

Annual Environmental Management Report

For Woodlawn Waste Expansion Project And Woodlawn Alternative Waste Technology Project

December 2018



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QUALITY INFORMATION

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DEFINITIONS/ABBREVIATIONS

AEMR	Annual Environmental Management Report
BMS	Business Management System
BTT	Banksmeadow Transfer Terminal
СТТ	Clyde Transfer Terminal
DPE	NSW Department of Planning and Environment
EMP	Environmental Management Plan (IMF)
EIS	Environmental Impact Statement
EP&A	<i>Environmental Planning and Assessment Act 1979</i> (and Regulations)
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
IEA	Independent Environmental Audit
IMF	Crisps Creek Intermodal Facility
LEMP	Landfill Environment Management Plan
LMP	Leachate Management Plan
MBT	Woodlawn Mechanical Biological Facility
MWOO	Mixed Waste Organic Output
NMP	Noise Management Plan
OEMP	Operational Environmental Management Plan (MBT)
PA	Project Approval
POEO	Protection of the Environment Operations Act 1997 (and Regulations)
SWMP	Soil Water and Management Plan
TADPAI	Tarago and District Progress Association Inc.
ТРА	Tonnes per annum
Veolia	Veolia Australia and New Zealand
WHS	Work Health and Safety Act 2011 (and Regulation)



EXECUTIVE SUMMARY

This Annual Environmental Management Report (AEMR) has been prepared in accordance with the Woodlawn Waste Expansion Project under Project Approval (PA) 10_0012 and the Alternative Waste Technology Project under PA 06_0239, as well as relevant legislative requirements and industry best practices .

On instruction from the Department of Planning and Environment (DPE), the requirements under each PA as per Schedule 7, Condition 5 of PA 10_0012 and Schedule 4, Condition 5 of PA 06_0239 have been combined in this AEMR and comprise collectively the 2017 - 2018 reporting period (9 September 2017 to 8 September 2018) respectively for the Woodlawn Bioreactor (the Bioreactor) and Crisps Creek Intermodal Facility (IMF) and the Woodlawn Mechanical Biological Treatment Facility (MBT).

This AEMR details the environmental performance of Bioreactor, IMF and MBT for the reporting period as a summary of environmental monitoring conducted in keeping with the PAs, as well as corrective actions resulting from any non-compliances identified and/or other findings from regulatory inspections, external and internal audit programs.

Section 1 Introduction



INTRODUCTION

1.1. Site Overview

Veolia Australian and New Zealand (Veolia) own and operate the Woodlawn Eco Precinct (the Eco Precinct), which is located approximately 40 km south of Goulburn and 50 km north of Canberra and comprises of the Woodlawn Bioreactor (the Bioreactor), Crisps Creek Intermodal Facility (IMF) and the Woodlawn Mechanical Biological Treatment Facility (MBT) as depicted in **Figure 1.1 and Appendix 1**.

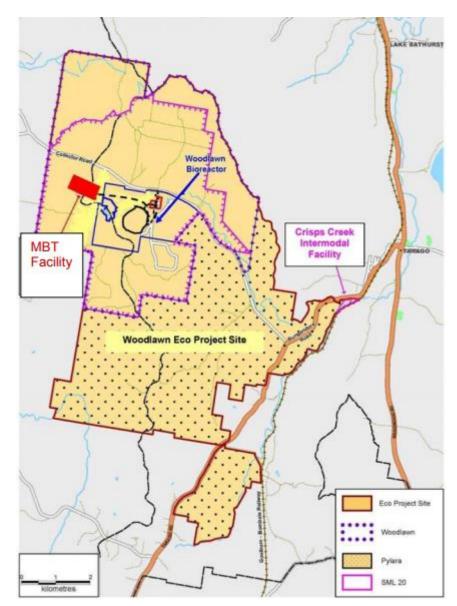


Figure 1.1 The Woodlawn Eco Precinct

1.1.1 Woodlawn Bioreactor and Crisps Creek Intermodal Facility

The Bioreactor, where waste landfilling and landfill gas extraction occurs in the void of a remnant open cut mine, approximately 33 million cubic metres (m3) in capacity. Originally



approved to accept a maximum of 500,000 tonnes per annum (tpa) of putrescible waste, the Bioreactor, is now approved to accept a maximum throughput of 1.13 million tpa.

The Bioreactor has been operating since September 2004, with the collection of landfill gas from landfilled waste to extract methane for energy generation commencing in 2008. This occurs at the adjacent Woodlawn Bio Energy Power Station (the Power Station). Waste to the Bioreactor from Sydney is transported in shipping containers via rail and unloaded onto road trucks at the IMF, also owned and operated by Veolia and located approximately 8 km away in the township of Tarago. Local waste from neighboring councils and businesses is transported via road.

In addition to the above operations, the DPE has also granted approval (December 2017) to modify the Bioreactor's PA for construction and operation of a leachate treatment plant (LTP) to process leachate was approved on. Construction of the LTP commenced following the approval and it is anticipated that the LTP will be operational to full capacity by March 2019. The LTP will facilitate better environmental and operational performance by allowing Veolia to extract and treat greater volumes of leachate from the Bioreactor and minimise and reduce the generation of odour, and enable more efficient gas extraction maximizing the waste to energy benefits of the Bioreactor.

Woodlawn Mechanical Biological Treatment FacilityThe MBT PA was granted in November 2007 and has been designed to process municipal solid waste (MSW) received from a collective of Sydney based councils to extract recyclable materials and produce MWOO from the organic fraction. The MWOO is produced with the intent to rehabilitate the former mine site on which the Bioreactor is situated.

The MBT facility currently comprises six building/processing areas (waste reception, area BRS drums, refining building, buffer storage area, fermentation hall and maturation storage areas. Changes to site layout, technology and operating hours were approved by the DPE as a modification to the PA in 2014.

Permitted to accept 240,000 tpa of mixed waste and 40,000 tpa of garden waste from Sydney, the first stage of the MBT commenced commissioning in March 2017 and operation in July 2017 processing up to 144,000 tpa of mixed waste.

1.2 Legislative Requirements

The main legislative instruments governing the environmental performance and activities undertaken at the Terminal include the *Environmental Planning and Assessment Act 1979* (the EP&A Act) regulated by the DPE, and the *Protection of the Environment Operations Act 1997* (POEO Act) regulated by the EPA, as well as their respective associated regulations.

In addition to the PAs, Environment Protection Licences (EPLs) issued by the EPA, under the POEO Act, regulate the operational activities conducted at the Bioreactor,



IMF and MBT. Monitoring activities undertaken at both facilities are reflected in the EPLs consistent with the consent requirements

An Environmental Management Plan has been prepared to reflect the requirements of the PAs for the operation of the Bioreactor (LEMP), IMF (EMP) and MBT (OEMP) respectively.

These 3 document concentrate on key environmental issues identified in the environmental assessment undertaken for these 3 facilities and set out the criteria for managing and monitoring environmental parameters such as water quality, waste, traffic, air quality, greenhouse gas, noise, landscape and vegetation and emergency response.

The above requirements stipulate the performance standards that need to be met to maintain compliance at the 3 sites, and those relevant to the preparation of this AEMR are provided in Table 1.2.1 and Table 1.2.2 and further discussed in Section 2.

Relevant Condition	Requirement				
SCHEDULE 7	SCHEDULE 7 – ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING				
Annual Envir	onment Management Review				
5	 One (1) year after the commencement of expanded operations, and annually thereafter, the Proponent shall prepare an Annual Environmental Management Report (AEMR) to review the environmental performance of the project to the satisfaction of the Director-General. This review must: a) describe the operations that were carried out in the past year; analyse the monitoring results and complaints records of the Project over the past year, which includes a comparison of these results against the relevant statutory requirements, limits or performance measures/criteria; monitoring results of previous years; and relevant predictions in the EA; c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance; d) identify any trends in the monitoring data over the life of the Project; and e) describe what measure will be implemented over the next year to improve the environmental performance of the Project. 				

Table 0.2.1: Bioreactor and IME conditions relevant for the preparation of this AEMR



Table 0.2.2: MBT conditions relevant for the preparation of this AEMR

Relevant	Requirement				
Condition					
SCHEDULE 4 -	SCHEDULE 4 – REPORTING				
Annual Reporti	Annual Reporting				
5	Every year from the date of this approval, unless the Director-General				
	agrees otherwise, the Proponent shall submit an AEMR to the				
	Director-General and relevant agencies. The AEMR shall:				
	 a) identify the standards and performance measures that apply to the development; 				
	 b) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years; 				
	 c) include a summary of the monitoring results for the development during the past year; 				
	 d) include an analysis of these monitoring results against the relevant: 				
	 Impact assessment criteria; Monitoring results from previous years; and 				
	 Predictions in the EIS; 				
	e) identify any trends in the monitoring results over the life of the				
	development;				
	f) identify any non-compliance during the previous year; and				
	g) describe what actions were, or are being taken to ensure compliance.				

Table 1.2.3 summaries the list of environmental approvals in place for the Bioreactor, IMF and MBT:

Table 0.2.3: Environmental Approvals

Description	Permit Number
Conditions of Development Consent: The Woodlawn Waste Management Facility (issued by DPE)	31-02-99
Project Approval: Woodlawn Waste Expansion Project (issued by DPE)	10_0012
Bioreactor Environment Protection Licence (issued by EPA)	11436
Special (Crown & Private Lands) Lease 20 (SML 20) (issued by Department of Primary Industries)	SML 20
Water Access Licence: Willeroo Borefield (issued by Water NSW)	40WA411642
IMF Environment Protection Licence (issued by EPA)	11455
MBT Environment Protection Licence (issued by EPA)	20476
Project Approval: <i>Woodlawn Alternative Waste Technology Project</i> (issued by DPE)	PA 06_0239



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1.3 **Responsibilities**

- Environmental monitoring for the Bioreactor and IMF was undertaken and/or supervised by Ark Du (Landfill Engineer) and Harneet Puarr (Woodlawn Environmental Officer)
- Environmental monitoring for the MBT was undertaken and/or supervised by Christian Chang (MBT Process Engineer).
- Analyses of collected samples were performed at Australian Laboratory Services Pty Ltd (ALS), which is a NATA accredited laboratory.
- The Odour Unit Pty Ltd (TOU) was appointed in January 2018 to conduct odour audits for the Bioreactor and IMF.
- An Independent Environmental Audit (IEA) for the Bioreactor/IMF was conducted by Ramboll Environ Australia Pty Ltd in the previous reporting period, the findings of which and corrective actions implemented in this reporting period are presented in this AEMR.
- The audit team associated with the Bioreactor IEA included Victoria Sedwick (Lead Auditor), David Ford (Auditor) and Ronan Kellaghan (Reviewed). The audit team was approved by the DPE.
- An independent noise audit was conducted by SLR Consulting Australia Pty Ltd (SLR) in October 2017 for MBT. The audit team associated with this noise assessment included Mark Blake and John Sleeman. The audit team was approved by the DPE.

Section 2

Environmental Assessment Criteria



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SECTION 2 ENVIRONMENTAL ASSESSMENT CRITERIA

Based on the risk predictions in the environmental assessments undertaken for the 3 facilities, the implemented controls measures described in the EMPs became the assessment criteria to determine the environmental performance of the respective operations. These are summaries in **Table 2** and results of monitoring measures in this reporting period are described in subsequent sections of this AEMR.

Issue	Environmental Risk	Likelihood of Occurrence	Control Measure	AEMR Section Reference
Air quality (dust and odour)	Emission of air pollutants and odour above the EPA guidelines.	Low level of risk due to the large buffer distance between the Bioreactor and sensitive receptors.	Monthly Dust monitoring Annual Independent Odour Audits	Section 3.2
Greenhouse gas emissions and energy use	Excessive energy consumption and related GHG emissions compared to similar facilities.	Known consequences with significant offset through generation of electricity from methane produced at the site.	Extraction & monitoring of the gas for green energy generation, reporting under National Greenhouse and Energy Scheme	Section 3.3
Surface Water	Contamination of surface water.	Possible without control measures, but unlikely due to existing approved Surface Water Management Scheme.	Ongoing Surface and Ground water monitoring, Leachate monitoring	Section 3.4
Groundwater	Contamination of ground water.	Possible without control measures, however unlikely due to the use of leachate barrier systems and existing Groundwater Management Scheme.	Ongoing Surface and Ground water monitoring, Leachate monitoring	

Table 2: Assessment Criteria



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Issue	Environmental Risk	Likelihood of Occurrence	Control Measure	AEMR Section Reference
Noise	Increased noise impacts above the EPA guidelines. Impacts on local residents.	Rare due to the large buffer distance between the Bioreactor sensitive receivers.	In the event a noise compliant is received , Noise monitoring is carried out at the site	Section 3.5
Pest, disease and agriculture related impacts	Introduction of pests and the spreading of disease as a result of the proposed expansion.	Possible without control measures, however unlikely due to existing approved, operational management measures.	Routine Site Inspections	Section 3.7
Traffic and transport	Significant impacts on local Tarago community, impacting levels of service and traffic flow.	The risk is rare due to the relatively low level of truck movements.	Limit the transfer of waste within approved operational hours	Sections 3.5 and 3.6
Socio economic	Negative impact on existing social conditions and on economic vitality of the Tarago district.	Rare as the Project will generate additional employment demand, while amenity impacts are low.	Veolia has well established mechanisms in place for addressing community concerns for engaging with the community to assist in the management of issues raised	N/A
Hazard and risk	Increased risk to human health and the environment from expansion, especially from dangerous materials and gases.	Rare as hazardous substances may not received at the Bioreactor and IMF.	All know hazards are understood and managed by Veolia with any incidents dealt with as part of the Fire and Emergency Response Plan	N/A



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SECTION 3 ENVIRONMENTAL MONITORING

3.1 Monitoring Requirements

This section presents the monitoring undertaken at the Bioreactor, IMF and MBT throughout the reporting period, in accordance with the requirements of the PAs, as detailed in the respective EMPs.

An Environmental Monitoring Program (EMP) has prepared to guide monitoring requirements, which enable the continuous measuring and assessment of suitability, adequacy and effectiveness of on-site environmental management measures. These requirements are summarised in **Table 3.1.1**, **Table 3.1.2** and **Table 3.1.3** and discussed in subsections below.

A monitoring location plan is included in Appendix 3.

Table 3.1.1: Bioreactor Monitoring Requirements Type of				
Consent Reference	Monitoring	Frequency	Commentary	
Schedule 4, Condition 3	Site Inspection	Daily	Ongoing basis	
Schedule 4, Condition 7	Odour Audit	Annually	Condition satisfied , odour audit conducted 02/02/17	
Schedule 4, Condition 11	Dust Monitoring	Monthly	Ongoing basis	
Schedule 4,Condition 12/ Air Quality and Greenhouse management Plan	Odour – Site inspections	Daily or as required	Ongoing basis	
Schedule 4,Condition 17/ Soil and Water management Plan/EPL	Surface water monitoring Groundwater monitoring	Quarterly/ Annually	Ongoing basis	
Schedule 4, Condition 18/ Leachate Management Plan	Leachate pond monitoring and Leachate recirculation monitoring	Annually	Ongoing basis	
Schedule 4, Condition 19/ Noise Management Plan	Noise Monitoring	As required	Not triggered	
Schedule 4, Condition 22	Meteorological monitoring	Continuous	Ongoing basis	
Schedule 4, Condition 23/ Landscaping and Vegetation Management	Site Inspections	Weekly housekeeping	Ongoing basis	

 Table 3.1.1: Bioreactor Monitoring Requirements



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Consent Reference	Type of Monitoring	Frequency	Commentary
Plan			
Schedule 4 Condition 24/ Pest ,Vermin & Noxious Weed Management	Site Inspections	Weekly housekeeping	Ongoing basis

Table 3.1.2: Crisps Creek IMF Monitoring Requirements

Consent Reference	Type of Monitoring	Frequency	Commentary
Schedule 5, Condition 5	Litter control	Daily	Ongoing basis
Schedule 5 Condition 6/ Pest ,Vermin & Noxious Weed Management	Site Inspections	Weekly housekeeping	Ongoing basis
Schedule 5, Condition 9	Odour Audit	Annually	Condition satisfied , odour audit conducted January 2018
Schedule 5, Condition 15	Noise Monitoring	As required	Not triggered

Table 3.1.3: MBT Monitoring Requirements

Condition Reference	Type of Monitoring	Frequency	Commentary
Schedule 3, Condition 29 EPL Condition M4	Meteorological monitoring	Continuous	Ongoing basis
Schedule 3, Condition 23 & 24 EPL Condition M2.2	Depositional Dust Monitoring	Monthly	Ongoing basis
Schedule 3, Condition 25 & 26 EPL Condition L4	Operational noise monitoring	As required	Condition satisfied, monitoring conducted: 2 – 3 October 2017
Schedule 3, Condition 20 EPL Condition M2.3	Surface Water Monitoring	Quarterly	Ongoing basis



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EPL Condition L2.4	Discharge Monitoring	Daily during any discharge	Ongoing basis
Schedule 3, Condition 20 EPL Condition M2.3	Groundwater Quality Monitoring	Quarterly	Ongoing basis
Schedule 3, Condition 20 EPL Condition M2.3	Leachate Monitoring	Six monthly	Ongoing basis
EPL Condition O5.3	Leachate Level	Weekly or as required	Ongoing basis
Schedule 3, Condition 6 EPL Condition L3.1	Waste volume monitoring	Daily	Ongoing basis
Schedule 3, Condition 9	Site Inspection and Housekeeping	Weekly	Ongoing basis
Schedule 3, Condition 10	Pest and Vermin Checks	Every two months	Ongoing basis

3.2 Air Quality

Air quality monitoring, pertaining to odour and dust emissions, was undertaken in accordance with the Consent to determine whether activities conducted at the Bioreactor, Crisps Creek IMF and MBT affected ambient air quality.

3.2.1 Bioreactor Air Quality Monitoring Results

3.2.1.1 Meteorology

Veolia operates an onsite meteorological station to continuously monitor climatic data listed in the EPL. Meteorological data recorded includes (but is not limited to):

- Wind speed at 10m;
- Wind direction at 10m;
- Temperature at 2m;
- Temperature at 10m;
- Rainfall;
- Solar radiation; and
- Sigma theta at 10m

Meteorological data is logged in 15 minute and 24 hour intervals and can be made available for the 2017/2018 reporting period upon request. Servicing and calibration of the meteorological station is carried out quarterly by Hydrometric Consulting Services (calibration reports can be provided upon request)



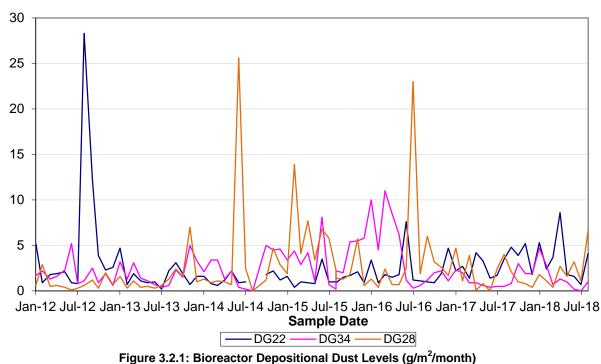
3.2.1.2 Dust

All operations and activities were carried out at the Bioreactor in a manner to minimise dust at the boundary of the premises. These included all access roads from the IMF to the Bioreactor and the haul road used for ancillary operations being sealed, the use of water trucks for dust suppression as required and monthly sampling to monitor for the presence and quantity of depositional dust.

	Table 3.2.1:	Bioreactor Air Q	uality Monitor	ring Results		
Parameter			Results/Dise	cussion		
Particulates/Dust Monitoring	Monitoring of 3 depositional dust gauges (DG) was completed on a monthly basis as required under the EPL, the results of which are generally consistent with previously reporting periods as depicted in Figure 3.2.1 The results of total insoluble solids found within the depositional dust					
	3.2.1 below	samples are summarised for each of the monitoring locations in Table 3.2.1 below, with the detailed results tabulated in Tables 4.1 - 4.3 (refer Appendix 3).				
		Table 3.2	.1.1: Dust M	onitoring Res	sults	
		Dust Gauge		Total Insoluk (g/m2/month)		
			Minimum	Maximum	Average	
		DG22	0.7	8.6	3.66	
		DG34	0.2	4.7	1.75	
		DG28	0.4	6.6	1.90	
	The maximum dust level recorded in this reporting period was 8.6 g/m2/month at DG22 in April 2018 which is located on the East side of the Bioreactor. Given that for the corresponding month there were no similar levels recorded at the dust gauges located within the proximity of the landfill void, it can be inferred that this dust emission was not as a result of the Bioreactor activities and can be treated as an outlier. Veolia infer that this result is due to Heron Resources' construction activities directly next to DG22. Overall dust suppression is generally consistent with previous years and a measure of the dust control measures that the site has in place.					
Odour Monitoring	41 odour period.	complaints were	e received at	the premises	during this	reporting
	odour con managem	independent oc trol measures a ent practices at mented all recom	and to identif the site. The	y improvemen odour audit re	nts to existir	ng odour ed Veolia
		l continue to im combination wit by Veolia.				



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* Data before 2011 has been removed to allow for better interpretation of performance for recent reporting periods.

3.2.1.3 PM10/TSP monitoring results

Results taken in 2016/2017 show that there were no exceedance both on and offsite. The maximum PM10 level was 21.7µg/m³ onsite, which was under the limit. (Note: Monitoring for the month November started 11/11/2016)

Note: Heron Resources, as part of their construction activities, have begun PM10/TSP monitoring_at the Pylara monitoring site and started on the 17 October 2017.

3.2.2 IMF Air Quality Monitoring Results

3.2.2.1 Dust

Dust monitoring is undertaken monthly at one location at the IMF in accordance with the EPL. A summary of this reporting period is provided in Table 3.2.2 and detailed in Table 10 (refer Appendix 3).

The results at DG18 indicate an average level of total insoluble solid matter is 0.75 g/m2/month, which is generally consistent with overall historical trends as seen in the subsequent graph, Figure 3.2.2. The handling of waste and associated operational activities at the IMF are undertaken in a manner to ensure minimal emissions of dust. This includes no opening of containerised waste on unloading and operating on hardstand site.

Table 3.2.2: Dust Monitoring Results

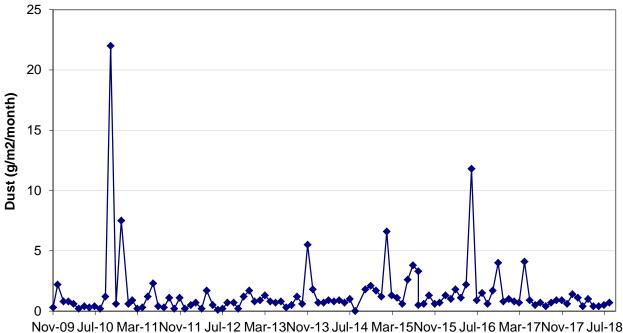


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Dust Gauge	Summary Total Insoluble Solids (g/m2/month)			
	Minimum	Maximum	Average	
DG18	0.4	1.4	0.75	



Sample Date



3.2.2.2 Odour

An annual independent odour audit is used to assess the effectiveness of odour control measures and to identify improvements to existing odour management practices at the site. The odour audit report indicated Veolia has implemented all recommendations from the previous odour audit and is further discussed in Section 6 of this AEMR.

Veolia will continue to implement recommended actions from the odour audit in combination with improving current odour control measures identified by Veolia.

No odour complaints were received for the IMF during this reporting period.

3.2.3 MBT Air Quality Monitoring Results

3.2.3.1 Dust



Dust monitoring is undertaken monthly at the MBT facility in accordance with the EPL. A summary of this reporting period is provided in Table 3.2.3 and detailed in Table 4 & 11 (refer Appendix 3).

_	Table 3.2.3: MBT Air Quality Monitoring Results							
Parameter		<u>(0)</u>			S/Discussion			
Particulates/Dust Monitoring	Monitoring of 3 depositional dust gauges (DG) was completed on a monthly basis as required under the EPL, the results of which are generally consistent with previously reporting periods as depicted in Figure 3.2.1 & 3.2.3 .							
	MBT shares 2 depositional dust gauges with the Bioreactor, which include Pylara (DG28) and West Void (DG 34), which are summarised in section 3.2.1. In addition, there is a dust gauge (DG 33) close to the MBT facility. A summary of this reporting period at the dust gauge is provided in Table 3.2.3.1 and detailed in Table 11 (refer Appendix 3)							
		Т	able 3.	2.3.1: Du	st Monitorin	g Res	ults	
		Dust Gaug	je	Sur	nmary Total I (g/m2/n		le Solids	
				Minim	ım Maxim	num	Average	
		DG 33 (Pc	oint 7)	0.2	2.4		0.84	
		e maximum d			•		on during this an background	•
Odour Monitoring	The air quality impact assessment (AIA) prepared by SLR, predicted that MBT Facility operations would comply with relevant air quality goals and are not expected to generate offensive or nuisance odours at nearby sensitive receivers. The adopted odour criterion of 6 OU was predicted to be achieve at all receptors with the exception of the TriAusMin (now Heron) administration building, which was predicted to experience a 99th percentile odour concentration of 8.5 OU. This concentration was predicted to be dominated by the existing source of the Bioreactor, rather than the operation of 1.7 OU when modelled alone.							
	_	Table 3.2.3	.2 - Od	our Emis	sion Perform	nance	Criteria	_
		Parameter	Perfo Meas	rmance ure	Standards		Statutory Requiremer	nt
		Odour Emissions	6 OU		German Standard	VDI	OEMP	



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			3940 'Determination of Odorants Ambient Air b Field Inspections	n Iy	
maintained use living r These poll microorgar processing ensure the	by the use of material to bio utants are abs nisms. Two bio areas at the odour control	of biofilters. Biof logically degrade sorbed into the l ofilter odour cont e Site. The two system is workin	ilters are pollutio and filter polluta piofilter material v rol systems (OCS		isms which use odours. en down by acent to the

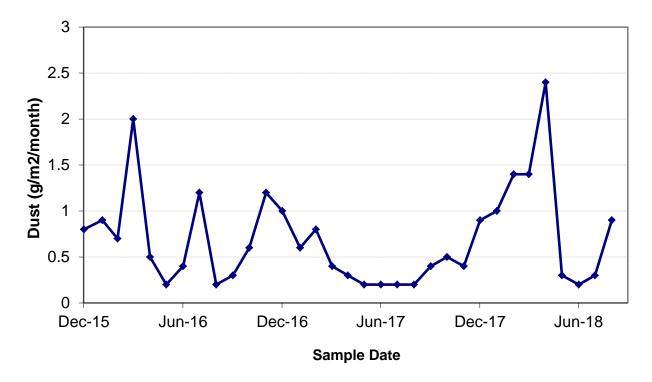


Figure 3.2.3 – MBT Depositional Dust Levels – DG33

3.3 Bioreactor Landfill Gas Monitoring results

Veolia operate the Bioreactor to maximise the production of landfill gas for generation of renewable energy at the Power Station, where 7 generators have been installed and commissioned, with 2 auxiliary flares as back up treatment of landfill gas emissions captured. The generators and flares satisfy the design, installation and operational requirements within the Consent and EPL.

The landfill gas extraction and utilisation infrastructure in the Bioreactor has been designed to meet the conditions of the landfill including settlement.



The findings from Landfill gas monitoring required under the Consent and EPL is summarised in **Table 3.3** below

	Table 3.3: Bioreactor Landfill Gas Monitoring Results							
Parameter				Results/Di				
Subsurface Gas	-	Monitoring of 3 subsurface gas monitoring bores (GMB) was undertaken on a quarterly basis as per EPL requirements and is summarised in Table 3.3.1 below:						
		Table 3.	3.1: S	ubsurface	Gas Mo	nitoring F	Result	
	Gas			Purged M			6)	
	Monitorii Bore ID	U	/2017	23/03/20	18 9/0	7/2018	16/08/201	8
	GMBH1	(0	0		0	0	
	GMBH2		C	0		0	0	
	GMBH4	1 (0	0		0	0	
Landfill Gas Extraction Booster	controlling landfill gas within the landfill void. Engineered impermeable barriers and the natural subsurface of the void wall also minimises the potential movement of landfill gas from the Bioreactor, allowing for maximum extraction through the gas collection system. The data reported for the landfill gas extraction booster at the Power Station is consistent to the historical average since 2016 as summarised in Table 3.3.2 below:							
	Table 3.3.						g Results Su	ummary
		Par	amete	r	Historio Averag		17/2018 Result	
		Tempe	rature	(° C)	2.7		5	
		Volumetric	Flow	(m3/hr)	2157		3400	
		Meth	nane (%	6)	53.4		51	
	The detailed data for each of the parameters required under the EPL for extraction booster is provided in Table 1 (refer Appendix 3).				the EPL for t	he gas		
Surface Gas	Surface gas monitoring was completed on a quarterly basis as per EPL requirements, which are summarised in Table 3.3.3 below. The detailed tabulated data is available in Table 2 (refer Appendix 3).							
		Table 3.3.3:	Surfa	ce Gas Mo	onitoring	Results	Summary	
		ameter	N	<i>l</i> linimum	Max	imum	Average	
	Met	hane (%)		0.0001	0	.08	0.009	
	Methane wa	s detected ir	n varvir	ng amounts	s over the	waste su	rface with a	
				<u> </u>	-	-		



	-	decreasing overall average of 0.009% during this reporting period compared to 0.010% last reporting period.				
	The emission threshold concentration for methane detected in surface gas emission testing is 500 parts per million (0.05%), as recommended in (Environmental Guidelines for Solid Waste Landfills, Second Edition 2016).					
	corrective acti maintain the e	Surface gas monitoring enables site operational personnel to investigate and apply corrective actions where any high concentrations of methane has been detected to maintain the effectiveness of the landfill cap and prevent migration of landfill gas through preferential pathways to the surface.				
	This can include application of cover material in areas of the void demonstrating settlement cracking, commissioning and rebalancing of gas extraction wells and installing additional gas collection infrastructure. During this reporting period vegetation mulch bio-cover was implemented around wells which have assisted in mitigating odour and reducing surface gas emissions.					
Landfill Gas Flare	The landfill gas flares are manufactured to a residence time of 0.3 seconds with a destruction efficiency of 98% for methane and non methanogenic organic compounds to meet the requirements of the EPL. Monitoring was continuously performed during this reporting period, an average of which is summarised in Table 3.3.4 below. Table 3.3.4: Landfill Gas Flare Monitoring Results					
		Parameter	Units	Result]	
		Temperature	°C	1057		
		Temperature	C			
		Residence Time	Seconds	< 0.3		



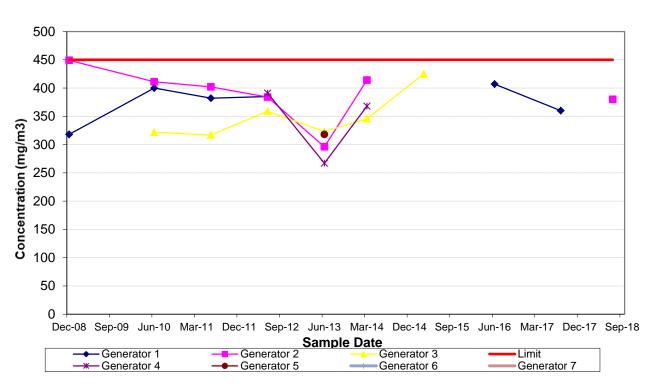


Figure 3.3.1 – Landfill Gas Engine Exhaust Point – Nitrogen Oxide Flow (mg/m³)

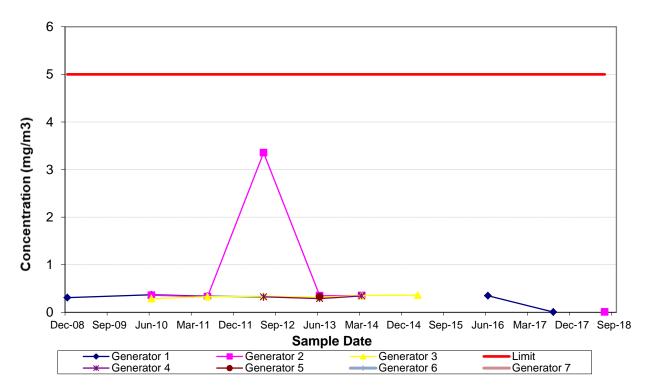


Figure 3.3.2 – Landfill Gas Engine Exhaust Point – Hydrogen Sulphide (mg/m³)



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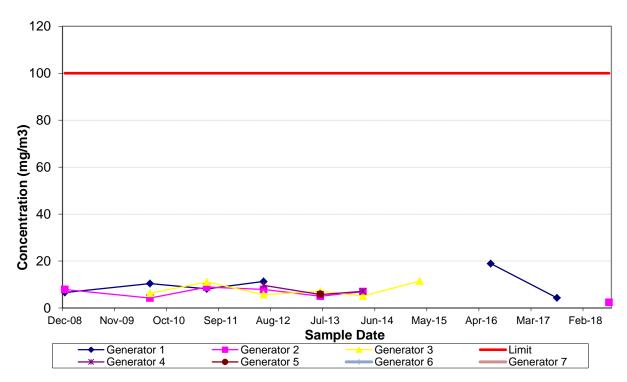


Figure 3.3.3 – Landfill Gas Engine Exhaust Point – Sulphuric Acid Mist and Sulphur Trioxide (mg/m3)

3.4 Water Monitoring

3.4.1 Bioreactor Surface Water Monitoring

The processes and management of water quality is documented and implemented on site in accordance with the EPL and the Landfill Environmental Management Plan (LEMP) for the Bioreactor. The LEMP provides guidance on the management of surface and stormwater systems such as drainage and pumping networks to divert clean water from any water that has come in contact with waste or leachate.

Clean surface and stormwater collected from within the void is pumped to Evaporation Dam 3 South (ED3S) for evaporation.

Water contaminated by waste or leachate is collected and treated in the Leachate Treatment System before being transferred to Evaporation Dam 3 North (ED3N) for evaporation. Mechanical evaporators may be used to assist evaporation and are controlled by wind direction sensors to prevent the drifting of sprayed liquids from the premises.

The wash bay, used for cleaning of containers and equipment associated with Bioreactor operations, collects sediment in a drainage sump. This sump is periodically drained and the resultant waste deposited in the Bioreactor.



The findings from water quality monitoring of surface water locations required under the Consent and EPL is summarised in Table 3.4.1 below with detailed data provided in Tables 5.1 - 5.10 (refer Appendix 3). Key quality indicators selected to identify likely impacts from the Bioreactor include:

- pH,
- Electrical conductivity (EC),
- Ammonia (NH3),
- Total organic carbon (TOC),
- Iron (Fe),
- Sulphate (SO4), and
- Zinc (Zn).

These are depicted in the trend graphs (Figures 3.4.1.1 - 3.4.1.10) provided in Appendix 4.

*It should be noted that for some monitoring locations, surface water monitoring results are only available to April 2018 as there was insufficient rain following this period to cause water flow. Hence samples were unable to be obtained for the purpose of conducting surface water monitoring.

*For Quarter 4 2018, monitoring was undertaken slightly earlier for 2 reasons samples are collected in conjunction with the Heron Resources Environmental Officer for safety reasons and the schedule followed was consistent with the previous reporting period.

1		4.1. Bioreactor Surface Water Monitoring Results
	Parameter	Results/Discussion
	Site 115 – Allianoyonyige Creek	Site 115 is situated downstream of the evaporation dams. 1 out of 4 quarterly monitoring events required under the EPL was undertaken in this monitoring period, due to insufficient flow, and have been documented in the Annual Return.
		Based on the results provided in Table 5.1 (refer Appendix 3), the pollutant concentration trends from previous monitoring periods are generally consistent.
		 Mean pH at 7.74 for this location indicates slightly alkaline water.
		 EC at 1080 µS/cm, indicating fresh to brackish water.
		 NH3 at <0.1mg/L and TOC at mean of 19 mg/L concentrations recorded in this monitoring period remain consistent with historical monitoring results
		 Heavy metal concentrations are of low magnitude for this reporting period – less than 0.0012 mg/L for Pb and less than 0.07mg/L for Zn, indicating no contaminated runoff is impacting surface water at this monitoring location.

Table 3.4.1: Bioreactor Surface Water Monitoring Results



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Demonstern	
Parameter	Results/Discussion
Spring 2	Spring 2 is located upstream of the Bioreactor and adjacent to Crisps Creek. The site therefore provides background water quality information to site operations. The spring naturally overflows to Crisps Creek during rainfall events.
	4 out of 4 quarterly monitoring events required under the EPL were undertaken in this monitoring period, and have been documented in the Annual Return. Water quality trend in Spring 2, based on the results provided in Table 5.2 (refer Appendix 3), is consistent with water quality from historical monitoring records.
	 pH is consistent with previous years (average 7.2) and reflective of the overall range of 3.5 – 8.5 for this location;
	 EC (average 522 µS/cm) for this reporting period is indicative of fresh water.
	 SO₄ (average 171 mg/L) shows an identical trend to conductivity, again indicating a direct effect on EC.
	 Pb (average 0.01mg/L) and Zn (average 4.50mg/L) concentrations continue to show slow decline from overall averages with some variability likely due to dilution following wet weather periods and concentration during drier periods.
	 NH₃ (average 0.25mg/L) and TOC (average 17mg/L) concentrations recorded in this monitoring period were consistent with historical monitoring results.
Site 105 – Crisps Creek	Site 105 is located downstream of the Bioreactor and tailings dams. 2 out of 4 quarterly monitoring events required under the EPL were undertaken in this monitoring period, due to insufficient flow, and have been documented in the Annual Return.
	Water quality trends in Site 105, based on the results provided in Table 5.3 (refer Appendix 3) are consistent with previous monitoring results.
	 pH (average 7.6) is within the overall range of 5.4 – 8.6 for this location, indicating relatively neutral water;
	 EC (average 1665 μS/cm) is consistent with historical results, reflecting brackish water.
	 TOC (average 20 mg/L) and NH₃ (average 0.1 mg/L) were consistent with historical trends.
	 Zn and Pb remain consistent and average 0.33 mg/L and 0.01 mg/L respectively consistent with historical results.
WM200 Raw Water Dam	The Raw Water Dam is located to the west of the dolerite stockpile and collects uncontaminated water. Quarterly monitoring events were undertaken in accordance with EPL conditions.
	Based on the results provided in Table 5.4 (refer Appendix 3), the



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Parameter	Results/Discussion
	results for WM200 remain generally consistent with the previous
	reporting periods.
	• pH (average 8.15) indicates slightly alkaline water;
	 EC (average 1655 µS/cm) is consistent with historical results;
	 SO₄ level (average 202 mg/L) is lower than previous reporting period;
	 Zn and Fe levels were lower at averages of 3.1 mg/L and 0.13mg/L respectively than previous reporting period;
	• TOC was an average of 7 mg/L in this reporting period which is consistent with historical results. This could be reflective of the presence of organic matter from riparian zone vegetation surrounding the dam.
	 NH₃ at an average of 0.45 mg/L is at quite low levels at this location.
WM201 – Entrance Road Culvert	Woodlawn Bioreactor administration office and workshop areas. 4 out o
	 pH is consistent (average 7.32) with previous reporting periods and remains within the overall range of 4.5 – 8.2 for this location;
	 EC at 387 μS/cm is reflective of fresh water and is consistent with previous reporting periods. EC variability can be caused by dilution during rainfall events.
	• Pb, Zn and Fe average 2.52 mg/L, 9.2 mg/L and 49.8 mg/L respectively, results in quarter 4 were high and treated as an anomaly as a subsequent sample was tested and resulted with usual readings.
	Veolia will continue to monitoring this location in the next reporting period for any likely contaminant run off impacts.
WM202 – ED3S	Evaporation Dam 3 South is a storage point to manage stormwater from the void by evaporation. Quarterly monitoring events were undertaken in accordance with EPL conditions.
	Water quality results indicated a similar trend to previously reported data as seen in Table 5.9 (refer Appendix 3).
	• pH levels indicate an acidic, yet stable trending result with the average pH of 3.17 appears to be generally consistent with previous reporting periods;
	 Fe (average 61.65 mg/L) is consistent with previous reporting periods;



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Parameter	Results/Discussion
	 Zn at an average of 788.75 mg/L is consistent with previous reporting periods;
	 SO₄ (average 8870 mg/L) is consistent with previous reporting periods
	 EC (average 10082.5 µS/cm) remains within the overall average. Both SO₄ and EC concentrations reflect the signature for Acid Mine Drainage (AMD) contaminated waters from remnant mining operations stored in Evaporation Dam 3 South.
	 NH₃ concentrations (average 138 mg/L) which is consistent with previous reporting periods.
WM203 – Evaporation Dam 3 North	Evaporation Dam 3 North (ED3N) is a storage point to manage treated leachate by evaporation. Quarterly monitoring events were undertaken in accordance with the EPL.
	Based on the water quality results provided in Table 5.7 (refer Appendix 3), for WM203, the following can be confirmed:
	 pH (average 8.23) appears to be generally consistent with previous reporting periods.
	 EC average (31275 µS/cm) appears to be fairly consistent with previous reporting periods;
	 SO₄ averages (5698.5 mg/L) is lower than previous monitoring periods
	 Fe levels (average 39 mg/L) are slightly higher than previous years whilst Zn levels (average 149.82) reflect a downward trend.
	 NH₃ concentrations (average 747 mg/L) remained stable over the course of the reporting period (592 – 885 mg/L).
	TOC is trending upward (average 1820 mg/L) from the previous reporting period.
Pond 3	Pond 3 is situated on a bench within the landfill void at a relative level (RL) of 740 m above sea level. Pond 3 acts as a transfer point to capture stormwater from the walls of the landfill void to Evaporation Dam 3 South.
	3 out of 4 quarterly monitoring events required under the EPL were undertaken in this monitoring period, due to insufficient flow, and have been documented in the Annual Return, the results of which are tabulated in Table 5.8 (refer Appendix 3). Pond 3 was decommissioned at the end of the reporting period. These water quality results are consistent with previous reporting periods.
	 pH average of 3.8 confirms acidic nature of water that comes in contact with the void walls and is generally consistent with previous results
	 EC (average 2765.7 µS/cm) is generally consistent with previous results;
	 SO₄ trends (average 1832 mg/L) is generally consistent with previous results



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Parameter	Results/Discussion
	 Pb average of 7.7 mg/L is generally consistent with previous results
	 Zn (average 206 mg/L) is generally consistent with previous results;
	 NH₃ (average 37 mg/L) and TOC (average 45 mg/L) both mirror a similar trend which appears quite variable over historical monitoring results.
	These results and trends are deemed representative of the stormwater quality captured from the walls of the void.
ED1 – Evaporation Dam 1	Evaporation Dam 1 (ED1) is a storage point to manage runof stormwater from its external catchment including dolerite stockpile area Quarterly monitoring events were undertaken in accordance with the EPL.
	 Based on the water quality results provided in Table 5.10 (refe Appendix 3), for ED1, the following can be confirmed: pH (average 3.1) which is consistent with previous reporting periods EC average 20125 μS/cm which is consistent with previous reporting periods SO₄ (averages 21825 mg/L) and Fe levels (average 99 mg/L) is greater than previous reporting period Zn levels (average 2967.5 mg/L) is greater than previous reporting period NH₃ concentrations (average 15.5 mg/L) remained stable ove the course of the reporting period. TOC averages 6 mg/L remains consistent with previous reporting periods
	Fe and Zn levels were noted significantly higher in quarter 4 this reporting period as Heron Resources were pumping into ED1 from the tailings dam at that time as part of the overall management of water across the site. Water will be progressively evaporated.
ED3SS – Lagoon 5	Evaporation Dam 3 South-South (ED3SS) is a new storage point to manage treated leachate by evaporation. Quarterly monitoring events were undertaken in accordance with the EPL.
	 Based on the water quality results provided in Table 5.6 (refe Appendix 3), for ED3SS, the following can be confirmed: pH (average 8.4) appears to be fairly consistent with the existing treated leachate quality EC average 24200 μS/cm appears to be generally consistent with the existing treated leachate quality SO₄ averages (675.75 mg/L) is lower than previous monitoring periods Fe levels (average 29.92mg/L) Zn levels (average 8.5mg/L) are lower than previous monitoring periods NH₃ concentrations (average 962.5 mg/L) remained stable ove the course of the reporting period



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Parameter	Results/Discussion
	 TOC (average 2420 mg/L) appears to be fairly consistent with
	the existing treated leachate quality

3.4.2 IMF Surface Water Monitoring Results

Surface water quality monitoring at three monitoring locations was undertaken as required by the EPL, the findings of which are summarised in Table 3.4.2. Detailed quality results are provided in Tables 9.1 to 9.4 (refer Appendix 3). The key quality indicators selected to identify any contamination in the receiving surface waters from site operations include:

- pH,
- Electrical Conductivity (EC),
- Sulphate (SO4),
- Iron (Fe),
- Zinc (Zn),
- Ammonia (NH3), and
- Total Organic Carbon (TOC).

These are depicted in trend graphs Figures 3.4.2.1 to 3.4.2.4 (refer Appendix 4).

Table 3.4.2: IMF Surface Water Monitoring Results		
Parameter	Results/Discussion	
Site 110 - Upstream	Site 110 is located upstream of the IMF in Crisps Creek. It approximately 8 km downstream of the Bioreactor.	
	Results provided in Table 9.1 (refer Appendix 3) indicate the follow trends:	
	 pH is close to neutral (average 7.50), consistent with previous reporting periods; 	
	 EC (average 881.50 µS/cm) is consistent with the previous period and representative of fresh water salinity; 	
	 SO4 (average 113.55 mg/L) is consistent with previous reporting periods; 	
	 Fe (average 0.28 mg/L) is consistent with previous reporting periods, whilst Zinc indicates a fluctuating trend (average 0.13mg/L), consistent with historical cyclic results; 	
	 NH3 (average 0.1 mg/L) is consistent with previous reporting periods and continues to be at non-detection levels. 	
	• TOC (average 13 mg/L) is slightly higher than the previous reporting period and is generally reflective of natural organic matter in streams.	
	While the indicator trends for this location indicate some variability over time, this is not uncommon when sampling intermittent streams.	
Site 130 -	Site 130 is located upstream of the IMF in the Mulwaree River.	
Upstream	Results provided in Table 9.2 (refer Appendix 3) indicate the following trends:	
	• pH is close to neutral (average 7.58), slightly lower than the	



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Parameter	Results/Discussion
	previous reporting period;
	 EC (average 401 μS/cm) is consistent with the previous reporting period and representative of fresh water salinity;
	 SO₄ (average 16.30 mg/L) is lower but generally consistent with previous reporting period;
	• Fe and Zn, average 0.72 mg/L and 0.02 mg/L respectively indicate consistency with fluctuating cycles in previous reporting periods;
	 NH₃ (<0.1 mg/L) continued to be un-detectable during this reporting period.
	 TOC (average 13.50 mg/L) is consistent with previous reporting periods.
Site 150 – Mulwaree	Site 150 is located 2 km downstream of the IMF on the Mulwaree River, which is also downstream of a railway bridge and Braidwood Road.
River	Results provided in Table 9.3 (refer Appendix 3) indicate the following trends:
	 pH (average 7.64) is slightly alkaline, consistent with the previous reporting period;
	 EC (average 680 µS/cm) shows a fluctuating trend and is generally consistent with previous periods and fresh water salinity;
	 SO₄ (average 45.35 mg/L) reflecting EC trend, is generally consistent with previous reporting period;
	• Fe and Zn, average 0.40 mg/L and 0.08 mg/L respectively indicate consistency with fluctuating cycles in previous reporting periods.
	 NH₃ (< 0.1mg/L) continued to be not detected during this reporting period.
	 TOC (average 14 mg/L), is generally consistent with previous reporting periods;
	These results are consistent with the trends for Site 110.
First Flush Stormwater	The IMF First Flush is located at the surface water outlet point of the site, prior to runoff into Crisps Creek.
Outlet	Results provided in Table 9.4 (refer Appendix 3) indicate the following trends:
	 pH (average 7.33) is close to neutral, consistent with the previous reporting period;
	 EC (average 124.17 μS/cm) shows a slight downward trend but is generally consistent with the previous period and representative of fresh water salinity;
	• SO ₄ (average 9.93 mg/L) is also slightly lower, reflecting EC trend, but generally consistent with previous reporting period;
	• Fe and Zn, average 0.83 mg/L and 0.07mg/L are generally



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Parameter	Results/Discussion	
	consistent with the previous period but reflective of fluctuating cycles.	
	 NH₃ (< 0.1mg/L) continued to be not detected during this reporting period. 	
	 TOC (average 6 mg/L) which is lower than previous reporting periods. 	

3.4.3 MBT Surface Water Monitoring Results

Quarterly surface water monitoring is carried out to monitor any potential surface water impacts of the project on the surrounding area.

Baseline data for surface water has been obtained from historical water quality monitoring undertaken for monitoring location Site 115 - Allianoyonyiga Creek.

For results of the surface water monitoring point Site 115, refer to section 3.4.1.

3.4.4 MBT Discharge Monitoring Results

Surface water discharge monitoring is conducted at the MBT facility to determine whether surface water flowing offsite could be contaminated as a result of operational activities. The results of discharge monitoring are assessed against discharge limits stipulated within the Consent and EPL 20476, which are described in Table 3.4.4.

Parameter	Performance Measure	Standards	Statutory Requirements
рН	6.5 – 8.5	Approved Methods for the Sampling and	
Total Suspended Solids (TSS)	50 mg/L	Analysis of Water Pollutants in New South Wales	EPL Condition L2.4

Table 3.4.4 - Discharge Parameters a	and Performance Measures
--------------------------------------	--------------------------

Condition 19 of the Consent states the stormwater retention pond must capture and store all stormwater runoff generated at the premises during a 24-hour duration 1-in-100-year Average Recurrence Interval (ARI) rainfall event. Following the commencement of operations the Facility must ensure it maintains a closed water management system, which ensures no discharge to the downstream environment.

Since start of the reporting period, no discharge events were recorded at Site 140. This is indicating compliance with this condition. This is due to low rainfall during this reporting period.



3.4.5 Bioreactor Leachate Monitoring Results

Leachate quality monitoring is undertaken annually at two monitoring locations in the Bioreactor as required by the EP. The findings from this reporting period are summarised in Table 3.4.5 below with the detailed data provided in Tables 6.1 and 6.2 (refer Appendix 3). The key quality indicators selected to characterize the leachate and identify any migration into groundwater or surface water monitoring locations include:

- pH,
- Electrical Conductivity (EC),
- Sulphate (SO4),
- Lead (Pb),
- Zinc (Zn),
- Ammonia (NH3), and
- Total Organic Carbon (TOC).

These are depicted in the subsequent trend graphs Figures 3.4.5.1 and 3.4.5.2.

	e 3.4.5: Bioreactor Leachate Monitoring Results	
Parameter	Results/Discussion	
Leachate Dam	The leachate dam is located at the northwest rim of the landfill void where leachate collected and extracted from the void is treated by aeration to oxidise organic compounds. An annual monitoring round was completed during this reporting period as per the requirements of the EPL.	
	Based on the results provided in Table 6.1 (refer Appendix 3), the characteristics of the leachate are:	
	 pH (8.26) is indicative of a slightly decreasing alkaline state from the previous reporting period result of 8.74 	
	 EC (23,500 µS/cm) is consistent with the previous reporting period; 	
	 SO4, one of the dominant anions, (354 mg/L) is consistent with previous reporting readings; 	
	 Pb (0.175 mg/L) and Zn (3.45 mg/L)) is consistent with the previous reporting period 	
	 NH3 (284 mg/L) is lower compared to previous reporting readings; 	
	 TOC (2790 mg/L) is consistent with previous reporting 	
Leachate Recirculation System	The leachate recirculation system is located within the landfill void, comprised of a network of drainage sumps, pipes, pumps and wells that are used to collect and extract leachate from the waste mass.	
	An annual round was completed during this reporting period in accordance with the EPL, the results of which are detailed in the Table 6.2 (refer Appendix 3).	
	Based on these results, the leachate collected directly from the recirculation system displays similar characteristics to the leachate	

Table 3.4.5: Bioreactor Leachate Monitoring Results



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Parameter	Results/Discussion		
	pond, with some exceptions as summarised below:		
	• pH (8.2) is generally consistent with previous reporting period;		
	 EC (40,300 µS/cm) is consistent with the previous reporting period and is generally consistent with the overall annual average for this location; 		
	 SO₄ (255 mg/L) is consistent with previous reporting period; 		
	• Both Pb and Zinc are consistent with previous reporting period, 0.326 mg/L and 2.4 mg/L respectively.		
	 TOC (7380 mg/L) is consistent with historical monitoring results. 		

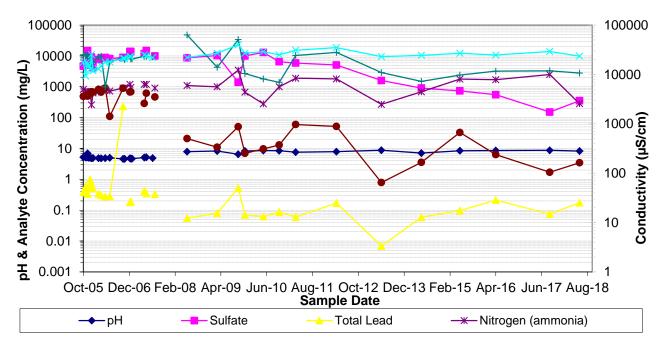


Figure 3.4.5.1 – Leachate Trends – Leachate Dam



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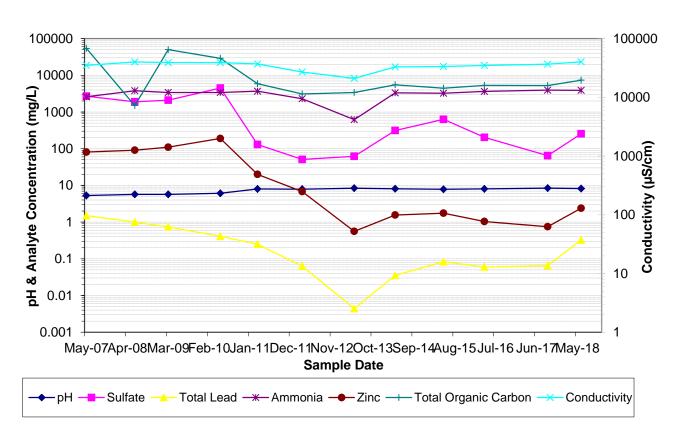


Figure 3.4.5.2 – Leachate Trends – Leachate Recirculation System 3.4.6 MBT Leachate Monitoring Results

Leachate quality monitoring is undertaken half-yearly at the MBT leachate aeration dam as required by the EPL. The findings from this reporting period are summarised in Table 3.4.6 below with the detailed data provided in Tables 6.3 (refer Appendix 3). Same key quality indicators are used as per section 3.4.5 and are depicted in Figures 3.4.6.

In addition to chemical testing, the level of the water in the leachate aeration pond is also monitored on a weekly basis and after every rainfall event to ensure the freeboard is not exceeded as per Condition O5.3 of the EPL.





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Parameter	Results/Discussion					
MBT Leachate Aeration Dam	The leachate aeration dam is located at the northern side of the MBT facility where leachate collected from the facility is treated by aeration to oxidise organic compounds in leachate.					
	Based on the results provided in Table 6.3 (refer Appendix 3), the characteristics of the leachate are:					
	 pH average (7.44) is showing a decreasing alkaline state from the previous reporting period result of 8.12. 					
	 EC average (13,800 μS/cm) has increased from the previous reporting period (1,200 μS/cm) due to increased organic load. 					
	 SO₄ average (154 mg/L) is lower than the previous reading (299 mg/L); 					
	 Pb average (0.0013 mg/L) and Zn (0.141 mg/L) is consistent with the previous reporting period. 					
	 NH₃ average (570 mg/L) is higher compare to previous reporting reading (3.5 mg/L); 					
	 TOC average (4100 mg/L) is higher compare to previous reporting reading (23 mg/L). 					
	The first round leachate sample was taken in May 2017 and was at the start of commissioning. The aeration dam was mostly accumulated by storm water. There is leachate collected and stored at the leachate pond during this reporting period, which resulted higher concentration in organic compounds and ammonia.					

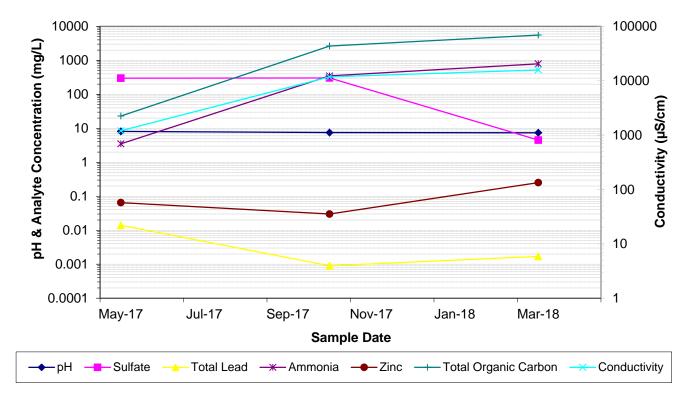


Figure 3.4.6 - Leachate Trends - MBT Leachate Pond

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3.4.7 Bioreactor Groundwater Monitoring Results

Groundwater quality monitoring at 15 locations was undertaken in this reporting period as required by the EPL, comprising of one annual and three quarterly rounds of monitoring, the results of which are summarised in **Table 3.4.7** below. Detailed data is provided in Tables **7.1 – 7.14** (refer **Appendix 3**).

The groundwater monitoring well network allows for an assessment of potential impacts from the waste operations at the Bioreactor, evaporation dams and tailing dams. The key quality indicators selected to detect any pollutants in groundwater samples are the same as those deemed characteristic for leachate and are as follows:

- pH
- Electrical Conductivity (EC),
- Sulphate (SO4),
- Lead (Pb),
- Zinc (Zn),
- Ammonia (NH3), and
- Total Organic Carbon (TOC).

These are depicted in the trend graphs Figures **3.4.7.1 to 3.4.7.14** (refer **Appendix 4**). In addition to water quality monitoring, standing water levels (SWL) of the wells are also measured in metres relative to sea level (m RL) and are depicted in the subsequent graphs Figures **3.4.7A**, **3.4.7B** and **3.4.7C**.

*It should be noted that the sampling frequency for some groundwater analytes are annual instead of quarterly, consistent with the requirements of the relevant EPL (refer section 3.4.8.

Table 3.4.7: Bioreactor Groundwater Monitoring Results						
Parameter	Results/Discussion					
MB1	MB1 is located down gradient of the landfill void. Based on the results provided in Table 7.1 (refer Appendix 3), the groundwater quality at this location can be described as:					
	 SWL (average 777.4 m RL) was slightly lower than previous reporting periods due to insufficient rainfall events; 					
	 pH (average 7.6) neutral – to slightly alkaline consistent with previous reporting period; 					
	 EC (average 1700 µS/cm) is slightly higher than but generally consistent with previous readings representing fresh water; 					
	 SO₄ (average 297.5 mg/L) is generally consistent with previous periods; 					
	 Pb and Zn (average 0.0002 mg/L and 0.076 mg/L respectively) are generally consistent with previous periods. 					
	• NH ₃ (average 0.1) is consistent with previous reporting periods.					
	 TOC (3 mg/L) is consistent with the previous reporting period and historical trends. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved. 					

Table 3.4.7: Bioreactor Groundwater Monitoring Results



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Parameter	Results/Discussion						
	All trends at this location indicate fairly stable concentration and ther no indication of contamination from mining or Bioreactor activities. N significant variations or anomalies were recorded for any analyte tes during this monitoring period.						
MB2	MB2 is located upstream of Evaporation Dam 2. Based on the results provided in Table 7.2 (refer Appendix 3), the groundwater quality at this location can be described as:						
	 SWL (average 778.93 m RL) was consistent with long term average since 2004; 						
	 pH (average 7.33) neutral, consistent with previous reporting period; 						
	 EC (average 6835 μS/cm) and SO₄ (average 3947.5 mg/L) is consistent with previous periods; 						
	 Pb (average 0.0002 mg/L) indicates a stable trend consistent with the previous reporting period. 						
	 Zn (average 0.05 mg/L) is generally consistent with previous reporting periods. 						
	 NH₃ (0.12 mg/L) same as previous monitoring periods of non- detection rates; 						
	• TOC (4 mg/L) is consistent with previous reporting periods.						
	All trends indicate fairly stable concentration and there is no indication of contamination from mining or Bioreactor activities. No significant variations or anomalies were recorded for any analyte tested during this monitoring period.						
MB3	MB3 is located upstream of the Bioreactor and mine site. Based on the results provided in Table 7.3 (refer Appendix 3), the groundwater quality at this location can be described as:						
	 SWL (average 791.42 m RL) was consistent with long term average since 2004; 						
	 pH (average 7.47) near neutral is consistent with previous reporting period; 						
	 EC (average 1997.5 μS/cm) is consistent with previous readings representing fresh water; 						
	 SO₄ (average 30.7 mg/L) is stable and consistent with previous periods; 						
	 Pb (average 0.0002 mg/L) and Zn (average 0.024 mg/L) are stable and consistent with previous periods. 						
	 NH₃ (0.1 mg/L) is consistent with previous monitoring periods of non detection rates; 						
	• TOC (4 mg/L) result is consistent with historical results. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.						
	All trends indicate fairly stable concentration and provide an indication of background groundwater concentrations.						



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Parameter	Results/Discussion					
MB4	MB4 is located downstream of the Bioreactor. Based on the results provided in Table 7.4 (refer Appendix 3), the groundwater quality at this location can be described as:					
	 SWL (average 773.76 m RL) was consistent with long term average since 2004; 					
	 pH (average 5.6) slightly acidic, consistent with previous reporting period; 					
	 EC (average 1605 μS/cm) represents fresh water salinity and is consistent with previous period. This trend is reflected in SO₄ (average 195.75 mg/L) results for this period; 					
	 Pb (average 0.0049 mg/L) remains stable while Zn (average 0.9 mg/L) is seen to fluctuate which appears consistent with historical cyclic trends; 					
	 NH₃ (0.1 mg/L) is consistent with previous monitoring periods of non detection rates; 					
	• TOC (2 mg/L) result is consistent with historical results. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.					
	All trends indicate fairly stable concentrations and there is no indication of contamination from mining or Bioreactor activities.					
MB6	MB6 is located downstream of Evaporation Dam 3 and upstream of the Bioreactor. Based on the results provided in Table 7.5 (refer Appendix 3), the groundwater quality at this location can be described as:					
	 SWL (average 791.02 m RL) was consistent with historical results; 					
	 pH (average 6.07) slightly acidic consistent with previous reporting period; 					
	 EC (average 5457.5 μS/cm) represents brackish water and the trend is mirrored by SO₄ (average 887 mg/L) consistent with previous periods; 					
	 Pb (average 0.0006 mg/L) and Zn (average 11.7 mg/L) is consistent with previous periods; 					
	 TOC (4 mg/L) and NH₃ average of 0.6 mg/l is lower than previous reporting period. 					
	Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.					
MB7	MB7 is located upstream of Evaporation Dam 3. Based on the results provided in Table 7.6 (refer Appendix 3), the groundwater quality at this location can be described as:					
	 SWL (average 785.93 m RL) was consistent with long term average since 2004; 					
	 pH (average 7.62) neutral is consistent with the previous reporting period; 					
	 EC (average 7467.50 µS/cm) and SO₄ (average 231.75 mg/L) follow a similar stable trend to previous reporting periods ; 					
	 Pb (average 0.0002 mg/L) is consistent throughout the reporting 					



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Parameter	Results/Discussion						
	period whilst Zn (average 0.18 mg/L) shows a fluctuating trend consistent with historical cycles;						
	 NH₃ (< 0.1 mg/L) is consistent with previous monitoring periods of non detection rates; 						
	• TOC (15 mg/L) appears consistent with the previous reporting period. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.						
	All trends indicate fairly stable concentration and there is no indication of contamination from mining or Bioreactor activities.						
MB10	 MB10 is located adjacent to Evaporation Dam 1. Based on the results provided in Table 7.7 (refer Appendix 3), the groundwater quality at this location can be described as: SWL (average 780.6 m RL) was consistent with previous 						
	 monitoring periods; pH (average 7.36) neutral is consistent with previous reporting pariods; 						
	 periods; EC (average 7747.5 μS/cm) is of brackish quality consistent with previous readings; SO₄ (average 3717.5 mg/L) mirrors EC and is generally 						
	 SO₄ (average 3/17.5 mg/L) mirrors EC and is generally consistent with previous periods; Pb (average 0.0002 mg/L) is stable while Zn (average 0.007 						
	 Fb (average 0.0002 mg/L) is stable while 2n (average 0.007 mg/L) and is generally consistent with previous reporting periods; 						
	 NH₃ (< 0.1 mg/L) is consistent with previous monitoring periods of non detection rates; 						
	• TOC (4 mg/L) appears consistent with the previous reporting period. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.						
	All trends indicate fairly stable concentrations and there is no indication of contamination from mining or Bioreactor activities.						
ED3B	ED3B is located downstream of Evaporation Dam 3. Based on the results provided in Table 7.8 (refer Appendix 3), the groundwater quality at this location can be described as:						
	 SWL (average 784.39 mRL) was consistent with previous monitoring periods; 						
	 pH (average 7.47) is neutral – slightly alkaline and consistent with previous reporting period; 						
	 EC (average 7685 µS/cm) indicating brackish water and SO₄ (average 986.25 mg/L) follow similar trends consistent with previous periods; 						
	 Pb (average 0.0005 mg/L) remains stable while Zn (average 0.23 mg/L) is consistent with previous monitoring periods. 						
	 NH₃ (0.1 mg/L) is at non detection rates; 						
	• TOC (12 mg/L) is slightly higher but reflective of historical results in previous reporting periods.						
	All trends indicate fairly stable concentrations at this location with no						



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Parameter						
	Results/Discussion evidence of contamination from mining or Bioreactor activities.					
WM1	 WM1 is located northeast of the landfill void. Based on the results provided in Table 7.9 (refer Appendix 3), the groundwater quality at this location can be described as: SWL (average 740.24 m RL) is consistent with previous monitoring periods; pH (average 7.69) neutral – to slightly alkaline consistent with previous reporting period; EC (average 2902.5 µS/cm) represents slightly brackish water, and is consistent with previous historical records; SO₄ (average 1607.5 mg/L) is similar in trend to EC and demonstrating a long term upward trend; Both Pb (average 0.007 mg/L) and Zn (average 6.22 mg/L) remain consistent with previous reporting periods. NH₃ (average 0.1 mg/L) is close to, or within, non-detection rates; TOC (3 mg/L) is consistent with previous monitoring period reflective of natural conditions; 					
	All trends indicate fairly stable concentrations at this location with no evidence of contamination from mining or Bioreactor activities.					
WM5	 WM5 is located to the west of the void near Evaporation Dam 3 South. Based on the results provided in Table 7.10 (refer Appendix 3), the groundwater quality at this location can be described as: SWL (average 784.09 mRL) is consistent with long term averages; pH (average 7.7) neutral is consistent with the previous period. EC (average 10170 µS/cm) is representative of saline water and consistent with the previous reporting period; SO₄ (average 313 mg/L) is consistent with previous monitoring periods. Pb (average 0.0002 mg/L) and Zn (average 0.009 mg/L) are both lower than the previous reporting period but can be seen to be fluctuating which appears consistent with historical cyclic trends; NH₃ (average 0.1 mg/L) is close to non-detection rates; TOC (14 mg/L) is consistent with previous monitoring periods reflecting natural conditions; 					
WM6	 WM6 is located to the west of the void adjacent to Evaporation Dam 3 North. Based on the results provided in Table 7.11 (refer Appendix 3), the groundwater quality at this location can be described as: SWL (average 786.06 m RL) is consistent with the previous reporting period; pH (average 6.39) is slightly acidic, but stable and consistent with previous reporting period; EC (average 13,750 µS/cm) represents brackish to slightly saline water, consistent with previous reporting period; 					



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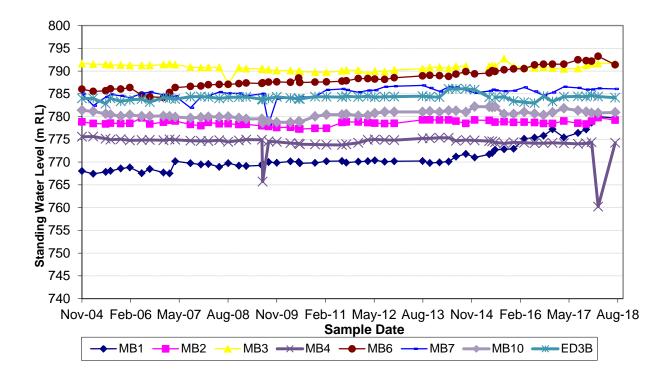
Parameter	Results/Discussion							
	 Pb (average 0.0042 mg/L) and Zn (average 0.214 mg/L) are both similar to the previous reporting period and generally consistent with historical fluctuations. 							
	 NH₃ (average 0.1 mg/L) is close to, or within, non-detection rates; 							
	 TOC (4 mg/L) is consistent with previous monitoring period reflecting natural conditions; 							
	All trends are relatively consistent and there is no indication of contamination from mining or Bioreactor activities.							
MW8S	MW8S is located northern side of ED3N. Based on the results provided in Table 7.12 (refer Appendix 3), the groundwater quality at this location can be described as:							
	 SWL (average 785.76 m RL) was consistent with long term average since 2004; 							
	 pH (average 7.44) is neutral and consistent with previous reporting period; 							
	 EC (average 11225 µS/cm) remains stable with previous reporting period results; 							
	 SO₄ (average 1328 mg/L) continues to show a declining trend but is generally consistent with previous periods; 							
	 Pb (average 0.0003 mg/L) is stable whilst Zn (average 0.86 mg/L) continues to show a declining trend from historical records. 							
	 NH₃ (average 0.1 mg/L) is close to, or within, non-detection rates; 							
	 TOC (7 mg/L) is consistent with previous monitoring period reflecting natural conditions; 							
	The fluctuations noted could be attributed to the recharging of this well only following significant wet weather events which indicates that this well intercepts the shallow unconfined aquifer.							
	There is no indication of contamination from mining or Bioreactor activities.							
MW8D	-							
	Table 7.13 (refer Appendix 3), the groundwater quality at this location can be described as:							
	 SWL (average 786.35 m RL) was consistent with long term average since 2004; 							
	 pH (average 6.88) slightly acidic to neutral consistent with previous reporting period. 							
	 EC (average 9580 µS/cm) represents brackish water which is consistent with previous readings; 							
	 SO₄ (average 3650 mg/L) mirrors EC consistent with previous periods; 							
	 Pb (average 0.0002 mg/L) and Zn (average 24.5 mg/L) are both consistent with previous periods; 							
	 NH₃ (< 0.1 mg/L) is at non detection rates; TOC (5 mg/L) is consistent with previous monitoring period 							



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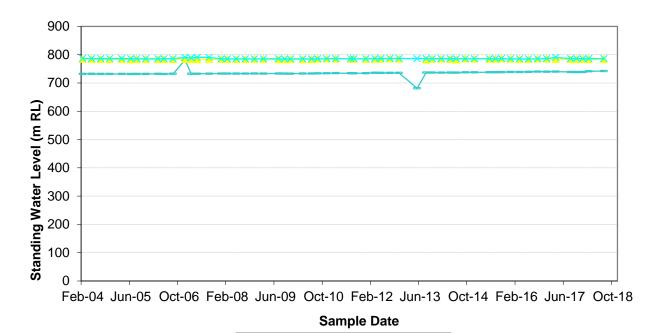
Parameter	Results/Discussion					
	reflecting natural conditions;					
	All trends indicate fairly stable concentrations with no evidence of contamination from mining or Bioreactor activities.					
MW9S	MW9S is located on the northwest side of ED3N. Based on the results provided in Table 7.14 (refer Appendix 3), the groundwater quality at this location can be described as:					
	 SWL (average 786.33) was consistent with previous reporting period; 					
	• pH (average 7.04) consistent with previous reporting period;					
	 EC (average 10,900 µS/cm) remains stable, consistent with previous reporting period for brackish water; 					
	 SO₄ (average 5092.5 mg/L) is consistent with previous periods; 					
	 Pb (average 0.0002 mg/L) and Zn (average 0.122 mg/L) were both generally consistent with historical results. 					
	 NH₃ (< 0.1 mg/L) is at non detection rates; 					
	 TOC (5 mg/L) reflecting natural conditions is consistent with historical results; 					
	No significant variations or anomalies were recorded for any analyte tested at this location during this monitoring period.					
MW10S	MW10S is located on the northeast side of ED3.					
	No sampling of MW10S could be undertaken during the reporting period as this well was continually dry This has been a consistent observation since the well was commissioned in 2007.					
	No data is available to produce tables or graphs for this monitoring poin					





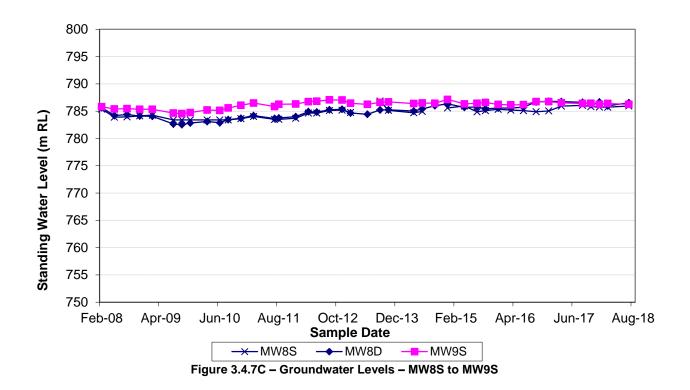
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—— WM1 <u>→</u> WM5 <u>→</u> WM6

Figure 3.4.7B – Groundwater Levels – WM1 to WM6





3.4.8 MBT Groundwater Monitoring Results

The ground water monitoring well was installed on 25 January 2017, immediately down gradient of the leachate aeration to enable the monitoring and detection of any leachate migration from the dam to the underlying groundwater.

Following the installation of the monitoring well, one baseline monitoring round was conducted in February 2017 to classify the general characteristics of groundwater encountered at the site prior to operations, as stipulated in the EPL. Four quarterly groundwater quality monitoring at WMBT Point 11 was undertaken in this reporting period as required by the EPL. Results are summarised in **Table 3.4.8** below. Detailed data is provided in Tables **7.15** (refer **Appendix 3**).

The key quality indicators selected are the same as listed in section 3.4.6 to detect any pollutants in groundwater samples are the same as those deemed characteristic for leachate. These key quality indicators are depicted in the trend graphs Figures **3.4.8** (refer **Appendix 4**). In addition to water quality monitoring, standing water levels (SWL) of the wells are also measured in metres relative to sea level (m RL) and are depicted in the subsequent graphs Figures **3.4.8A**.

	3.4.8: Bioreactor Groundwater Monitoring Results					
Parameter	Results/Discussion					
WMBT Point 11	WMBT Point 11 is located down gradient of the MBT leachate aeration pond. Based on the results provided in Table 7.15 (refer Appendix 3), the groundwater quality at this location can be described as:					
	 SWL (average 785.75 m RL) was consistent with the previous reporting period. The minimum level measured was 785.4 m RL and maximum level measured was 786.06 m RL. 					
	 pH (average 7.8) and is to slightly alkaline, which is consistent with previous reporting period; 					
	 EC (average 13875 µS/cm) is slightly lower than but generally consistent with previous reporting period readings; 					
	 SO₄ (average 541.5 mg/L) is consistent through this reporting period and lower than the average of the previous period; 					
	 Pb and Zn (average 0.00045 mg/L and 0.03775 mg/L respectively) are generally consistent with previous period with minor fluctuations. 					
	• NH ₃ (average 0.1) is consistent with previous reporting periods.					
	• TOC (14 mg/L) is slightly higher than the previous reporting period. This is due to a higher measurement in the first round of this reporting period. TOC concentration reduced to a lower level towards the end of the reporting period.					
	All trends at this location indicate consistent concentration and there is no indication of contamination from leachate or MBT activities. No significant variations or anomalies were recorded for any analyte tested during this monitoring period.					

Table 3.4.8: Bioreactor Groundwater Monitoring Results



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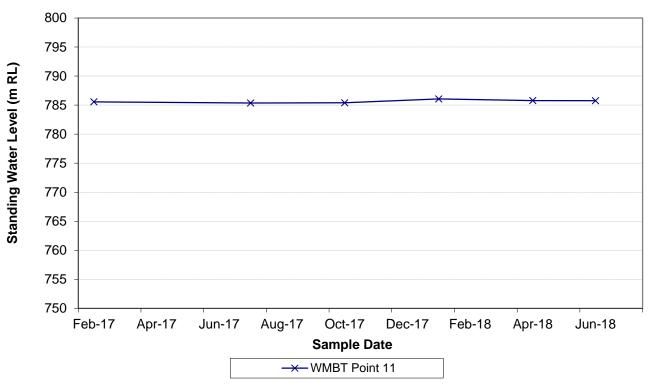


Figure 3.4.8 - Groundwater Levels - WMBT Point 11

3.4.9 Bioreactor Piezometers Level Monitoring Results

Measurements for groundwater standing water levels (SWL) in the vicinity of the Bioreactor were undertaken at 6 out of 6 piezometers around the landfill void in accordance with the EPL. Each location consists of a shallow (reference A) and deep (reference B) piezometer.

The findings of the monitoring are summarised in Table 3.4.9 below and detailed quarterly levels are provided in Tables **8.1 – 8.5** (refer **Appendix 3**). Standing water levels (SWL) of the piezometers are depicted Figures 3.4.9.1.

Parameter	Results/Discussion					
P38A & P38B	P38 is located east of the void. Standing water levels are presented in Table 8.1 (refer Appendix 3). This monitoring location was deemed unsafe to access due to a rock slip on the Southern side of the Bioreactor void wall in 2010. An application to remove this monitoring point from the licence was submitted to the EPA and rejected during this reporting period. Following this decision, Veolia engaged a geotechnical consultant and earthmoving company to provide safe access. Monitoring re-commenced immediately.					
	SWL in P38A (shallow aquifer)) indicated a stable standing water level ranging from 776.18 metres Relative Level (m RL) to 776.23 RL during					

Table 3.4.9: Bioreactor Piezometers Level Monitoring Results



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Parameter	Results/Discussion						
- arameter	this reporting period.						
	SWL in P38B (deep) ranged from 770.90 m RL to 771.11 m RL in this reporting period, consistent with previous reporting periods.						
P44 & P45	P44 and P45 were decommissioned at the end of quarter 1 in this reporting period and replaced by P200A and 200B						
P200A & P200B	P200 is located east of the void. Standing water levels are presented in Table 8.2 (refer Appendix 3).						
	SWL in P200A (shallow) showed a range of 754.46 m RL to 757.23 m RL and is stable.						
	SWL in P200B (deep) showed a range of 754.15 m RL to 756.95 m RL and is stable.						
P58A & P58B	P58 is located west of the void. Standing water levels are presented in Table 8.3 (refer Appendix 3).						
	SWL in P58A (shallow) showed a range of 763.95 m RL to 764.24 m RL and is stable.						
	SWL in P58B (deep) is similar to previous reporting period fluctuating between 751.85 m RL and 753.68 m RL.						
P59A & P59B	P59 is located west of the void and to the south of P58. Standing water levels are presented in Table 8.4 (refer Appendix 3).						
	SWL in P59A (shallow) ranged from 784.86 m RL to 786.88 m RL in this reporting period, consistent with previous reporting period.						
	SWL in P59B (deep) ranged between 784.58 m RL and 786.48 m RL, consistent with previous reporting period.						
P100A & P100B	P100 is located northeast of the void. Standing water levels are presented in Table 8.5 (refer Appendix 3).						
	SWL in P100A (shallow) is consistent with the previous reporting period averaging between 738.10 m RL to 739.46 m RL.						
	P100B (deep) averaged between 711.49 m RL and 722.84 m RL which indicates water above the base level of 698.29 m RL which has been recorded in previous periods.						
	This increase is likely due to the compaction of landfill waste at higher levels within the void preventing water ingress.						



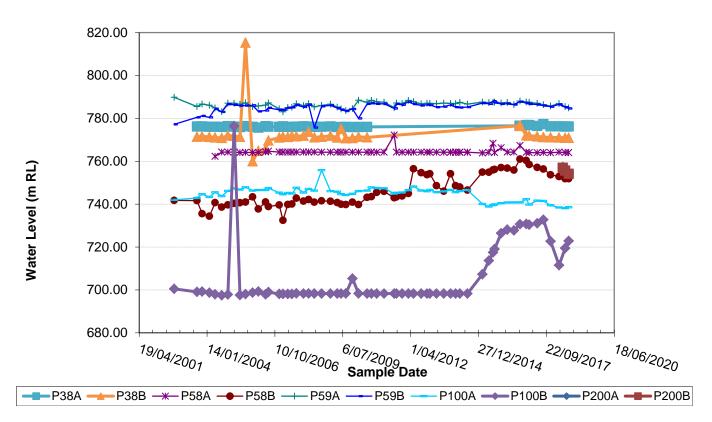


Figure 3.4.9.1 – Piezometer Standing Water Levels – P38 to P200

3.4.10 Bioreactor Evaporation Dam Volume Monitoring Results

The Evaporation Dam 3 (ED3) system comprises extracted (and treated) leachate from the landfill void and captured stormwater. The water volume has to be maintained in all Evaporation Dam 3 (Lagoon systems) below the freeboard level at all times.

Water levels are taken monthly as detailed in Table 3.4.10, which shows that the dam Relative Levels (RL) of ED3S, ED3S-S and ED3N Lagoon 4 remained below their respective freeboard levels at all times during the reporting period.



		•		U (
	ED3 S	OUTH	ED3 NORTH			
Date	ED3S	ED3S-S	ED3N Lagoon 1	ED3N Lagoon 2	ED3N Lagoon 3	ED3N Lagoon 4
	RL	RL	RL	RL	RL	RL
Sep-17	790.89	793.47	790.51	791.12	790.64	790.45
Oct-17	790.85	793.6	790.42	791.08	790.60	790.46
Nov-17	790.79	793.52	790.37	791.00	790.51	790.61
Dec-17	790.79	793.49	790.31	791.01	790.49	790.67
Jan-18	790.73	793.31	790.12	791.11	790.29	790.66
Feb-18	790.89	793.25	790.07	791.18	790.24	790.73
Apr-18	790.79	793.11	789.95	791.12	790.14	790.77
Apr-18	790.69	793.01	789.87	790.99	790.04	790.75
May-18	790.67	792.95	789.82	791.05	789.99	790.76
Jun-18	790.69	792.92	789.79	791.20	789.99	790.82
Jul-18	790.69	792.91	789.76	791.15	789.96	790.91
Aug-18	790.69	792.89	789.98	791.09	789.96	790.97
Minimum	790.67	792.89	789.76	790.99	789.96	790.45
Mean	790.76	793.20	790.08	791.09	790.24	790.71
Maximum	790.89	793.6	790.51	791.20	790.64	790.97
Max Freeboard levels	791.2	793.6	791.3	791.1	791	791.3

 Table 3.4.10: Bioreactor Evaporation Dam Volume Monitoring Results (RL - mAHD)



3.4.11 Extraction of Water

Table 3.4.11.1 below provides the volume of the water extracted from the Willeroo Borefield.

Month	Willeroo Bore Field Usage Volume per month KL
Sep-17	1522.3
Oct-17	824.4
Nov-17	865.7
Dec-17	1341.7
Jan-18	291.8
Feb-18	226.1
Mar-18	232.7
Apr-18	275.2
May-18	267.6
Jun-18	353.2
Jul-18	273.4
Aug-18	131.7
Total	6605.8

Table 3.4.11.1: Willeroo	Bore Field	Volume
		Volume

Heron commenced dewatering of the mine workings in May 2017 required for Heron Mine project. Water extracted from the mine decline is summarised in Table 3.4.11.2. Extracted water was transferred to ED2.

Month	Heron mine dewatering September 2017 - April 2018 Volume per month KL
Sep-17	2928
Oct-17	11009
Nov-17	4404
Dec-17	14543
Jan-18	17712
Feb-18	7471
Mar-18	Pump turned off
Apr-18	93839



Total Ground water extracted during the reporting period – **103,141 KL**

Leachate extracted from the Bioreactor for the water year (1 July 2017 to 30 June 18) was 85,435 m³. Leachate is treated through the existing Leachate Treatment Plant before being transferred to the ED3 dams for evaporation. For the monthly ED3 lagoon system Relative Levels refer to Table 3.4.10.

Additional assisted evaporators were installed in ED3N in February 2018 to reduce the volume of the ED3 dams.

3.5 Noise

3.5.1 Noise Monitoring

Operational activities at the Woodlawn Bioreactor and Crisps Creek IMF were restricted within the approved operating hours described in **Table 3.5.1** as per Conditions of the Consent.

Activity	Day	Hours
Operations	Monday- Saturday	6:00am-10:00pm
Sunday & Public Holidays		Nil

Table 3.5.1 Approved Hours of Operation

No noise complaints were received during this reporting period indicating that noise at the Bioreactor was likely maintained within the 35 dB(A) LAeq (15 minute) criteria at the nearest residential receiver. Noise monitoring will be undertaken by Veolia on the receipt of any such complaints.

3.5.2 MBT Noise Monitoring

Operational activities at the Facility were restricted within the approved operating/construction hours described in **Table 3.5.2.1** as per Schedule 3, Condition 27 of the Consent.

Activity	Day	Hours
Operation Hours	Monday – Saturday	6:00am – 10:00pm
Emergency Hours	Monday – Sunday	Anytime

Table 3.5.2A - Approved Hours of Construction & Operation

Note: Operation of BRS Drums and associated infrastructure is permitted over 24 hours.

Noise limits are stipulated in the Consent to ensure the site does not generate nuisance noise emissions as a result of construction or operational activities.



Table 3.5.2B- Noise Impact Assessment Criteria dB(A)				
Parameter	Performance Measure	Standards	Statutory Requirement	
Residences on privately owned land (during construction)	Laeq (15min) = 40dB	NSW Industrial	Schedule 3,	
Residences on privately owned land (during operations)	Laeq (15min) = 35 dB	Noise Policy (EPA)	Condition 25	
Traffic Noise on privately owned land	Laeq (1 hour) = 60dB	Environmental Criteria for Road Traffic Noise (DECC)	Schedule 3, Condition 26	

SLR Consulting was engaged to conduct operational noise monitoring to conduct a noise audit of the Woodlawn Mechanical Biological Treatment Facility, to determine if any impact of operational activities on nearby receivers occurs in regards to the emission of nuisance noise.

3.5.2.1 Operational Noise

Ambient noise measurements were conducted at the two locations as identified as the nearest residences on privately owned land, as specified in Condition 25 of the Consent. The results of the operator-attended measurements confirm the noise impact assessment criteria (Refer to Table 3.5.2.2) is complied with at the nearest residences on privately-owned land, with LAeq(15minute) noise levels recorded below 35 dBA at both locations. The operator-attended measurements also recorded levels higher than LAeq(15minute) 35 dBA, and in these instances the ambient noise environment was due to natural sounds such as birds, insects and frogs.

3.5.2.2 Traffic Noise

Traffic noise levels were calculated at the nearest residence to the road between the Crisps Creek Intermodal Terminal and Woodlawn MBT, for comparison with the Traffic Noise Impact Assessment Criteria specified in the approval. The results of the operator-attended measurements and calculation confirm the Project Approval (06_0239) noise criteria is complied with at the nearest residence on privately-owned land.

A copy of the noise audit report was submitted to the DPE on the 6 December 2017. The performance of the Facility in managing potential noise emissions was also assessed on the receipt of any noise complaints. No noise complaints were received in this reporting period.

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3.6 Waste

3.6.1 Waste Conformance

All waste received as part of the expanded operations was in accordance with the waste types permitted in the Consent and EPL.

Acceptance and screening of waste prior to final disposal was in accordance with the requirements of the Veolia Control of Non-Conforming Waste Procedure and NSW Resource Recovery Screening & Recording of Waste Procedure to ensure only conforming waste is received. Visual assessments of incoming waste were conducted by operators, as tipping/unloading occurred on the landfill surface.

No records of non-conforming waste were recorded during this reporting period. Incoming waste and the waste was received as per the condition 20, schedule 5 of project approval 10_0012.

3.6.2 Waste Volume Monitoring and Recording

The Consent stipulates that the expanded operations must not exceed the maximum annual input rates in following **table 3.6.2.1**.

Table 3.6.2.1 Maximum annual input rates for woodlawn Bioreactor				
Putrescible waste Received as residual		Putrescible regional		
received by rail from waste from Woodlawn		waste received by road		
· · ·				
Sydney	AWT			
Sydney 900,000 tpa	AWT 100,000 tpa	90,000 tpa		

Table 3.6.2.1 Maximum annual input rates for Woodlawn Bioreactor

All waste received is recorded in the Systems, Applications and Products in Data Processing (SAP) software. SAP also records vehicle registrations, the date and time of delivery, the gross and tare weight of the vehicle, as well as the nature and origin of the waste delivered by each contractor.

Table 3.6.2.2 Maximum annual input rates for Crisps Creek

Received by Rail from Sydney	Received by rail from Sydney for processing at the Woodlawn AWT
900,000 tpa	280,000 tpa

The data provided by SAP is used to track and monitor the amount of incoming waste in accordance with the limits of the Consent. **Table 3.6.2.3** indicates that the Woodlawn Bioreactor has remained within the annual waste limit stipulated within the Consent.



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Table 3.6.2.3 Incoming waste tonnage via rail and road per month for Woodlawn Bioreactor, MBT facility and Crisps Creek (IMF) during 2017/2018 reporting period.

Monitoring Period	Incoming Waste Received at the Woodlawn Bioreactor Via Crisps Creek IMF (tonnes)	Incoming Waste Received at the MBT Via Crisps Creek IMF (tonnes)	Incoming Waste Volumes received residual as waste from MBT (tonnes)	Incoming regional waste received by road (tonnes)
September 2017	46,809.660	9,516.640	6,281.670	3,723.000
Oct 2017	47,953.910	9,401.820	5,733.480	3847.060
Nov 2017	57,279.010	9,543.020	5,377.480	4844.890
Dec 2017	58,633.830	7,973.580	4,847.100	4615.880
January 2018	56,923.520	8,927.670	7,065.060	3781.840
February 2018	49,225.700	10,826.120	7,304.780	4521.440
March 2018	52,159.200	11021.500	8443.080	5282.990
April 2018	52,666.240	8,926.880	6,226.460	4693.860
May 2018	53,068.850	10,881.130	7,199.540	8808.030
June 2018	47,066.560	10,675.680	7,467.120	8495.380
July 2018	48,193.720	12,048.220	6,635.820	9654.720
August 2018	50,342.900	12,590.980	7,685.120	9328.360
TOTAL	620,323.10	122,333.24	80,266.71	71,597.45

Comparing the Total from Table 3.6.2.3 with the maximum input rates (Table 3.6.2.1 and 3.6.2.2) shows that the waste received at the Woodlawn was with in the allowed limits.



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Table 3.6.2.3 Forecast waste tonnages for the 2018/2019 reporting period.

Reporting period	Forecast Waste Received at the Woodlawn Bioreactor Via Crisps Creek IMF (tonnes)	Received at the	Forecast Waste received residual as waste from MBT (tonnes)	Forecast regional waste received by road (tonnes)
2018/19	630,000	143,000	80,000	90,000

3.6.3 MBT Waste Volume Monitoring

3.6.3.1 Waste Acceptance and Screening

Waste was screened in accordance with the NSW Resource Recovery Screening and Recording of Waste Procedure at the Clyde Transfer Terminal and Banksmeadow Transfer Terminal sites before the loading of waste into containers for the transportation to the Facility. If any waste is detected that is not acceptable through the screening process, it is rejected and cannot be loaded into the containers.

Once the waste is received at the Facility, the operator of the grapple crane inspected the waste as it is discharged from the vehicle, to check for nonconforming waste. In the event that easily extractable, bulk recyclable waste was detected this waste was separated from the general waste stream and set aside for removal from the facility to another facility licensed to receive this type of waste for processing or recycling. This includes waste types identified as less desirable to processing operations. No records of non-conforming waste were recorded during this reporting period.

3.6.3.2 Waste Volume Monitoring

Schedule 3, Condition 2 of the Consent stipulates that the Facility must not receive or process more than 240,000 TPA of mixed waste and 40,000 TPA of garden waste. Under the Facility operations (Stage 1), the site is approved to accept and treat 184,000 TPA, which includes 144,000 TPA of mixed waste and 40,000 TPA of garden waste. The WRVCP details the Waste Monitoring Program used to monitor and record incoming waste at the Facility. The performance measures for the waste volumes are detailed in **Table 3.6.5.2B**.



Table 3.6.5.2A - Stage 1 Waste Parameters and Performance Measures					
Parameter	Performance Measure	Standards	Statutory Requirement		
Mixed waste	240,000 TPA	NSW EPA Waste	Schedule 3,		
Garden waste	40,000 TPA	Classification Guidelines	Condition 2		

Veolia utilised the data provided by PWS to track and monitor the amount of incoming waste transported by rail to Crisps Creek Intermodal Facility and transferred to the Facility. **Table 3.6.5.2B** indicates that the Facility has remained within the annual waste limit stipulated within the Consent. Veolia shall continue to monitor incoming waste tonnages at the Facility for the following operational year.

Table 3.6.5.2B - Incoming Waste Ton	nages during Operations (Sep 2017 -	Aug 2018) at MBT

Source	Waste Type	Total TPA
Banksmeadow Transfer Terminal	Mixed Waste	81,839.56
Clyde Transfer Terminal	Mixed Waste	40,493.68
	TOTAL	122,333.24

3.7 Pests and Vermin

The management of pest and vermin at the Bioreactor and IMF were maintained through preventative and responsive mitigation measures as per the Landscaping Management Plan in the LEMP. Such measures included:

- Inspection of the site by a registered pest controller every two months;
- Weekly Site inspections to record site conditions such as evidence of vermin and pests; and
- Placement of rodent bait stations at various locations around the site

No pest and/or vermin complaints or management issues were reported during the operation of the Bioreactor during the reporting period.

3.8 Rehabilitation

Rehabilitation of the mine void through landfilling is a continuous process. Final rehabilitation works shall be completed in accordance with the closure and rehabilitation plan. The areas to be rehabilitated include:

- The Bioreactor
- Former Mineral Processing Area Plant Area
- Evaporation Dam 3



- Evaporation Dam 1
- Power Station; and
- Office and car park areas

In 2008 to 2010, Veolia commissioned Golder Associates Pty Ltd to do a detailed contamination assessment of the Former Mineral Processing Area. Veolia post this assessment transported the main contaminates to the tailings dam area, which included the lead reverse tailings dam, which was located in the south part. Landscaping and reshaping the current area will begin post construction activities by Heron Resources.

Veolia will consult with OEH on the final rehabilitation plans and plant species to be adopted within the rehabilitation areas, once a suitable rehabilitation design is selected and additional detail is developed.

Other areas of the mine site are subject to a current development approval by Heron Resources Limited Pty Ltd (Heron). Under the approved development, Heron are proposing to undertake further underground mining and reprocessing over various areas of the mine site. Rehabilitation of other areas, will be the responsibility as identified in Heron Mining Operations Plan (MOP).

On the ongoing basis, Veolia has undertaken vegetation monitoring and tree planting programs at the Eco-Precinct site. Tree planting aims to increase native species, which in turn creates new habitats for native fauna. Tree planting programs may include the following activities:

- Identification of suitable locations for planting;
- Assessment of existing vegetation and trees;
- Purchase of native saplings;
- Planting of saplings, generally with local volunteer groups
- Funding of tree planting program
- Installation of sapling tubes / tree guards
- Application of fertiliser and/or mulch as required

Mixed Waste Organic Output produced from the MBT will be focused on rehabilitation of Heron area of operation initially – tailing dams.



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SECTION 4 ENVIRONMENTAL PERFORMANCE

The environmental performance of the expanded operations was assessed through the results of environmental monitoring, internal inspections, as well as external environmental audits.

4.1 Non-Compliances and Corrective Actions

4.1.1 Non-Compliance

The Independent Enviornmental Audit (IEA) carried out for the Bioreactor and IMF in this reporting period (2017-2018) determined non-compliances against the PA. These are summarised as followed in **Table 4.1.1** below and the status of corrective actions to resolve/manage these non-compliances are also provided.

Finding	Consent	Recommendation	Corrective Action	Status
	Condition			
Community Liason Committee	Schedule 7 condition 2 of Project Approval 10_0012	Verify that all current members of the CLC have been endorsed by the DPE	Seek endorsement from DPE	Completed 22/05/2018
Train movements at IMF – Veolia received an official caution on the 13/07/18	Schedule 5 condition 20 of Project Approval 10_0012	Clarify with DPE whether approval is required for continued splitting of the second train each day at Goulburn into two movements to the IMF until the Tarago rail upgrade works are complete	Veolia will seek clarification from DPE if splitting of the second train at Goulburn will trigger any approval requirements.	Tarago Loop Extension works are expected to commence in the second half of 2019. Once these works are completed there will no longer be a need to split Train 2. At this point in time the entire Train 2 will access the IMF at around 11:45am and depart at 4.30pm. Note: splitting of train has not caused any operational interruptions or environmental harm and no complaints have been received at the CC IMF.

Table 4.1.1: 2017-2018 period findings and non-compliance against the Consent

There were two non-compliances in this reporting period (2017-2018), which is a reduction from the last reporting period (2016-2017) where there were six non-compliances. The corrective



actions for which were all completed. The Odour Management is an ongoing activity and with the Evaporation Dam 1 and 2 lining assessment, Veolia completed the Ecological Risk Assessment and Evaporation Plan in the 2017-2018 reporting period.

No IEA is yet required to be scheduled for the MBT until the next reporting period.

4.2 Complaints

Veolia operates a 24-hour telephone complaints line that enables the receipt of complaints from members of the public, as required under the EPLs. Other complaints that were received off site during this reporting period were logged by the EPA. Veolia recorded a total of 42 complaints, relating only to odour, during this reporting period. Upon receipt of an odour complaint, Veolia recorded all details into the site complaints register as required under the EPL, and Site Management followed up with the complainant to determine the nature (and scale) of the odour.

In order to engage proactively in effective odour management, Veolia participates in regular community liaisons to encourage and gather feedback from the local residents regarding the odour performance at the Bioreactor. These liaisons are facilitated through either the Community Liaison Committee (CLC) to voice their concerns with the Bioreactor site and at the Tarago & District Progress Association Inc. (TADPAI) meetings. Veolia continues to implement activities to eliminate and minimise odour sources at the site based on annual odour audit recommendations.

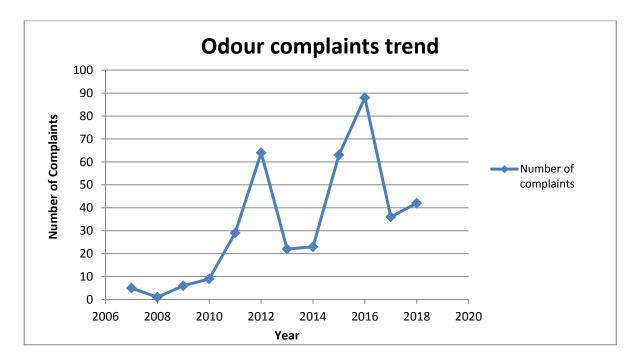


Figure 4.2: odour complaints trend



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SECTION 5 CONCLUSION

Based on the results of monitoring undertaken at the Bioreactor, IMF and MBT sites in accordance with the respective PA conditions and EPLs, the overall environmental performance of the Woodlawn Eco-Precinct in this reporting period can be demonstrated to be well managed.

Bioreactor, IMF and MBT Improvements

A number of improvements to the environmental management of the Woodlawn Bioreactor have been implemented during this reporting period. These improvements were implemented as a result of the recommendations and findings identified by independent environmental audits, regulatory inspections as well as Veolia's internal assurance program.

Examples of these improvements include:

- Completed Ecological Risk Assessment for Evaporation Dam 1 and 2
- Construction of the Leachate Treatment Plant commenced in December 2017 as • part of the Long Term Leachate Treatment Project
- Completed construction of HDPE lined dam within ED1 footprint to store treated effluent from the new Leachate Treatment Plant
- Installed leachate extraction pumps in the areas where LFG extraction is impacted by the leachate
- Designing of the new waste tipping profile and quality assurance of the tipping activity to meet the profile design
- LFG extraction wells extension to the new tipping lift with perforated pipe sections
- Use of matured MWOO for capping inside of the MBT Fermentation Building to improve MWOO composting process
- Increased frequency and use of new cleaning techniques to clean both inside and outside of the MBT facility buildings to ensure litter and leachate is contained

Veolia intend to undertake following to improve the community and environmental performance in the next reporting period:

- Groundwater and surface water assessment around ED1 as part of the Evaporation Dam Seepage Management Strategy for ED1
- · Construct a series of buffer/collection ponds in different catchment areas around the void as part of the new storm water management in the Void
- Leachate minimisation strategy
- Commission and operation of the new Leachate Treatment Plant to extract and treat leachate more efficiently
- Further assessment of the west side of the Bioreactor to further improve the groundwater monitoring network as WM4 was decommissioned during the previous reporting period



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- MBT odour control system humidification recirculation system to improve moisturisation of biofilter medium and reduce wastewater generation
- Install and commissioning additional aerator inside of MBT aeration pond to improve leachate quality and reduce potential odour
- In consultation with the NSW EPA, re-establish site specific exemption at Woodlawn Eco-Precinct and Woodlawn Mine for the ongoing use of MWOO



REFERENCES

- Veolia Environmental Services Environment Assessment: Woodlawn Expansion Project Volume 1 Main Report, URS Australia Pty Ltd, August 2010
- Veolia Environmental Services Environment Assessment: Woodlawn Expansion Project Volume 2 Appendices, URS Australia Pty Ltd, August 2010
- Waste Classification Guidelines Part 1: Classifying Waste, NSW Environment Protection Authority, November 2014;
- Environmental Guidelines: Solid Waste Landfills Second Edition, April 2016.
- Ramboll Environ (2016). Woodlawn Bioreactor and Crisps Creek Intermodal Facility Independent Environmental Audit 2016, Ramboll Environ. December 2016

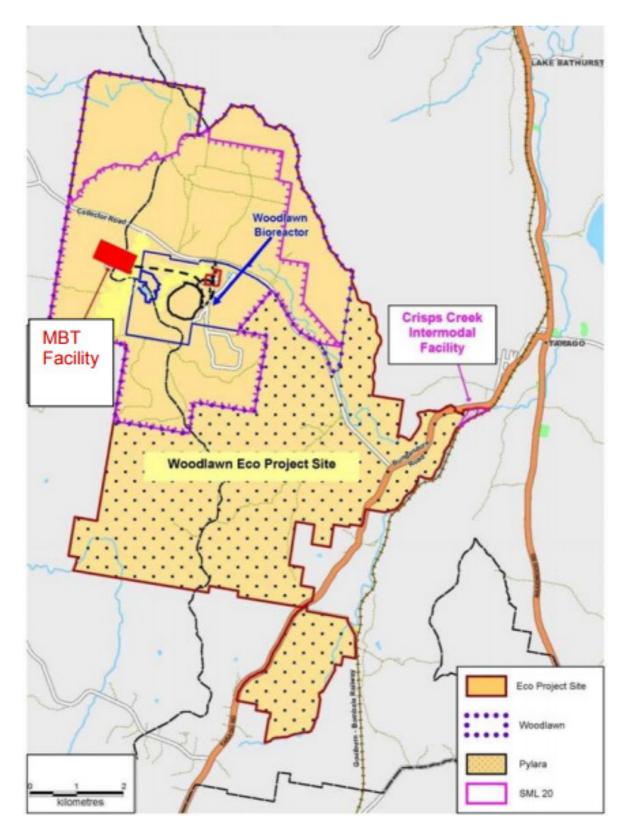


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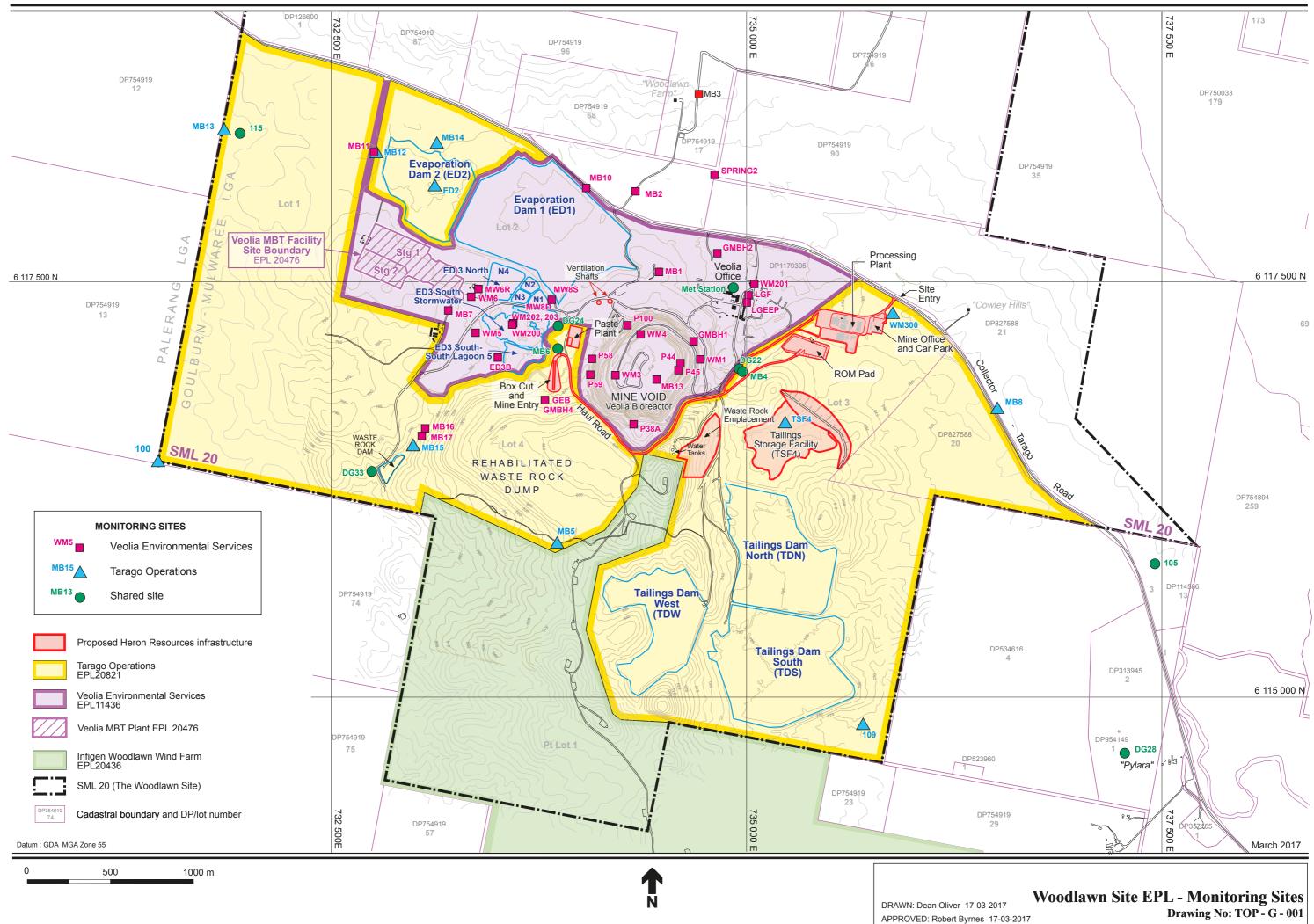
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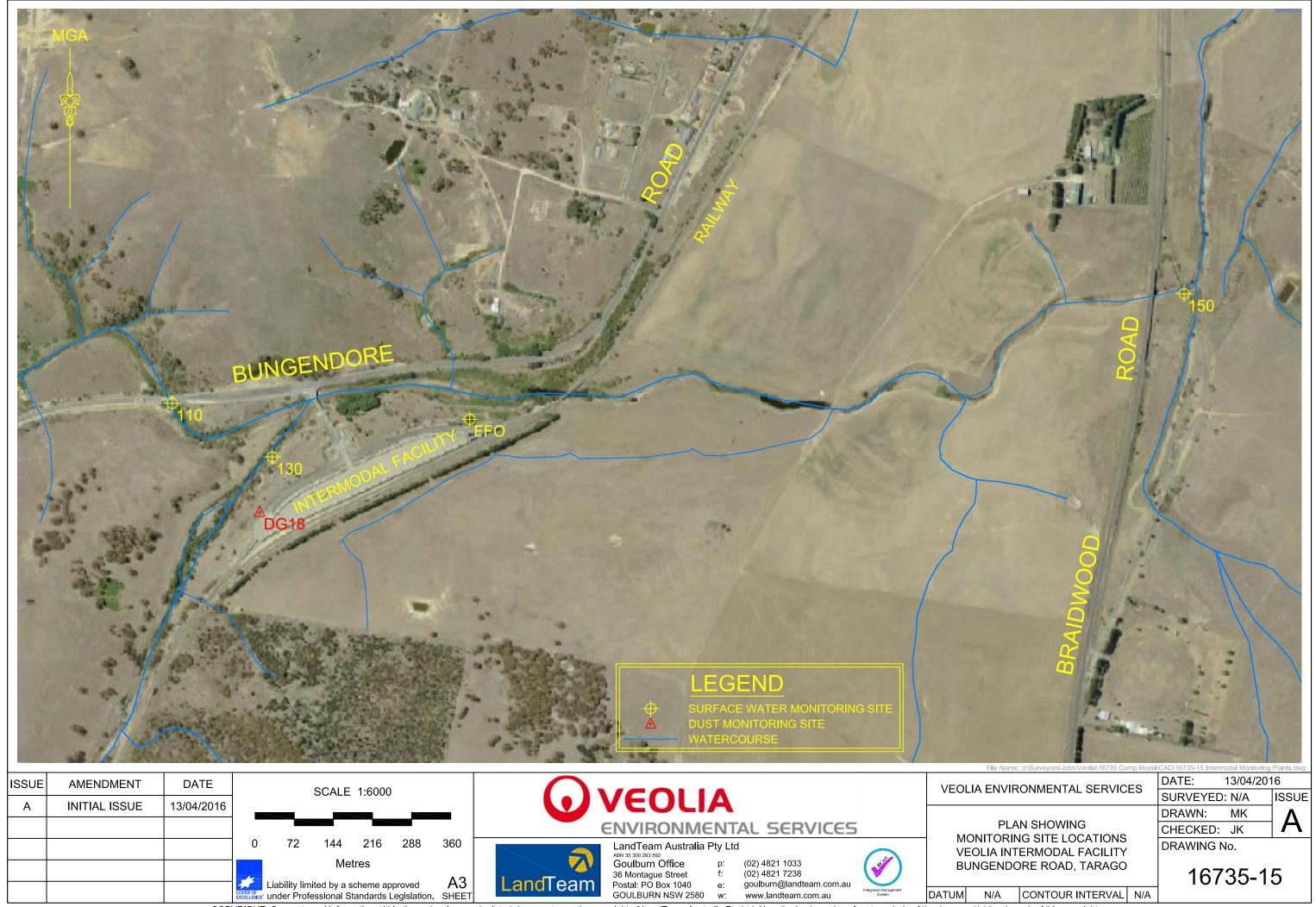
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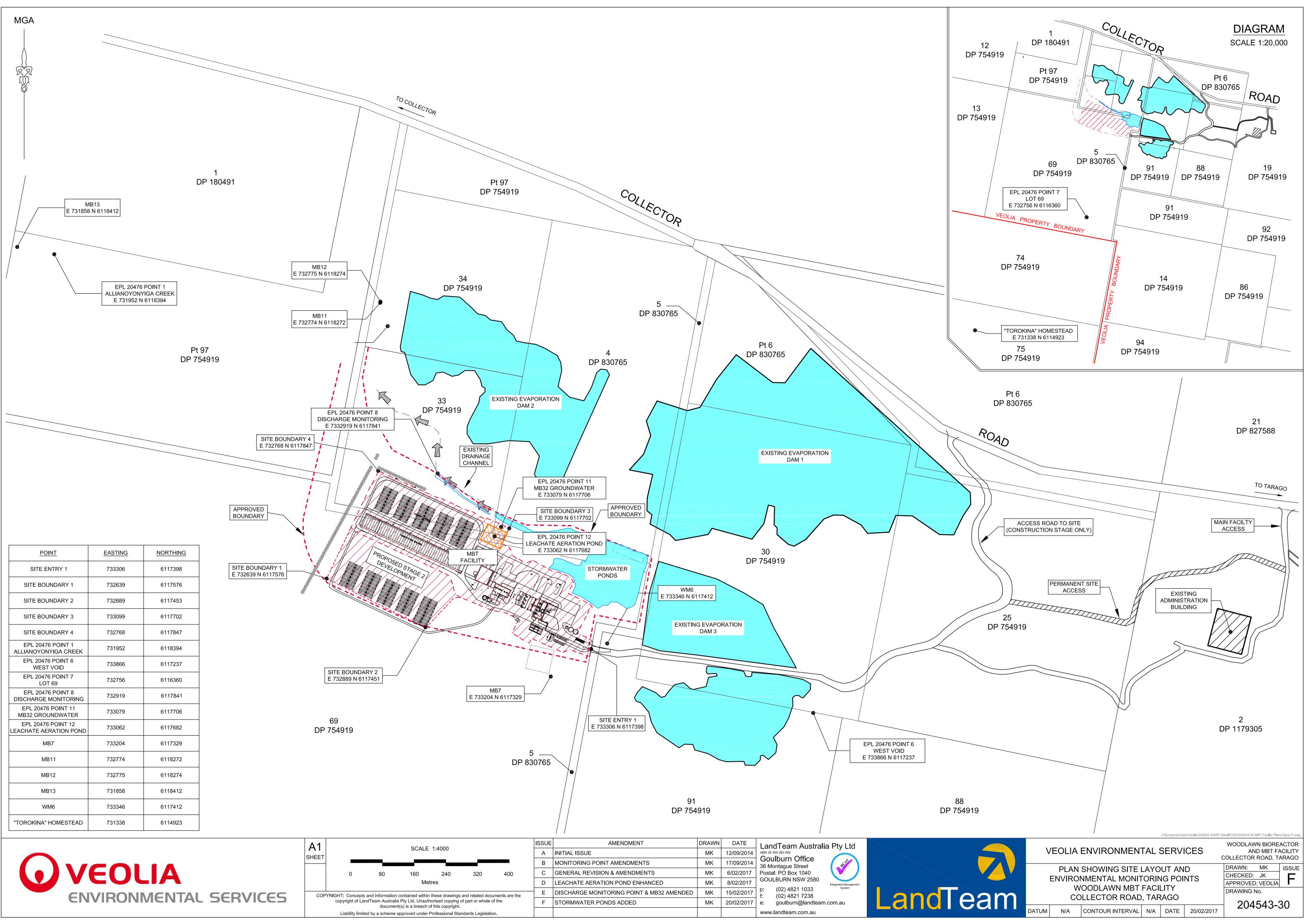
APPENDICES



Woodlawn Bioreactor, Crisps Creek Intermdal Facility and MBT Facility Location Plan









41 HEET			SCALE	1:4000	
	0	80	160	240	320
		00	Met		520

			•	Table 1	- Landfill G	as Extra	action Bo	oster Res	ults		
EPL 11436	Date	DateCarbon DioxideDry Gas DensityMoisture Content		Molecular weight of stack gases	Oxygen	Temperature	Volatile Organic Compounds	Volumetric Flow rate	Volumetric Flow rate	Methane	
		%	%	%	mg/m3	%	Deg C	mg/m3	m3/hour	m3/sec	%
	1/06/2011	37.04			N/A	1.09	22.2		771.83	0.21	
	14/10/2011	34.8	11617	8.5	30.17	1.6	44.7	0.09	5380	1.49	48.6
	6/05/2013	36.1			N/A	0.53	32.2		2124	0.59	61.4
	29/05/2014	44.7	105	7.8	N/A	1.68	47.8		2520	0.7	48
	5/08/2015	46.9	104.2	7.6	N/A	0.3	39.1		3010	0.84	50.4
	2/06/2016	39	1,250,000	0.50	N/A	1.2	2.4	Attached Document	1814	0.50	57
	1/08/2017	36.5	1,270,000	<0.4	N/A	3.6	3	Attached Document	0.7	2500	49.82
	25/07/2018	37	1,270,000	<0.4	N/A	3.4	5	Attached Document	0.94	3400	51
OVERALL	Minimum	34.8	104.2	0.5	30.17	0.3	2.4	0.09	771.83	0.21	48
	Maximum	46.9	1270000	8.5	30.17	3.6	47.8	0.09	5380	3400.00	61.4
	Average	39.29	633637.70	6.10	30.17	1.68	36.7	0.09	1952.68	738.04	52.32
	StdDev	4.66	N/A	N/A	N/A	1.22	19.12	N/A	1782.81	1386.28	4.98

Count

Table 2 - Surface Gas Monitoring Results

		12/1	2/2017		
Transect	Time	No of measurements	Min Methane (%)	Max Methane (%)	Average Methane (%)
1	7:45:00 AM	6	0.0007	0.0113	0.0050
2		8	0.0016	0.0205	0.0060
3		▲10	0.0021	0.0112	0.0051
4		11	0.0015	0.0205	0.0081
5		11	0.0006	0.0116	0.0058
6		11	0.0027	0.0154	0.0072
7		11	0.0021	0.0185	0.0078
8		11	0.0004	0.0133	0.0065
9		11	0.0009	0.0247	0.0092
10		11	0.0023	0.0223	0.0107
11		11	0.0007	0.0507	0.0182
12	+	15	0.0006	0.0188	0.0084
13		8	0.0009	0.0118	0.0049
14		7	0.0006	0.0129	0.0043
15	14:30:00 PM	5	0.0001	0.0106	0.0030
Total Me	asurements	135	0.000	0.051	0.008

	▲Quarter 2 - Surface Gas Results											
Transect	Time	No of measurements		Max Methane (%)	Average Methane (%)							
1	7:45:00 AM	5	0.0022	0.0136	0.0060							
2		8	0.0012	0.0205	0.0060							
3		10	0.0031	0.0180	0.0068							
4		11	0.0018	0.0279	0.0098							
5		11	0.0051	0.0290	0.0144							
6		11	0.0045	0.0335	0.0149							
7		5	0.0081	0.0423	0.0215							
8		11	0.0017	0.0296	0.0099							
9		11	0.0017	0.0365	0.0114							
10		11	0.0006	0.0294	0.0059							
11		11	0.0009	0.0224	0.0079							
12	+	15	0.0012	0.0603	0.0116							
13		10	0.0007	0.0426	0.0083							
14		9	0.0007	0.0068	0.0031							
15	14:30:00 PM	7	0.0011	0.0054	0.0026							
Total Mea	surements	146	0.001	0.060	0.009							

Quarter 3 Surface Gas Results

		22/00	5/2018		
Transect	Time	No of measurements	Min Methane (%)	Max Methane (%)	Average Methane (%)
1	1:45:00 PM	5	0.0023	0.0272	0.0088
2		7	0.0089	0.0238	0.0154
3		11	0.0026	0.0170	0.0083
4		10	0.0013	0.0320	0.0098
5		9	0.0013	0.0360	0.0110
6		8	0.0010	0.0116	0.0041
7		9	0.0007	0.0167	0.0056
8		12	0.0014	0.0133	0.0063
9		12	0.0011	0.0315	0.0090
10		11	0.0013	0.0109	0.0054
11		11	0.0006	0.0272	0.0054
12	*	14	0.0008	0.0790	0.0147
13	1	10	0.0014	0.0380	0.0126
14		9	0.0023	0.0171	0.0084
15	4:30:00 PM	7	0.0017	0.0078	0.0047
Total Me	asurements	145	0.001	0.079	0.009

Quarter 4 -	Surface G	as Results
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		28/08/	2018		
Transect	Time	No of measurements	Min Methane (%)	Max Methane (%)	Average Methane (%)
1	1:45:00 PM	4	0.0012	0.0823	0.0289
2		5	0.0033	0.0790	0.0233
3		9	0.0006	0.0215	0.0072
4		11	0.0004	0.0120	0.0031
5		11	0.0007	0.0083	0.0035
6		11	0.0005	0.0113	0.0052
7		10	0.0012	0.0172	0.0056
8		10	0.0023	0.0128	0.0073
9		10	0.0017	0.0788	0.0214
10		11	0.0005	0.0105	0.0052
11		11	0.0012	0.0268	0.0094
12	÷	14	0.0012	0.0193	0.0068
13		10	0.0013	0.0201	0.0073
14		9	0.0013	0.0118	0.0055
15	4:30:00 PM	8	0.0017	0.0134	0.0047
Total Meas	surements	144	0.000	0.082	0.010

2017/	2018 Surface Gas	2017/2018 Surface Gas Results Summary										
	Minimum	Maximum	Average									
Methane (%)	0.000	0.082	0.009									

													-			
								EPL Limit		EPL Limit						EPL Limit
								450		100						5
EPL 11436		Date	Carbon Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack Gases	Nitrogen Oxides	Oxygen	Sulfuric Acid Mist & Sulfur Trioxides S03	Sulphur Dioxide	Temperat ure	Velocity	Volatile Organic Compoun ds	Volumetri c Flowrate	Hydrogen Sulphide
			%	mg/m3	kg/m3	%	gr/gr mole	mg/m3	%	mg/m3	mg/m3	Deg C	m/sec	mg/m3	m3/sec	mg/m3
		3/04/2009	11.6	962	1.35	5.6	30.2	318	8.2	6.58	21	455	50.5	3.62	1.71	0.31
		10/02/2010	13.3	1073	1.36	5.3	30.472	400	8.2	10.4	3	475	46.4	1.74	1.59	0.37
		30/06/2011	10.4	1011	1.34	3.3	30.032	382	9.2	8.13	56	418	42.9	4.14	1.6	0.34
		20/06/2012	11.6	997	1.35	8.3	30.172	385	8.2	11.3	214	447	45	0.09	1.49	0.326
		11/06/2013						Gen	erator 1 wa	s not availal	ble					
		25/03/2015						Gen	erator 1 wa	s not availal						
		2/06/2016	9.3	898	1.33	4.7	29.9	407	9.5	18.9	72	463	47.8	3.9	1.64	0.35
		1/08/2017	11.6	670	1.35	8.8	30.3	360	8	4.3	110	460	50	1.4	1.7	0.0074
		25/07/2018								s not availal						
OVERALL			9.3	670	1.33	3.3	29.9	318	8	4.3	3	418	42.9	0.09	1.49	0.0074
	Maximum		13.3	1073	1.36	8.8	30.472	407	9.5	18.9	214	475	50.5	4.14	1.71	0.37
	Average		11.30	935.17	1.35	6.00	30.18	375.33	8.55	9.94	79.33	453.00	47.10	2.48	1.62	0.28
	StdDev		1.35	142.12	0.01	2.13	0.20	32.47	0.63	5.07	76.03	19.48	2.93	1.64	0.08	0.14
	Count		6	6	6	6	6	6	6	6	6	6	6	6	6	6
					Tab	le 3.2 -	Landfi	ll Gas	Engine	Resul	ts - Ge	nerator	· 2			
		l l						EPL Limit	-	EPL Limit						EPL Limit
								450		100						5
EPL 11436		Date	Carbon Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack	Nitrogen Oxides	Oxygen	Sulfuric Acid Mist & Sulfur Trioxides	Sulphur Dioxide	Temperat ure	Velocity		Volumetri c Flowrate	

Table 3.1 - Landfill Gas Engine Results - Generator 1

	11400		Dioxide	Wohokide	Density	Content	Gases	ONICCO		Trioxides S03	DIOXIGC	urc		ds	eriowiate	Gupnice
			%	mg/m3	kg/m3	%	gr/gr mole	mg/m3	%	mg/m3	mg/m3	Deg C	m/sec	mg/m3	m3/sec	mg/m3
		8/12/2008	9.3	674	1.31	6.2	29.4	449	10	7.88	10	437	44.7	4.17	1.55	
		23/06/2010	13.4	799	1.36	5.4	30.48	411	8.4	4.23	3	368	41.7	0.086	1.61	0.36
		30/06/2011	11.4	750	1.35	4.8	30.152	402	8.2	8.89	109	415	43.6	4.1	1.59	0.33
		20/06/2012	9.8	1011	1.34	8.1	29.944	384	9	7.9	255	432	44.7	0.18	1.52	3.354
		11/06/2013	10.1	981	1.34	5	29.976	296	9	5	136	464	45	3.71	1.51	0.35
		25/03/2014	9.7	766	1.33	5.9	29.9	414	8.6	6.95	410	471	46.2	4.178	1.53	0.354
		25/03/2015	Generator 2 was not available													
		2/06/2016	Generator 2 was not available													
		1/08/2017	Generator 2 was not available													
_		25/07/2018	11.4	1000	1.35	9.4	30.3	380	8.4	2.4	100	455	48	7.9	1.6	<0.01
(OVERALL Minimum		9.30	674.00	1.31	4.80	29.40	296.00	8.20	4.23	3.00	368.00	41.70	0.09	1.51	0.33
	Maximum		13.40	1011.00	1.36	8.10	30.48	449.00	10.00	8.89	410.00	471.00	46.20	4.18	1.61	3.35
	Average		10.62	830.17	1.34	5.90	29.98	392.67	8.87	6.81	153.83	431.17	44.32	2.74	1.55	0.35
	StdDev		1.54	135.17	0.02	1.20	0.35	51.91	0.64	1.82	155.96	37.28	1.53	2.02	0.04	1.34
	Count		6	6	6	6	6	6	6	6	6	6	6	6	6	5

EPL 11436

Table 3.3 - Landfill Gas Engine Results - Generator 3

						EPL Limit		EPL Limit						EPL Limit
						450		100						5
Date	Carbon Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack Gases	Nitrogen Oxides	Oxygen	Sulfuric Acid Mist & Sulfur Trioxides S03	Sulphur Dioxide	Temperat ure	Velocity	Volatile Organic Compoun ds		Hydrogen Sulphide
	%	mg/m3	kg/m3	%	gr/gr mole	mg/m3	%	mg/m3	mg/m3	Deg C	m/sec	mg/m3	m3/sec	mg/m3
8/04/2010	7.5	304	1.35	6	30.138	322	14.7	6.25	3	345	46.2	0.09	1.89	0.288
30/06/2011	10.5	869	1.34	3.8	30.04	317	9	11.1	120	438	48.7	25	1.75	0.33
20/06/2012	10.6	926	1.34	3.8	30.032	359	8.3	5.65	266	421	45.8	3.87	1.65	0.34

Note: A TAN coloured cell indicates that the indicated value is LESS THAN (<) indicated

	11/06/2013	9.6	622	1.34	7.1	29.992	323	10.8	7.15	83	476	51.3	3.12	1.66	0.32
	25/03/2014	11.6	819	1.35	7.3	30.19	346	8.3	5.07	395	474	52.5	4.122	1.69	0.355
	23/03/2015	11.5	870	1.35	6.3	30.17	425	8.2	11.5	161	451	44	0.16	1.5	0.362
	2/06/2016						Gen	erator 3 wa	s not availa	ble					
	1/08/2017						Gen	erator 3 wa	s not availa	ble					
	25/07/2018						Gen	erator 3 wa	s not availa	ble					
OVERALL Minimum		7.50	304.00	1.34	3.80	29.99	317.00	8.20	5.07	3.00	345.00	44.00	0.09	1.50	0.29
Maximum		11.60	926.00	1.35	7.30	30.19	425.00	14.70	11.50	395.00	476.00	52.50	25.00	1.89	0.36
Average		10.22	735.00	1.35	5.72	30.09	348.67	9.88	7.79	171.33	434.17	48.08	6.06	1.69	0.33
StdDev		1.52	235.90	0.01	1.56	0.08	40.78	2.56	2.81	139.91	48.50	3.34	9.45	0.13	0.03
Count		5	5	5	5	5	5	5	5	5	5	5	5	5	5

	1			1				EDL Limit		EDL Limit						EDL Limit
								EPL Limit		EPL Limit						EPL Limit
								450		100						5
EPL 11436		Date	Carbon Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack Gases	Nitrogen Oxides	Oxygen	Sulfuric Acid Mist & Sulfur Trioxides S03	Sulphur Dioxide	Temperat ure	Velocity	Volatile Organic Compoun ds	Volumetri c Flowrate	, ,
			%	mg/m3	kg/m3	%	gr/gr mole	mg/m3	%	mg/m3	mg/m3	Deg C	m/sec	mg/m3	m3/sec	mg/m3
		20/06/2012	10.3	686	1.34	5.7	29.964	391	8.3	9.64	278	425	45.3	3.77	1.6	0.327
		11/06/2013	9.4	784	1.33	4.6	29.884	267	9.5	5.72	121	436	52.9	3.87	1.87	0.29
		25/03/2014	9.7	878	1.34	5.8	29.9	368	8.8	7.08	411	458	51.7	0.099	1.73	0.345
		25/03/2015						Gen	erator 4 wa	s not availal	ble					
		2/06/2016						Gen	erator 4 wa	s not availal	ble					
		1/08/2017						Gen	erator 4 wa	s not availal	ble					
		25/07/2018								s not availal						
OVERALL	Minimum		9.40	686.00	1.33	4.60	29.88	267.00	8.30	5.72	121.00	425.00	45.30	0.10	1.60	0.29
	Maximum		10.30	878.00	1.34	5.80	29.96	391.00	9.50	9.64	411.00	458.00	52.90	3.87	1.87	0.35
	Average		9.80	782.67	1.34	5.37	29.92	342.00	8.87	7.48	270.00	439.67	49.97	2.58	1.73	0.32
	StdDev		0.46	96.01	0.01	0.67	0.04	65.96	0.60	1.99	145.17	16.80	4.09	2.15	0.14	0.03
	Count		3	3	3	3	3	3	3	3	3	3	3	3	3	3
			-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Tab		Londf		Enaina	Decul		aarata	. E				
				Tap	ie 3.5 -	Landh	li Gas	⊏ngine	Resul	ts - Gei	ierator	5				
					ie 3.5 -	Landh			Resul	EPL Limit	nerator	5				EPL Limit
					ie 3.5 -	Landh		EPL Limit	Resul	EPL Limit	nerator	.				EPL Limit 5
EPL 11436		Date	Carbon Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content			Oxygen		Sulphur Dioxide	T emperat ure	Velocity	Volatile Organic Compoun ds	Volumetri c Flowrate	5 Hydrogen
		Date		Carbon	Dry Gas	Moisture	Molcular Weight Of Stack	EPL Limit 450 Nitrogen		EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides	Sulphur	Temperat	Velocity m/sec	Organic Compoun	Volumetri	5 Hydrogen
		Date	Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack Gases	EPL Limit 450 Nitrogen Oxides	Oxygen	EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides S03	Sulphur Dioxide	Temperat ure		Organic Compoun ds	Volumetri c Flowrate	5 Hydrogen Sulphide
			Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack Gases	EPL Limit 450 Nitrogen Oxides mg/m3	Oxygen %	EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides S03 mg/m3	Sulphur Dioxide mg/m3	Temperat ure		Organic Compoun ds	Volumetri c Flowrate	5 Hydrogen Sulphide
		25/03/2014	Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack Gases	EPL Limit 450 Nitrogen Oxides mg/m3 Gene	Oxygen % erator 5 wa	EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides S03 mg/m3 s not availa	Sulphur Dioxide mg/m3 ble	Temperat ure		Organic Compoun ds	Volumetri c Flowrate	5 Hydrogen Sulphide
		25/03/2014 25/03/2015	Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack Gases	EPL Limit 450 Nitrogen Oxides mg/m3 Gene	Oxygen % erator 5 wa	EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides S03 mg/m3 s not availa	Sulphur Dioxide mg/m3 ble	Temperat ure		Organic Compoun ds	Volumetri c Flowrate	5 Hydrogen Sulphide
		25/03/2014 25/03/2015 2/06/2016	Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack Gases	EPL Limit 450 Nitrogen Oxides mg/m3 Gen Gen Gen	Oxygen % erator 5 wa erator 5 wa erator 5 wa	EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides S03 mg/m3 s not availa s not availat s not availat	Sulphur Dioxide mg/m3 ble ble ble	Temperat ure		Organic Compoun ds	Volumetri c Flowrate	5 Hydrogen Sulphide
		25/03/2014 25/03/2015 2/06/2016 1/08/2017	Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack Gases	EPL Limit 450 Nitrogen Oxides mg/m3 Gen Gen Gen Gen Gen	Oxygen % erator 5 wa erator 5 wa erator 5 wa erator 5 wa erator 5 wa	EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides S03 mg/m3 s not availa s not availat s not availat s not availat	Sulphur Dioxide mg/m3 ble ble ble ble	Temperat ure		Organic Compoun ds	Volumetri c Flowrate	5 Hydrogen Sulphide
11436	Minimum	25/03/2014 25/03/2015 2/06/2016	Dioxide %	Carbon Monoxide mg/m3	Dry Gas Density kg/m3	Moisture Content %	Molcular Weight Of Stack Gases	EPL Limit 450 Nitrogen Oxides mg/m3 Gen Gen Gen Gen Gen Gen Gen	Oxygen % erator 5 wa erator 5 wa erator 5 wa erator 5 wa erator 5 wa erator 5 wa	EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides S03 mg/m3 s not availa s not availal s not availal s not availal s not availal s not availal	Sulphur Dioxide mg/m3 ble ble ble ble ble	Temperat ure Deg C	m/sec	Organic Compoun ds mg/m3	Volumetri c Flowrate m3/sec	5 Hydrogen Sulphide mg/m3
		25/03/2014 25/03/2015 2/06/2016 1/08/2017	Dioxide % 	Carbon Monoxide mg/m3	Dry Gas Density kg/m3 0.00	Moisture Content %	Molcular Weight Of Stack Gases gr/gr mole	EPL Limit 450 Nitrogen Oxides mg/m3 Gen Gen Gen Gen Gen Gen Gen Gen	Oxygen % erator 5 wa erator 5 wa erator 5 wa erator 5 wa erator 5 wa erator 5 wa 0.00	EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides S03 mg/m3 s not availat s not availat	Sulphur Dioxide mg/m3 ble ble ble ble ble ble 0le ble	Deg C	<i>m/sec</i>	Organic Compoun ds mg/m3 0.00	Volumetri c Flowrate m3/sec 0.00	5 Hydrogen Sulphide mg/m3 0.00
11436	Maximum	25/03/2014 25/03/2015 2/06/2016 1/08/2017	Dioxide % 0.00 0.00	Carbon Monoxide mg/m3	Dry Gas Density <i>kg/m3</i> 0.00 0.00	Moisture Content %	Molcular Weight Of Stack Gases gr/gr mole	EPL Limit 450 Nitrogen Oxides mg/m3 Gen Gen Gen Gen Gen Gen 0.00 0.00	Oxygen % erator 5 wa erator 5 wa erator 5 wa erator 5 wa erator 5 wa 0.00 0.00	EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides S03 mg/m3 s not availat s not availat 0.00 0.00	Sulphur Dioxide mg/m3 ble ble ble ble ble 0.00 0.00 0.00	Deg C 0.00 0.00	0.00 0.00	Organic Compoun ds mg/m3 0.00	Volumetri c Flowrate <i>m3/sec</i> 0.00 0.00	5 Hydrogen Sulphide mg/m3 0.00
11436	Maximum Average	25/03/2014 25/03/2015 2/06/2016 1/08/2017	Dioxide % 0.00 0.00 #DIV/0!	Carbon Monoxide mg/m3	Dry Gas Density kg/m3 0.00 0.00 #DIV/0!	Noisture Content %	Molcular Weight Of Stack Gases gr/gr mole	EPL Limit 450 Nitrogen Oxides mg/m3 Gen Gen Gen Gen Gen 0.00 0.00 #DIV/0!	Oxygen % erator 5 wa erator 5 wa erator 5 wa erator 5 wa erator 5 wa o.00 0.00 #DIV/0!	EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides S03 mg/m3 s not availat s not availat	Sulphur Dioxide mg/m3 ble ble ble ble 0le 0le 0le 0.00 0.00 #DIV/0!	Temperature Deg C 0.00 0.00 #DIV/0!	0.00 0.00 #DIV/0!	Organic Compoun ds mg/m3 	Volumetri c Flowrate m3/sec 0.00 0.00 #DIV/0!	5 Hydrogen Sulphide mg/m3 0.00 0.00 #DIV/0!
11436	Maximum Average StdDev	25/03/2014 25/03/2015 2/06/2016 1/08/2017	Dioxide % 0.00 0.00 #DIV/0! #DIV/0!	Carbon Monoxide mg/m3 0.00 0.00 #DIV/0! #DIV/0!	Dry Gas Density kg/m3 0.00 0.00 #DIV/0! #DIV/0!	0.00 0.00 #DIV/0! #DIV/0!	Molcular Weight Of Stack Gases gr/gr mole	EPL Limit 450 Nitrogen Oxides mg/m3 mg/m3 Gen Gen Gen Gen Gen 0.00 0.00 #DIV/0!	Oxygen % erator 5 was erator 5 was erator 5 was erator 5 was erator 5 was o.00 0.00 #DIV/0! #DIV/0!	EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides S03 mg/m3 s not availat s not s not availat s not s not	Sulphur Dioxide mg/m3 ble ble ble ble 0le 0le 0le 0le 0.00 0.00 #DIV/0!	0.00 0.00 #DIV/0! #DIV/0!	0.00 0.00 #DIV/0! #DIV/0!	Organic Compoun ds mg/m3 	Volumetri c Flowrate m3/sec 0.00 0.00 #DIV/0! #DIV/0!	5 Hydrogen Sulphide mg/m3
11436	Maximum Average	25/03/2014 25/03/2015 2/06/2016 1/08/2017	Dioxide % 0.00 0.00 #DIV/0!	Carbon Monoxide mg/m3	Dry Gas Density kg/m3 0.00 0.00 #DIV/0!	Noisture Content %	Molcular Weight Of Stack Gases gr/gr mole	EPL Limit 450 Nitrogen Oxides mg/m3 Gen Gen Gen Gen Gen 0.00 0.00 #DIV/0!	Oxygen % erator 5 wa erator 5 wa erator 5 wa erator 5 wa erator 5 wa o.00 0.00 #DIV/0!	EPL Limit 100 Sulfuric Acid Mist & Sulfur Trioxides S03 mg/m3 s not availat s not availat	Sulphur Dioxide mg/m3 ble ble ble ble 0le 0le 0le 0.00 0.00 #DIV/0!	Temperature Deg C 0.00 0.00 #DIV/0!	0.00 0.00 #DIV/0!	Organic Compoun ds mg/m3 	Volumetri c Flowrate m3/sec 0.00 0.00 #DIV/0!	5 Hydrogen Sulphide mg/m3 0.00 0.00 #DIV/0!

Table 3.4 - Landfill Gas Engine Results - Generator 4

Table 3.6 - Landfill Gas Engine Results - Generator 6

								EPL Limit		EPL Limit						EPL Limit
								450		100						5
EPL 11436		Date	Carbon Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack Gases	Nitrogen Oxides	Oxygen	Sulfuric Acid Mist & Sulfur Trioxides S03	Sulphur Dioxide	Temperat ure	Velocity	Volatile Organic Compoun ds		Hydrogen Sulphide
			%	mg/m3	kg/m3	%	gr/gr mole	mg/m3	%	mg/m3	mg/m3	Deg C	m/sec	mg/m3	m3/sec	mg/m3
		23/03/2015		Generator 6 was not available												
Note: /	A TAN	2/06/2016		Generator 6 was not available												
coloure	ed cell	1/08/2017		Generator 6 was not available												

indicates that the	25/07/2018	
indicated value is		

LESS THAN (<)

OVERALL Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average	#DIV/0!													
StdDev	#DIV/0!													
Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0

T-6.4 - Landfill Gas Engine Results - Generator 7

Generator 6 was not available

							EPL Limit		EPL Limit						EPL Limit
							450		100						5
EPL 11436	Date	Carbon Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack Gases	Nitrogen Oxides	Oxygen	Sulfuric Acid Mist & Sulfur Trioxides S03	Sulphur Dioxide	Temperat ure		Volatile Organic Compoun ds		Hydrogen Sulphide
		%	mg/m3	kg/m3	%	gr/gr mole	mg/m3	%	mg/m3	mg/m3	Deg C	m/sec	mg/m3	m3/sec	mg/m3
	25/07/2018						Gen	erator 7 wa	s not availal	ole					

OVERALL Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average	#DIV/0!													
StdDev	#DIV/0!													
Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Table 4.1 -	Dust I	Deposit	tion Resul	ts - DG2	2 East	Void	
Site Name	ALS Batch Code	Date	Ash Residue	Combustibles	Calculated Rainfall	Soluble Matter	Insoluble Solids	Total Solids
Name			g/m2/mth	g/m2/mth	mm	g/m2/mth	g/m2/mth	g/m2/mth
DG22	CA1705530-001	Sep-17	4.2	0.6	14	0.2	4.8	4.8
DG22	CA1706016-001	Oct-17	3.48	0.4	51	0.2	3.9	3.9
DG22	CA1706590-001	Nov-17	4.69	0.5	50	0.2	5.2	5.2
DG22	CA1800087-001	Dec-17	1.36	0.4	70	0.6	1.8	2.4
DG22	CA1800771-001	Jan-18	3.42	1.9	66	0.2	5.3	5.3
DG22	CA1801653-001	Feb-18	2	0.4	86	0.2	2.4	2.4
DG22	CA1802174-001	Mar-18	3.14	0.6	11	0.2	3.7	3.7
DG22	CA1802844-001	Apr-18	7.32	1.3	13	0.2	8.6	8.6
DG22	CA1803432-001	May-18	1.61	0.2	12	0.2	1.8	1.8
DG22	CA1804079-001	Jun-18	1.35	0.2	31	0.2	1.6	1.6
DG22	CA1804681-001	Jul-18	0.57	0.2	10	0.2	0.7	0.7
DG22	CA1805443-001	Aug-18	3.72	0.4	11	0.2	4.1	4.1
		Min	0.57	0.2	10	0.2	0.7	0.7
		Avg	3.07	0.59	35.42	0.23	3.66	3.71
		Max	7.32	1.9	86	0.6	8.6	8.6
		stDev	1.86	0.51	27.82	0.12	2.19	2.15

	Table 4.2 -	Dust D)eposit	ion Result	ts - DG3	4 West	Void	
Site Name	ALS Batch Code	Date	Ash Residue	Combustibles	Calculated Rainfall	Soluble Matter	Insoluble Solids	Total Solids
			g/m2/mth	g/m2/mth	mm	g/m2/mth	g/m2/mth	g/m2/mth
DG34	CA1705530-002	Sep-17	0.55	0.2	17	0.2	0.8	0.8
DG34	CA1706016-002	Oct-17	2.1	0.9	57	0.4	3	3.4
DG34	CA1706590-002	Nov-17	1.53	0.4	57	0.2	1.9	1.9
DG34	CA1800087-002	Dec-17	1.32	0.6	71	0.2	1.9	1.9
DG34	CA1800771-002	Jan-18	3.66	1	51	0.2	4.7	4.7
DG34	CA1801653-002	Feb-18	1.42	1.4	83	0.2	2.8	2.8
DG34	CA1802174-002	Mar-18	0.41	0.3	14	0.2	0.7	0.7
DG34	CA1802844-002	Apr-18	0.95	0.4	15	0.2	1.3	1.3
DG34	CA1803432-002	May-18	0.38	0.6	14	0.2	1	1
DG34	CA1804079-002	Jun-18	0.08	<0.2	36	0.2	0.2	0.2
DG34	CA1804681-002	Jul-18	0.07	0.2	10	0.2	0.2	0.2
DG34	CA1805443-002	Aug-18	0.74	0.3	40	0.2	1	1
		Min	0.07	0.2	10	0.2	0.2	0.2
		Avg	1.10	0.57	38.75	0.22	1.63	1.66
		Max	3.66		83	0.4	4.7	4.7
		stDev	1.02	0.38	25.07	0.06	1.33	1.37

	Table 4.3	3 - Dust	t Depos	sition Res	ults - DC	328 Py	ara	
Site Name	ALS Batch Code	Date	Ash Residue	Combustibles	Calculated Rainfall	Soluble Matter	Insoluble Solids	Total Solids
Name			g/m2/mth	g/m2/mth	mm	g/m2/mth	g/m2/mth	g/m2/mth
DG28	CA1705530-004	Sep-17	1.01	1.1	19	0.2	2.1	2.1
DG28	CA1706016-003	Oct-17	0.54	0.5	56	0.2	1	1
DG28	CA1706590-003	Nov-17	0.33	0.5	62	0.2	0.8	0.8
DG28	CA1800087-003	Dec-17	0.2	0.2	71	0.2	0.4	0.4
DG28	CA1800771-003	Jan-18	0.84	1	67	0.2	1.8	1.8
DG28	CA1801653-003	Feb-18	0.13	1	91	0.2	1.1	1.1
DG28	CA1802174-003	Mar-18	0.2	0.2	15	0.2	0.4	0.4
DG28	CA1802844-003	Apr-18	1.39	1.3	12	0.2	2.7	2.7
DG28	CA1803432-003	May-18	0.73	0.9	12	0.2	1.6	1.6
DG28	CA1804079-003	Jun-18	1.5	1.7	33	0.2	3.2	3.2
DG28	CA1804681-003	Jul-18	0.63	0.5	10	0.2	1.1	1.1
DG28	CA1805443-003	Aug-18	5.06	1.5	43	0.2	6.6	6.6
		Min	0.13	0.2	10	0.2	0.4	0.4
		Avg	1.05	0.87	40.92	0.20	1.90	1.90
		Max	5.06	1.7	91	0.2	6.6	6.6
		stDev	1.34	0.49	27.98	0.00	1.72	1.72

	Summary Total Insoluble Solids (g/m2/month)											
Dust Gauge	Minimum	Maximum	Average									
DG22	0.7	8.6	3.7									
DG34	0.2	4.7	1.8									
DG28	0.4	6.6	1.9									

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	Statistics	Field Information							I	able 5.1	- Surface Water Results	- Site 115 Analytical Information	1						
EPL 11436		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissovled Oxygen	Redox	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen	Conductivity	pН	Total Dissolved Solids	Total Organic Carbon	Total Potassium
				AM/PM	Initials	pН	µS/cm	°C	mg/L	mV			mg/L	Demand mg/L	µS/cm	рН	mg/L	mg/L	mg/L
		27/10/2017 29/01/2018	Site 115 Site 115	11:50am	HP/ZR ZR						Dry Dry								
		26/02/2018 23/04/2018	Site 115 Site 115	10:55am	HP/ZR HP/ZR	6.55	880.1	14.64	7.95	332.7	turbid dry		0.1	5	1080	7.74	547	19	6.2
2017/18	Minimum					6.55 6.55	880.10 880.10	14.64 14.64	7.95 7.95	332.70 332.70			0.10	5.00 5.00	1080.00	7.74 7.74	547.00 547.00	19.00	6.20 6.20
	Maximum Average					6.55	880.10	14.64	7.95	332.70			0.10 0.10	5.00	1080.00 1080.00	7.74	547.00	19.00 19.00	6.20
	StdDev Count					#DIV/0! 1.00	#DIV/0! 1.00	#DIV/0! 1.00	#DIV/0! 1.00	#DIV/0! 1.00			#DIV/0! 1.00	#DIV/0! 1.00	#DIV/0! 1.00	#DIV/0! 1.00	#DIV/0! 1.00	#DIV/0! 1.00	#DIV/0! 1.00
	0	Field Information	1		1				Т	able 5.2	Surface Water Results	- Spring 2 Analytical Information							
EPL	Statistics	Date	Site Code	Time	Sampler	pН	Conductivity	Temperature	Dissovled	Redox	Flow	Laboratory Sample Code	Nitrogen	Biochemical Oxygen	Conductivity	pН	Total Dissolved	Total Organic	Total
11436				AM/PM	Initials	pH	μS/cm	°C	Oxygen mg/L	mV			(ammonia) mg/L	Demand mg/L	μS/cm	pH	Solids mg/L	Carbon mg/L	Potassium mg/L
		9/10/2017 4/12/2017	Spring 2 Spring 2	2:30pm 1:40pm	HP/ZR HP/ZR	7.1 7.33	675.8 353.3	17.99 14.06	9.93 9.88	480 310.6	cloudy		0.3	4	782 545	7.35 7.36	524 409	15 19	24.6 13.8
		26/02/2018 23/04/2018	Spring 2 Spring 2	11:40am 1:30pm	HP/ZR HP/ZR	7.26 7.66	217.5 435.1	15.98 18.83	7.73	303.2 300.1	slightly turbid cloudy	CA1801368-008 CA1802629-001	0.4	5	263 496	6.87 7.35	225 314	14 20	6.5 14.8
2017/18	Minimum					7.10	217.50	14.06	7.73	300.10			0.10	4.00	263.00	6.87	225.00	14.00	6.50
	Maximum Average					7.66 7.34	675.80 420.43	18.83 16.72	9.93 9.07	480.00 348.48			0.40 0.25	8.00 5.50	782.00 521.50	7.36 7.23	524.00 368.00	20.00 17.00	24.60 14.93
	StdDev Count					0.24 4.00	192.45 4.00	2.14 4.00	1.05 4.00	87.79 4.00			0.13 4.00	1.73 4.00	212.83 4.00	0.24 4.00	128.30 4.00	2.94 4.00	7.44 4.00
	Statistics	Field Information							Т	able 5.3	- Surface Water Results	- Site 105 Analytical Information							
EPL	Statistics	Date	Site Code	Time	Sampler	pН	Conductivity	Temperature	Dissovled	Redox	Flow	Laboratory Sample Code	Nitrogen	Biochemical Oxygen	Conductivity	pН	Total Dissolved	Total Organic	Total
11436		10/10/00/7	01 105	AM/PM	Initials	pH	µS/cm	°C	Oxygen mg/L	mV			(ammonia) mg/L	Demand mg/L	μS/cm	pH	Solids mg/L	Carbon mg/L	Potassium mg/L
		10/10/2017 6/11/2017 26/02/2018	Site 105 Site 105 Site 105	1:40pm 11:45 9:50am	ZR/HP ZR ZR/HP	5.75 6.63	1745.6 900.7	13.6 13.08	7.11	436 458.7	Dry slightly cloudy slightly turbid	CA1706099-004	<0.1 <0.1	3	2190 1140	7.54 7.65	1590 850	16	1.2
		23/04/2018	Site 105	0.000	ZR/HP	0.00					dry								
2017/18	Minimum Maximum					5.75 6.63	900.70 1745.60	13.08 13.60	7.11 7.82	436.00 458.70			0.00 0.00	3.00 4.00	1140.00 2190.00	7.54 7.65	850.00 1590.00	16.00 24.00	1.20 6.20
	Average StdDev					6.19 0.62	1323.15 597.43	13.34 0.37	7.47 0.50	447.35 16.05			#DIV/0! #DIV/0!	3.50 0.71	1665.00 742.46	7.60 0.08	1220.00 523.26	20.00 5.66	3.70 3.54
	Count					2.00	2.00	2.00	2.00	2.00			0.00	2.00	2.00	2.00	2.00	2.00	2.00
	Statistics	Field Information						Т	able 5.4	- Surface	Water Results - Raw Wa	ater Dam (WM200		Information	n				
		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissovled Oxygen	Redox	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen	Conductivity	рН	Total Dissolved Solids	Total Organic Carbon	Total Potassium
EPL 11436														Demand					
11430		3/10/2017 15/11/2017	WM200 WM200	AM/PM 10:20am 11:15am	Initials HP/ZR HP/ZR	pH 5.22	µS/cm 1359	°C 17.14	mg/L 9.55	mV 547	Clear	CA1705432-002 CA1706380-001	mg/L 0.1 1.3	mg/L 2 2	µS/cm 1660 1630	pH 7.87 8.13	mg/L 980 1150	mg/L 8 8	mg/L 2.8 2.8
		15/01/2018 5/04/2018	WM200 WM200	1:50pm 12pm	HP/ZR HP/ZR	8.18 7.76	1629.6 1568.6	21.24 21.82	8.63 8.18	310.5 190.9	clear	CA1800328-001 CA1802285-001	0.2	2	1650 1650	8.34 8.25	1090	5	2.7
2017/18	Minimum Maximum					5.22 8.18	1359.00 1629.60	17.14 21.82	8.18 9.55	190.90 547.00			0.10 1.30	2.00 2.00	1630.00 1680.00	7.87 8.34	980.00 1150.00	5.00 8.00	2.00 2.80
	Average StdDev					7.05 1.60	1519.07 141.94	20.07 2.55	8.79 0.70	349.47 181.22			0.45 0.57	2.00 0.00	1655.00 20.82	8.15 0.20	1075.00 70.47	6.75 1.50	2.58 0.39
	Count					3.00	3.00	3.00	3.00	3.00			4.00	4.00	4.00	4.00	4.00	4.00	4.00
	Statistics	Field Information						Tabl	e 5.5 - 5t		ater Results - Entrance R	Analytical Information							
EPL 11436		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissovled Oxygen	Redox	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen Demand	Conductivity	рН	Total Dissolved Solids	Total Organic Carbon	Total Potassium
				AM/PM	Initials	pН	µS/cm	°C	mg/L	mV			mg/L	mg/L	μS/cm	pН	mg/L	mg/L	mg/L
		4/10/2017 6/11/2017 26/02/2018	WM201 WM201 WM201	3PM 10:45am 9:50am	HP/ZR ZR HG	7.79	74.9	15.71	8.83	460.9	Dry muddy flow	CA1706099-001 CA1801368-002	0.1	2	74 123	7.28	36 84	7	3
		23/04/2018 28/06/2018	WM201 WM201	11:15am	HP/ZR HP/ZR	7.19	505.8	10.45	9.16	99.3	dry muddy flow	CA1804008-002	0.2	44	753	7.58	665	51	17.7
2017/18	Minimum Maximum	31/08/2018	WM201	1:40pm	HP/ZR	8.05 7.19 8.05	391.8 74.90 505.80	7.53 7.53 15.71	9.33 8.83 9.33	<u>102.6</u> 99.30 460.90	slightly cloudy	CA1805308-001	<0.1 0.10 0.20	2.00 44.00	596 74.00 753.00	7.31 7.09 7.58	430 36.00 665.00	10 7.00 51.00	3.1 2.80 17.70
	Average StdDev					7.68 0.44	324.17 223.27	11.23 4.15	9.11 0.25	220.93 207.82			0.13	16.00 24.25	386.50 339.26	7.32 0.20	303.75 298.00	19.50 21.05	6.65 7.37
	Count					3.00	3.00	3.00	3.00	3.00			3.00	3.00	4.00	4.00	4.00	4.00	4.00
	Statistics	Field Information					Table	5.6 - Sur	face Wat	er Resul	ts - Evaporation Dam 3 S	South-South (ED: Analytical Information		goon 5)					
EPL 11436		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissovled Oxygen	Redox	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen	Conductivity	pН	Total Dissolved Solids	Total Organic Carbon	Total Potassium
				AM/PM	Initials	pH	µS/cm	°C	mg/L	mV			mg/L	Demand mg/L	µS/cm	pH	mg/L	mg/L	mg/L
		4/10/2017 19/01/2018	ED3S-S ED3S-S	12:05PM 11:55AM	HP/ZR HP/ZR	8.4 8.28	23362 26038.9	23.39 26.58	1.8 0.85	356.7 421.8	leachate leachate	CA1705489-001 CA1800461003	1260 882	317 35	24600 24100	8.47 8.29	14900 28000	2070	2000 1910
		26/03/2018 23/04/2018	ED3S-S ED3S-S	1:30pm 1:45pm	HP/ZR HP/ZR	8.26 7.71	20336.6 21115.1	16.29 18.55	0.16 3.61	-142.7 28.6	leachate leachate	CA1802038-001 CA1802629-002	873 835	108 92	24100 24000	8.46 8.32	16200 16000	2470 2720	2080 1940
2017/18	Minimum					7.71	20336.60	16.29	0.16	-142.70			835.00	35.00	24000.00	8.29	14900.00	2070.00	1910.00
	Maximum Average					8.40 8.16	26038.90 22713.15	26.58 21.20	3.61 1.61	421.80 166.10			1260.00 962.50	317.00 138.00	24600.00 24200.00	8.47 8.39	28000.00 18775.00	2720.00 2420.00	2080.00 1982.50
	StdDev					0.31	2561.47	4.65	1.50	268.31			199.38	123.38	270.80	0.09	6176.50	267.71	75.00
	Count					4.00	4.00	4.00	4.00	4.00			4.00	4.00	4.00	4.00	4.00	4.00	4.00
								Table	5.7 - Sur	face Wat	er Results - Evaporation	Dam 3 North (W	M203)						
	Statistics	Field Information	<u>г г</u>		1				2			Analytical Information							

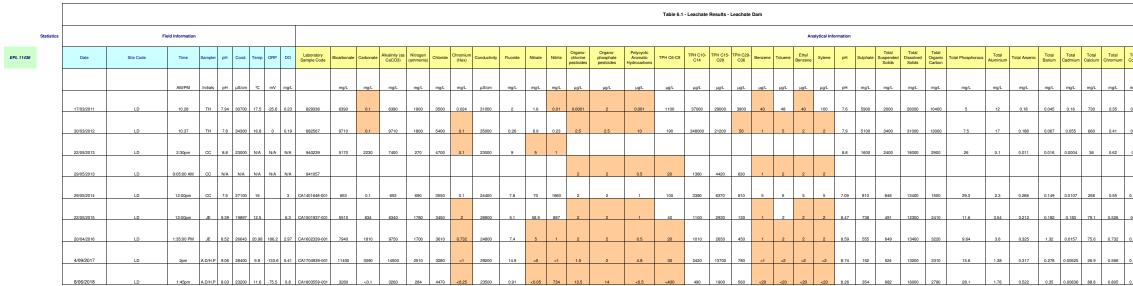
								l able	<u>5.7 - Sur</u>	face Wat	er Results - Evaporation	Dam 3 North (W	M203)							i i
	Statistics	Field Information										Analytical Information	1							
EPL 11436		Date	Site Code	Time	Sampler	pН	Conductivity	Temperature	Dissovled Oxygen	Redox	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen Demand	Conductivity	pН	Total Dissolved Solids		Total Potassium	
				AM/PM	Initials	pН	µS/cm	°C	mg/L	mV			mg/L	mg/L	µS/cm	pН	mg/L	mg/L	mg/L	
		3/10/2017	WM203	11am	HP/ZR	6.33	25784.5	15.84	4.27	461.2	leachate	CA1705432-003	728	11	32700	8.12	27200	1150	1880	
		15/11/2017	WM203	1:40PM	HP/ZR						leachate	CA1706380-003	771	28	33300	8.36	28200	1300	424	1
		19/01/2018	WM203	11:20am	HP/ZR	7.99	33230	22.11	2.3	388.7	leachate	CA1800461-003	877	51	24100	8.3	28300	2400	1940	i -

		19/01/2018	WW203	11:20am	HP/ZR	7.99	33230	22.11	2.3	388.7	leachate	CA1800461-003	877	51	24100	8.3	28300	2400	1940
		23/04/2018	WM203	2pm	HP/ZR	7.45	35344.7	22.43	6.46	150.8	leachate	CA1802629-003	612	34	35000	8.13	30500	2430	2830
2017/18	Minimum					6.33	25784.50	15.84	2.30	150.80			612.00	11.00	24100.00	8.12	27200.00	1150.00	424.00
2017/10	Maximum					7.99	35344.70	22.43	6.46	461.20			877.00	51.00	35000.00	8.36	30500.00	2430.00	2830.00
	Average					7.26	31453.07	20.13	4.34	333.57			747.00	31.00	31275.00	8.23	28550.00	1820.00	1768.50
	StdDev					0.85	5021.70	3.72	2.08	162.38			109.64	16.51	4881.51	0.12	1391.64	689.88	996.04
	Count					3.00	3.00	3.00	3.00	3.00			4.00	4.00	4.00	4.00	4.00	4.00	4.00
		[able 5.8	- Surface Water Results	- Pond 3							
	Statistics	Field Information								able 5.0		Analytical Information		-					
	Statistics	r leid information										Analytical mormation							
EPL 11436		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissovled Oxygen	Redox	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen Demand	Conductivity	рН	Total Dissolved Solids	Total Organic Carbon	Total Potassium
				AM/PM	Initials	pН	µS/cm	°C	mg/L	mV			mg/L	mg/L	µS/cm	pН	mg/L	mg/L	mg/L
		4/10/2017	Pond 3	3pm	HP/ZR						Dry-no flow								
		6/11/2017	Pond 3	11:15AM	ZR	4.54	4016.9	13.77	6.81	322.2	muddy	CA1706099-002	100	218	5060	4.55	5270	130	4.
		25/02/2018	Pond 3		HG							CA1801368-001	5.2	2	937	3.67	753	4	1.
		23/04/2018	Pond 3		HP/ZR						dry								
		28/06/2018	Pond 3	11:20am	HP/ZR	5.72	1500.2	9.9	9.48	251.5	Slightly turbid	CA1804008-001	8.7	2	2300	3.18	2150	3	
2017/18	Minimum					4.54	4016.90	13.77	6.81	322.20			5.20	2.00	937.00	3.67	753.00	4.00	1.80
	Maximum					4.54	4016.90	13.77	6.81	322.20			100.00	218.00	5060.00	4.55	5270.00	130.00	4.20
	Average					4.54	4016.90	13.77	6.81	322.20			52.60	110.00	2998.50	4.11	3011.50	67.00	3.00
	StdDev Count					#DIV/0! 1.00	#DIV/0! 1.00	#DIV/0! 1.00	#DIV/0! 1.00	#DIV/0! 1.00			67.03 2.00	152.74 2.00	2915.40 2.00	0.62 2.00	3194.00 2.00	89.10 2.00	1.70 2.00

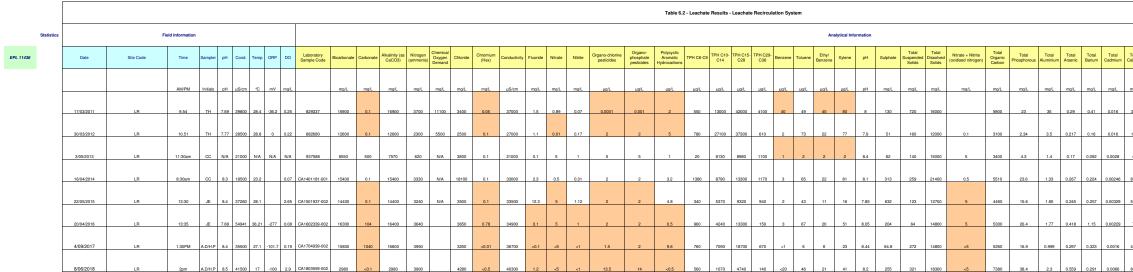
				Table	5.9 - Surf	ace Wate	er Results - Evaporation Dam 3 South (WM202)			
Statistics	Field Information						Analytical Information			

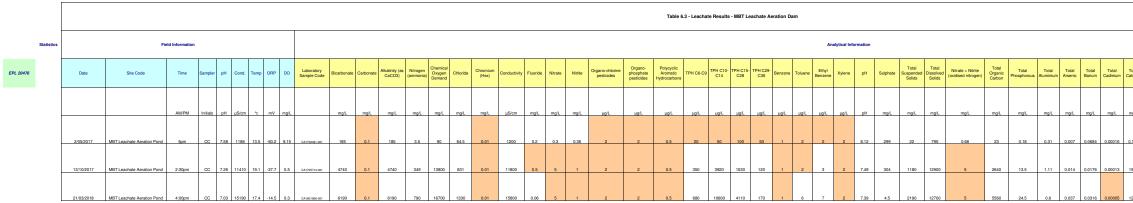
EPL 11436		Date	Site Code	Time	Sampler	pН	Conductivity	Temperature	Dissovled Oxygen	Redox	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen Demand	Conductivity	рН	Total Dissolved Solids	Total Organic Carbon	Total Potassium
				AM/PM	Initials	pН	µS/cm	°C	mg/L	mV			mg/L	mg/L	µS/cm	pН	mg/L	mg/L	mg/L
		3/10/2017	WM202	9:50am	HP/ZR	2.9	7840.8	14.69	8.92	515.3	slightly brown tinge	CA1705432-001	126	2	9790	3.27	13000	9	33.8
		15/11/2017	WM202	1:30pm	HP/ZR							CA1706380-002	131	4	9640	3.21	13200	6	34.3
		15/01/2018	WM202	2:30pm	HP/ZR	2.79	10355.6	22.71	7.69	616	clear	CA1800328-002	142	2	10300	3.04	13700	5	35.2
		5/04/2018	WM202	12:30pm	HP/ZR	3.34	9993.5	21.21	7.48	404	clear	CA1802285-002	153	2	10600	3.16	14000	5	35.2
017/18	Minimum					2.79	7840.80	14.69	7.48	404.00			126.00	2.00	9640.00	3.04	13000.00	5.00	33.80
	Maximum					3.34	10355.60	22.71	8.92	616.00			153.00	4.00	10600.00	3.27	14000.00	9.00	35.20
	Average					3.01	9396.63	19.54	8.03	511.77			138.00	2.50	10082.50	3.17	13475.00	6.25	34.63
	StdDev					0.29	1359.50	4.26	0.78	106.04			12.03	1.00	445.90	0.10	457.35	1.89	0.69
	Count					3.00	3.00	3.00	3.00	3.00			4.00	4.00	4.00	4.00	4.00	4.00	4.00

								Ta	ble 5.10	- Surface	e Water Results - Evapo	ration Dam 1 (ED	1)						
	Statistics	Field Information										Analytical Information	1						
EPL 11436		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissovled Oxygen	Redox	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen Demand	Conductivity	рН	Total Dissolved Solids	Total Organic Carbon	Total Potassium
				AM/PM	Initials	pН	µS/cm	°C	mg/L	mV			mg/L	mg/L	µS/cm	pН	mg/L	mg/L	mg/L
		3/10/2017	ED1	10:40am	HP/ZR	2.9	15633.8	16.76	8.61	648.4	clear	CA1705434-003	14	5	18700	3.3	33300	7	7.7
		15/11/2017	ED1	11:50am	HP/ZR						clear	CA1706337002	13.7	2	18800	3.23	33600	6	7.7
		29/01/2018	ED1	9:15am	HP/ZR	2.81	20157.3	22.76	7.32	485.7	clear	CA1800630-006	18	2	21300	3.1	36200	5	9.4
		17/04/2018	ED1	11:50am	HP/ZR	3.07	17975.1	15.98	8.26	507.4	brown tinge	CA1802543-005	16.4	2	21700	2.77	38000	6	8.4
2017/18	Minimum					2.81	15633.80	15.98	7.32	485.70			13.70	2.00	18700.00	2.77	33300.00	5.00	7.70
	Maximum					3.07	20157.30	22.76	8.61	648.40			18.00	5.00	21700.00	3.30	38000.00	7.00	9.40
	Average					2.93	17922.07	18.50	8.06	547.17			15.53	2.75	20125.00	3.10	35275.00	6.00	8.30
	StdDev					0.13	2262.22	3.71	0.67	88.34			2.05	1.50	1596.61	0.24	2235.14	0.82	0.80
	Count					3.00	3.00	3.00	3.00	3.00			4.00	4.00	4.00	4.00	4.00	4.00	4.00



removed from <LOR values</p>





Total Cobalt	Total Copper	Total Lead	Total Magnesium	Total Manganese	Total Mercury	Total Phenols	Total Potassium	Total Sodium	Total Zinc
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
0.36	0.38	0.06	1100	0.82	0.0003	2.4	2100	3100	60
0.15	0.32	0.17	1400	0.91	0.0012	1.57	2900	4400	52
0.10	0.19	0.0069	800	0.25	0.0011	<0.05	2000	3000	0.79
0.1	0.15	0.0005	800	0.25	0.0011	20.00	2000	3000	0.75
0.102	0.267	0.0591	0.332	0.96	0.001	0.51	1610	2910	3.56
0.16	1.37	0.0969	161	3.18	0.0009	0.3	1310	2490	33.1
0.16	0.289	0.212	172	0.832	0.0009	0.05	1520	2490	6.36
0.078	0.136	0.0748	110	0.194	0.0032	<0.5	1800	3270	1.7
0.198	0.314	0.175	135	0.733	0.0056	1	1940	3380	3.45

Total alcium	Total Chromium	Total Cobalt	Total Copper	Total Iron	Total Lead	Total Magnesium	Total Manganese	Total Mercury	Total Phenols	Total Sodium	Total Zinc
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
370	2.9	0.4	0.46	140	0.25	930	3.7	0.0092	0.88	11400	20
					0.063		1				6.8
110	0.41	0.061	0.25	31		360		0.001	2.34	2300	
41	0.1	0.043	0.033	N/A	0.0044	490	0.075	0.0005	2.71	2300	0.56
87.1	0.604	0.0826	0.099	N/A	0.0354	172	0.461	0.0024	1.44	2720	1.56
57.5	0.477	0.0566	0.171		0.0833	145	0.604	0.0008	0.08	2050	1.75
79	0.78	0.104	0.119		0.06	149	0.333	0.0018	0.5	2990	1.04
41.2	0.547	0.0734	0.368		0.0653	95	0.152	0.0581	0.75	3090	0.75
83.6	0.901	0.137	0.48		0.326	156	0.413	0.0054	3.4	3390	2.4

Total Calcium	Total Chromium	Total Cobalt	Total Copper	Total Iron	Total Lead	Total Magnesium	Total Manganese	Total Mercury	Total Phenols	Total Sodium	Total Zinc
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
0.126	0.003	0.0039	0.008	0.48	0.014	20.8	0.074	0.0001	0.05	69.3	0.065
1940	0.321	0.031	0.009	8.72	0.0009	142	6.71	0.0017	1.37	580	0.03
1230	0.682	0.0558	0.01	8.83	0.0017	256	1.5	0.0018	3.18	1320	0.252

Statistics Field Information Date Site Code Time AMPP	Sampler pH Conductively Temperature Disordered Reduction Patential Datalia pH gStm TC mpL mrV	Depth to Water RL Water Level Laboratory Sample Bloat	2 ¹⁷ Carbonate Alkalinky (ss. Nilrogen Carbonate Carbonate mgL mgL mgL galaxy (ss. Cheride Condu	diet Dissolved Calcium Dissolved Dissolved Statium	asolved pH Sulptate Total Classified pH mgL mgL	Chromium Dissolved Dissolved C (Hes) Auminium Ansenic C mgL mgL mgL	asolved Dissolved Dissolved Di denium Cobalt Copper	asolved Dissolved Dissolved Manganese Mercury	Dissolved Zinc Pluoride Nitrate	Nitte Organo- chiorine pesticides mg/L mg/L	Organo-phosphate Po pesticides mg/L	ycyclic Aromatic Hydrocarbons TPH CS-CP TPI pg1L pg1L pg1L b	C10- TPH C15- C28	1029- 36 Benzene Toluene Bithyl pt µgL µgL µgL µgL	tene Total Total Organic Total Barlum 1 Phenols Carbon Barlum 1	
10/10/2017 MB1 2:4 6/12/2017 MB1 : 14/02/2018 MB1 10:5 14/05/2018 MB1 1:1	pm HP/271 6.23 1404 16.52 1.77 616 pm HP/271 6.54 14602 15.34 3.4 561 pm HP/271 6.54 14002 15.34 3.4 561 pm HP/271 7.34 1209.5 15.97 2.96 414	7 19.23 778.28 CA170576-001 7 7 20.2 777.21 CA170575-001 7 7 19.75 777.31 CA16975-001 7 3 21.17 776.34 CA1803941-004	99 0.1 200 0.1 145 31 0.1 431 0.1 159 24 0.1 424 0.1 92.5 24 0.1 424 0.1 167 24 0.1 426 0.1 167	700 180 965 5.9 640 180 97.7 6.5 650 172 85.8 6.2 770 175 86.2 6.4	51 7.77 342 1240 554 7.51 234 1240 51.3 7.59 185 1175 54.2 7.54 229 1240	0.001 0.02 0.002	0.0000 0.0000 0.002	0.0002 0.111 0.000	0.076 0.38	12 0.01 0.01	5 0.014	0.5 20	50 100	50 1 3 2	2 0.05 3 0.0912	
Minisum Madmum Awrage SidDev Count	ani 14921 4432 17.48 4.79 533 [19/22] 7.734 13963 15.52 2.96 4443 8.65 1392.5 15.54 1.77 4443 8.65 1490.2 17.45 4.79 6457 7.22 1492.475 18.445 3.23 554.1 0.81790.422 27.93448 5.7490.0137 14.75462 4.44 4.44 0.81790.422 27.93448 5.7490.0137 14.75462 4.45 4.45 5.45 5.45 5.45 5.45 5.45 5.45	10.22 776.34 320 21.17 771.28 431 20.0075 777.425 422 0.022341768 0.022341768 14.26 4 4 4	0.1 299 0.1 92.5 164 0.1 421 0.1 167 177 0.1 420 0.1 140.875 177 12 0 14.30517582 0 33.50715086 53.54 4 4 4 4 4	0 172 88.2 5.9 0 187 97.7 6.8 0 178.5 92.8 6.3 5 261 6.55743524 4.9853115 0.31602777 2.37 4 4 4	51 7.51 185 1170 562 7.77 342 1240 14.025 7.6275 297.5 1222.5 2286483 0.100049 75.10037 25 4 4 4 4		0.0008 0.0009 0.002 0 0.0008 0.0009 0.002 0 0.0008 0.0009 0.002 0 0.0008 0.0009 0.002 0 0.000 #CKV01 #CKV01 #	L0002 0.111 0.0001 L0002 0.111 0.0001 L0002 0.111 0.0001 L0002 0.111 0.0001 EVV01 #EVV01 #EVV01 1 1 1	0.076 0.28 0.12 0.076 0.28 0.12 0.076 0.28 0.12 eDividi eDividi eDividi 1 1 1	0.01 0.0125 0.01 0.0125 0.01 0.0125 eCIV.01 eCIV.01 1 1	0.014 0.014 0.014 #Dfv101 5	0.5 20 0.5 20 0.5 20 #DIV/01 #DIV/01 #D 1 1	0 100 0 100 0 100 VIOI #CVV0I #C	50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 1 1 2 5 50 1 2 2 50 1 1 2 2 50 1 1 2 1 2 2 50 1 1 2 2 2 50 1 1 1 1 2 2 2 50 1 1 1 1 2 2 2 50 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 0.05 3 0.0912 2 0.05 3 0.0912 2 0.05 3 0.0912 1 0.05 9 0.0912 1 1 1 1	
Statistics Field Information Date Sile Code Time	Sampler pH Conductivity Temperature Display Oxidation- Potential	Depth to Water RL Water Level Code Bicat	²⁷ Carbonate Akaliniy (as Nitrogen Chiorde Condu	divit Dissolved Calcium Dissolved Dissolved Dissolved S	Table 7.2 - Groundwal solved pH Sulptale Total Dissolved Solds	Chromium Dissolved Dissolved Auminium Arsenic D	ssolved Dissolved Dissolved Dissolved Dissolved	sectived Dissolved Dissolved Manganese Mercury	Dissolved Pluoride Nitrate	Nitte Organo- chiorine pesticides	Organo-phosphate Perfectives	lycyclic Aromatic Hydrocarbons TPH C6-C9	C10- TPH C15- TPH C280 C	1029- 36 Benzene Toluene Ehtyl Benzene Xy	tene Total Total Organic Total Phenois Carbon Barlum T	
A/15/2517 M82 2:55 4/12/2517 M82 2:55 4/12/2517 M82 2:15	Initials pH pSiom 10 mgL mV		. mgL mgL mgL mgL μ500 34 0.1 230 0.1 723 27 0.1 227 0.1 464 10.1 221 0.1 664	n mgL mgL mgL 250 554 814 1.4 260 554 802 1.4 260 556 862 1.6	mgL pH mgL mgL 265 7.67 4165 7100 268 7.14 3800 7060 289 7.14 4010 7440	mgL mgL mgL	mgL mgL mgL	mgL mgL mgL	mgL mgL mgL	mgL mgL	mgL 5 0.014	рас рас р	рL µgL µ	9L μgL μgL μgL μ	gL mgL mgL mgL	
14/05/2018 M82 9-1 Molnum Maximum Aserage SdDav Count	an 20119 6.65 5147.8 15.13 10.0 355 6.61 55627 15 11 6.63 55627 15.76 2.07 604 6.55 5773257 15.4 1.225 447.35 0.007700007 75.4225319 0.35557937 0.43791711 143.382532 4 4	3 3.33 778.53 CA1803541-022 2.23 778.53 227 3.33 7778.53 223 2.050 778.925 231 2.050 778.925 221 0.482949226 0.483494226 3.666 4 4 4	22 0.1 222 0.2 707 0.1 227 0.1 496 656 0.1 226 0.2 723 662 5 0.1 0.215 655 663 15 0 3.666445502 0.65 106.6614582 175.2	8800 541 751 2 0 534 791 1.4 0 556 862 2 5 546.25 817.25 1.6 415 10.53169819 31.2769883 0.28234271 11:	278 7.2 3820 7263 268 7.14 3850 7560 283 7.47 4160 7440 277 7.33 3947.5 7200 5782659 0.227346 170.469491 4 4 4 4 4	0.01 0.04 0.004 0.01 0.04 0.004 0.01 0.04 0.004 #DIVIO: #DIVIO: #DIVIO:	0.0211 0.0027 0.007 0 0.0211 0.0027 0.007 0 0.0211 0.0027 0.007 0 0.0211 0.0027 0.007 0 0.0011 ECIVIDI ECIVIDI E	0002 0.007 0.0001 0002 0.037 0.0001 0002 0.037 0.0001 EV/01 #EV/01 #EV/01	0.05 0.28 0.28 0.05 0.28 0.28 0.05 0.28 0.28 #DW01 #DW01 #DW0	0.01 0.0135 0.01 0.0135 0.01 0.0135 #DIV/01 #DIV/01	0.014 0.014 0.014 eDrugi	0.5 20 0.5 20 0.5 20	0 100 0 100 0 100 V.OI #CVV01 #C	20 1 2 2 20 1 2 2 20 1 2 2	2 0.05 4 0.0218 2 0.05 4 0.0218 2 0.05 4 0.0218 1 1 1 1 1 1 1	
	0.267706307 75.4225319 0.395979797 0.437911711 143.9985532 4 4 4 4	: 0.403494226 0.403494226 3.696 4 4 4 4	IS 0 3.696945502 0.05 106.6614582 1752 4 4 4 4 4 4	415 10.53169819 31.2769803 0.28294271 11: 4 4 4 4	4 0.227346 170.3673 170.469491 Table 7.3 - Groundwat		DIVIDI ADIVIDI ADIVIDI A	DIVIDI #DIVIDI #DIVIDI 1 1 1		ectivo: ectivo:	4Crivor 1	eckvici eckvici ec		NVO PDIVO PDIVO PDIVO PD 1 1 1 1	INTEL PONIOL PONIOL PONIOL 1 1 1 1 1	
tatistics Field Information Date Site Code Time AMP1	Sampler pH Conductivity Temperature Dissolved Ovidation- Novgen Potential	Analytical Information Depth to Water RL Water Level Laboratory Sample Black ast	on Carbonate Alkalinky (sa Nitrogen Chloride Condu caCC00) mgL mgL mgL mgL sc mgL sc mgL u/St		asolved odum pH Sulphate Dissolved Solids mol. cH mol. mol.	Chromium Dissolved Auminium Arsenic C	ssolved Dissolved Dissolve	asolved Dissolved Dissolved Manganese Mercury	Dissolved Fluoride Nitrate	Note Cigano- chioine pasticides	Organo-phosphate Per	Hydrocations TPH CS-C9	C10- TPH C15- TPH C28 C	1029- 136 Denzene Toluene Ethyl Xy Els uol uol uol uol uol	tene Total Total Organic Total Phenois Carbon Barlum 1	
9102017 ME3 2-1 4/122017 ME3 12 26/032018 ME3 2-4 14/052018 ME3 2-4	om 220407 6.77 19652 15.8 4.21 544 784 220407 6.64 12 15.21 2.67 548 om 220407 6.65 1600.1 15.75 2.58 543 am 220407 6.73 1606.0 15.75 2.58 543 am 220407 6.73 1606.0 15.35 2.31 444	3 1.67 791.53 CA1706710-001 1 1.84 791.35 CA180303-001 5 2 791.20 CA180304-001	74 0.1 274 0.1 433 83 0.1 283 0.1 474 88 0.1 288 0.1 475	140 136 164 1.4 950 137 99.6 1.4	mgL pH mgL mgL mgL 74.7 736 23.7 1023 77.8 7.15 122 1400 77.9 7.44 23.3 1226 76.7 7.33 22.1 1220	0.01 0.02 0.023	0.0005 0.0005 0.002	0.000 0.001 0.000	11 0.024 0.13 1	63 0.01 0.01	5 0.014	0.5 20	50 100	50 1 2 2	2 0.65 4 0.0005	
Minimum Maximum Awaraga SaldDev Count	6.61 10052 15.21 2.31 444.5 6.78 16412 15.8 4.21 54.9 6.7275 1611355 15.275 3.4425 536.2 0.070200027 17.2134595 0.282161485 0.947325182 60.08482088	1.6 791.2 25 2 791.6 28 1.7775 791.4225 274 0.179227447 15227447 1623 4 4 4 4	0.1 251 0.1 423 120 0.1 288 0.1 491 214 0.1 274 0.1 497 1999 11 0 16.2016547 0 24.42576128 94.392 4 4 4 4 4	0 126 99.6 1.4 0 141 110 1.6 5 127.75 105.9 1.475 7 292 2.217355783 4.5062919 0.09574271 1.48 4 4 4	74.7 7.15 32.1 1020 77.9 7.96 122 1400 16.775 7.47 55.275 1250 16226566 0.347851 44.46853 161.864141 4 4 4 4	0.01 0.02 0.003 1 0.01 0.02 0.003 1 0.01 0.02 0.003 1 eDN/01 eDN/01 eDN/01 1 1 1	00005 0.0005 0.002 0 00005 0.0005 0.002 0 00005 0.0005 0.002 0 DIV.01 #CIVI01 # 1 1 1	0.0022 0.001 0.0001 0.0022 0.001 0.0001 0.0022 0.001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001	0.024 0.19 0.63 0.024 0.19 0.63 0.024 0.19 0.63 #DIVIDI #DIVID 1 1 1 1	0.01 0.0125 0.01 0.0125 0.01 0.0125 #DIV/01 #DIV/01 1 1	0.014 0.014 0.014 #DRVIDI 5	0.5 20 0.5 20 #DIVIDI #DIVIDI #D 1 1	0 100 0 100 0 100 VIOI #CIVIOI #C	20 1 2 2 20 1 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 0.05 4 0.0305 2 0.05 4 0.0304 2 0.05 4 0.0324 2 0.05 4 0.0324 1 1 2 2	
Statistics Field Information	Sampler pH Conductivity Tempenture Disactured Oxidation- Reduction	Analytical Information Depth to Water RL Water Level Laboratory Sample Bicat	²⁰ Carbonate Akalimityjes Nitrogen Chloride Condu	the Dissolved Dissolved Dis	Table 7.4 - Groundwal		ssolved Dissolved Dissolve	solved Dissolved	Dissolved Fluoride Nitrate	Nitte Organo- chlorine	Gramo-chosphate Po	lycyclic Aromatic TPH col. co. TPH	CID TPH CIS- TPH	1029- Berzene Toluene Bittyl Xy	tene Total Total Organic Total T Phenois Carbon Earlum T	
AMPP 10/10/2017 MD4 2.5 6/12/2017 MD4 15 22/00/2018 MD4 15 27/04/2018 MD4 11.2	Sampler pH Conductivity Temperature Descended Droppin Ordeburger Priority Initials pH _pS1m C mg2, m Priority P1010 _pS1m C mg2, m Priority Priority P1010 _pS1m _S21 11242 11 15.01 1.64 950 P1017 _S231 1531 15.35 1.64 950 9714 988 P1019 _S31 1511 1575 1.6 488 488	n nR. ng	CalCO3 (ammonia) Children y mgL mgL mgL mgL µSic 14 0.1 13 0.1 246		Insolved lodum pH Sulphase Sulphase Focus Desolved Solids mgL pH mgL mgL 176 5.68 2002 984 185 5.57 190 955		admium Cobalt Copper			Nbite Crigano- chiorne pesticides mgL mgL	Organo-phosphate Pe pesticides Pg	Hydrocations PH CPC (14 C28 C	of here to be because Ap	Phenois Carbon Barlum	
22/02/22/18 ME4 1:5 27/04/22/18 ME4 11:2 Molmum Assnap SdDev Court	ZRV# Col 1311 1311 15.23 1.4 448 am ZRV# Col Statistical 15.24 2.34 345 5.05 1311 15.74 1.46 3664 1516 15.74 1.46 3664 5.04 5.045 1.66 3.24 660.2 3.24 660.2 3.24 1.66.2 3.24 50.25 3.217/16/96 5.24.2 50.25 3.237/16/96 5.24.2 50.25 3.237/16/96 5.24.2 50.25 3.237/16/96 5.24.2 50.25 3.237/16/96 5.24.2 50.25 3.24.2 50.25 3.23.7 50.25 3.23.7 50.25 3.23.7 50.25 3.23.7 50.25 3.24.2 50.25 3.24.2 50.25 3.24.2 50.25 3.24.2 50.25 3.24.2 50.25 50.25 50.25 50.25 50.25 50.25 50.25 50.25 50.25 50.25 50.25 50.25 50.25 50.25 50.25 50.25 50.25	12.85 773.85 CALERGED 01 1 14 12.26 773.55 CALERGED 01 1 12.46 773.55 11.11 12.265 774.05 11.11 12.265 774.05 13.1 12.275 773.7425 12.1 12.7375 773.7425 12.1 0.217466473 0.2180	11 0.1 13 0.3 272 1.6 0.1 12 0.1 282 0.1 12 0.1 270 155 0.1 13 0.1 385 165 0.1 13 0.1 385 165 0.1 12.275 0.1 377 166 18 0 0.5 0 8.124038455 12.205	4601 7.51 92.71 1.41 500 7.2 80.1 1.7 0 6.6 85.1 1.4 1 7.51 92.7 1.7 5 7.04.75 88.15 1.525 944 0.393991426 3.50751077 0.15 8.88	194 5.79 197 981 195 5.36 194 1945 176 5.36 130 255 195 5.79 202 1940 187 5.79 202 1940 187.5 5.6 195.75 992.5 1819447 0.18248 5.057927 35.2940003 4 4 4 4	0.01 0.13 0.003 0.01 0.12 0.003 1 0.01 0.13 0.003 1 eDN01 eDN01 eDN01	0.00122 0.0235 0.054 00122 0.0235 0.054 0 00122 0.0235 0.054 0 0.0121 #	0.0049 0.024 0.000 1.0049 0.024 0.0001 1.0049 0.024 0.0001 1.0049 0.024 0.0001 1.0049 0.024 0.0001 1.0049 1.004	1 0.504 0.19 0.24 0.504 0.19 0.24 0.504 0.19 0.24 0.504 0.19 0.24 eDW01 eDW01 eDW0	24 0.01 0.01 0.01 0.0125 0.01 0.0125 0.01 0.0125 #DIV/01 #DIV/01	0.014 0.014 0.014 0.014 #DRVIDI	0.5 20 0.5 20 0.5 20 0.5 20	50 100 0 100 0 100 0 100 VIOI #CIVIOI #C	50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 1 1 1 1	2 0.05 2 0.0246 2 0.05 2 0.0246 2 0.05 2 0.0246 2 0.05 2 0.0246 1 1 1 1	
SidDev Count	0.337/01/040 15.4273567 0.30155644 1.018561677 127.4394233 4 4 4 4 4 4	0.217466473 0.217466473 0.883 4 4 4 4	18 0 0.5 0 0.12403405 12.900 4 4 4 4 4 4	044 0.382901426 3.50701077 0.15 8.88 4 4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		DIVIDI #DIVIDI #DIVIDI #	DIVICI #DIVICI #DIVICI 1 1 1	PORVICI PORVICI PORVICI	#DIVIOI #DIVIOI	#Drvior 1	ADIVICI ADIVICI ADI	VIOI #CIVIOI #C	IVIDI #DINIDI #DINIDI #DINIDI #D 1 1 1 1 1	IVICI #DIVICI #DIVICI 1 1 1 1 1 1	
Statistics Field Information	Sampler pH Conductivity Temperature Distanced Oxidation- Reduction	Analytical Information	an Akainiv (as Nitroan Gondu	dit Dissolved Dissolved Di	Total	Chromium Dissolved Dissolved D	majved Dissolved Dissolved Di	solved Dissolved	Desolved Fluoride Nitrate	Nbite Crgano- chlorine	Grano-chosphate Po	wordic Atomatic	CID TPH CIS- TPH	ICOP- a su Bitwi u	. Total Total Croanic Total -	
	Sampler pH Conductively Temperature Disteled Conductively Instant eH x5/cm C mgL Noverfair 197297 528 4207 EC.2 mgL nVC 197297 528 4207 EC.22 1.80 642 m1 19729 528 4207 16.2 1.30 571 m1 19729 528 4207 1.6.3 1.9 472	Depth 10 Waser HL Waser Level Code als m m RL 000000000000000000000000000000000000	Calcorasis CaCO2) (ammonia) Chorde y mg/L mg/L mg/L mg/L j100 24 0.1 41 1 1000	Discove Caclun Magnesium Potassium S n mg1.	pH Suprasi Dispose mgL pH mgL mgL 542 6.14 740 3510 711 6.01 1000 4500	(Hex) Auminium Ansenic C mgL mgL mgL	admium Cobalt Copper	Lead Manganese Mercury mgiL mgiL mgiL	ng1 mg1 mg1	mgL mgL	pesicides regil.	ydrocations IPH Ca-Ca yg/L yg/L y	64 C28 C	36 Berzene Touses Berzene Xy gil µgil µgil µgil µgil µ	Phenois Carbon Barlum gL mgL mgL mgL	
23/06/23/10 Mills 240pm Minimum Maximum Alexage SadDev Court	Im Opp Dot H (10)/2 Dot H (10)/2 Dot Dot <t< td=""><td>Al All JULAI CANISSIDATION 3 4 6.77 789.44 CANISSIDATION 34. 4.75 789.44 CANISSIDATION 34. 5.1875 791.0225 36.9 40.1 5.1875 791.0225 36.9 2.889 7 10.760/503 2.889 4.4 4.4</td><td>33 0.1 34 0.2 14/3 0.1 34 0.3 160 460 0.1 34 0.3 160 460 0.1 1 1600 600 560 0.1 37 0.675 1380 542 10 3.16027766 0.3040379 248.3277404 666.23 4 4 4 4 4 4</td><td>000 423 274 10 200 44 214 124 0 229 218 10 0 55.8 421 12.8 5 44.75 268.5 11.575 107.7 2.47.00005 48 205.01 1.775</td><td>6.03 6.03 9.04 401 6.03 9.04 401 3020 401 3020 402</td><td>0.01 0.146 0.006 0.01 0.146 0.006 0.01 0.146 0.006 0.01 0.146 0.006 0.01 0.146 0.006 40//01 0.146 0.006 1 1 1 1</td><td>0.029 0.0468 0.008 0 0.029 0.0468 0.008 0 0.009 0 DIVIOI #DIVIOI #</td><td>0.0006 1.75 0.0002 0006 1.75 0.0002 0006 1.75 0.0002 0006 1.75 0.0002 0006 1.75 0.0002 0006 1.75 0.0002 1.001 #DIV/01 #DIV/01 1 1 1</td><td>2 11.7 0.53 0.01 11.7 0.53 0.01 11.7 0.53 0.01 11.7 0.53 0.01 11.7 0.53 0.01 11.7 0.53 0.01</td><td>01 0.01 0.01 0.01 0.0135 0.01 0.0135 0.01 0.0135 #DIVIOI #DIVIOI</td><td>5 0.014 0.014 0.014 0.014 #DV/01</td><td>0.5 20 0.5 20 0.5 20 0.5 20</td><td>50 100 0 100 0 100 0 100 VIDI #DIVIDI #D</td><td>50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2</td><td>2 0.05 4 0.0254 2 0.05 4 0.0254 2 0.05 4 0.0254 2 0.05 4 0.0254 2 0.05 4 0.0254 1 1 1 1</td></t<>	Al All JULAI CANISSIDATION 3 4 6.77 789.44 CANISSIDATION 34. 4.75 789.44 CANISSIDATION 34. 5.1875 791.0225 36.9 40.1 5.1875 791.0225 36.9 2.889 7 10.760/503 2.889 4.4 4.4	33 0.1 34 0.2 14/3 0.1 34 0.3 160 460 0.1 34 0.3 160 460 0.1 1 1600 600 560 0.1 37 0.675 1380 542 10 3.16027766 0.3040379 248.3277404 666.23 4 4 4 4 4 4	000 423 274 10 200 44 214 124 0 229 218 10 0 55.8 421 12.8 5 44.75 268.5 11.575 107.7 2.47.00005 48 205.01 1.775	6.03 6.03 9.04 401 6.03 9.04 401 3020 401 3020 402	0.01 0.146 0.006 0.01 0.146 0.006 0.01 0.146 0.006 0.01 0.146 0.006 0.01 0.146 0.006 40//01 0.146 0.006 1 1 1 1	0.029 0.0468 0.008 0 0.029 0.0468 0.008 0 0.009 0 DIVIOI #DIVIOI #	0.0006 1.75 0.0002 0006 1.75 0.0002 0006 1.75 0.0002 0006 1.75 0.0002 0006 1.75 0.0002 0006 1.75 0.0002 1.001 #DIV/01 #DIV/01 1 1 1	2 11.7 0.53 0.01 11.7 0.53 0.01 11.7 0.53 0.01 11.7 0.53 0.01 11.7 0.53 0.01 11.7 0.53 0.01	01 0.01 0.01 0.01 0.0135 0.01 0.0135 0.01 0.0135 #DIVIOI #DIVIOI	5 0.014 0.014 0.014 0.014 #DV/01	0.5 20 0.5 20 0.5 20 0.5 20	50 100 0 100 0 100 0 100 VIDI #DIVIDI #D	50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2	2 0.05 4 0.0254 2 0.05 4 0.0254 2 0.05 4 0.0254 2 0.05 4 0.0254 2 0.05 4 0.0254 1 1 1 1	
	4 4 2 4 4	1 1		4 4 4	4 4 4 4 Table 7.6 - Groundwat										1 1 1 1	
tatistics Field Information Date Site Code Time AMPP AMPP AMPP AMPP	Sampler pH Conductivity Temperature Cleasehed Oricidation Dovinen Backacion Initale pH pSicm °C mgL mV	Depth to Water RL Water Level Laboratory Sample Code Bit att att m m RL mgl	n Carbonate Atkainety (se httingen Chloride Condu CarbOD) (ammodal) mgiL mgiL mgiL mgiL uSit	the Dissolved Calcium Dissolved Dissolved Calcium S	asolved pH Sulphate Total colum pH mgL mgL mgL	Chromium Dissolved Dissolved Dissolved Dissolved Dissolved Dissolved Complexity of the complexity of t	anolved Dascived Dascived Data	actived Dascived Dascived Load Management Mercury mgiL mgiL mgiL	Desched Znc Fluoride Nitrate mg1. mg1. mg1.	Note Organo- chiorine mg1 mg1.	Organo-phosphate Po pesticides mg1.	Hotocations TPH C6-C9 (19)	C10- TPH C15- TPH C28- C	1023- 36 Benzene Toluene Bihyl Xy giL μgL μgL μgL μ	tene Total Total Organic Total 1 Phenois Cadon Barium 1 gL mgL mgL mgL	
3102017 M87 3.2 3012018 M87 2.2 22002018 M87 2.2 27042018 M87 12.3	pm 2704P 6.60 5925.6 15.8 2.01 548 pm 2704P 6.73 6404.3 16.20 2.40 607 pm 2704P 6.52 22512 16.24 3.64 44	1 2.88 786.19 (A1705234-001 7 2.00 786.07 (A1800060-002 4 3.17 785.95 (A1801889-002	89 0.1 789 0.1 1570 01 0.1 901 0.1 1570	040 190 369 5.9 920 242 487 7.2	573 7.58 300 3790 637 7.91 243 5270		0.00145 0.0074 0.005	0.0002 0.41 0.000	0.183 0.28	28 0.01 0.01	5 0.014	0.5 20	50 100	50 1 2 2	2 0.65 15	
Weinsum Backmam Average SatDev Count	271 2419 6.54 7778-11 16.021 22.31 260 6.25 555.00 15.00 2.01 2022 6.77 2022 6.77 2022 6.77 2022 6.77 2022 6.75 52.51 50.00 51.00 2.01 2022 51.21 51.62 51.12 51.21	2.68 785.57 738.1 3.50 786.19 901.1 3.14 785.93 797.7 0.223345228 16.97 4 4 4	24 0 0.10 0.11 738.00 0.10 1570.06 5940 0 0.10 961.00 0.10 2780.06 5740 0 0.10 970.50 0.10 2780.06 5770 16 0 16.97056275 0 197.5689897 780.11 4 4 4 4	1730 201 661 9.8 200 206 571 9.4 00 193.00 483.00 5.90 5 00 21.00 644.00 9.80 6 50 263.255 522.00 8.08 6 805 26.2636100 0.28234271 4.94	773.00 7.25 188.00 3780.00 154.00 7.91 303.00 5890.00 127.75 7.62 231.75 5100.00 12747468 0.346482 5658854 311.126984 4 4 4 4	0.01 0.04 0.03 0.01 0.04 0.03 0.01 0.04 0.03 eDW01 eDW01 eDW01 1 1 1	0.00 0.01 0.01 0.00 0.01 0.01 0.00 0.01 0.01	0.00 0.61 0.00 0.00 0.61 0.00 0.00 0.61 0.00 DV/01 #DV/01 #DV/01 1 1 1	0.18 0.28 0.28 0.18 0.28 0.28 0.18 0.28 0.28 eDivio: #Divio 1 1 1 1	0.01 0.01 0.01 0.01 0.01 0.01 #DR/01 1 1	0.01 0.01 0.01 #DW01 5	0.50 20.00 5 0.50 20.00 5 0.50 20.00 5 PDW01 PDW01 PD 1 1	00 100.00 5 .00 100.00 5 .00 100.00 5 V/01 #DV/01 #D	100 1.00 2.00 2.00 2 100 1.00 2.00 2.00 2 100 1.00 2.00 2.00 2 100 1.00 2.00 2.00 2 100 1.01 2.00 0.00 2 100 1.01 1.01 1.00 0 1 1 1 1 1.00 0 1 1 1 1 1.00 0 1	100 0.05 15.00 0.20 100 0.05 15.00 0.20 15.00 0.20	
tatistics Field Information		Analytical Information			Table 7.7 - Groundwate	er Results - MB 10				0	I					
Date Site Code Time 26/102017 MB10 114 11/122017 MB10 114	Sampler pH Conductivity Temperature Disabled Display Ocidation Patential Initials pH jaStem C mgL <	Depth to Water RL Water Level Laboratory Sample Bicat m m RL Code attraction 7 3 700.3 CA1792951-001 mg/ 4 2.88 700.3 CA17929251-001 mg/	an Alkalinky (as. Carbonals Ntrogen (ammonia) Chicride Cody up: 1200 mgL mgL mgL mgL up: 1200 up: 1200	State Dissolved Calclum Dissolved Magnesium Dissolved Dissolved Dissolved State m mg1	solved colum pH Sulphate Dissolved Dissolved Solids mg1 pH mg1 mg1 522 7.23 3975 7343 537 7.31 3975 7343		solved Dissolved		Dissolved Zinc Fluoride Nitrate	Nitte Cripto Nitte pesticides mgL mgL	Organo-phosphate Po pesticides mg1.	Hydrocarbons TPH C6-C9 TPH C6-C9 C9	C10- TPH C15- TPH 14 C28 C 1L H9L P	C29- 36 Benzene Toluene Bithyl Benzene Xy p1 µp1 µp1 µp1 µp1 µ	fene Total Total Organic Total Phenols Carbon Barlum 1 git mgit mgit mgit mgit	
22/03/2018 MB10 2-3 14/05/2018 MB10 2-4 Assimum Assimum Assesse SafDav Count	271107 6.63 6735.21 15.67 1.65 468 am 271107 6.83 6661.31 15.21 0.66 294.4 6.83 6781 15.21 0.66 294.4 6.66 6781 15.21 0.26 294.4 6.667 666.575 15.617 1.205 503.125 0.271952815 15.947524 0.258455024 20.4007044 20.4007044	33 33 780 CA1807839-004 44 3.12 780.04 CA1803041-003 2.80 780.02 280 280 3.8 780.02 280 280 3.8 780.02 280 280 3.0 780.6 285 25 0.41182506 0.41182506 25 25	84 0.1 2244 0.3 11921 94 0.1 2844 0.3 11921 0.1 2844 0.1 1960 792 0.1 2849 0.1 1200 805 0 2.5 0.1 1160 974 4 4 4 4 4 4	000 501 827 1.4 960 554 763 0.3 0 554 763 0.3 0 567 827 1.4 5 560.25 787 1.05 45 5.560.25 787 1.05	528 7.51 3660 7821 461 7.22 3560 77343 517 7.35 3560 7343 517 7.35 3670 7823 517 7.35 3670 7823 517 7.35 3717.5 7642 79222329 0.194722 174.2264 206.46661 4 4 4 4	0.01 0.04 0.006 0 0.01 0.04 0.006 0 0.01 0.04 0.006 0 0.01 0.04 0.006 0 eDr/00 eDr/01 006 0 1 1 1	0.00005 0.003 0.01 0 00005 0.003 0.01 0 00005 0.003 0.01 0 00005 0.003 0.01 0 DVV01 #DVV01 #DVV01 #	0.0002 0.065 0.000 0002 0.065 0.0001 0002 0.065 0.0001 0002 0.065 0.0001	1 0.007 0.55 0.07 0.007 0.55 0.07 0.007 0.55 0.07 0.007 0.55 0.07 #DN/01 #DN/01 #DN/0	0.01 0.0135 0.01 0.0135 0.01 0.0135 0.01 0.0135 #DW01 #DW01	0.014 0.014 0.014 0.014 #DV/01	0.5 20 0.5 20 0.5 20 0.5 20	50 100 0 100 0 100 0 100	50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2	2 0.05 4 0.0002 2 0.05 4 0.0002 2 0.05 4 0.0002 2 0.05 4 0.0002 0.05 4 0.0002 1 1 1 1	
Siddev Count	0.271823815 120.475722 0.3787/4632 0.586620094 204.0057087 4 4 4 4 4 4	4 4 4 4	0 2.5 0 40.66554809 4435 4 4 4 4 4	45 5.560275773 27.7608038 0.23804761 24.7 4 4 4	79022239 0.104722 174.2284 208.4861 4 4 4 4 Table 7.8 - Groundwat		DIVIOI #DIVIOI #DIVIOI # 1 1 1	1 1 1 1 1 1	PDIVICI PDIVICI PDIVICI 1 1 1	#DIVIOI #DIVIOI	#Divior 1	4DEV/01 4DEV/01 4D	VIDI #DIVIDI #D	IVIOI #DIVIOI #DIVIOI #DIVIOI #D	1 1 1 1 1 1 1	
tatistics Field Information Date Site Code Time	Sampler pH Conductivity Temperature Disabled Dividelion Reduction Description	Analytical Information Depth to Water PL Water Level Laboratory Sample Block Code and	²¹ Carbonate Alkalinky (ss Carbonate CacCol) (semicola) Chloride Y	divit Dissolved Calcium Dissolved Dissolved Dissolved Statium Statistics Stat	asolved pH Sulphate Dissolved Solids	Chromium Dissolved Dissolved Dissolved Chromium Auminium Arsenic C	asolved Dissolved Dissolve	sacived Dissolved Dissolved Manganese Mercury	Dissolved Fluoride Nitrate	Nate Otgano- chiotne pasticides	Crgano-phosphate Pe	lycyclic Aromatic Hydrocarbons TPH C6-C9	C10- TPH C15- C28	C229- Benzene Toluene Dittyl Xy	tene Total Cropanic Total Granum T	
25/102017 ED05 124 14/122017 ED05 124 14/022018 ED05 20 23/07/2518 ED05 20 Molecular	pm 197231 6.65 6780.8 18.7 3.421 548 pm 197251 6.31 72654 21.7 3.75 550 pm 197251 6.31 72654 21.7 3.75 550 pm 197251 7.21 55447 12.23 7.15 141.6 6.31 554247 12.58 2.11 141.6	3 2.44 764.35 CA1705863.022 4 2.16 784.54 CA170708.001 7 2.41 754.29 CA16012.005 4 2.65 784.15 CA160423.005 2.16 7784.15 CA1604435.002 566	3d 6.1 53d 6.3 1000 14 6.1 6.16 6.3 1000 14 6.1 6.16 6.3 1000 15 6.1 5.26 6.3 6.20 15 6.1 5.22 6.3 6.20 10 5.46 6.1 8.20 726	040 82.4 405 0.5 300 93.8 412 0.4 600 85.7 367 0.4 710 85.1 381 0.4 0 82.4 267 0.5	1240 7.55 1000 5100 1120 7.36 1210 5250 1200 7.40 565 5090 900 7.46 1150 5240 900 7.36 545 5090	0.01 0.02 0.016	0.00301 0.0032 0.013	0.0005 0.505 0.000	0.229 0.52 0.05	0.01 0.0135	15 0.014 0.014	0.5 20	50 100 0 100	50 1 2 2	2 0.05 12 0.0004	
Maximum Average SadDev Count	6.31 (2012) 6.31 (2012) 6.31 (2012) 6.32 (2012) 6.69 (2012) 6.69 (2012) 6.69 (2012) 6.69 (2012) 6.750	2.16 784.15 564 2.65 784.46 610 2.415 784.385 5833 0.2007/4859 0.2007/4859 20.58 4 4 4 4	0.1 566 0.1 820 726 0.1 616 0.2 1900 726 5 0.1 520.25 0.125 1587.5 766 11 0 20.56114023 0.55 513.378262 2040- 4 4 4 4 4	0 82.4 367 0.5 0 93.9 412 0.6 5 86.775 282.25 0.575 1 248 4.962105408 21.8689277 0.05 173 4 4 4	900 7.36 565 5000 1290 7.55 1210 5250 1375 7.465 986.25 5170 5615462 0.079073 291.8154 05.7947771 4 4 4 4		00201 0.0022 0.013 0 00201 0.0022 0.013 0 00201 0.0022 0.013 0 00201 0.0022 0.013 0 00101 #CIVIDI #CIVIDI # 1 1 1	0005 0.505 0.0003 0005 0.505 0.0003 0005 0.505 0.0003 0005 0.505 0.0003 0005 0.505 0.0003 0.000 #DIVIDI #DIVIDI 1 1 1	0.229 0.52 0.05 0.229 0.52 0.05 0.229 0.52 0.05 eDV01 eDW01 eDW01 1 1 1	0.01 0.0125 0.01 0.0125 0.01 0.0125 #DIVIDI #DIVIDI 1 1	0.014 0.014 0.014 #DRVI01 5	0.5 20 0.5 20 #DIVIDI #DIVIDI #D 1 1	0 100 0 100 0 100 VIOI #CIVIOI #C	20 1 2 2 20 1 2 2 INTO #DINOI #DINOI #DINOI #D 1 1 1 1	2 0.05 12 0.0304 2 0.05 12 0.0304 2 0.05 12 0.0304 IM01 #DIVIDI #DIVIDI 1 1 1 1	
tatistics Field Information Date Site Code Time		Analytical Information Depth to Water PL Water Level Laboratory Sample Block add	²⁰ Carbonate Alkalinky (ss. Nitrogen (chloride Condu- y (semmonia)	divit Dissolved Calcium Dissolved Dissolved Signature Si	Table 7.9 - Groundwal seolved pH Sulphate Dissolved Solds	Chromium Dissolved Auminium Arsenic C	ssolved Dissolved Dissolved Dissolved Dissolved	solved Dissolved Dissolved Manganese Mercury	Dissolved Pluoride Nitrate	Nitte Organo- chiorine pesticides	Organo-phosphale Pe peeticides Po	lycyclic Aromatic Hydrocarbons TPH C6-C9	C10- TPH C15- TPP C28 C	1 C29- 36 Denzene Toluene Dittyl Xy	fene Total Total Organic Total Phenois Carbon Barlum 1	
27/10/2017 WMH 2/01/2018 WMH 11/4 5/04/2018 WMH 10/2 22/07/2018 WMH 10/2	pm 149/271 7.41 2446.9 460.8 5.42 20.0 am 149/271 7.52 2464.8 266.3 6.43 17.3 am 149/271 7.52 2464.8 266.3 6.43 17.3 am 149/271 7.93 2564.8 154.6 6.7 15.	m mE mg/ 42.77 738.50 CA1705951-003 38 42.4 738.87 CA1805953-001 53 59.93 741.33 CA1802531-031 53 29.93 741.33 CA1802531-031 53 39 742.27 CA18042531-031	mgL mgL <td>n mgL mgL mgL 102 200 201 102 10.7 700 273 100 10.7 500 273 194 11.3 010 271 196 12.3</td> <td>95.0 7.73 1000 2010 95.0 7.73 1000 2010 95.0 7.73 1010 2000 95 7.73 1520 2005</td> <td>ngi ngi ngi 0.01 0.05 0.000</td> <td>ngi ngi ngi 0.0000 0.0046 0.00</td> <td>0.007 0.159 0.000</td> <td>mgi mgi mgi</td> <td>ng1 ng1</td> <td>ngl. 5 0.014</td> <td>0.5 20</td> <td>50 100</td> <td>50 1 2 2</td> <td>gL mgL mgL mgL 2 0.05 3 0.0165</td>	n mgL mgL mgL 102 200 201 102 10.7 700 273 100 10.7 500 273 194 11.3 010 271 196 12.3	95.0 7.73 1000 2010 95.0 7.73 1000 2010 95.0 7.73 1010 2000 95 7.73 1520 2005	ngi ngi ngi 0.01 0.05 0.000	ngi ngi ngi 0.0000 0.0046 0.00	0.007 0.159 0.000	mgi mgi mgi	ng1 ng1	ngl. 5 0.014	0.5 20	50 100	50 1 2 2	gL mgL mgL mgL 2 0.05 3 0.0165	
Minimum Maximum Average SidDav Count	am 98/201 7.74 2201 201 8.24 8.4 7.41 2251 15.46 5.42 14.13 7.33 2264.8 480.8 8.34 20.06 7.65 2481.875 305.675 6.6975 17.83 0.23160001 83.732039 15.7853046 1.16601189 2.897352076 4 4 4	30 738.5 10 42.77 742.27 30 41.03 740.24 2011 1.843167563 1.843167563 5.122 4 4 4	0.1 201 196 0.1 144 227 0.1 226 0.1 173 30 5 0.1 20125 0.1 152.25 260 80 0 5.122453252 0 13.8894443 93.66 4 4 4 4 4 4 4	0 371 190 10.6 0 306 194 12.3 5 377.25 191.5 11.2 5 786 6.751543034 1.91485422 0.778681 4.36 4 4 4	105 7.84 1050 2780 105 7.56 1500 2510 105 7.78 1810 2780 16,075 7.6875 1607.5 2687.5 11479107 0.110567 141.7451 02.9404509 4 4 4 4	0.01 0.05 0.003 0.01 0.05 0.003 0.01 0.05 0.003 eDW/01 eDW/01 eDW/01 1 1 1 1	0.0000 0.0046 0.00 0.0000 0.0046 0.00 0.0000 0.0046 0.00 DR/01 #DR/01 #DR/01 # 1 1	0.007 0.139 0.0001 0.007 0.139 0.0001 0.007 0.139 0.0001 0.007 0.139 0.0001 DEV/01 #DEV/01 #DEV/01 1 1 1	6.22 0.5 0.56 6.22 0.5 0.56 6.22 0.5 0.56 6.22 0.5 0.56 FDIVIDI #DIVIDI 1 1 1	0.01 0.0125 0.01 0.0125 0.01 0.0125 #DIV/01 #DIV/01 1 1	0.014 0.014 0.014 #DEVIDI 1	0.5 20 0.5 20 #DIVIDI #DIVIDI #D 1 1	0 100 0 100 0 100 V/01 #DEV/01 #D	50 1 2 2 50 1 1 2 1 5 50 1 1 2 2 50 1 1 2 1 5 50 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 0.05 3 0.0165 2 0.05 3 0.0165 2 0.05 3 0.0165 1.001 #DIV.01 #DIV.01 1 1 1 1	
tatistics Field Information		Analytical Information			Table 7.10 - Groundwa						1					
Date Site Code Time 25/10/2017 MMS 12:1	Sampler pH Conductively Conductively Potential Dissolved Daygen Temperature Temperature Initials pH pSion mV mgL °C pm MP22R 6.85 5528.3 470.9 6.23	Depth to Water FIL Water Level Laboratory Sample Bication 0 m m n <	an Carbonals Akalinky (ss. Nitrogen Chioride Condu. y mg1 mg1 mg1 mg1 y 1000 1 10000 1 1000 1 1000 1 1000 1 1000 1 1000 1 10000 1 10000 1 1000 1 100	State Dissolved Calcium Dissolved Magnasium Dissolved Potasium Dissolved State m mg/L mg/L mg/L mg/L state state <td>teolved pH Sulphate Dissolved odum pH mgL mgL mgL 1400 7.76 294 6555</td> <td>Chromium Dissolved Dissolved Auminium Arsenic C</td> <td>solved Dissolved Dissolved Dissolved Dissolved Dissolved Dissolved Copper Dissolved Di</td> <td>saolved Dissolved Dissolved Lead Manganese Mercury mgl. mgl. mgl.</td> <td>Dissolved Zinc Fluoride Nitrate</td> <td>Nbite Cityaso- chlorine pesticides mgl. mgl.</td> <td>Organo-phosphate Pe pesticides mg1.</td> <td>Hydrocarbons TPH C6-C9 TPH Hydrocarbons Hydro F</td> <td>C10- TPH C15- TPH C28 C pL µgL µ</td> <td>1029- 36 Benzene Toluene Dithyl Xy Benzene ygl pgl pgl p</td> <td>tene Total Organic Total Organic Total Phenois Carbon Barlum 1 git mgit mgit mgit total total Total Organic Total Total Total Organic Total Total Organic Total Total Total Organic Total Total Organic Total Organi</td>	teolved pH Sulphate Dissolved odum pH mgL mgL mgL 1400 7.76 294 6555	Chromium Dissolved Dissolved Auminium Arsenic C	solved Dissolved Dissolved Dissolved Dissolved Dissolved Dissolved Copper Dissolved Di	saolved Dissolved Dissolved Lead Manganese Mercury mgl. mgl. mgl.	Dissolved Zinc Fluoride Nitrate	Nbite Cityaso- chlorine pesticides mgl. mgl.	Organo-phosphate Pe pesticides mg1.	Hydrocarbons TPH C6-C9 TPH Hydrocarbons Hydro F	C10- TPH C15- TPH C28 C pL µgL µ	1029- 36 Benzene Toluene Dithyl Xy Benzene ygl pgl pgl p	tene Total Organic Total Organic Total Phenois Carbon Barlum 1 git mgit mgit mgit total total Total Organic Total Total Total Organic Total Total Organic Total Total Total Organic Total Total Organic Total Organi	
14/02/2018 WMS 9-2 14/05/2018 WMS 2-2 Molmum Awetage	an 19728 7.31 9766.7 320.3 2.03 17.5 pn 19728 7.33 9163 152 4.08 161 6.65 9163 152 4.08 161 7.31 10045.4 682.7 8.23 94.05 7.055 9000.175 41.255 4.8625 18.855	20 2.88 782.85 CA1801128-504 9 13 2.34 782.89 CA180301-605 9 2.25 780.69 A180301-605 10 3.04 784.48 105 2.6425 784.48 105	30 0.1 1055 0.1 2245 1 441 6.1 1044 6.1 3082 1 1 0.1 1000 6.1 2600 927 1 0.1 1050 6.1 2640 927 5 0.1 1042.5 6.1 2640 927	1700 194 572 2.4 6600 166 546 2.4 0 166 546 2.4 0 196 572 4.6 0 196 572 4.6 0 191.55 542.25 3.005 11 275 4.573474245 11.4418821 1.05316682 230	1430 7.66 322 6120 947 7.61 298 6120 947 7.61 298 6120 1400 7.76 325 7280 291.75 7.665 313.25 6715	0.01 0.03 0.029 0.01 0.03 0.029 0.01 0.03 0.029 0.01 0.03 0.029	0.0009 0.0034 0.006 0 00009 0.0034 0.006 0 00009 0.0034 0.006 0	0.0002 1.45 0.000 1.0002 1.45 0.0001 1.0002 1.45 0.0001 1.0002 1.45 0.0001	1 0.009 1.05 0.05 0.009 1.05 0.05 0.009 1.05 0.05 0.009 1.05 0.05	05 0.01 0.01 0.01 0.0135 0.01 0.0135 0.01 0.0135	0.014 0.014 0.014 0.014	0.5 20 0.5 20 0.5 20	50 100 0 100 0 100 0 100	50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2	2 0.05 14 0.432 2 0.05 14 0.432 2 0.05 14 0.432 2 0.05 14 0.432	
Maximum Average SidDev Count	7.31 10045.4 680.7 8.22 94.20 7.005 9900.173 419.225 4.8235 18.855 0.206801022 388.746666 200.1050673 2.30045045 3.725734027 4 4 4 4 4		1 0.1 1050 0.1 2240 107 5 0.1 1042.5 0.1 2065 107 17 0 9.57427107 0 140.2308678 6442 4 4 4 4 4	275 4.573474245 11.4418821 1.05316982 230 4 4 4	4606511 0.066583 18.29157 538.782907 4 4 4 4 Table 7.11 - Groundwa		00009 0.0034 0.006 0 00009 0.0034 0.006 0 DWIDI #DWIDI #DWIDI # 1 1 1	1.0022 1.45 0.0001 1.0022 1.45 0.0001 EXVIDI #EXVIDI #EXVIDI 1 1 1	0.009 1.05 0.05 0.009 1.05 0.05 #Crivio1 #Divio 1 1 1	0.01 0.0125 0.01 0.0125 #DIV/01 #DIV/01 1 1	0.014 0.014 eEtvi01 1	0.5 20 0.5 20 #DKVDI #DKVDI #C 1 1		80 1 2 2 80 1 2 2 INICI #DINICI #DINICI #DINICI #D	2 0.05 14 0.432 2 0.05 14 0.432 IN/01 #DIV/01 #DIV/01 #DIV/01 1 1 1 1	
	Potential Citygen	Depth to Water RL Water Level Depth to Water RL	an Carbonale Alkalinky (ss. Nitrogen Chloride Conda Carbonale (ammonia) Chloride y mg1, mg1, mg1, mg1, mg1, ySt	dilit Dissolved Calcium Dissolved Dissolved Calcium Magnesium Potensium S	asolved pH Sulphate Dissolved Solds pH ngL mgL	Chromium Dissolved Dissolved (Hes) Auminium Arsenic C	admium Disacived	Lead Dissolved Dissolved Manganese Mercury	Dissolved Pluoride Nitrate	Nitte Organo- chiorne pasticides mg1 mg1	Organo-phosphate Po pesticides mg/L	Hydrocarbons TPH C6-C9 TPH Hydrocarbons pgL pgL p	C10- 14 C28 C28	C29- 36 Benzene Toluene Bittyl Xy gL µgL µgL µgL µgL	tene Total Total Organic Total Barlum T gL mgL mgL mgL mgL	
AMP 16/102317 WM6 10:3 4/12/317 WM6 12:2 14/02/318 WM6 8:4 23/07/318 WM6 12:5 Molecular	Im Im<	4 44 78554 AA1705716-003 5 1 3.94 786.11 241001128-006 6 1 4.22 786.11 24100425-003 5 2.94 785.54 241001128-006 6 2.94 785.54 477	mgL mgL mgL mgL μ50 17 61 44 6.1 4440 1 1.0 1 51 0.1 5120 1 2.0 1 61 0.1 4460 1 1.1 0.1 51 0.1 4460 1 1.1 0.1 54 0.1 4460 1 1.1 0.1 54 0.1 3120 122 0.1 66 0.1 56 0	Acc 122 219 1.4 020 128 5.08 1.8 000 115 473 1.8 000 121 468 3.4 0 115 459 1.8	mgL pH mgL mgL mgL 2420 6.34 310 8600 2440 6.33 444 9273 2420 6.31 324 8000 1525 6.34 354 8000 1525 6.34 310 8000 1520 6.34 310 8000	0.01 0.02 0.047	0.00187 0.0422 0.012	0.0042 0.141 0.000	0.214 0.3 0.00	88 0.01 0.01 0.01 0.0135	0.014	0.5 20	50 100 0 100		2 0.05 4 0.003 2 0.05 2 0.053	
Maximum Aestage Sadgev Count	642 - 11 1272.4 138 - 13 14 1427.5 - 138 - 14 1427.5 - 14 1427.5 - 154.9 - 7.42 - 16.61 - 7.27 - 1173.45 - 554.9 - 7.42 - 16.61 - 6.7175 - 1150.535 - 422.45 - 6.3975 - 0.300214004 - 204.4551 - 173.238328 - 0.512754 - 0.7320261 - 0.732	42] 786.11 746.11 746.43 746.44 3.34 785.54 477.	12 0.1 6.1 0.1 6.1 6.1 6.1 6.1 6.1 7.1	0 128 528 3.4 0 121.5 458.25 2.225 455 5.322305474 29.6500074 0.70475049 448 4 4 4	2460 6.51 468 8800 2165 6.59 372.25 8377.5 216566 0.00046 71.7975 412.664109 4 4 4 4 Table 7.12 - Groundwat	0.01 0.02 0.647 1 0.01 0.02 0.647 1 0.01 0.02 0.647 1 eDN/01 eDN/01 eDN/01 1 1	00187 0.0422 0.012 0 00187 0.0422 0.012 0 00187 0.0422 0.012 0 00187 0.0422 0.012 0 00101 eEEVI01 eEEVI01 e 1 1 1	0042 0.141 0.0006 0042 0.141 0.0006 0.042 0.141 0.0006 0.042 0.141 0.0006 0.000 eCtv101 eCtv101 1 1 1	0.214 0.3 6.88 0.214 0.3 6.88 0.214 0.3 6.88 eDrivol eDivid eDivid 1 1 1	0.01 0.0135 0.01 0.0135 #DIV/01 #DIV/01 1 1	0.014 0.014 0.014 #EVN01 1	0.5 20 0.5 20 #DIVIDI #DIVIDI #D 1 1	0 100 Vioi #Civioi #C	20 1 2 2 20 1 2 2 20 1 2 2 20 1 2 2 1001 #DIVIOI #DIVIOI #DIVIOI #D 1 1 1 1	2 0.05 2 0.05 2 0.05 4 0.05 2 0.05 3 0.05 1 1 2 1 1 1 2 1	
Date Site Code Time		Analytical Information	on Carbonale Akalinity (as Carbonale Calcola) Chioride Condu	the Dissolved Calcium Dissolved Dissolved Statistics	ssolved pH Sulphate Dissolved	Chromium Dissolved Dissolved Di	asolved Dissolved Dissolve	solved Dissolved Dissolved Manganese Mercury	Dissolved Pluoride Nitrate		Crgano-phosphate Po pesticides		C10- TPH C15- TPH C28 C		tene Total Crganic Total Crganic Barlum T	
AMP9 26/10/2017 MW85 2:3 4/12/2017 MW85 11:5 14/02/2018 MW85 1 23/07/2018 MW85 1	Index pr paces mv mpc C W1 M272R 6.68 9276.6 520.4 6.05 17.7 am MP2R 6.43 10017.5 428.5 6.11 14.1	m mRL mg/ 59 4.92 785.73 CA1705951-002 N 4.69 785.96 CA1706710-005	mgL mgL mgL mgL mgL 01 0.4 66 0.1 61 61 21 0.1 721 0.1 2460 1 78 0.1 778 0.3 2460 1 22 0.1 532 0.1 2720 1	000 227 781 2.8 H00 195 660 5	100 7.38 1550 7420 1365 7.48 567 8595 1346 7.55 835 7750 894 7.34 1940 7750	0.01 0.03 0.03	AD467 A0002 A002		mgi mgi mgi 3 0.862 0.76	29 0.01 0.01	0.014	0.5 20	50 100	50 1 2 2	2 0.05 7 0.043	
Molmum Maximum Average StdDev Count	00 0020 7.0 0021 0021 0021 0021 0021 0021 0021 00	Num (05.015) 503 5.03 785.955 777 4.0375 785.7575 660 0.145446821 0.142446821 1053 4 4 4	32 6.1 532 0.1 2460 154 0.1 532 6.1 2460 154 0.1 778 6.1 2510 150 5 0.1 650.5 6.1 2800 112 1 0 105205.7 0 487.784/652 651.1 4 4 4 4 4 4	0 105 660 2.8 0 248 855 5 5 227.5 766 3.25 1 812 23.33985226 90.3896764 1.1 226 4 4 4	894 7.34 835 7420 1380 7.55 1940 8990 1785 7.44 1328 7377.5 4118666 0.096954 510.9331 692.694016 4 4 4 4		0.0407 0.0032 0.012 0 0.0407 0.0032 0.012 0 0.012 0		0.862 0.76 2.39 0.862 0.76 2.39 0.862 0.76 2.39 eCN/01 #DN/01 #DN/01 1 1 1	0.01 0.0135 0.01 0.0135 0.01 0.0135 #DIV/01 #DIV/01 1 1	0.014 0.014 0.014 #DIVIDI 1	0.5 20 0.5 20 ectivici ectivici ect 1 1	0 100 0 100 0 100 VIOI #CVIOI #C	20 1 2 2 20 1 2 2 20 1 2 2 20 1 2 2 20 1 2 2 1 1 1 2 2 1 1 1 1	2 0.05 7 0.0443 2 0.05 7 0.0443 2 0.05 7 0.0443 2 0.05 7 0.0443 1 1 1 1	
tatistics Field Information		Depth to Water RL Water Level Laboratory Sample Code Bication	on Curbonale Alakainty (as Natogen Cadoo); (ummonia) Chibride Codo); y mgL mgL mgL upSr upSr upSr upSr upSr upSr upSr upSr		Table 7.13 - Groundwat	er Results - MW8D	ssolved Dissolved Dissolve			Nitte Organo- chiorine pesticides	Organo-phosphate Po pesticides				tene Total Organic Total Garbon Sorten T	
4/10/2017 MWED 114 4/10/2017 MWED 114 4/10/2017 MWED 9/1 9/10/2018 MWED 9/1	Initials pH pSkm mV mgL °C an HP32R 5.7 8722.3 457.7 4.76 166 am HP32R 5.2 8526.8 411.1 6.53 143.2 am HP32R 6.54 8265.8 411.1 6.53 143.2	m mRL mg/ 2 4.32 786.23 CA1705853-006 34 3.88 786.67 CA170575-004 34 4.58 776.77 CA1801128-003	mgL mgL mgL mgL µSk 05 0.1 160 0.1 1540 1 20 0.1 222 0.1 1755 1 72 0.1 172 0.1 656 1	s mgL mgL mgL : 500 294 1170 5.1 500 350 1166 4.2 200 400 1240 5.1	mgL pH mgL mgL 872 6.9 4500 10100 861 6.85 5000 9830 800 6.72 2530 10600	ngi ngi ngi 0.01 0.04 0.017	ngi ngi ngi 0.29 0.0262 0.033	mgi mgi mgi 0.0002 2.38 0.000	mgL mgL mgL 5 24.5 0.52	mgL mgL 13 0.01 0.01	mgL 6 0.014	0.5 20	μοτ. μοτ. μ	2L μgL μgL μgL μ 50 1 2 2	pl mpl mpl mpl 2 0.05 5	
22/07/2018 MWED 9:11 Maximum Asenge SidDev Court	MI HPR2B 7.36 6228.4 219.1 4.02 3.13 7.79 6670.2 445.7 6.02 17.24 6.915 8172.505 268.15 653 102.273 3.845.8172.505 268.15 115.102413 1.81725023 6.5002261 3.84435227 1291.41603 115.102413 1.81725023 6.50002261	12 4 786.55 CA180443-505 172 3.68 785.968 222 4.58 786.668 222 4.155 786.553 226.0 0.316806986 0.316806986 256.08 4 4 4 4	23 0.1 172 0.1 1340 0.1 172 0.1 656 105 0.1 228 0.1 1750 105 i 0.1 224.5 0.1 1221.5 568 i 0.1 204.5 0.1 1221.5 568 i 0.1 206.08220001 0 474.1965134 1380.1 i 4 4 4 4 4	500 191 586 3.3 191 586 3.9 0 405 1240 5.1 0 405 1240 5.1 0 327.75 1039 4.575 7 204 99.60279846 304.089899 0.61846584 102	650 7.05 2530 6360 650 6.72 2533 6360 872 7.05 5020 10600 9625 6.88 3650 9172.5 1220725 0.136382 1309.275 1916.37462	0.01 0.04 0.017 0.01 0.04 0.017 0.01 0.04 0.017 #DIVIOI #DIVIOI #DIVIOI	0.29 0.0262 0.033 0 0.29 0.0262 0.033 0 0.29 0.0262 0.033 0 DIVIOI #DIVIOI #DIVIOI # 1 1 1	0002 2.38 0.0005 0002 2.38 0.0005 0002 2.38 0.0005 0002 2.38 0.0005 DIV/01 #DIV/01	24.5 0.52 0.13 24.5 0.52 0.13 24.5 0.52 0.13 eDivio: eDivio 1 1 1 1	0.01 0.0135 0.01 0.0135 0.01 0.0135 #DW01 #DW01 1 1	0.014 0.014 0.014 #DIVIO	0.5 20 0.5 20 0.5 20 #DRV01 #DRV01 #D 1 1	0 100 0 100 0 100 VDI #DV/01 #D	50 1 2 2 50 1 1 1 2 2 50 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 0.05 5 0.0154 2 0.05 5 0.0154 2 0.05 5 0.0154 2 0.05 5 0.0154 2 0.05 5 0.0154 1 1 1 1	
												<u> </u>	-			
Date Site Code Time 10/102017 MW95 10.1 10/102017 MW95 10.1	Stepse pl Conductory Dillition Dimension Dimension stepse att 20000 2000 2000 2	Depth to Water RL Water Level Laboratory Sample Code Bicati ate m m RE	Of Carbonals Alkalinity (sa CaCOD) Nitogen (smmork) Chloride Condu y mgL mgL mgL µfx 22 0.1 222 0.1 1000	Bit Dissolved Calcium Dissolved Magnetize Dissolved Potessium Dissolved Potessium <thdissolv< td=""><td>teolived pH Sulphate Discolved Solds mgL pH mgL mgL mgL 1200 7.18 4460 10200</td><td>Chronium Dissolved Auminium Arsenic D</td><td>asolved Dissolved Dissolved Dissolved Dissolved Dissolved Copper Dissolved Copper mgL mgL</td><td>solved Dissolved Dissolved Manganese Mercury mgL mgL mgL</td><td>ngl ngl ngl</td><td>Note Organo- chlorine pesticides mgL mgL</td><td>Crgano-phosphate Pe pesticides mg/L</td><td>Hydrocations TPH C6-C9 TPH Hydrocations PDL PDL F</td><td>C10- TPH C15- TPH C28 C pL µpL µ</td><td>1029- 36 Benzene Toluene Bithyl Xy pt µpt µpt µpt µ</td><td>tense Total Organic Total Barlum 1 gl. mgl. mgl. mgl. mgl.</td></thdissolv<>	teolived pH Sulphate Discolved Solds mgL pH mgL mgL mgL 1200 7.18 4460 10200	Chronium Dissolved Auminium Arsenic D	asolved Dissolved Dissolved Dissolved Dissolved Dissolved Copper Dissolved Copper mgL mgL	solved Dissolved Dissolved Manganese Mercury mgL mgL mgL	ngl ngl ngl	Note Organo- chlorine pesticides mgL mgL	Crgano-phosphate Pe pesticides mg/L	Hydrocations TPH C6-C9 TPH Hydrocations PDL PDL F	C10- TPH C15- TPH C28 C pL µpL µ	1029- 36 Benzene Toluene Bithyl Xy pt µpt µpt µpt µ	tense Total Organic Total Barlum 1 gl. mgl. mgl. mgl. mgl.	
23.07.0218 MWG 1 21.02.0218 MWG 9.3 23.07.0218 MWG 9.3 Molmum Assinum Asenzae	ant 80/28 7.24 02524 0201 4.21 152 ant 10/28 7.24 02524 0201 4.21 152 ant 10/28 7.22 02524 0201 4.21 152 6.53 00556 150.6 3.20 13.66 7.24 02526 4 5312 6.24 1570 7.215 0010.275 021705 4.7000	1 1 <th1< th=""> <th1< th=""> <th1< th=""> <th1< th=""></th1<></th1<></th1<></th1<>	00 0.1 225 0.1 1600 1 23 0.1 225 0.1 1600 1 24 0.1 252 0.1 1500 123 0.1 252 0.1 1600 123 0.1 264 0.1 2040 133 0.1 252 0.1 1600 123 0.1 264 0.1 2040 132 7 0 16.2007153 0 216.200201 4 4 4 4 4 4 4	2 000 278 860 2.3 00 368 918 3.5 0 376 918 2 0 276 918 2 0 200 920		0.01 0.04 0.023 0.01 0.04 0.023 (0.01 0.04 0.023 (0.01 0.04 0.023	0.00081 0.0167 0.018 00081 0.0167 0.018 0 00081 0.0167 0.018 0 00081 0.0167 0.018	0.0002 0.013 0.000 0002 0.013 0.0008 0002 0.013 0.0008	0.122 0.88 1 0.122 0.88 0.41 0.122 0.88 0.41 0.122 0.88 0.41 0.122 0.88 0.41 0.122 0.88 0.41 0.122 0.81 0.41 0.121 1 1	41 0.01 0.01 0.01 0.0125 0.01 0.0125 0.01 0.0125 0.01 0.0125 0.01 0.0125 1 1	0.014 0.014 0.014 0.014 #DW01 1	65 20 65 20 65 20 65 20	50 100 0 100 0 100 0 100	50 1 2 2 50 1 2 2 50 1 2 2 50 1 2 2	2 0.66 5 0.0145 2 0.65 5 0.0145 2 0.65 5 0.0145 2 0.65 5 0.0145 0.05 5 0.0145 1 1 1 1	
		0.105198226 0.105198226 1683 4 4 4 4 4 4	4 1.552753 0.1 1777.5 109 4 4 4 4 4 4 4 4 4 4 4		1322658 0.170367 462.1958 275.378527 4 Table 7.15 - Groundwater Re	sults - Point 11 (WMBT)				eDivior eDivior 1 1		0.5 20 0.5 20 eDivo: eDivo: eC 1 1		2 1 2 2 1 2 2 1 2 2 1 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 2 1 2 2 1 2 2 2 1 2 2 2 1 2 2 2 2	2 0.05 5 0.0145 2 0.05 5 0.0145 evici #DM/01 #DM/01 1 1 1 1	
Italistics Field Information Date Site Code Time AM	Sampler pH Conductivity Reduction Dissolved Temperature Pointaia pH p2Conductivity Reduction Original Temperature Pointaia pH p2Cond mit mpL	Analytical Information Depth to Water RL Water Level Laboratory Sample Dicat D	2 ² Carbonate Akkalinity.(ps. Nitrogen CarGO20 (ammonia) Chloride pt. mgL mgL mgL mgL mgL mgL	dial Dissolved Calcium Dissolved Magnesium Potessium Store	Table 7.15 - Groundwater Re asolved pH Sulphate Total Dissolved Solda mg1 pH mg1 mg1 mg1	Chromium Dissolved Dissolved Auminium Arsenic Dissolved mg1 mg1 mg1	asolved Dissolved Dissolved Di dmium rogt rogt rogt	Lead Dissolved Dissolved Manganese Mercury	Dissolved Zinc Fluoride Nitrite	Nitrate Organo- chiorine pesticides gL mg/L mg	Organo-phosphate peeticides mgL	Hydrocations TPH O5-C9 TPH Hydrocations PPL	C10- TPH C15- C28 C	1029- 36 Benzene Toluene Bithyl 1901 1901 1901 1901	fene Total Crganic Dissolved T Phenois Carbon Barium 1 1901 mg1 mg1 mg1	
4/10/2017 Point 11 (WM07) 10:4 31/01/2018 Point 11 (WM07) 11:5 50/4/2018 Point 11 (WM07) 520 21/06/2018 Point 11 (WM07) 520 21/06/2018 Point 11 (WM07) 12:0	Optimize API April 1 April 1 <th a<="" td=""><td>3 2.8 765.05 CA100071-001 3 4.08 765.78 CA1002289-001</td><td></td><td>000 242 465 7.1 200 7.2 500 7.4 600 160 160 174</td><td>Figl 24 Figl F</td><td>0.01 0.03 0.044</td><td>0.0000 0.002 0.011</td><td>0.0000 0.004 0.001 0.0000 0.0010 0.0010 0.0012 0.0012</td><td>8 0.042 0.97 1 0.008 0.07 0.07 0.07 0.07 0.07 0.07 0.07</td><td>2.63 0.002 2.63 0.002 2.63 0.002 2.63 0.002 2.63 0.002</td><td>0.002</td><td>0.5 20</td><td>50 100</td><td>DD DD DD<</td><td>ygit mgit mgit mgit 2 0.05 23 0.0706 12 4 5 2 0.05 6 0.0706</td></th>	<td>3 2.8 765.05 CA100071-001 3 4.08 765.78 CA1002289-001</td> <td></td> <td>000 242 465 7.1 200 7.2 500 7.4 600 160 160 174</td> <td>Figl 24 Figl F</td> <td>0.01 0.03 0.044</td> <td>0.0000 0.002 0.011</td> <td>0.0000 0.004 0.001 0.0000 0.0010 0.0010 0.0012 0.0012</td> <td>8 0.042 0.97 1 0.008 0.07 0.07 0.07 0.07 0.07 0.07 0.07</td> <td>2.63 0.002 2.63 0.002 2.63 0.002 2.63 0.002 2.63 0.002</td> <td>0.002</td> <td>0.5 20</td> <td>50 100</td> <td>DD DD DD<</td> <td>ygit mgit mgit mgit 2 0.05 23 0.0706 12 4 5 2 0.05 6 0.0706</td>	3 2.8 765.05 CA100071-001 3 4.08 765.78 CA1002289-001		000 242 465 7.1 200 7.2 500 7.4 600 160 160 174	Figl 24 Figl F	0.01 0.03 0.044	0.0000 0.002 0.011	0.0000 0.004 0.001 0.0000 0.0010 0.0010 0.0012 0.0012	8 0.042 0.97 1 0.008 0.07 0.07 0.07 0.07 0.07 0.07 0.07	2.63 0.002 2.63 0.002 2.63 0.002 2.63 0.002 2.63 0.002	0.002	0.5 20	50 100	DD DD<	ygit mgit mgit mgit 2 0.05 23 0.0706 12 4 5 2 0.05 6 0.0706
Awanum Awange SidDev Court	8.03 14300 54.2 7.28 17.5	4.46 786.05 78	0.1 291 0.1 2520 135 0.1 291 0.1 2520 142 0.1 291 0.1 2520 142 0.1 291 0.1 2520 133 1 401/01 e0r/101 0 e0r/101 290.0	0 242 495 16.1	2060 7.96 588 9320	0.01 0.03 0.044 0	.00006 0.002 0.011 0	0012 0.084 0.0018	0.042 0.97 0.05	2.63 0.002 2.63 0.002 2.63 0.002 #DN/01 #DN/01	0.002 0.002 0.002 #DR/01	0.5 20	0 100	50 1 2 2	2 0.05 6 0.0706 2 0.05 23 0.0706 2 0.05 14 0.0706 1 1 4 1	

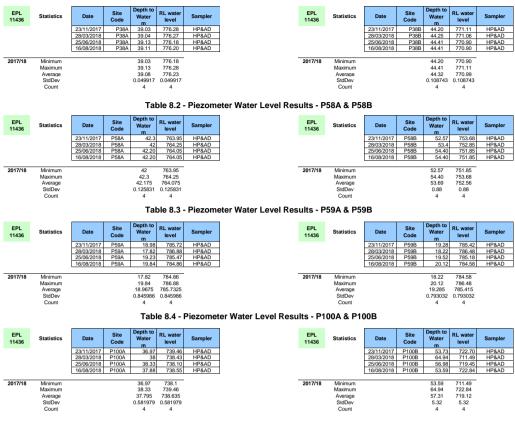


Table 8.1 - Piezometer Water Level Results - P38A & P38B

Table 8.5 - Piezometer Water Level Results - P200A & P200B

EPL 11436	Statistics	Date	Site Code	Depth to Water m	RL water level	Sampler
		21/05/2018	P200A	32.77	757.23	HP & HG
		25/06/2018	P200A	34	756.00	HP&AD
		16/08/2018	P200A	35.54	754.46	HP&AD
2017/18	Minimum			32.77	754.46	
	Maximum			35.54	757.23	
	Average			34.10333	755.8967	
	StdDev			1.387888	1.387888	
	Count			3	3	

EPL 11436	Statistics	Date	Site Code	Depth to Water m	RL water level	Sampler
		21/05/2018	P200B	33.05	756.95	HP & HG
		25/06/2018	P200B	34.34	755.66	HP&AD
		16/08/2018	P200B	35.85	754.15	HP&AD
2017/18	Minimum			33.05	754.15	
2017/18	Minimum Maximum			33.05 35.85	754.15 756.95	
2017/18						
2017/18	Maximum			35.85	756.95	

Table 9.1 - IMF Surface Water Results - Site 110

		statistics	Field Information									An	alytical Informa	tion														
	EPL 11455		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissolved Oxygen	Oxidation- Reduction Potential	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen Demand	Conductivity	рН	Sulphate	Total Suspended Solids	Total Dissolved Solids	Total Kjeldahl Nitrogen	Total Organic Carbon	Oil & Grease	Phosphorous	Total Copper	Total Iron	Total Lead	Total Zinc
					AM/PM	Initials	DН	uS/cm	°C	ma/L	mV			ma/L	ma/L	uS/cm	рH	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L
			6/10/2017	Site 110	10:00am	HP/ZR						Dry- no flow																
			27/10/2017		11.15am	HP/ZR	7.98	993	16.2	7.47	472.5	gentle flow	CA1705949-004	0.1	2	1250	7.69	134	8	704	0.5	8	1	0.02	0.004	0.22	0.0021	0.064
			19/01/2018	Site 110		HP/ZR						dry																
			26/02/2018	Site 110	9:35am	HP/ZR	6.71	415.3	14.81	7.71	406.4	slightly turbid	CA1801368-006	0.1	3	513	7.31	93.1	3	438	1.08	18	1	0.03	0.013	0.33	0.0017	0.188
			24/04/2018	Site 110		HP/ZR						dry																
_																												
		Minimum					6.71	415.3	14.81	7.47	406.4			0.1	2	513	7.31	93.1	3	438	0.5	8	1	0.02	0.004	0.22	0.0017	0.064
		Maximum					7.98	993	16.2	7.71	472.5			0.1	3	1250	7.69	134	8	704	1.08	18	1	0.03	0.013	0.33		0.188
		Average					7.345	704.15	15.505	7.59	439.45			0.1	2.5	881.5	7.5	113.55	5.5	571	0.79	13	1	0.025	0.0085	0.275		0.126
		StdDev					0.89803	408.495587	0.98287843	0.169706	46.739758			0	0.707106781	521.1376977	0.268701	28.92067	3.535533906	188.0904	0.410122	7.07106781	0	0.007071068	0.006363961	0.077782	0.000283	0.087681
		Count					2	2	2	2	2			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Table 9.2 - IMF Surface Water Results - Site 130

	Statistics	Field Information									An	alytical Informat	tion														
EPL 11455		Date	Site Code	Time	Sampler			Temperature	Dissolved Oxygen	Oxidation- Reduction Potential	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen Demand	Conductivity	рН	Sulphate	Total Suspended Solids	Total Dissolved Solids	Total Kjeldahl Nitrogen	Total Organic Carbon	Oil & Grease		Total Copper	Total Iron	Total Lead	Total Zinc
				AM/PM	Initials	pH	µS/cm	°C	mg/L	mV			mg/L	mg/L	µS/cm	pH	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		6/10/2017	Site 130	9:45am	HP/ZR						dry-no flow																
		27/10/2017	Site 130	10.20am	HP/ZR	8.02	497.3	15.8	8.16	419.9	gentle flow	CA1705949-003	0.1	2	617	7.87	22.4	3	357	0.42	6	1	0.01	0.002	0.68	0.0002	0.008
		19/01/2018	Site 130		HP/ZR						dry																
		26/02/2018	Site 130	9:20am	HP/ZR	6.83	150.9	15.3	7.72	379.9	slightly turbid	CA1801368-005	0.1	4	185	7.28	10.2	4	139	1.28	21	1	0.01	0.004	0.76	0.0014	0.028
		24/04/2018	Site 130		HP/ZR						dry																
2017/18	Minimum					6.83	150.9	15.32	7.72	379.9			0.1	2	185	7.28	10.2	3	139	0.42	6	1	0.01	0.002	0.68	0.0002	0.008
	Maximum					8.02	497.3	15.84	8.16	419.9			0.1	4	617	7.87	22.4	4	357	1.28	21	1	0.01	0.004	0.76	0.0014	0.028
	Average					7.425	324.1	15.58	7.94	399.9			0.1	3	401	7.575	16.3	3.5	248	0.85	13.5	1	0.01	0.003	0.72	0.0008	0.018
	StdDev					0.84146	244.941789	0.36769553	0.311127	28.284271			0	1.414213562	305.4701295	0.417193	8.626703	0.707106781	154.1493	0.608112	10.6066017	0	0	0.001414214	0.056569	0.000849	0.014142
	Count					2	2	2	2	2			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Table 9.3 - IMF Surface Water Results - Site 150

		Field Information										alvtical Informa	lan													•	
EPL 11455	Statistics	Date	Site Code	Time	Sampler	pН	Conductivity	Temperature	Dissolved Oxygen	Oxidation- Reduction Potential		Laboratory Sample Code	Nitrogen	Biochemical Oxygen Demand	Conductivity	рН	Sulphate	Total Suspended Solids	Total Dissolved Solids	Total Kjeldahl Nitrogen	Total Organic Carbon	Oil & Grease	Phosphorous	Total Copper	Total Iron	Total Lead	Total Zinc
				AM/PM	Initials	рН	uS/cm	°C	ma/L	mV			ma/L	ma/L	uS/cm	рH	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L
	(6/10/2017	Site 150	9:55am	HP/ZR						no flow																
	(27/10/2017	Site 150	10.45am	HP/ZR	7.82	831.9	16.08	7.9	459.9	gentle flow		0.1	2	1030	7.96	55	4	566	0.56	8	1	0.02	0.003	0.14	0.0003	0.015
	(19/01/2018	Site 150		HP/ZR						dn																
	(26/02/2018	Site 150	8:50am	HP/ZR	7.83	269.4	14.23	7.67	322.6	slightly turbic		0.1	4	330	7.32	35.7	227	227	1.21	20	1	0.02	0.012	0.67	0.0028	0.16
		24/04/2018	Site 150		HP/ZR						dŋ																
-																											
2017/18	Minimum Maximum					7.82 7.83	269.4 831.9	14.23 16.08	7.67 7.9	322.6 459.9			0.1 0.1	2 4	330 1030	7.32 7.96	35.7 55	4 227	227 566	0.56 1.21	8 20	1	0.02	0.003	0.14 0.67	0.0003	0.015
	Average StdDev Count					7.825 0.00707 2	550.65 397.747564 2	15.155 1.30814755 2	7.785 0.162635 2	391.25 97.085761 2			0.1 0 2	3 1.414213562 2	680 494.9747468 2	7.64 0.452548 2	45.35 13.64716 2	115.5 157.6848122 2	396.5 239.7092 2	0.885 0.459619 2	14 8.48528137 2	1 0 2	0.02 0 2	0.0075 0.006363961 2	0.405 0.374767 2	0.00155 0.001768 2	

											Table 9.4 - IMF Surfa	ice Water Resul	ts - First Fl	ush Syst	em													
	Statistics	Field Information										Ana	lytical Informat	ion														
EPL		Date	Site Code	Time	Sampler	DН	Conductivity	Temperature D	ssolved	Oxidation-	Flow		Laboratory	Nitrogen	Biochemical	Conductivity	рН	Sulphate	Total	Total	Total	Total	Oil & Grease	Phosphorous	Total Cooper		Total 1	Total Zinc
				AM/PM	Initials	pH	µS/cm	°C	mg/L	mV				mg/L	mg/L	µS/cm	pH	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		6/10/2017	First Flush	9:30am	DK/HP	7.84	153.5	15.12	9.13	372.6		Low flow	CA1705533-001	0.1	2	2 142	7.58	14.4	7	75	0.49	3	1	0.03	0.009	0.57	0.0038	0.041
		27/10/2017	First Flush	10am	HP/ZR	9.28	82.8	15.59	7.08	423.9		gentle flow	CA1705949001	0.1	2	2 122	7.03	9	8	96	0.54	4	1	0.04	0.008	0.68	0.0045	0.054
		19/01/2018	First Flush	10:10am	HP/ZR	7.87	127.9	22.64	6.76	484.3		gentle flow	CA1800461-001	0.1		3 131	7.33	7.1	10	73	0.77	9	1	0.04	0.007	1.09	0.0025	0.113
		26/02/2018			HP/ZR	6.92	84.4	17.32	5.63	372.6			CA1801368-004	0.1	2	2 98	7.23	5.1	12	70	0.43	7	1	0.05	0.006	0.86	0.0047	0.048
		24/04/2018	First Flush	10:15am	HP/ZR	8.39	109.8	16.39	7.39	170.3			CA1802738-001	0.1	3	3 131	7.32	11.7	9	62	0.64	7	1	0.03	0.002	0.6	0.0024	0.018
		28/06/2018	First Flush	8:40am	HP/ZR	6.07	87	9.47	9.44	163.9		half full	CA1804011-001	0.1	3	3 121	7.51	12.3	33	77	0.66	6	1	0.06	0.015	1.16	0.0125	0.139
2017/18	Minimum					6.07	82.8	9.47	5.63	163.9			0	0.1	2	98	7.03	5.1	7	62	0.43	3	1	0.03	0.002	0.57	0.0024	0.018
	Maximum					9.28	153.5	22.64	9.44	484.3			0	0.1	3	142	7.58	14.4	33	96	0.77	9	1	0.06	0.015	1.16	0.0125	0.139
	Average					7.72833	107.566667	16.0883333 7	571667	331.26667			#DIV/0!	0.1	2.5	124.1666667	7.333333	9.933333	13.16666667	75.5	0.588333	6	1	0.041666667	0.007833333	0.826667	0.005067	0.068833
	StdDev					1.12085	28.6404376	4.231328 1	457579	133.67041			#DIV/0!	1.5202E-17	0.547722558	14.90525634	0.19745	3.490941	9.867454923	11.32696	0.124807	2.19089023	0	0.011690452	0.004262237	0.253114	0.003769	0.046662
	Count					6	6	6	6	6			0	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

Table 10 - Dust Deposition Results - DG18

Site Name	Date	ALS Batch Code	Ash Residue	Combust ibles	Calculated Rainfall	Soluble Matter	Insoluble Solids	Total Solids
			g/m2/mth	g/m2/mth	mm	g/m2/mth	g/m2/mth	g/m2/mth
DG18	Sep-17	CA1705530-004	0.48	0.20	17	0.2	0.7	0.7
DG18	Oct-17	CA1706016-004	0.52	0.40	68	0.2	0.9	0.9
DG18	Nov-17	CA1706590-004	0.49	0.40	75	0.2	0.9	0.9
DG18	Dec-17	CA1800087-004	0.31	0.30	68	0.2	0.6	0.6
DG18	Jan-18	CA1800771-004	0.84	0.60	114	157	1.4	158
DG18	Feb-18	CA1801653-004	0.78	0.30	103	0.2	1.1	1.1
DG18	Mar-18	CA1802174-004	0.23	0.2	16	0.2	0.4	0.4
DG18	Apr-18	CA1802844-004	0.77	0.20	10	0.2	1	1
DG18	May-18	CA1803432-004	0.29	0.2	10	0.2	0.4	0.4
DG18	Jun-18	CA1804079-004	0.26	0.2	28	0.2	0.4	0.4
DG18	Jul-18	CA1804681-004	0.34	0.2	10	0.2	0.5	0.5
DG18	Aug-18	CA1805443-004	0.55	0.2	35	0.2	0.7	0.7

2017/2018	Min	0.23	0.2	10	0.2	0.4	0.4
	Max	0.84	0.6	114	157	1.4	158
	Avg	0.49	0.28	46.17	13.27	0.75	13.80
	stDev	0.21	0.13	37.85	45.26	0.32	45.41

Table 11 - Dust Deposition Results - DG33

Site Name	Date	ALS Batch Code	Ash Residue	Combust ibles	Calculated Rainfall	Soluble Matter	Insoluble Solids	Total Solids
			g/m2/mth	g/m2/mth	mm	g/m2/mth	g/m2/mth	g/m2/mth
DG 33	CA1705530-005	Sep-17	0.21	0.2	18	0.2	0.4	0.4
DG 33	CA1706016-005	Oct-17	0.25	0.20	47	0.2	0.5	0.5
DG 33	CA1706590-005	Nov-17	0.2	0.20	43	0.2	0.4	0.4
DG 33	CA1800087-005	Dec-17	0.42	0.50	80	0.2	0.9	0.9
DG 33	CA1800771-005	Jan-18	0.67	0.30	47	0.2	1	1
DG 33	CA1801653-005	Feb-18	0.81	0.60	105	0.2	1.4	1.4
DG 33	CA1802174-005	Mar-18	0.71	0.7	10	0.2	1.4	1.4
DG 33	CA1802844-005	Apr-18	1.66	0.7	14	0.2	2.4	2.4
DG 33	CA1803432-005	May-18	0.11	0.2	17	0.2	0.3	0.3
DG 33	CA1804079-005	Jun-18	0.05	0.2	32	0.2	0.2	0.2
DG 33	CA1804681-005			_	10	0.2	0.3	0.3
DG 33	CA1805443-005	Aug-18	0.64	0.3	40	0.2	0.9	0.9

2017/2018	Min	0.05	0.2	10	0.2	0.2	0.2
	Max	1.66	0.7	105	0.2	2.4	2.4
	Avg	0.49	0.36	38.58	0.20	0.84	0.84
	stDev	0.45	0.21	29.33	0.00	0.65	0.65



Date	Complaint lodged	Response	Location	Description	Duration	Response/action taken to resolve the complaint
	6:00:00 PM	Letter	Mulwaree Street, Tarago	The complainant reported to the Environmental line through EPA that there was a "strong rubbish odour."	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a
28/08/2018	8:28:00 AM	Letter	Rosebery Street, Tarago	The complainant reported to the Environmental line through EPA that "It is a horrible rubbish and chemical smell and he first noticed the odour at approx. 6:30am and it was still continuing at the time of his call."		Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a
5/08/2018	9:12:00 AM	Letter	Rosebery Street, Tarago	The complainant reported to the Environmental line through EPA that the odour "was a foul waste type odour and it started at 21:50 on Saturday 4/8/18 and was still present at the time of his call on 5/8/18 at 09:12."	12 hours	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a

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Date	Complaint lodged	Response	Location	Description	Duration	Response/action taken to resolve the complaint
	8:50:00 PM	Letter	Rosebery Street, Tarago		Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a
12/07/2018	8:56:00 AM	Letter	Braidwood Road, Tarago	The complainant reported to the community feedback line that Rotten garbage smell rating 7/10 and would like to have other options – maybe email instead. Want to be contacted regarding this.	Not specified.	Veolia continues to address the challenges of water management we development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a
12/07/2018	6:30:00 AM	Letter	Rosebery Street, Tarago	The complainant reported to the Environmental line through EPA that "a stench of odour from the Woodlawn Bio Reactor, Tarago".	Not specified.	Veolia continues to address the challenges of water management we development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a

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Date	Complaint lodged	Response	Location	Description	Duration	Response/action taken to resolve the complaint
	8:49:00 AM	Letter	Braidwood Road, Tarago	The complainant reported to the community feedback line that the smell last night was 7/10 and this morning was 8/10.	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a
10/07/2018	6:30:00 AM	Letter	Rosebery Street, Tarago	The complainant reported to the Environmental line through EPA that "this odour has been occurring every day and caller is sick of the odours".	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a
9/07/2018	7:00:00 AM	Letter	Rosebery Street, Tarago	The complainant reported to the Environmental line through EPA that "the smell began at 7 am Monday 9/7/2018, rated as 4/6 and stated that the odour triggered an asthmatic attack on the complainant's spouse. Spouse sought medical attention on Tuesday 10/7/2018 because asthmatic attack could not settle."	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a

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Date	Complaint lodged	Response	Location	Description	Duration	Response/action taken to resolve the complaint
4/07/2018	6:27:00 PM	Letter	Rosebery Street, Tarago	The complainant reported to the Environmental line through EPA that "It stinks. I cannot explain it, it just stinks. He said the odour started at 18:00".	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a
3/07/2018	9:30:00 AM	Call	Cullulla Road, Tarago	Complainant contacted the Community feedback line and complained that the trucks exiting the Crisps Creek Intermodal Facility are slow going up the hill towards the Bioreactor which makes him late for work, and that some drivers don't wait for him to pass before exiting out of the slip lane.	Not specified.	Veolia has advised contractors to give way to vehicles when exiting
3/07/2018	8:46:00 AM	Letter	Goulburn Street, Tarago	The complainant reported to the Environmental line through EPA that "he is affected by a strong offensive odour coming from Woodlawn landfill starting from 8:30am. He rated the odour at 5/6 and said the wind condition is calm".	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a

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Date	Complaint lodged	Response	Location	Description	Duration	Response/action taken to resolve the complaint
3/07/2018	8:45:00 AM	Letter	Braidwood Road, Tarago		Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a
22/06/2018	9:20:00 AM	Letter	Leahys Lane, Tarago	The complainant reported to the Environmental line through EPA a "sour milk and rotten garbage smell, first noticed the odour at about 6:30am, there was no wind at this time".	3 hours	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a
21/06/2018	7:10:00 PM	Letter	Leahys Lane, Tarago	The complainant reported to the Environmental line through EPA a "sour milk and rotten garbage smell, first noticed the odour at about 7pm"	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also us waste mass. We are constantly reviewing our tipping sequence in a

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Date	Complaint lodged	Response	Location	Description	Duration	Response/action taken to resolve the complaint
21/06/2018	10:05:00 AM	Letter	Rosebery Street, Tarago	The complainant reported to the Environmental line through EPA that his partner "first noticed the odour at about 5:30 am on their way to work, he went outside about 10am for a break and felt so nauseous from the odour he had to go inside again.".	Not specified.	Veolia continues to address the challenges of water management v development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. A bio-filter is also u waste mass. We are constantly reviewing our tipping sequence in a
28/05/2018	10:15:00 AM	Letter	Willandra Lane, Tarago	The complainant reported to the community feedback line that it "Smells like rubbish, usual tip smell we get coming into the house, the smell was about a 5 on a scale of 1-5. It feels as if nothing is changing and it is getting worse. Not fair, I feel money throwing at Goulburn Council is not enough to get rid of the smell".	15 minutes	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. A bio-filter is also u waste mass. We are constantly reviewing our tipping sequence in a
26/05/2018	9:00:00 AM	Letter	Rosebury Street, Tarago	The complainant reported to the Environmental line through EPA that he experienced a "strong pungent odour suspected of coming from the Woodlawn Bioreactor, first noticed the odour when I went outside the house at 8:45am. He said it was a waste type odour and it was a cold morning with only a slight breeze."	Not specified	Veolia continues to address the challenges of water management we development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. A bio-filter is also u waste mass. We are constantly reviewing our tipping sequence in a

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Date	Complaint lodged	Response	Location	Description	Duration	Response/action taken to resolve the complaint
22/05/2018	9:45:00 PM	Letter	Tarago	The complainant reported to the community feedback line that he "smelt an odour in town last night on the way home, the smell was about a 2 as per the ranking in the odour diaries"	Not specified.	Veolia continues to address the challenges of water management v development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. A bio-filter is also u waste mass. We are constantly reviewing our tipping sequence in a
19/04/2018	9:30:00 AM	Letter	Braidwood Road, Tarago	The complainant reported to the community feedback line that it " smelt like rotten garbage, same as before, as I was leaving my house"		Veolia continues to address the challenges of water management we development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. A bio-filter is also n and waste mass. We are also reviewing our tipping sequence in an engaged the University of Canberra to undertake a study on fugitive gas collection at the Woodlawn Bioreactor.
19/04/2018	9:00:00 AM	Letter	Braidwood Road, Tarago	The complainant reported to the community feedback line that it "smells like rotten garbage at my house"	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. A bio-filter is also n and waste mass. We are also reviewing our tipping sequence in an engaged the University of Canberra to undertake a study on fugitive gas collection at the Woodlawn Bioreactor.

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nt within the Bioreactor and is attempting to address this with the ution being advanced by Veolia's water division. Construction for o now used to manage any fugitive gas between the void's wall an attempt to further improve gas collection. We have also itive gas emissions/odour and its behaviour to further improve



Date	Complaint lodged	Response	Location	Description	Duration	Response/action taken to resolve the complaint
5/04/2018	7:57:00 AM	Letter	Braidwood Road, Tarago		Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also m and waste mass. We are also reviewing our tipping sequence in an engaged the University of Canberra to undertake a study on fugitive gas collection at the Woodlawn Bioreactor. The gas extraction syste efficient state and no power station or gas extraction related issues
29/03/2018	11:46:00 AM	Letter	Cullulla Road Tarago	The complainant reported to the community feedback line that she "First smelt faint odour at 7:15am at Cullulla road, Tarago and again at 7:25am at corner of King/Mulwaree st but stronger. Smell was an absolute stench at 8:55am at the corner of Collector / Tarago road. Smell was tolerable when she arrived back home at 9:10am"		Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also no and waste mass. We are also reviewing our tipping sequence in an system was operating at an efficient state and no power station or g the odour being detected by the complainants.
29/03/2018	8:40:00 AM	Letter	Braidwood Road, Tarago	The complainant reported to the community feedback line that she "went outside and the smell is particularly strong, worse than earlier in the week."	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solutio the new Leachate Treatment Plant is on target. A bio-filter is also me and waste mass. We are also reviewing our tipping sequence in an system was operating at an efficient state and no power station or g the odour being detected by the complainants.

nt within the Bioreactor and is attempting to address this with the ution being advanced by Veolia's water division. Construction for o now used to manage any fugitive gas between the void's wall an attempt to further improve gas collection. We have also tive gas emissions/odour and its behaviour to further improve ystem was operating at an

es occurred during the lead up to the odour complaint.

It within the Bioreactor and is attempting to address this with the ution being advanced by Veolia's water division. Construction for o now used to manage any fugitive gas between the void's wall an attempt to further improve gas collection. The gas extraction or gas extraction related issues occurred during the lead up to

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Date	Complaint lodged	Response	Location	Description	Duration	Response/action taken to resolve the complaint
27/03/2018	7:26:00 AM	Letter	Cullulla Road Tarago	The complainant reported to the community feedback line that she "First detected the smell at 7:26am at the corner of King/Mulwaree st (bus depot), was a faint odour- smelt of rubbish/gas. The strongest odour was at 8:55am at the corner of Collector and Tarago road- Had to spray bus with glen40 as kids felt ill, odour was stronger than first smelt at 9:10am"		Veolia continues to address the challenges of water management v development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. A bio-filter is also n and waste mass. We are also reviewing our tipping sequence in an system was operating at an efficient state and no power station or g the odour being detected by the complainants.
27/03/2018	10:02:00 AM	Letter	Goulburn Street, Tarago	The complainant reported to the EPA that they "first noticed the odour last night at about 8pm and closed up the house at that time, so couldn't say how long the odour lasted however they said it was still present at 7.30am this morning when they first went outside. They said the strength of the odour varied between 4/6 (strong) – 6/6 (overpowering)."		Veolia continues to address the challenges of water management we development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. A bio-filter is also n and waste mass. We are also reviewing our tipping sequence in an system was operating at an efficient state and no power station or g the odour being detected by the complainants.
27/03/2018	9:49:00 AM	Letter	Mulwaree Street, Tarago	The complainant reported to the EPA that "she first noticed the odour when she went outside this morning at about 8.30-9am. She said the odour is affecting the whole town. She said the odour is overpowering and rated its strength as a 6/6."	Not specified.	Veolia continues to address the challenges of water management we development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. A bio-filter is also n and waste mass. We are also reviewing our tipping sequence in an system was operating at an efficient state and no power station or g the odour being detected by the complainants.

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Date	Complaint lodged	Response	Location	Description	Duration	Response/action taken to resolve the complaint
	8:54:00 AM	Letter	Braidwood Road, Tarago	The complainant reported to the community feedback line that she was experiencing a "slight smell wafting over her property that seems to be getting stronger."	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. A bio-filter is also n and waste mass. We are also reviewing our tipping sequence in an system was operating at an efficient state and no power station or g the odour being detected by the complainants.
28/02/2018	8:25:00 AM	Letter	Braidwood Road, Tarago	The complainant reported to the EPA that she was experiencing a "strong rotting garbage smell coming from the Veolia Bioreactor on 28/2/18 at 08:00."	Not specified.	Veolia continues to address the challenges of water management we development and implementation of a longer term treatment solution the new Leachate Treatment Plant is on target. Following a heavy so currently in the process of managing excess storm water in the Void between the void's wall and waste mass. We have also engaged the emissions/odour and its behaviour to further improve gas collection start in March 2018. We are also reviewing our tipping sequence in that compared to this time last year gas collection has increased sign have implemented to date.
8/02/2018	8:47:00 PM	Letter	Rosebury Street, Tarago	The complainant reported to the EPA that he was experiencing a "strong stench/odour and it smells like rotten rubbish."	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solution commenced the civil work on the new Leachate Treatment Plant. Veolia Woodlawn have implemented a contoured waste profile that surface to minimise the ability for surface storm water to enter the w perforated well design has been implemented. This has been instal compared with that of solid wells. This approach is proving success substantially when compared with this time last year. A bio-filter tria fugitive gas between the void's wall and waste mass. This has show now part of our normal operations. We have also engaged the Univ emissions/odour and its behaviour to further improve gas collection start in March 2018.

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Date	Complaint lodged	Response	Location		Duration	Response/action taken to resolve the complaint
18/01/2018	8:27:00 AM	Letter	Braidwood Road, Tarago	The complainant reported to the EPA that "a foul rotting rubbish smell is coming from the Woodlawn Bioreactor. She noticed the smell when she went outside of her house at approx 8am and said she had not detected any odours recently, but this morning's odour was particularly bad and said it was a 10 out of 10 for strength and intensity."		Veolia continues to address the challenges of water management of development and implementation of a longer term treatment solution provided the final supporting information to the Department of Plan finalized, so construction can begin. Veolia Woodlawn have implemented a contoured waste profile that surface to minimise the ability for surface storm water to enter the perforated well design has been implemented. This has been insta compared with that of solid wells. This approach is proving success substantially when compared with this time last year. A bio-filter tria fugitive gas between the void's wall and waste mass. This has sho now part of our normal operations. We have also engaged the Univ emissions/odour and its behaviour to further improve gas collection
13/12/2017	8:55:00 AM	Letter	King Street, Tarago	The Complainant reported to the EPA that he first "noticed an odour of rotting garbage when he went outside at approx. 8am and was still present at the time of his call at 8.55am. He said the strength was strong = 4/6"	55 minutes	Veolia continues to address the challenges of water management of development and implementation of a longer term treatment solution provided the final supporting information to the Department of Plan finalized, so construction can begin. Veolia Woodlawn have implemented a contoured waste profile that surface to minimise the ability for surface storm water to enter the w perforated well design has been implemented. This has been insta compared with that of solid wells. This approach is proving success substantially when compared with this time last year. A bio-filter tria fugitive gas between the void's wall and waste mass. This has show now part of our normal operations. We have also engaged the Univ emissions/odour and its behaviour to further improve gas collection
13/12/2017	8:39:00 AM	Letter	Rosebery Street, Tarago	The complainant reported to the EPA that "there was a bad odour at the residence from approx 8am, this is an ongoing issue and he is concerned about the impact the odours are having on the quality of water in his water tank."	39 minutes	Veolia continues to address the challenges of water management of development and implementation of a longer term treatment solution provided the final supporting information to the Department of Plan finalized, so construction can begin. Veolia Woodlawn have implemented a contoured waste profile that surface to minimise the ability for surface storm water to enter the w perforated well design has been implemented. This has been insta compared with that of solid wells. This approach is proving success substantially when compared with this time last year. A bio-filter tria fugitive gas between the void's wall and waste mass. This has show now part of our normal operations. We have also engaged the Univ emissions/odour and its behaviour to further improve gas collection

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3/12/2017	9:14:00 PM	Letter	Rosebery Street, Tarago	The complainant reported to the EPA that "there was a bad odour at the residence from approx 9pm, the smell was so strong that he vomited up his dinner. He advised that the smell was a rubbish smell."		Veolia continues to address the challenges of water management we development and implementation of a longer term treatment solution provided the final supporting information to the Department of Plan finalized, so construction can begin. Veolia Woodlawn have implemented a contoured waste profile that surface to minimise the ability for surface storm water to enter the we perforated well design has been implemented. This has been instal compared with that of solid wells. This approach is proving success substantially when compared with this time last year. A bio-filter triat fugitive gas between the void's wall and waste mass. This has show now part of our normal operations. We have also engaged the Univ emissions/odour and its behaviour to further improve gas collection
28/10/2017	8:45:00 AM	Letter	Rosebery Street, Tarago	The complainant reported to the EPA that there was "a bad odour at his residence that smelt like "a dump/tip smell" from about 8:15am that morning".	30 minutes	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solution provided the final supporting information to the Department of Plant finalized, so construction can begin. Veolia Woodlawn have implemented a contoured waste profile that surface to minimise the ability for surface storm water to enter the w perforated well design has been implemented. This has been instal compared with that of solid wells. This approach is proving success substantially when compared with this time last year. A bio-filter tria fugitive gas between the void's wall and waste mass. This has show now part of our normal operations. We have also engaged the Univ emissions/odour and its behaviour to further improve gas collection
8/10/2017	6:25:00 PM	Letter	Roseview Road Tarago	The complainant reported to the EPA that "the odour was quite bad at his property from 15:00hrs that day, but that the issue was an ongoing one"	3 hours	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solution provided the final supporting information to the Department of Plant finalized, so construction can begin. Veolia Woodlawn have implemented a contoured waste profile that surface to minimise the ability for surface storm water to enter the w perforated well design has been implemented. This has been install compared with that of solid wells. This approach is proving success substantially when compared with this time last year. A bio-filter trial fugitive gas between the void's wall and waste mass. This has show now part of our normal operations. We have also engaged the Univ emissions/odour and its behaviour to further improve gas collection

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Date	Complaint lodged	Response	Location	Description	Duration	Response/action taken to resolve the complaint
21/09/2017	8:38:00 AM	Letter	Tarago	The complainant reported to the EPA that there was an odour of "rotting food waste started at around 8:15am today. The weather is dry and calm, with a slight westerly breeze. The odour strength is around 4-5/6, quite strong today. This is an ongoing issue at the site."	Not specified.	Veolia continues to address the challenges of water management of development and implementation of a longer term treatment solution Woodlawn have implemented a contoured waste profile that allows to minimise the ability for surface storm water to enter the waste. D well design has been implemented. This has been installed to max that of solid wells. This approach is proving successful as gas colle compared with this time last year. A bio-filter trial has also been un- the void's wall and waste mass. This has shown to demonstrate so normal operations. We have also engaged the University of Canbe its behaviour to further improve gas collection at the Woodlawn Bio
19/09/2017	9:30:00 PM	Letter	Braidwood Road, Tarago	The complainant reported to the EPA that "Excessive rotting rubbish smell coming from the Veolia Woodlawn Bio Reactor, Collector Road, Tarago. Odour started on 19/7/17 at 21:30 and was ongoing overnight."	Not specified.	Veolia continues to address the challenges of water management we development and implementation of a longer term treatment solution Woodlawn have implemented a contoured waste profile that allows to minimise the ability for surface storm water to enter the waste. D well design has been implemented. This has been installed to maxi- that of solid wells. This approach is proving successful as gas colle compared with this time last year. A bio-filter trial has also been und the void's wall and waste mass. This has shown to demonstrate so normal operations. We have also engaged the University of Canbe its behaviour to further improve gas collection at the Woodlawn Bio
18/09/2017	4:00:00 PM	Letter	Rosebery Street, Tarago	The complainant reported to the EPA that "There is a nauseating odour coming from Veolia. The odour started on 18/09/17 at 16:00."	Not specified.	Veolia continues to address the challenges of water management v development and implementation of a longer term treatment solution Woodlawn have implemented a contoured waste profile that allows to minimise the ability for surface storm water to enter the waste. D well design has been implemented. This has been installed to maxis that of solid wells. This approach is proving successful as gas colle compared with this time last year. A bio-filter trial has also been und the void's wall and waste mass. This has shown to demonstrate so normal operations. We have also engaged the University of Canbe its behaviour to further improve gas collection at the Woodlawn Bio

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Date	Complaint lodged	Response	Location	Description	Duration	Response/action taken to resolve the complaint
17/09/2017	7:15:00 AM	Letter	Roseview Road, Tarago	The complainant reported to the EPA that "The smell of rotting garbage from the Veolia Tarago Landfill was extreme on 17/9/17 from 07:15. This has been an ongoing issue for a long time with many complaints made by local residents over that time and no resolution to the odour issue. The odour started overnight."	Not specified.	Veolia continues to address the challenges of water management v development and implementation of a longer term treatment solution Woodlawn have implemented a contoured waste profile that allows to minimise the ability for surface storm water to enter the waste. D well design has been implemented. This has been installed to maxi- that of solid wells. This approach is proving successful as gas colle compared with this time last year. A bio-filter trial has also been und the void's wall and waste mass. This has shown to demonstrate so normal operations. We have also engaged the University of Canbe its behaviour to further improve gas collection at the Woodlawn Bio
10/09/2017	7:40:00 AM	Letter	Roseview Road, Tarago	The complainant reported to the EPA that "the smell from the Veolia Woodlawn Landfill, Collector Road, Tarago, has been extreme since the early hours of the morning and is still present now at 07:48."	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solution Woodlawn have implemented a contoured waste profile that allows to minimise the ability for surface storm water to enter the waste. D well design has been implemented. This has been installed to maxi- that of solid wells. This approach is proving successful as gas colle compared with this time last year. A bio-filter trial has also been und the void's wall and waste mass. This has shown to demonstrate so normal operations. We have also engaged the University of Canbe its behaviour to further improve gas collection at the Woodlawn Bio
10/09/2017	7:30:00 AM	Letter	Braidwood Road, Tarago	The complainant reported to the EPA that there was an "extremely pungent odour in the air coming from the Veolia Woodlawn Landfill, Collector Road, Tarago."	Not specified.	Veolia continues to address the challenges of water management w development and implementation of a longer term treatment solution Woodlawn have implemented a contoured waste profile that allows to minimise the ability for surface storm water to enter the waste. D well design has been implemented. This has been installed to maxis that of solid wells. This approach is proving successful as gas colle compared with this time last year. A bio-filter trial has also been und the void's wall and waste mass. This has shown to demonstrate so normal operations. We have also engaged the University of Canbe its behaviour to further improve gas collection at the Woodlawn Bio

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