

# **ENVIROKING PTY LTD**

*WASTE RECYCLING SOLUTIONS*

**Environmental Management Plan**

**for**

**Land Application of**

**Food Processing & Treated**

**Greasetrap Wastes**

**Enviroking Pty Ltd trading as Sludge King**  
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843 John Renshaw Drive, Black Hill NSW 2322

Date Issued: 19<sup>th</sup> September 2007

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## 1. PRELIMINARIES

### 1.1. Introduction and Summary

It is the aim of Enviroking Pty Ltd to provide safe working procedures for its employees and subcontractors and to cooperate with Occupational Health and Safety, and Environmental objectives. This plan is an integration of Environmental and OH&S programmes. The objective of this plan is to provide a systematic approach for Enviroking Pty Ltd for the management of land application of food processing and treated greasetrap wastes.

#### **Purpose:**

The following environmental management plan (EMP) is prepared for the land application operations of Enviroking Pty Ltd. The plan forms part of diligence requirements under the Protection of the Environment Operations Act and amendments of June 1997. Generally the amendment of June 1997 permits land application of liquid food waste and treated grease trap waste provided benefit can be assured and the EPA guideline "Use and disposal of Biosolids Products" (EPA 1997).

Fundamentally the EMP follows the requirements of the NSW "Use and disposal of Biosolids Products Guidelines" (EPA1997) and sets out a method of operation and management that demonstrates this and ensures transparency.

The EMP remains the property of Sludge King Pty. Ltd. The management plan contains highly commercially confidential information that details the operational procedures of the company and is not to be copied or given to any party or entity, other than as required by statute without the specific consent of the author.

All correspondence should be directed to Rodney Lodge, Enviroking Pty Ltd, 843 John Renshaw Drive, Black Hill NSW 2322.

### 1.2. Authorisation

This document is authorised as the Environmental Management Plan and related documentation for Enviroking Pty Ltd.

The undersigned is responsible for the development and control of this document.

Authorised By: Rodney Lodge, Director

For and on behalf of Enviroking Pty Ltd

Signed: \_\_\_\_\_ Date: 19<sup>th</sup> September 2007

### 1.3. Regulatory Environment

The Protection of the Environment Operations Act of 1997 (POEO Act) regulations Part 1 Schedule 1 regarding waste facility licensing were amended on 1 June 2000 (NSW Gov Gazette No 57).

The effect of the amendment was to remove facilities using liquid food wastes and treated grease trap waste from the list of scheduled premises requiring licensing where that use was for an agricultural or environmental rehabilitation purpose.

There are some differences in the kinds of waste that are exempted from licensing between the extended metropolitan regulation area and outside of that area, mainly with respect to animal waste. Both inside and outside the ERA, Blue Mountains and Wollondilly liquid food waste and treated grease trap waste are exempted from the list of scheduled activities (ie do not require licensing).

The amended regulations also define food waste as-

- (a) the by-product of any one or more of the following activities:
  - (i) the preparation or manufacturing of food(including beverages),
  - (ii) the processing of meat, poultry or fish, or
- (b) food that it unwanted or is no longer fit for the purpose for which it was intended (because, for example, it is spoilt or past its use-by-date),

but does not include-

- (c) grease trap waste
- (d) packaging,
- (e) any food waste that constitutes Group A waste, hazardous waste or industrial waste.

Treated grease trap waste means grease trap waste that has undergone treatment to remove material that can float, being treatment that includes (or is equivalent to) leaving the grease trap waste to settle by operation of gravity for at least 4 hours, so that only aqueous liquid waste and the settleable portions of the grease trap waste remain, but does not include any treated grease trap waste that constitutes Group A waste, hazardous waste or industrial waste.

A definition is also given of agricultural and environmental benefit.

In other words the onus is on the proponent to prove the sources of his products, the analysis of those products, that the land is not adversely affected (such as by the build up of heavy metals), and that public health is not affected.

As regards local government the situation is also quite clear. According to the Environment Planning and Assessment Regulations of 2000 Schedule 3, Clause 32 (1)(a)(iii) and (iv) a waste management facility that disposes by way of "landfilling,.... placing or other means" and that "comprises more than 1,000 tonnes per annum of sludge or effluent" or "more than 200 tonnes per year of other waste material" is a waste facility.

However, Clause 32(2)(i) states-

(2) This clause does not apply to:

(a) development comprising or involving any use of sludge or effluent if:

(i) the dominant purpose is not waste disposal, and

(ii) the development is carried out in a location other than one listed in subclause (1)(d) above.

Subclause (d) defines environmentally sensitive areas, floodplains, and areas within 100m of a natural water body as areas where such activities would be scheduled activities requiring an EIS and development consent.

The effect of this is that where "sludge or effluent" is used for a recycling purpose with a fertiliser benefit the cap of 1000 tonnes per annum does not apply and the activity is not considered a scheduled activity.

## 2. ADMINISTRATION

### 2.1. Company Identification Details

The following is a relevant list of contacts in relation to all aspects for the implementation of procedures and documentation processes for the control and implementation of the Environmental Management Plan.

<b>ENVIROKING PTY LTD</b>		
1.	Company Name	Enviroking Pty Ltd T/A Sludge King
2.	Address	843 John Renshaw Drive, Black Hill NSW 2322
3.	Phone:	02 4930 3000
4.	Facsimile:	02 4930 3030
5.	Directors	Rodney Lodge, Melinda Lodge
6.	Manager	Rodney Lodge
7.	Plant Foreman	Eamon Hendrickx
8.	Environmental Advisor	Simon Leake – Sydney Environmental and Soil Laboratory Pty Ltd
9.	Emergency Response	Rodney Lodge, Eamon Hendrickx

## **2.2. Company History and Commitment**

Enviroking Pty Ltd has been collecting grease and food wastes in the Lower Hunter area for over 25 years taking wastes to existing treatment facilities. A plant was established in the late 90's to treat a variety of regional wastes including Group B wastes (food processing and grease trap wastes). During the first few years it used a regional land application operation for disposal of treated and untreated wastes. In 2002 increasing costs of that disposal together with the deregulation created by amendments to the POEO Act in June 2002 resulted in the perception by management that it would be in their interests to manage their own wastes "cradle to grave. The services of an experienced land application scientist were sought to help establish and manage the operation.

Basically the activity involves the transport of non hazardous liquid organic food wastes and treated grease trap wastes to farming properties, the application of these products into soil, and the cropping off the nutrients with pasture or crops. Enviroking Pty Ltd conducts the land application and ground preparation but may require participating farmers to perform the sowing and harvesting as per their normal operations. Grease Trap Waste is treated according to the requirements of the POEO Act using a minimum of four hours settlement to remove the floating fat portions and some water, the remaining organic sludge being designated "treated".

The benefits of the system are that it returns nutrients to the soil to the benefit of agriculture while eliminating landfill. Enviroking Pty Ltd benefits from vertical integration of its business, the farmer benefits from a free fertiliser source, and the environment benefits from the return of nutrients to the agricultural cycle, the substitution for chemical fertilisers, and the improvement in soil organic matter and nutrient levels. Improvements in soil fertility and crop yield from use of such products are well established in the scientific literature.

## **2.3. Company Policy**

Enviroking Pty Ltd's aim is to facilitate the recycling of waste plant nutrients back into soil and agricultural systems in a manner that:

- 1 results in no environmental harm,
- 2 results in savings to the producers of the waste nutrients,
- 3 benefits the farmer in terms of increased yields and improved soil properties;
- 4 satisfies the public and regulatory authorities of its competence, and
- 5 at a cost that makes it commercially viable for the shareholders.

Enviroking Pty Ltd has significant experience in the segregation, collection, and treatment of a wide range of food wastes in the Hunter area and strong familiarity with the market. The following company policies are observed in all dealings with food waste to land:

- It is not in Enviroking Pty Ltd 's interests to pollute land for financial gain. This is unlawful quite apart from being commercially fatal.
- Enviroking Pty Ltd will act at all times to ensure that the process is sustainable in the long term in a farming and environmental context.
- A program of interaction with the farmer is to be in place to ensure that nutrients are removed by cropping and not left to metabolise or volatilise into the environment.
- Any program will allow for the same area of land to be used again and to remain viable for farming.
- The primary use of the land will remain farming and Enviroking Pty Ltd's activity is not to subsume that use.

Properties deemed suitable include those falling into the following description:

1. Full time professional grazing properties including dairying, cattle, deer, sheep and horses.
2. Commercially run full time cropping properties excepting vegetable cropping and root crops for human consumption. Grain and fruit cropping for human consumption is acceptable, as are all industrial crops such as oilseeds.
3. Devastated land including mining and land for revegetation with either cover crops and/or native vegetation.
4. Have attributes consistent with the requirements of the EPA guideline "Use and disposal of Biosolids Products" (EPA 1997).

It is a general policy of the company that nutrient and contaminant loading rate calculation methods described in the EPA guideline "Use and disposal of Biosolids Products" (EPA 1997) provide the closest applicable guidelines for the activity.

## **2.4. The Reuse Method**

### **2.4.1 Overview**

The process of reusing food processing wastes and by-products of grease trap waste treatment involves applying the liquid product to farming land at rates appropriate to the land use and cropping system.

Past experience has shown these products to be highly beneficial to crop growth resulting in yields 2 to 4 times higher than that of unfertilised land when applied at around 200-300 wet tonnes/ha. At this rate lateral and vertical movement of soluble nutrients has been shown to be negligible.

Liquid wastes and treated by-products are transported in liquid tankers carrying around 18-20 tonnes (or cubic metres) at around 10-20% solids content.

### **2.4.2 Equipment Requirements**

Equipment used is-

1. 20,000 litre road tanker for transport of liquids
2. 4x4 front end loader/tractor of 120 hp.
3. Trailered subsurface injection equipment with the following features-
  - vacuum equipped 5,000 litre tank
  - three ripping tynes at 900mm centres
  - hydraulically operated tool bar lift
  - dual axles to prevent compaction

The sowing and harvesting of crops and management of animals is the responsibility of farmers but it is the responsibility of management that the farmer ensures that a crop or pasture capable of utilising the nutrients follows the application.

It is not acceptable, for example, to apply the product to unimproved pasture with plant species of low fertiliser responsiveness. Enviroking Pty Ltd will cooperate with the farmer at all times.

## 2.5. Document Control

### 2.5.1 Issue Revision and Review

This document provides standard procedures to be adopted.

- Maintaining an up to date version of this Environmental Management Plan.
- Maintaining a record of revisions that occur in the table below and destroying obsolete pages as instructed.
- Maintain the document distribution register.
- Provide an updated copy to the registered holders when changes occur.
- Issue revisions to those indicated on the distribution list.
- Audit, review and update this document on a regular basis not exceeding 12 monthly intervals to ensure its relevance and that it is kept up to date.

### 2.5.2 Record of Document Distribution

#### Distribution Register

This register shall identify the distribution of controlled copies of this document. The register will record the copy number, revision number, and date of issue and the registered holder of the plan. The register will be updated where appropriate.

No.	Revision	Issue Date	User	Company
1	1	19/09/07	OFFICE	ENVIROKING PTY LTD
2	1	19/09/07	LINDSAY ELLIOT	AVERY'S LA, HEDDON GRETA
3				
4				
5				

## 3. ENVIRONMENTAL MANAGEMENT SYSTEMS

The product used is considered to fall into a low risk category; Group B waste with potential amenity effects, but composed of non persistent biodegradable organic matter and nutrients. See Environmental Guidelines: Assessment, Classification & Management of Liquid and Non liquid wastes EPA 1999). Industry and EPA experience with the method has shown that by addressing the following issues the small risk of loss of amenity through land applying such wastes can be eliminated.

All of these aspects are managed by adopting EPA guideline "Use and disposal of Biosolids Products" (EPA 1997) as the best available guideline.

### **3.1 Traceability and site security**

Enviroking Pty Ltd's traceability of waste starts from the producers of the waste and finishes with knowing the exact location, time, date, tanker number, driver, and amount of waste that has ended up on each property.

Transport certificates for waste are used by Enviroking Pty Ltd's transport section for all incoming wastes and waste producers, to control the waste types received at the premises. Records of all waste receivals are kept as part of plant licence conditions.

Records of all outgoing loads are also kept and form part of regular EPA reporting requirements.

For land application purposes the transport of blended organics leaving the plant does not require licences nor does the land application itself. As part of diligence the following information is voluntarily kept:

1. Date and time of load
2. Truck driver and truck registration
3. Property name and paddock number.

All application are kept on file at Enviroking Pty Ltd's premises and main office for a minimum of two years after Enviroking Pty Ltd has finished with a property or paddock.

Within reasonable time of vacating a property a summary of the applications to that property together with soil and waste analysis data will be given to the farmer as proof that contamination has not occurred.

### **3.2 Management of Contamination Risk**

Management of contamination risk follows the protocols described in EPA guideline "Use and disposal of Biosolids Products" (EPA 1997) where prior information about the product is required in order to calculate Contaminant Limiting Application Rate (CLAR) and/or Nitrogen Limiting Application Rate (NLAR) to determine which is the more limiting.

Enviroking Pty Ltd has found that contaminants in food and treated grease trap wastes are generally low, as would be expected from products that humans and animals consume, and most often it is the nitrogen levels that limits application rates, not contaminants. According to Biosolids Guidelines this is called a Nitrogen Limiting Application Rate or NLAR.

Appendix I presents the latest analysis of treated wastes leaving the plant for land application. The data shows that the product complies with Grade A biosolids.

Treatment grading according to Biosolids Guidelines (EPA 1997) is not considered appropriate for non faecal based materials. Instead, the most precautionary method of land application, soil injection is employed routinely to reduce vector attraction. This method is deemed appropriate for partially stabilised or unstabilised biosolids and liquid sludges.

### 3.2.1 Issue Revision and Review

Prior to any waste being applied to a utilisation area, soil samples are to be taken and analysed according to Biosolids Guidelines.

Soils are tested as topsoil (A-horizon) and subsoil (B-horizon) individually as identified by the soil profile morphology rather than at some predetermined soil depths.

Tables one and two list the analytes that are to be tested in topsoil and subsoil pre and post application. Broadly this analysis requires certain agronomic indicators including tests for available nitrogen, and heavy metals.

**Table 1:**

Pre-application and post application soil tests in topsoil and subsoil

Topsoils	Subsoil*
pH in water	pH in water
pH in CaCl <sub>2</sub> 1:2	pH in CaCl <sub>2</sub> 1:2
ECe mS/cm	ECe mS/cm
Sodium soluble & exchangeable	
Potassium soluble & exchangeable	
Calcium soluble & exchangeable	
Magnesium soluble & exchangeable	
Aluminium soluble & exchangeable	
ECEC	
Ca/Mg	
Available Phosphate	
exchangeable Ammonium	
Soluble Nitrate	Soluble Nitrate
Available Sulphate	
Arsenic	
Cadmium	
Chromium	
Copper	
Lead	
Mercury	
Nickel	
Selenium	
Zinc	

\* **Important Note:** Subsoils are not usually affected by application of sludges into the topsoil, apart from some possibility of leaching of nitrates.

Note: Extensive analysis over 3 years has revealed no positive organochlorine pesticide results. For this reason it is deemed inappropriate to include those analytes. Records of soil analysis are kept in Appendix II.

Listed in table two are the maximum allowable soil contaminant concentrations for agricultural land that Enviroking Pty Ltd uses from the Biosolids Guidelines (EPA 1997).

**Table 2:**

Maximum Receiving Soil Contaminant Ceiling levels

<b>Contaminant</b>	<b>Max. allowable soil contaminant concentrations mg/kg dry weight of soil.</b>
Arsenic	20
Cadmium	1
Chromium	100
Copper	100
Lead	150
Mercury	1
Nickel	60
Selenium	5
Zinc	200

**3.2.2 Waste Analysis Policy**

Waste auditing will generally comply with the method of analysis of Biosolids products as described in EPA Biosolids Guidelines (1997). Statistics for food waste products from the last 2 years of analysis at Enviroking Pty Ltd are attached in Appendix I. Sample calculations of NLAR and CLAR are given for that statistical profile.

Statistical profiles will be updated annually and reflect the latest product profiles.

Analysis policy is as follows-

**1. New waste:** Waste that is being considered for inclusion in the system needs to be characterised before acceptance. Tables 3 and 4 give the suit of properties to be measured. A representative sample is taken from the customer. Only if acceptable according to the criteria in Table 3, can the product be accepted. Undertakings are required from the customer that the waste source is a single source and it is produced from an invariable process. Clients are required to informed Enviroking Pty Ltd of any alteration to the process of manufacturing or producing the waste that might result in a different composition. Where this occurs Enviroking Pty Ltd will re-audit the waste as if it is a new waste.

**2. "Farm Tank" Waste:** Incoming waste streams are treated first then blended and homogenised in a holding tank called "Farm Tank". Before the homogenised waste is sent to farms a sample is taken. These samples are bulked together to form the required sampling interval, at least every 100 tonnes.

Wastes are tested for those elements listed in table three and table four. Table three presents contaminants and maximum thresholds. Note that it is proposed to drop organochlorine testing if initial sampling demonstrates no detectable levels. Table four represents agronomic analysis and for establishing nitrogen application rates.

**Table 3:**

Contaminant Measurements and Acceptance Concentration Thresholds.

mg/kg	Contaminant Acceptance Concentration Thresholds*
Arsenic	20
Cadmium	20
Chromium	500
Copper	1997
Lead	420
Mercury	15
Nickel	270
Selenium	50
Zinc	2500

- Grade C equivalent from EPA 1997.

**Table 4:**

Other determinations that are tested in food and treated GT wastes.

Elements
Total Nitrogen
Total Solids Ratio

Note: All contaminant analysis will be performed by laboratories accredited by the National Association of Testing Authorities.

### 3.2.3 Determining Contaminant Limiting Application Rate

Contaminant limiting applications rates (CLAR) are to be calculated using the EPA Biosolids Management (EPA 1997) method.

In summary this is-

$$\text{CLBAR} = \text{SM} (\text{MASCC-MISCC})/\text{BCAC}$$

where

CLBAR = Contaminant limiting Biosolids application rate

SM = Soil Mass, for Subsoil injection to 150mm (100mm cover) this is assumed to be 1997 t/ha.

MASCC = Maximum Allowable Soil Contaminant Concentration

MISCC = Measured in-situ soil contaminant level

BCAC = Biosolids contaminant application concentration

BCAC is measured in mg/kg dry weight basis is then converted to "as received" basis to determine the liquid application rate.

The CLBAR is determined for the contaminant closest to the upper ceiling limit concentration and then compared with the NLBAR to see which is the most limiting. In nearly all cases the NLAR will be the limiting application rate.

### 3.3 Management of Nutrient Loading

Experience has shown that application rates of food and treated grease trap wastes are usually nitrogen limited, not contaminant limited. Thus management of nutrient loading is essentially an issue of controlling N additions to avoid large pools of soluble nitrate.

The method of estimating N needs of crops and balancing that with N additions from food waste is generally to be that method of Nitrogen Limiting Biosolids Application Rate (NLBAR) used in Biosolids Guidelines (EPA 1997).

Assumptions made:

**Mineralisation Rate:** With biosolids various N mineralisation rate (MR) assumptions are made ranging from 10 to 25%. As a precautionary approach a higher mineralisation rate is assumed for the food wastes being **40% in the first year**. This is an assumption that has always worked in practice.

**Incorporation Depth:** Enviroking Pty Ltd will adopt 150mm incorporation depth for subsoil injection.

**Crop N use:** In general the N removal rates from Table S 4-2 from the Biosolids Guidelines (EPA 1997) as well as Table seven from the Victorian Department of Natural Resources and Environment, "Soils and Fertilisers Exposed 1997" are used to estimate N removal rates. These are reproduced in Table 5.

**Total N removal:** This is assumed to be 150% of plant uptake to account for denitrification losses and is given in Table 5 for forage and pasture crops.

**Table five:**

Nutrient removed (kg/ha) by different farm products, assuming average production levels. (Department of Natural Resources and Environment 1997).

Product	Crop N Removal	Total N Loss*
Pasture uptake (10 t dry matter/ha)	400	600
Pasture Hay (4t/ha)	160	240
Pasture Silage (3t/ha)	120	180
Lucerne Hay (4 t/ha)	150	225

\* Using the 150% rule.

**Crop Rotation:** With double cropping (eg Winter and Summer crop), in a single cropping situation where pasture is used in the "off season", or where several cuts of hay may be taken during a year the total N removal rate is considered to be additive.

In order to establish NLBAR it is necessary to know the following:

1. Preapplication available soil N levels
2. Estimate of proposed crop N needs for the next 12 months.
3. N content in the food waste.

Calculations for the nitrogen limited application rate (NLBAR) are to follow the Vic Biosolids guideline (EPA 1997). The following criteria are to be adopted when using those calculations.

### **3.4 Application Rates**

Actual application rate chosen will be whichever is the lower between CLBAR and NLBAR. In nearly all circumstances this will prove to be the NLBAR when using food wastes.

### 3.5 Management of Potential for Odour Protection

Experience has shown that prevention of odour nuisance is the primary requirement to continue to operating without loss of amenity for the local community.

The following measures are to be followed or addressed before application and selection of a property:

- a) All liquid organic waste is to be utilised using subsoil injection or surface application followed by ploughing the same day.
- b) Buffer distances to dwellings, boundaries and sensitive land uses etc described in Biosolids Guidelines (EPA 1997) are to be observed. In simplified terms these are-
  - 100 metres from an occupied dwelling;
  - 30 metres from farm dams
  - 100 metres from surface waters
  - 250 metres from drinking water bores
  - 50 metres from other bores
  - 500 metres from residential zone
  - 5 metres from a farm driveway or internal fence line
- c) Farms are selected where odour impact is likely to be minimal, such as land distant from communities or dwellings and away from main roads. The properties should be large enough to contain odours within boundaries.

*A complaints procedure is issued to all staff at Enviroking Pty Ltd in the event of an odour complaint (or any type of complaint). The details of any complaint must be recorded as well as the response made to the complaint.*

### 3.6 Management for Loss of Product from Site

Site management will follow Biosolids guidelines (EPA 1997). There are essentially two aspects to the prevention of runoff the combination of the two having proven to provide a virtually complete management technique. They are:

1. The choice of properties to ensure correct buffer distances to waterways and
2. Incorporation of product into soil as required by Biosolids guidelines EPA (1997).

#### 3.6.1 Choice of Properties, Soil & Other Properties

Properties that Enviroking Pty Ltd intends to use will have characteristics required under Biosolids guidelines (EPA 1997) with regard to slopes and soils summarised as follows-

- a) a maximum slope of 10%,
- b) minimal surface rock that would prevent effective incorporation.
- c) depth to regional ground water should be greater than 3m. No property will be used where this criteria is not met.
- d) soils in the "highly permeable" category such as coastal sands will not be used.

### **3.6.2 Wet Weather & Other Contingencies**

Enviroking Pty Ltd will take additional precautions in wet weather. Problems of soil trafficability can occur when soil is at or close to its plastic limit where damage to soil structure can occur through wheel slip. Operations will cease in saturated soil conditions and not commence again until the soil is able to support vehicles.

Untrafficable soil is recognised as soil close to its field capacity moisture content (approximately the plastic limit). Thus any soil that behaves plastically is deemed too wet for normal application activity.

A contingency plan is to be followed when wet weather stops application activity. This plan is also applicable for machinery failure, loss of staff, or any unforeseen circumstances. The plan involves:

- a) establish with the waste producers their capacity for storage of food waste during extended wet periods. More often than not it will be found that waste producers have their contingency plans for Enviroking Pty Ltd not being able to take food waste away in any case,
- b) store liquids at the Enviroking Pty Ltd premises for as long as practicable,
- c) establish with other treatment/storage works their capacity for in line storage of products,
- c) As a first priority divert liquids to other approved recycling facilities such as composting works.
- d) As a last resort the waste would go to approved non recycling waste disposal facilities.

It is preferable that Enviroking Pty Ltd, with time, establish a range of regionally diverse properties as part of wet weather contingency so that waste may be diverted to properties not rain affected.

### **3.6.3 Human and Animal Health**

Since faecal pathogen issues do not occur with food waste the Biosolids Guidelines are not strictly comparable but as a precautionary approach Enviroking Pty Ltd will exclude stock for a minimum of 30 days and dairy cattle for 90 days.

Enviroking Pty Ltd will not permit the growing of human root crops such as potatoes for at least one cropping cycle or 6 months whichever is the longer. Discussions with farmers will make this quite clear at the outset.

Management of stock is the farmer's responsibility but Enviroking Pty Ltd is to monitor the integrity of fences and cooperate with the farmers in stock exclusion.

## 4. RISK ASSESSMENT

### 4.1. Safety Risk Assessment Register

<b>Key: Safety Risk Classifications:</b> Class 1: Potential death or permanent disability. Class 2: Possible loss time injury. Class 3: First aid.			
Work Activity	Potential HSE Hazards Identified	Risk Level	Control Measures
<b>1. Greasetrap &amp; Food Waste Pumpout</b>	<ul style="list-style-type: none"> <li>• Conditions of site</li> <li>• Collapse of structures</li> <li>• Restricted access</li> <li>• Other people, traffic</li> <li>• Objects falling</li> <li>• Work overhead</li> <li>• Trips, slips, falls</li> <li>• Spillage</li> <li>• Lids off greasetrap</li> <li>• Lids lifting</li> <li>• Truck parking, reversing, speeds</li> <li>• Personal injury</li> </ul>	Classes 2 & 3	<ul style="list-style-type: none"> <li>• Escorted site access.</li> <li>• Comply with Site Specific Instructions.</li> <li>• Site Specific Induction where necessary.</li> <li>• Check drawings, maps and directions.</li> <li>• Barricades and warning signs.</li> <li>• Secure alternative means of access.</li> <li>• Ensure there is adequate edge protection to prevent falls.</li> <li>• Ensure there is adequate signage &amp; use of witch's hats to prevent trips &amp; slips.</li> <li>• Full truck checkover before operation, includes hoses, fittings, pump, valves, spill kit.</li> <li>• Correct handles and fitting of lids, use of gatic lifters, correct lifting procedures.</li> <li>• Use of hazard/flashing lights, reversing lights &amp; alarm.</li> <li>• Adhere to all speed limits on roadways, sites and depots.</li> <li>• Use of PPE, hi-visibility clothing, steel capped boots, etc</li> </ul>

## 4.2. Environmental Risk Management Register

**Key: Environmental Risk Classifications:**

Class 1: Environmental damage or effects that are permanent and irreversible.

Class 2: Environmental damage or effects that are beyond statutory limitations but can be corrected.

Class 3: Environmental damage or effects that are minor impacts.

Environmental Category	Operational Activity	Risk Level	Control required	Control Measures
<b>1. CONTROL OF AIR QUALITY</b>	Standard operational activities of this company present no risk in this category.	Nil	Yes ( x ) No ( )	No smoke emissions. No dust emissions. Commercial jobs are done outside of normal working hours to avoid odour complaints. Exhaust stacks are in place to minimise odour emissions from the plant shed.
<b>2. CONTROL OF WATER QUALITY</b>	Standard operational activities of this company present no risk in this category.	Nil	Yes ( x ) No ( )	Enviroking P/L is fully compliant with Environment Protection Licences 11245 & 11180.
<b>3. WASTE MINIMISATION</b>	Reduction in plastic or non-biodegradable packaging. Recycling of materials.	Nil	Yes ( ) No ( x )	Utilisation of recycle collection bin for materials that can be recycled on site. Encourage separation of materials such as plastic products, paper and cardboard. Educate employees and environmental promotion.
<b>4. NOISE CONTROL</b>	Standard operational activities of this company present no risk in this category.	Nil	Yes ( x ) No ( )	Jobs are scheduled at agreeable & suitable times to minimise noise. Drivers create vacuum in the pump before entering jobs. Radio/CB/CD/tape volume set at minimum levels before 7am.
<b>5. CONTROL OF CONTAMINATED WASTE DISPOSAL</b>	Disposal of chemicals, flammable or waste materials, empty containers to be in compliance with "Instructions For Use"	Nil	Yes ( ) No ( x )	No hazardous trade waste materials used.
<b>6. CONTROL OF GROUP B WASTE</b>	Standard operational activities of this company present no risk in this category.	Nil	Yes ( ) No ( x )	Enviroking P/L is fully compliant with Environment Protection Licences 11245 & 11180. Emergency procedures and responses in place.

**Environmental Risk Management Register continued:**

<b>Environmental Category</b>	<b>Operational Activity</b>	<b>Risk Level</b>	<b>Control required</b>	<b>Control Measures</b>
<b>7. FUEL OR LIQUID OIL SPILLAGE INSIDE PLANT</b>	Standard operational activities of this company present extremely low risk in this category.	Nil	Yes (x) No ( )	Emergency procedures and responses in place. Bunds are intact, not cracked or broken.
<b>8. FIRE INSIDE BUILDING</b>	Standard operational activities of this company present extremely low risk in this category.	Nil	Yes (x) No ( )	Emergency procedures and responses in place.
<b>9. MINOR SPILLS OF AQUEOUS WASTE INSIDE BUILDING</b>	Standard operational activities of this company present extremely low risk in this category.	Nil	Yes (x) No ( )	Emergency procedures and responses in place. Bunds are intact, not cracked or broken.
<b>10. MAJOR SPILLS OF AQUEOUS WASTE INSIDE BUILDING</b>	Standard operational activities of this company present extremely low risk in this category.	Nil	Yes (x) No ( )	Emergency procedures and responses in place.
<b>11. MAJOR SPILLS OF AQUEOUS WASTE INSIDE BUILDING – TANK OR LINE RUPTURE</b>	Standard operational activities of this company present extremely low risk in this category.	Nil	Yes (x) No ( )	Emergency procedures and responses in place. Bunds are intact, not cracked or broken.
<b>12. MAJOR SPILLS OF AQUEOUS WASTE OUTSIDE BUILDING – VACUUM TANKER, LINE OR BUND RUPTURE</b>	Standard operational activities of this company present extremely low risk in this category.	Nil	Yes (x) No ( )	Emergency procedures and responses in place. Bunds are intact, not cracked or broken.
<b>13. PROTECTION OF FLORA</b>	Standard operational activities of this company present extremely low risk in this category.	Nil	Yes (x) No ( )	Motor vehicle & pedestrians to follow, wherever possible, designated roads and or tracks.

## 5. REFERENCES

Environment Protection Authority of NSW (1997)  
Environmental Guidelines: Use and Disposal of Biosolids Products.  
EPA Sydney South.

Overcash , M.R. and D. Pal (1979)  
*Design of Land Treatment Systems for Industrial Wastes -theory and practices.*  
Ann Arbor Science Publishers, Ann Arbor MI USA.

Victorian Department of Natural Resources and Environment,  
*"Soils and Fertilisers Exposed 1997.*

## 6. APPENDIX

### 6.1 Appendix 1 – Liquid Waste Statistics

#### TO BE UPDATED DRAFT only

Analytical statistics for blended loads of dewatered grease trap waste from the most recent set of 25 analyses to June 2002 are presented as follows.

Analyte	Mean concn, dwb	SD	Mean concn,"a s received"	Grade* concn mg/kg dwb	Grade A criteria	BCAC Grade
<b>Nitrogen g%</b>	1.29	0.584	23	NA	NA	NA
	mg/kgdwb		mg/kg			
<b>Zinc</b>	189.2	147.5	40.7	415.8	200	B
<b>Copper</b>	96.88	109.9	20.8	265.7	100	B
<b>Arsenic</b>	0.637	0.529	0.13	1.45	20	A
<b>Cadmium</b>	0.529	0.705	0.11	1.61	3	A
<b>Chromium</b>	7.317	4.792	1.57	14.68	100	A
<b>Lead</b>	28.64	40.43	6.15	90.74	150	A
<b>Mercury</b>	0.263	0.499	0.06	1.03	1	B
<b>Selenium</b>	0.313	0.243	0.07	0.69	5	A
<b>Nickel</b>	5.15	3.998	1.1	11.29	60	A
<b>Total Solids Ratio</b>	0.215	0.084	NA	NA	NA	NA

\* Uses Grading Concentration = mean + a x sd where a is calculated at 1.536 (see Schedule 2 NSW Biosolids Guidelines EPA 1997).

The product is Grade B with respect to contaminants zinc, copper and mercury. Mercury only just exceeds Grade A. The product falls into restricted use 2 category and may be used in agriculture provided CLBAR calculations are performed (see below).

Note: These statistics are on dewatered grease trap waste, not GTW treated according to the definitions in the amended POEO Act of June 2000. The statistics must be updated with treated GTW statistics.

## Sample Calculations

These are sample calculations only using some general assumptions for farming soil. In each situation the actual soil data pertaining on the farm being utilised will be used.

### CLBAR:

The most limiting element is zinc. To bring a soil from the background level of around 20mg/kg up to 200mg/kg (the limit for agricultural use) would require 180mgZn/kg of soil. How much treated GTW would this require-

$180\text{mg/kg soil} \times 2 \text{ exp } 6 \text{ kgsoil/ha} \times 1\text{L}/40.7 \text{ mgZn} = 8,845 \text{ million litres/ha}$  or 8,845 tonnes/ha of liquid product.

Note: Actual soil results will be used on individual farms.

### NLBAR:

Assume total N loss due to plant uptake is 400kg/annum in a pasture situation. Applying the 150% rule this would mean supplying 600kgN/ha. To supply 600kg of total N requires  $600/0.00277$  kg of liquid GTW or 217 tonnes/ha.

Therefore the application rate is limited not by contaminants but by nitrogen at 217 t/ha.

## 6.2 Appendix 2 – Individual Property Details

Policy : This appendix will be updated for each property used for food waste application. Records kept will include as a minimum:

Owner  
Location and Address

### A statement on Property Characteristics including:

- soil types
- depth of water tables or water table conditions
- slope suitability
- buffer distance suitability
- Soil test results pre and post application
- Any water test results
- All Food waste deliveries including
- date of delivery
- vehicle registration number
- driver
- farm operator
- paddock location of the delivery
- Analysis results
- NLBAR and/or CLBAR calculations.

### 6.3 Appendix 3 – Title Deed

## 6.4 Appendix 4 – Plans