



LICENCE NUMBER: L6964/1997/10
LICENCE FILE NUMBER: DEC12715
APPLICATION DATE: 13 October 2011
EXPIRY DATE: 5 September 2013

PREMISES DETAILS

LICENSEE AND OCCUPIER

City of Armadale
7 Orchard Avenue
ARMADALE, WA 6112
ABN: 79 836 269 538

PREMISES

City of Armadale Landfill & Recycling Facility
Lots 185 and 186 on Plan 152818, Lot 1120 on Plan 152811 and Lot 1 on Diagram 12494,
Hopkinson Road
HILBERT, WA 6112

PRESCRIBED PREMISES CATEGORY

Table 1: Prescribed premises category

Category number*	Category Description*	Category Production or Design Capacity*	Premises Production or Design Capacity#	Premises Fee Component**
13	Crushing of building material: premises on which waste building or demolition material (for example, bricks, stones, or concrete) is crushed or cleaned.	1 000 tonnes or more per year	5 000 tonnes per year	Not more than 50 000 tonnes per year
62	Solid waste depot: premises on which waste is stored, or sorted, pending final disposal or re-use.	500 tonnes or more per year	100 000 tonnes per year	More than 5000 tonnes per year
64	Class II or III putrescible landfill site: premises on which waste (as determined by reference to the waste type set out in the document entitled "Landfill Waste Classification and Waste Definitions 1996" published by the Chief Executive Officer and as amended from time to time) is accepted for burial.	20 tonnes or more per year	100 000 tonnes per year	More than 50 000 but not more than 100 000 tonnes per year

* From Schedule 1 of the Environmental Protection Regulations 1987

From application

** From Schedule 4 of the Environmental Protection Regulations 1987

This Environmental Assessment Report (EAR) has been drafted for the purposes of detailing information on the management and mitigation of emissions and discharges from the prescribed premises. The objective of the EAR is to provide a risk assessment of emissions and discharges,



and information on the management of other activities occurring onsite which are not related to the control of emissions and discharges from the prescribed premises activity. This does not restrict the Department of Environment and Conservation (DEC) to assessing only those emissions and discharges generated from the activities that cause the premises to become prescribed premises.

Basis of Assessment

The City of Armadale Landfill and Recycling Facility has been assessed as a "prescribed premises" under categories 13, 62 and 64, within Schedule 1 of the *Environmental Protection Regulations 1987*.

The premises currently holds a category 64, class II putrescible landfill licence. The City of Armadale also operates a transfer station, sorting and recycling facility and crushing of building material at the premises. The necessary infrastructure and equipment required to carry out these additional activities are located on site and no further works are required. The licence has been amended to capture all of the prescribed activities undertaken at the premises.

Most of the additional conditions relate to fire management and the crushing of building material. Dust conditions have been updated and asbestos management conditions included. The licensee will be required, via licence condition to submit an Asbestos Management Plan. Redundant conditions have been removed.

1.0 BACKGROUND

1.1 GENERAL COMPANY DESCRIPTION

The City of Armadale is the owner and operator of the Landfill and Recycling Facility. The City purchased the site in 1974 and commenced landfilling operations in 1975.

The City of Armadale is proactive in implementing recycling and waste diversion activities to optimise waste management activities on site by increasing recycling activities on site and reducing waste to landfill.

1.2 LOCATION OF PREMISES

The Landfill and Recycling Facility is located at Lots 185 and 186 on Plan 152818, Lot 1120 on Plan 152811 and Lot 1 on Diagram 12494, Hopkinson Road HILBERT, WA 6112 (suburb previously known as Brookdale) as depicted in attachment 1.

The closest sensitive residential receptor is located south, approximately 360 metres from the active landfill area. It is a house on a large 2 ha block. For class II putrescible landfills, the EPA recommends a separation distance of 500 metres for subdivisions and 150 metres for single residences; the separation distance for crushing of building materials should be 1000 metres and solid waste depot 200 metres.

The site was previously cleared of native vegetation and used as a clay extraction pit. The clay soil is of sufficiently low permeability to be suitable as a landfill liner without the need for any additional compaction.

The north-west corner of the site contains a stormwater drain which flows to the Birriga Main Drain. Only uncontaminated stormwater is directed to this drain.

Contaminated surface water runoff is directed to the leachate collection system located in the central low point of the site.



According to the Department of Water Groundwater Atlas, the depth to groundwater at the active landfilling area is approximately 3 metres and approximately 7 meters at the recycling centre.

1.3 PROCESS DESCRIPTION

The City of Armadale is currently landfilling the premises. The landfill site has 10 years life at its current filling rate.

Since 2000, the City of Armadale has increased its efforts to divert waste from landfill. Approximately 37% of the waste stream is diverted from landfill.

The site currently operates the following waste diversion facilities at the premises;

- green waste processing area;
- dismantling of E-waste;
- separation of recyclable materials;
- "Drop 'N' Shop" Reuse Centre; and
- sorting and crushing of construction materials.

1.4 REGULATORY CONTEXT

1.4.2 Part V Environmental Protection Act 1986, Environmental Management

A search of DEC's Incident Complaint Management System reveals 6 complaints from the landfill site. The most recent complaint was a report about a pile of crushed asbestos on 26 September 2011. This stockpile was tested and did not contain asbestos. A fire occurred 12 March 2010, 3 odour complaints on 25 August 2008, 13 August 2008 and 7 March 2006 and a late monitoring report on 5 December 2005.

The premises is currently licensed as a class II putrescible landfill. Other activities being undertaken at the premises which also require licensing are;

- crushing of construction waste; and
- solid waste depot

DEC required the City of Armadale to submit a Fire Management Plan following the fire that occurred on 12 March 2010. The Fire Management and Operational Plan has been submitted and comments sought from FESA, who had no comment. A licence condition will be added so that fire is managed in accordance with the plan.

As the City is crushing building material on the premises, the City is required to submit an Asbestos Management Plan and Sampling and Analysis Procedure to ensure asbestos is not crushed, stockpiled and reused.

1.4.3 Other Decision Making Authorities' Legislation which applies

FESA administer the Bushfires Act 1954

Department of Health administer the Health Act 1911

Department of Water administer the Rights in Water Irrigation Act 1914

Waste Authority (DEC), Waste Avoidance and Resource Recovery Act 2007

Contaminated Sites Section (DEC) Contaminated Sites Act 2003.

1.4.4 Rights in Water Irrigation Act 1914

The property owners extract groundwater and may require a Groundwater Licence (GWL) under the *Rights in Water Irrigation Act 1914*.

1.4.5 Local Government Authority



The City of Armadale own and operates the Landfill and Recycling Facility. The City is also responsible for administering the functions of local government such as planning, building and health issues. The City also has delegated authority to administer parts of the Environmental Protection Act 1986, Health Act 1911 and Bushfires Act 1954.

2.0 STAKEHOLDER AND COMMUNITY CONSULTATION

SUBMISSIONS RECEIVED DURING 21 DAY PUBLIC COMMENT PERIOD

The Application for Licence details for this facility was advertised in the West Australian newspaper on 8 September 2008 as a means of advising stakeholders and to seek public comments. No submissions were received.

3.0 EMISSIONS AND DISCHARGES RISK ASSESSMENT

DEC considers that conditions should focus on regulating emissions and discharges of significance. Where appropriate, emissions and discharges which are not significant should be managed and regulated by other legislative tools or management mechanisms.

The following section assesses the environmental risk of potential emissions from the City of Armadale Landfill and Recycling Facility. In order to determine the site's appropriate environmental regulation, an emissions and discharges risk assessment was conducted of the City of Armadale Landfill and Recycling Facility using the environmental risk matrix outlined in Appendix A. The results of this are summarised in Table 2.

Table 2: Risk assessment and regulatory response summary table.

Risk factor	Significance of emissions	Socio-Political Context of Each Regulated Emission	Risk Assessment	DEC Regulation (EP Act - Part V)	EAR Reference	Other management (legislation, tools, agencies)
Air emissions (point source)	Not applicable. No point source emissions from this premises.	N/A	N/A	LIC – no conditions		Environmental Protection Act 1986.



Air emissions (fugitive)	<p>3. It is anticipated that portions of the landfill are under anaerobic conditions and release methane and carbon dioxide into the atmosphere. On-site observations and an absence of landfill gas odour conclude that gas emissions are not significant. Control measure used to manage potential odour are:</p> <ul style="list-style-type: none"> -final cover should be a minimum of 1 metre to allow oxidation of gases prior to release into the atmosphere. - buffer distance of 35m <p>Fire is an issue at this premises. The most recent fire was on 12 March 2010. The City has since submitted a fire management plan</p>	<p>Low. DEC has not received any complaints regarding landfill gases at the premises, however there is potential for community concern if the landfill is not capped appropriately. The result may be odour from gases other than methane and carbon dioxide and plant deaths.</p>	<p>C. Gas/air monitoring and capture may be required in the future as methane and carbon dioxide are colourless and odourless gases and site observations are not adequate.</p>	LIC - Conditions		<p>Environmental Protection Act 1986, Environmental Protection (Unauthorised Discharges) Regulations 2004, Premises Fire Management Plan, Premises Operational Management Plan, Premises Post Closure Management Plan.</p>
Dust emissions	<p>2. The site contains 1 km of unsealed road. A water cart is used to manage dust. It is used to wet the roads to prevent the generation of dust. Dustex is used on permanent roads and exposed areas. Crushing and mulching also has the potential to generate dust. The material is wet down prior to processing and stockpiles are sprayed by watercart as required.</p>	<p>Low. Dust has the potential to cause community concern if not managed appropriately.</p>	<p>D. Management of landfill activities, management of crushing activities.</p>	LIC – Conditions		<p>Environmental Protection (Unauthorised Discharges) Regulations 2004</p>
Odour emissions	<p>3. The major source of odour is from the putrescible landfill, if the material is not covered in a timely manner. DEC last received an odour complaint on 25 August 2008. The cause of the odour was the waste was tipped in the wrong location. A buffer of 35 meters should be maintained at all times to prevent odour affecting residents.</p>	<p>Low. DEC has previously received 3 odour complaints regarding the putrescible landfill. The most recent complaint was in 2008.</p>	<p>C. Standard odour condition, landfill management condition.</p>	LIC-Conditions		<p>Environmental Protection Act 1986, Health Act 1911, City of Armadale Health Local Laws.</p>



Noise emissions	2. The major source of noise at the site is from the crushing and mulching operations. Currently 5000 tonnes of material is crushed per year with no complaints lodged to the DEC. The City of Armadale have plans to increase this amount to 20 000 tonnes per year. Such an increase would require a works approval, noise monitoring/modelling and a noise management plan to ensure noise does not become an issue.	Low. DEC has not received noise complaints about this premises, however, there is potential if crushing and mulching activities significantly increase	D. The noise regulations are sufficient in regulating noise on-site. Increase in throughput would require reassessment and works approval.	LIC- No conditions		Environmental Protection (Noise) Regulations 1997.
Light emissions	Not significant. Light is not an issue of concern at this premises.	N/A	N/A	LIC- No conditions		Australian Standard 1158: Lighting for Roads and Public Spaces
Discharges to water	2. The only discharge to water is the discharge of uncontaminated stormwater to the stormwater drainage system. The water discharges to the Birriga Main Drain.	No community interest or concern.	D. Groundwater monitoring required ensuring contaminants do not enter the groundwater.	LIC - Condition stating that only uncontaminated Stormwater is to be discharged		Environmental Protection (Unauthorised Discharges) Regulations 2004
Discharges to land	3. The primary activity undertaken at this premises is discharging solid waste to land, as a result, leachate is produced and directed to the leachate collection system which is reused and evaporated on-site.	Low. Potential for community concern if leachate is not managed appropriately.	C. condition for leachate management.	LIC -		Environmental Protection (Unauthorised Discharges) Regulations 2004
Solid / liquid wastes	Landfill: 3. Solid waste is accepted onto the site. No liquid waste is accepted on site.	Low. Potential for community concern if windblown waste is not managed.	C. Condition for windblown waste and acceptance criteria.	LIC - Conditions		Environmental Protection (Controlled Waste) Regulations 2004, Litter Act 1979 (DEC), Health (Asbestos) Regulations 1992 (DOH), Landfill Waste Classification and Waste Definitions 1996, Guidelines of Acceptance of Solid Waste to Landfills 2001 (DEP), Draft Silting, Design,
	Solid Waste Depot: 1. All recycled materials are separated and placed into the appropriate bins.	Low. Community concern relating to the storage of asbestos.	D. Asbestos condition.	LIC - Conditions		



	Crushing: 3. Brick rubble, concrete, sand and fibro-cement is screened and crushed for road base and cover material. There is a high risk of asbestos contamination. An asbestos management plan and asbestos testing is required for the crushed stockpiles.	Low. 26/9/11 DEC received a complaint from a concerned member of the public that a 5 – 6 metre pile of asbestos had been crushed and stockpiled. The stockpile was tested for asbestos and results came back negative.	C. Asbestos conditions, Asbestos Management Plan	LIC - Conditions		Operation, and Rehabilitation of Landfills 2005 (DOE)
Hydrocarbon/chemical storage	1. The premises stores approximately 4500 litres of diesel, 500 litres of oil and lubricants (not waste) and a small quantity of hazardous household waste. Hydrocarbons and chemicals are stored within a bunded area. The household hazardous waste is removed from the premises by a controlled waste carrier when required.	Low. If not stored appropriately, hydrocarbons and chemicals may contaminate the site.	E. Standard containment conditions.	LIC – Standard conditions		Dangerous Goods storage licence and relevant legislation (DMP)
Native vegetation clearing	Not significant. This premises does not contain any native vegetation. The site was previously cleared for clay extraction.	N/A	N/A	LIC – No conditions		Environmental Protection Act 1986.
Contaminated site identification	2. This premises has been classified as possibly contaminated, further investigation required. The licensee currently undertakes biannual groundwater monitoring at the premises from 4 groundwater monitoring bores. Monitoring results indicate exceedances of the Freshwater, Drinking water and Irrigation Guidelines for certain ions and physical parameters.	Low. Contamination has the potential to enter the groundwater and affect groundwater supplies if not managed appropriately	D. On-going groundwater monitoring required. Separation distances.	LIC - Conditions		Contaminated Sites Act 2003 (DEC), Tenement Conditions and Closure Plan (DOC)

4.0 GENERAL SUMMARY AND COMMENTS

The City of Armadale Landfill and Recycling Facility has been operating a Class II putrescible landfill since 1975. The solid waste depot and crushing of building materials are consequent to the landfilling activities and the aim to reduce the amount of waste being landfilled.

Currently approximately 37% of the waste received on-site is being diverted away from landfill and recycled.



The City of Armadale applied to amend their licence to capture the activities additional to Category 64 Class II putrescible landfill currently being undertaken at the premises. These activities include the crushing of building material and operation of a solid waste depot.

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26 April 2012

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APPENDIX A: EMISSIONS AND DISCHARGES RISK ASSESSMENT MATRIX

Table 3: Measures of Significance of Emissions

Emissions as a percentage of the relevant emission or ambient standard		Worst Case Operating Conditions (95 th Percentile)			
		>100%	50 – 100%	20 – 50%	<20%*
Normal Operating Conditions (50 th Percentil	>100%	5	N/A	N/A	N/A
	50 – 100%	4	3	N/A	N/A
	20 – 50%	4	3	2	N/A
	<20%*	3	3	2	1

*For reliable technology, this figure could increase to 30%

Table 4: Socio-Political Context of Each Regulated Emission

		Relative proximity of the interested party with regards to the emission				
		Immediately Adjacent	Adjacent	Nearby	Distant	Isolated
Level of Community Interest or Concern*	5	High	High	Medium High	Medium	Low
	4	High	High	Medium High	Medium	Low
	3	Medium High	Medium High	Medium	Low	No
	2	Low	Low	Low	Low	No
	1	No	No	No	No	No

Note: These examples are not exclusive and professional judgement is needed to evaluate each specific case

*This is determined by DEC using the DEC "Officer's Guide to Emissions and Discharges Risk Assessment" May 2006.

Table 5: Emissions Risk Reduction Matrix

		Significance of Emissions				
		5	4	3	2	1
Socio-Political Context	High	A	A	B	C	D
	Medium High	A	A	B	C	D
	Medium	A	B	B	D	E
	Low	A	B	C	D	E
	No	B	C	D	E	E

PRIORITY MATRIX ACTION DESCRIPTORS

A = Do not allow (fix)

B = licence condition (setting limits + EMPs - short timeframes) (setting targets optional)

C = licence condition (setting targets + EMPs - longer timeframes)

D= EIPs, other management mechanisms/licence conditions (monitoring/reporting)/other regulatory tools

E = No regulation, other management mechanisms

Note: The above matrix is taken from the DEC Officer's Guide to Emissions and Discharges Risk Assessment May 2006.



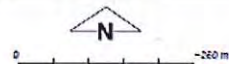
ATTACHMENT 1: Plan of Premises



LEGEND

- Swan River Trust Act, Swan River Trust Management Area
- / Road Centrelines

Perth Metropolitan Central
20cm Orthomosaic -
Landgate 2007



Scale 1:6950
(Approximate when reproduced at Letter)
Geocentric Datum Australia 1984
Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

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