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WASTE MANAGEMENT PLAN

50 Wyllie Road, Kembla Grange NSW

prepared for

Bicorp Pty Ltd

April 2014



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APPENDIX A – PRELIMINARY VENTILATION DRAWINGS

APPENDIX B – KFW LEACHATE CONTROL PLANS

1.0 INTRODUCTION

Benviron Group on behalf of Bicorp Pty Ltd was appointed to conduct a Waste Management Plan as part of an Environmental Impact Statement for the proposed upgrade of a Resource Recovery Facility at the property located at 50 Wyllie Road, Kembla Grange, NSW (Lot 10 in DP 878167).

This management plan is designed in accordance to relevant waste regulatory criteria including the NSW DECC "Waste Avoidance and Resource Recovery Strategy" (2007), and the NSW DECC "Waste Classification Guidelines" (2009):

2.0 OBJECTIVES

The aims of the waste management plan is to:

- Identify, classify and quantify the likely waste streams that would be handle/stored/disposed of at the facility;
- Describe how this waste would be treated, stored, use, disposed and handled on site, and transported to and from the site, and the potential impacts associated with these issues, including current and future offsite waste disposal methods; and
- Describe the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy (2007).

3.0 SITE DESCRIPTION

The proposed works are to be undertaken at the site identified as 50 Wyllie Road, Kembla Grange, NSW (Lot 10 in 878167). The site is located within the Wollongong City Council Area. Surrounding properties are zoned as recreation (RE2 and RE1), light industrial (IN2) and environment conservation (E2).

The upgrade of the Resource Recovery Facility is proposed to occur at the south-western portion of the site near Wyllie Road. This proposed development area in currently zoned as light industrial (IN2).

The site is bound to the north by an existing ridgeline. To the west the site is bounded by industrial facilities. To the south and east the site is bordered by vacant land.

4.0 OPERATIONAL OVERVIEW

The existing and proposed operation of the site is a Resource Recovery Facility that accepts selective material from building and demolition sites. Materials are transported to the site in trucks ranging in size from 10-25t in capacity. The materials are sorted and separated in sections within the site, processed, and then recycled or disposed of off-site.

The following figure describes the process of the assessment of waste arriving/generated at the site.

Figure 1: Assessment and Handling of waste arriving/generated at the site

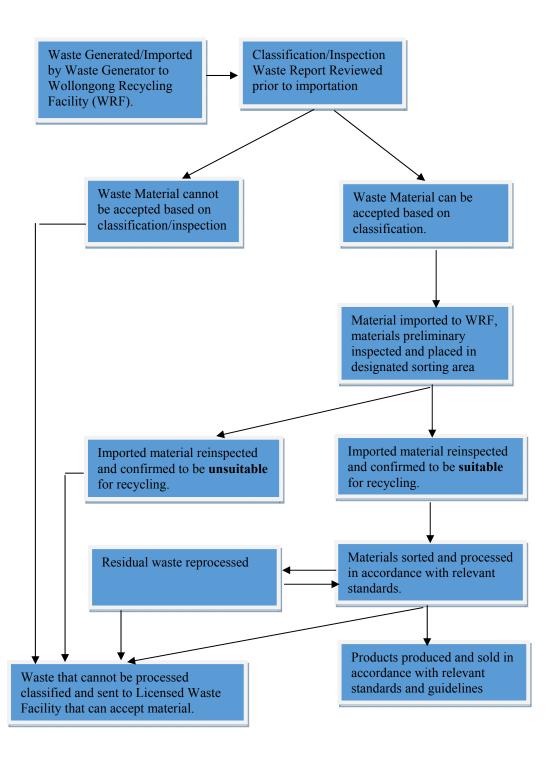
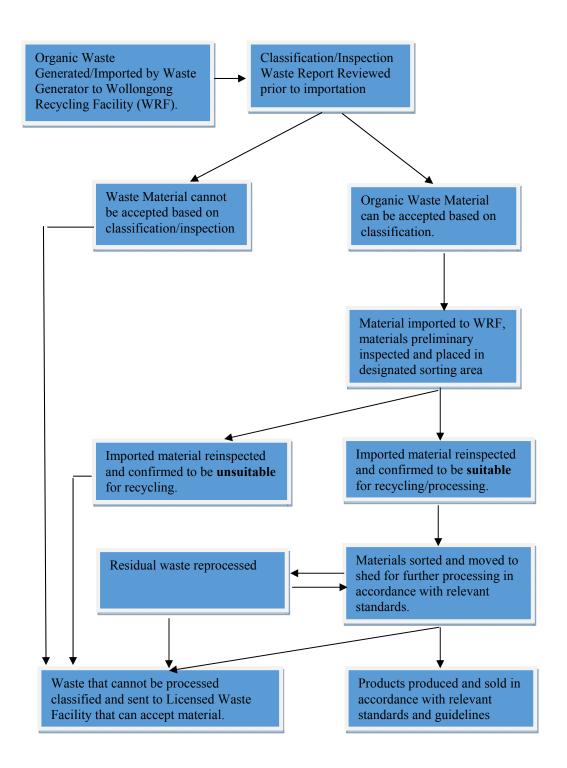


Figure 2: Assessment and Handling of Organics arriving/generated at the site



Organics Processing and Composting

As organic wastes constitute the largest fraction of the waste stream going to landfill, the composting of these materials will serve to reduce the demands on landfills and recycle resources to produce compost and other materials

The facility is proposed to undertake composting for Class/Category 1 Organic material which include Garden and landscaping material, untreated timber, natural fibrous material.

It is to be noted that any organic (green) wastes that will be processed on site will be undertaken generally as per figure 2, and more specifically as outlined in the flowchart as follows:

"Green Waste/Organic" Material accepted into Facility and stockpiled in Green Waste shredding area. No more than 1600T will be stored in this area at any one time. Pre shredding means – simple Green waste sorted into various size reduction of material grades of material. Suitable material through a shredder then some will be pre-shredded and screened material moved into shed for into smaller fragments as outlined in further processing. Table 2. Garden Mulch and firewood portions removed from the pre Shredded material moved into shredding process stockpiled processing/composting shed and outside shed for direct sale. further processed via composting, Approximately 500T and 300T shredding, mulching, chipping or respectively will be stored in this grinding. Approximately 800T of mulch will be processed within the area at any one time. shed at any one time. Material to be composted will be separated into windrows. At peak capacity it is estimated that windrows will be 3m high x 3m wide x 30m long. Material will then be allowed to compost and turned every week in accordance with appropriate guidance (AS 4454). Temperature will be kept at 55⁰ for a minimum of three days. Total composting duration will be undertaken for 4-6 weeks. No more than 900T of material will be composted at any one time in the Composted material will then be moved outside the processing shed to the maturation area for 3-4 weeks for final curing. Material tested for suitability and sold and removed from site.

Figure 3: Specific Organics handling process within the site

Organic Storage and Waiting Areas

Material stored within the "green waste" shredding area will be processed every four-five weeks. During this time material will be stockpiled on site and unprocessed material will be covered with a tarpaulin to minimise breakdown and leachate generation where material is not for direct sale.

It is not expected that material that is shredded for direct sale will be cause for concern due to the rapid turnover of the material and the chance for biological breakdown within this area will be minimal.

Detailed Composing Process

Pre shredded organic green waste will be transported to the composting shed and will be stockpiled in trapezoidal aerated windrow stockpiles approximately 3m high x 4m wide by 30m long with a capacity for up to 900T to be processed at any one time. Material will then be processed as follows:

- Material will be thoroughly mixed using a front end loader prior to pile formation. If not correctly mixed initially turning of the pile during composting can redress this issue.
- 2. Static Aerated windrows will be formed in the above described dimensions (3x4x30).
- 3. The ingredients to be used are to be non-putrescible organics such as garden waste, timber, wood, etc which should be easily accommodated by this method because aeration lessens the chance of oxygen deficiency within the pile. However too much aeration can limit processing capacity and form an unstable pile which can allow for pathogens to survive, therefore it

- recommended that moisture conditions be strictly monitored. Good management of these conditions limit any odour generation.
- 4. Moisture content should be near the water holding capacity for the material and measurement of this should be undertaken in accordance with AS4454.
- 5. As temperature gradients will naturally occur within windrows it is important to maintain temperature across the pile to prevent pathogens from remaining in the pile. Turning on a weekly basis using a front end loader will help to minimise this risk and allow the natural heating and pasteurising process to eliminate any pathogens.
- 6. In order to increase aeration of the pile perforated pipes will be installed at the base of the pile or within the concrete floors of the shed. This will be used in turn with temperature monitoring in order to maintain pile heat and composting stability and reduce potential for anaerobic composting conditions to form.
- 7. Composting will be undertaken for approximately 4-6 weeks with 1-2 turns per week depending on pile conditions. Once the composting process has become stable the material will be removed from the composting shed and placed in the composting curing area for a further month. During this time the material will be covered with a tarpaulin to prevent leachate runoff.
- 8. Material will be tested for compliance with AS4454 and will be sold to the market accordingly.

Detailed Composing Process

The shed will be designed to be negative pressure (refer to preliminary ventilation shed design plans Appendix A) in order to minimise the escape of any potential odours escaping through the roller doors. The air will be drawn into the building through the roller doors and will be vented through a stack (as per GHD 2014 Report) in the roof of the structure. Air that is vented through a pressurised pipe for

the windrow composting building will be pumped into the building and will be vented as described above.

Leachate Control

The leachate will be managed in accordance with the KFW Development plans (See Appendix B). The process is generally as follows

- The green waste shredding area will have an impervious concrete or asphalt concrete layer to prevent infiltration from the shredding surface.
- The green waste shredding area has a perimeter drain to collect and direct runoff to the green waste runoff collection pond.
- Composting and storage will be undertaken in a weatherproof shed which will have a concrete floor.
- The composting process will occur under cover in a weather-proof building and will produce no or at worst a small volume of leachate.
- The composting process shed will have a concrete floor underlain by a polyethylene membrane in order to prevent leachate infiltration into the groundwater.

The compost process leachate collection system will consist of the following:

 A primary concrete tank with a volume of 5,000 litres. The concrete tank will be fitted with a watertight lid and internally sealed with an epoxy coating to ensure watertightness.

- A secondary concrete tank with a volume of 2,500 litres. The concrete tank
 will be fitted with a watertight lid and internally sealed with an epoxy coating
 to ensure watertightness.
- The secondary tank will be connected to the primary tank at the level where the primary tank is at 4,000 litre storage (80%) capacity.
- The primary collection tank will be fitted with a sensor to indicate 75% capacity (ie 3,750 litres. At this point the site manager shall arrange to have the primary tank pumped out by a liquid waste tanker and disposed of at an appropriate treatment facility.

Stockpile Heights

Stockpile heights have been based on those outlined in the South Australian Environmental Protection Agency (EPA SA September 2010) and will be as follows in order manage fire, dust and odour –

- Stockpiles of inert material such as concrete, brick, soil etc will be stockpiled to a maximum of 5m in height. Height Poles to the exact length (5m) will provide on-site guidance for stockpile management.
- Stockpiles of organic material such as timber, garden waste, composting material etc will be stockpiled to a maximum of three (3m) in height. Again height poles (3m) will be used for on-site guidance for stockpile management.

5.0 PROPOSED DEVELOPMENT

Currently the Resource Recovery Facility operates at a maximum annual volume capacity of 30,000 tonnes. The proposed development is to operate at a maximum annual volume capacity of 230,000 tonnes.

6.0 MATERIAL TO BE ACCEPTED

The following table outlines the materials received on-site, the processes to recycle the material, the end-product, final destination of the material, and output material generated.

Table 1: Materials to be accepted for Recycling and Processing

Waste Materials to be	Waste	Estimated Total	Process/Handling	Storage	Use/Sold as	Residual Waste to be
received	Classification	Per Annum				disposed to landfill
		(Tonnes)				
Glass	General Solid	2500T	Material washed,	Granular material	Sold for road	Nil
	Waste		crushed and screened	graded to various	aggregate and	
			into various products	sizes and	drainage backfill	
				stockpiled on site		
Plastic	General Solid	2500T	Material sorted into	Sorted material	Sold to plastic recycler	Nil
	Waste		various types	stockpiled on site	for reprocessing	
Plasterboard	General Solid	1000T	Material crushed and	Sorted material	Sold to manufacturer	Some Paper material
	Waste		gypsum removed. Paper	stockpiled on site	for reprocessing or to	may not be able to
			backing is separated for		landscapers as soil	be recycled
			recycling.		amendments.	
Ceramics	General Solid	1000T	Material crushed and	Granular material	Sold for road	Nil
	Waste		screened into various	graded to various	aggregate and	
			products	sizes and	drainage backfill	

Waste Materials to be	Waste	Estimated Total	Process/Handling	Storage	Use/Sold as	Residual Waste to be
received	Classification	Per Annum (Tonnes)				disposed to landfill
				stockpiled on site		
Brick	General Solid Waste	15,000T	Material crushed and screened into various products	Granular material graded to various sizes and stockpiled on site	Sold as second hand building material or Sold for road aggregate and	Nil
					drainage backfill	
Concrete	General Solid Waste	20,000T	Material crushed and screened into various products	Granular material graded to various sizes and stockpiled on site	Sold for road aggregate and drainage backfill	Nil
Metals – Including steel, iron, aluminium, copper, lead etc.	General Solid Waste	10,000	Metal – sorted into sizes and types	Sorted material stockpiled on site	Sold as second hand building material or sold to metal recycler	Nil
Paper/Cardboard	General Solid Waste	5000T	Material sorted into various types	Sorted material stockpiled on site	Sold to paper/cardboard recycler for	Nil

Waste Materials to be	Waste	Estimated Total	Process/Handling	Storage	Use/Sold as	Residual Waste to be
received	Classification	Per Annum				disposed to landfill
		(Tonnes)				
					reprocessing	
Household Waste from	General Solid	7,500T	Sorted into various	Sorted material	Sold as second hand	Material that cannot
municipal cleanup	Waste		materials that can be	stockpiled on site	building material or to	be recycled sent to
			recycled - metal, timber,		redistributed to	landfill.
			plastic etc		relevant recycling area.	
Organics (non putrescible)	General Solid	30,000T	Green/Wood waste	Sorted material	Sold as recycled	Unsuitable green
Garden/Vegetative	Waste		mulched/ composted. All	stored on site as	building material or as	waste must be
Waste, Timber			handled within	either mulch or	landscaping material.	disposed of to
			processing shed.	compost		landfill.
Virgin Excavated Natural	General Solid	20,000T	Soils and rock are	Sorted material	Sold as landscaping	Nil
Material (VENM)	Waste		processed into	stockpiled on site	material.	
			landscaping material.			
Building and Demolition	General Solid	30,000T	Sorted into various	Sorted material	Sold as second hand	Material that cannot
Waste	Waste		materials that can be	stockpiled on site	building material or to	be recycled sent to
			recycled - metal, timber,		redistributed to	landfill.
			plastic etc		relevant recycling area.	
Asphalt Waste & Railway	General Solid	5,000T	Material crushed and	Material made to	Sold for road	Nil

Waste Materials to be	Waste	Estimated Total	Process/Handling	Storage	Use/Sold as	Residual Waste to be
received	Classification	Per Annum				disposed to landfill
		(Tonnes)				
Ballast	Waste		screened into various	various sizes and	aggregate and	
			products	stockpiled on site	drainage backfill	
Cured Concrete Waste	General Solid	5,000T	Material crushed and	Granular material	Sold for road	Nil
	Waste		screened into various	graded to various	aggregate and	
			products	sizes and	drainage backfill	
				stockpiled on site		
Mixtures of above	General Solid	10,000T	Sorted into various	Sorted material	Sold as second hand	Material that cannot
materials.	Waste		materials that can be	stockpiled on site	building material or to	be recycled sent to
			recycled - metal, timber,		redistributed to	landfill.
			plastic etc		relevant recycling area.	
Waste Accepted under	As per	15,000T	Soils and rock are	Sorted material	Sold as	Nil
NSW EPA Resource	relevant		processed into	stockpiled on site	landscaping/earthwork	
Recovery Exemptions.	exemption		landscaping material.		s material.	
Soils	General Solid	50,000T	Soils and rock are	Sorted material	Sold as	Nil
	and Restricted		processed into	stockpiled on site	landscaping/earthwork	
	Waste		landscaping material.		s material.	

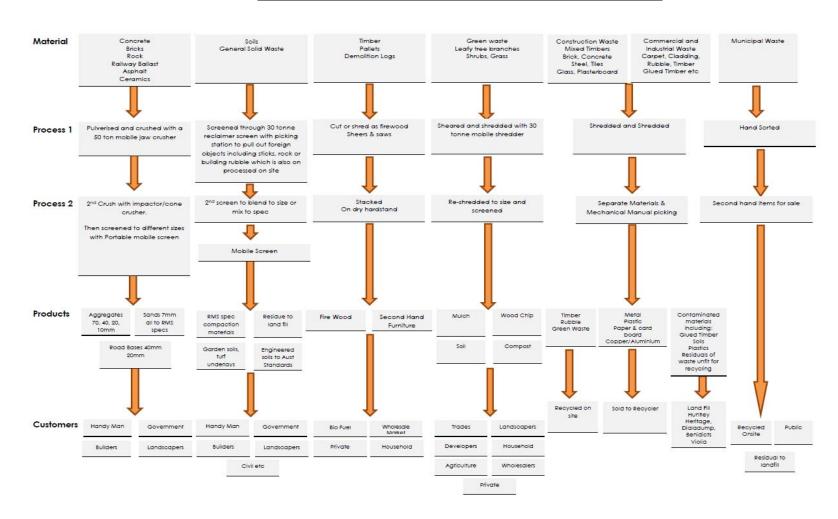


Table 2: Generalised Recycling and Processing within the Site

7.0 OUTPUT PRODUCTS

The following table outlines the specifications for the output products.

Table 3: Output Materials produced and their characteristics

Processed Output	Relevant Standards	Physical	Chemical Characteristics	Biological
Products to be Sold	to assess products	Characteristics		Characteristics
Recycled Roadbase	NSW EPA Recovered	Granular material	Generally Inert but have some	Nil
and associated	Aggregate	from graded to	contaminant concentrations of	
Bedding and	Exemption, NSW	various sizes	Heavy Metals, Foreign Materials	
Drainage	RMS QA 3051	ranging between		
Materials.	Specification, IPWEA	9mm -70mm.	Final products will have contaminant	
	Specification for		concentrations less than those	
	Supply of Recycled		outlined in NSW EPA Recovered	
	Material		aggregate Exemption	
Excavated Natural	NSW ENM Exemption	Soil material made	May have some contaminant	Minimal biological
Material		up of silt, clay, sand	concentrations of Heavy Metals,	activity as should
(ENM)		or rock.	TRH/BTEX, PAH or Foreign Materials	have minimal
				organic material
			Final products will have contaminant	within soils.
			concentrations less than those	
			outlined in NSW EPA ENM	
			Exemption	
Recycled Glass	NSW EPA Recovered	Granular material	Generally Inert but have some	Nil
Sand	Glass Sand	graded to various	contaminant concentrations of	
	Exemption	sizes and	Heavy Metals, Foreign Materials	
		stockpiled on site		
		between 2mm and	Final products will have contaminant	
		5mm	concentrations less than those	
			outlined in NSW EPA Recovered glass	
			sand Exemption.	

Processed Output	Relevant Standards	Physical	Chemical Characteristics	Biological
Products to be Sold	to assess products	Characteristics		Characteristics
Second Hand	N/A - material is	Sorted material	N/A	N/A
Building Supplies	sorted and suitable	such as second		
	material is stored for	hand timber, metal,		
	sale.	pipe, furniture etc.		
Mulch/Compost	AS4419, AS4454	Material consists of	N/A	High level of
	NSW EPA Mulch	shredded wood		biological activity.
	Exemption.	and timber.		Processing requires
				material is
				pasteurised in
				order to prevent
				spread of
				pathological
				organisms
Blended Soil Mixes	AS4419, AS4454,	Blended soils	May have some contaminant	Biological activity
	NSW ENM	consisting of sand	concentrations of Heavy Metals,	should have
	Exemption, NSW EPA	silt, clay &	TRH/BTEX, PAH or Foreign Materials	stabilised as
	Recovered	aggregates.		organic portions
	Aggregates		Final products will have contaminant	should have
	Exemptions.		concentrations less than those	already been
			outlined in NSW EPA Exemptions.	broken down.
			Material will also conform to	
			relevant Australian standards.	

This list covers most of the materials to be produced, however this is not an exhaustive list of materials that may be produced within the site and in the future additional products may be introduced based on market trends. it is important to note that should relevant guidelines and/or Australian/NSW Legislation be changed/amended and the following definitions (see table 1, 2 and 3) are added to,

amended or are no longer relevant, it is intended that this report will proactively incorporate these changes (where possible and relevant) into this report in accordance with the new guidance/legislation criteria.

8.0 WASTE MATERIALS

NSW Recycling targets

As shown in Table 1, 2 & 3, minimal waste is generated from the Resource Recovery Facility. The recycling facility will allow the following outcomes to be achieved in accordance with the NSW Waste and Resource Recovery Strategy though the continued operation and processing of waste material and these area as follows:

- 1. Preventing and avoiding waste;
- 2. Increasing recovery and use of secondary materials;
- 3. Reducing toxicity in products and materials; and
- 4. Reducing litter and illegal dumping

It will also help the NSW government to achieve the following targets:

- Municipal waste from a baseline 26% to 66%
- Commercial and industrial (C&I) waste from a baseline 28% to 63%
- Construction and demolition (C&D) waste from a baseline 65% to 76%

Wollongong City Council Recycling Strategy

It was identified that Wollongong Council has adopted the NSW Waste and Resource Recovery strategy as part of their own waste recovery strategy and are currently preparing a waste action plan for the council area. This is expected to be finalised within the next few years.

Estimated Quantity of Waste Diverted during 10 Year Startup Phase

Municipal Waste Stream

Year	Year Estimated Tonnes diverted per annum								
	Mixed dry recycling	Paper/Cardboard	Plastics	Glass	Wood/timber	Metals	Mixed residual waste		
Capacity of recycling Yard	N/A	5000	2500	2500	30000	10000	N/A		
2014/15	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
2015/16	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
2016/17	N/A	1500	100	100	2000	3000	N/A		
2017/18	N/A	2000	200	200	2500	3500	N/A		
2018/19	N/A	2200	300	300	2700	3700	N/A		
2019/20	N/A	2500	500	500	3000	4000	N/A		
2020/21	N/A	2500	500	500	4000	4000	N/A		
2021/22	N/A	2500	500	500	5000	4000	N/A		
2022/23	N/A	2500	500	500	5000	4000	N/A		
2023/24	N/A	2500	500	500	5000	4000	N/A		
2024/25	N/A	2500	500	500	5000	4000	N/A		
Total	N/A	20700	3600	3600	34200	34200	N/A		

Commercial and Industrial Waste Stream

Year Estimated Tonnes diverted per annum								
real	Estimated Tonnes diverted per annum						T	
	Mixed dry	Paper/Cardboard	Plastics	Glass	Wood/timber	Metals	Mixed	
	recycling						residual	
							waste	
Capacity of	10000	5000	2500	2500	30000	10000	10000	
recycling								
Yard								
2014/15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
2015/16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
2016/17	1000	1000	500	500	5000	5000	500	
2017/18	2000	2000	1000	1000	7000	6000	1000	
2018/19	3000	2200	1500	1500	10000	6000	1000	
2019/20	4000	2500	2000	2000	10000	6000	1000	
2020/21	5000	2500	2000	2000	15000	6000	2000	
2021/22	7000	2500	2000	2000	15000	6000	2000	
2022/23	10000	2500	2000	2000	20000	6000	2000	
2023/24	10000	2500	2000	2000	20000	6000	2000	
2024/25	10000	2500	2000	2000	30000	6000	2000	
Total	52000	20200	27500	27500	132000	53000	13500	

[&]quot;Yellow highlight" indicates construction phase of proposed recycling yard"

The above tables outline an estimated resource recovery for the recycling facility for targeted waste streams by the NSW Government. It must be noted that these estimates are very conservative and are likely to be much more efficient.

Suitable Material to be removed off-site

Any material that is *suitable* for sale or re-use will be dealt with in accordance with the Protection of the Environment and Operations Act 1997. The material that is deemed suitable will first be tested and classified in accordance with the NSW EPA Resource Recovery Guidelines and also along with any other soil specification guidelines relevant in order to protect human health and the environment. Based on this classification material will be transported to a licensed facilities that can accept such materials or material with appropriate development permissions and only in accordance with specified uses in the NSW EPA Resource Recovery Exemptions.

Unsuitable Material required for Disposal Off-site

Any material that is *not suitable* for sale or re-use will be dealt with in accordance with the Protection of the Environment and Operations Act 1997. The material that is deemed unsuitable will first be tested and classified in accordance with the NSW EPA Waste Classification Guideline 2009 and based on this classification will be transported to a licensed landfill facilities that can accept such materials in order to protect human health and the environment. These facilities may be:

- Dunmore
- Huntley Heritage
- Benedict's
- Dial a Dump
- Veolia

Any material that is classified and is deemed trackable waste as outlined in Schedule 1, Part 1 of the Protection of the Environmental and Operations Regulation (2005) will be managed in accordance with the NSW EPA guidance on Trackable Waste.

Though it is expected that less than 15-20% of material received on site will be unable to be recycled.

9.0 WASTE LICENSING

Due to the amount of tonnage the site is proposed to accept it can be seen in Schedule 1 of the Protection of the Environment and Operations Act 1997 that these thresholds would exceed the scheduled activity criteria for Resource Recovery, Waste Storage, Composting etc. Based on this an EPA Licence will be required under the Protection of the Environment and Operations Act 1997 for operation of the site over and above the thresholds outlined in Schedule 1.

10.0 CONTINGENCY PLANNING

The table below summarises conditions that can be reasonably expected and the resulting problems they may cause and how these problems may be resolved within the context of the resource recovery operation.

Anticipated Problem	Corrective Action By Contractor					
Chemical spill / exposure	Stop work, refer to Occupational Health, Safety and Rehabilitation Plan and immediately contact Benviron Group.					
Excessive rain	Maintain access roads, cover high-traffic areas with gravel; or cover working areas/stockpiles with plastic during off-shifts; or shut down operations until runoff is more manageable. Inspect & maintain sediment control pond & filter fences.					
Unmanageable mud in excavation zone	Improve drainage collection system; add geotextile/gravel in problem areas; or strip off mud/slurry materials; or excavate from the top of the fill.					
Excessive drainage	Minimise active/contaminated work area; or improve diversion clean run-on; or maintain sufficient on-site wastewater storage capacity; or mobilise additional storage and/or treatment systems as needed.					
Excessive dust	Use water sprays or biodegradable dust sprays, or cease dust- generating activity until better dust control can be achieved, or apply interim capping systems.					
Sediment pond water for discharge — analytical results exceed site response levels	Perform in-situ treatment, e.g. flocculant dosing, until response levels are met. Alternatively arrange off-site disposal by a licensed Contractor.					

Leachate Pond capacity exceeded	Arrange off-site disposal by a licensed Contractor.				
Excessively wet materials	Stockpile and dewater on-site; or add absorbents.				
	Minimise input of material by refusing to accept material for a				
Excessive stockpiling of	period of time to be defined by Site Director. Focus on				
material within site.	eliminating wastes of concern from the site through processing				
	or disposal.				
	Maintain spare equipment or parts; or maintain alternate rental				
Equipment failures	options; or shut down affected operations until repairs are				
	made.				
Release of fuel/oil from	Remove source, use absorbent booms to remove oil and make				
machinery	any repairs as required.				
Silt fence fails	Stop work and repair fence to specifications.				
Excessive noise	Identify source and review noise attenuation equipment and as				
LACESSIVE HOISE	necessary provide silencers on noisy equipment.				
	Monitor for volatiles using PID and upgrade PPE if necessary.				
Excessive odours	Use odour and volatile suppressing agents to eliminate or				
EXCESSIVE ORORIS	reduce odours as required and/or cover odorous material if				
	practicable.				

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11.0 CONCLUSION

This report has identified, classified, and quantified the likely waste streams that

would be handled/stored/disposed of at the Resource Recovery Facility. Table 1

outlines that minimal waste material is generated by the facility and is disposed at a

licensed landfill able to accept such materials.

In accordance with the NSW DECC "Waste Avoidance and Resource Recovery

Strategy" (2007) goals, the proposed development facilitates the prevention and

avoidance of waste by increasing and promoting the recovery and use of secondary

materials.

Should you have any questions regarding this report, please do not hesitate to

contact the undersigned.

ber buckley

For and on behalf of

Benviron Group

Ben Buckley

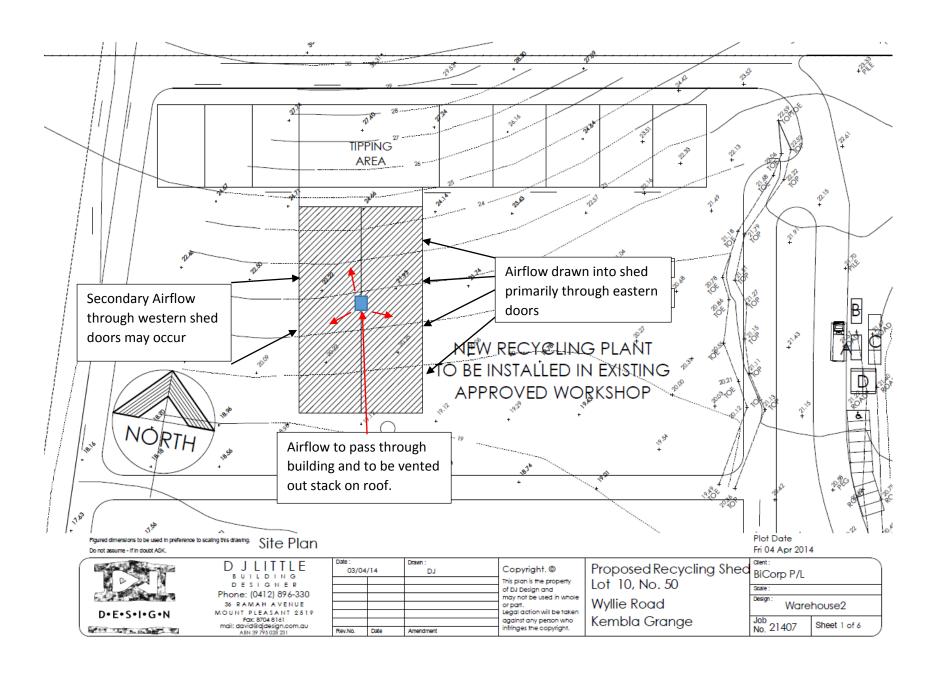
Director

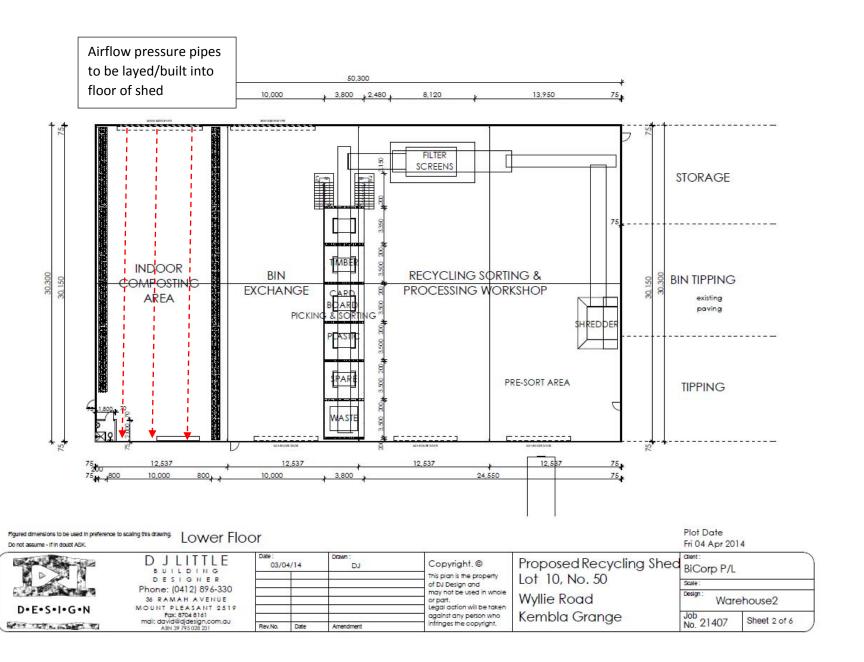
Senior Environmental Forensic Scientist

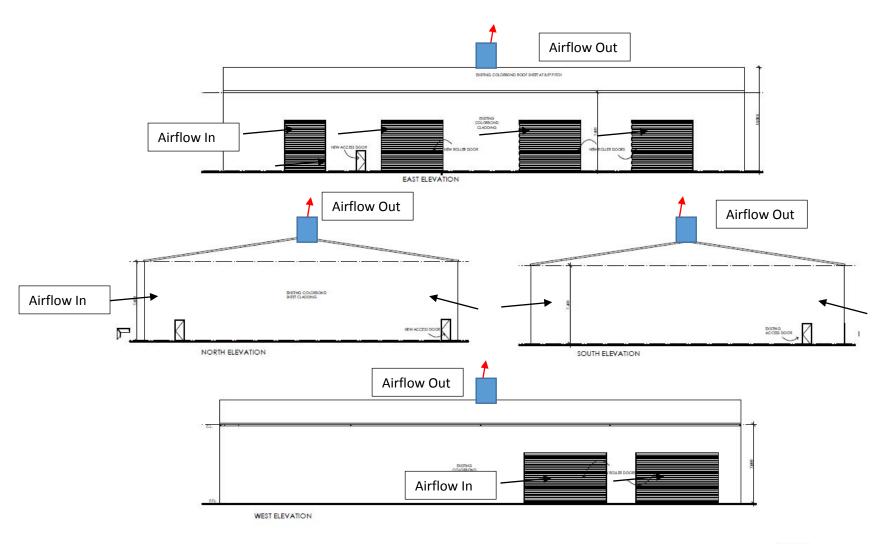
References

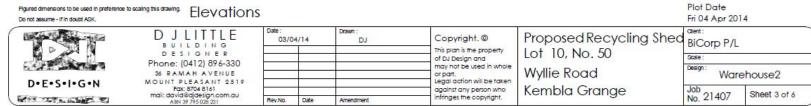
- NSW DECC "Waste Avoidance and Resource Recovery Strategy" (2007).
- NSW DECC "Waste Classification Guidelines" (2009).
- EPA SA "Guidelines for Stockpile Management: Waste and Waste derived products for recycling and reuse". (2010)
- GHD (2014) Air Quality Assessment, June 2014
- KFW (2014) Leachate Control Procedure

APPENDIX A – SHED VENTILATION DRAWINGS









APPENDIX B - KFW LEACHATE DESIGN PLANS

 Working surfaces
 EPA Goal
 To ensure storage To ensure storage areas, active composting surfaces, and associated access roads are constructed to prevent the pollution by leachate of subsoil, groundwater and surface water bodies and to allow all-weather vehicular access to any part of the processing site that needs to be reached by vehicles.

Mınımum Design Requirement is met as follows:

The green waste shredding area will have an impervious concrete or asphalt concrete layer to prevent infiltration from the shredding surface.

The green waste shredding area has a penmeter drain to collect and direct runoff to the green waste runoff collection pond.

Composting and storage will be undertaken in a weatherproof shed which will have a concrete floor.

Leachate barrier system

To prevent the pollution by leachate of subsoil, groundwater and surface water bodies over the period of time that raw organics or products remain on the premises beyond the closure of the facility, and until the premises has ceased to pose potential environmental threats.

Mınımum Design Requirement is met as follows:

The green waste shredding area has an impervious layer to prevent infiltration from the shredding surface. The impervious layer will be concrete or aspiralt cement (AC) pad of a thickness of at least 100 mm is to be

The concrete or AC pavement will be designed for a traffic loading of 1 x 105 ESA. Assuming a CBR of 5, the pavement thickness will be in the order of 340 mm including a minimum of 100 mm concrete of AC thickness.

A 100mm concrete or AC layer will withstand the loads from all machines vehicles and equipment that are required to operate the facility.

To ensure that leachate is collected efficiently at the composting and related processing facility for further management, thereby avoiding water pollution and/or odour problems.

Mınımum Design Requirement is met as follows:

The composting process will occur under cover in a weather-proof building and will produce no or at worst a small volume of leachate.

The composting process shed will have a concrete floor underlain by a polyethylene membrane in order to prevent leachate infiltration into the

The compost process leachate collection system will consist of the

- A primary concrete tank with a volume of 5,000 litres. The concrete tank will be fitted with a watertight lid and internally sealed with an epoxy coating to ensure watertightness.
- A secondary concrete tank with a volume of 2,500 litres. The concrete tank will be fitted with a watertight lid and internally sealed with an epoxy coating to ensure watertightness.
- The secondary tank will be connected to the primary tank at the level where the primary tank is at 4,000 litre storage (80%) capacity.
- The primary collection tank will be fitted with a sensor to indicate 75% capacity (ie 3,750 litres. At this point the site manager shall arrange to have the primary tank pumped out by a liquid waste tanker and disposed of at an appropriate treatment facility.

. Leachate storage system

o ensure that leachate is stored efficiently at the composting and related occssing facility for further management, thereby avoiding water pollution idlor odour problems.

Minimum Design Requirement is met as follows

The compost process leachate collection and storage the following: system will consist

- A primary concrete tank with a volume of 5.000 litres. The concrete tank will be fitted with a watertight lid and internally sealed with an epoxy coating to ensure watertightness
- A secondary concrete tank with a volume of 2,500 litres. The concrete tank will be fitted with a watertight lid and internally sealed with an epoxy coating to ensure watertightness.
- The secondary tank will be connected to the primary tank at the level where the primary tank is at 4,000 litre storage (80%) capacity.
- The pnmary collection tank will be fitted with a storage level sensor to indicate 75% capacity (ie 3,750 litres. At this point the site manager shall arrange to have the pnmary tank pumped out by a liquid waste

tanker and disposed of at an appropriate treatment facility.

DO NOT SCALE

EASEMENT FOR TRANSMISSION LINE 45.72 WIDE

ZONE LINE

A weekly inspection of the level in the leachate storage tank is to be performed.

Six monthly testing of the storage level sensor is to be performed

It is noted that above ground tanks are preferred, however underground tanks are proposed in this case because the composting area is within a weather proof shed which will mean that the generation of leachate will be nil or very small.

The composting process will be undertaken in a weatherproof shed. There will therefore be no need to make provision for rainwater inflow to the leachate storage system. It is noted that rainwater from the weatherproof shed will be harvested for use on site for dust suppression.

Surface water controls

avoid the generation of excessive leachate and to prevent any sediment pollutants from being carried off the premises.

umum Design Requirementis met as follows: surface water controls must at least meet the following requirements:

evention of surface water mixing with organics will achieved by undertaking composting process within a weatherproof building. The building will actively prevent surface water mixing with the composting material. composting and storage; vention of surface water m

green waste shredding; wention of surface water mixing with organics will be achieved by:

200mm HIGH KERB

- elevating the green waste shredding area above the internal road system in order to ensure that surface water does not run onto the
- the internal road and stormwater system is designed to collect and divert surface water away from the green waste shredding area. The internal road has a central V drain in order to ensure that surface water runs away from the shredding area.

composting; composting the composting transition of runoff will be prevented by undertaking the composting scass and storage within a weatherproof building. The building will scass and storage within a weatherproof building. The building will storage within a weatherproof building material.

For green waste shredding handling: treatment of runoff from the shredding area will be achieved by:

- elevating the green waste shredding area above the internal road system in order to ensure that surface water does not run onto the
- the internal road and stormwater system is designed to collect and alwert surface water away from the green waste shredding area. The internal road has a central dish-drain in order to ensure that surface water runs away from the shredding area.

EASEMENT

COMPOST PRODUCTION = -2500m³/yr COMPOST PRODUCTION

PROCESSING SHED

DRAIN IN BUILDING
TO COLLECT
SEEPAGE FROM

FOR

GAS PIPELINE

GÉNÉRAL PROCESSING SHED

AREA

PROCESSING

BANA BANK

EQUIPMENT AREA

For composting: management of surface water generated from the design of a 1-in-10 year, management of surface water generated from the design of a 1-in-10 year, 24-hour-penod storm event will not be required because the composting operations are within a weatherproof building. The building will effectively prevent surface water mixing with the composting material.

For green waste shredding: management of surface water generated from the design of a 1-in-10 year, 24-hour-penod storm event will be achieved by minimising the area of green waste exposed to rainfall and ensuring the shredding pond has sufficient volume. As runoff will not be heavily loaded with organic matter, water retained in the green waste shredding pond may be used a supplementary supply for dust suppression on site.

The internal road and stormwater system is designed to collect and divert surface water away from the green waste shredding area. The internal road has a central V drain in order to ensure that surface water runs away from the shredding area.

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PROVIDE 5,000 LITRE UNDERGROUND CONCRETE TANK FOR LEACHATE

OCCECTION A

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1/1/20

ROVIDE 2,500 LITRE

DISCHARGE TO SOCILLECTION TANKS

TOP

SHREDDING

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ATER

WATER RECYCLING POND

DETENTION
BASIN A



DENOTES PROPOSED SURFACE LEVELS DENOTES HUMECEPTOR DOWNSTREAM DEFENDER

DENOTES EXISTING CONTOURS

COMPOSTING AND STORAGE SHED, CONCRETE FLOOR, DRAIN TO UNDERGROUND LEACHATE COLLECTION TANKS

POND SHREDDING RUNOFF

GREEN WASTE SHREDDING AREA, CONCRETE OR ASPHALT SURFACE, REFER TO DRAWING KF110816/C17
DETENTION FOND

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DENNIS SMITH
Date of Survey leight Datum AHD

FUTURE ROAD

PLAN

FILENAME: X: \KF110816\Civil\Drawings\DA\KF110816 DA.dwg

Designed M.I.E.Aust. C.P.Eng Drawn A PROUDLOVE MAR 2014 WYLLIE ROAD, KEMBLA GRANGE LEACHATE CONTROL PLAN LOT 10 DP 878167

PROPOSED INDUSTRIAL DEVELOPMENT ISSUED FOR DA APPROVAL 16 Of 17 KF110816 C32

 $\boldsymbol{\varpi}$ PLOTTED BY