Government of Western Australia
Department of Environment Regulation

Licence

Environmental Protection Act 1986, Part V

Licensee: Shire of Bridgetown Greenbushes

Licence: L6818/1997/11

Registered office: 1-3 Steere Street
BRIDGETOWN WA 6255

Premises address: Bridgetown Waste Management Facility
Lot 903 on Plan 189961
Bridgetown – Boyup Brook Road
BRIDGETOWN WA 6255
Being Lot 903 on Plan 189961 as depicted in Schedule 1.

Issue date: Friday, 03 May 2013

Commencement date: Monday, 11 June 2013

Expiry date: Tuesday, 10 June 2036

Prescribed premises category
Schedule 1 of the *Environmental Protection Regulations 1987*

Category number	Category description	Category production or design capacity	Approved Premises production or design capacity
61	Liquid waste facility: premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.	100 tonnes or more per year	650 tonnes per annual period
61A	Solid waste facility: premises (other than premises within category 67A) on which solid waste produced on other premises is stored, reprocessed, treated, or discharged onto land.	1000 tonnes or more per year	5 000 tonnes per annual period
62	Solid waste depot: premises on which waste is stored, or sorted, pending final disposal or reuse.	500 tonnes or more per year	5 000 tonnes per annual period
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" published by the Chief Executive Officer and as amended from time to time) is accepted for burial.	500 tonnes or more per year	5 000 tonnes per annual period

Conditions
This Licence is subject to the Conditions set out in the attached pages.

Date signed: 22 August 2016
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Caron Goodbourn
Acting Manager Licensing (Waste Industries)
Officer delegated under section 20
of the *Environmental Protection Act 1986*

Contents

Introduction

This Introduction is not part of the Licence conditions.

DER's industry licensing role
The Department of Environment Regulation (DER) is a government department for the state of Western Australia in the portfolio of the Minister for Environment. DER's purpose is to advise on and implement strategies for a healthy environment for the benefit of all current and future Western Australians.

DER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

Licence requirements
This Licence is issued under Part V of the Act. Conditions contained within the Licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licensee the intention is not to replicate them in the licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instrument. Legislation can be accessed through the State Law Publisher website using the following link:
http://www.slp.wa.gov.au/legislation/statutes.nsf/default.html

For your Premises relevant statutory instruments include but are not limited to obligations under the:

(a) *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.

(b) *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.

(c) *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.

You must comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply.

Licence holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

Licence fees
If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer be valid and you will need to apply for a new licence for your Premises.

Ministerial conditions
If your Premises has been assessed under Part IV of the Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

Premises description and Licence summary
Applications to amend Works Approval W5677/204/1 (Works Approval) and Licence L6818/1997/11 (Licence) have been submitted by the Shire Bridgetown-Greenbushes (Licensee) for the construction and operation of an existing Prescribed Premises. The amendment applications are for the Bridgetown Waste Management Facility situated within Lot 903 on Plan 189961 Bridgetown – Boyup Brook Road, Bridgetown, Western Australia (Premises).

The amendment applications have been assessed concurrently within the Decision Document.

The Licensee is seeking approval through the Works Approval amendment to construct landfill cell 2 which will form a contiguous extension of the previously constructed Works, being landfill cell 1 and the associated leachate collection system and pond (Works Approval Application).

The Licensee is seeking approval through the Licence amendment to (1) operate the category 64 landfill cell 1 and the leachate pond (constructed under the Works Approval); (2) operate the category 61 liquid waste facility until 31 December 2016; (3) include existing Category 62 solid waste depot operations in the Licence; and (4) transfer the existing groundwater monitoring improvement conditions from the Works Approval to the Licence (Licence Application).

Premises operations
The landfill has operated for at least 17 years at the Premises and comprises of the following prescribed activities:

- The liquid waste facility (LWF) comprises of an inter-connected pond system located adjacent to the north and upslope of the historic landfill. The LWF is constructed using insitu unlined soils.
- The solid waste facility (SWF) comprises of a periodic green waste mulching operation. Mulched green waste is used for cover material over inactive areas of the landfill and to suppress dust.
- The solid waste depot (SWD) activities are undertaken on a bituminised surface and facilities were constructed under Works Approvals W2353/1998/1 and W2920/1998/1.
- Landfilling activities are now operating within the easterly located cell 1 and the proposed future cell 2 which will incorporate a contiguous leachate collection and drainage layer within the Pallid Zone clays and direct leachate into the leachate pond. Final waste placement and contouring is occurring in the historic landfilling area which was managed using the local soils with no additional controls or liners. All areas potentially subject to landfilling are currently referred to as the active landfill area. A life of landfill post closure plan (LPCP) was developed by the Licensee in 2012. The LPCP proposed a final landfill profile which identified additional cells and the need for additional drainage and stormwater controls to help control erosion on the elevated batters. Approval has not been granted at this time for works and operations at the Premises undertake landfilling beyond cells 1 and 2 or to the profile indicated within the LPCP.

Granting of Licence (L6818/1997/11) amendment

The amended Licence is the result of an amendment sought by the Licensee and is granted with additional amendments justified within this Decision Document. The amendments to the Licence are:

- Addition and amendment of terms for the accurate interpretation of the Conditions of the Licence.
- Administrative amendments including chronological numbering of conditions, accurate and consistent use of terminology and citation, removal of redundant text and conditions and to fix errors in nomenclature.
- Additional conditions to address the risk of fugitive emissions containing asbestos.
- Approval to operate the landfill cell 1 and the leachate pond with Conditions.
- Approval to operate the liquid waste facility until 31 January 2017 with Conditions.
- Approval to undertake solid waste depot operations with Conditions.
- Approval to undertake solid waste facility operations (green waste mulching) with Conditions.
- Additional premises operation, monitoring and reporting Conditions.
- Additional improvement Conditions for: (IR1) the installation of additional groundwater monitoring bores; (IR2) the submission of a groundwater monitoring plan validation report; and (IR3) the submission of a final landfill profile and post closure plan.
- Amended and updated Premises maps.
- The transfer of the existing groundwater monitoring and improvement conditions, with amendments, from the Works Approval.

The licences and works approvals issued for the Premises since 03/05/2013 are for:

Instrument log		
Instrument	**Granted**	**Description**
L6818/1997/11	03/05/2013	Licence re-issue
W5677/2014/1	23/07/2015	New works approval granted (additional cell)
W5677/2014/1	01/08/2016	Works approval amended (construction of cell 2)
L6818/1997/11	01/08/2016	Licence amendment (operation of cell 1 and leachate pond)

Severance

It is the intent of these Licence conditions that they shall operate so that, if a condition or a part of a condition is beyond the power of this Licence to impose, or is otherwise *ultra vires* or invalid, that condition or part of a condition shall be severed and the remainder of these conditions shall nevertheless be valid to the extent that they are within the power of this Licence to impose and are not otherwise *ultra vires* or invalid.

END OF INTRODUCTION

Licence conditions

1 General

1.1 Interpretation

1.1.1 In the Licence, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 For the purposes of this Licence, unless the contrary intention appears:

'acceptance criteria' has the meaning defined in Landfill Definitions;

'ACM' means asbestos containing material and has the meaning defined in the document Department of Health 2009, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*, Government of Western Australia;

'Act' means the *Environmental Protection Act 1986;*

'active landfill area' means the area on the Premises approved for the burial of waste, as defined and labelled on the Premises Map in Schedule 1;

'AHD' means the Australian height datum;

'annual period' means the inclusive period from 1 January until 31 December in that year;

'AS/NZS 2031' means the Australian Standard AS/NZS 2031 *Selection of containers and preservation of water samples for microbiological analysis;*

'AS/NZS 5667.1' means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples;*

'AS/NZS 5667.4' means the Australian Standard AS/NZS 5667.4 *Water Quality – Sampling – Guidance on sampling from lakes, natural and man-made;*

'AS/NZS 5667.10' means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of waste waters;*

'AS/NZS 5667.11' means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters;*

'asbestos' means the asbestiform variety of mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals and includes actinolite, amosite, anthophyllite, chrysolite, crocidolite, tremolite and any mixture containing 2 or more of those;

'asbestos fibres' has the meaning defined in the document Department of Health 2009, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*, Government of Western Australia;

'ASTM D5092-04(2010)e1' means the standard ASTM D5092-04(2010)e1 *Standard practice for design and installation of groundwater monitoring wells*;

'averaging period' means the time over which a limit is measured or a monitoring result is obtained;

'BGL' means below ground level;

'CEO' means Chief Executive Officer of the Department of Environment Regulation;

'CEO' for the purpose of correspondence means;

Chief Executive Officer
Department Administering the *Environmental Protection Act 1986*
Locked Bag 33
CLOISTERS SQUARE WA 6850
Email: info@der.wa.gov.au

'clean fill' has the meaning defined in Landfill Definitions;

'Condition' means a condition to which this Licence is subject under Section 62 of the Act, and as set out in this Licence;

'construction and demolition waste' has the meaning defined in Landfill Definitions;

'contaminated solid waste' has the meaning defined in Landfill Definitions;

'controlled waste' has the definition in *Environmental Protection (Controlled Waste) Regulations 2004*;

'DER Asbestos Guidelines' means document titled "Guidelines for managing asbestos at construction and demolition waste recycling facilities", published by the Department of Environment and Conservation, as amended from time to time.

'freeboard' means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point;

'green waste' means waste that originates from flora and which does not contain or has not been treated or coated with, preserving agents, biocides, fire retardants, paint, adhesives or binders;

'hardstand' means a surface with a permeability of 10^{-9} metres/second or less;

'Landfill Definitions' means the document titled "Landfill Waste Classification and Waste Definitions 1996" published by the Chief Executive Officer of the Department of Environment as amended from time to time.

'Licence' means this Licence numbered L6818/1997/11 and issued under the Act;

'Licensee' means the person or organisation named as Licensee on page 1 of the Licence;

'NATA' means the National Association of Testing Authorities, Australia;

'NATA accredited' means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

'Premises' means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Licence;

'putrescible' has the meaning defined in Landfill Definitions;

'Schedule 1' means Schedule 1 of this Licence unless otherwise stated;

'Schedule 2' means Schedule 2 of this Licence unless otherwise stated;

'solid waste' has the meaning defined in Landfill Definitions;

'solid waste depot' means the area on the Premises approved for the storage and sorting of waste, as defined and labelled on the Premises Map in Schedule 1;

'special waste type 1' has the meaning defined in Landfill Definitions;

'special waste type 2' has the meaning defined in Landfill Definitions;

'spot sample' means a discrete sample representative at the time and place at which the sample is taken;

'tipping area' means the location within the active landfill area of the Premises where waste is currently brought for burial; and

'usual working day' means 0800 – 1700 hours, Monday to Friday excluding public holidays in Western Australia.

1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the standard in force from time to time during the term of this Licence.

1.1.4 Any reference to a guideline in the Licence means the version of that guideline in force from time to time, and must include any amendments or replacements to that guideline made during the term of this Licence.

1.2 Premises operation

1.2.1 The Licensee must record and investigate the exceedance of any descriptive or numerical limit specified in any part of section 1.2 of this Licence

1.2.2 The Licensee must only accept waste on to the Premises if:
(a) the waste is of a type listed in Table 1.2.1 or Table 1.2.2; and
(b) the quantity of the waste type accepted is below any quantity limit listed in Table 1.2.1 or Table 1.2.2; and
(c) the waste type meets any specification listed in Table 1.2.1 or Table 1.2.2.

Table 1.2.1: Liquid waste acceptance

Waste type	Quantity limit	Specification
Septage wastes	Combined total of up to 650 tonnes per annual period for wastes accepted under category 61 for disposal.	(i) Liquid waste must only be accepted to the Premises for discharge to the liquid waste facility pond at the discharge point depicted in Schedule 1 and labelled L1. (ii) No liquid waste must be accepted after the 31 January 2017.
Wastes from grease traps		
Fire debris and wash water		

Table 1.2.2: Solid waste acceptance

Waste type	Quantity limit	Specification
Putrescible waste	Combined total of up to 5,000 tonnes per annual period for wastes accepted under category 61A for reprocessing and storage	(i) Only green waste must be accepted.

Table 1.2.2: Solid waste acceptance (cont.)		
Waste type	**Quantity limit**	**Specification**
Inert Waste Type 1	Combined total of up to 5,000 tonnes per annual period for wastes accepted under category 62 for sorting and storage.	(ii) Must not contain visible asbestos or ACM.
Inert Waste Type 2		None specified
Hazardous waste		None specified
Recyclable waste		None specified
Special Waste Type 1		(iii) Only wrapped asbestos must be accepted. (iv) Acceptance must not result in the discharge of ACM or asbestos fibres.
Clean Fill	Combined total of up to 5,000 tonnes per annual period for wastes accepted under category 64 for landfilling.	None specified
Construction and demolition waste		(v) Must not contain visible asbestos or ACM.
Contaminated soil		(vi) Must meet the Class II Landfill Definitions acceptance criteria
Inert Waste Type 1		(vii) Must not contain visible asbestos or ACM. (viii) Must meet the Class II Landfill Definitions acceptance criteria
Inert Waste Type 2		(ix) Must meet the Class II Landfill Definitions acceptance criteria
Putrescible waste		(x) Must meet the Class II Landfill Definitions acceptance criteria

1.2.3 The Licensee must ensure that where waste does not meet the waste acceptance criteria set out in Conditions 1.2.2 it is immediately removed from the Premises.

1.2.4 The Licensee must ensure that all wastes accepted onto the Premises are only subjected to the processes set out in Table 1.2.3 and in accordance with any process limits described in Table 1.2.3.

Table 1.2.3: Waste processing		
Waste type	**Processes**	**Process limits**
All solid waste types	Receipt, handling, associated storage and/ or disposal of waste by landfilling	(a) No waste must be temporarily stored, treated, processed, disposed of or landfilled within 35 metres from the boundary of the Premises. (b) Disposal of waste by landfilling must only take place within the active landfill area as depicted in Schedule 1. (c) The landfill tipping area must not be exposed with: (i) a vertical face exceeding two metres. (ii) a horizontal face exceeding 30 metres. (d) Waste must be levelled and compacted as soon as practicable after it is discharged in layers not greater than 500 mm. (e) Waste must be placed and compacted to ensure all faces are stable and capable of retaining rehabilitation material.

Table 1.2.3: Waste processing (cont.)		
Waste type	**Processes**	**Process limits**
All solid waste types (cont.)	Receipt, handling, associated storage and/ or disposal of waste by landfilling (cont.)	(f) Waste must be landfilled to ensure that the highest point within the active landfill area, including final capping, must not exceed a height of 296 mAHD. (g) Landfill cell 1, including capping must not exceed and final profile slope steeper than 20 degrees. (h) No burning of waste to occur
Putrescible waste	Reprocessing (mulching)	(i) Only green waste to be mulched.
Clean Fill	Receipt, handling, associated storage and disposal of waste by landfilling	None specified
Contaminated soil		(j) Disposed of to landfill the day of acceptance.
Construction and demolition waste		(k) Must not be crushed or screened.
Inert Waste Type 1		None specified
Inert Waste Type 2		(l) Disposed of to landfill the day of acceptance. (m) Tyres must not be landfilled.
Putrescible waste		(n) Disposed of to landfill the day of acceptance.
Inert Waste Type 1	Receipt, handling or storage prior to disposal or transfer off-Premises	None specified
Inert Waste Type 2		None specified
Hazardous waste		(o) Waste oil must only be stored within the waste oil receptacle or storage drums on a hardstand. (p) Paint must not be landfilled at the Premises in liquid form.
Recyclable waste		None specified
Special Waste Type 1		(q) Must only be stored within the solid waste depot. (r) Must be contained such that ACM and asbestos fibres are fully contained and cannot discharge.

1.2.5 The Licensee must ensure that:

(a) cover material is applied to all landfilled waste types in accordance with depth and frequency in Table 1.2.4 and that the cover material is maintained on the waste types; and

(b) sufficient stockpiles of cover are maintained at the Premises at all times.

Table 1.2.4: Cover requirements			
Waste type	**Cover material**	**Depth**	**Frequency**
Clean fill and Inert Waste Type 1	No cover required		
All waste wastes (excluding Clean fill and Inert Waste Type 1)	Type 1 Inert waste or clean fill	150 mm	Continuous cover techniques, no later than the end of the day.
All waste types	Clean fill	1000 mm	Within six months of the completion of landfilling within a cell/ trench.

1.2.6 The Licensee must ensure that the waste types listed in Table 1.2.5 are only stored within the containment infrastructure and in accordance with any infrastructure requirements described in Table 1.2.5

Table 1.2.5: Waste containment infrastructure		
Waste type	**Containment infrastructure**	**Infrastructure requirements**
Leachate	Leachate pond	(a) The HDPE liner must be maintained to achieve a permeability of less than 1 x 10^{-11} m/sec; (b) The HDPE liner must be maintained to be free of leaks and defects; (c) a minimum freeboard of eight hundred (800) millimetres must be maintained; (d) the catchment of the leachate pond must not exceed an area of 6725 m^2; and (e) stormwater runoff must not enter the leachate pond or cause erosion of the pond embankments.
Waste oil	Waste oil receptacle and storage drums	(f) Impervious and maintained to be free of leaks and defects.

1.2.7 The Licensee must manage the liquid waste facility pond such that:
(a) the pond does not overtop;
(b) a minimum freeboard of three-hundred (300) millimetres is maintained
(c) stormwater runoff must not enter the pond or cause erosion of the pond embankments;
(d) vegetation does not grow in the pond embankment or the pond liner; and
(e) a cover of no less than 1000 mm of type 1 inert waste or clean fill must be placed over the entire liquid waste facility by 1 May 2017.

1.2.8 The Licensee must implement control measures to prevent infestations of pests, flies and vermin at the Premises.

1.2.9 The Licensee must maintain a sign at the entrance to the Premises which clearly displays a contact telephone number for information, complaints and notification of fires.

1.2.10 The Licensee must ensure that windblown waste:
(a) does not discharge beyond the Premises boundary; and
(b) is routinely collected to prevent the accumulation of waste within the Premises in bushland, along fences, gates and roads.

1.2.11 The Licensee must ensure that no irrigation or discharge of leachate from the leachate pond occurs at the Premises.

1.2.12 The Licensee must prepare and submit to the CEO an Asbestos Management Plan for the Premises by 1 February 2017. The Asbestos Management Plan must be consistent with the DER Asbestos Guidelines, the Conditions of this Licence and must include:
(a) Identification of where asbestos may be present at the site;
(b) Standard operational procedures for the pre-acceptance,
(c) acceptance and processing of waste and how any asbestos detected at the Premises will be managed;
(d) Identification of each person's roles and responsibilities under the Asbestos Management Plan; and
(e) Procedures for dealing with incidents or emergencies associated with asbestos.

2 Emissions

2.1 Emissions to land

2.1.1 The Licensee must ensure that liquid waste tankered into the Premises is only discharged to the emission point in Table 2.1.1 as depicted on the map in Schedule 1.

Table 2.1.1: Emissions to land

Emission point reference	Description	Source including abatement
Emission point L1	Liquid waste facility pond	Liquid waste tankered into the Premises

2.1.2 The Licensee must not cause or allow emissions to land of the parameter listed in Table 2.1.2 greater than the limits listed in Table 2.1.2.

Table 2.1.2: Emission limits to land

Emission point reference	Parameter	Limit (including units)	Averaging period
Emission point L1	Liquid waste tankered into the Premises (septage wastes, wastes from grease traps and fire debris and wash water)	No more than 650 tonnes per annual period	Annual period

3 Monitoring

3.1 General monitoring

3.1.1 The Licensee must ensure that:
(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
(b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;
(c) all surface water sampling is conducted in accordance with AS/NZS 5667.4;
(d) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
(e) all microbiological samples are collected and preserved in accordance with AS/NZS 2031;
(f) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in the relevant table.

3.1.2 The Licensee must ensure that:
(a) monthly monitoring is undertaken at least 15 days apart; and
(b) quarterly monitoring is undertaken at least 45 days apart.

3.1.3 The Licensee must ensure that all monitoring equipment used on the Premises to comply with the conditions of this Licence is calibrated in accordance with the manufacturer's specifications and the requirements of the Licence.

3.1.4 The Licensee must, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

3.2 Monitoring of emissions to land

3.2.1 The Licensee must undertake the monitoring specified in Table 3.2.1 according to the specifications in Table 3.2.1

Table 3.2.1: Monitoring of emissions to land

Emission point reference	Parameter	Units	Averaging period	Frequency
Emission point L1	Cumulative monthly volume of liquid waste discharged[1]	tonnes	Monthly	Continuous

Note 1: To be calculated using controlled waste tracking forms.

3.3 Monitoring of inputs and outputs

3.3.1 The Licensee must undertake the monitoring in Table 3.3.1 according to the specifications in Table 3.3.1.

Table 3.3.1: Monitoring of inputs and outputs

Input/ Output	Parameter	Units	Averaging period	Frequency
Waste inputs	Liquid waste, clean fill; contaminated soil; hazardous waste; inert waste type 1; inert waste type 1; putrescible waste; green waste; recyclable waste; and special waste type 1	Tonnes	Annual period	Continuous (each load arriving at Premises)
Waste outputs	Waste type as defined in the Landfill Definitions and recyclable waste.			Continuous (each load leaving or rejected from the Premises)

3.4 Process monitoring

3.4.1 The Licensee must undertake the monitoring in Table 3.4.1 according to the specifications in Table 3.4.1

Table 3.4.1: Process monitoring					
Monitoring point reference	**Process description**	**Parameter**	**Units**	**Averaging period**	**Frequency**
SW1	Stormwater western sedimentation pond discharge point	Total nitrogen, ammonia-nitrogen; total phosphorus; Total dissolved solids; total suspended solids; oil and grease; total recoverable hydrocarbons.	mg/L	Spot sample	Monthly when flowing for the period August 2016 until December 2017
		Escherichia coli	cfu/ 100 mL		

3.5 Ambient environmental quality monitoring

3.5.1 The Licensee must undertake the monitoring in Table 3.5.1 according to the specifications in Table 3.5.1.

Table 3.5.1: Monitoring of ambient groundwater quality				
Monitoring point reference and location[1]	**Parameter**	**Units**	**Averaging period**	**Frequency**
MB1, MB2 and MB6	Dissolved oxygen[3]	mg/L	Spot sample	Quarterly
	Electrical conductivity[3]	µS/cm		
	Escherichia coli	cfu/ 100 mL		
	Oxidation/ reduction potential[3]	mV		
	pH[3]	-		
	Standing water level[34]	m(AHD) and mBGL		
	Biochemical oxygen demand; Chloride, fluoride, potassium, sulfate; Total metals: aluminium, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury , nickel, zinc; Total dissolved solids; Total nitrogen, nitrate-nitrogen, nitrite-nitrogen, ammonia-nitrogen; and Total phosphorus, phosphate.	mg/L		
MB3, MB4, MB5, MB7, MB8, MB9, MB10, MB11 andMB12.	All parameters listed for 'MB1, MB2 and MB6' above.		Spot sample	Monthly for the period August 2017 until December 2019

Note 1: Monitoring of the locations is not required in months where the bores are dry.
Note 2: Monitoring of locations MB7 and MB9 must commence in the quarter from February 2017.
Note 3: In-field non-NATA accredited analysis permitted.
Note 4: Monitoring of SWL for the shallow groundwater monitoring bores is not required; being the bores MB3, MB4, MB5, MB8, MB10, MB11 and MB12.

4 Improvements

4.1 Improvement program

4.1.1 The Licensee must complete the improvements in Table 4.1.1 by the date of completion in Table 4.1.1.

Table 4.1.1: Improvement program

Improvement reference	Improvement	Date of completion
IR1	The Licensee must ensure that groundwater monitoring bores are installed at the Premises according to the number and type listed in Table 4.1.2 at the locations depicted in the Premises map in Schedule 1 according to the construction specifications and able to meet the future sampling requirements detailed in Table 4.1.2.	31/03/2017
IR2	The Licensee must submit to the CEO a groundwater monitoring plan verification report which must: (a) Includes the geological profile logs for all groundwater monitoring bores (MB1 through MB12) at the Premises; (b) Contains a detailed and updated conceptual model of the hydrogeology at the Premises supported by: (i) a detailed description of the geology immediately up and down-gradient of the liquid waste facility, landfill cell 1 and leachate pond including any fracture zones identified; (ii) a detailed description of the depth to groundwater across the Premises and an assessment of the groundwater flow regime up and down hydraulic gradient of the liquid waste facility, landfill cell 1, cell 2 and leachate pond Works; (c) Identify the extent to which each groundwater monitoring bore may be able to differentiate potential contamination (leachate) arising from the old landfill cells, the liquid waste facility, new landfill cells 1 and 2 and the leachate pond.	02/01/2018
IR3	The Licensee must submit a final landfill profile and post closure plan for the landfill at the Premises which must include: (a) The proposed final land profile detailed, with surface contours and landfill cell arrangements, by vertical and horizontal profile plans which clearly define the waste profile within the geological profile at the Premises. (b) The stormwater and landfill embankment stability controls that will be used. (c) A geotechnical stability report, certified by a suitably qualified profession engineer, that assesses the stability of the final landfill profile based on an analysis of the geology, stormwater controls, landfill steepness and landfill lining systems at Premises. (d) Contingency options that will be implemented should: (i) groundwater monitoring results find that landfill leachate emissions present an unacceptable risk and that the ongoing acceptance of putrescible waste at the landfill is no longer granted approval; and/ or (ii) stability monitoring find that the landfill is undergoing structural failure. (e) Expected timeframes for the implementation of key stages in the landfill development and emission controls.	03/12/2018

Table 4.1.2: New groundwater monitoring bore specifications			
Groundwater monitoring bore number	**Groundwater monitoring bore type**	**Construction specifications**	**Future sampling requirements**
MB3, MB4 and MB5 (as depicted in Schedule 1)	Replacement shallow groundwater monitoring bore	(a) Constructed in accordance with ASTM D5092-04(2010)e1; (b) Drilled to a depth of two (2) meters into the Pallid Zone clays; (c) Constructed with a: (i) machine-slotted PVC casing screened interval from the top of the Pallid Zone to 1 meter below the ground surface; (ii) two (2) meter blank un-slotted PVC casing with an end cap below the screened interval and within the Pallid Zone clays; (d) Annular space of each bore is sand packed and sealed with a bentonite and cement plug at the surface.	• The two (2) metre blank PVC casing within the Pallid Zone acts as a collection sump for the screened interval; • Bores are to be sampled by using a low-flow pumping technique or disposable bailers; and • Water within bore is to be completely removed from the bore after each sampling event.
MB8, MB10, MB11 and MB12 (as depicted in Schedule 1)	New shallow groundwater monitoring bore		
MB7 and MB9 (as depicted in Schedule 1)	New deep groundwater monitoring bore	(e) Constructed in accordance with ASTM D5092-04(2010)e1.	• Representative samples of groundwater can be obtained within the saprock at the base of the weathered profile.

5 Information

5.1 Records

5.1.1 All information and records required by the Licence must:
- (a) be legible;
- (b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
- (c) except for records listed in 5.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
- (d) for those following records, be retained until the expiry of the Licence and any subsequent licence:
  - (i) off-site environmental effects; or
  - (ii) matters which affect the condition of the land or waters.

5.1.2 The Licensee must complete an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the conditions of the Licence, and any previous licence issued under Part V of the Act for the Premises for the previous annual period.

5.1.3 The Licensee must implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

5.2 Reporting

5.2.1 The Licensee must submit to the CEO an Annual Environmental Report within 90 calendar days after the end of the annual period. The Annual Environmental Report must contain the information listed in Table 5.2.1 in the format or form specified in Table 5.2.1.

Table 5.2.1: Annual Environmental Report

Condition or table (if relevant)	Parameter	Format or form[1]
-	Summary of any limit being exceeded and any action taken.	None specified
Condition 3.1.3	Calibration report	
Condition 3.2.1	Summary of all emissions to land data which must include monthly volumes of liquid waste discharged.	
Condition 3.3.1	Summary of all inputs and outputs monitoring data which must include: (a) data in a table format for the annual period; (b) comment on annual input and output volumetric trends; and (c) the volumetric tonnage conversion rates used for each waste type.	
Condition 3.4.1	Summary of all process monitoring data which must include: (a) data in a table format for the annual period; and (b) comment on annual input and output volumetric trends.	
Condition 3.5.1	Summary of all monitoring data for ambient groundwater quality which must include: (a) data in a table format for the annual period; (b) data in graphical format for trend analysis to include at least the last four years data where available;	
5.1.2	Compliance	AACR
5.1.3	Summary of complaints must include: (a) number and type of complaints received; (b) nature of complaint and complainant details; (c) ambient environmental conditions at the time of complaint; and (d) actions taken to address complaint.	None specified

Note 1: Forms are in Schedule 2.

5.3 Notification

5.3.1 The Licensee must ensure that the parameters listed in Table 5.3.1 are notified to the CEO in accordance with the notification requirements of Table 5.3.1.

Table 5.3.1: Notification requirements

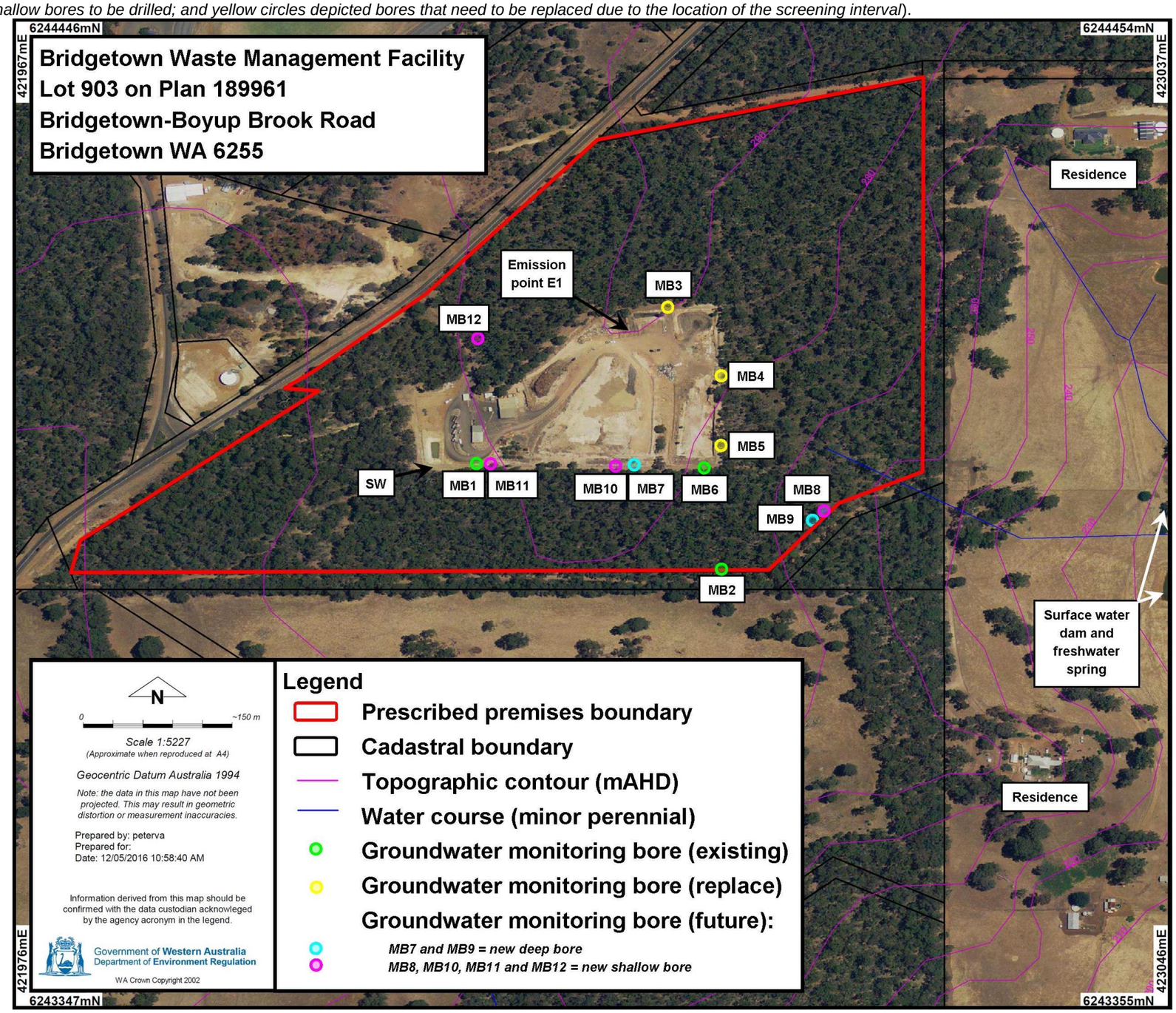
Condition or table (if relevant)	Parameter	Notification requirement	Format or form[1]
-	Breach of any limit specified in a Condition of the Licence	Part A: As soon as practicable and no later than 5pm of the next usual working day. Part B: As soon as practicable	N1
1.2.10	The ignition date and extinguishment time, cause and location of any fires on the Premises	Within 14 days of the fire starting.	None specified

Note 1: Forms are in Schedule 2.

Schedule 1: Maps

Premises map

The Premises is shown in the map below. The red line depicts the Premises boundary. Coloured circles identify the different groundwater monitoring bores (*green circles depict existing deep bores; blue circles depict deep bores to be drilled; purple pink circles depict shallow bores to be drilled; and yellow circles depicted bores that need to be replaced due to the location of the screening interval*).



Premises operations map

The Premises is shown in the map below. The coloured lines identify the waste management areas and key infrastructure as defined by the legend.

Schedule 2: Reporting & notification forms

These forms are provided for the proponent to report monitoring and other data required by the Licence. They can be requested in an electronic format.

ANNUAL AUDIT COMPLIANCE REPORT PROFORMA

SECTION A

LICENCE DETAILS

Licence Number:	Licence File Number:
Company Name: Trading as:	ABN:
Reporting period: _____ to _____	

STATEMENT OF COMPLIANCE WITH LICENCE CONDITIONS

1. Were all conditions of the Licence complied with within the reporting period? (please tick the appropriate box)

Yes ☐ Please proceed to Section C

No ☐ Please proceed to Section B

Each page must be initialled by the person(s) who signs Section C of this Annual Audit Compliance Report (AACR).

Initial:

SECTION B

DETAILS OF NON-COMPLIANCE WITH LICENCE CONDITION.

Please use a separate page for each Licence condition that was not complied with.

a) Licence condition not complied with:	
b) Date(s) when the non compliance occurred, if applicable:	
c) Was this non compliance reported to DER?:	
☐ Yes ☐ Reported to DER verbally Date _____ ☐ Reported to DER in writing Date _____	☐ No
d) Has DER taken, or finalised any action in relation to the non compliance?:	
e) Summary of particulars of the non compliance, and what was the environmental impact:	
f) If relevant, the precise location where the non compliance occurred (attach map or diagram):	
g) Cause of non compliance:	
h) Action taken, or that will be taken to mitigate any adverse effects of the non compliance:	
i) Action taken or that will be taken to prevent recurrence of the non compliance:	

Each page must be initialled by the person(s) who signs Section C of this AACR

Initial:

SECTION C

SIGNATURE AND CERTIFICATION

This Annual Audit Compliance Report (AACR) may only be signed by a person(s) with legal authority to sign it. The ways in which the AACR must be signed and certified, and the people who may sign the statement, are set out below.

Please tick the box next to the category that describes how this AACR is being signed. If you are uncertain about who is entitled to sign or which category to tick, please contact the licensing officer for your premises.

If the licence holder is		The Annual Audit Compliance Report must be signed and certified:
An individual	□	by the individual licence holder, or
	□	by a person approved in writing by the Chief Executive Officer of the Department of Environment Regulation to sign on the licensee's behalf.
A firm or other unincorporated company	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A corporation	□	by affixing the common seal of the licensee in accordance with the *Corporations Act 2001*; or
	□	by two directors of the licensee; or
	□	by a director and a company secretary of the licensee, or
	□	if the licensee is a proprietary company that has a sole director who is also the sole company secretary – by that director, or
	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A public authority (other than a local government)	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
a local government	□	by the chief executive officer of the licensee; or
	□	by affixing the seal of the local government.

It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular. There is a maximum penalty of $50,000 for an individual or body corporate.

I/We declare that the information in this annual audit compliance report is correct and not false or misleading in a material particular.

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

DATE: _____/_____/_____

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

DATE: _____/_____/_____

SEAL (if signing under seal)

Licence: L6818/1997/11 Licensee: Shire of Bridgetown Greenbushes
Form: N1 Date of breach:

Notification of detection of the breach of a limit.

These pages outline the information that the operator must provide.
Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

Notification requirements for the breach of a limit	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of Shire of Bridgetown Greenbushes	
Date	

Government of Western Australia
Department of Environment Regulation

Decision Document

Environmental Protection Act 1986, Part V

Proponent: Shire of Bridgetown Greenbushes

Licence: L6818/1997/11

Work Approval: W5677/2014/1

Registered office: 1-3 Steere Street
BRIDGETOWN WA 6255

Premises address: Bridgetown Waste Management Facility
Lot 903 on Plan 189961
Bridgetown – Boyup Brook Road
BRIDGETOWN WA 6255
Being Lot 903 on Plan 189961 as depicted in Schedule 1.

Licence L6818/1997/11:

Issue date: Friday, 03 May 2013

Commencement date: Monday, 11 June 2013

Expiry date: Tuesday,10 June 2036

Works Approval W5677/2014/1:

Issue date: Friday, 24 July 2015

Commencement date: Monday, 27 July 2015

Expiry date: Monday, 26 July 2021

Decision

Based on the assessment detailed in this document the Chief Executive Officer's (CEO) Delegate has decided to issue an amended licence and amended works approval. The CEO Delegate considers that in reaching this decision, they have taken into account all relevant considerations and legal requirements and that the Conditions of the Works Approval and Licence will ensure that an appropriate level of environmental protection is provided.

Decision Document prepared by: Peter van Schoubroeck
Licensing Officer

Decision Document authorised by: Caron Goodbourn
Delegated Officer

Contents

1 Purpose of this Document

This Decision Document explains how the Chief Executive Officer's (CEO) Delegate has assessed and determined the application and provides a record of the CEO Delegate's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this Decision Document is limited to the CEO Delegate's assessment and decision making under Part V of the *Environmental Protection Act 1986*. Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

2 Administrative summary

Administrative details		
Application type	Works Approval ☐ New Licence ☐ Licence amendment ☒ Works Approval amendment ☒	
Activities that cause the premises to become prescribed premises	**Category number(s)**	**Assessed design capacity**
	61	650 tonnes per annual period
	61A	5 000 tonnes per annual period
	62	5 000 tonnes per annual period
	64	5 000 tonnes per annual period
Works Approval W5799/2014/1		
Application verified Application fee paid	Date: 13/05/2014 Date: 06/06/2014	
Licence L6818/1997/11		
Application verified Application fee paid	Date: 25/02/2013 Date: 14/03/2013	
Works Approval has been complied with Compliance Certificate received	Yes ☒ (partial) Yes ☒	
Commercial-in-confidence claim	Yes ☐ No☒	
Commercial-in-confidence claim outcome	None applicable	
Is the proposal a Major Resource Project?	Yes ☐ No☒	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986*?	Yes ☐ No ☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Is the proposal subject to Ministerial Conditions?	Yes ☐ No ☒	Ministerial statement No: EPA Report No:
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the *Environmental Protection Act 1986*)?	Yes ☐ No ☒ Department of Water consulted Yes ☒ No☐	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes ☐ No☒		
Is the Premises subject to any EPP requirements? Yes ☐ No ☒		

3 Executive summary of proposal and assessment

The Shire Bridgetown-Greenbushes (Licensee) submitted applications to amend Works Approval W5677/204/1 (Works Approval) and Licence L6818/1997/11 (Licence) for the Bridgetown Waste Management Facility (BWMF)~~Applications to amend Works Approval W5677/204/1 (Works Approval) and Licence L6818/1997/11 (Licence) have been submitted by the Shire Bridgetown-Greenbushes (Licensee) for the construction and operation of an existing Prescribed Premises~~. The BWMF is located ~~amendment applications are for the Bridgetown Waste Management Facility situated~~ within Lot 903 on Plan 189961 Bridgetown – Boyup Brook Road, Bridgetown, Western Australia (Premises).

This Decision Document is based on an assessment of the Licensee's applications, received on 11 March 2016 (Works Approval Application) and 22 April 2016 (Licence Application~~)), for amendments to the Part V *Environmental Protection Act 1986* Works Approval and Licence~~. The amendment applications have been assessed concurrently within this Decision Document.

The amendment applications are assessed with regards to the prescribed activities at the Premises:

- Category 61: Liquid waste facility accepting up to 650 tonnes per annual period.
- Category 61A: Solid waste facility accepting up to 5000 tonnes per annual period.
- Category 62: Solid waste depot accepting up to 5000 tonnes per annual period.
- Category 64: Class II putrescible landfill accepting up to 5000 tonnes per annual period.

The Licensee is seeking approval through an amendment of the Works Approval ~~amendment~~ to construct landfill cell 2 which will form an ~~contiguous~~ extension of the previously constructed ~~Works, being~~ landfill cell 1, ~~and the associated~~ leachate collection system and pond (Works Approval Application).

The Licensee is seeking approval through an amendment of the Licence ~~amendment~~ to: (1) operate the category 64 landfill cell 1 and the leachate pond ~~(constructed under the Works Approval)~~; (2) operate the existing category 61 liquid waste facility until 31 December 2016; (3) approve~~include~~ existing Category 62 solid waste depot operations within the Licence; and (4) transfer the existing groundwater monitoring improvement conditions from the Works Approval to the Licence (Licence Application).

~~The applications address the ongoing operations at the Premises which are assessed with regards to the following prescribed activities:~~

- ~~Category 61: Liquid waste facility accepting up to 650 tonnes per annual period.~~
- ~~Category 61A: Solid waste facility accepting up to 5000 tonnes per annual period.~~
- ~~Category 62: Solid waste depot accepting up to 5000 tonnes per annual period.~~
- ~~Category 64: Class II putrescible landfill accepting up to 5000 tonnes per annual period.~~

This Decision Document identifies the ~~emission~~ risks arising from potential emissions during the ~~Works, operation of the Works and~~construction and operation of the prescribed activities at the Premises. This Decision Document details the ~~emission~~ controls proposed by the Licensee and the regulatory controls considered necessary to address ~~based on~~ the potential risks from emission ~~risks~~. In summary, ~~and~~ subject to the regulatory controls and Conditions justified within this Decision Document for the Works Approval and Licence~~, the Licensee has established that~~:

- the construction of landfill cell 2 is approved~~acceptable~~;
- and future operation[1] of landfill cell 2 will likely be ~~acceptable~~ approved subject to ~~Conditions that will inform and be informed by future risk assessments~~the ongoing effectiveness of the leachate controls;
- the operation of the liquid waste activities is approved ~~acceptable to continue at the Premises~~ until the 31 January 2017;
- the operation of the solid waste/ green waste mulching activities is approved~~acceptable at the Premises~~;
- the operation of the solid waste/ transfer station activities is approved~~acceptable at the Premises~~; and

- the operation[1] of the landfilling activities within cell 1 is approved subject to the effectiveness of the leachate controls~~acceptable at the Premises subject to future risk assessments informed by future groundwater monitoring results~~.

Note 1: The ~~continuing~~ operation of landfill cells 1 and 2 are~~is~~ subject to periodic review of the groundwater monitoring results; the groundwater monitoring data will inform the risk assessment for *leachate emissions (landfill)*~~be considered as part of periodic risk assessments and reviews of approvals for the landfill operations~~.

All Conditions regarding groundwater monitoring have been removed from the Works Approval and are now addressed within the Licence.

Leachate emissions and landfill stability are considered to have residual risk ratings of moderate and high respectively. Due to the risk of potential leachate emissions from the landfill and the risks arising from potential failures in the landfill stability a contingency based approach is required for landfilling operations at the Premises. This approach will be informed by ongoing groundwater monitoring requirements and the outcomes of Condition 4.1.1 improvement reference IR3.~~The potential for leachate emissions from the landfill and the long term stability of the landfill have been identified as the most significant emission risks at the Premises , having residual risk ratings of moderate and high respectively. Conditions specified in the Works Approval and Licence include commitments made by the Licensee and additional Conditions considered necessary to ensure that the emission risks can be adequately controlled.~~ If the ~~landfill~~ risks arising from potential ~~leachate~~ emissions ~~controls~~ are found to not be adequately controlled ~~ly control the emission risk~~ then the risks will be reassessed. ~~the cessation of approval to landfill putrescible waste at the Premises will be considered.~~ Approval to landfill putrescible waste at the Premises may be revoked if the controls for *leachate emissions (landfill)* are found to not be adequate.

~~Due to the risk of potential leachate emissions from the landfill (see the risk assessment *Leachate emissions (landfill)*) and the emission risks arising from potential failures in the landfill stability *(see risk assessment below)* a staged contingency based approach is required for landfilling operations at the Premises. This staged approach will be informed by ongoing groundwater monitoring requirements and the outcomes of improvement reference IR3 (see risk assessment below).~~

Location and siting

The Premises is located about 2.7 kilometres north east of the Bridgetown town site. No relevant policy or planning areas ~~were~~ have been identified. ~~The Premises location and C~~current features of the Premises include:

- Land use: The Premises has operated ~~as a landfill~~ for at least 17 years and resides within land zoned 'State Forest and timber reserves'. Surrounding land use is primarily agricultural. Land to the north and east is generally zoned 'rural', with the adjacent sportsground complex zoned 'State Forest and parks and recreation'. Land to the west and south is zoned a mix of 'special rural' and 'special residential'.
- Topography: The Premises is located ~~with~~ at the southern end of the Darling Plateau on the southern side of a hill. Land at the Premises slopes away from the central northern area (>290 m AHD) on average about 4% to the southwest (~270 m AHD) and more sharply to the south east (~260 m AHD). A ridgeline and landfill mass running north-south through the Premises divides the sites surface drainage and may influence the direction of groundwater flow.
- Geology: The Premises consists of the following ~~substrata composition~~geological layers:
  - Surface laterite/ mottled layer (0-4 mbgl) comprises of~~ing~~ orange/ brown gravel and ferricrete (cemented areas) over~~lying~~ a mixed~~heterogenous~~ silt/ clay layer with variable amounts of mixed fine grained sand and gravel. Channels from tree roots~~Macropores~~ can be present in this layer and may allow ~~act as a conduit allowing~~ groundwater to flow >100 m/day.
  - Pallid layer (~4-25 mbgl) comprises~~ing~~ primarily of low permeability white kaolin clay and small amounts of~~minor~~ sand and~~/~~ gravel ~~components~~.
  - Saprolite layer (~25-30 mbgl) comprises~~ing~~ a thin layer of silty sand and weathered granite. Groundwater can occur within this layer.
  - Bedrock layer (~30 mbgl) of granite rock with localised quartz bands, shearing and joins. Groundwater can occur within bedrock gaps.
- Hydrology:
  - Surface water~~: The Premises~~ drains towards~~into~~ the Hardy Estuary Blackwood River Catchment via local water courses~~tributaries~~. Historically landfilled areas drain to the south west while the land subject to the new landfill cells~~works under W5677/2014/1~~ drain~~s~~ to the south east.
  - Groundwater~~: At the Premises groundwater~~ has been found at depths of approximately 20-25 mbgl within the saprolite layer~~and weathered granite zone~~. ~~Transient perched aquifers~~Groundwater may also temporarily occur within the surface mottled layer above the Pallid layer. T~~ however, t~~he shallow groundwater catchment ~~at the Premises~~ is considered relatively small. No perched groundwater has ~~yet~~ been detected however, the design of the existing groundwater monitoring bore network may not ~~allow monitoring to~~ be effective within this layer. The hydrogeology at the Premises and potential for groundwater is addressed in further detail within the risk assessment *Leachate emissions (landfill)*.

Potential receiving environments and sensitive receptors in the vicinity of the Premises are:

- Groundwater: Local deep ~~groundwater~~ (>20 mbgl) and shallow ~~transient perched aquifers along the top of the Pallid Zone~~ (~1-4 mbgl) groundwater that may express as surface water down slope of the Premises. ~~–~~A spring is known to occur 250 metres east of the Premises boundary. No groundwater abstraction has been identified close to the Premises ~~proximate~~ down hydraulic gradient ~~of the Premises~~.
- Surface water: Surface water (stormwater) ~~originating within the Premises has the potential to~~may enter the adjacent bushland, ~~and~~ travel onto the adjacent private property and enter surface water dams to the west, south and east of the Premises.
- Private residences: ~~Private residences have been i~~dentified on adjacent lots: ~190 metres south west of the Premises and more extending to the west; ~270 metres south east of the Premises; and ~180 and ~370 metres north east of the Premises. The sportsground is located ~200 metres north west of the Premises. The Premises has an internal buffer of between 100 and 300 meters from the boundary to the prescribed activities~~, being re-established following clearing for the construction of the leachate pond~~.
- Flora and fauna: ~~Native vegetation w~~Within the Premises and adjacent bushland is~~,~~ vested with the Department of Lands and Department of Parks and Wildlife and includes State Forest 30 to the north (known as Hester State Forest and Hester Conservation Park). ~~One Schedule 2 (*Wildlife Conservation Act 1950 – Wildlife Conservation (Specially Protected Fauna) Notice*~~

~~*for Threatened Fauna*) threatened (endangered) fauna (bird) sighting is identified at the boundary of the Premises.~~

Premises operations

The ~~landfill has operated for at least 17 years at the Premises and comprises of the~~ following prescribed activities occur at the Premises:

- Category 61: The liquid waste facility (LWF) ~~comprises of~~is an inter-connected pond system located ~~adjacent~~ to the north and upslope of the historic landfill. The LWF is constructed using insitu unlined soils.
- Category 61A: The solid waste facility (SWF) involves~~comprises of a~~ periodic green waste mulching ~~operation~~. Mulched green waste is used for cover material over inactive areas of the landfill and to suppress dust.
- Category 62: The solid waste depot (SWD) activities are undertaken on a bituminised surface and facilities which were constructed under ~~W~~works a~~A~~pprovals W2353/1998/1 and W2920/1998/1.
- Category 64: Landfilling activities are now operating within ~~the easterly located~~ cell 1. ~~and the proposed~~ F~~f~~uture cell 2 ~~which~~ will incorporate a contiguous leachate collection and drainage layer ~~within the Pallid Zone clays and~~ that directs leachate through the base of cell 1 into the leachate pond. Final waste placement and contouring is occurring in the historic landfilling area. ~~which was managed using the L~~local soils with no additional ~~controls or~~ liners were used within historical landfill cells. All areas potentially subject to landfilling are currently referred to as the active landfill area. A life of landfill post closure plan (LPCP) was developed by the Licensee in 2012. The LPCP proposed a final landfill profile which identified additional cells and the need for ~~additional~~ drainage and stormwater controls to help control erosion on the elevated batters. ~~Approval has not been granted at this time for works and operations at the Premises undertake l~~Landfilling beyond cells 1 and 2 or to the profile indicated within the LPCP has not been granted approval under the Licence.

Potential emissions and regulatory controls

Risk assessments have been undertaken in this Decision Document (see Decision Table and Appendix A) for the following emission risks:

- ~~Emissions to land (~~leachate irrigation~~);~~ and
- ~~Emissions to land (~~liquid waste facility);
- ~~Fugitive emissions (~~dust; dust – asbestos~~);~~
- ~~Fugitive emissions; (dust);~~
- ~~Fugitive emissions (~~dust – green waste mulching~~);~~
- ~~Fugitive emissions (;~~ landfill gas; ~~);~~
- ~~Fugitive emissions (~~odour~~);~~ and
- ~~Fugitive emissions (~~windblown waste);
- ~~Leachate emissions (~~leachate pond); and
- ~~Leachate emissions (~~leachate pond);
- Noise emissions;
- ~~Potential for emissions (~~landfill fire; and ~~);~~
- ~~Potential for emissions (~~landfill stability);
- Potential for environmental harm (disease, pest and vermin); and
- Stormwater emissions.

No other emissions have been identified as potentially arising at the Premises ~~from construction and operation activities.~~

Appendix B provides a summary of the Conditions of the Works Approval and Licence and the emission risks which they address.

Appendix C provides a summary of the Conditions in the previous Licence version and how they relate to the Condition in the amended Licence.

~~No other emissions have been identified as potentially arising at the Premises from construction and operation activities.~~

Occupation and other approvals

The Premises was vested with the Licensee for the purposes of rubbish disposal site on 23 July 1992. No other approvals of relevance have been identified that limit the legal capacity for the Licensee to undertake the prescribed activities ~~at the Premises~~.

Consultation

Consultation was undertaken with stakeholders as part of the Works Approval W5677/2014/1 application and amendment process. The issues that were raised ~~through that consultation process~~ were considered within the Works Approval and Licence amendment process and are addressed ~~where relevant~~ in the 'Advertisement and consultation table' of this Decision Document.

Granting of Works Approval (W5667/2014/1) amendment

The amended Works Approval is ~~the result of an amendment sought by the Licensee and is granted with additional amendments justified within this Decision Document~~granted approval.

The amendments to the Works Approval are:

- Extension of the expiry date to 26/07/2021 to allow for the construction of cell 2.
- Additional ~~of~~ terms for the accurate interpretation of the Conditions in~~of~~ the Works Approval.
- Additional ~~of~~ construction requirements and specifications for cell 2.
- ~~The t~~Transfer of the ~~previously established~~ groundwater monitoring and improvement Conditions, with amendments, to the Licence.
- ~~Amendments to~~Specification of cell 2 for construction compliance and quality assurance reporting ~~c~~Conditions ~~for construction compliance and quality assurance validation to specify cell 2 Works~~; submission of compliance reporting for cell 1 and the leachate pond has been completed.
- Amend~~ed~~ and update~~d~~ Premises maps and Construction plans.

Granting of Licence (L6818/1997/11) amendment

The amended Licence is ~~the result of an amendment sought by the Licensee and is granted with additional amendments justified within this Decision Document~~granted approval. The amendments to the Licence are:

- Add~~ition~~ and amend~~ment of~~ terms for the accurate interpretation of the Conditions of the Licence.
- Administrative amendments including chronological numbering of conditions, accurate and consistent use of terminology and citation, removal of redundant text and conditions and to fix spelling errors ~~in nomenclature~~.
- Additional conditions to address the risk of fugitive emissions potentially containing asbestos.
- Approve~~al to~~ the operation of ~~e the~~ landfill cell 1 and the leachate pond with Conditions.
- Approve~~al to~~ the operation of~~e~~ the liquid waste facility until 31 January 2017 with Conditions.
- Approve ~~al to undertake~~ solid waste depot operations with Conditions.
- Approve ~~al to undertake~~ solid waste facility operations (green waste mulching) with Conditions.
- Add~~itional premises~~ operati~~ng~~on~~s~~, monitoring and reporting Conditions.
- Add~~itional~~ improvement Conditions for: (IR1) ~~the~~ install~~ation of~~ additional groundwater monitoring bores; (IR2) ~~the~~ submi~~t~~ssion of a groundwater monitoring plan validation report; and (IR3) ~~the~~ submi~~t~~ssion of an updated final landfill profile and post closure plan.
- Amend~~ed~~ and update~~d~~ Premises maps.
- Include ~~The transfer of~~ the existing groundwater monitoring and improvement conditions, with amendments, from the Works Approval.

4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* and DER's 'Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises'. Where other references have been used in making the decision they are detailed in the D~~d~~ecision D~~d~~ocument.

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Interpretation	W1.1.2; and W1.1.4 L1.1.2, L1.1.3 and L1.1.4	**Construction (W5677/2014/1)** Condition 1.1.2 has been amended to include new definitions for the following: • 'Cell 1', 'cell 2' and 'leachate pond' have been defined to differentiate the Works program schedule and construction quality assurance and compliance reporting requirements with regards to Conditions 1.2.1, 1.2.2, 1.2.3, 1.2.4, 2.1.1, 2.1.2, 2.1.3 and 2.1.4. • 'Condition', 'HDPE' and 'Works' have been defined to ensure that the terms used within the amended Conditions of the Works Approval are clear and certain. ~~Condition 1.1.4 in the previous version of the Works Approval has been amended; no code of practice is referred to within the Works Approval or supporting documentation for the Works.~~ **Operation (L6818/1997/11)** ~~Conditions 1.1.2, 1.1.3 and 1.1.4 have been amended to ensure that terminology used within the Licence is referenced to the appropriate definitions where applicable and that any reference to a standard or guideline is to the most current version of that standard or guideline.~~ Definitions under Condition 1.1.2 that are not used within the Licence, including those that were linked to Conditions which have been removed ~~(addressed in the relevant section of the Decision Table below)~~. Additional definitions have been inserted for the following purposes: • To accurately reference waste types and terminology in accordance with the Landfill Definitions. • To accurately define the area approved for relevant prescribed activities (active landfill area, emission point L1 and solid waste depot). • To accurately define the relevant Australian Standard for monitoring requirements. • To accurately reference terms used in the Conditions for controlling the emission risks related to asbestos. Condition 1.1.4 has been inserted to ensure that any reference to a guideline is to the most current version of that guideline (e.g. for asbestos)	General provisions of the *Environmental Protection Act 1986* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
General conditions ~~**General conditions (cont.)**~~	W1.2.1 - W1.2.4 N/A	**Construction (W5677/2014/1)** Condition 1.2.1 has been amended to grant approval for and define the construction requirements listed in Table 1.2.2 for the construction of landfill cell 2. The documents listed in Table 1.2.2 form the Works Approval Application. Condition 1.2.2 has been amended to specify that construction quality assurance must be undertaken for the entire cell 2 Works. Cell 1 and the leachate pond were granted approval for construction under Works Approval W5677/2014/1 on 23 July 2015 and relevant construction quality assurance documentation has been submitted. Cell 2 will not be completed until some years after the operation of cell 1 commences, expected 2021. Subsequently cell 1 construction quality assurance (Condition 1.2.2) and compliance verification (Condition section 2.1) must occur separately under the Works Approval. Construction quality assurance requirements for cell 2 are specified within the document: • *Shire of Bridgetown Greenbushes - Construction quality assurance plan: Construction of earthworks for waste storage cell at Bridgetown landfill site, Bridgetown.* Condition 1.2.3 has been included to specify the minimum construction requirements for cell 2 that address the main emission risks. Condition 1.2.4 has been included to grant approval for minor deviation from the design and construction specifications where the Works are not materially changed and the risk from emissions is not altered. The specifications of Conditions 1.2.1-1.2.4 are addressed in the risk assessment for *Leachate emissions (landfill)* in Appendix A. **Operation (L6818/1997/11)** Licence conditions 1.2.1, 1.2.2, 1.2.3, 1.2.4 and 1.2.5 in the previous version of the Licence have been deleted. No other general conditions of relevance have been identified and the 'general conditions' section of the Licence has been removed. ~~The conditions were removed for the following reasons:~~ ~~Previous condition 1.2.1: was an explanatory statement and not a condition, the intent of the statement is covered by the general provisions of the Act.~~ ~~Previous condition 1.2.2: there is no specified pollution control, monitoring equipment or management system which the condition clearly related to, where infrastructure is required to control or monitor emissions it is specified within conditions under the 'Premises operation' section of the Licence.~~ ~~Previous condition 1.2.3: the provisions of the condition were not clear or enforceable. No substances (dangerous goods or environmentally hazardous materials), not addressed in the amended licence, requiring specific Conditions, have been identified for the prescribed activities~~	General provisions of the *Environmental Protection Act 1986* *Environmental Protection (Unauthorised Discharges) Regulations 2004* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Premises operation ~~**Premises operation (cont.)**~~	N/A L1.2.1 – L1.2.12	**Construction (W5677/2014/1)** There are no specified conditions relating to premises operation in the Works Approval. This Works Approval is for the construction phase of landfill cell 1, cell 2 and the leachate pond only. No approval to accept waste for burial in cell 1 or cell 2 or contain leachate within the leachate pond is granted under Works Approval W5677/2014/1. **Operation (L6818/1997/11)** ~~Licence conditions 1.3.1 through to 1.3.9 in the previous version of the Licence have been deleted or amended; in summary Conditions in the previous version of the Licence have been treated as follows:~~ • ~~Previous condition 1.3.1 has been replaced by Condition 1.2.2.~~ • ~~Previous condition 1.3.2 items (i), (ii) and (iii) have been replaced by Condition 1.2.4 (a), (b) and (c).~~ • ~~—~~ • ~~Previous condition 1.3.2 items (iv), (v) and (viii) have been deleted and are replaced by Condition 1.2.5.~~ • ~~Previous condition 1.3.2 items (vi) and (vii) have been replaced by Condition 1.2.4 (c)(i) and (d) respectively.~~ • ~~Previous condition 1.3.3 (i) and (ii) have been replaced by Condition 1.2.9.~~ • ~~Previous conditions 1.3.4 and 1.3.5 have been replaced by Condition 1.2.10.~~ • ~~Previous condition 1.3.6 has been replaced by Condition 1.2.9.~~ • ~~Previous condition 1.3.7 has been deleted; the condition is not clear or enforceable. The emission risk can be adequately regulated by Condition 1.2.9, the *Environmental Protection (Unauthorised Discharge) Regulations 2004* and the general provisions of the *Environmental Protection Act 1986*.~~ • ~~Previous condition 1.3.8 has been replaced by Condition 1.2.2.~~ • ~~Previous condition 1.3.9 has been replaced by Condition 1.2.9 with amendments. Condition 1.3.9, provisions (iii) and (iv) have been deleted; they were not valid or enforceable.~~ Condition 1.2.1 is linked to and informs the reporting requirements under Condition 5.3.1 for any limit in the licence being breached. Conditions 1.2.2 through to 1.2.13 have been included based on the risk assessments presented within this Decision Document, summarised in Appendix B. Limits under Condition 1.2.2, Table 1.2.2 (a) and (b) define the physical ~~limitations~~restrictions framing the scope of	General provisions of the *Environmental Protection Act 1986* *Environmental Protection (Unauthorised Discharges) Regulations 2004* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		the risk assessments within this Decision Document. A Licence amendment will be considered for the operation of cell 2 at a later date and will consider the submission of construction compliance documentation, a review of groundwater monitoring bore data and reassessment of the risk *Leachate emissions (landfill)*. The Conditions for the operation of cell 2 will likely be the equivalent of those in place for the operation of cell 1.	
Emissions general	N/A N/A	**Construction (W5677/2014/1)** No specified Conditions are considered necessary as Conditions for potential emissions during the construction of cell 2; therefore no Works Approval Conditions are required in this section. **Operation (L6818/1997/11)**<br ~~Amendments to the emission~~All sections and conditions ~~and removal~~ of the emissions section in the previous version of the Licence have been deleted. ~~are for:~~ ~~Sections 2.1-2.4 and 2.8 in the previous licence version have been deleted; the sections contained no conditions.~~ ~~Section 2.5 in the previous licence version has been amended to include conditions 2.1.1 and 2.1.2 based on the risk assessment *Emissions to land (liquid waste facility)* in Appendix A.~~ ~~Conditions 2.6.1 and 2.6.2 have been deleted based on the risk assessment for fugitive dust emissions presented in the Fugitive emissions (dust) section of this Decision Table.~~ ~~Condition 2.7.1 has been deleted based on the risk assessment for fugitive odour emissions presented in the Fugitive emissions (odour) section of this Decision Table.~~	General provisions of the *Environmental Protection Act 1986* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Emissions to land including monitoring	N/A L2.1.1 L2.1.2; and L3.2.1	**Construction (W5677/2014/1)** No emissions to land are requested through the amendment application or granted approval to occur during construction of cell 2, therefore no Works Approval Conditions are required in this section. **Operation (L6818/1997/11)** The liquid waste facility (LWF) is comprised a two interconnected ponds constructed with insitu soils. The risk assessment and supporting analysis has found that the LWF is acting as infiltration pond. No sludge management occurs; this is likely due to the infiltration of the discharged liquid waste. No sludge management infrastructure is located at the Premises. Based on the risk assessment *Emissions to land (liquid waste facility)* in Appendix A Conditions 2.1.1 and 2.1.2 have been included in the Licence in restrict the discharge of liquid waste. In addition~~, in conjunction with~~ Condition 1.2.7 requires physical ~~to help~~ controls ~~the discharge~~ on the LWF and ~~and~~ Condition 3.2.1 requires ~~to monitor~~ the volume of liquid waste discharged to be monitored.	General provisions of the *Environmental Protection Act 1986* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Fugitive emissions (dust, green waste mulching, asbestos, landfill gas and windblown waste)	N/A N/A	**Construction (W5677/2014/1)** Potential fugitive emissions during construction of cell 2 will be limited to dust. The risk of dust emissions has been assessed in conjunction with the risk of dust emissions during operation below. No other fugitive emissions are expected to occur during construction of cell 2. **Operation (L6818/1997/11)** Emission description: *Emission:* Dust from machinery and vehicle movements, earthworks and waste handling during construction and operation is possible. *Impact:* Reduced local air quality from airborne particulates is possible, particularly during the drier, summer months with potential annoyance from nearby sensitive receptors. Residences are located between 190 and 370 m form the Premises and are buffered by native vegetation. The sportsground is located ~200 metres north west of the Premises. Interference with native flora and fauna (ecosystem services) is also possible. *Controls:* Visual monitoring, vehicle speed restrictions, controlled access, partially sealed and covered roads, water carts and use of suppressing materials (mulched green waste and inert waste). Risk assessment: *Consequence:* Minor *Likelihood:* Possible *Risk Rating:* Moderate Regulatory Controls: It is considered that the provisions of Section 49 of the *Environmental Protection Act 1986* are sufficient to regulate dust ~~and smoke emissions~~. ~~Conditions 2.6.1 and 2.6.2 in the previous licence version have been deleted.~~ Residual risk assessment: *Consequence:* Minor *Likelihood:* Unlikely *Risk Rating:* Low Note: Appendix A contains risk assessments for the following fugitive emissions that may occur during ~~for~~ operation: *dust - green waste mulching*, *dust - asbestos*, *landfill gas* and *windblown waste.*	General provisions of the *Environmental Protection Act 1986* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Fugitive emissions (odour)	N/A	**Construction (W5677/2014/1)** No odour emissions are expected to occur during construction of cell 2. All works will be undertaken over previously undisturbed soils, no previously buried waste will be disturbed as part of the Works. No Works Approval Conditions are required in this section.	General provisions of the *Environmental Protection Act 1986* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*
	N/A	**Operation (L6818/1997/11)** Emission description: *Emission:* Odour may be generated from the acceptance, storage, movement and disposal of putrescible and liquid waste. *Impact:* Residences are located between 190 and 370 m from the Premises and are buffered by native vegetation. The sportsground is located ~200 metres north west of the Premises. *Control:* Historically under normal operating conditions odour emissions have not resulted in complaints. This indicates ~~indicating~~ that maintenance of the putrescible and liquid waste during~~under~~ normal operations~~g conditions has proved effective to control~~ odour emissions do not impact upon receptors. Risk Assessment: *Consequence:* Minor *Likelihood:* Unlikely *Risk Rating:* Moderate Regulatory controls: It is considered that the provisions of Section 49 of the *Environmental Protection Act 1986* are sufficient to regulate odour emissions. ~~Condition 2.7.1 in the previous licence version has been deleted.~~ Odour emissions should be largely mitigated by controls within Section 1.2 of the Licence which include Condition 1.2.4, Table 1.2.3 (m) and Condition 1.2.5 (a) which limit the exposure time for putrescible waste and likelihood of odour generation. Approval to accept liquid waste will cease on 31 January 2017 under Condition 1.2.2(c)(ii). Residual Risk: *Consequence:* Minor *Likelihood:* Unlikely *Risk Rating:* Moderate	

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Noise	N/A N/A	**Construction (W5677/2014/1)** Noise emissions generated at the Premises have not resulted in complaints or been identified as an issue. Noise emissions during construction are not expected to exceed ambient levels form normal operationsg conditions at the landfill. Noise levels during the construction and operation of cell 2 should be equitable with noise emissions during the construction and operation of cell 1. Should Nnoise emissions arise from the construction or operation at the Premises they can be regulatedmanaged under the requirements of the *Environmental Protection (Noise) Regulations 1997*. **Operation (L6818/1997/11)** Emission description: *Emission:* Noise arising from operational activities, vehicular and machinery movement, handling of waste and landfilling. *Impact:* Interference with the health, welfare, convenience, comfort or amenity of sensitive residential receptors. Residences are located between 190 and 370 m from the Premises and are buffered by native vegetation. The sportsground is located ~200 metres north west of the Premises. Interference with native flora and fauna is also possible. *Control:* Historically under normal operating conditions noise emissions have not resulted in complaints. This indicatesing that duringunder normal operations g conditions noise emissions do not impact upon receptors. Risk assessment: *Consequence:* Minor *Likelihood:* Possible *Risk Rating:* Moderate Regulatory controls: It is considered that the provisions of *Environmental Protection (Noise) Regulations 1997* will be sufficient to regulate noise emissions during operation. Risk assessment: *Consequence:* Minor *Likelihood:* Possible *Risk Rating:* Moderate	General provisions of the *Environmental Protection Act 1986* *Environmental Protection (Noise) Regulations 1997* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Monitoring general	N/A	**Construction (W5677/2014/1)** ~~Conditions 2.1.1 and 2.1.2 have been deleted, monitoring of groundwater under Condition 2.2.1 of the Works Approval is no longer required.~~ All ambient environmental monitoring Conditions have been transferred to Licence L6818/1997/11.	General provisions of the *Environmental Protection Act 1986* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*
	L3.1.1 – L3.1.3	**Operation (L6818/1997/11)** ~~In summary the conditions in the previous version of the Licence have been treated as follows:~~ ~~Previous conditions~~Conditions 3.1.1, 3.1.2 and 3.1.3 have been amended to accurately refer to all relevant Australian Standards for monitoring, the minimum separation times for monitoring events and accurately refer to calibration requirements. ~~• . All monitoring requirements are justified within the risk assessments referred to below.~~ ~~• Previous sections 3.2-3.4 and 3.9 have been deleted; the sections contained no conditions.~~ ~~• Previous section 3.5 has been amended to Section 3.2 and includes Condition 3.2.1 justified within the risk assessment for *Emissions to land (liquid waste facility)* in Appendix A.~~ ~~• Previous section 3.6 has been amended to Section 3.3 and includes Condition 3.3.1 justified within the risk assessment for *Leachate emissions (landfill)* in Appendix A.~~ ~~• Previous section 3.7 has been amended to Section 3.4 and includes Condition 3.4.1 justified within the risk assessment for *Stormwater emissions* in Appendix A.~~ ~~• Previous section 3.8 has been amended to Section 3.5 and includes Condition 3.5.1 justified within the risk assessment for *Leachate emissions (landfill)* in Appendix A.~~ Condition 3.1.4 has been maintained from the previous version of the Licence with no change.	

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Monitoring of inputs and outputs	N/A L3.3.1	**Construction (W5677/2014/1)** The acceptance and disposal of waste is not granted approval under the Works Approval therefore no Works Approval Conditions are required in this section. **Operation (L6818/1997/11)** ~~Section 3.6 in the previous version of the Licence has been amended to Section 3.3 and includes~~ Condition 3.3.1 is justified within the risk assessment for *Leachate emissions (landfill*) in Appendix A. No weighbridge is located ~~present~~ at the Premises. ~~To accurately verify the tonnes of waste coming into and out of the Premises the accuracy of waste volumetric data collection and tonnage conversion rates is important.~~ The data obtained by the monitoring under Condition 3.3.1 is required to be reported annually under Condition 5.2.1 which will than assist in compliance determination for Condition 1.2.2 (category 62 and 64 prescribed activities) and inform the risk assessment for *Leachate emissions (landfill*).	General provisions of the *Environmental Protection Act 1986* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*
Process monitoring	N/A L3.4.1	**Construction (W5677/2014/1)** The processing of waste is not granted approval under the Works Approval therefore no Works Approval Conditions are required in this section. **Operation (L6818/1997/11)** ~~Section 3.7 has been amended to Section 3.4 and includes~~ Condition 3.4.1 is justified within the risk assessment for *Stormwater emissions* and *Fugitive emissions (dust - green waste mulching*) in Appendix A. The stormwater quality and green waste mulching data obtained by the monitoring under Condition 3.3.1 is required to be reported annually under Condition 5.2.1. The storm water data will inform the risk assessment for stormwater emissions and adequacy of stormwater controls put in place at the Premises by the Licensee. The green waste data will inform compliance determinations against Conditions 1.2.2 (category 61A prescribed activities).	General provisions of the *Environmental Protection Act 1986* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Ambient quality monitoring	N/A	**Construction (W5677/2014/1)** ~~Condition 2.2.1 of the Works Approval for the monitoring of ambient groundwater quality has been deleted and transferred to Licence L6818/1997/11.~~ No Works Approval Conditions are required in this section.	General provisions of the *Environmental Protection Act 1986* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*
	L3.5.1	**Operation (L6818/1997/11)** ~~Condition 3.8.1 in the previous version of the Licence has been amended to~~ Condition 3.5.1, justified within the risk assessment for *Leachate emissions (landfill*) in Appendix A. Condition 3.5.1 has been amended to: • Specify all current groundwater monitoring bore locations and all future groundwater monitoring bore locations at the timeframes the new groundwater monitoring bores are required to be established under Condition 4.1.1 improvement reference IR1. • Specify all parameters to be monitored, as previously specified by Condition 2.2.1 of W5677/2014/1. • Specify the units of all parameters to be monitored, as previously specified by Condition 2.2.1 of W5677/2014/1. • Specify that the monitoring of groundwater is to be undertaken using spot samples and on a quarterly or monthly frequency as previously specified within the Condition 2.2.1 of W5677/2014/1 and established under the risk assessment for *Leachate emissions (landfill*) in Appendix A. Monitoring required under Condition 3.5.1 may also potentially detect potential emissions from the liquid waste facility as identified in the risk assessment for *Emissions to land (liquid waste facility*) in Appendix A. The groundwater monitoring bore network has not been specifically designed to detect potential seepage from the liquid waste facility and emission impacts may not be discernible from potential seepage from the landfill. ~~Conditions 3.8.2 and 3.8.3 in the previous version of the Licence have been deleted. The specifications within Condition 3.8.2 are now covered within the 'units' column of Table 3.5.1 and the requirement to monitor standing water level before abstracting groundwater samples forms part of the process established within the Australian Standards for groundwater monitoring.~~ The monitoring of standing water level in shallow groundwater monitoring bores is excluded due to the transient nature of the perched aquifer and design specifications of the bores (Condition 4.1.1, Table 4.1.2). ~~The specifications within Condition 3.8.3 are inherent for the Licensee to comply with Condition 3.5.1.~~	

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Improvements	N/A	**Construction (W5677/2014/1)** Condition 3.1.1 of the Works Approval for the improvement program has been deleted and relevant elements transferred to Licence. ~~Within Condition 3.1.1:~~ ~~Improvement reference IR1 required the submission of a groundwater monitoring plan by 18 September 2015. Shire of Bridgetown Greenbushes submitted the document Astron Environmental Services Pty Ltd 2015, *Groundwater Monitoring Plan Bridgetown Landfill Site November 2015* on 11 March 2016 which:~~ ~~○ Included a conceptual model of the landfill;~~ ~~○ Identified existing and proposed new/ additional groundwater monitoring bores;~~ ~~○ Demonstrated that through the use of a staged installation methodology for additional groundwater monitoring bores that a groundwater monitoring bore network can be established that will ensure:~~ ~~▪ Groundwater up and down hydraulic gradient of previously landfilled areas and landfill cells 1 and 2 can be effectively monitored; and~~ ~~▪ Monitoring locations can differentiate between potential leachate arising from previously landfilled areas and landfill cells 1 and 2 including preferential subsurface seepage along the top of the Pallid Zone.~~ • ~~The submission for i~~improvement reference IR1: The Shire of Bridgetown Greenbushes submitted the document Astron Environmental Services Pty Ltd 2015, *Groundwater Monitoring Plan Bridgetown Landfill Site November 2015* on 11 March 2016. ~~, aside from being late was found compliant.~~ Technical aspects of the submission are addressed under the risk assessment for *Leachate emissions (landfill*) in Appendix A which inform the requirements established under Licence Condition 4.1.1 improvement reference IR1 and Table 4.1.2. • Improvement reference IR2 required the submission of a groundwater monitoring verification report following the installation of the groundwater monitoring bore network. Improvement reference IR2 has been removed and transferred to the Licence with amendments as specified under the risk assessment for *Leachate emissions (landfill*) in Appendix A.~~, informing the requirements established under Licence Condition 4.1.1 improvement reference IR2 and Table 4.1.2.~~ No Works Approval Conditions are required in this section.	General provisions of the *Environmental Protection Act 1986* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions* *Guidelines for managing asbestos at construction and demolition waste recycling facilities*
~~**Improvements (cont.)**~~	L4.1.1	**Operation (L6818/1997/11)** Conditions 4.3.2 and 4.3.3 within Section 4.1 of the previous licence versions have been deleted and replaced by Condition 4.1.1.	

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Information ~~**Information (cont.)**~~	W2.1.1 – W2.1.64 L5.2.1, L5.3.1	**Construction (W5677/2014/1)** ~~Conditions 4.1.1, 4.1.2 and 4.1.3 in the previous version of the Works Approval have been amended to become Conditions 2.1.1, 2.1.2 and 2.1.3 respectively. The content of the Conditions has been amended as follows:~~ ~~• Condition 2.1.1 specifies that a compliance document is now only required for cell 2, compliance documentation for cell 1 and the leachate pond have already been submitted.~~ ~~• Condition 2.1.2 specifies that the compliance document certification is now only required for the construction of cell 2 and must include the as constructed plans for all Works due to the integrated nature of cell 1, cell 2, the leachate pond and the leachate collection system.~~ ~~• Condition 2.1.3 specifies that the construction quality assurance validation report demonstrates compliance with the construction specifications for cell 2. Quality assurance validation documentation for cell 1 and the leachate pond have already been submitted.~~ New conditions within the Works Approval have been included for the following: • Condition 2.1.4 has been included to require that any departures from the Works specifications in Condition 1.2.3, approved by the provisions of Condition 1.2.4, are documented to demonstrate that the Works have not materially changed and that the risk from emissions has not changed. Condition 2.1.4 ~~is justified within the risk assessment for Condition 1.2.3 which~~ is justified within the risk assessment for *Leachate emissions (landfill*) in Appendix A. • Conditions 2.1.5 and 2.1.6 have been included to require all records and information to be maintained in an accurate and legible format, facilitating the submission, review and compliance determination for the Works and associated reporting. **Operation (L6818/1997/11)** ~~Conditions 5.1.1, 5.1.3 and 5.1.4 have been maintained from the previous version of the Licence with no change.~~ ~~Condition 5.1.2 in the previous version of the Licence has been deleted. The Condition is not enforceable. A lack of awareness of the Conditions of the Licence is not a defence, does not remove the obligation to comply with Conditions and awareness of the Conditions does note ensure compliance.~~	General provisions of the *Environmental Protection Act 1986* *Guidance Statement: Regulatory Principles* *Guidance Statement: Setting Conditions*
		~~Condition 5.2.1 in the previous version of the Licence has been amended to contain all annual reporting provisions within Table 5.2.1. Provisions (a), (b), (d), (e), (g) and (h) have been deleted, provision (c) amended to Condition 5.3.1 and provision (f) amended into Table 5.2.1.~~ Condition 5.2.1 requires the annual submission of monitoring, compliance and complaint data which will inform the risk assessment for the operation of the Premises. Due to the emission risks established within this Decision Document annual submission of reporting requirements and associated review is justified.	

DECISION TABLE			
Works Approval / Licence section	**Condition number[1]**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Licence Duration	N/A	**Construction (W5677/2014/1)** The Works Approval W5677/2014/1 was granted approval on 23 July 2015 with an expiry date 26 July 2017. The Applicant/ Licensee has requested that the expiry date is amended to 26 July 2021. The additional timeframe will authorise the gradual excavation of cell 2 as cover material is required for cell 1 and the installation of the cell 2 liner. The extension to the expiry date of Works Approval W5677/2014/1 out to 26 July 2021 is granted approval.	General provisions of the *Environmental Protection Act 1986* *Guidance Statement*: *Licence Duration*
	N/A	**Operation (L6818/1997/11)** A *Notice of amendment of licence expiry dates Section 59B(9) and Section 59(1)(k) Environmental Protection Act 1986 Licensed Prescribed Premises* (Notice) was given effect by the Director General on 29 April 2016. The Notice gave regard to the *Guidance Statement*: *Licence Duration*. The expiry date of Licence L6818/1997/11 was amended under the Notice from 10 June 2018 to 10 June 2036. The expiry date of the Licence being 10 June 2036 does not provide unmitigated approval for operations at the Premises to continue until this time. Prescribed activities will be subject to ongoing review in accordance with the risk based regulatory framework and appropriate Conditions put in place commensurate to the risk posed by emissions from the Premises.	

Note 1: W = Works Approval condition; L = Licence condition

5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
16/06/2014	W5677/2014/1 application advertised in West Australian (or other relevant newspaper)	No comments received	N/A
23/06/2014	W5677/2014/1 Application referred to interested parties	Concerns received from an interested party included stormwater water runoff and potential groundwater impacts on nearby property. An extract from the Department of Health, dated 1989, that stipulated that landfilling should occur only west of the watershed line was also provided.	The Stage 2 works are located wholly east of the ridgeline line. Leachate controls are to be implemented in the form of liners and the landfill cell leachate collection system design. Groundwater monitoring bores are required through improvement conditions as a contingency to indicate if any seepage occurs. Stormwater and potential surface water contamination controls are to be implemented in the form of site design, contouring and waste separation. Clean stormwater drains and a sump will also be in place at the Premises.
23/06/2014	W5677/2014/1 Application referred to Department of Water	Department of Water raised concerns that the current bores onsite may not be appropriate to monitor for any leachate escaping the proposed cell along the top of the Pallid Zone. Department of Water suggested that additional shallow bores should be drilled at each monitoring site.	Controls for the potential of leachate seepage from Stage 2 works are to be implemented in the form of: • Landfill cell floor contouring; • Leachate collection drainage layer and pipeline; • Leachate collection pond; • HDPE lining of the leachate collection pond. Contingency controls are to be implemented through the improvement conditions which require: • Development of a conceptual site model and groundwater monitoring plan; Installation of addition down gradient groundwater monitoring bores to indicate any potential seepage, including preferential subsurface seepage along the top of the Pallid Zone.
08/07/2015	Proponent sent a copy of draft W5677/2014/1	Clarification of monitoring bore details	Decision document now identifies the three shallow groundwater monitoring bores.

Date	Event	Comments received/Notes	How comments were taken into consideration
27/07/2015	Granting of W5677/2014 advertised in West Australian	None applicable	None applicable
13/04/2016	W5677/2014/1 amendment application referred to stakeholders	Stakeholder concerns: • The leachate pond may not have adequate capacity to contain the additional leachate from cell 2. • Cell 1 does not have liners along the cell walls. • Imposition of prescribed activities is not expected to be any greater as long as leachate does no enter groundwater and adjacent properties. Department of Water: • Does '*not recommend that the amendment to the Works Approval be granted until a review of the groundwater data is completed*'. • '*The installation of BTN4 does … not allow for accurate determination of groundwater flow across the site … especially since the site is situated on a ridge*'. • '*The presence of a perched groundwater system is unknown, due to the current shallower monitoring bores being screened into the 'pallid layer', rather than into the 'mottled zone'. This does not enable an assessment of a seasonal water table sitting on, or flowing across, this low permeable layer'*. '*If the current bores BH1, 2 and 3, are screened into the 'pallid zone' rather than on top of it, they may need to be replaced*'. • General concerns regarding groundwater monitoring bore construction, locations and measurements.	• The pond has been sized for a catchment of 6725 m^2. Condition 1.2.7 requires that overtopping does not occur. • The risk assessment *Leachate emissions (landfill)* considers this, groundwater monitoring will be used to validate the effectiveness of current controls. • Groundwater monitoring will be used to validate the effectiveness of current controls. Should leachate be detected the risk and controls will be reviewed. • This position has been considered and available groundwater data considered. • This has been addressed by Condition 4.1.1 improvement reference IR1. • This has been addressed by Condition 4.1.1 improvement reference IR1. • Concerns are noted and have informed the development of Condition 4.1.1 improvement reference IR1.

Date	Event	Comments received/Notes	How comments were taken into consideration
15/04/2016	Proponent sent a copy of draft amended W5677/2014/1	• Works approval satisfactory however the amendment request for L6818/1997/11 seeks to have all Conditions regarding groundwater monitoring and bores transferred to the Licence.	• All groundwater related Conditions are now addressed under the Licence.
22/06/2016	Proponent sent a copy of draft instrument L6818/1997/11	• Request that proposed monitoring of emission to land (Condition 3.2.1, Table 3.2.1) is omitted based on the supporting information provided to characterise the waste constituents. • Request that proposed timeframe for preparation of an asbestos management plan (Condition 1.2.12) is extended out to 6 months for the amendment taking effect. • Request that proposed ambient groundwater monitoring requirements (Condition 3.5.1) are deferred to August 2017 where monthly monitoring is required.	• Proposed Condition 3.2.1 and Table 3.2.1 have been amended to remove all contaminant parameters except the volume discharged. The supporting information was considered adequate with regards to the emission risk and limited approval timeframe for the emission (acceptance of liquid waste) to occur. • Proposed condition 1.2.12 has been granted with a 6 month submission timeframe (being 01/02/2017). • Proposed Condition 3.5.1 has been amended to change the frequency of the monthly testing period from February 2017 – December 2019 out to August 2017 – December 2019. The original testing period was intended to pick up the 2017, 2018 and 2019 winter period when shallow groundwater monitoring bores would be more likely to yield samples. The amended dates are not likely to yield a reliable 2017 monitoring data set. The justification for more intensive sampling beyond 2019 will be considered with regards to the data secured at that time.
	Proponent sent a copy of draft instrument W5677/2014/1	None applicable	None applicable
01/08/2016	Granting of W5677/2014 and L6818/1997/11 advertised in West Australian		

6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High

Appendix A

Risk assessment: Stormwater emissions

Construction (W5677/2014/1)

No emissions of stormwater are proposed or granted approval under the Works Approval. The emission risk ~~from~~ of contaminated stormwater during the Works is lower than ~~that arising~~ during operations, which will be occurring concurrently. Subsequently the emission risk from stormwater during the Works is assessed under the Licence for operations at the Premises. The emission risk arising from stormwater specifically occurring within cell 2 is addressed under the risk assessment *Leachate emissions (landfill)*. No Works Approval Conditions are required.

Operation (L6818/1997/11)

Emission description:

Emission: The quality of stormwater discharged within or from the Premises may deteriorate where stormwater is not appropriately managed, comes into contact with waste or becomes loaded with sediment.

Impact: Under normal operating conditions low level loads of contaminants (including nitrogen, phosphorus, pathogens/ *Escherichia coli*, metals, hydrocarbons and suspended solids) could discharge within surface water to native vegetation on the Premises. Under staturated and high rainfall events stormwater may be able to enter ~~and/ or into~~ neighbouring properties ~~under saturated condition~~. Contaminants could degrade ecosystem services or if migrating beyond the vegetation within the Premises impact the quality and amenity of rural dam/ water supplies. Groundwater specific impacts are considered within the risk assessment risk assessment *Leachate emissions (landfill)*. Down hydraulic gradient r~~R~~esidences are located between 190 and 370 m from the Premises and are buffered by native vegetation. ~~The sportsground is located ~200 metres north west of the Premises.~~ Private dams are located approximately 200 meters east, including a spring, 750 metres south and 580 metres south west of the Premises

Controls: Grading of site topography and stormwater diversion channels, covering of waste, maintenance of liquid waste facility and leachate pond freeboard, bunds and waste containment infrastructure within the solid waste depot, a dedicated stormwater retention pond for the solid waste depot and south western parts of the landfill, partially bituminised access roads and general site maintenance.

Risk assessment (ecosystem services):

Consequence: Minor
Likelihood: Unlikely
Risk Rating: Moderate

Risk assessment (rural dam/ water supply impact):

Consequence: Moderate
Likelihood: Rare
Risk Rating: Moderate

Regulatory Controls:

It is considered that the provisions of Section 49 of the *Environmental Protection Act 1986* and the provisions of the *Environmental Protection (Unauthorised Discharge) Regulations 2004* are sufficient to regulate the emissions of stormwater at the Premises.

~~For example the diversity of w~~Waste managed for the solid waste depot operations is ~~are~~ contained on a bitumen hardstand, including ~~a diversity of~~ recyclable items. The general management of these items and any emissions arising such as the contamination of stormwater will be considered with regards to Section 49 of the *Environmental Protection Act 1986* and the provisions of the *Environmental Protection (Unauthorised Discharge) Regulations 2004*

The risk arising from stormwater emissions ~~is~~ should largely be controlled~~mitigated~~ by ~~controls~~ the requirements within Section 1.2 of the Licence. These ~~, which reflect the Licensee's general site maintenance controls and~~ include:

- Controls on the types of waste accepted at the Premises (Conditions 1.2.2 and 1.2.3);
- Controls on the processing and storage of waste at the Premises (Condition 1.2.4); and

- Controls on the cover of wastes under being landfilled (Condition 1.2.5).

Conditions 1.2.4, Table 1.2.3 (a), (n) and Condition 1.2.6 (f) specially refer to the placement and storage of wastes, particularly waste oil, in locations that will reduce the likelihood of stormwater contamination ~~and impact~~ occurring.

Based on a desktop water balance assessment the ~~solid waste depot~~ stormwater retention pond for the solid waste depot is estimated to have a capacity of (22 m long x 10 m wide x 2.5 m deep) of 550 m^3. The catchment for the pond includes ~~the solid waste depot and parts of~~ the southwestern area of the active landfill area and is estimated to exceed (100 m x 80 m) 8,000 m^2. Subsequently a rainfall event of 25 mm would result in the generation of 200 m^3 of stormwater ~~runoff~~. ~~Coupled with the potential for contaminants arising within the solid waste depot area and from the active landfill area~~ Condition 3.4.1 requires sampling of the pond when flowing from the discharge weir each month until the end of December 2017. The monitoring results will help verify the accuracy of the risk assessment~~,~~ and identify potential contaminants that may arise ~~in other areas of~~ at the Premises and contaminats ~~where~~ stormwater ~~discharges and inform the need for any further Conditions~~. In the absence of contaminants being present it is considered that the monitoring requirements can cease.

Residual risk (ecosystem services):
Consequence: Minor
Likelihood: Unlikely
Risk Rating: Moderate

Residual risk (rural dam/ water supply impact):
Consequence: Moderate
Likelihood: Rare
Risk Rating: Moderate

Risk assessment: Fugitive emissions (dust – green waste mulching)

Construction (W5677/2014/1)

No mulching of green waste is proposed or granted approval under the Works Approval. No Works Approval Conditions are required.

Operation (L6818/1997/11)

Emission description:

Emission: Dust generated from the mulching, movement and handling of mulched green waste is possible, particularly where the moisture content of the mulch is low. Contaminants within the green waste could result in more harmful contaminants occurring within fugitive dust emissions (e.g. asbestos which is assessed separately under the risk assessment *Fugitive emissions (dust - asbestos)*).

Impact: Reduced local air quality from airborne particulates and the interference with the health, welfare, convenience, comfort or amenity of sensitive residential receptors. Residences are located between 190 and 370 m from the Premises and are buffered by native vegetation. The sportsground is located ~200 metres north west of the Premises.

Controls: No controls specific to green waste mulching are specified by the Licensee.

Risk assessment:

Consequence: Minor
Likelihood: Unlikely
Risk Rating: Moderate

Regulatory Controls:

It is considered that the provisions of Section 49 of the *Environmental Protection Act 1986* are sufficient to regulate dust emissions from green waste mulching at the Premises.

To reduce the risk of ~~more harmful~~ contaminants occurring within ~~fugitive dust emissions~~ the green waste the following Conditions have been imposed:

- Condition 1.2.1, Table 1.2.2 (c)(i) specifies than only green waste must be accepted to the Premises for the purposes of mulching.
- Condition 1.2.4, Table 1.2.3 (h) specifies than only green waste must be processed by mulching.
- Condition 3.3.1, Table 3.3.1 specified that the volume of green waste accepted at the Premises must be monitored in tonnes. The monitoring results will help verify the accuracy and scope of the risk assessment and inform compliance determinations against Condition 1.2.1(b) for Category 61A activities.

Conditions specifically addressing the *Fugitive emissions (dust - asbestos)* further reduce the risk of dust emissions from green waste mulching ~~more harmful contaminants arising within fugitive dust emissio~~ns.

Residual risk assessment:

Consequence: Minor
Likelihood: Rare
Risk Rating: Low

Risk assessment: Fugitive emissions (dust - asbestos)

Construction (W5677/2014/1)

No potential for dust emissions to contain asbestos is expected to occur during construction of cell 2. All works will be undertaken over previously undisturbed soils, no previously buried waste will be disturbed as part of the Works. No Works Approval Conditions are required in this section.

Operation (L6818/1997/11)

Emission description

Emission: If disturbed a~~A~~sbestos and asbestos fibres may become airborne or spread through soils.

Impact: The spread of asbestos, particularly airborne fibres, poses a significant health risk (e.g. asbestosis) to people exposed to the Premises air shed. Residences are located between 190 and 370 m from the Premises and are buffered by native vegetation. The sportsground is located ~200 metres north west of the Premises.

Controls: No acceptance of materials containing asbestos fibres or ACM for landfilling is proposed.~~,~~ N~~n~~o asbestos is buried at the Premises. All asbestos acceptedance at the Premises is required to be fully contained (wrapped) and is stored within the solid waste depot until being transferred off-Premises for disposal.

Risk Assessment

Consequence: Major
Likelihood: Unlikely
Risk Rating: Moderate

Regulatory Controls

- The general provisions of the *Environmental Protection Act 1986* are applicable, including Section 49 causing pollution and unreasonable emission.
- Part 3, Division 6, Regulations 42 through 47 of the *Environmental Protection (Controlled Waste) Regulations 2004* is applicable for the transport and acceptance of asbestos.
- Conditions 1.2.1, Table 1.2.2, (c) (ii), (v) and (vii) reduce the likelihood of asbestos contamination by specifying that inert waste type 1 and construction and demolition waste cannot be accepted when contaminated by asbestos. T~~(t~~ype 1 inert waste and construction and demolition wastes are identified as waste types that can become contaminated with asbestos material~~)~~.
- Conditions 1.2.1, Table 1.2.2, (c) (iii) and (iv) reduce the likelihood of asbestos discharge by specifying that where asbestos is accepted for storage and future disposal off-Premises that it must be wrapped and that acceptance must not result in the discharge of asbestos or ACM.
- Condition 1.2.4, Table 1.2.3 (i) reduces the likelihood of asbestos discharge by specifying that contaminated soil, which is identified as a waste type that can unknowingly be contaminated by asbestos, is disposed of to landfill the day of acceptance and reduces potential exposure timeframes.
- Condition 1.2.1, Table 1.2.3, (j) reduces the likelihood of asbestos discharge by specifying that construction and demolition waste cannot be crushed or screened at the Premises due to the risk of asbestos being present within the waste type.
- Conditions 1.2.1, Table 1.2.3, (p) and (q) reduce the likelihood of asbestos discharge by specifying that asbestos waste must only be stored within the solid waste depot and contained such that discharge of asbestos or ACM cannot occur.
- Condition 1.2.12 requires the submission of an asbestos management plan (AMP). The adherence to procedures established within the AMP can help ensure the risk of asbestos being unintentionally accepted and discharged at the Premises is minimised. Commitments by the Licensee within the AMP can inform future assessments of the emission risk and may be specified as Conditions within the Licence.

Residual Risk

Consequence: Major
Likelihood: Rare
Risk Rating: Moderate

Risk assessment: Fugitive emissions (windblown waste)

Construction (W5677/2014/1)

No potential for windblown waste emissions is expected to occur during construction of cell 2. All Works will be undertaken over previously undisturbed soils, no previously buried waste are expected to be disturbed as part of the Works. No Works Approval Conditions are required in this section.

Operation (L6818/1997/11)

Emission description

Emission: Windblown waste, primarily in the form of plastics, which can contain additional contaminants (e.g. hydrocarbons via absorption if previously exposed). Windblown waste can travel significant distances, most likely into the surrounding native vegetation but also possibly into surrounding private lands.

Impact: Interference with the health, welfare, convenience, comfort or amenity of sensitive residential receptors. Residences are located between 190 and 370 m from the Premises ~~and are buffered by native vegetation~~. The sportsground is located ~200 metres north west of the Premises. Private dams are located approximately 200 meters east, including a spring, 750 metres south and 580 metres south west of the Premises. Interference with native flora and fauna (ecosystem services) is possible.

Controls: Waste accepted to the Premises with the potential to become windblown is contained within the solid waste depot storage area or discharged directly to the landfill where cover material is applied on a daily ~~basis~~ when operati~~o~~ng~~al~~. Litter screens may be used. Windblown waste has been observed within the native vegetation surrounding the prescribed activities. No complaints have been identified from neighbouring residences regarding windblown waste.

Risk assessment (ecosystem services):
Consequence: Insignificant
Likelihood: Likely
Risk Rating: Moderate

Risk assessment (neighbouring residences):
Consequence: Insignificant
Likelihood: Possible
Risk Rating: Low

Regulatory Controls

The general provisions of the *Environmental Protection Act 1986* are applicable, including Section 49 causing pollution and unreasonable emission. The following Conditions on the Licence, some of which address other emission risks, reduce the risk of windblown waste occurring:

- Condition 1.2.4 (c) reduces the likelihood of windblown waste occurring by limiting the exposed face of the tipping area from which windblown waste could escape.
- Condition 1.2.5 (a) reduces the likelihood of windblown waste occurring by requiring cover material to be placed on landfilled wastes by the end of the day deposited and that the cover material is maintained, reducing the exposure time for waste that may become windblown.
- Condition 1.2.10 (a) and (b) reduces the potential for impacts to arise from windblown waste by requiring that waste that becomes windblown does not discharge beyond the Premises boundary and that windblown waste arising within the Premises is collected routinely.

Residual risk (ecosystem services):
Consequence: Insignificant
Likelihood: Possible
Risk Rating: Low

Residual risk (neighbouring residences):
Consequence: Insignificant
Likelihood: Unlikely
Risk Rating: Low

Risk assessment: Fugitive emissions (landfill gas)

Construction (W5677/2014/1)

No potential for landfill gas emissions is expected to arise as a result of constructing cell 2. All works are up gradient of cell 1 in soils not previously subject to landfill activities. No Works Approval Conditions are required.

Operation (L6818/1997/11)

Emission Description:

Emission: Landfill gas is formed as a by-product of organic waste decomposition under anaerobic conditions. Gas emissions can migrate vertically, horizontally and within water from the landfilled waste.~~occur via advection or diffusion.~~ Less than 3000 tonnes of putrescible waste per annual period is understood to be deposited in the landfill. The separation distance to deep groundwater (~16m) and transient nature of any groundwater perched above the Pallid Zone reduces~~minimises~~ the likelihood~~risk~~ of ~~dissolved phase~~ transport in water. No monitoring has been undertaken ~~which could~~to inform the rate of landfill gas being emitted at the Premises. No final low permeability capping has been placed over previously landfilled areas likely resulting in a heterogeneous and diffuse emission of landfill gas.

Impact: Gas emissions such as methane can result in odour, fire and explosion risks. Landfill gas such as hydrogen sulphide can also have toxic effects on the health and wellbeing of flora, fauna and human receptors. All residences are located more than 250 m from the active landfill area.

Controls: No gas emission specific controls are in place. Waste cover and stormwater diversion assist in controlling and limiting the rate of landfill gas release.

Risk Assessment:

Consequence: Minor
Likelihood: Unlikely
Risk Rating: Moderate

Regulatory Controls:

It is considered that the emissions of landfill gas can be effectively regulated by the general provisions of the *Environmental Protection Act 1986*. No Conditions specific to the emission of landfill gas are proposed for the landfill at this time. The risk posed by landfill gas emissions from the landfill over the life of operation should be considered as part of the Post Closure ~~Management~~ Planning (PCP) process which is addressed by Condition 4.1.1 improvement reference IR3 (see the risk assessment *Potential for emissions (landfill stability)*). The risk of landfill gas emissions will be reconsidered following submission of the final landfill profile and post closure plan (FLPPCP).

Residual Risk:

Consequence: Minor
Likelihood: Unlikely
Risk Rating: Moderate

Risk assessment: Emissions to land (liquid waste facility)

Construction (W5677/2014/1)

No potential for liquid waste emissions to land is expected ~~to occur~~ during construction of cell 2. All works will be undertaken over previously undisturbed soils and ~~away from~~ the liquid waste facility is required to cease operation by the time the adjacent (~15m) excavation for cell 2 occur. No Works Approval Conditions are required in this section.

Operation (L6818/1997/11)

Emission description:

Emission: ~~Leakage of~~C ~~c~~ontaminants (e.g. nutrients and metals) leaking through the liquid waste facility (LWF) pond liner. Water balance calculations indicate that liquid waste volumes discharged to the LWF are~~received may be~~ greater than those evaporated, which suggest~~sing~~ leakage though the liner. See supporting information below under the subheading '*Supporting information for liquid waste facility leakage potential*' for establishing the likelihood of the emission~~, including relevant hydrogeological information~~.

Impact: Seepage of liquid waste from the ponds could result in the nutrients (nitrogen and phosphorus) and other contaminants (heavy metals) entering the groundwater which could impact local groundwater quality and down gradient receptors (native vegetation, groundwater users, potential surface water expression). Any leachate from the LWF ponds would potentially migrate through down hydraulic gradient landfilled waste. ~~; the hydraulic load~~Leachate could mobilise additional contaminants within the landfilled waste. The LWF is located ~250 and ~~-~~300 metres within the southern and eastern boundaries of the Premises. Surface water is proximate to the Premises: a spring and agricultural dam are located ~250 metres east of the Premises boundary; an agricultural dam is located is located ~750 metres south of the Premises; and numerous dams are located from ~300 to ~900 meters in an arc extending west to south west of the Premises boundary. Minor watercourses originate within 500 meters of the Premises boundary to the south west, south and east.

Controls: The LWF is understood to be constructed with insitu soils and not exceed a depth of 3-4 mbgl. No details are available of the pond liner construction standard. ~~T; t~~here is no information to suggest that the pond liner was treated in anyway suggesting that the LWF is wholly ~~insitu soils within~~ the surface laterite/ mottled layer. Visual observations support the assumption that the LWF was constructed by direct excavation into the insitu soil. Groundwater monitoring bores are not installed in locations that allow potential seepage emissions from the LWF to be differentiated from leachate arising from landfilled waste. The Licensee proposes the closure ~~of~~ the LWF ~~is proposed by the Licensee is expected~~ to coincide with the opening of a new LWF in an adjacent local government area.

Risk assessment:

Consequence: Major
Likelihood: Possible
Risk Rating: High

Regulatory controls:

~~Together the regulatory controls provide a valid, enforceable, risk-based set of Conditions which are clear, certain and outcome based:~~

- Condition 1.2.2, Table 1.2.1 (a) limits the type of liquid waste received at the LWF to the wastes historically received ~~and does not include any wastes types likely to contain elevated levels of toxic contaminants such as pesticides or endocrine disrupting chemicals~~.
- Condition 1.2.2, Table 1.2.1 (b) limits the volume of liquid waste received during an annual period at the LWF to the waste volumes historically received. In conjunction with Condition 1.2.2, Table 1.2.1(a), this limits ~~and subsequently~~ the contaminant load being discharged.
- Condition 1.2.2, Table 1.2.1 (c) limits the acceptance of liquid waste to the existing LWF and specifies that no liquid waste is approved for acceptance after the 31 January 2017. This is~~,~~ one month after the date requested by the Licensee. The extension is to allow for unforeseen circumstances that may arise ~~to be addressed outside of~~ during the Christmas period when resource demand is generally ~~high~~stretched.

- Condition 1.2.3 specifies that waste not meeting the acceptance criteria under Condition 1.2.2 is removed from the Premises, limiting the potential for other types of liquid waste to be discharged to the LWF.
- Condition 1.2.7 (a), (b), (c) and (d) require the LWF to be managed in a manner that minimises the likelihood of liquid waste being discharged to the environment via overtopping or increasing the rate of infiltration.
- Condition 1.2.7 (e) specifies that by the 1 May 2017 that the LWF is to be covered by at least 1 meter of cover material to minimise the likelihood of contaminants being further mobilised and leaking via stormwater infiltration and rainfall events.
- Conditions 2.1.1 and 2.1.2 authorise the emission of liquid waste to the LWF and limit the volume permitted to be discharged over an annual period.
- Condition 3.2.1 requires that the volume of liquid waste discharge to the LWF is recorded. The monitoring may help:
  - the Licensee monitor compliance against Condition 2.1.2 of the Licence;
  - ~~establish~~ establish the contaminant load being discharged to the ~~environment~~LWF~~;~~
  - ~~inform the risk assessment~~; and
  - potentially inform the interpretation of groundwater monitoring data.
- Condition 3.5.1 requires the monitoring of groundwater. ~~D~~ ~~however, d~~ue to the placement and distance of current and proposed groundwater bores monitoring results are unlikely to be reliably correlated to the LWF ~~or differentiated from potential leachate emissions from the landfill~~.
- Condition 5.2.1 requires the annual reporting of monitoring data, the data will assist in compliance determination for Condition 1.2.2 (category 61 prescribed activities) ~~and inform the risk assessment for *Emission to land (liquid waste facility)*~~.

Residual risk:
Consequence: Major
Likelihood: Rare
Risk Rating: Moderate

Supporting information for liquid waste facility leakage potential:

A desktop assessment of the ~~Bridgetown Waste Management Facility~~ liquid waste facility (LWF) pond liner integrity was undertaken using available information. The information included liquid waste input data (Table 1), an estimation of the pond sizes (Table 2), meteorological data (Table 3) and hydrogeological information (Table 4).

Table 1: Liquid waste acceptance volumes for the liquid waste facility by calendar year (source: Controlled Waste Tracking System).

Year	2010	2011	2012	2013	2014	2015	2016 (end April)	Average[1]
Liquid waste (kL) ~~volume~~ accepted	676.40	655.35	651.50	536.36	604.22	541.65	213.9	**615.30**

Note1: Average calculation based on volume accepted ~~during 2016~~ up to April 2016 to be equivalent of one third of the annual intake.

Table 2: Pond sizes within the LWF (estimates based on aerial imagery).

Pond	**Rainfall catchment**	**Evaporation catchment**
1 (20 x 6.0 m)	120 m^2	120 m^2
2 (20 x 6.0 m)	120 m^2	120 m^2
3 (25 x 6.0 m)	150 m^2	150 m^2
Total	**390 m^2**	**390 m^2**

Table 3: Meteorological data, rainfall and evaporation (source: Bureau of Meteorology)

	Monthly average												**Total**
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
Rainfall[1]	17.8	10.4	20.6	51.6	101.6	108.0	123.4	113.5	92.6	41.0	31.9	17.8	**721.4**
Evaporation[2]	189.1	165.3	133.3	78	52.7	42	46.5	55.8	69	99.2	129	164.3	**1224.2**

Note 1: Rainfall data is derived from the Bridgetown site 009617.
Note 2: Evaporation data is derived from the Jarrahwood site 009842.

Table 4: Hydrogeological information (source Astron Environmental Services Pty Ltd 2015, *Groundwater monitoring plan Bridgetown landfill site*, 21130-15-WQSR-1Rev0_151211; Astron Environmental Services Pty Ltd 22 April 2016, Groundwater Monitoring Plan – Updates to GWMP, April 2016, 21160-16-LR-1Rev0_160422; and WML Consulting Engineers 2013, *Shire Bridgetown-Greenbushes Hydrogeological investigation for the expansion of the Bridgetown landfill*).

Geological layer	**Depth[1]**	**Permeability information**	**Description**
Surface laterite/ mottled layer	0-4 mbgl	Laterite layer: high permeability Mottled layer: low permeability	Comprising orange/ brown gravel and ferricrete (cemented areas) overlying a heterogamous silt/ clay layer with variable amounts of mixed fine grained sand and gravel. Seasonally perched groundwater could occur above the Pallid layer. Tree roots and macropores can be present in this layer.
Pallid layer	4-25 mbgl	Low permeability (Re-compacted sample permeability ~~of~~ 5 x 10^{-9} m/s) (insitu testing permeability 2.8 x 10^{-8} to 3.2 x 10^{-9})	Comprising primarily of low permeability white kaolin clay and minor sand/ gravel components.
Saprolite layer	25-30 mbgl	Moderate permeability	Comprising a thin layer of silty sand and weathered granite. Groundwater occurs within this layer.

Geological layer	Depth[1]	Permeability information	Description
Bedrock layer	30 mbgl	Variable permeability based of rock defects.	Comprising granite rock with localised bands of quartz, shearing and joins.

Note 1: All depths are general indicative profiles only and can vary across the Premises at any given location.

Desktop waste balance assessment:
Calculations for the desktop water balance assessment of the LWF pond capacity are detailed below. ~~Note that annual average data was used, n~~No monthly loading calculations have~~s~~ been applied.

1) Meteorological data
- **a)** Annual rainfall: 721.4 mm
- **b)** Annual evaporation: 1224.2 mm

2) Pond inputs:
- **a)** Rainfall catchment: 390 m^2
- **b)** Rainfall input: 390 x 721.4 = 281.35 kL/ year
- **c)** Liquid waste: 2010→2016 data average = 615.30 kL/ year

3) Outputs:
- **a)** Evaporation surface: 390 m^2
- **b)** Evaporation output: 390 x 1224.2 = 477.44 kL/ year
- **c)** Evaporation output corrected[1] (390 x 0.75) x 1224.2 = 358.09 kL/ year

Note 1: 75% correction factor applied due to the anaerobic crust and vegetated tree line along the northern boundary of the LWF, reducing the evaporation rate.

4) Water Balance:
Inputs (281.35 + 615.30) – Outputs (477.44) = **419.21 kL/year**
Inputs (281.35 + 615.30) – Outputs corrected (358.09) = **538.56 kL/ year**

~~It is noted that t~~The method used in this desktop assessment provides a simplified estimation~~, while in reality there is significant~~ and does not account for operational variability. When no correction factor is applied for the evaporation capacity of the anaerobic pond due to surface crust accumulation an excess input volume of 419.21 kL/ year is calculated. This indicates that without overflow of the ponds it is almost certain that ~~a large volume of~~ liquid waste is seeping into the local soil profile at a rate of ~1 kL/ m^2/ year. No reports or evidence of overflow from the LWF have been identified.

Groundwater monitoring bore data assessment:
Groundwater monitoring bore data is not available that allows potential seepage ~~emissions~~ from the LWF to be differentiated from landfill leachate ~~arising from landfilled waste~~. No inferences can be made on the integrity of the LWF liner based on groundwater monitoring bore data.

Liquid waste pond integrity summary:
The desktop water balance assessment has found that inputs ~~likely~~ exceed the evaporation capacity of the pond by a factor of hundreds of kilolitres per year. ~~No reports or evidence of overflow have been identified.~~ Based on the geological profile at the Premises it is assumed ~~and likely~~ that the LWF ponds do not extend into the Pallid Zone clays and therefore hypothesized ~~that~~:

- any potential seepage will preferentially migrate through the surface layer soils and along the surface of the Pallid Zone; and
- due to the hydraulic load at the site of the LWF facility the local Pallid Zone clays may be saturated and exhibit~~display~~ an increased rate of seepage into the deeper soil profile.

The hypothesis indicates that the integrity of the LWF pond liners is compromised and that contaminants are seeping into the local soil profile. The hydraulic load may~~, potentially~~ interact~~ing~~ with landfilled waste and ~~potentially~~ increas~~e~~ing the contaminant load ~~migrating through the~~ within

leachate at the Premises~~Pallid Zone, landfilled waste profile and/ or through the surface laterite layer~~.

Risk assessment: Emission to land (leachate irrigation)

Construction (W5677/2014/1)

No ~~leachate~~ irrigation/ recirculation of leachate from the leachate pond over the any portion of the Premises is proposed or granted approval under the Works Approval. No Works Approval Conditions are required.

Operation (L6818/1997/11)

Infrastructure for the irrigation/ recirculation of leachate from the leachate pond over land within of the active landfill area was proposed to be constructed under Works Approval W5677/2014/1. No construction compliance documentation was submitted to confirm that~~the installation or specifications of~~ the infrastructure had been installed. L~~and l~~eachate is not expected to occur within the leachate pond in volumes warranting irrigation/ recirculation from some years. Subject to the location of the irrigation/ recirculation practice there is the potential that leachate and associated contaminants would migrate into the surface laterite/ mottled layer and potentially contaminate~~ant~~ groundwater that flows off-Premises. ~~No approval is granted under the Licence for the irrigation/ recirculation of leachate at this time and the Licensee must submit an application for the irrigation/ recirculation of leachate to be considered and potentially granted approval.~~

Emission description:

Emission: As per the risk assessment for *Leachate emissions (landfill)*[1].

Note 1: Overland flow of leachate could occur under saturated soil conditions however, no irrigation/ recirculation of leachate would be granted approval under such circumstances.

Impact: As per the risk assessment for *Leachate emissions (landfill)*.

Controls: No controls specific to leachate irrigation/ recirculation are specified by the Licensee.

Risk Assessment

Consequence: Major
Likelihood: Possible
Risk Rating: High

Regulatory Controls:

Condition 1.2.11 specifies that no irrigation or discharge of leachate from the leachate pond is granted approval. Subsequently there is no likelihood for the controlled discharge of leachate at the Premises. The Licensee must submit an application for the irrigation/ recirculation of leachate to be considered and potentially granted approval.

Residual risk assessment:

Consequence: Major
Likelihood: Not assessed
Risk Rating: Not assessed

Risk assessment: Leachate emissions (landfill)

Construction (W5677/2014/1)

~~No potential for leachate emissions arising from the landfill is expected to occur during construction~~ Construction of cell 2 should not result in any leachate emissions. All works will be undertaken over previously undisturbed soils. N~~, n~~o previously buried waste will be disturbed as part of the Works. No Works Approval Conditions are required in this section.

Operation (L6818/1997/11)

The operation of cell 2 is planned to commence in approximately 2021. Cell 2 will be the same size and follow the same operating method~~ology~~ as ~~for the operation of~~ cell 1. The hydrogeological setting and the leachate collection system within cell 2 will be equivalent and concurrent with cell 1. Both cell 1 and 2 will feed into the leachate pond. Subsequently the risk assessment for the operation of cell 2 is the same as cell 1 updated ~~by the assessment of~~with additional hydrogeological information. The risk assessment presented below has been adapted from the risk assessment presented in Works Approval W5677/2014/1 granted ~~approval~~ on 23 July 2015.

The potential for leachate arising from within the active landfill area, other than cell 1 and 2, is not considered in this risk assessment. Apart from minor contouring there is very limited capacity for additional landfilling to occur in these areas. Leachate emissions that may arise from previously landfilled areas are now largely subject to the hydraulic load percolating through the landfill mass and the opportunity to take additional action is limited. The emission risk arising from previously landfilled areas will be informed by future groundwater monitoring results and in part addressed through ~~.~~ Condition 4.1.1 improvement reference IR3 (see *Risk assessment: Potential for emissions (landfill stability)*).

Additional consideration has been made regarding ~~The assessment and approval process has involved investigations into~~ the hydrogeology at the Premises and~~, including~~ the staged approach to the establishment of additional groundwater monitoring bores. ~~Groundwater has been identified as flowing southeast at the Premises by t~~The Astron Environmental Services Pty Ltd 22 April 2016, *Groundwater Monitoring Plan – Updates to GWMP, April 2016* concludes that groundwater at the Premises flows southeast. As part of the risk assessment process the following communication from DER officer Mr Steve Appleyard has been considered ~~in the risk assessment~~:

- '*Insufficient groundwater monitoring data are available to support this* [Astron Environmental Services Pty Ltd] *assumption*';
- '*The landfill site straddles a drainage divide. Consequently, the direction of groundwater flow on the northern side of the site is likely to be in a west to north-westerly direction, whereas groundwater near the southern boundary of the site is likely to flow in a south-easterly direction*';
- '*Small amounts of groundwater are likely to occur in saprock at the base of the weathered profile. Seasonally, groundwater is also likely to occur at shallow depth near the contact between pisolitic gravels or ferruginous duricrust and the underlying clayey regolith'*;
- '*Hydraulic conductivity of the shallow, seasonal aquifer is much greater than the deep aquifer, and is likely to be responsible for carrying large amounts of dissolved solutes downslope during winter rainfall events. The hydraulic conductivity of the shallow aquifer is likely to be highly variable, and probably varies from about 1-5 m/d in areas where sand occurs at shallow depth … to possibly in excess of 100 m/d where pisolitic gravels and lateritic duricrust (hardpan) contain large, well-interconnected macropores*';
- '*The … CSM* [conceptual site model] *for the Bridgetown landfill developed by Astron has not adequately considered the risks posed by shallow groundwater flow to environmental receptors. The CSM … does not show shallow groundwater discharging to the land surface downslope of the landfill … the CSM does not consider adequately the range of receptors that could be affected by microorganisms and dissolved contaminants that could be rapidly discharged to hillside springs and seeps with little or no attenuation during heavy rainfall events*'; and
- '*It is recommended that at least four monitoring bores are constructed (one on each corner of the site) to determine the direction of groundwater flow across the site. Recommended*

methods for the construction and the sampling of shallow bores have been provided'. The recommendations are addressed by Condition 4.1.1 improvement reference IR1 and specified within Table 4.1.2 of the Licence (see below).

Emission Description

Emission: Potential for leachate seepage through the floor (Pallid Zone clays) or walls (surface laterite) of cell 2. Leachate could migrate to the deep groundwater layer in the saprolite layer however, it is considered more likely that leachate could migrate through the surface laterite across the top of the Pallid Zone.

Impact: Potential for the contamination of groundwater to impact the receptors outlined below:

- Local deep groundwater quality which is slightly acidic, ~~brackish water, with~~ pH in the range of 5 to 6 and brackish water, total dissolved solids <3 000 mg/L.
- Agricultural dams located approximately 200 meters east (including an adjacent spring), 750 metres south and 580 metres south west of the Premises.
- Minor watercourses originate within 500 meters of the Premises boundary to the south west, south and east.

Controls:

- Cell 2 is to be constructed at a location due east of the historic landfill cells and up hydraulic gradient of cell 1 with a vertical separation of approximately 16 m from the maximum seasonal water table.
- The base of cell 2 is to be constructed using compacted naturally occurring clay within the Pallid Zone ~~(comprising white kaolin clay with minor sand)~~ with an average permeability of 5 x 10^{-9} m/sec. The Works Approval holder has demonstrated that taking into account separation distance to groundwater and cation exchange capacity of the in situ soil, that the time taken for leachate to reach the highest seasonal groundwater level would be approximately 54 years compared to 63 years at a permeability of 1 x 10^{-9} m/sec and 2 meters separation to groundwater. ~~The leachate risk is further reduced by the cell base contour and leachate collection system controls described below.~~
- The base of cell 2 will be constructed to form a v-shape, grading to the centreline of the cell at 3% to promote leachate drainage within the basal gravel drainage layer. The cell will have~~,~~ ~~with~~ an overall fall of 1% to the south~~ern end of the cell,~~ for the leachate collector pipe drainage.
- The sides of the ~~landfill~~ cell will be in the mottled zone ~~(a silt/clay layer with varying amounts of sand and trace gravel)~~ with an average permeability varying from 2 x 10^{-7} m/s to 5 x 10^{-9} m/s with exceptions where channels from tree roots~~macropores and tree roots~~ are present. The sides of the excavation will be steeply excavated, at 2V:1H, to minimise erosion of the batters and clogging of the gravel drainage layer from ingress of fine material.
- The leachate collection layer overlying a low permeability re-compacted clay base is designed to control seepage to less than 1 000 L/ha/h/day. This meets the Environmental Protection Authority Victoria 2014, *Best Practice Environmental Management guidelines siting, design, operation and rehabilitation of landfills* standard for a Type 3 landfill.
- A construction quality assurance (CQA) plan for the earthworks and leachate collection pipework for cell 2 has been developed.

~~WML Consultants have the following response to the Department of Water's concern that leachate may escape the proposed cell along the top of the Pallid Zone: '*the system is designed to prevent any leachate build-up within the waste cell therefore the leachate level should not have the opportunity to pond above the mottled and Pallid Zone interface. The steep side walls and floor gradients are designed to prevent a hydraulic gradient developing across this upper strata*'.~~

Risk assessment

Consequence: Major
Likelihood: Possible
Risk Rating: High

Regulatory Controls (W5677/2014/1)

- Conditions 1.2.1 and 1.2.2 requires cell 2 to be constructed in accordance with the design specifications and construction quality assurance process.
- Condition 1.2.3 details the key specifications for the construction of cell 2, being:

- Row 1: to limit stormwater ingress, limit the leachate volumes generate and not overload the holding capacity of the leachate pond.
- Row 2: to limit cell 2 to the physical specifications framing this risk assessment and ensure that leachate can be ~~primarily~~ contained within the Pallid Zone clays and directed through the leachate collection system.
- Row 3: to limit the leachate collection system to the specifications framing this risk assessment and ensure the leachate collection system is adequately protected from the ingress of sediment~~ation~~ and clogging. The r~~Emission r~~isks of emission resulting~~arising~~ from the clogging of the leachate collection pipework must be able to be resolved.

- Conditions 2.1.1, 2.1.2 and 2.1.3 require a construction compliance document and construction quality assurance validation report to be submitted. The validation report requires the Licensee to demonstrate that the cell 2 works have been constructed in accordance with the construction quality assurance plans.

Regulatory Controls (L6818/1997/11)

- Conditions 1.2.2, Table 1.2.2 (a) and (b) (Category 64 activities) limit~~s~~ the type and volume of waste that may be accepted for landfilling, defining the specifications framing this risk assessment and reducing the potential contaminant load present within any ~~landfill~~ leachate.
- Conditions 1.2.2, Table 1.2.2 (c) (vi), (viii), (vi) and (x) specify that for waste types accepted for landfilling, which ~~that~~ may contain elevated contaminant levels, that the waste must meet the contaminant grade approved for disposal at a Class II landfill facility as per the Landfill Definitions.
- Condition 1.2.3 specifies that waste not meeting the acceptance criteria under Condition 1.2.2 that it is removed from the Premises. This helps stop the consequence from potential leachate emissions increasing.
- Condition 1.2.4, Table 1.2.3 (a) limits encroachment of any waste past ~~from~~ the Premises boundary, providing a buffer for all emission types and limiting the capacity for leachate emissions migrating off- Premises.
- Condition 1.2.4, Table 1.2.3 (b) limits landfilling to the active landfill area which is constrained to cells 1 and the previously filled areas. Previously filled areas are limited in capacity by vehicular access requirements and the provisions (e) and (f) of Condition 1.2.4, Table 1.2.3.
- Conditions 1.2.4, Table 1.2.3 (i), (k) and (m) require waste to be landfilled the day of acceptance, which in conjunction with the provisions of Condition 1.2.5 limit the likelihood of waste remaining exposed and generating leachate.
- Condition 1.2.4, Table 1.2.3 (o) ensures liquid paint is not disposed of to the landfill and reduces the potential contaminant load within leachate.
- Conditions 1.2.5 (a) and (b) require that waste is covered and reduces the likelihood of waste remaining exposed and generating leachate. The failure to maintain sufficient cover material would lead to landfilling operations to be suspended at the Premises.
- Condition 3.3.1 requires the waste types accepted at the Premises and rejected at the Premises to be recorded and subsequently reported under Condition 5.2.1. This will allow the waste types being landfilled to be reviewed and facilitate compliance determinations against Condition 1.2.2.
- Condition 3.5.1 requires groundwater monitoring to be undertaken at the Premises. Groundwater monitoring is essential for validating the effectiveness of the construction and design specifications of cell1, the leachate pond, ~~and~~ the future cell 2 and regulatory controls.
- Condition 4.1.1 improvement reference IR1 specifies the construction details for groundwater monitoring bores within Table 4.1.2. Due to the nature of the hydrogeology at the Premises, specified measures are required to ensure that groundwater and potential leachate occurring within the surface laterite layer can be detected. An analysis of the bore constructions for MB3, MB4 and MB5 has found that the screened intervals are placed within and not above the Pallid Zone clays. In addition the bore network needs~~is required~~ to be expanded to provide an adequate data set for the detection of leachate occurrence within deep and shallow geological profiles.
- Condition 4.1.1 improvement reference IR1 will inform the validation of the groundwater monitoring bore network, hydrogeology assessment and inform future risk assessments.

Residual Risk
Consequence: Major

Likelihood: Unlikely
Risk Rating: Moderate

Risk assessment: Leachate emissions (leachate pond)

Construction (W5677/2014/1)

~~No potential for leachate emissions arising from the leachate pond is expected to occur during construction of cell 2.~~ Cell 2 will not accept waste during construction and n~~. N~~o Works Approval Conditions are required in this section.

Operation (L6818/1997/11)

Emission description:

Emission: As per the risk assessment for *Leachate emissions (landfill)*.
Impact: As per the risk assessment for *Leachate emissions (landfill)*.
Controls: Controls specific to the leachate pond emission risk are derived from the construction specifications and supported by a construction quality assurance report. Controls are ~~which include~~:

- Leachate pond sized to accommodate a catchment of 6375 m^2 with sufficient capacity to contain a 1 in 100 year average recurrence interval storm event. Calculations are based on a freeboard of 800 mm.
- Leachate pond constructed and lined with the following specifications:
  - Fill material compacted to a minimum 90% maximum modified dry density containing free of deleterious material and fill clumps >75 mm in layers no exceeding 150 mm thickness;
  - A maximum deviation of 30 mm along the final floor and internal batter slope of the fill material;
  - Quality control testing under a NATA accredited laboratory and relevant Australian Standards which included 90 tests on the 7800 m^3 of fill material used in the leachate pond embankment;
  - A geosynthetic clay liner (ProFab AS601) having a density more than 200g/m^2 mass per unit area overlying the fill material; and
  - A high density polyethylene (HPDE) liner (Solmax 640ST-9000) which exhibits a minimum average thickness of 1.43 mm.

Risk assessment:

Consequence: Major
Likelihood: Unlikely
Risk Rating: Moderate

Regulatory Controls:

- Condition 1.2.2 (all) limits the waste types and subsequent leachate contaminant levels that may be present within leachate accumulating in the leachate pond. This helps stop the consequence from potential leachate emissions increasing.
- Condition 1.2.3 specifies that waste not meeting the acceptance criteria under Condition 1.2.2 that it is removed from the Premises. This helps stop the consequence from potential leachate emissions increasing.
- Condition 1.2.6 (a) through (e) requires that the HDPE liner and leachate pond must be maintained to a standard that is free of leaks and defects, achieves a permeability of less than 1 x 10^{-11} m/sec and does not exceed physical operational limitations. This reduces the likelihood of potential leachate emissions occurring.
- Condition 3.5.1 requires that ambient groundwater quality be monitored to help detect any leachate emissions arising at the Premises. Monitoring bores MB8 and MB9 are specifically located to help detect leachate emissions arising from the leachate pond.
- Condition 4.1.1 improvement reference IR1 specifies the construction details for groundwater monitoring bores, including MB8 and MB9, within Table 4.1.2. Due to the nature of the hydrogeology at the Premises, specified measures are required to ensure that groundwater and potential leachate occurring within the surface laterite layer can be detected.

Residual risk assessment:

Consequence: Major
Likelihood: Rare
Risk Rating: Moderate

Risk assessment: Potential for emissions (landfill stability)

Construction (W5677/2014/1)

No potential for emissions is expected to arise from landfill stability as a result of constructing cell 2. All works are up gradient of cell 1 in soils not previously subject to landfill activities. Cell 2 will not accept waste during construction and nNo Works Approval Conditions are required.

Operation (L6818/1997/11)

The Licensee has previously developed a final landfill profile and post closure plan (LPCP) for the Premises. Landfill cells 1 and 2 form part of the overall LPCP. Additional landfill cells to the east and south of the active landfill area ~~have previously been~~were proposed in the LPCP (see Figure 1 below). The LPCP has not been reviewed in full or granted approval under Part 5 of the Act~~ed by the Licence or the Works Approval~~. The risk of potential leachate emissions from the landfill and the long term stability of the landfill are the two key aspects that need to be considered in any review and possible approval of a LPCP. The proposed final landfill profile is based on a central apex of approximately 296 mAHD. The highest point of the current landfill is understood to be approximately 295 mAHD. This has resulted in elevated batters on the landfill profile on western, southern and in particular eastern margins (where the historic landfill abuts cell 1 and 2). Current landfill batters ~~are considered~~may be too steep to remain stable in the long term without additional structural support. Additional stability controls were proposed in the LPCP. The long-term planning and stability of the landfill needs to be addressed in the medium term.

~~Due to the risk of potential leachate emissions from the landfill (see the risk assessment *Leachate emissions (landfill)*) and the emission risks arising from potential failures in the landfill stability (see risk assessment below) a staged contingency based approach is required for landfilling operations at the Premises. This staged approach will be informed by ongoing groundwater monitoring requirements and the outcomes of improvement reference IR3 (see risk assessment below).~~

Emission description (potential emissions arising from failures in landfill stability):

Emission: Erosion and structural failure (slumping, slippage and collapse) of the landfill ~~profile~~ can result in putrescible waste being exposed~~. with~~ Dd~~d~~ust, odour, wind-blown waste and contaminated water (leachate) emissions are all possible.

Impact: Can include:

- Interference with the health, welfare, convenience, comfort or amenity of sensitive residential receptors, which are located between 250 and 500 metres from the premises.
- Increased contaminant loads in surface stormwater runoff and leachate in~~to~~ groundwater. Agricultural dams located approximately 200 meters east (~~,~~ including a spring), 750 metres south and 580 metres south west of the Premises. Minor watercourses originate within 500 meters of the Premises boundary to the south west, south and east.
- Increased landfill fire risk.
- ~~and i~~Impacts on ecosystem services.

Control: ~~Landfill operations at the Premises use a~~A continuous cover method in used at the landfill. Cells 1 and 2 are the only areas of the landfill that have been designed to specified construction standards. All other landfilled waste has been deposited in a semi-controlled insitu manner. A LPCP and final cell designed has previously been developed by the Licensee ~~however~~. T~~,~~ ~~t~~he previous LPCP d~~oesid~~ not meet all the elements of Condition 4.1.1, improvement reference IR3 in the amended licence.

Risk Assessment:

Consequence: Major
Likelihood: Possible
Risk Rating: High

Regulatory controls:

- Condition 1.2.4, Table 1.2.3 (d), (e) and (f) specifies process limits for the placement of waste and the profile of the active landfill area. Compacting waste in layers no greater the 500 mm reduces the amount of settlement ~~that will occur within the waste profile~~ and ~~reduces~~ the likelihood of structural failure in the landfill. The requirement to~~for~~ retain~~ing~~ rehabilitation

material is an outcome based condition thatwhich guides the placement and design of all waste profiles at the Premises. Specifying tThe maximum height (apex) of the active landfill area is specified to ensures that the final landfill profile does not become any steeper.

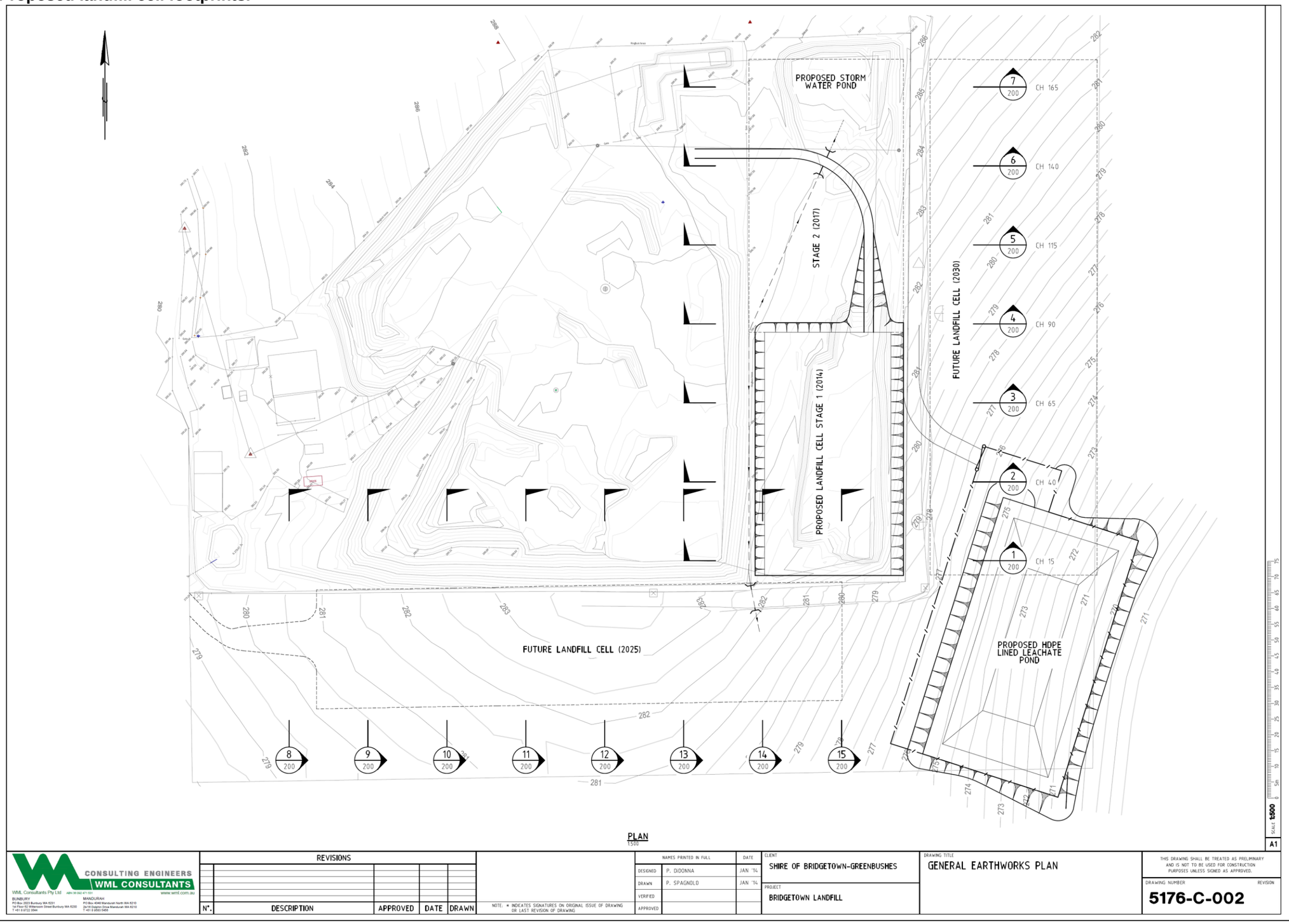
- Condition 1.2.4, Table 1.2.3 (g) specifies that the new landfill cell 1 does not have a final profile steeper than 20 degrees. This ensures that new waste profiles are not created that have an increased risk of instability. Theis submission of a final landfill profile and post closure plan measure will be reconsidered following the completion of (Condition 4.1.1 improvement reference IR3) will inform whether this control is appropriate of can be amended. and ensures that until a final landfill profile and post closure plan for the Premises is granted approval that new waste profiles are not created than have an increased risk of instability.
- Condition 1.2.4, Table 1.2.3 (l) specifically prohibits the burial of tyres, landfilling of tyres requires special management approaches to address risks arising from landfill fire and stability issues.
- Condition 4.1.1 improvement reference IR3 requires the submission of a final landfill profile and post closure plan (FLPPCP). It is expected that the FLPPCP will incorporate elements of the previously developed LPCP and include the additional information specified within the Condition. The FLPPCP will include:
  - Any amendments proposed to the previously developed final land profile surface contours and landfill cell arrangements plans which takes into consideration the following items:
    - Advanced understanding of the sitesAdditional hydrogeological information geology;
    - Specified details of the stability and stormwater controls and infrastructure;
    - The outcomes of the geotechnical stability report;
    - The actions that may be required should contingency options need to be implemented.
  - Detailed specifications of the stormwater and landfill embankment stability controls;
  - A detailed and holistic geotechnical stability assessment of the final landfill contours and cell arrangements;
  - Contingency options to address the risk of structural failure within the landfill mass and/ or landfill leachate entering groundwater and impacting nearby receptors; and
  - Expected/ targeted timeframes for the implementation of key stages in the landfill development and construction and commissioning of proposed emission controls.

  The submission date of 3 December 2018 for the FLPPCP is considered appropriate. The submission date will provide adequate time for the document to be developed and the next round of detailed (month) groundwater monitoring results from the shallow groundwater monitoring bore network will be available in the proceeding months to help inform the risk assessment process.

  The FLPPCP is expected to be submitted as part of a life of landfill amendment application to the Licence and will inform future approvals and regulatory controls for the Premises. Additional regulatory controls may be specified by DER, beyond the controls proposed in the FLPPCP, commensurate to the emission risk.

Residual Risk:
Consequence: Major
Likelihood: Possible
Risk Rating: High

Figure 1: Proposed landfill cell footprints.



Risk assessment: Potential for emissions (landfill fire)

Construction (W5677/2014/1)

~~No potential for emissions is expected to arise from landfill fire as a result of constructing cell 2.~~
No Works will involve waste and all Works will take place in soils not previously subject to landfill activities. No Works Approval Conditions are required.

Operation (L6818/1997/11)

Emission description:
Emission: Landfill fires can result in a range of emissions over a protracted period of time including fugitive toxic smoke, elevated contaminants in leachate and risks around landfill stability.
Impact:

- Interference with the health, welfare, convenience, comfort or amenity of sensitive receptors off-premises. Residences are located between 190 and 370 m from the Premises and are buffered by native vegetation. The sportsground is located ~200 metres north west of the Premises. Private dams are located approximately 200 meters east, including a spring, 750 metres south and 580 metres south west of the Premises.
- Ecosystem implications on native flora and fauna. Native vegetation is location directly south and east of the landfill and extends into adjacent lands.
- Pollution and environmental harm.

Control: Controls on a~~A~~ccess ~~controls~~, waste acceptance, containment and cover procedures and general Premises maintenance. No fires have been identified as occurring at the Premises.

Risk Assessment:
Consequence: Major
Likelihood: Rare
Risk Rating: Moderate

Regulatory controls:

- Conditions within Premises operation, section 1.2, of the Licence limits the capacity for landfill fires to occur by specified acceptance, handling, storage and disposal practices.
- Condition 1.2.4, Table 1.2.3 (l) specifically prohibits the burial of tyres, landfilling of tyres requires special management to address risks arising from landfill fire and stability issues.
- Condition 1.2.4, Table 1.2.3 (h) specifically prohibits the burning of any waste at the Premises, no waste is planned to be burnt and no infrastructure and response capacity has been established to adequately manage controlled burning of any materials at the Premises.
- Condition 1.2.9 requires signage to be maintained at the entrance to the Premises with contact details to ensure any fire (and complaints) can be responded to promptly and adequately.
- Condition 5.3.1 requires that DER are notified of any fire at the Premises; considering the emission risk presented by a landfill fire the notification will be used to inform an assessment of any emission risks and the adequacy of controls in place at the Premises.
- The potential occurrence and any impacts arising from any fire at the Premises will be considered with regards to ~~Section 49 of~~ the general provisions of the *Environmental Protection Act 1986* including the provisions of the *Environmental Protection (Unauthorised Discharge) Regulations 2004*.

Residual Risk:
Consequence: Major
Likelihood: Rare
Risk Rating: Moderate

Risk assessment: Potential for environmental harm (disease, pest and vermin)

Construction (W5677/2014/1)

No Works will involve waste and all Works will take place in soils not previously subject to landfill activities.~~No potential for environmental harm is expected to arise from disease, pests and vermin as a result of constructing cell 2.~~ No Works Approval Conditions are required.

Operation (L6818/1997/11)

Emission description:

Emission: Exposed, uncovered and uncontained liquid and putrescible waste can ~~provide refuge and nourishment for~~support vermin and pest species (e.g. such as feral cats, insects and rodents) and ~~can~~ harbour disease and pathogens, which can be spread by vectors (e.g. insects and vertebrates).

Impact: Can include:

- Interference with the health, welfare, convenience, comfort or amenity of sensitive receptors off-premises. Residences are located between 190 and 370 m from the Premises and are buffered by native vegetation. The sportsground is located ~200 metres north west of the Premises. Private dams are located approximately 200 meters east, including a spring, 750 metres south and 580 metres south west of the Premises.
- Disease and ecosystem implications on native flora and fauna. Native vegetation is location directly south and east of the landfill and extends into adjacent lands.

Note: The surrounding native vegetation is classified as '*low confidence – infestation inferred*' on the geographic information system dieback occurrence dataset. Based on this classification and the historic long-term acceptance of potentially *Phytophthora spp.* infected waste materials and soils at the Premises, the risk of impact from *Phytophthora spp.* is excluded from this risk assessment.

Control: Access controls, waste acceptance, containment and cover procedures, leachate containment and management, proposed closure of the liquid waste facility and general Premises maintenance.

Risk Assessment:

Consequence: Major
Likelihood: Unlikely
Risk Rating: Moderate

Regulatory controls:

- Conditions within Premises operation, section 1.2, of the Licence limits the capacity for waste to promote the occurrence of disease, pests and vermin by placing controls on the acceptance, storage, disposal, containment and covering of waste.
- Condition 1.2.8 requires infestations of pest, vermin and potential disease vectors to be prevented. Should infestations arise the Licensee will need to implement measures to ~~mitigate~~ adequately control the infestation~~, such as controlling mosquito populations within the leachate pond~~.
- The potential occurrence and any impacts arising from disease, pests and vermin at the Premises will be considered with regards to the general provisions of the *Environmental Protection Act 1986*.

Residual Risk:

Consequence: Major
Likelihood: Rare
Risk Rating: Moderate

Appendix B

Summary of the Conditions of the Works Approval and Licence and the emission risks which they address.

W5667/2004/1 Condition~~ONDITION~~	Section/ emission risk~~ECTION/ EMISSION RISK~~ in the Decision Document~~IN DECISION DOCUMENT~~
1.1.1 – 1.1.4	'Interpretation' section of Decision Table
1.2.1 and 1.2.2	'General conditions' section of Decision Table
1.2.3	Risk assessment *Leachate emissions (landfill*)
2.1.1 – 2.1.6	'Information' section of Decision Table

L6818/1997/11 ~~C~~Condition~~ONDITION~~	Section/ emission risk in the Decision Document~~SECTION/ EMISSION RISK IN DECISION DOCUMENT~~
1.1.1 – 1.1.4	'Interpretation' section of Decision Table
1.2.1	'Premises operation' section of Decision Table
1.2.2 Table 1.2.1 (a), (b) and (c)	Risk assessment *Emission to land (liquid waste facility)*
1.2.2 Table 1.2.2 (a) and (b) (cat 61A)	'Premises operation' section of Decision Table
1.2.2 Table 1.2.2 (a) and (b) (cat 62)	'Premises operation' section of Decision Table
1.2.2 Table 1.2.2 (a) and (b) (cat 64)	Risk assessment *Leachate emissions (landfill)*
1.2.2 Table 1.2.2 (b) (cat 64)	Risk assessment *Leachate emissions (landfill)*
1.2.2 Table 1.2.2 (c)(i)	Risk assessment *Fugitive dust emissions (green waste mulching)*
1.2.2 Table 1.2.2 (c)(ii)	Risk assessment *Fugitive dust emissions (asbestos)*
1.2.2 Table 1.2.2 (c)(iii) – (v)	Risk assessment *Fugitive dust emissions (asbestos)*
1.2.2 Table 1.2.2 (c)(vi)	Risk assessment *Leachate emissions (landfill)*
1.2.2 Table 1.2.2 (c)(vii)	Risk assessment *Fugitive dust emissions (asbestos)*
1.2.2 Table 1.2.2 (c)(vii) – (x)	Risk assessment *Leachate emissions (landfill)*
1.2.3	Risk assessment *Emission to land (liquid waste facility)* Risk assessment *Leachate emissions (landfill)* Risk assessment *Leachate emissions (leachate pond)*
1.2.4, Table 1.2.3 (a)	Risk assessment *Stormwater emissions* Risk assessment *Leachate emissions (landfill)*
1.2.4, Table 1.2.3 (b)	Risk assessment *Leachate emissions (landfill)*
1.2.4, Table 1.2.3 (c)	Risk assessment *Fugitive emissions (windblown waste)*
1.2.4, Table 1.2.3 (d) – (g)	Risk assessment *Potential for emissions (landfill stability)*
1.2.4, Table 1.2.3 (h)	Risk assessment *Fugitive dust emissions (green waste mulching)*
1.2.4, Table 1.2.3 (i)	Risk assessment *Fugitive dust emissions (asbestos)* Risk assessment *Leachate emissions (landfill)*
1.2.4, Table 1.2.3 (j)	Risk assessment *Fugitive dust emissions (asbestos)*
1.2.4, Table 1.2.3 (k)	Risk assessment *Leachate emissions (landfill)*
1.2.4, Table 1.2.3 (l)	Risk assessment *Potential for emissions (landfill stability)* Risk assessment *Potential for emissions (landfill fire);*
1.2.4, Table 1.2.3 (m)	Risk assessment *Fugitive emissions (odour)*

1.2.4, Table 1.2.3 (n)	Risk assessment *Stormwater emissions*
1.2.4, Table 1.2.3 (o)	Risk assessment *Leachate emissions (landfill)*
1.2.4, Table 1.2.3 (p) and (q)	Risk assessment *Fugitive dust emissions (asbestos)*
1.2.5 (a)	Risk assessment *Leachate emissions (landfill)* Risk assessment *Fugitive emissions (odour)* Risk assessment *Fugitive emissions (windblown waste)*
1.2.5 (b)	Risk assessment *Leachate emissions (landfill)*
1.2.6 (a) - (e)	Risk assessment *Leachate emissions (leachate pond)*
1.2.6 (f)	Risk assessment *Stormwater emissions*
1.2.7 (a) – (e)	Risk assessment *Emission to land (liquid waste facility)*
1.2.8	Risk assessment *Potential for environmental harm (disease, pest and vermin)*
1.2.9	Risk assessment *Potential for emissions (landfill fire);*
1.2.10 (a) and (b)	Risk assessment *Fugitive emissions (windblown waste)*
1.2.11	Risk assessment *Emission to land (leachate irrigation)*
1.2.12	Risk assessment *Fugitive dust emissions (asbestos)*
2.1.1	Risk assessment *Emission to land (liquid waste facility)*
2.1.2	Risk assessment *Emission to land (liquid waste facility)*
3.1.1 – 3.1.4	'General monitoring' section of Decision Table
3.2.1	Risk assessment *Emission to land (liquid waste facility)*
3.3.1	Risk assessment *Leachate emissions (landfill)*
3.4.1	Risk assessment *Stormwater emissions*
3.5.1	Risk assessment *Leachate emissions (landfill)* Risk assessment *Leachate emissions (leachate pond)*
4.1.1 IR1 and IR2 (incl. Table 4.1.2)	Risk assessment *Leachate emissions (landfill)* Risk assessment *Leachate emissions (leachate pond)*
4.1.1 (IR3)	Risk assessment *Potential for emissions (landfill stability);* Risk assessment *Fugitive emissions (landfill gas)*
5.1.1	'Information' section of Decision Table
5.1.2	'Information' section of Decision Table
5.1.3	'Information' section of Decision Table
5.2.1	Risk assessment *Emission to land (liquid waste facility)*
5.3.1	Risk assessment *Potential for emissions (landfill fire);* 'Information' section of Decision Table

Appendix C

Summary of the Works Approval and Licence amendment condition conversion process.

W5677/2014/1 version granted 23 July 2015	W5677/2014/1 version granted DATE
1.1.1	No change.
1.1.2	Amended: see Decision Table *Interpretation* section.
1.1.3	No change.
1.1.4	Amended: Term 'code of practice' was deleted; no code of practice is referred to within the Works Approval or supporting documentation.
1.2.1	Amended: see Decision Table.
1.2.2	Amended: see Decision Table.
2.1.1, 2.1.2 and 2.2.1	Deleted: all ambient environmental monitoring Conditions have been transferred to Licence L6818/1997/11.
3.1.1	Deleted: see Decision Table.
4.1.1	Amended to Condition 2.1.1: specifies that a compliance document is now only required for cell 2.
4.1.2	Amended to Condition 2.1.2: specifies that the compliance document certification is now only required for the construction of cell 2 and must include the as constructed plans for all Works due to the integrated nature of cell 1, cell 2, the leachate pond and the leachate collection system.
4.1.3	Amended to Condition 2.1.3: now specifies that the construction quality assurance validation report demonstrates compliance with the construction specifications for cell 2.

L6818/1997/11 version granted 3 May 2013	L6818/1997/11 version granted DATE
1.1.1	No change.
1.1.2	Amended: to ensure that terminology used within the Licence is referenced to the appropriate definitions.
1.1.3	Amended: to ensure that any reference to a standard is to the most current version of that standard.
1.2.1	Deleted: the text was an explanatory statement and not a condition, the intent is covered by the general provisions of the Act.
1.2.2	Deleted: there was no specified pollution control, monitoring equipment or management system which the condition clearly related to.
1.2.3	Deleted: the provisions of the condition were not clear or enforceable. No substances (dangerous goods or environmentally hazardous materials) have been identified for the prescribed activities undertaken at the Premises, except where specified within the Decision Document.
1.2.4	Deleted: the storage and remediation of spills of relevant materials can be effectively regulated by the general provisions of the *Environmental Protection Act 1986* and the *Environmental Protection (Unauthorised Discharges) Regulations 2004*.

L6818/1997/11 version granted 3 May 2013	L6818/1997/11 version granted DATE
1.2.5	Deleted: there are no specifications for contaminated stormwater to be 'treated' and no stormwater treatment infrastructure is located at the Premises, the condition was not enforceable.
1.3.1	Replaced by Condition 1.2.2.
1.3.2 (i)	Replaced by Condition 1.2.4 (a).
1.3.2 (ii)	Replaced by Condition 1.2.4 (b).
1.3.2 (iii)	Replaced by Condition 1.2.4 (c).
1.3.2 (iv-v)	Replaced by Condition 1.2.5.
1.3.2 (vi)	Replaced by Condition 1.2.4 (c)(i).
1.3.2 (vii)	Replaced by Condition 1.2.4 (d).
1.3.2 (viii)	Replaced by Condition 1.2.5.
1.3.3 (i-iii)	Replaced by Condition 1.2.9.
1.3.3 (iv)	Deleted: not relevant to the regulation of emissions.
1.3.4 and 1.3.5	Replaced by Condition 1.2.10.
1.3.6	Replaced by Condition 1.2.9.
1.3.7	Deleted; the condition was not clear or enforceable. The emission risk can be adequately regulated by Condition 1.2.9, the *Environmental Protection (Unauthorised Discharge) Regulations 2004* and general provisions of the *Environmental Protection Act 1986*.
1.3.8	Replaced by Condition 1.2.2.
1.3.9 (i-ii)	Replaced by Condition 1.2.9 with amendments.
1.3.9 (iii-iv)	Deleted: the condition was not valid or enforceable.
1.3.9 (v-vi)	Replaced by Condition 1.2.9 with amendments.
Section 2.1-2.5	Deleted: the sections contained no conditions.
2.6.1 and 2.6.2	Deleted: see risk assessment *Fugitive emissions (dust)* section in the Decision Table.
2.7.1	Deleted: see risk assessment *Fugitive emissions (odour)* section in the Decision Table.
Section 2.8	Deleted: the section contained no conditions.
3.1.1 – 3.1.3	Amended: to accurately refer to all relevant Australian Standards for monitoring, the minimum separation times for monitoring events and accurately refer to calibration requirements.
3.1.4	No change.
Section 3.2-3.7	Deleted; the sections contained no conditions.
3.8.1	Replaced by Condition 3.5.1.
3.8.2	Deleted: now covered within the 'units' column of Table 3.5.1 and the requirement to monitor standing water level before abstracting groundwater samples forms part of the process established within the Australian Standards for groundwater monitoring.

L6818/1997/11 version granted 3 May 2013	L6818/1997/11 version granted DATE
3.8.3	Deleted: specifications were inherent for the Licensee to comply with Condition 3.5.1.
Section 3.9	Deleted: the section contained no conditions.
4.3.2 Improvement reference IR1 and IR2	Deleted: the improvement requirements were based on the requirements of Condition 1.2.3 in the previous version of the Licence which is now deleted. No relevant existing holding tanks have been identified at the Premises therefore the improvement requirements are not clear or enforceable, the condition is redundant.
4.3.2 Improvement reference IR3	Deleted: A submission was not received by the date of completion and the intent of the condition is being progressively addressed by ongoing groundwater monitoring, bore establishments and hydrogeological investigation. The requirement for a hydrogeological assessment report and the specified requirements (i) through (v) of IR3 were addressed by the improvement condition requirements (Condition 3.1.1 improvement references IR1 and IR2) under the Works Approval W5677/2014/1 version granted on 23 July 2015. Any Conditions addressing the intent of a hydrogeological assessment report, groundwater monitoring report and associated validation report are now addressed through the risk assessment *Leachate emissions (landfill)* in Appendix A and the new improvement condition 4.1.1 (improvement references IR1 and IR2).
4.3.3	Deleted: the condition is redundant.
5.1.1	No change.
5.1.2	Deleted: the Condition was not enforceable. A lack of awareness of the Conditions of the Licence is not a defence, does not remove the obligation to comply with Conditions and awareness of the Conditions does note ensure compliance.
5.1.3 and 5.1.4	No change.
5.2.1	Amended to Condition 5.2.1.
5.2.1 (a)	Amended into Table 5.2.1.
5.2.1 (b)	Deleted: addressed by Condition 3.1.1.
5.2.1 (c)	Amended to Condition 5.3.1.
5.2.1 (d-e)	Deleted: redundant.
5.2.1 (f)	Amended into Table 5.2.1.
5.2.1 (g)	Deleted: addressed by Condition 5.1.4.
5.2.1 (h)	Deleted: addressed through Condition 5.1.3.
5.3.1	Amended: to simplify fire reporting requirements and to require any limit within the Licence being exceeded to be reported as soon as practicable.