,  $L_{Aeq, T}$ , over 15 minute measurement intervals. A number of locations were influenced by extraneous noise sources such as traffic and therefore the use of pausing techniques was applied in order to ascertain the noise attributable to the source of interest.

A statistical analysis of the measurement results was also completed so that the percentile levels,  $L_{AN, T}$ , for  $N = 90\%$  and  $10\%$  over the measurement intervals were also recorded. The percentile levels represent the noise level in dB(A) exceeded for  $N\%$  of the measurement time. In addition, a  $1/3$  octave band frequency analysis was conducted at each noise monitoring position to determine the presence of any tonal component of noise generated at the site. A graphical representation of the frequency analysis is presented in Appendix III.

---

## 4.0 Licenced Conditions and Emission Limit Values

---

Whilst this survey was not completed as part of the annual monitoring requirements it is useful for the purpose of the evaluation of results to compare the results to the emissions limit values as outlined below.

**Condition 4.3** *Noise from the facility shall not give rise to sound pressure levels (Leq, 30 minutes) measured at the boundary of the facility which exceed the limit value(s).*

**Condition 6.12.1** *The licensee shall carry out a noise survey of the site operations biannually\*. The survey programme shall be undertaken in accordance with the methodology specified in the 'Environmental Noise Survey Guidance Document' as published by the Agency.*

\* This requirement has been reduced to Annual.

### **Schedule B.4**

#### ***Emissions Limits***

8.1.1 Daytime: 55dB  $L_{(A)eq}$  (30 Minutes) <sup>Note 1</sup>

8.1.2 Night-time: 45dB  $L_{(A)eq}$  (30 Minutes) <sup>Note 1</sup>

Note 1 *There shall be clearly no audible tonal component or impulsive component in the noise emissions from the activity at any noise sensitive location.*

---

## 5.0 Noise Monitoring Results

---

Noise monitoring results are presented below in Table 2.

**Table 2** Results of an evening-time noise monitoring survey at KWD Recycling.

Monitoring Location ID	Survey Date and Time Interval	L <sub>Aeq, 15min</sub> dB(A)	L <sub>A90, 15min</sub> dB(A)	L <sub>A10, 15min</sub> dB(A)	MAJOR SOURCES OF NOISE
NSL 1	26/09/2012 20:34 – 20:50	40	38	41	Noise from the site faintly audible but not significant. The main noise source was distant traffic on local roads, wind in the trees and farm animals. Paused once for local car passing.
NSL 2	26/09/2012 19:21 – 19:39	41	36	43	Noise from the site very faintly audible but not significant. The main noise source was distant traffic on local roads and occasional dog barking and birdsong. Paused once to talk to neighbour.
NSL 3	26/09/2012 19:50 – 20:06	40	36	42	Site activity not audible. The main noise source was farm animals, wind in the tress, occasional dog barking and distant traffic. Paused for three cars passing.
NSL 4	26/09/2012 20:09 – 20:28	39	36	40	Site activity not audible. The main noise source was farm animals, wind in the tress, occasional dog barking and distant traffic. Paused for eight cars passing.

- NOTES** [1] The observed weather conditions during monitoring were as follows: Cool; dry with low humidity, approx 11°C.  
Wind: blustery, 2 - 4 m/s.  
[2] Locations are as shown in Appendix I.



---

## 6.0 Evaluation of Results

---

### Evening-time noise survey

Schedule B4 of Waste Licence W0217-01 specifies a night-time (22:00hrs – 08:00hrs) noise limit value of 45 dB(A)  $L_{Aeq, 30min}$ . This survey was completed to assess the impact that the site activities have on the local noise environment in the vicinity of the site based on this specified noise limit value. The night-time noise limit value of 45 dB(A)  $L_{Aeq, 30min}$  was not exceeded at any of the four monitoring locations.

The recorded  $L_{Aeq}$  values for these locations ranged between 39 dB(A) and 41dB(A), which are all within the licence limit. The evening time noise levels recorded are typical of the levels experienced in a rural environment during similar weather conditions. A less blustery evening would most certainly have resulted in slightly less  $L_{Aeq}$  values.

In addition to the  $L_{Aeq}$  values it is often beneficial to analyse the  $L_{A90}$  results particularly where plant noise is steady and audible during operation but there are extraneous noise sources such as distant traffic, birdsong, dog barking, intermittent local activity and wind. The  $L_{A90}$  results, often referred to as the background noise, usually give a good indication of the constant noise level coming from the plant. Looking at these results we can see that the  $L_{A90}$  results range between 36 dB(A) and 38 dB(A). This tells us that even though the site may be audible at a number of locations it is having an insignificant influence on the receiving environment.

### 6.3 $\frac{1}{3}$ octave band frequency analysis

A  $\frac{1}{3}$  octave band frequency analysis was conducted at each noise measurement location in order to assess any tonal or impulsive component associated with site activities or plant operation. Analysis of the  $\frac{1}{3}$  octave band frequency spectra measured at each of the noise monitoring locations are presented in Appendix III.

The EPA *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* as published in April 2012 outlines the following in respect of tonal noise:

*Prior to the application of a rating penalty the Agency would recommend that the simplified methodology for the objective identification of tones that is advocated in Annex D of ISO 1996-2:2007(E) is adopted. This methodology requires that for a prominent, discrete tone to be identified as present, the time-average sound pressure level in the one-third-octave band of interest should exceed the time-average sound pressure levels of both adjacent one-third-octave bands by some constant level of difference. The appropriate level differences vary with frequency. They should be greater than or equal to the following values in both adjacent one-third-octave bands:*

- 15dB in low frequency one-third-octave bands (25Hz to 125Hz);
- 8dB in middle-frequency bands (160Hz to 400Hz);
- 5dB in high frequency bands (500Hz to 10,000Hz);

From an examination of the  $\frac{1}{3}$  octave band frequency spectra it is noted that spectra measured at all locations are generally broadband and no sound pressure level in any of the one-third-octave bands exceed the time-average sound pressure levels of both adjacent one-third-octave bands by the level of difference as outlined above.

It can therefore be concluded that there is no significant tonal content associated with the operations at the KWD site and each frequency analysis shows a general broadband noise spectrum which supports the conclusion that site activities have a minimal impact on the local noise climate and a minimal potential to cause noise disturbance at local receptors.

---

## 7.0 Results Summary

---

The results of this evening time noise monitoring survey clearly indicates that activities at the KWD Recycling facility in Aughacurreen, Killarney, Co. Kerry do not generate unacceptable noise levels beyond site boundaries and in particular at the closest receptors.

Noise levels arising from activities at the site are attenuated as a result of the following factors:

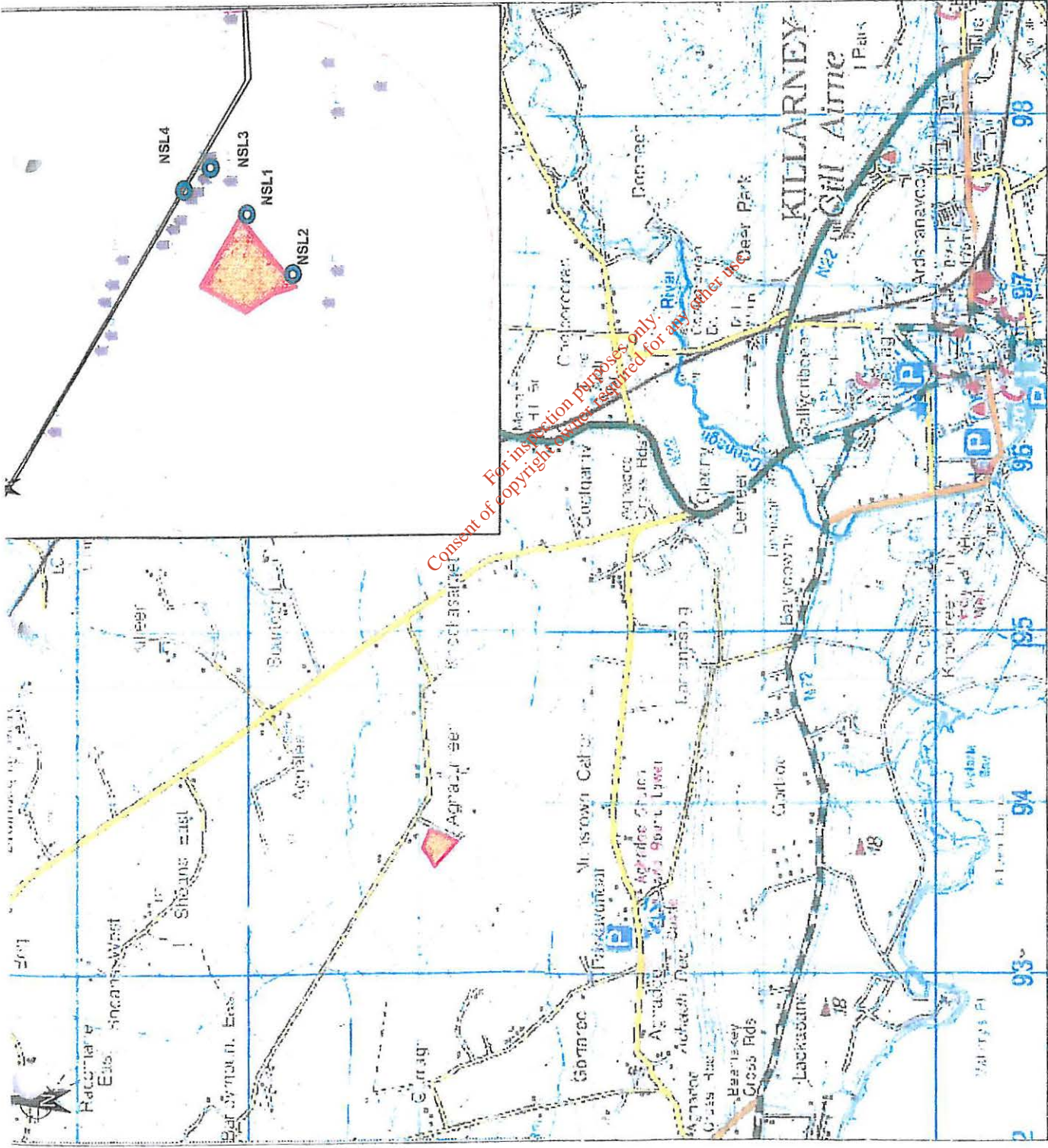
- (a) Noise attenuation due to distance from noise sources to receptors;
- (b) The natural topography of the site and the resultant presence of screening that is currently in place along site boundaries;
- (c) The enclosing within buildings of the significant noise generating machinery;

In conclusion, these factors ensure that the quality of the local noise environment in the vicinity of the site boundaries was not adversely affected during the evening time operation and therefore the potential for noise disturbance and nuisance at local receptors is unlikely.

# Appendix I

## Map of Monitoring Locations

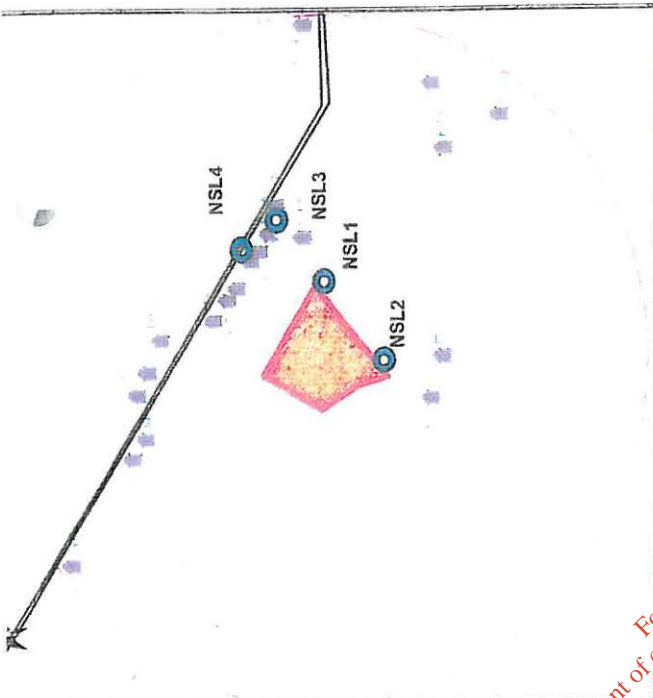
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Site Location

Houses within the vicinity of the site

Noise Sensitive Locations



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## Appendix II

### Calibration Certificate

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# CERTIFICATE OF CALIBRATION

Date of issue: 24 May 2012

Certificate Number: C1203699

Page 1 of 11



## Brüel & Kjær

The Calibration Laboratory  
Skodsborgvej 307, DK-2850 Nærum, Denmark  
Tel: +45 45 800 500 Fax: +45 45 801 405  
Email: [ukservice@bksv.com](mailto:ukservice@bksv.com)

  
Nils Johansen  
Approved Signatory

### CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær Type 2250	No: 2506513	Id: -
Microphone:	Brüel & Kjær Type 4189	No: 2523818	
Associated Calibrator:	Brüel & Kjær Type 4231	No: 2507013	
Calibrator Certificate:	C1203671	Calibrator Level:	94.01 dB SPL
SLM Software Version:	BZ7223 Version 1.5		

Date of calibration: 23 May 2012

### CUSTOMER:

Customer Ref: 60801

### CALIBRATION CONDITIONS:

Preconditioning: 12 hours at 23°C ± 3°C  
Environment conditions: Air Temperature: 23.4 °C, Air Pressure: 102.3 kPa, Relative Humidity: 54.0 %RH

### SPECIFICATIONS:

The Sound Level Meter Brüel & Kjær Type 2250 has been calibrated in accordance with the requirements as specified in BS7580: Part 1: 1997.

### PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System 3630 with application software type 7763 (version 4.6 - DB: 4.60) by using procedure 2250-4189.

### RESULTS:

Unless otherwise stated herein, the reported uncertainty is based upon a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with DANAK requirements. The uncertainties refer to the measured values only with no account being taken of the ability of the device under test to maintain its calibration.

**Note: Calibration as received.**

## CERTIFICATE OF CALIBRATION

No: C1203671

Page 1 of 4

### CALIBRATION OF

Calibrator: Brüel & Kjær Type 4231 No: 2507013 Id: -  
½ Inch adaptor: Brüel & Kjær Type UC-0210  
Pattern Approval: None

### CUSTOMER

### CALIBRATION CONDITIONS

Preconditioning: 4 hours at 23°C ± 3°C  
Environment conditions: Pressure: 102.09 kPa. Humidity: 51 % RH. Temperature: 23.1 °C.

### SPECIFICATIONS

The Calibrator Brüel & Kjær Type 4231 has been calibrated in accordance with the requirements as specified in IEC60942:2003 Annex B Class 1. The accreditation assures the traceability to the international units system SI.

### PROCEDURE

The measurements have been performed with the assistance of Brüel & Kjær acoustic calibrator calibration application software Type 7794 (version 2.4) by using procedure P\_4231\_D04.

### RESULTS

Calibration Mode: **Calibration as received.**

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor  $k = 2$  providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

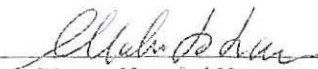
Date of calibration: 2012-05-23

Date of issue: 2012-05-23



Lene Petersen

Calibration Technician



Morten Høngård Hansen

Approved Signatory

## Appendix III

### **$\frac{1}{3}$ Octave Band Frequency Analysis Results and Noise Measurement Spectra**

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### NSL1 KWD

Instrument:		2250
Application:		BZ7223 Version 1.5
Start Time:		09/26/2012 20:34:16
End Time:		09/26/2012 20:50:57
Elapsed Time:		00:15:00
Bandwidth:		Broadband
Max Input Level:		141.48

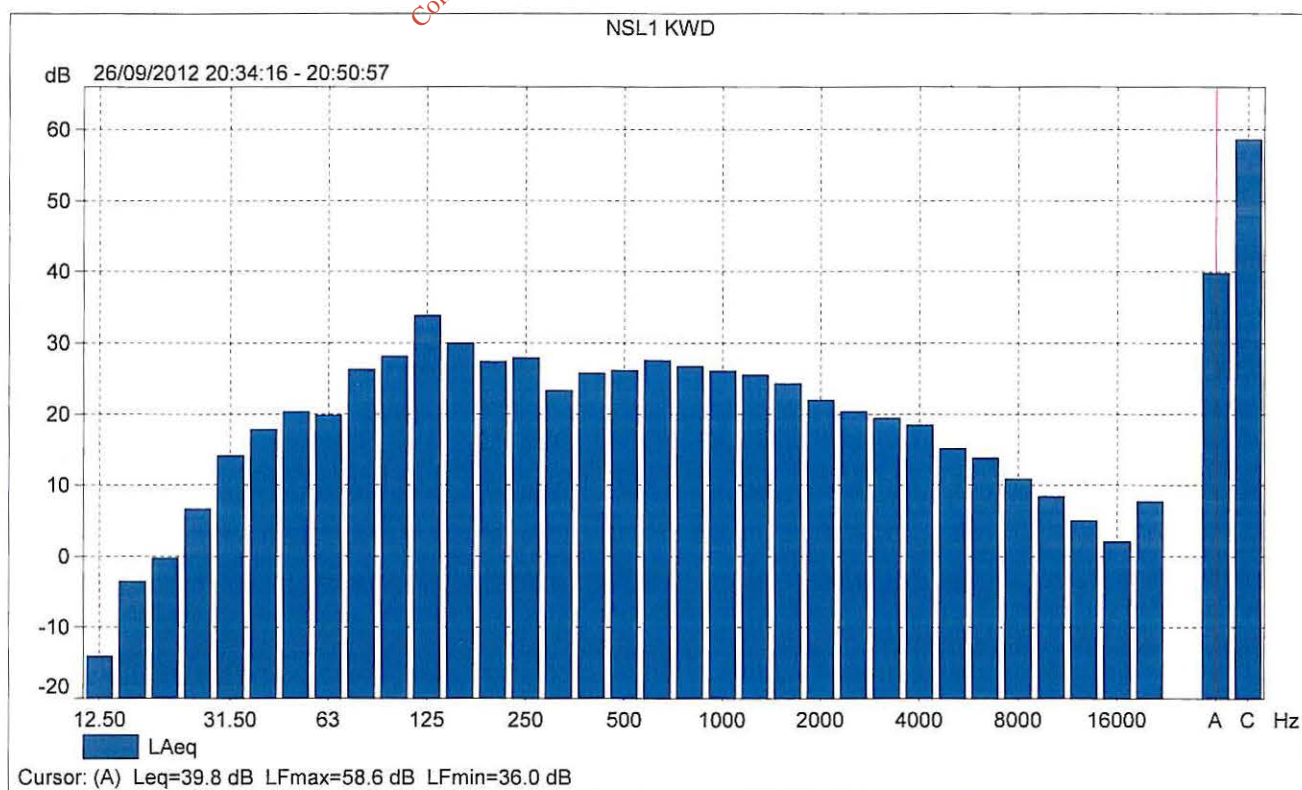
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	A

Instrument Serial Number:		2506513
Microphone Serial Number:		2523818
Input:		Top Socket
Windscreen Correction:		None
Sound Field Correction:		Free-field

Calibration Time:		09/26/2012 19:18:25
Calibration Type:		External reference
Sensitivity:		47.04 mV/Pa

### NSL1 KWD

	Start time	End time	LAeq [dB]	LAF10 [dB]	LAF90 [dB]	LAFmax [dB]	Overload [%]
Value			39.8	41.0	37.9	58.6	---
Time	20:34:16	20:50:57					
Date	26/09/2012	26/09/2012					



### NSL2 KWD

Instrument:		2250
Application:		BZ7223 Version 1.5
Start Time:		09/26/2012 19:21:44
End Time:		09/26/2012 19:39:13
Elapsed Time:		00:15:00
Bandwidth:		Broadband
Max Input Level:		141.48

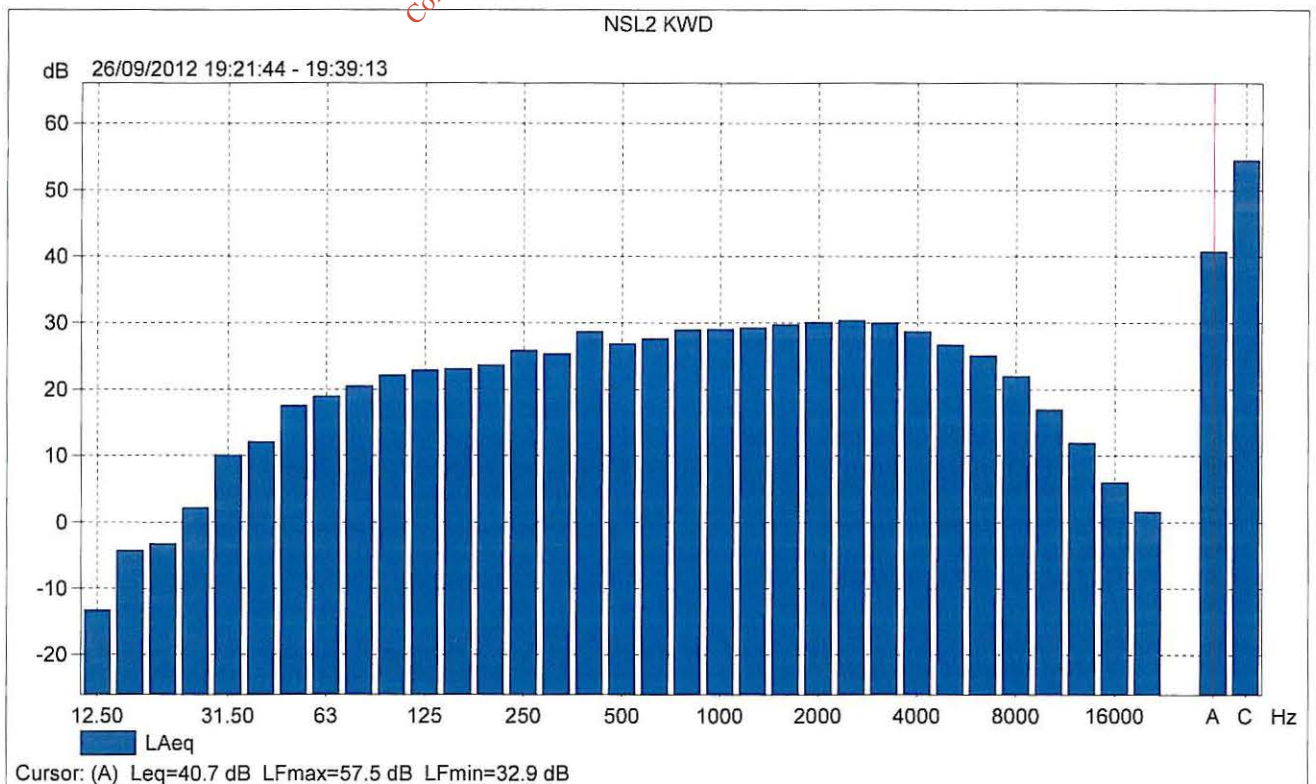
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	A

Instrument Serial Number:		2506513
Microphone Serial Number:		2523818
Input:		Top Socket
Windscreen Correction:		None
Sound Field Correction:		Free-field

Calibration Time:		09/26/2012 19:18:25
Calibration Type:		External reference
Sensitivity:		47.04 mV/Pa

### NSL2 KWD

	Start time	End time	LAeq [dB]	LAF10 [dB]	LAF90 [dB]	LAFmax [dB]	Overload [%]
Value			40.7	42.7	35.9	57.5	---
Time	19:21:44	19:39:13					
Date	26/09/2012	26/09/2012					



### NSL3 KWD

Instrument:		2250
Application:		BZ7223 Version 1.5
Start Time:		09/26/2012 19:50:15
End Time:		09/26/2012 20:06:21
Elapsed Time:		00:15:00
Bandwidth:		Broadband
Max Input Level:		141.48

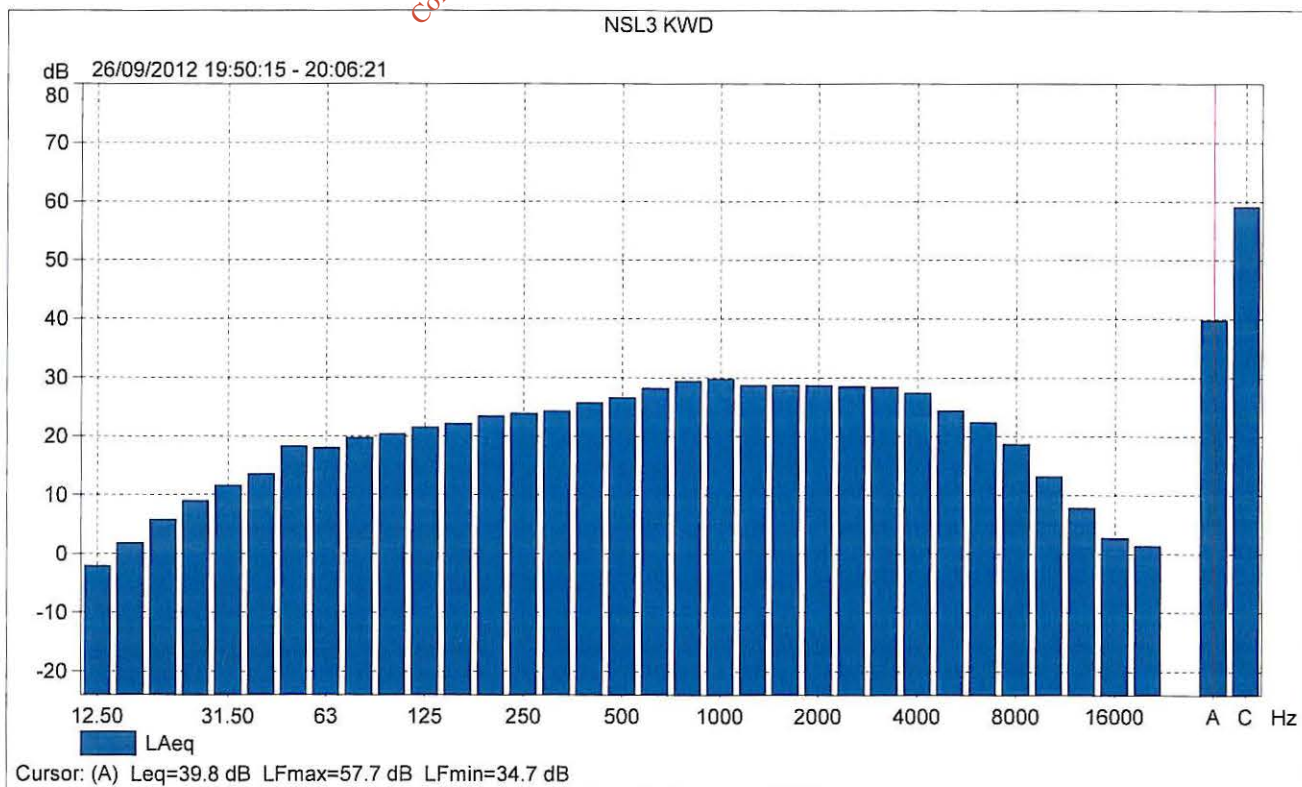
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	A

Instrument Serial Number:		2506513
Microphone Serial Number:		2523818
Input:		Top Socket
Windscreen Correction:		None
Sound Field Correction:		Free-field

Calibration Time:		09/26/2012 19:18:25
Calibration Type:		External reference
Sensitivity:		47.04 mV/Pa

### NSL3 KWD

	Start time	End time	L <sub>Aeq</sub> [dB]	L <sub>AF10</sub> [dB]	L <sub>AF90</sub> [dB]	L <sub>AFmax</sub> [dB]	Overload [%]
Value			39.8	42.1	36.4	57.7	---
Time	19:50:15	20:06:21					
Date	26/09/2012	26/09/2012					



### NSL4 KWD

Instrument:		2250
Application:		BZ7223 Version 1.5
Start Time:		09/26/2012 20:09:05
End Time:		09/26/2012 20:28:31
Elapsed Time:		00:15:00
Bandwidth:		Broadband
Max Input Level:		141.48

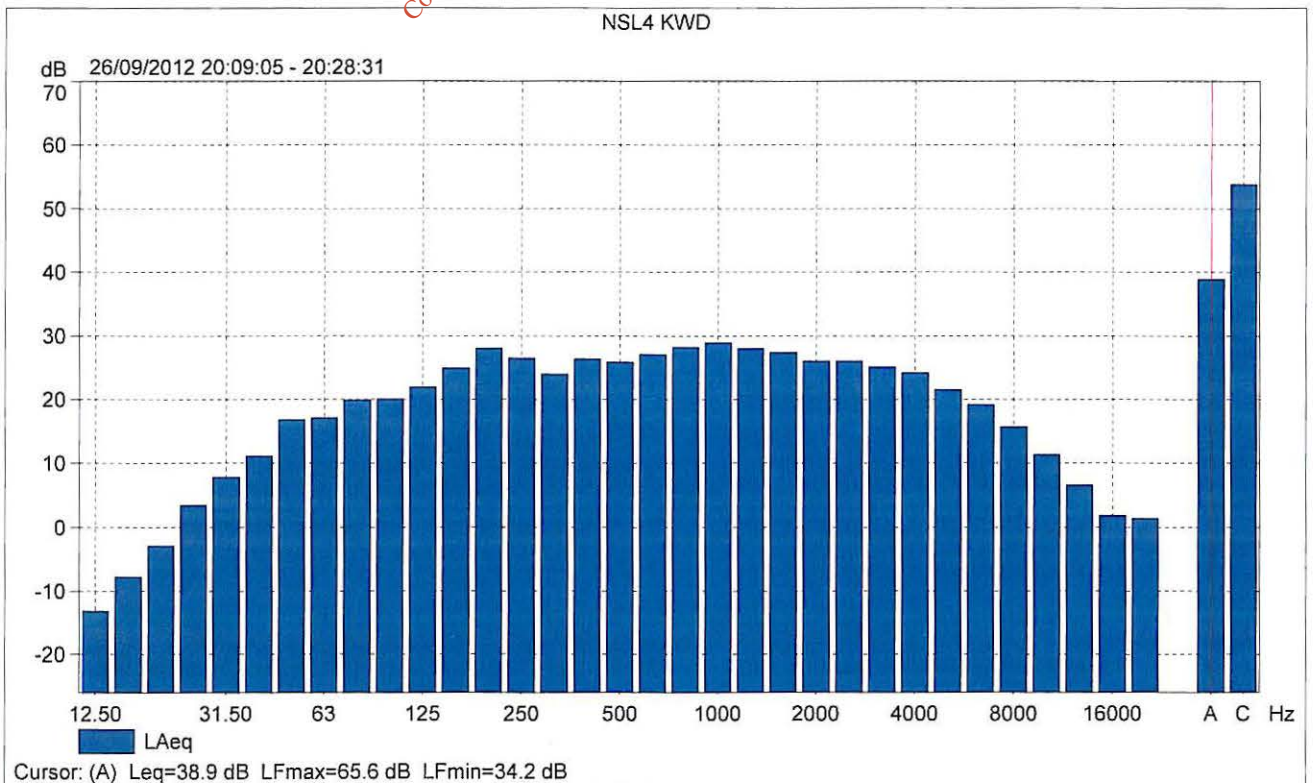
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	A

Instrument Serial Number:		2506513
Microphone Serial Number:		2523818
Input:		Top Socket
Windscreen Correction:		None
Sound Field Correction:		Free-field

Calibration Time:		09/26/2012 19:18:25
Calibration Type:		External reference
Sensitivity:		47.04 mV/Pa

### NSL4 KWD

	Start time	End time	LAeq [dB]	LAF10 [dB]	LAF90 [dB]	LAFmax [dB]	Overload [%]
Value			38.9	40.4	35.9	65.6	---
Time	20:09:05	20:28:31					
Date	26/09/2012	26/09/2012					



## **Appendix E.6**

# **Mist-Air Unit Specification**

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## MIST-AIR ODOUR NEUTRALIZER

Manufactured by Mist-Air and used extensively throughout Europe for curing odour issues in waste recycling sites, storage bunkers, landfill sites, etc.

Aqueous fog on its own, absorbs many odorous gases and alcohols.

The water particles absorb airborne gas into a solute, which then sinks to the ground to naturally biodegrade. Once the gas is in a solute it is no longer available to be detected by the olfactory nerves in the nose.

The addition of a 0.25% solution of Mist-Air Odour Neutraliser to the fog reduces the surface tension of each water particle, and increases the natural absorbency by approx 400,000 times.

So adding Mist-Air Odour Neutraliser to the water before it is turned into fine fog, is all that is required to solve 90% of all odour problems.

**Completely** miscible in water, and guaranteed not to separate and block jets, circulation pipes or filters, preventing sludge in pipelines, water tanks and fittings, a problem which is associated with many essential oil based products.

Because there is such a diverse mixture of odorous gases present in the air it is inevitable that a few gases do not readily mix with water, so a masking agent is added to nullify the effects of these gases to the olfactory nerves.

Unfortunately many products on the market use such powerful masking agents that they cause more complaints than the odours they are trying to mask.

Mist-Air Odour Neutraliser is available with many trace scents including Eucalyptus, Apple, Cherry, Cut Grass, etc.

These are not overpowering, but a delicate blend of trace elements that cause no offence and simply distract the olfactory nerves

There are no COSHH implications with Mist-Air Odour Neutraliser, and it is harmless to animals, insects, humans, plant life, and aquatic life.

Neither does it cause sore eyes and burning throats associated with many deodorants and essential oil based products.

Supplied in 25 , or 1000 litre containers. Shelf life approx. 24 months.

## GASES ABSORBED BY MIST-AIR ODOUR NEUTRALISER

1,4,-Diaminobutane	$NH_2(CH_2)_4NH_2$	Crotyl Mercaptan	$CH_3CHCH_2SH$	Methane	$CH_4$
1-Propanethiol	$CH_3CH_2CH_2SH$	Dibutylamine	$(C_4H_9)_2NH$	Methylamine	$CH_3NH_2$
2-Methyl-2-Butanethiol	$(CH_3)_3CSH$	Diisopropylamine	$(C_3H_7)_2HN$	Nitrogen	$N_2$
Acetaldehyde	$CH_3CHO$	Dimethylamine	$(CH_3)_2NH$	Nitrogen Dioxide	$NO_2$ NOX
Allyl Thiol	$CH_2CHCH_2SH$	Dimethyl Sulphide	$(CH_3)_2S$	Pentanethiol	$CH_3(CH_2)_3CH_2SH$
Ammonia	$NH_3$	Diphenyl Sulphide	$(C_6H_5)_2S$	Pyridine	$C_5H_5N$
Ammonium Hydroxide	$NH_3$	Ethane	$C_2H_6$	Skatole	$C_9H_9N$
Argon	Ar	Ethanethiol	$C_2H_5SH$	Sodium Hydroxide	NaOH
Benzyl Thiol	$C_6H_5CH_2SH$	Ethylamine	$C_2H_5NH_2$	Sulphur Dioxide	$SO_2$
Butyl amine	$C_4H_9CHNH_2CH_3$	Ethylene	$C_2H_4$	Thiocresol	$CH_3C_6H_4SH$
Cadaverine	$H_2N(CH_2)_5NH_2$	Helium	He	Thiocresol	$CH_3C_6H_4SH$
Carbon Dioxide	$CO_2$	Hydrogen	$H_2$	Thiophenol	$C_6H_5SH$
Carbon monoxide	CO	Hydrogen Chloride	HCL	Toluene	$C_6H_5CH_3$
Chlorine	$Cl_2$	Hydrogen Fluoride	HF	Triethylamine	$(C_2H_5)_3N$
Chloro Phenol	$C_6H_4OHCl$	Hydrogen Sulphide	$H_2S$		
Chlorophenol	$C_6H_5O$	Indole	$C_8H_7NH$		



## Safety Data Sheet

To requirements of directive 91/155/EEC

<b>Product Name</b>	Mist-Air Odour Neutraliser	<b>Exposure controls &amp; personal protection</b>	
<b>Supply Company</b>	Mist-Air Environmental Penybont, Nr. Oswestry, Shropshire SY10 9JF Tel : 01691 828 991/828487 Fax: 01691 828 499 Email: info@mist-air.co.uk	Respiratory protection	Not necessary
<b>Emergency</b>	01691 828 487	Eye protection	Wear goggles
<b>Composition</b>	Sophisticated blend of surfactants CAS. No./N/A UN. No N/A	Hand protection	Wear gloves when handling concentrate
<b>Hazards</b>	Adverse health effects: Category H Innocuous	Industrial hygiene	No special precautions
<b>Risk phrases</b>	R22 Harmful if swallowed	<b>Physical &amp; Chemical properties</b>	
<b>Safety phrases</b>	S37/39 Wear suitable gloves and eye/face protection for handling the concentrate	Form	Liquid
<b>First Aid Measures for Concentrates</b>		Colour	Light straw
Inhalation	None	Change in physical state	None
Eye contact	Irrigate eyes with copious amounts of clean water. Seek medical advise is symptoms persist.	Odour	Neutral or apple as requested.
Ingestion	Drink plenty of fresh water. Seek medical advise if symptoms persist.	Density/ bulk density	1.04 (H 0=1)
<b>Further information</b>	Mist Air odour neutraliser is classed as innocuous, see attached Ref 1: Toxicology	Viscosity	N/A
<b>Fire fighting measures</b>	Non flammable	Solubility	Complete in water
<b>Accidental spillage</b>	Hose down with copious amounts of water. No further action necessary.	pH value	6-8
<b>Handling</b>	Normal industrial standards	Flash point	None
<b>Storage</b>	Ambient temperatures	Ignition temperature	N/A
		Explosion limits	N/A
		Stability & reactivity	
		Thermal decomposition	N/A
		Hazardous thermal	N/A
		Decomposition products	N/A
		Hazardous reactions	N/A
		Toxicology information	See Ref 1 Toxicology. Non carcinogenic
		Ecological effects	
		Fish toxicity	N/A
		Invertebrate toxicity	N/A
		Biodegradation	Fully biodegradable
		Bioaccumulation potential	N/A
		Transport	Not listed as hazardous
		Disposal considerations	Do not put concentrate direct into water courses
		Regulatory information	Classification and labeling based on Directive 91/155/EEC
		Air contamination limits	None specified by UK Health & Safety Executive
		Other information	This product is intended for use in atmospheric odour removal.

## Toxicology Information

The product has full E.P.A. U.S.D.A. and U.S. Federal Hazardous Substances Act clearance to be used as an atmospherically dispersed Odour Control Agent. The product is currently being used in the following States: Miami, California, Washington State, Boston Penn., Texas, Tennessee, New York State, Oregon, Michigan, New Jersey. Widely used throughout Europe and UK, specifically for control of airborne odours from landfill, composting, and waste recycling activities.

**This product is NOT acutely toxic in all of the areas examined, and no hazard labeling is required.**

More specifically we have the following information for you:

In the area of **primary skin irritation** when tested as specified and at the concentrate supplied, this product induced a primary irritation scope of 0.25 out of a possible score of 8. Operationally we define this product as having a potential to be slightly skin irritant but would rarely be irritating to people. No labeling is thus required.

In the area of **eye irritation** when tested specified and at the concentrate supplied, this product induced slight eye irritation in two of the six test animals with complete recovery within 48 hours. The irritations were not considered significant (positive) to require labeling.

In the area of **ingestion hazard**, when administered at 15g / kg which is 3 times the dose level as required by the US Federal Hazardous Substances Act, the submitted concentrate did not induce any acute toxicity in the test animals, your product therefore is considered essentially non toxic and no labeling is required.

In the area of **acute inhalation hazard**, the product diluted 1:32 with de ionised water did not induce any acute inhalation toxicity in the exposed test animals after 1 hour dynamic exposure at the maximum achievable concentration of 14.2 mg/l.

This product was not acutely toxic in the area of acute inhalation hazard at the dilution tested. **No labeling is required for your product at that dilution.**

Based on the ingredients in this composition and their concentrations, this product is according to the conventional method of EEC directive 1999/45/EC classified as: Safe when used as directed.

**Ecological Information:**

**General:** This material is unlikely to accumulate in the environment and environmental problems under normal use conditions are unexpected.

This information is to the best of our current knowledge correct and is intended to describe the product only in terms of health & safety and environmental requirements. Since the conditions of use are outside our control, any recommendations or suggestions are made without guarantee and Mist-Air disclaims any liability for loss or damage suffered from use of this information. Customers must satisfy themselves that the product is suitable for a particular purpose. Furthermore, nothing contained herein shall be construed as a recommendation to use any product in conflict with existing patents.

