dulverton
waste management

Public Environmental Report:

Dulverton Organic Recycling Facility (EPN 7852/1)

June 2014 to June 2017

Dulverton Waste Management

ABN: 11 784 477 180

Certified Environmental Management
CEM20661

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1. INTRODUCTION

This report has been prepared for the EPA as part of the application made by Dulverton Waste Management (DWM) for a remission from the variable component of the annual licence fee for the Dulverton Organic Recycling Facility (DORF).

In order to apply for this remission, it is a requirement under the Annual Fee Remission Guidelines to prepare a report covering the previous three-year period of operations of the site, using the criteria listed in the Guidelines.

2. ACRONYMS

CAR	Corrective Action Request
DORF	Dulverton Organic Recycling Facility
DWM	Dulverton Waste Management
EMS	Environmental Management System
EPA	Environment Protection Agency
EPN	Environment Protection Notice
SWMS	Safe Work Method Statement

3. BUSINESS PROFILE

Dulverton Waste Management (DWM) is a jointly owned venture by Devonport City Council, Kentish Council, Central Coast Council, and Latrobe Council. DWM exists to provide environmentally sound waste management services for its owners, the community and Industry. DWM operate a regional landfill, and DORF, which is located directly south west of the landfill.

The DORF has been a key environmental initiative in recent times as it allows the diversion of tonnes of organic waste away from the landfill each year. Organic waste streams from a number of local waste generators are delivered daily, and are blended with carbonaceous materials using scientific based methods to create a high-value input for horticulture and agriculture. It is sold to various locations around Tasmania.

The operation of the DORF is contracted to Gradco who employ two full time staff onsite, and others when required.

4. ENVIRONMENTAL POLICY

OBJECTIVE

Dulverton Waste Management (DWM) is committed to responsible environment management and the pursuit of providing a safe and sustainable waste management, minimisation and recycling service for our community.

LEGISLATION

Environmental Management & Pollution Control Act 1994 (Tas)

DEFINITIONS

Environmental Management System (EMS)	An Environmental Management System (EMS) is a structured management tool which provides a methodical approach to planning, implementing and reviewing the performance of an organisation in regard to its compliance obligations for environmental management. It follows the standards set out in AS/NZS ISO 14001:2015, and is regularly audited independently to assess adherence and for ongoing improvement.
Stakeholders	a person or group that has an investment, share, or interest in something, as a business or industry.

RESPONSIBILITIES

Board:

- To provide the financial and human resources required to support the objectives of this policy.

Chief Executive Officer:

- To provide the systems and procedures to support the objectives of this policy

Employees, Contractors & Sub-Contractors:

- To comply with all the systems and procedures relating to the environment;
- To at all times consider the effect of an activity on the environment; and
- To discontinue an activity if it becomes apparent that environmental harm may occur.

POLICY STATEMENT

DWM is committed to:

- Playing a leading role in promoting best practice in our industry;
- Protection of the local environment and minimisation of waste;
- Compliance with applicable compliance obligations and with other requirements to which the organisation subscribes;
- Communicating with all persons working for or on behalf of the organization the requirements of the Environmental Management System (EMS);
- Minimising and where possible avoid adverse impacts on our stakeholders, environment and social surrounds;
- The reduction of suitable waste stream volumes to landfill, through effective reuse, composting and minimization strategies; and
- Understanding and minimising our greenhouse gas contribution

DWM will:

- Actively pursue continual improvement in environmental management;
- Provide a framework for setting and reviewing environmental objectives and targets;
- Implement and maintain an Environmental Management System (EMS) certified to ISO 14001:2015; and
- Regularly review its environmental performance through:
    - Management review of the system;
    - Progress against objectives and targets; and
    - An internal and external audit.

OTHER KEY RELATED POLICIES

Nil

REVIEW

This policy will be reviewed every four years or as required by the Board.

REFERENCE			
APPROVED BY:	DWM Board of Directors	**MINUTE NO:**	MFID 45875
APPROVAL DATE:	10th August 2016	**REVIEW DATE:**	by September 2020

5. REPORTING PERIOD

The reporting period is June 2014 – June 2017

6. ACTIVITY PROFILE

6.1 Summary of Plant and Operations on site

- Windrows of organic material, at varying stages of pasteurisation and decomposition
- Stockpiles of greenwaste, intermediate-sized compost, and wood fines for mixing with organic waste delivered to site by customers
- Stockpile of wooden pallets for to be chipped, and, at times, stockpiles of chipped pallets
- Stockpiles of finished, screened compost ready for sale to customers
- Two heavy duty concrete 3-sided pits for trucks to deliver into, and for mixing of organic waste on arrival, in preparation to be windrowed
- Excavator for turning windrows, and mixing materials in the mixing pits in preparation to be windrowed
- Wheel loader for shifting materials to the mixing pit, around the site and for loading trucks
- Mobile three-way split screening machine to screen large pieces of material out of the finished product
- Storage pond for collection of leachate
- Pump shed at the storage pond housing;
    - 1 pump to irrigate compost leachate back onto windrows and to supply truck bin washdown hose at mixing pits
    - 1 pump for use for irrigation of leachate into approved disposal area
- Two domestic-type water tanks for day storage of liquid waste delivered by customers
- Pump and storage shed near liquid waste storage tanks, to get liquid waste out of tanks when required
- Above-ground lateral irrigation system for disposal of excess leachate
- Shipping container for storage of tools and compost batch samples
- Vehicles for moving personnel around site.

6.2 Production Capacity and Actual Production Capacity

Schedule 2 of EPN 7852/1 states;

1. The activity must not exceed the following limits (annual fees are derived from these figures):

    1.1 25,000 tonnes per year of production of compost or mushroom substrate.

Compost Sales	2013/14 Actual	2014/15 Actual	2015/16 Actual	2016/17 Actual
Cubic Metres (m^3)	**5,993**	**3,450**	**5,531**	**7,155**

NOTE: The average weight of a cubic metre of compost is 600kg.

6.3 Raw Material Consumption Level

EPN 7852/1 does not specify a limit on the use of raw materials.

6.4 Product Markets and Sources of Raw Materials

Dulverton organic compost is sold around Tasmania to landscaping supply and plant nursery businesses, and has always been popular as an input for orchards and vineyards. In recent times there has been an increasing market for its use in both conventional agriculture and biological/organic farming situations.

Raw materials currently used in the production of Dulverton organic compost are:

Raw materials delivered by customers for disposal	Carbonaceous material kept on site for mixing
Milk processing waste; sludge, whey cream, waste water	Greenwaste – delivered from local transfer stations
Biosolids from sewerage treatment plants, primarily in N.W region	Wood fines – purchased from N.W processors
Potato waste from processing factory (filter crumb)	Clarifier waste - historical stockpile from paper mill
Supermarket organic collection bins and meat waste collection bins	Wooden pallets – delivered by customers and shredded by a contractor once delivered to site
Fish processing waste	'Intermediate' compost - larger particle size that is screened out of the premium compost
Animal manure	

6.5 Pollution Discharges and Wastes, and Control Measures

A cornerstone document of the Environmental Management System is the Aspects and Impacts Register. All parts of the operation are identified in terms of where they have potential to interact with the environment (referred to as an aspect), and the potential problem this could cause (the impact). A risk rating is then calculated, control measures are developed and listed in the Register, and a residual risk rating is calculated based on all control measures being implemented correctly.

A number of measures are in then put in place to check and monitor any control measures that are implemented for an identified aspect, to ensure that it is adhered to. Control measures are altered or improved as necessary to provide suitable environmental protection.

This section addresses criteria listed in the Annual Fee Remission Guidelines to address potential and actual impacts on the environment.

Air emissions, including odour

Earlier in the history of the introduction of composting to the DWM business model, there have been periods where air emissions may have contributed to odour. This was likely due in part to a+ less than ideal composting process, and in part due to odorous inputs that were previously accepted. A number of waste streams are no longer delivered to the DORF.

Current practice only allows delivery of waste to the DORF by pre-approved customers. Every potential input is subject to extensive testing and analysis before being considered suitable for composting. Rules of entry to site, made clear in the annual induction, emphasise that DWM can (and will) refuse acceptance of waste if it is non-compliant with composting requirements.

In addition to these restrictions, in recent years DWM management have implemented a number of changes to the operations on the site to improve the method of composting. Using the format of the EMS, a large work instruction has been developed over the years and essentially makes clear what site personnel are expected to do. This is updated whenever an alteration is made to the work practice. These practical changes to site operations are why DWM believes that odour complaints have diminished in recent years.

Improvements in process coupled with transparent and frank communication have led to an improvement in the relationship with the community and the regulator. Current DWM management have had an open and honest approach to any complaints received from surrounding residents. These complaints are recorded on the Corrective Action Request (CAR) task list and staff are expected to follow up and investigate any particular cause, and record any action taken to improve the situation. This task list is made available to the board of management, and is included in the Annual Environmental Review.

It is a requirement of DWM systems for staff and contractors to fully cooperate and welcome EPA officers on site. Current DWM staff are very proud of their role in changing the culture of this business in regard to these important relationships.

Water emissions, wastewater and stormwater

Any stormwater that falls on the part of the site where windrows and composting activities occur drains to the leachate storage dam through a series of v-drains and culverts around the site. Rain filters through the windrows, or falls directly onto the work area where there may be remnants of compost material, and collects minute particles of nutrients and organic matter along the way, making it unsuitable to divert off site.

Any stormwater that falls outside of the actual composting footprint, such as on the wooden pallet stockpile or the bush area around the site, is collected in series of drains around the outside of the site. To improve the management of leachate from composting it is important to identify any sources of stormwater that are unnecessarily entering the leachate storage dam.

As part of the requirement of EPN 7852/1, Attachment 3, DWM has recently prepared a Leachate Management Plan for the DORF. This should be referred to for detailed information on this subject.

Noise emissions

Adverse noise emissions are not known to be generated from the composting site.

Land/soil contamination

All composting occurs on a hardstand surface, in a footprint that has been approved by the EPA for this purpose. The construction of the surface is such that soil contamination is unlikely in this area. Irrigation of compost leachate in a nearby DWM-owned pine plantation has potential to contaminate soil, in the immediate area. For this reason the proposal for the irrigation system was developed by the third party consultant, and was then approved by the EPA to be implemented.

As a result of this approved design there are licence requirements for testing of the soil and compost leachate. DWM has implemented these into the EMS, and set a number of control measures to ensure that the necessary monitoring is carried out.

Wastes, general and controlled

No waste is generated from composting, in principle, the composting site is providing an environmentally beneficial disposal option for the waste of other businesses.

Any windrows that do not reach the pasteurisation requirements, or do not meet contamination levels, required by AS 4454 *Composts, soils and mulches* are trucked off the DORF site and used as either day-cover or growing medium on the landfill.

Energy use

The use of energy on the site is not considered to be a point source for adverse emissions. The only requirement for electricity is to operate the two pumps at the leachate storage dam.

Minimal machines and vehicles are required. Every day an excavator and wheel loader work on site and occasionally a truck is required for shifting stockpiles of material around the site or to the landfill. Waste is delivered in trucks or tankers.

Water use

All 'water' used on the site is compost leachate, which is recirculated from the storage dam for some of the following uses; sprinklers that irrigate the windrows in summer, washdown hoses for truck drivers to wash their delivery bins at the mixing pits, and firefighting.

Measures taken to manage and minimise greenhouse emissions

A significant environmental benefit from the development of the DORF is the removal from the waste stream to the landfill of large amounts of organic waste, which previously would have contributed to the generation of greenhouses gas emissions as they anaerobically decomposed. This is considered by DWM to be a significant outcome for North West Tasmania in responsibly taking action to minimise greenhouses gases.

Another significant benefit of composting this material is that the end result is a high quality compost that puts nutrients and carbon back into the soil that would otherwise be lost if they were landfilled. The benefits of carbon storage in soil are beginning to be understood by the agriculture and horticulture communities, but perhaps the use of compost to achieve this is not yet widely known. DWM prides itself on making a product that has real value as a soil input, but also in demonstrating how greenhouse gas emissions can be minimised by this type of recycling.

There is evidence that 1 – 2% of total greenhouse gases world-wide come from the production of synthetic fertilisers, therefore producing compost as a replacement fertiliser has additional benefits.

Flora, fauna and biodiversity, on site and surrounding

The title of land that the DORF sits on is quite large but composting itself occurs only on a small portion, identified in Attachment 1 of the EPN. The land outside this identified footprint is not used by DWM for composting but is left to provide habitat for native flora and fauna.

The leachate storage dam is surrounded by 3m high security fencing, designed to keep out access by people and animals. This obviously does not keep out water birds and they are occasionally observed on the lagoon.

As part of their annual induction to site, all personnel are provided with a Flora and Fauna Information Sheet which identifies local special values and discusses the need to protect the plants and animals around the site.

The most significant adverse impact on native wildlife from the DORF is the regular food source for feral cats, which also occurs at the landfill. The impact of feral cats on birds and small animals is well known in Tasmania and is an unfortunate result from an activity that has such positive environmental benefits in other ways. In 2016 DWM implemented a cat trapping program, which was followed up in 2017, both sessions caught a large number of cats. DWM will now purchase cat traps to keep on site and do regular trapping in-house so the gains made will not be lost.

Cultural and aboriginal heritage

There are no known adverse impacts on cultural or aboriginal heritage from the operations at the DORF.

6.6 The Local Environment

The immediate surrounding of the DORF are the Dulverton landfill to the north east, approximately 700 metres exist between the centres of the active areas of these two sites. Privately-owned forest plantations exist to the north, west and south, and a pine plantation to the east owned by DWM. Some natural vegetation follows Caroline Creek on the eastern boundary of the landfill site. In the wider vicinity, to the south and west there continues large plantations and areas of native vegetation. On the eastern side, there is pasture and to the north west of the site there are small farm holding and 'lifestyle' blocks, much of which is also pasture. Access to these properties is by gravel road.

Cement Australia operates a site near Railton, approximately 3kms from the DORF. A railway line is in place to take deliveries from the cement plant to the port at Devonport, and this more or less follows the eastern boundary of the DWM landfill site.

For an extended period DWM have leased a small area of land to the north east of the landfill site for use in making compost for mushroom growing. This lease is currently held by the Costa Group.

6.7 The Regional Environment

Data from the nearest weather station at Railton;

Month	Mean maximum temp	Mean minimum temp	Mean rainfall
January	21.9ºC	10.6 ºC	55.6mm
June	11.6 ºC	3.9 ºC	113.1mm

(Source; Meat and Livestock Australia website)

There are no air monitoring stations around the site, but generally the air quality is very good.

The typical prevailing winds are South-Westerly.

6.7 Significant Changes during the Reporting Period

As a fee remission has not yet been granted, this requirement does not apply.

7. PERMIT CONDITIONS

A copy of EPN 7852/1 is attached in Appendix A.

8. RELEVANT ENVIRONMENTAL LEGISLATION

- Environmental Management and Pollution Control Act 1994 (Tas)
- Land Use Planning and Approvals Act 1993 (Tas)
- Threatened Species Protection Act 1995 (Tas)
- Weed Management Act 1999 (Tas)
- State Policy on Water Quality Management 1997
- Tasmanian Biosolids Reuse Guidelines, 1999
- AS/NZS ISO 14001:2015 – Environmental Management Systems

9. COMPLAINTS RECEIVED BY THE PUBLIC/NON-COMPLIANCE WITH PERMIT CONDITIONS

Complaints received by the public are recorded as Corrective Action Requests (CAR's), as are any environmental incidents that occur. The structure of the system under the EMS requires DWM staff to resolve the situation, then implement any reasonable actions that will prevent a recurrence. All action taken, and by whom, is recorded on the Register which is reviewed by the board of management at each meeting, and supplied to the EPA in every Environmental Annual Review.

See Appendix B for details of all complaints and incidents that occurred during the reporting period.

10. INFRINGEMENT NOTICES AND EPN'S

The DORF is permitted to operate under the conditions of Environment Protection Notice 7852/1. No other EPN's or Infringement Notices have been issued in the reporting period.

11. ACTIONS UNDER EMPCA: ENVIRONMENTAL AGREEMENTS, IMPROVEMENT PROGRAMS, AND MANDATORY ENVIRONMENTAL AUDITS

During the reporting period no environmental agreements or improvements programs were required or implemented.

The EPA carried out annual auditing against the requirements of the EPN in April 2016 and two items were raised as minor non-conformances;

- E4 Irrigation Area Management – it was noted that the volumes of compost leachate applied through the irrigation system were not being recorded; and
- OP6 Fencing – it was noted that stock-proof fencing was yet to be constructed around the site.

12. PROSECUTIONS AND ENFORCEMENT ACTION

No proceedings have been taken in relation to the activity in the reporting period, either under Tasmanian or Commonwealth environmental legislation, other legislation, or local government by-laws.

13. ENVIRONMENTAL MONITORING

Environmental monitoring is carried out by an independent consulting company. During the reporting period this was initially Environmental Services and Design, and then in mid-2016 DWM engaged GHD to carry out this work.

The report that GHD provided for the most recent Annual Environmental Review includes tabulated data for all monitoring sites, and for a number of years previous to the period of time this report covers.

A copy of this report is attached in Appendix C.

14. STAFF AND CONTRACTOR ENVIRONMENTAL TRAINING

Before commencing work all personnel must be inducted onto the site. This involves viewing a professionally made video then reading through a number of Safe Work Method Statements with the Site Supervisor and 'signing on' to them. A booklet is also provided that provides further detail on the topics discussed in the video, which personnel can keep in their vehicle and refer to later.

All these documents provide information about the Environmental Management System (EMS) used on the DWM landfill and DORF sites, and the higher risk (to the environment) activities on site.
After inductions personnel working on site are required to participate in an EMS Awareness session, to develop further understanding of the legal requirements of DWM's operation, and expand their general knowledge.

In regard to signing on to SWMS, this is a requirement for high risk construction activities and are used by DWM for all activities where control measures are required to minimise risk, whether they be ongoing day-to-day tasks or one-off project works.

To ensure that the EMS is a relevant and useful tool for daily operations, DWM expands on the SWMS work health and safety format by requiring that staff writing the SWMS consider the steps involved in the activity and any potential environmental impacts it may have. Any necessary control measures are then listed for site personnel to understand and adhere to.

In addition to this, the site contractor has regular toolbox meeting using a template form to provide an agenda and record the minutes. This agenda includes the review of one EMS Work Instruction, one EMS Procedure and one SWMS. This assists in maintaining awareness of the system and giving staff a broader understanding of site operations other than their specific role.

15. COMMUNITY ENGAGEMENT

No formal community engagement has been entered into in this reporting period in relation to activities at the DORF though site tours are regularly conducted for interested parties. DWM regularly reports to its four owner-Councils, and board of management, to provide information about the activities at the DORF. Members of these groups can then disseminate information as they see fit.

16. ENVIRONMENTAL MANAGEMENT OVER AND ABOVE PERMIT REQUIREMENTS

Since July 2008, DWM has implemented an Environmental Management System (EMS) to ensure that best practice operations are carried out on both the landfill and composting sites. There have been numerous benefits to DWM by implementing this system, and the significant effort it takes to maintain a certified system continues to be supported by the Owner-Councils and the Board.

The overall aim of the EMS is to ensure that the site is operated at the optimum level of environmental management, but as noted previously DWM incorporate work health and safety requirements, to ensure an active and relevant system.

CERTIFICATE
OF REGISTRATION

This is to certify that:

Dulverton Waste Management

ABN 11 784 477 180

Dulverton Landfill Dawson Siding Road Devonport TAS 7310 AUSTRALIA

operates an

ENVIRONMENTAL MANAGEMENT SYSTEM

which complies with the requirements of

ISO 14001:2004

for the following scope

The registration covers the Environmental Management System for processes involved in the operation of a regional landfill, including acceptance of general, putrescible and controlled waste, and management of leachate. It also includes the operation of an organics recycling facility, by open windrow composting, to produce compost for wholesale.

Certificate No: CEM20661

Issued: 24 April 2017
Expires: 14 September 2018

Originally Certified: 15 June 2008
Current Certification: 12 April 2017

Nicole Grantham
General Manager SAI Global Certification Services

Certified System
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SAI GLOBAL

17. COMMITMENTS TO IMPROVE FUTURE ENVIRONMENTAL PERFORMANCE

All personnel involved with DWM – Board of Management, staff, and site contractors – are committed to continual improvement and refinement of the Environmental Management System (EMS) as the best method of assessing and managing environmental issues.

18. STATEMENT BY CHIEF EXECUTIVE OFFICER

"I acknowledge the contents of this Public Environmental Report".

……

Matthew Greskie

Chief Executive Officer

Dulverton Waste Management

Date: 13 / 11 / 2017

19. APPENDIX A: EPN 7852/1

ENVIRONMENT PROTECTION NOTICE No. 7852/1

Issued under the *Environmental Management and Pollution Control Act 1994*

Issued to: **DULVERTON REGIONAL WASTE MANAGEMENT AUTHORITY**
ABN 11 784 477 180
LEVEL 1, 35 STEWART ST
DEVONPORT TAS 7300

Environmentally Relevant Activity: **The operation of a composting facility (ACTIVITY TYPE: Resource Recovery)**
DULVERTON COMPOSTING OPERATION, DAWSONS SIDING RD
DULVERTON TAS 7310

GROUNDS

I, Wes Ford, Director, Environment Protection Authority, (the Director), being satisfied in accordance with section 44(1)(d) of the *Environmental Management and Pollution Control Act 1994* (EMPCA) that in relation to the above-mentioned environmentally relevant activity that it is desirable to vary the conditions of a permit (see table below) hereby issue this environment protection notice to the above-mentioned person as the person responsible for the activity.

Permit No.	Date Granted	Granted By
DA73/02	18 November 2003	Latrobe Council

PARTICULARS

The particulars of the grounds upon which this notice is issued are:

1 A regulatory limit which sets the maximum scale or throughput of the activity is needed because any increase in scale or throughput may result in additional environmental impacts or emissions that were not considered at the time of granting of the permit.

2 Permit conditions need to be varied to reflect contemporary management practices, specifically that an Environmental Management System is in place.

3 It is desirable to add a condition requiring odour management. Odour management consideration is part of best practice environmental management.

4 The permit conditions need to be varied to ensure that there are adequate safeguards against environmental harm or nuisance being caused by the activity.

5 A condition requiring notification of a change of ownership of The Land is needed because this Notice may affect title to land and the new owner's interests may be affected by pollutants emitted or disturbed by the activity.

6 The permit conditions need to be varied to reflect current or updated terminology and/or to clarify the meaning of the conditions.

7 Permit conditions need to be varied to more specifically identify when approvals to effect change are required.

8 The permit does not include a condition requiring the person responsible to take action to minimise environmental harm if an incident occurs.

9 It is necessary to add a condition requiring a public complaints register to be maintained so that the Director can appraise the frequency and characteristics of complaints which may indicate nuisance should any complaints be received.

10 It is necessary to add a condition requiring the submission of a publicly available Annual Environmental Review to inform the Director and the public of the environmental performance of the activity.

11 It is desirable to add conditions ensuring that decommissioning and rehabilitation is undertaken, and is done in a timely, planned and approved manner to minimise environmental harm.

12 A condition is included to require fire-fighting wastewater that is generated from on-site firefighting to be managed to prevent environmental harm.

13 A condition is included to require the maintenance of existing perimeter drains to ensure that their performance is not impeded.

14 The permit does not contain conditions relating to adequate management of stormwater on The Land. It is necessary to add a condition requiring adequate management of stormwater to prevent environmental harm and/or nuisance being caused by stormwater leaving The Land.

15 Permit conditions need to be varied to identify overall management objectives for the management of leachate.

16 Permit conditions need to be varied to combine leachate pond management requirements into a single cohesive condition.

17 A condition is included to ensure adequate monitoring of the soils and groundwater within the irrigation area and to keep the Director informed of results.

18 Permit conditions need to be varied to update conditions and requirements relating to fire management at the activity.

19 Permit conditions need to be varied to ensure that weeds are adequately controlled on the land and to replace a completed requirement.

20 The permit does not contain conditions in relation to dealing with environmentally hazardous substances. Environmentally hazardous substances are likely to be stored and handled on The Land and current best practice environmental management necessitates conditions to be varied for the storage and handling of environmentally hazardous substances.

21 The permit does not have a condition requiring the provision of spill kits. It is desirable to add a condition requiring provision, in suitable locations, of spill kits appropriate for the environmental hazardous substances held on The Land for use in any incident to minimise the emissions of a pollutant into the environment.

22 Permit conditions need to be varied to update requirements for the treatment of samples obtained for monitoring to achieve best practice environmental management.

23 Monitoring and reporting requirements set out in the permit conditions need to be varied to reflect current best practice environmental management and to require accurate measurement of emissions and their impact upon the receiving environment and to consistently inform the Director of the results of monitoring

24 Permit conditions need to be varied to include requirements for the signage of monitoring points.

25 Permit conditions need to be varied to update requirements relating to the monitoring of surface waters, leachate, irrigation area and groundwater to reflect current operating conditions and best practice environmental management and to keep the Director informed of results.

26 Permit conditions need to be varied to update requirements for the monitoring of the composting process, to verify that optimal conditions for composting are being maintained.

27 Permit conditions relating to noise emissions need to be updated to comply with current terminology, and best practice environmental management.

28 It is desirable to add conditions setting noise emission limits, in accordance with the Environment Protection Policy (Noise) 2009Permit conditions relating to hours of operation need to be updated to comply with current terminology and operating conditions.

29 Permit conditions relating to receivable wastes need to updated to include all materials currently considered acceptable for composting at the activity.

30 The permit does not include any fencing requirement. Fencing of the activity is required to discourage unauthorised persons from entering the site and coming into contact with sewage or any hazardous substance.

31 Permit conditions relating to the management of windrows need to varied to reflect current understanding of the environmental risks posed by composting and appropriate measures to reduce these risks.

32 Permit conditions relating to staffing requirements need to be varied to reflect a better understanding of the environmental risk associated with the activity. Trained staff need to be on site at all times during operational hours.

33 Permit conditions relating to site hygiene and biosecurity need to be varied to reflect changes to materials accepted on site and the understanding of the environmental risks posed by the activity.

34 It is necessary to remove condition C2 of permit No. DA73/02 because it details requirements that have been fulfilled and are no longer required.

DEFINITIONS

Unless the contrary appears, words and expressions used in this Notice have the meaning given to them in Schedule 1 of this Notice and in the EMPCA. If there is any inconsistency between a definition in the EMPCA and a definition in this Notice, the EMPCA prevails to the extent of the inconsistency.

REQUIREMENTS

The person responsible for the activity must comply with the varied permit conditions as set out in Schedule 2 of this Notice.

INFORMATION

Attention is drawn to **Schedule 3**, which contains important additional information.

PENALTIES

If a person bound by an environment protection notice contravenes a requirement of the notice, that person is guilty of an offence and is liable on summary conviction to a penalty not exceeding 1000 penalty units in the case of a body corporate or 500 penalty units in any other case (at the time of issuance of this Notice one penalty unit is equal to $154.00).

NOTICE TAKES EFFECT

This notice takes effect on the date on which it is served upon you.

APPEAL RIGHTS

You may appeal to the Appeal Tribunal against this notice, or against any requirement contained in the notice, within 14 days from the date on which the notice is served, by writing to:

The Chairperson
Resource Management and Planning Appeal Tribunal
GPO Box 2036
Hobart TAS 7001

Signed: _____

DIRECTOR, ENVIRONMENT PROTECTION AUTHORITY

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Attachments

Attachment 1: The Land (modified: 15/10/2015 10:08).....1 page
Attachment 2: Location of Perimeter drains (modified: 27/02/2015 11:26).....1 page
Attachment 3: Guidelines for EMP Production (modified: 19/10/2015 14:23).....2 pages

Schedule 1: Definitions

Activity means any environmentally relevant activity (as defined in Section 3 of EMPCA) to which this document relates, and includes more than one such activity.

Authorized Officer means an authorized officer under section 20 of EMPCA.

Classification And Management Of Contaminated Soil For Disposal means the document *Information Bulletin No.105 Classification and Management of Contaminated Soil for Disposal* published by the Department of Primary Industries, Parks, Water and Environment in November 2012, and includes any subsequent versions of this document.

Compost means material produced by the controlled microbiological transformation of organic materials under aerobic and thermophilic conditions.

Compost Irrigation Management Plan means the document entitled Compost Irrigation Management Plan, prepared by SEMF and dated 2 February 2011.

Controlled Waste has the meaning described in Section 3(1) of EMPCA.

Director means the Director, Environment Protection Authority holding office under Section 18 of EMPCA and includes a person authorised in writing by the Director to exercise a power or function on the Director's behalf.

DRP means Decommissioning and Rehabilitation Plan.

EMPCA means the *Environmental Management and Pollution Control Act 1994*.

Environmental Harm and **Material Environmental Harm** and **Serious Environmental Harm** each have the meanings ascribed to them in Section 5 of EMPCA.

Environmental Nuisance and **Pollutant** each have the meanings ascribed to them in Section 3 of EMPCA.

Environmentally Hazardous Material means any substance or mixture of substances of a nature or held in quantities which present a reasonably foreseeable risk of causing serious or material environmental harm if released to the environment and includes fuels, oils, waste and chemicals but excludes sewage.

Irrigation Area means the area of pine plantation labelled Irrigation Area in Attachment 1.

Leachate means any liquid that is either released by or has percolated through waste, compost or raw materials.

Leachate Storage Pond means the pond used for the storage of leachate and labelled as Leachate Pond in Attachment 2 of this Notice.

Liquid Waste means any waste that is in liquid form or is substantially comprised of free liquids or is not spadeable (able to be lifted and moved in heaps with a spade).

Noise Sensitive Premises means residences and residential zones (whether occupied or not), schools, hospitals, caravan parks and similar land uses involving the presence of individual people for extended periods, except in the course of their employment or for recreation.

Person Responsible is any person who is or was responsible for the environmentally relevant activity to which this document relates and includes the officers, employees, contractors, joint venture partners and agents of that person, and includes a body corporate.

Pest Animal means any animal (including insects) whose activity has the potential to cause environmental harm or nuisance.

Putrescible means materials that are capable of rapid biological decay or rotting.

Reporting Period means the 12 months ending on 18 November each year.

Stormwater means water traversing the surface of the land as a result of rainfall.

Tasmanian Noise Measurement Procedures Manual means the Noise Measurement Procedures Manual referred to in regulation 4 of the *Environmental Management and Pollution Control (Miscellaneous Noise) Regulations 2014*.

The Land means the land on which the activity to which this document relates may be carried out, and includes: buildings and other structures permanently fixed to the land, any part of the land covered with water, and any water covering the land. The Land falls within the area defined by:

1. Certificates of Title 131878/1 and 153999/1; and
2. Further delineated at Attachment 1 of this Notice.
3. Grid reference centroid: 448825E 5429024N

Vectors means animals capable of transmitting an infection from one host to another.

Wastewater means spent or used water (whether from industrial or domestic sources) containing a pollutant and includes stormwater which becomes mixed with wastewater.

Water Sensitive Urban Design. means the management of stormwater in the landscape rather than drain it all to waterways. This is done with the aim of protecting and improving waterway health by mimicking the natural water cycle as closely as possible

Weed means a declared weed as defined in the *Weed Management Act 1999*.

Schedule 2: Conditions

Maximum Quantities

Q1 Regulatory limits

1 The activity must not exceed the following limits (annual fees are derived from these figures):

1.1 25,000 tonnes per year of production of compost or mushroom substrate.

General

G1 Access to and awareness of conditions and associated documents

A copy of these conditions and any associated documents referred to in these conditions must be held in a location that is known to and accessible to the person responsible for the activity. The person responsible for the activity must ensure that all persons who are responsible for undertaking work on The Land, including contractors and sub-contractors, are familiar with these conditions to the extent relevant to their work.

G2 No changes without approval

1 The following changes, if they may cause or increase the emission of a pollutant which may cause material or serious environmental harm or environmental nuisance, must only take place in relation to the activity if such changes have been approved in writing by the EPA Board following its assessment of an application for a permit under the *Land Use Planning and Approvals Act 1993*, or approved in writing by the Director:

1.1 a change to a process used in the course of carrying out the activity; or

1.2 the construction, installation, alteration or removal of any structure or equipment used in the course of carrying out the activity; or

1.3 a change in the quantity or characteristics of materials used in the course of carrying out the activity.

G3 Incident response

If an incident causing or threatening environmental nuisance, serious environmental harm or material environmental harm from pollution occurs in the course of the activity, then the person responsible for the activity must immediately take all reasonable and practicable action to minimise any adverse environmental effects from the incident.

G4 Change of ownership

If the owner of The Land upon which the activity is carried out changes or is to change, then, as soon as reasonably practicable but no later than 30 days after becoming aware of the change or intended change in the ownership of The Land, the person responsible must notify the Director in writing of the change or intended change of ownership.

G5 Complaints Register

1 A public complaints register must be maintained and made available for inspection by an Authorized Officer upon request. The public complaints register must, as a minimum, record the following detail in relation to each complaint received in which it is alleged that environmental harm (including an environmental nuisance) has been caused by the activity:

1.1 the time at which the complaint was received;

1.2 contact details for the complainant (where provided);

1.3 the subject-matter of the complaint;

1.4 any investigations undertaken with regard to the complaint; and

1.5 the manner in which the complaint was managed, including any mitigation measures implemented.

2 Complaint records must be maintained for a period of at least 3 years.

G6 Annual Environmental Review

1 Unless otherwise specified in writing by the Director, a publicly available Annual Environmental Review for the activity must be submitted to the Director each year within three months of the end of the reporting period. Without limitation, each Annual Environmental Review must include the following information:

1.1 a statement by the General Manager, Chief Executive Officer or equivalent for the activity acknowledging the contents of the Annual Environmental Review;

1.2 subject to the *Personal Information Protection Act 2004*, a list of all complaints received from the public during the reporting period concerning actual or potential environmental harm or environmental nuisance caused by the activity and a description of any actions taken as a result of those complaints;

1.3 details of environment-related procedural or process changes that have been implemented during the reporting period;

1.4 a summary of the amounts (tonnes or litres) of both solid and liquid wastes produced and treatment methods implemented during the reporting period. Initiatives or programs planned to avoid, minimise, re-use, or recycle such wastes over the next reporting period should be detailed;

1.5 details of all non-trivial environmental incidents and/or incidents of non compliance with permit or environment protection notice conditions that occurred during the reporting period, and any mitigative or preventative actions that have resulted from such incidents;

1.6 a summary of the monitoring data and record keeping required by these conditions. This information should be presented in graphical form where possible, including comparison with the results of at least the preceding reporting period. Special causes and system changes that have impacted on the parameters monitored must be noted. Explanation of significant deviations between actual results and any predictions made in previous reports must be provided;

1.7 identification of breaches of limits specified in these conditions and significant variations from predicted results contained in any relevant DPEMP or EMP, an explanation of why each identified breach of specified limits or variation from predictions occurred and details of the actions taken in response to each identified breach of limits or variance from predictions;

1.8 a list of any issues, not discussed elsewhere in the report, that must be addressed to improve compliance with these conditions, and the actions that are proposed to address any such issues;

1.9 a summary of fulfilment of environmental commitments made for the reporting period. This summary must include indication of results of the actions implemented and explanation of any failures to achieve such commitments; and

1.10 a summary of any community consultation and communication undertaken during the reporting period.

G7 Environmental Management Plan

1 Within 15 months of the date on which these conditions take effect, or by a date otherwise specified in writing by the Director, an Environmental Management Plan ('EMP') must be submitted to the Director for approval.

2 The EMP must detail prescriptions, consistent with these conditions, for the prevention or mitigation of environmental harm and environmental nuisance arising from the activity.

3 The EMP must include specific Plans, as detailed in Attachment 3.

4 In preparing the EMP the person responsible must take into account environment related complaints, incidents and changes to the activity over the preceding 3 years.

5 The EMP must include plans clearly showing the actual location of all infrastructure associated with the activity including buildings, machinery, roads, stockpiles and drainage controls. These plans must also depict the current and proposed future extent of disturbance associated with the activity.

6 The approved EMP, as amended from time to time with the written agreement of the Director, must be implemented by the person responsible from the date of the Director's approval.

Atmospheric

A1 Covering of vehicles
Vehicles carrying loads containing material which may blow or spill must be equipped with effective control measures to prevent the escape of the materials from the vehicles when they leave The Land. Effective control measures may include tarpaulins and load dampening.

A2 Control of dust emissions
Dust emissions from The Land must be controlled to the extent necessary to prevent environmental nuisance beyond the boundary of The Land.

A3 Odour management
The person responsible must institute such odour management measures as are necessary to prevent odours causing environmental nuisance beyond the boundary of The Land.

Decommissioning And Rehabilitation

DC1 Notification of cessation
Within 30 days of becoming aware of any event or decision which is likely to give rise to the permanent cessation of the activity, the person responsible for the activity must notify the Director in writing of that event or decision. The notice must specify the date upon which the activity is expected to cease or has ceased.

DC2 DRP requirements
Unless otherwise approved in writing by the Director, a Decommissioning and Rehabilitation Plan (DRP) for the activity must be submitted for approval to the Director within 30 days of the Director being notified of the planned cessation of the activity or by a date specified in writing by the Director. The DRP must be prepared in accordance with any guidelines provided by the Director.

DC3 Rehabilitation following cessation

1 Following permanent cessation of the activity, and unless otherwise approved in writing by the Director, The Land must be rehabilitated including:

1.1 stabilisation of any land surfaces that may be subject to erosion;

1.2 removal or mitigation of all environmental hazards or land contamination, that might pose an on-going risk of causing environmental harm; and

1.3 decommissioning of any equipment that has not been removed.

2 Where a Decommissioning and Rehabilitation Plan (DRP) has been approved by the Director, decommissioning and rehabilitation must be carried out in accordance with that plan, as may be amended from time to time with written approval of the Director.

Discharge

DS1 Fire fighting wastewater

In the event of a fire, potentially contaminated wastewater arising from fire fighting must be treated on The Land to the satisfaction of the Director or removed from the site by a person holding all necessary approvals for such transport.

DS2 Maintenance of Perimeter Drains

1 Perimeter drains as identified in Attachment 2 of this Notice must be maintained to prevent stormwater from entering the area used or disturbed in carrying out the activity. All reasonable measures must be implemented to ensure that sediment transported along these drains remains on The Land. Such measures may include provision of strategically located sediment fences, appropriately sized and maintained sediment settling ponds, vegetated swales, detention basins and other measures designed and operated in accordance with the principles of Water Sensitive Urban Design.

2 Drains must have sufficient capacity to contain run-off that could reasonably be expected to arise during a 1 in 10 year 24 hour storm event. Maintenance activities must be undertaken regularly to ensure that this capacity does not diminish.

DS3 Stormwater

1 Polluted stormwater that will be discharged from The Land must be collected and treated prior to discharge to the extent necessary to prevent serious or material environmental harm, or environmental nuisance.

2 Notwithstanding the above, all stormwater that is discharged from The Land must not carry pollutants such as sediment, oil and grease in quantities or concentrations that are likely to degrade the visual quality of any receiving waters outside the Land.

3 All reasonable measures must be implemented to ensure that solids entrained in stormwater are retained on The Land. Such measures may include appropriately sized and maintained sediment settling ponds or detention basins.

4 Stormwater discharged in accordance with this condition must not be directed to sewer without the approval of the operator of the sewerage system.

Effluent Disposal

E1 Leachate Management

1 The leachate collection system must be managed to prevent leachate generated by the composting operation from polluting groundwater or surface waters.

2 Leachate on The Land must be managed such that:

2.1 it does not cause an odour nuisance beyond the boundary of The Land; and

2.2 human contact with leachate is minimised.

E2 Leachate Storage Pond Management

1 Uncontaminated stormwater must be prevented as far as practicable from entering the leachate stream.

2 All leachate and contaminated stormwater must be directed to the leachate storage pond.

3 The available capacity (freeboard) of the leachate storage pond must be maintained to:

3.1 eliminate the transfer of leachate to the irrigation area during periods of soil water saturation or near saturation;and

3.2 retain sufficient capacity to hold all leachate arising from a 1 in 10 year 24 hour storm event.

4 If the storage capacity of the leachate storage pond reduces to a point where it is likely to breach the above requirements, the person responsible must submit to the Director for approval a proposal to ensure that the required storage capacity will be achieved and maintained within a reasonable timeframe while addressing potential environmental impacts. The person responsible must implement any such proposal approved by the Director.

5 Water from the leachate storage pond must not be released into surface water bodies or streams.

E3 Sludge Management

1 The leachate storage pond must be managed by periodic desludging to maintain the design capacity of the pond to:

1.1 Allow settling of solid matter entrained in the leachate; and

1.2 Prevent overflow and loss of leachate to the environment.

2 Sludge removed from the leachate storage pond must be sampled and tested to determine the level of contamination and disposed of in accordance with the requirements of *Classification and Management of Contaminated Soils for Disposal.*

E4 Irrigation Area Management

1 During periods of discharge of leachate to the irrigation area, weekly visual assessments must be conducted on the irrigation area and any noticeable impacts such as damage to soil and plants or evidence of pooling or run-off from the site must be recorded.

2 Parameters listed in Column 1 of Table 3 must not exceed the values given in Column 3 in leachate water to be discharged to the irrigation area.

3 The annual loading of contaminants listed in Column 1 of Table 3 applied to the irrigation area must not exceed the values given in Column 4.

4 If the accumulated metal content in the upper 15 cm of soil for any metal listed in column 1 of Table 3 exceeds the Cumulative Contaminant Loading specified in Column 5 of Table 3 then the area must be rested and remediated in a manner approved by the Director.

5 The hydraulic load applied to the irrigation area must be recorded. Unless otherwise approved in writing by the Director, the annual application rate for any given area must not exceed 3 ML/ha, reducing to 2ML/ha in a 1:10 wet year and increasing to 4 ML/ha in a 1:10 dry year.

Fire Management

FM1 Fire management

1 Fire control measures on The Land must be to the satisfaction of the Tasmania Fire Service (TFS). Correspondence from the TFS indicating the suitability of fire control measures must be submitted to the Director within 6 months of the date on which these conditions take effect.

2 Fires occurring on The Land must be extinguished as soon as possible using all practical means available.

3 The lighting of fires on The Land is not permitted.

4 The person responsible must make all reasonable efforts to prevent unauthorised ignition of green waste stockpiles.

Flora And Fauna

FF1 Weed Control

Weeds must be controlled on site to the extent necessary to prevent the establishment of seeding populations and to prevent their spread off site.

Hazardous Substances

H1 Storage and handling of hazardous materials

1 Unless otherwise approved in writing by the Director, environmentally hazardous materials held on The Land must be:

1.1 located within impervious bunded areas, spill trays or other containment systems; and

1.2 managed to prevent unauthorised discharge, emission or deposition of pollutants:

1.2.1 to soils within the boundary of The Land in a manner that is likely to cause serious environmental harm;

1.2.2 to groundwater;

1.2.3 to waterways; or

1.2.4 beyond the boundary of The Land.

H2 Spill kits

Spill kits appropriate for the types and volumes of materials handled on The Land must be kept in appropriate locations to assist with the containment of spilt environmentally hazardous materials.

Monitoring

M1 Dealing with samples obtained for monitoring

1 Any sample or measurement required to be obtained under these conditions must be taken and processed in accordance with the following:

1.1 Australian Standards, NATA approved methods, the American Public Health Association Standard Methods for the Analysis of Water and Waste Water or other standard(s) approved in writing by the Director;

1.2 measurement equipment must be maintained and operated in accordance with the manufacturer's specifications;

1.3 samples must be tested in a laboratory accredited by the National Association of Testing Authorities (NATA), or a laboratory approved in writing by the Director, for the specified test;

1.4 results of measurements and analysis of samples and details of methods employed in taking measurements and samples must be retained for at least three years after the date of collection; and

1.5 noise measurements must be undertaken in accordance with the Tasmanian Noise Measurement Procedures Manual.

M2 Monitoring, record keeping and reporting

Unless otherwise approved in writing by the Director, the results of laboratory analysis of samples collected in the course of monitoring required under these conditions must be submitted to the Director in the Annual Environmental Review following completion of those analyses by the laboratory.

M3 Signage of monitoring points

With the exception of open water sampling, all monitoring points must be clearly marked to indicate the location and name of the monitoring point.

M4 Stormwater monitoring

1 Unless otherwise approved in writing by the Director, representative samples of stormwater must be collected at the point of discharge from the Land, identified as "Surface Water Discharge Point" in Attachment 2, at 3 monthly intervals and must be analysed or measured for the parameters listed in Column 1 of Table 1 at the frequency specified in Column 2 of Table 1.

2 If there is no flow at the Surface Water Discharge Point at the time of sampling then the sample must be collected at the first occurrence of flow thereafter.

3 Results of the above monitoring must be included in the subsequent Annual Environment Review.

4 If stormwater has become contaminated with leachate, or if required in writing by the Director, additional sampling and testing of the parameters listed in Column 1 of Table 1 must be undertaken at the locations and frequency specified by the Director and the results must be submitted to the Director within 30 days of receipt by the person responsible.

5 Stormwater and groundwater monitoring programs must be continued for a period of five years from the issue of this Notice, after which the person responsible may apply to the Director to alter the monitoring program.

6 **Table 1 Stormwater Monitoring**

Column 1	Column 2
MONITORING PARAMETER AND REPORTING UNITS	MONITORING FREQUENCY
pH	At least once per three monthly period, when water is flowing.
BOD (mgO_2/L)	At least once per three monthly period, when water is flowing.
TSS (mg/L)	At least once per three monthly period, when water is flowing.
Conductivity (Ds/M)	At least once per three monthly period, when water is flowing.
Total Nitrogen (mg/L)	At least once per three monthly period, when water is flowing.
Ammonia (mg/L)	At least once per three monthly period, when water is flowing.
NOx (mg/L)	At least once per three monthly period, when water is flowing.
Total Phosphorus (mg/L)	At least once per three monthly period, when water is flowing.
Dissolved Free Phosphorus (mg/L)	At least once per three monthly period, when water is flowing.

M5 Leachate monitoring

1 Unless otherwise approved in writing by the Director, representative samples of leachate must be collected and must be analysed or measured for the parameters listed in Column 1 of Table 2 at the the following times:

1.1 When a change in raw materials or processes may result in changes to the leachate;

1.2 Prior to the commencement of seasonal irrigation;

1.3 When required in writing by the Director.

2 Unless otherwise required in writing by the Director, all metals are to be analysed for total concentration.

3 Results of analysis and measurements must be submitted to the Director within 30 days of receipt by the person responsible.

4 Table 2 Leachate Monitoring

Column 1
MONITORING PARAMETERS
pH
Conductivity (uS/cm)
Alkalinity (as $CaCO_3$) (mg/L)
Total Nitrogen (mg/L)
Ammonia (ug-N/L)
Nitrate (ug-N/L)
Nitrite (ug-N/L)
Total phosphorus (mg/L)
BOD (mgO_2/L)
Dissolved Oxygen (mg/L)
Total CN (as CN) (mg/L)
Total Iron (Fe) (mg/L)
Aluminium (Al) (mg/L)
Copper (Cu) (mg/L)
Zinc (Zn) (mg/L)
Chromium (Cr) (mg/L)
Manganese (Mn) (mg/L)
Nickel (Ni) (mg/L)
Lead (Pb) (mg/L)
Cadmium (Cd) (mg/L)
Chloride (mg/L)
Sulphate (mg/L)
Sodium (Na) (mg/L)
Potassium (K) (mg/L)
Magnesium (Mg) (mg/L)
Arsenic (As) (mg/L)
Mercury (Hg) (mg/L)
Selenium (Se) (mg/L)
TPH (mg/L)

M6 Irrigation Area Monitoring

1 Unless otherwise approved in writing by the Director, soil to be irrigated must be sampled and analysed for the parameters listed in Column 1 of Table 3 at the rate of 2 composite soil samples per irrigated hectare at the frequency specified in column 2.

2 Water with electrical conductivity greater than 2,300 uS/cm must not be discharged to the irrigation area.

3 Water with a BOD value greater than 75 mg/L must not be discharged into the irrigation area.

4 **Table 3 Irrigation Area Monitoring and Limits**

Column 1	Column 2	Column 3	Column 4	Column 5
Monitoring Parameter	Sampling Frequency	Maximum Concentration in Irrigation Water (mg/L)*	Annual Loading in top 15 cm of soil (g/ha)**	Soil Cumulative Contaminant Loading (kg/ha)*
Arsenic (As)	Annually	2.0	6,000	20
Cadmium (Cd)	Annually	0.05	150	2
Copper (Cu)	Annually	5.0	15,000	140
Lead (Pb)	Annually	20.0	60,000	260
Mercury (Hg)	Annually	0.002	6	2
Nickel (Ni)	Annually	2.0	6,000	85
Selenium (Se)	Annually	0.05	150	10
Zinc (Zn)	Annually	5.0	15,000	300
Magnesium (mg)	Annually			
Potassium (K)	Annually			
Chlorine (Cl)	Annually			
Calcium (Ca)	Annually			
Electrical Conductivity (uS/cm)	Annually			
BOD (mgO2/L)	Annually	75		

*Values Derived from Table 4-2 of *Environmental Guidelines for the Use of Recycled water In Tasmania (DPIWE December 2002).*

**Assuming an average annual transfer of 3ML/ha of leachate.

M7 Groundwater monitoring

1 Unless otherwise approved in writing by the Director, groundwater bores identified in Attachment 2 of this Notice must be sampled and tested for the parameters listed in Column 1 of Table 4 "Groundwater Monitoring" monitored in accordance with Column 2 of Table 4.

2 To prevent potential damage or loss of groundwater bores during composting operations or surface drainage improvements; an area must be cleared around each monitoring site with markers installed to ensure they remain clearly visible.

3 Table 4. Groundwater Monitoring

Column 1	Column 2
MONITORING PARAMETERS (reporting units)	**SAMPLING FREQUENCY**
Ground water depth (m)	Within 6 weeks of issue of this Notice then at 6 month intervals
Co ordinates, GDA 94 Zone 55 - Easting, Northing, AHD	Within 6 weeks of issue of this Notice
pH	Within 6 weeks of issue of this Notice then at 6 month intervals
Conductivity (uS/cm)	Within 6 weeks of issue of this Notice then at 6 month intervals
Total Dissolved Salts (TDS) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Total Nitrogen(ug-N/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Ammonia (mg-N/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Nitrate (mg-N/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Nitrite (mg-N/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Total phosphorus (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Orthophosphate (mg-P/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Dissolved Organic C (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
BOD (mgO_2/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Total and dissolved (Fe) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Copper (Cu) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Zinc (Zn) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Chromium (Cr) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Manganese (Mn) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Nickel (Ni) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Lead (Pb) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Cadmium (Cd) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Chloride (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Sulphate (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Sodium (Na) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Potassium (K) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Magnesium (Mg) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Arsenic (As) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Mercury (Hg) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
Selenium (Se) (mg/L)	Within 6 weeks of issue of this Notice then at 6 month intervals
TPH (mg/kg)	Within 6 weeks of issue of this Notice then at 6 month intervals

M8 Monitoring of Compost

1 If required in writing by the Director the parameters listed in Column 1 of Table 5 must be monitored in the compost heaps and logged as specified by the Director.

2 All monitoring data collected in accordance with this condition, along with the protocols involved in conducting monitoring, must be made available to an authorised officer upon request.

2.1 Table 5. Monitoring requirements and operational limits for composting.

Column 1	Column 2	Column 3
Monitoring Parameter	Requirement	Sampling Frequency
Moisture Content (%)	Between 45-65 %	As required in writing by the Director, but not in excess of the requirements of AS4454-2012 Composts, soil conditioners and mulches.
Oxygen Content (%)	>5%.	As required in writing by the Director, but not in excess of the requirements of AS4454-2012 Composts, soil conditioners and mulches.
Carbon:Nitrogen ratio	>15:1	As required in writing by the Director, but not in excess of the requirements of AS4454-2012 Composts, soil conditioners and mulches.
Pile Temperature (° C)	Temperatures > 55 degrees C for three days prior to turning.	As required in writing by the Director, but not in excess of the requirements of AS4454-2012 Composts, soil conditioners and mulches.

Noise Control

N1 Noise emission limits

1 Noise emissions from the activity when measured at any noise sensitive premises in other ownership and expressed as the equivalent continuous A-weighted sound pressure level must not exceed:

1.1 50 dB(A) between 0700 hours and 1800 hours (Day time); and

1.2 45 dB(A) between 1800 hours and 2200 hours (Evening time); and

1.3 40 dB(A) between 2200 hours and 0700 hours (Night time).

2 Where the combined level of noise from the activity and the normal ambient noise exceeds the noise levels stated above, this condition is not considered to have been breached unless the noise emissions from the activity are audible and exceed the ambient noise levels by at least 5 dB(A).

3 The time interval over which noise levels are averaged must be 10 minutes or an alternative time interval specified in writing by the Director.

4 Measured noise levels must be adjusted for tonality, impulsiveness, modulation and low frequency in accordance with the Tasmanian Noise Measurement Procedures Manual.

5 All methods of measurement must be in accordance with the Tasmanian Noise Measurement Procedures Manual.

Operations

OP1 Receivable wastes

1 Unless otherwise approved in writing by the Director, only the following materials may be received, stored or used in composting on the land:

1.1 Wood fibre, including sawdust;

1.2 Processed plant residues;

1.3 Green waste;

1.4 Whey waste;

1.5 Waste Brewers yeast;

1.6 Animal waste; (including macerated fish wastes)

1.7 Vegetable waste;

1.8 Biosolids classified as Class 1 and Class 2 as defined in the *Tasmanian Biosolids Reuse Guidelines August* 1999, as may be updated from time to time;

1.9 Other organic wastes, that are not controlled wastes; and

1.10 Liquid wastes as follows:

1.10.1 Fonterra wastewater;

1.10.2 leachate from the leachate storage pond on the Land; and

1.10.3 liquid waste of a type approved in writing by the Director.

2 Where there is doubt concerning whether the classification of a waste is a 'controlled waste', then clarification must be sought from the Director.

OP2 Composting

Unless otherwise approved in writing by the Director, composting at the site must be confined to the area designated as the "Composting Area" as identified in Attachment 1.

OP3 Management of Windrows

1 During the thermophilic stage of the composting operation, parameters listed in Column 1 of Table 5 must comply with the requirement listed in Column 2 within the windrows.

2 All putrescible material delivered to the site must be incorporated into the windrows on the day of receipt.

3 Any putrescible material that cannot be incorporated as above must be disposed of to the Dulverton landfill on the day of receipt.

4 Partially composted putrescible materials must not be left lying between windrows, and must be returned into the windrows prior to the end of each working day.

5 Inter-windrow spaces must be maintained in a manner to prevent the feeding or breeding of pest animals and the generation of odour.

6 Machinery capable of turning and mixing the compost must be kept on site at all times. A person capable of operating the machinery must be available for an adequate period to turn and mix compost on a daily basis.

OP4 Management of Compost

1 Compost must be produced under the following conditions:

1.1 Turning of the outer material to the inside of the windrow so that the whole mass is subjected to a minimum of three turns per composting cycle;

1.2 Temperatures maintained to at least 55 degrees C for three consecutive days prior to each turn;

1.3 Windrows must remain aerobic throughout the composting process;

1.4 Composting must be undertaken in such a manner as to restrict the generation of runoff, leachate and odours; and

1.5 Composting must be undertaken in such a manner as to restrict access of vectors and pest animals to the windrows and raw materials.

OP5 Site Hygiene and Biosecurity

1 Washdown facilities for vehicles delivering fish waste must be provided and maintained by the person responsible.

2 Washdown water from fish transport containers and vehicles must not leave the Land and must report to the leachate pond.

3 The premises and equipment, including transport equipment and vehicles, must be maintained and cleaned as necessary to prevent the accumulation of putrescible materials that may give rise to odour, or provide breeding sites for flies.

OP6 Fencing

1 The composting area as shown at Attachment 1 must be contained with in a stock-proof fence sufficient to restrict the entry of native animals.

2 The leachate management infrastructure must be contained within a secure fence sufficient to restrict unauthorised entry.

OP7 Staffing

1 A site supervisor must be in attendance at all times when the site is open and must have the responsibility for the control of the daily operations of composting and monitoring.

2 The site supervisor must have the responsibility and authority to receive, or to reject each load of waste received at the site.

3 The site supervisor must make all reasonable efforts to ensure that there is no public access to the site.

Schedule 3: Information

Legal Obligations

LO1 EMPCA

The activity must be conducted in accordance with the requirements of the *Environmental Management and Pollution Control Act 1994* and Regulations thereunder. The conditions of this document must not be construed as an exemption from any of those requirements.

LO2 Storage and handling of Dangerous Goods, Explosives and dangerous substances

1 The storage, handling and transport of dangerous goods, explosives and dangerous substances must comply with the requirements of relevant State Acts and any regulations thereunder, including:

1.1 *Work Health and Safety Act 2012* and subordinate regulations;

1.2 *Explosives Act 2012* and subordinate regulations; and

1.3 *Dangerous Goods (Road and Rail Transport) Act 2010* and subordinate regulations.

LO3 Change of responsibility

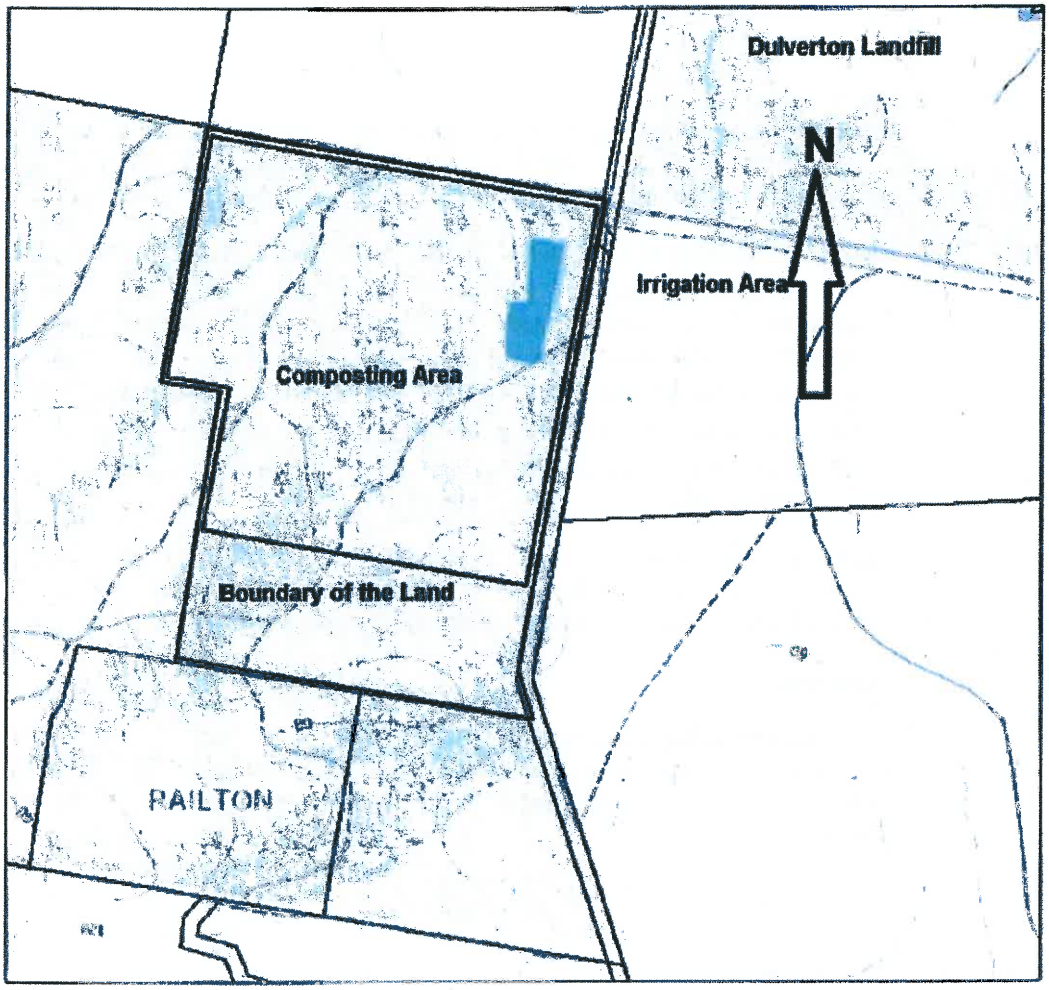
If the person responsible for the activity ceases to be responsible for the activity, they must notify the Director in accordance with Section 45 of the EMPCA.

Other Information

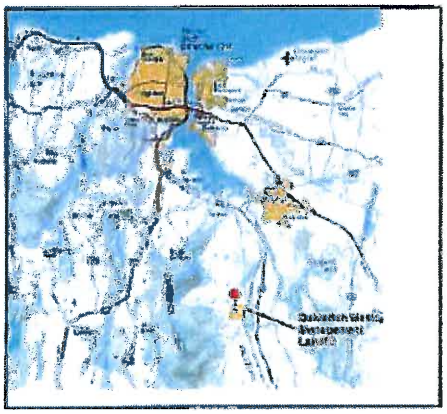
OI1 Notification of incidents under section 32 of EMPCA

Where a person is required by section 32 of EMPCA to notify the Director of the release of a pollutant, the Director can be notified by telephoning 1800 005 171 (a 24-hour emergency telephone number).

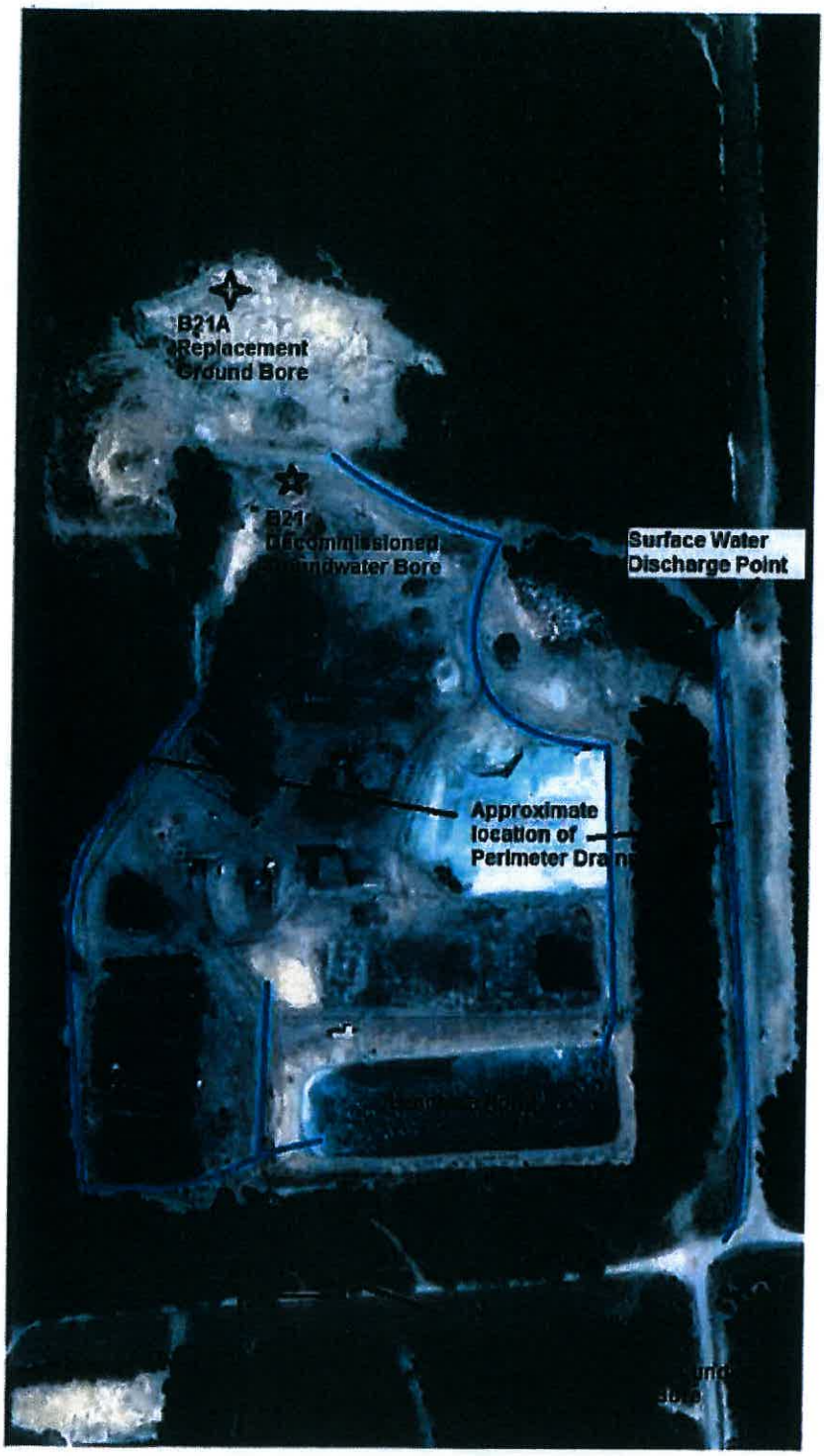
Attachment 1. The Land



Location of the Dulverton Organic Recycling Facility in relation to Devonport



Attachment 2. Location of Groundwater Bores and Drainage Lines



Information Derived from

"Report for Dulverton Landfill Second Stage Hydrogeology Review February 2009"

Attachment 3 Guidelines for EMP Preparation

The following Plans must be included in the EMP.

The plans may be

- Prepared, submitted and updated as a single item;
- Prepared, submitted and updated as individual plans; and may include
- Excerpts from existing Management Plans or Management Systems.

They must be prepared in accordance with best practice environmental management and include, but are not limited to the following content:

Odour Management Plan

The Plan must

1. Identify:
    - All known potential odour sources.
    - Factors that influence the production of odour emissions from these sources.
    - Operational practices to effectively reduce these emissions and to minimise their impacts on neighbours and the local community.
2. Include commitments to implement the identified operational practices to effectively reduce these emissions, and a timetable for the implementation of these practices.

Leachate Management Plan

The Plan must include

1. Details of the leachate collection and management infrastructure for the activity including;
    a. A description of the physical characteristics of the leachate pond, including;
        - depth,
        - volume
        - construction details and
        - other information thought to be relevant
2. Actions to ensure that the system is operated to prevent leachate loss that could reasonably be expected from a 1 in 10 year storm event.
3. A procedure to remove the requirement to discharge into the irrigation area during times of low transpiration and high soil water content.

Karst Management Plan

The Karst Management Plan must include;

1. Initial desktop survey to bring together all existing knowledge of soil and bedrock data and to identify any knowledge gaps that could reasonably present risks to the environmentally correct management of the activity
2. The design and execution of a program to prioritize and address the identified knowledge gaps using field assessments, including but not limited to;
    a. Mapping of soils in the vicinity of the landfill/composting facilities;
    b. Mapping of distribution of bedrock types for the above area; and
    c. Identification of areas of known and potential karst within these bounds.
3. A geological model and a risk assessment that considers sources, pathways and receptors associated with the karst that will be used to better inform future expansion and post closure care of the activity.
4. A Hydrogeological model that determines whether there is a karstic aquifer underlying the site and if so characterises the feature i.e. identify recharge sources, rates and directions of flow, and zones of discharge.
5. A plan for the design and implementation of measures to monitor and minimise impacts. As a minimum this should include ongoing monitoring of ground subsidence and groundwater quality.

Pest Animal Control Plan

. The Plan must:

1. Contain strategies that identify all pest animals known to be active on the Land;
2. Contain strategies that limit access or control the access of the identified animals to putrescible materials on site. This may include control methods for the elimination of targeted species while not impacting upon non-targeted species; and
3. Include actions designed to restrict the ability of pest animals to breed and feed on the land.

20. APPENDIX B: COMPLAINTS AND INCIDENTS

Extract: Annual Environmental Review for the DORF 2014-15

Corrective Action Register (CAR): Nov 2014- Nov 15 – Complaints Received for DORF Operations

CAR No	Generated from	Date *(The non-conformance occurred)*	Description of Non-conformance *(details of the incident as received by reporting officer)*	Action Taken *(Outlines direct action taken to rectify the non-conformance).*	Action By *(Name of staff member who carried out 'action taken')*	Action Date *(Is the date that the staff member carried out the 'action taken'. This cell is to be left blank until the action in 'action taken' has been completed)*	Root Cause of Problem *(to be updated following an investigation of the non-conformance and what underlying factors may have contributed to it).*	Preventative Action *(Measures put in place to prevent the non-conformance from reoccurring).*
ENV-408	MP	25/09/2015	Received a phone call from a resident who stated that crows from the Dulverton Landfill are coming over to her farm and harassing her cows.	Recorded details and made contact with Site Supervisor who advised that there has not been a noticeable increase in crows onsite. Also visited the site on the 28/09/2015 and did not see a noticeable increase in crows.	MP	28/09/2015	The nature of landfill and composting operations means that crows may be attracted.	Continuing to monitor the crow numbers.
ENV-411	Latrobe Council	5.11.2015	Odour complaint received by Council, mid-morning, from a Coal Hill Road resident. After discussion with DWM, Council rang complainant back, who advised that the odour has dissipated.	Council EHO discussed with DWM EO, who had not noticed any odour when on site that morning. EO spoke to site personnel who could not identify a source of the odour.	AH	5.11.2015	The root cause of this odour has not been established.	Continual improvement and adjustment of processes at the DORF.

Extract: Annual Environmental Review for the DORF 2015-2016

Corrective Action Register (CAR): November 2015- November 2016 – Complaints Attributed to DORF Operations

CAR No	Generated from	Date *(The non-conformance occurred)*	Description of Non-conformance *(details of the incident as received by reporting officer)*	Action Taken *(Outlines direct action taken to rectify the non-conformance).*	Action By *(Name of staff member who carried out 'action taken')*	Action Date *(Is the date that the staff member carried out the 'action taken'. This cell is to be left blank until the action in 'action taken' has been completed)*	Root Cause of Problem *(to be updated following an investigation of the non-conformance and what underlying factors may have contributed to it).*	Preventative Action *(Measures put in place to prevent the non-conformance from reoccurring).*
ENV-411	Latrobe Council	5.11.2015	Odour complaint received by Council, mid-morning, from a Coal Hill Road resident. After discussion with DWM, Council rang complainant back, who advised that the odour has dissipated.	Council EHO discussed with DWM EO, who had not noticed any odour when on site that morning. EO spoke to site personnel who could not identify a source of the odour.	AH	5.11.2015	The root cause of this odour has not been established.	Continual improvement and adjustment of processes at the DORF.
ENV-415	Public	12.01.2016	Odour complaint received from resident of Dallys Road, Dulverton.	EO spoke to resident, who advised that odour had only caused issue in the past month or so (prior to this it had been 4 years since she had cause for complaint). Did not want to take further but offered to keep notes on dates/times and advise DWM in future. EO advised that DWM has had cause recently to advise the EPA of severe odour from mushroom composting site and	AH	13/01/2016	Root cause not yet determined but could be mushroom composting activities combined with; offal waste (which has been taken since late 2015 due to closure of rending plant at Quoiba); particularly warm weather; Pardoe biosolids taken at the DORF (which can be	Improvement to drainage between windrows has been emphasised. A new area has been developed to extend the windrow pad, and improve layout and drainage. Purchasing of wood waste continues to ensure that organic waste is composted

				perhaps this is the cause of odour noticed at Dallys Road, but the complainant was not convinced.			more odorous due to only receiving primary processing at the STP). No complaints have been received since this one.	with high levels of carbon material. All EMS processes are adhered to, and updated as necessary to ensure high standards are maintained.
ENV-440	Site Personnel	12.02.16	Compost Gate bent again with another car found upside down within 20 meters of gate	Gate repaired	BR	16.02.2016	The DORF entrance is situated on a publicly accessible road, and a number of cars have been destroyed in this area in recent times (Police have been advised and have followed up ownership of vehicles where ever possible).	Suitable security options are being investigated.
ENV-441	Site Personnel	13.02.16	Car on fire at DORF Gate.	TFS arrived onsite to extinguish fire. Carried out temporary repairs to DORF Gate	KH	13.02.2016	The DORF entrance is situated on a publicly accessible road. A number of cars have been burnt out in the immediate vicinity of the DORF during February.	Suitable security options are being investigated.

ENV-442	public	01.03.2016	Odour complaint received from a resident at Coal Hill Road.	EO contacted complainant to discuss. EO visited residence to discuss, then invited the complainant for a tour of landfill and compost facility. This was well received.	AH	3.03.2016	It has not been confirmed that the only odour that is causing a nuisance is generated from the DORF. On this day mushroom compost odour was extremely offensive in early morning, and EPA were advised of this when following up a phone call complaint.	Continue to keep records of odour generated by mushroom composting operation. Advise EPA when necessary, or at request.
ENV-443	EPA	09.03.2016	Odour complaint received by the EPA from a resident in the vicinity of the DWM site. EPA emailed DWM to advise.	EO rang EPA to discuss issue. EPA officer will attend site in a few weeks' time. EO will determine if procedures in place for dealing with some new waste streams going to landfill are still suitable.	AH	9.03.2016	Site personnel are following DWM procedures for burial of this type of waste. Complaints received appear to correlate with DWM receiving offal waste to landfill after the sudden closure of the Quoiba rendering plant.	Working with the EPA to have this situation resolved.
ENV-447	Latrobe Council	31.03.2016	Complaint of odour from a resident of Dawsons Siding Road was made to Council and reported to DWM.	Council EHO visited site to meet with EO and Site Supervisor. Looked at site and discussed various operations and procedures used on site to provide information to assist in understanding how the DWM site works.	AH	7.04.2016	Site personnel are following DWM procedures for burial of this type of waste. Complaints received appear to correlate with DWM receiving offal waste to landfill after the sudden closure of the Quoiba rendering plant.	Working with the EPA to have this situation resolved. 08.04 - DWM have been advised that offal waste will be taken to Cressy as of 11.04.2016.

ENV-459	Site Personnel	16.05.2016	During the night on 15.05.2016, the boom gate at the DORF was badly bent, speed limit sign was bent and ripped out of the ground, and a sedan car was abandoned and burnt out nearby.	It was reported to Police radio room who advised they would send someone as soon as they could.	AH	16.05.2016	The access road to the DORF is open to the public, and this area is a regular spot for abandoned cars.	Surveillance cameras have been budgeted for in 2016/17.
ENV-462	EPA	27.05.2016	Resident in the Dulverton area reported a complaint of odour coming from DWM site during the morning.	EPA sent an officer to the area to follow up, but odour was gone by their arrival (around midday). AH spoke to Hobart-based EPA officer who advised of the situation. Also spoke to Site Supervisor regarding any unusual action that may have occurred on that day.	AH	1.06.2016	Site Supervisor advised it is possible that odour is related to once-a-week delivery from meatworks (that was the source of odour complaints earlier this year) but this is not confirmed.	EPA to follow up with meatworks and cartage contractor re delivery requirements.
ENV-471	Kentish Council	21.07.2016	Council EHO advised that a complaint had been received from a resident of Coal Hill Road to say that 'the odour from Dulverton was unbearable this morning between 8.30am and 9.00am', and that it had smelt like 'off milk'.	EO spoke to DORF personnel. No unusual waste was received this morning, and personnel had noted that the windrows were not particularly odorous during turning. EO also spoke to the complaint to discuss their concerns - no further action was requested.	AH	21.07.2016	The root cause of the odour that complainants are reporting has not been confirmed.	All monitoring and records are being kept. Notes are being kept in Supervisors daily diary when odour occurs from any activities on site, inc. mushroom composting.

ENV-472	Latrobe Council	20.10.2016	Council EHO had received a complaint from a resident of Railton Road to say that 'flies had been particularly bad on her property at the moment'. MFID 47394)	EO discussed with Site Supervisor. Flies are not a problem at the DORF at present, but can be found around the landfill site. This is despite normal operational procedures being carried out. No unusual fly activity noted when on site that day.	AH	20.10.2016	The nature of DWM operations means that a food source is available year round; seasonal changes will often see an increase in fly numbers. However, it has not been proven that flies breeding on DWM land are causing a nuisance for surrounding property owners.	Continue to maintain operational procedures for burial and covering on waste.
ENV-473	Latrobe Council	21.10.2016	Council EHO received a complaint from a resident of Great Bend Road who advised that the 'flies are extremely bad the moment'. Also odour has been bad, particularly in the morning. MFID 47393.	EO discussed with Site Supervisor. Flies are not a problem at the DORF at present, but can be found around the landfill site. This is despite normal operational procedures being carried out. No unusual fly activity noted when on site that day.	AH	24.10.2016		

Extract: Annual Environmental Review for the DORF 2015-2016

Environmental Incidents and Non-Compliance 2015-2016

CAR No	Generated from	Date	Description of Non-conformance	Action Taken	Action By	Action Date	Root Cause of Problem	Preventative Action
ENV-457	Site Personnel	03.05.2016	Site Supervisor reported that roof has come off one of the mushroom compost buildings due to stormy weather, and their compost leachate was flowing heavily through drain and into DWM Stormwater Pond 3.	EPA were advised immediately by phone and email (ref MFID: 44405). Site staff dug some diversion drains to try and divert some of the storm water away from the leachate pond but had limited time onsite as instructed by Emergency Services.	BR/AH	06.06.2016	This was a very unusual and unexpected rain event that caused major flooding in the North Waste of Tasmania. The DORF perimeter drain was unable to cope with the significant stormwater runoff from the surrounding bushland.	The DORF perimeter drain has been expanded to increase capacity.
ENV-467	DWM	06.06.2016	Due to the severe weather and flooding, the DORF leachate pond breached its banks. The Site Supervisor witnessed a significant amount of storm water coming through the bush behind the site and into the pond.	EPA were advised immediately by phone and email (ref MFID: 44405). Site staff dug some diversion drains to try and divert some of the storm water away from the leachate pond but had limited time onsite as instructed by Emergency Services.	BR/AH	06.06.2016	This was a very unusual and unexpected rain event that caused major flooding in the North Waste of Tasmania. The DORF perimeter drain was unable to cope with the significant stormwater runoff from the surrounding bushland.	The DORF perimeter drain has been expanded to increase capacity.
ENV-474	DWM	5.09.2016	One of the sprinklers in the pine plantation had blown out, where it joins into the main line.	Sprinkler line shut off and AH advised SS to stop pumping for the rest of the day.	AH/SS	05.09.2016	All irrigation fittings subject to failure. The preventative action in place (daily checks) allowed early intervention and resolution.	The preventative action in place (daily checks) allowed early intervention and resolution - continue this procedure.

CAR No	Generated from	Date	Description of Non-conformance	Action Taken	Action By	Action Date	Root Cause of Problem	Preventative Action
ENV-474	DWM	5.09.2016	One of the sprinklers in the pine plantation had blown out, where it joins into the main line.	Sprinkler line shut off and AH advised SS to stop pumping for the rest of the day.	AH/SS	05.09.2016	All irrigation fittings subject to failure. The preventative action in place (daily checks) allowed early intervention and resolution.	The preventative action in place (daily checks) allowed early intervention and resolution - continue this procedure.
ENV-478	Site contractor	03.10.2016	Site had another 38 mm rain on Monday Morning - DORF Pond overflowed despite pumping to pines.	EPA notified and whilst there was significant dilution of the pond due to the amount of rain, DWM will be undertaking additional sampling.	AH	19.10.16	Above average rainfall causing excessive leachate generation, exacerbated by the June event breaching the perimeter cut-off drain.	Perimeter drain previously enlarged. Continuous pumping to DORF leachate irrigation with EPA approval.
ENV-480	Site contractor	01.10.16	Recent rains Fri & Sat (92 mm) DORF Pond overflowed despite pumping to pines	EPA notified and whilst there was significant dilution of the pond due to the amount of rain, DWM will be undertaking additional sampling.	AH	19.10.16	Above average rainfall causing excessive leachate generation, exacerbated by the June event breaching the perimeter cut-off drain.	Perimeter drain previously enlarged. Continuous pumping to DORF leachate irrigation with EPA approval.
ENV-484	Site contractor	24.10.16	Whilst pumping milk onto windrows the poly pipe fitting blew out.	Pipe fitting was repaired by DORF staff.	SS	24.10.2016	Occasionally fittings can blow out unexpectedly.	DORF staff have been given pipe wrenches and appropriate tools for use on site by the new contractor. This will allow fittings to be tightened correctly.

Corrective Action Register (CAR): November 2016 - June 2017

- Complaints, Environmental Incidents and Non-Compliance -

CAR No	Generated from	Date	Description of Non-conformance/Area for Improvement	Action Taken	Action By	Action Date	Root Cause of Problem	Preventative Action
ENV-488	Site contractor	23.11.2016	Veolia load of supermarket collection bin waste deposited at DORF had plastic bags in it. Photos taken and forwarded to AH.	DORF staff picked out as much as possible. AH forwarded photos to Veolia.	SS/AH	23.11.2016	Veolia advised that this bin had come from one particular store, and that the driver hadn't check the bin first otherwise Veolia protocol would have required him not to take the bin to the DORF.	AH contacted Veolia and Veolia management advised that they will remind the driver and the supermarket of the requirement for clean waste only to go into the bin.
ENV-491	DORF Personnel	23.11.2016	Supermarket collection bin waste has been contaminated with unsuitable items.	AH advised Veolia 24.11.2016, who are organising the program, to advise. AH also discussed with Mal Whiteley from Veolia.	AH	24.11.2016	Root cause has not yet been determined by Veolia	Continue to work with Veolia to determine they are providing enough education to the supermarket staff.
ENV-492	DORF Personnel	15.12.2016	DORF personnel advised that recent loads of supermarket waste had been contaminated with items such as plastic-wrapped meat, tin cans, broken witches hat.	AH advised Veolia and requested assistance to improve the quality of the waste collected. Also advised DORF personnel to report these instances using the CAR form in their machine so that any follow up with Veolia could be done quickly and accurately.	AH	16.12.2016	Root cause has not yet been determined by Veolia	Continue to work with Veolia to determine they are providing enough education to the supermarket staff.
ENV-493	Site Supervisor	29.12.2016	Supermarket waste delivered to DORF by Veolia had paint cans and plastic bags in it again.	Veolia Truck Driver has contacted his boss who is going to get in contact with supermarkets again to make sure that there are locks on the garbage bins	Veolia	29.12.2016	Root cause has not yet been determined by Veolia	Site Supervisor advised that recent loads of supermarket waste delivered to site have not been contaminated.
ENV-495	Compost Customer	10.02.2017	A nursery who stocks DWM compost phoned to advise that the Gradco truck driver emptied the load of compost directly onto his top soil pile. The driver did not ask where the customer wanted the compost to be unloaded.	Advised the customer that a discount would be provided on their account and that the matter would be raised with Gradco. Gradco advised that they would not be charging for delivery of the compost.	MP	10.02.2017	Truck driver did not get tipping instructions from customer before tipping. Truck driver admitted that it was their error and they should have checked first.	Gradco reminded the truck drivers that under no circumstances is a load of compost to be tipped without checking with the customer on the delivery location.
ENV-501	Latrobe Council	27.02.2017	Odour complaint received by Council from a resident of Sherwood Drive.	Email saved on M-Files. Discussed with Site Supervisor, no unusual activity could be determined on this day.	AH	02.03.2017	The root cause of the odour that the complainant reported has not been confirmed.	The SS is required to log any instances of odour generated from DWM site operations and/or the mushroom compost facility on the Weekly Diary. Should regular occurrences of bad odour be noted, action to rectify will be investigated.
ENV-502	Neighbour	31.03.2017	Odour complaint received from resident at Castle Drive, Tarleton.	MP had a detailed discussion with the SS who advised that there was a general odour noticed from the site and the mushroom facility that day, but nothing out of the ordinary. The SS drove further up Dawsons Siding Road to check for odour leaving site and nothing was detected. The SS confirmed that odour from the mono-cell could only be detected from close proximity and no odour was observed from the trucks carting the product to the monocell. AH followed up with complainant to discuss the matter.	AB /AH /MP	05.04.2017	The root cause of the odour that the complainant reported has not been confirmed.	The SS is required to log any instances of odour generated from DWM site operations and/or the mushroom compost facility on the Weekly Diary. Should regular occurrences of bad odour be noted, action to rectify will be investigated.

21. APPENDIX C: GHD REPORT: ANNUAL MONITORING FY 2016/2017

Dulverton Waste Management

Dulverton Annual Monitoring FY 2016/2017

May 2017

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1. Introduction

Dulverton Waste Management (DWM) engaged GHD Pty Ltd (GHD) to undertake regular monitoring of groundwater and surface water at the Dulverton Waste Management Landfill ("the landfill"), situated in Dulverton, Tasmania (the site).

The landfill currently operates under an Environmental Protection Notice (EPN) 7158/3, which was issued on 20 November 2015. The adjacent Dulverton composting facility operates under a separate EPN (No. 7852/1), although for the purpose of this report, both sites will be assessed together.

1.1 Objectives

The principal objective of the work was to assess the status of groundwater and surface water at the site, and to determine the impact (if any) the landfill is having on the surrounding environment, with particular emphasis placed on down-gradient receptors at Caroline Creek.

1.2 Scope of Works

To meet the requirements outlined in the site EPN 7158/3 and 7852/1 and address the stated project objectives above, the following scope of works was undertaken:

- Quarterly sampling of surface water;
- Bi-annual monitoring of groundwater;
- Laboratory analysis of all water samples; and
- Compilation of a concise technical report summarising the monitoring results.

As well as the current EPN requirements, DWM have committed to undertake additional works at the historical hazardous waste cell to define the status of the groundwater. This includes quarterly monitoring for one year, as well as updating groundwater flow maps for the site.

1.3 Limitations of Report

This report: has been prepared by GHD for Dulverton Waste Management and *may only be used and relied on by Dulverton Waste Management for the purpose agreed between GHD and the Dulverton Waste Management as set out in section 1.2 of this report.*

GHD otherwise disclaims responsibility to any person other than Dulverton Waste Management arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer sections 5.1, 5.2, 5.3, 6, and 7 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Dulverton Waste Management and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

2. Site Description and History

The Dulverton landfill is located approximately 15 km south of Devonport in northern Tasmania. The landfill is not open to the public and receives waste stream from waste transfer stations and from private contractors. Dulverton landfill can accept inert waste, clean fill and putrescible waste, and a number of controlled wastes are approved under the conditions of the EPN, making it a Category B landfill. Other controlled wastes can be accepted by individual application, and negotiation with the EPA.

The site began operation in 1995. The key features of the site include:

- The landfill, consisting of an open tip face of approximately 50 metres;
- Two leachate lagoons, one of which uses an aerator to reduce nutrient load and odour; the other is used an overflow/storage pond. Leachate drains through the open waste cell and is collected underneath in pipes, which gravity feed the leachate into the storage pond. The leachate is discharged to sewer via an underground pipeline to the Latrobe sewerage treatment plant;
- One HDPE-lined emergency leachate overflow pond (formerly SP1 and SP2), and one stormwater pond;
- A composting area for composting of organic waste streams that have been successfully diverted from landfill disposal;
- A compost leachate storage pond at the composting site. This storage pond is also connected to a system of sprinklers in a nearby pine plantation for irrigation onto land;
- Historical hazardous waste cell that has been entombed for over four years;
- Underground gas recovery infrastructure on the closed landfill cells, and a gas flare;
- A weighbridge at the front gate for all customer loads to be weighed;
- Site office and facilities for on-site staff;
- A workshop for housing site machinery, and includes fuel storage tank and fuel trailer; and
- Firefighting infrastructure including a portable water cart, hydrants, and gear for personnel including self-contained breathing apparatus sets.

The active landfill is lined and has a leachate collection system. The landfill is progressively covered and capped as per the site EPN

Adjacent to the landfill site is an active composting operation (as listed above), also managed by DWM, and operates under a separate EPN licence. This site receives waste streams that have been tested and analysed before being approved for acceptance on site, and which are then mixed with high carbon material including woodchips and green waste to achieve the correct ratio for composting. Once the material is blended, it is stored in windrows where it is regularly monitored and turned to achieve pasteurisation as required under the Australian Standard for Composts, Soil Conditioners and Mulches. After 16 weeks, the windrows are screened to remove larger pieces of material and the resulting product is sold as premium compost within Tasmania.

The composting site is not lined but stormwater and surface runoff are directed through drains to ensure that all clean water leaves the site and enters stormwater drains outside the composting site boundaries (stormwater is not directed into the leachate storage pond). The stormwater pond is not lined and in the past has suffered overflow through periods of heavy rainfall. DWM are currently investigating methods to reduce the likelihood of this occurring.

3. Monitoring Network and Program

3.1 Groundwater Monitoring Network

The groundwater monitoring network is made up of eleven bores as stated in the EPN. This monitoring network includes bores from various networks which have been installed over the history of the site:

- Bores installed as part of the original EMP work, for which no bore logs are available (B1 to B10);
- A second set of bores as part of a GHD hydrogeology review (B11, B12, B14 and B21A); and
- Hazardous waste cell bores (B15, B16 and B17).

The table below (Table 1) provides updated location information and a summary of bore details (where available) of those bores in and around the site. Due to the limited bore logs, GHD undertook a down-hole camera and down-hole geophysics assessment as part of a hydrogeology review in 2009 (GHD, 2009). The results were used to determine the likely screen aquifer of each bore. This is included in the summary table below (Table 1). Some bores in the previous EPNs, such as B3, B4 and B5 have not been included in the current EPN.

The current groundwater monitoring network consist of the following bores:

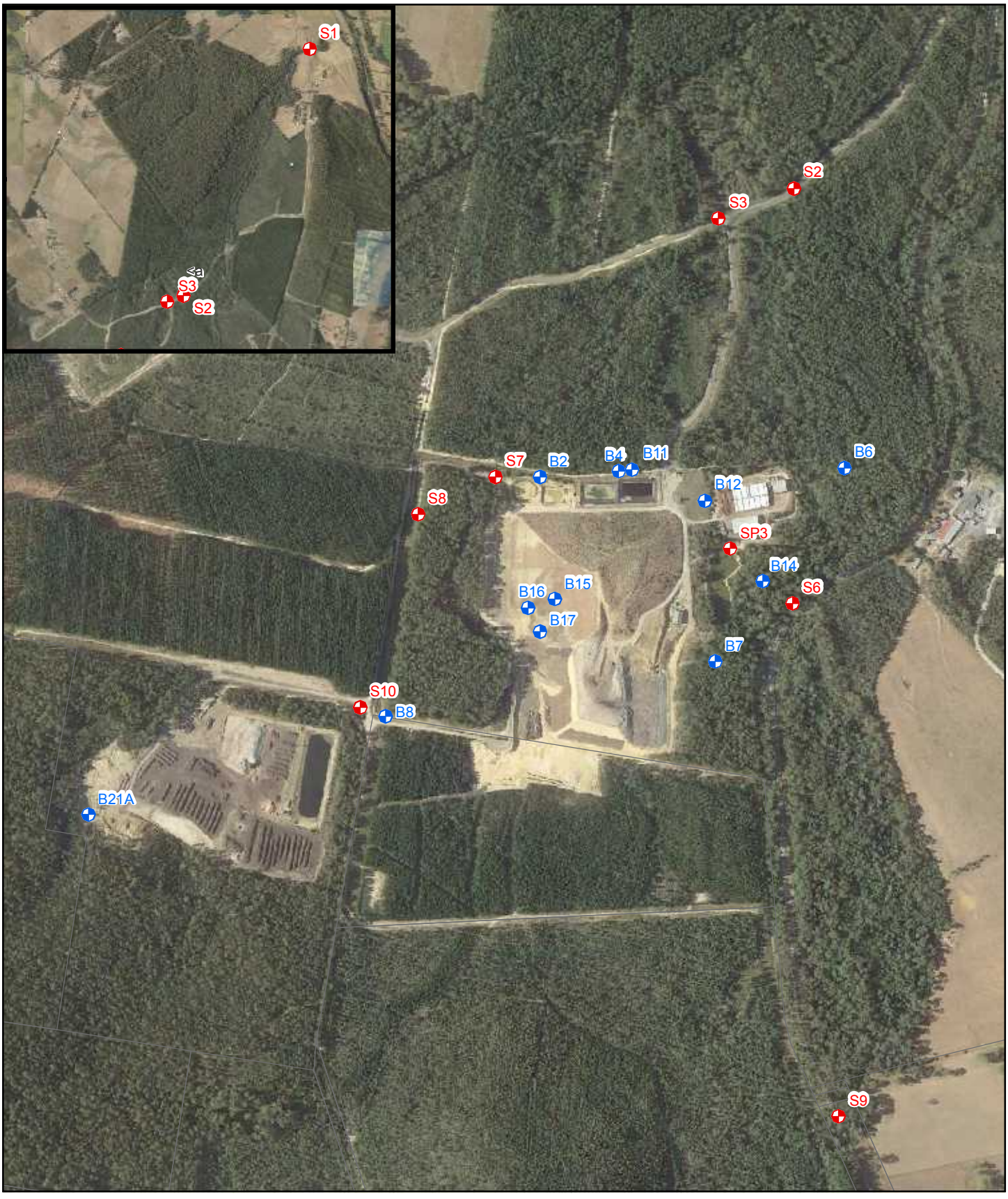
- The landfill
  - *11 bores - B2, B6, B7, B8, B11, B12, B14, B16, B17*
- The composting site:
  - 2 bores - *B21A* and B8

Additional bores have been drilled by Tasman Geotechnics to monitor groundwater levels in the proposed landfill extension area to the west of the current site. These additional bores are not included in this report, or the current EPN, but may be useful for any further detailed groundwater assessment.

There has been some confusion over the past as to the nomenclature of some monitoring bores. At some time, the coordinates of B12 and B14 have swapped so the map shows them in the wrong location. In the field, the bores are labelled correctly.

The EPN states that groundwater monitoring shall include recording of the following:

- Standing water level;
- Volume of water in litres within the installed casing before purging;
- Volume of water in litres purged before sampling;
- Time required to purge the bore casing before sampling;
- Method of purging the casing water volumes;
- Flow rate of the purging method used for sampling;
- Time, date and identification code of the water sample; and
- Field primary water quality parameters, including at least, conductivity, pH and temperature.



LEGEND

- Surface Water Sampling Sites
- Groundwater Moniotring Wells

Paper Size A3

0 25 50 100 150 200 250

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

Dulverton Regional Waste Management Authority
DWMC - Annual Monitoring 16/17

Groundwater & Surface Water Sampling Locations

Job Number 32-12345
Revision B
Date 07 Apr 2017

Figure 1

G:\32\18151\GIS\Maps\Working (Optional)\3218151_Sampling_Sites.mxd

2 Salamanca Square Hobart TAS 7000 Australia T 61 3 6210 0600 F 61 3 6210 0601 E hbamail@ghd.com W www.ghd.com

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by: drockliff

Table 1 Summary of Groundwater Network- those in Bold Text are in the current Monitoring Program

Bore ID	Easting	Northing	Total Depth	Screened from (mBG)	Screened to (mBG)	Screened lithology	Location and purpose
B2	**449234**	**5429501**	**21.8***	**18.3***	**21.7***	**Sandstone***	**Next to stormwater pond**
B3	449396	5429537	17.5	14.5*	18*	Limestone*	North of leachate pond No 1
B4	449371	5429511	19.6	16.6*	19.6*	Sandstone*	Between leachate pond 1 and 2
B6	**449766**	**5429518**	**6.72**	**3.5***	**6.5***	**Shale/mudstone**	**Eastern side of boundary between the landfill and Caroline Creek**
B7	**449541**	**5429180**		**17.6***	**20***	**Sandstone***	**South of sediment pond and in between landfill and Caroline Creek**
B8	**448967**	**5429085**	**18.92**	**17**	**19**	**Sandstone/limestone***	**Southwest corner of the landfill and down gradient of the composting site**
B11	**449397**	**5429515**	**7.95**	**4.95**	**7.95**	**Clayey silts**	**Monitoring the upper most aquifer down gradient of the leachate ponds**
B12	**449523**	**5429461**	**14.33**	**6.98**	**9.98**	**Clayey silts**	**Monitoring the deeper aquifer between the landfill and Caroline Creek**
B14	**449624**	**5429320**	**4.47**	**1.47**	**4.47**	**Gravelly silt**	**Monitoring the upper most aquifer down gradient of the landfill**
B15	**449261**	**5429288**	**14.5**	**10.5**	**14.5**	**Clayey silts**	**Monitoring the hazardous waste cell**
B16	**449215**	**5429275**	**14.5**	**10.5**	**14.5**	**Limestone**	**Monitoring the hazardous waste cell**
B17	**449236**	**5429234**	**16**	**11**	**16**	**Clayey silts**	**Monitoring the hazardous waste cell**
B21A	**448448**	**5428914**	**23**	**17**	**23**	**Clay, dolerite boulders and limestone**	**Background groundwater site**

*interpreted from downhole geophysics and previous reports, no bore logs available

3.2 Surface Water Monitoring Network

The main surface water feature near the landfill is Caroline Creek, which flows northwards through the northeastern corner of the site. Caroline Creek joins the Mersey River north of the Landfill. There are 10 sampling sites that sample Caroline Creek, including a background site (S9) and down-gradient sites (Refer to Table 5 below).

The landfill site has numerous stormwater drainage channels, which are also included in the surface water monitoring program. Refer to Figure 1 for location of the surface water sites.

Table 2 Summary of Surface Water Sites

Sample ID	Location and Purpose
S1	Furthest downstream site of Caroline Creek. Provides water quality prior to entering the Mersey River
S2	On Caroline Creek, approximately 500 metres downstream of the landfill
S3	A small drainage line, which flows after high rainfall events. This monitors off water quality leaving the site to Caroline Creek
S4	Caroline Creek culvert on the road between the railway and Tas Mushrooms. Monitoring down gradient Caroline Creek water quality as it passes adjacent the site
S6	This was the listed as an historical background Caroline Creek site but due to proposed landfill expansion, a new background site has been added (S9).
S7	This is a stormwater drainage line from sediment pond 1 at the northern site boundary
S8	This is a stormwater drainage line which monitors water quality of surface water leaving site
S9	The background surface water site monitored at Caroline Creek
S10	Monitors stormwater coming from the composting site
SP1	No longer monitored. This is the stormwater pond that captures run off from the landfill areas which is then discharged off site
SP2	No longer monitored as SP1 and SP2 were joined together to form one stormwater pond.
LP2	This was the onsite leachate pond which is now monitored by DWM through the site trade waste agreement
CP1*	This is the stormwater/leachate pond for the composting site, this is no longer monitored through the EPN

*previously BS1

A landfill leachate monitoring program is not specified in the EPN, and is only to occur when requested in writing by the Director of the EPA. DWM currently undertakes leachate monitoring as part of their Trade Waste Agreement. Samples are taken weekly and quarterly by DWM and these results have been provided to GHD as part of this assessment.

Similarly, the compost site EPN does not stipulate a leachate monitoring program. The EPN states that representative samples of leachate need only be collected when a change in raw materials or processes may result in changes to the leachate, or prior to commencement of seasonal irrigation, or when required by the director.

3.3 Rainfall

The Australian Bureau of Meteorology rainfall station 91291 (Sheffield School Farm) provides rainfall data from 1950. Monthly rainfall, recorded during the 2016/2017 monitoring period detailed in Figure 2 below. Rainfall in the 5 days preceding sampling is shown below in Table 3.

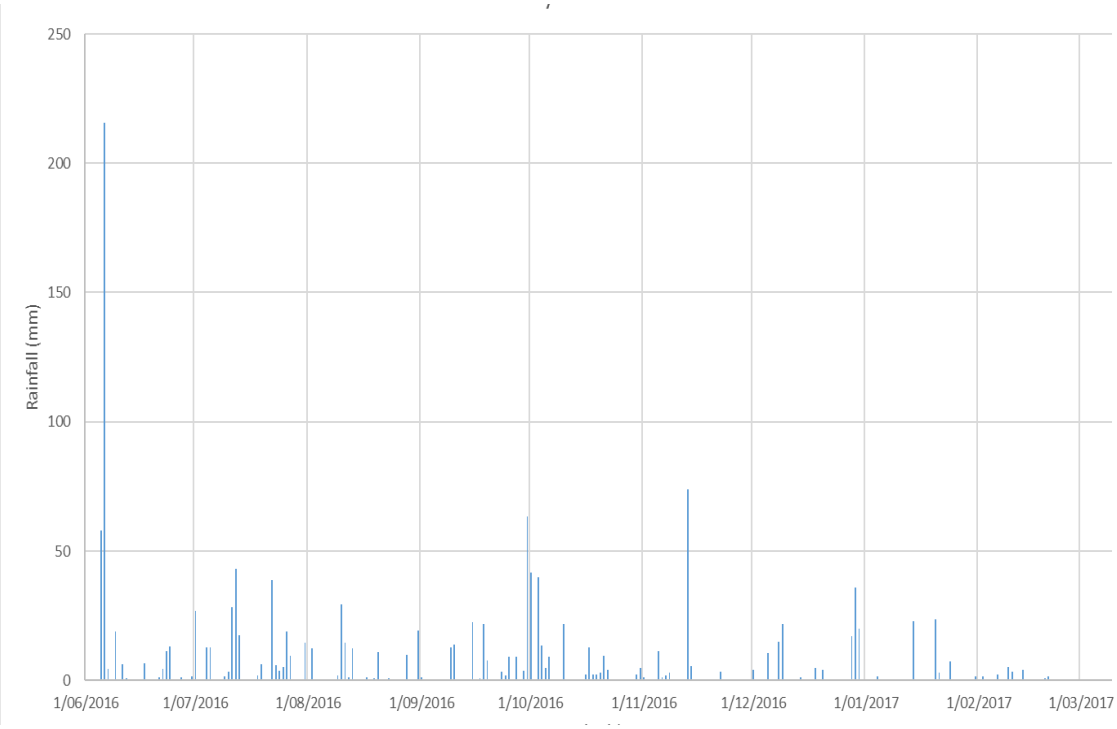


Figure 2 Daily Rainfall for the Reporting Period

Table 3 Rainfall for the 5 Days Preceding Sampling

Sample date	Rainfall on sampling day (mm)	Rainfall preceding 5 days (mm)
27 February 2017	0	0, 0, 0, 0, 0
15 December 2016	0	1.2, 0, 0, 0, 0, 21.8
23 November 2016	0	3.4, 0.4, 0, 0, 0
1 August 2016	0	14.6, 0, 0, 0.6, 9.4, 18.8

4. Sampling and Analysis Plan

Sampling and analyses were carried out according to relevant Australian guidelines. For a detailed description of the sampling plan, refer to Appendix A. GHD carry out a quality control and assurance plan which is detailed in.Appendix B. The sampling program is based on the current EPN, as summarised in Table 4 and Table 5, although it is noted that the sampling frequency has voluntarily been increased to quarterly at the hazardous waste bores (B15, B16 and B17) until August 2017.

Table 4 Groundwater Program

Frequency	Parameters
Six-monthly	Bore depth, Standing Water Level, location coordinates, Total Dissolved Salts, redox, total nitrogen, ammonia, nitrite, total phosphorus, orthophosphate, Dissolved Organic Carbon, Biochemical Oxygen Demand, total cyanide, total and dissolved iron, bromide, iodide, chloride, sulfate, sodium, potassium, magnesium*, arsenic, mercury, selenium, TPH
Annually	Copper, zinc, chromium, manganese, nickel, lead, cadmium, nitrate, pH, conductivity

*Some of the major ions were missing from the list but have been included in the current analysis (calcium, alkalinity bicarbonate, alkalinity carbonate).

Table 5 Surface Water Program

Frequency	Parameters
Three monthly	pH, biological oxygen demand, total suspended solids, conductivity, total nitrogen, ammonium, oxides of nitrogen, total phosphorus, dissolved free phosphorus

Leachate sampling is undertaken weekly and quarterly by DWM staff though the landfill's trade waste agreement. The EPN states that these results may be required by the Director and if required by the director, leachate pond water must be sampled for parameters as listed in the EPN. DWM provided GHD with quarterly results where available, which have been used in this assessment.

Environmental monitoring began at the DWM landfill site in approximately February 2005, which included a similar network of groundwater and surface water sites. The monitoring in the earlier EPN was more frequent and for a larger set of parameters. Since this time, there have been additional bores drilled, surface water sites added and lost, and leachate is now monitored through a trade waste agreement.

Monitoring undertaken by GHD for this annual report occurred on:

- August 2016 – Groundwater and surface water monitoring;
- November 2016 – Surface water monitoring;
- December 2016 – Additional groundwater monitoring of B15, B16 and B17; and
- February 2016 – Groundwater and surface water monitoring

As part of the sampling and analysis program, GHD conduct a quality assurance and quality control program. The details of which are included in Appendix A.

5. Basis of Assessment

The water quality results are compared against those guidelines as defined through the *State Policy on Water Quality Management 1997.* The first step in the implementation of the *State Policy on Water Quality Management 1997* is the identification of Protected Environmental Values (PEVs) for the surface waters in the region of interest. PEVs are the current values and uses of a water body for which water quality should be protected**.**

The DWM landfill is located within the Mersey catchment, as defined in the *Environmental Management Goals for Tasmanian Surface Waters – Mersey December 2001.* The landfill is located on what is defined as "private land" in the report, which sets specific targets for surface waters. For surface waters flowing through private land (including forest on private land) the PEV's are:

- A: Protection of aquatic ecosystems
  - (ii) Protection of modified (not pristine) ecosystems from which edible fish are harvested
- B: Recreational Water Quality and Aesthetics
  - (i) Primary contact water quality (Mersey River - at Union Bridge; adjacent to Bridle Track Road Kimberley Bridge picnic area, at Olivers Road Bridge, at Liena Road Bridge, at Merseylea Bridge and from Lovetts Flats to Bells Pde)
  - Secondary contact water quality
  - Aesthetic water quality
- C: Raw Water for Drinking Water Supply (Unnamed creek with co-ordinates 448 500 E 5 394 800 N – Mole Creek town water supply)
  - (ii) Subject to coarse screening plus disinfection
- D: Agricultural Water Uses
  - Irrigation
  - Stock watering
- E: Industrial Water Supply (Industrial Water Supply - Wesley Vale Pulp Mill off-take at Big Bend, Mersey River; water for mining and chemical works on Redwater Creek and Mersey River and for brick production on Caroline Creek.

Overall, the management goals, (as taken from *Environmental Management Goals for Tasmanian Surface Waters – Mersey December)* for this area are thus "*That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; that is acceptable for irrigation and stock watering purposes; is suitable for industrial supply in specified areas (pulp and paper production, mining and chemical works and brick production); for town drinking water supply (subject to coarse screening and disinfection) in specified area; and which will allow people to safely engage in recreation activities such as swimming (in specified areas), paddling or fishing in aesthetically pleasing waters. For private land (including forest on private land) within the Mole Creek karst system, water quality management should also have particular regard to the values associated with that system"* (2001, Department of Primary Industries, Water and the Environment).

The PEV refer to the following nationally recognised documents for specific trigger values:

- Australian and New Zealand Environmental Conservation Council (ANZECC & ARMCANZ 2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
- Australian and New Zealand Environmental Conservation Council (ANZECC & ARMCANZ 2000) Australian and New Zealand Guidelines for Primary Health and Contact Recreation;
- Australian and New Zealand Environmental Conservation Council (ANZECC & ARMCANZ 2000) Australian and New Zealand Guidelines for Stock and Domestic
- Australian and New Zealand Environmental Conservation Council (ANZECC & ARMCANZ 2000) Australian and New Zealand Guidelines for Irrigation Long Term Trigger values
- National Health and Medical Research Council (NHMRC & NRMMC 2011) Australian Drinking Water Guidelines

6. Site Assessment Results

The following section discusses field and analytical observations regarding the historical records starting from 2004. It is noted that there has been some uncertainty regarding the results collected prior to 2016. Due to this uncertainty, the results prior to 2016 will be viewed separately. The reason for this data uncertainty is due to the groundwater sampling procedure followed and lack of filtered metals results. In the past, samples were analysed for total metals only, which is difficult to assess against the guidelines as the trigger values are for bioavailable, filtered metals. The previous groundwater sampling method did not include purging or stabilising field parameters prior to collecting a groundwater sample. This is not in line with Australian standards; therefore, some of the resulting groundwater data may not be accurate. In light of this, the first section will provide a summary of those earlier groundwater results in a separate table. All data from 2004 to the most recent monitoring event are compared against trigger values in Appendix C. Long-term groundwater trends will not, however, be assessed as part of this report as there are only two data points for the 2016 to 2017 year, and as discussed, the historical monitoring data are not reliable. However, long-term surface water trends are included.

As described above in section 5, the PEV for the Mersey catchment include protecting the receiving waters for a number of values. The trigger values used to compare the site results against are:

- ANZECC & ARMCANZ (2000) Trigger values for freshwater aquatic ecosystems with a level of protection for 95% of species **(FAE95%)**;
- National Health and Medical Research Council Primary Health and Contact, 2011 which is taken from the Australian Drinking Water Guidelines 2011 **(REC)**;
- ANZECC & ARMCANZ (2000) Irrigation Long Term Trigger values **(LTV),** Irrigation Short term Trigger Values **(STV);** and
- ANZECC & ARMCANZ (2000) Stock and Domestic **(S&D).**

Field sheets, with stabilised field parameters are provide in Appendix D. All laboratory documentation for the 2016 to 2017 monitoring period is provided in Appendix E.

6.1 Water Chemistry Results against Trigger Values

This section provides a summary of monitoring results against trigger values in two sections. The first section summarises those sites that have monitoring results above trigger values prior to 2016 (all data is tabulated and compared against the trigger values in Appendix C. As the ANZECC & ARMCANZ guidelines use filtered metals and only total metal concentrations are available for this period, the concentrations are predictably higher, as total metals includes metals adsorbed on suspended clays and other fine particles. The following section (6.2) summarises the 2016 to 2017 results against trigger values.

6.1.1 Historical Groundwater Monitoring Data

Table 6 summarises those sites that have parameters above each of the trigger values. The FAE95% trigger values are typically the lowest trigger values, and as such this column shows the highest number of exceedances. The guidelines do not take into account background conditions, which in this case are monitored at B21A. Background bore B21A shows exceedances for aluminium, cadmium, chromium, copper, lead, nickel and zinc, indicating that these concentrations are at least in part, due to the surrounding geology.

Sites B4, B6, B7 and B8 do not show exceedances above the FAE95% trigger values, with each bore being down-gradient of the landfill operations, at mixed depths and geology. Monitoring bores that do show exceedances that are different to the background bore include B2, B12, B14, B16, and B17. These bores show nitrate above FAE95% trigger levels at each site and B2 showing both nitrate and ammonia above trigger levels. As these bores are not purged prior to sampling it is difficult to draw conclusions. The next section will compare purged results from the 2016 to 2017 sampling program.

Table 6 Summary of Historical Groundwater Metals and Nutrients above Trigger Values*

	FAE95%	REC	LTV	STV	S&D
B2	Al, Cd, Cr, Cu, Pb, Mn, Ni, Zn, ammonia, nitrate		Fe (total and filtered), Mn		
B4	Zn		Fe (total and filtered),		
B6			Fe (total), phosphorus		
B7			Fe (total), phosphorus		
B8			Fe (total), phosphorus		
B11	Al, Cd, Cr, Cu, Pb, Ni, Zn		Fe (total and filtered)		
B12	Al, Cd, Cr, Cu, Pb, Ni, Zn, nitrate		Al, Fe (total and filtered)		Al
B14	Al, Cd, Cr, Cu, Pb, Ni, Zn, nitrate		Al, Fe (total and filtered)		Al
B15	Cd, Cr, Cu, Pb, Ni, Zn	Ni	Pb, Fe (total), Cu, Ni		Pb
B16	Cd, Cr, Cu, Pb, Mn, Ni, Zn, nitrate	Ni	Pb, Fe (total), Cu, Ni		Pb
B17	Cd, Cr, Cu, Ni, Zn, nitrate	Ni	Fe (total), Ni		Pb
B21A	Al, Cd, Cr, Cu, Pb, Ni, Zn		Fe (total and filtered), Mn		

*above trigger values more than 3 events or 50% of results.

The historical data show that where monitored, all total petroleum hydrocarbons (TPH), benzene, toluene, ethyl benzene, xylene (BTEX), organochlorine pesticides (OC pesticides), organophosphate pesticides (OP pesticides), poly cyclical aromatic hydrocarbons (PAH), and polychlorinated biphenyls (PCB), have typically been below laboratory detection limits.

6.1.2 Groundwater Monitoring Results 2016 - 2017

This section describes the results of monitoring from August 2016 to February 2017. These monitoring results are for filtered metals, which are needed to compare against ANZECC & ARMCANZ (2000) guidelines. Table 7 shows those sites with analytes above the adopted trigger levels (trigger levels as described above). This sampling program adopted Australian Standards for sampling, which includes purging to achieve stabilised field parameters prior to a sample collection.

Table 7 Summary of Groundwater 2016-2017 Parameters above Trigger Levels

	FAE95%	REC	LTV	STV	S&D
B2	Mn, ammonia		Mn, Fe (total and filtered), phosphorus		
B4[1]			Fe (total and filtered), Mn, phosphorus		
B6	Zn		Fe (total and filtered), phosphorus		
B7			Fe (total), phosphorus		
B8	nitrate		Fe (total), phosphorus		
B11	Cu, Pb, Zn		Fe (total and filtered), phosphorus		
B12	nitrate		Fe (total), phosphorus		
B14	Cu		Fe (total), phosphorus		
B15	Cu, Zn		Fe (total), phosphorus		
B16	Cu, Nitrate		Fe (total), phosphorus		
B17	nitrate		Fe (total), phosphorus		
B21A			Fe (total), Mn, phosphorus		

Generally, most metals that exceeded the trigger values in the historic data set, particularly for the FAE95% have not been exceeded in the recent monitoring events (Table 7). Cadmium was below the laboratory limit of detection in all the recent samples whilst chromium was either at the limit of detection or below the laboratory limit of detection.

Copper, lead, zinc and nickel were also generally lower in concentration than in previous monitoring rounds, which is to be expected given that they are filtered and the bores have been purged to a greater degree than in the past.

The background bore B21A, once purged and metals are filtered, no longer shows any metals above the FAE 95% trigger levels. In comparison, some of the down-gradient bores continue to show elevated concentrations above the trigger levels. As there are only two sampling events, it is not possible to establish a causal relationship. Monitoring should continue to draw out any similarities between the landfill leachate and groundwater chemistry signatures. Major ion analysis will also aid in classifying the amount of mixing, if any, of these waters. During the 2016/2017 groundwater monitoring events, BTEX compounds were also included in the list of analytes for analysis. Of the BTEX compounds, toluene was detected on one occasion in monitoring bores B14 and B15 at relatively low concentrations of 7 and 5 µg/L respectively. Analysis of landfill leachate intermittently shows levels of toluene above the laboratory limit of reporting suggesting that at least some of the landfill leachate may be entering the groundwater system.

6.2 Landfill Leachate

Landfill leachate is compared against the trigger levels in this section, although landfill leachate is unlikely to be continuously discharged to Caroline creek, it provides a snapshot of the elevated parameters and likely contaminants. It is important to note that landfill leachate is analysed for total metals, which is likely to be elevated in comparison to filtered metals (of which the trigger values should be assessed against). Table 8 shows those analytes above trigger levels in the leachate.

Whilst the leachate data have not been assessed on long-term trends for this report, this section aims to classify the leachate make up so that potential contaminants or parameters which may identify leachate seepage to the environment. Long-term trends will be assessed in the following years report once there is a body of data to plot. Appendix C summarises all available leachate data compared against trigger levels.

Over the past three years of data, the following synthetic substances have been detected in the landfill leachate, these include: Fenamiphos (once above REC trigger levels 2-methylphenol, Phenol, Acetone, Formaldehyde, BTEX and TPH (all chain lengths). Most of these are at relatively low concentrations; apart from fenamiphos, which at one time (June 2015) was above REC trigger levels. However, the presence of these chemicals may be used as tracer parameters for the groundwater and surface water monitoring program, as their presence in the natural environment is limited.

Table 8 Landfill Leachate Aqainst Trigger Levels - Total Metals

	FAE95%	REC	LTV	S&D
Leachate pond	Al, Cd, Cr, Cu, Fe, Pb, Ni, Zn, ammonia, nitrate		Total Fe, Mn, Cu, Cr, phosphorus, total nitrogen	Cu

6.3 Surface Water Monitoring Results 2016 2017

Exceedances for the parameters analysed in the surface water results are shown in Table 9 below. Surface water monitoring site S6 was originally used as a background monitoring site but due to the potential expansion of the landfill operation, site S9 was added to ensure that background conditions would continue to be monitored.

Table 9 Summary of Surface Water Parameters above Trigger Levels

	FAE95%	REC	LTV	STV	S&D
S1	Nitrate				
S2	Nitrate				
S3	Ammonia, nitrate		P (filtered), Total N		
S4	Nitrate				
S6	Nitrate				
S7	Nitrate		P (filtered), Total N		
S8	Ammonia, nitrate		P (filtered), Total N		
S9	Nitrate				
S10	Nitrate		P (filtered)		

Nitrate was above the FAE95% trigger value in all the surface water monitoring sites over the 2016-2017 monitoring period including both the background monitoring sites. Phosphorus and total nitrogen exceeded the Long Term Irrigation Value in three of the monitoring sites. Given that the surrounding land use around the landfill appears to be agricultural and forestry, industries that typically use fertilizer, elevated nutrient levels in back ground monitoring site(s) would not necessarily be unexpected.

The revised EPN came into effect in November 2015, which significantly reduced the number of parameters analysed for in the surface water sampling making it difficult to compare long-term trends. Nitrate and Total Phosphorous however have been consistently analysed since 2009.

The nitrate values from the most recent monitoring rounds (August 2016 – present) are well within the historical values recorded (Figure 3). The sampling sites would appear to show a good correlation between one another with rising nitrate levels including the background site S9. The exact sampling dates for the May 2016 and February 2015 are not recorded in the data set however there were days rainfall in excess of 25 mm that may have resulted in a flushing effect from the broader catchment.

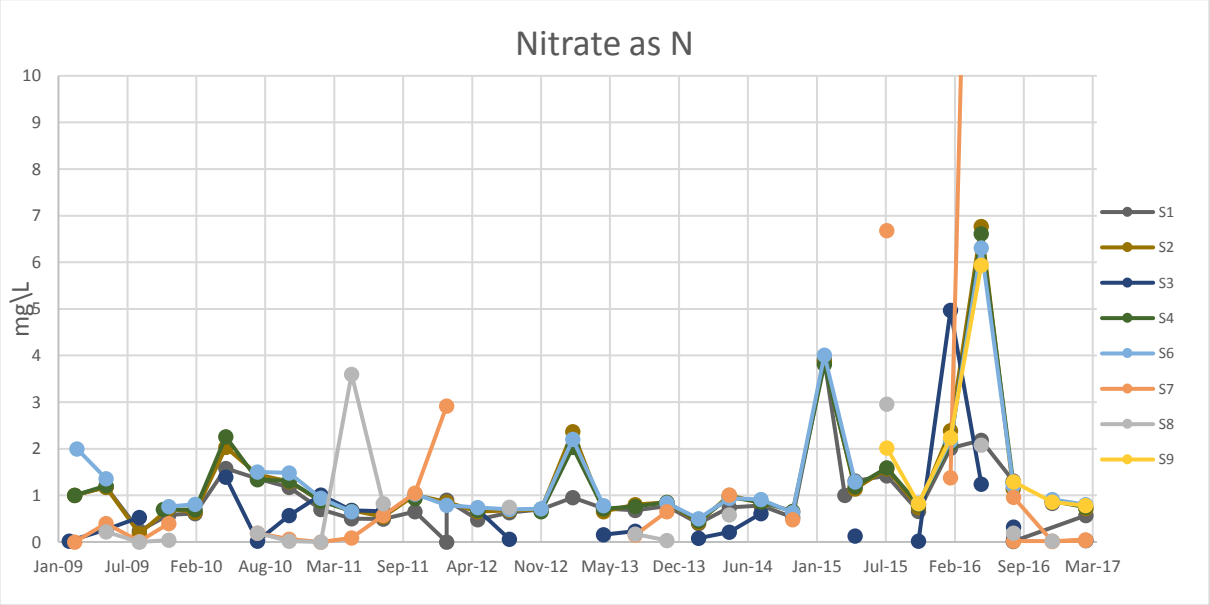


Figure 3 Historic and recent Nitrate Results from the Surface Water Sites

The Total Phosphorus historical values are show a similar patter to the most recent sampling events (Figure 4) however, there was a noticeable increase in phosphorus recorded at the S7 site during the January 2017 monitoring.

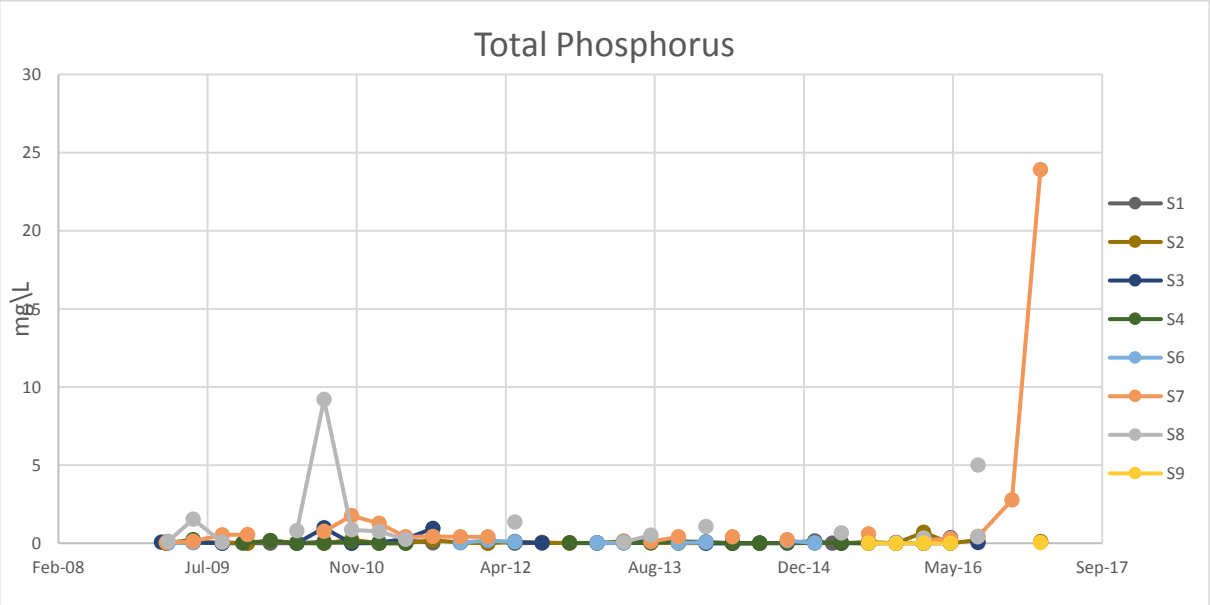


Figure 4 Historic and recent Total Phosphorous Results for Surface Water Site

7. Recommendations

The following recommendations should be considered in order to assess more completely the impact of the landfill operations on the surrounding environment. With respect to the EPN under which the landfill operates, there are numerous inconsistencies around the timing of sampling and suite of analytes that are required for groundwater and surface water.

7.1 Monitored Parameters

The list of analytes varies significantly between groundwater, surface water and the leachate. The groundwater and leachate suite is missing calcium and alkalinity from the major ions and the surface water suite does require analysis of any major ions. A complete set of major anions and cations should be analysed for all three water types (groundwater, surface water and leachate), so that a direct comparisons can be made.

In addition to the major ions, BTEX should at least be added to the groundwater suite, as periodically there has been positive detections in the groundwater samples.

Metals are currently not required to be monitored in the surface water samples. As many of the PEV in the Mersey River (which receives water from Caroline Creek) reference metals, they should also be included in the standard suite of analysis. Metal concentrations above trigger values (ie FAE95%) can be naturally occurring. It therefore would be possible to set *site specific* guideline values based on the analysis of background (or up-gradient) conditions in Caroline Creek.

7.2 Monitoring Frequency

There are inconsistencies and redundancies in some of the groundwater parameters listed for analysis/measurement in the EPN. Recording the coordinates of the monitoring bores every six months is not necessary, although checking hand-held GPS coordinates helps confirm that the correct bore is being sampled. Conductivity and pH are required to be monitored annually whereas standard sampling procedures require that they be recorded in the field every time a groundwater monitoring event occurs. pH is necessary to be measured each time samples are taken as pH has a direct influence on certain metals concentrations, and therefore allows for a complete assessment.

As mentioned above, the PEV in the Mersey River substantially reference metals and therefore they should be included in the six-monthly suite of analytes. Nitrate is also only required to be analysed annually and nitrite every six months. In practice the laboratory determines the concentration of both analytes using the same analytical process and can report both. Nitrate should be added to the six-monthly list of analytes.

Surface water monitoring should continue, however in the periods where the groundwater and surface water events coincide, the suite of analytes should include metals at a minimum. Similarly, if leachate sampling is to occur at the same time, the suite of analytes should ideally at least include the groundwater parameters to allow a direct comparison between the three water mediums.

7.3 Groundwater and Surface Monitoring Network

There are threegroundwater monitoring bores, B5, B9 and B10 that are not currently monitored. The condition of these bores should be investigated and if found to be no longer required or damaged they should be decommissioned, to prevent contamination of the aquifer, by an appropriately trained contractor in accordance with the *"Minimum construction requirements for water bores in Australia, 3rd Edition"* standard.

Monitoring bore B3, is down-gradient of the leachate ponds and is screened across a limestone aquifer. Consideration should be given to re-introducing this bore (if bore is in appropriate condition) to the monitoring network.

A general condition assessment of the bores should be undertaken (this can be done during the next groundwater monitoring event). This should take into account the condition of the surface seal, if the bores have caps, if any need to be labelled etc. If required the bores should be fixed appropriately.

Currently there are 10 sampling sites for surface water, many of which are in Caroline Creek. Now that a new background surface water sampling site in Caroline Creek has been included, the previous background site can be removed. The surface water sampling network could be rationalised, and leachate sampling included.

Appendices

Appendix A - Sampling and Analysis Plan

Data Quality Objectives

The purpose of establishing Data Quality Objectives (DQOs) is to ensure that the field investigations and subsequent analyses are undertaken in a way that enables the collection and reporting of reliable data on which to base the assessment.

A process for establishing DQOs for a site has been defined by the US EPA. That process has been adopted within the Australian Standard: AS 4482.1-2005 and referenced by the *National Environment Protection (Assessment of Site Contamination) Measure* (NEPC, 1999). The DQO process was taken into account in designing the scope of work carried out over the course of the program.

Investigation Strategy

The works included monitoring of all groundwater bores and surface water sites and leachate sumps.

Groundwater Investigation

Groundwater samples were collected in accordance with the following guidelines:

- *AS/NZ 5667.1:1998*: Water Quality – Sampling. Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples. Standards Australia, New South Wales; and
- *AS/NZ 5667.11:1998:* Water quality – Sampling. Part 11: Guidance on sampling of groundwaters. Standards Australia, New South Wales.
- Groundwater Sampling

Groundwater sampling and analysis was conducted on all existing monitoring bores as follows:

- The standing water level and LNAPL thickness (if present) was gauged using an electronic interface probe;
- Bores which did not contain LNAPL were purged and sampled using either pre-installed waterra inertial tubing or with clean, disposable bailers. During sampling, field parameters (pH, electrical conductivity (EC), oxidation-reduction potential (redox), dissolved oxygen (DO) and temperature) were recorded. The presence of a sheen or odour was also noted;
- When field parameters (i.e. pH and EC) reached equilibrium (i.e. consecutive measurements within 10% of each other), a groundwater sample was collected directly from the dedicated waterra tubing or bailer;
- The groundwater samples were immediately placed into laboratory prepared bottles suitable for the required analyses. The sample containers were labelled with the job number, sample identification, date collected and sampler's initials;
- Sample bottles were immediately transferred to an ice filled cooler for preservation prior to being transported to the contract laboratory. Samples were accompanied with chain of custody documentation to the project laboratory;
- Groundwater samples were submitted for laboratory analysis in accordance with the EPN 7158/3; and
- Quality assurance / quality control sampling included one blind duplicate and one split duplicate.

Surface Water Investigation

Surface water samples (including leachate) were collected in accordance with the following guidelines:

- *AS/NZ 5667.1:1998*: Water Quality – Sampling. Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples. Standards Australia, New South Wales; and
- *AS/NZ 5667.6:1998:* Water quality – Sampling. Part 6: Guidance on sampling of rivers and streams. Standards Australia, New South Wales.

Surface Water Sampling

Surface water sampling and analysis was conducted as follows:

- Samples were collected from leachate and surface water using laboratory supplied bottles and preservatives suitable for the selected analysis.
- The surface water and leachate samples were immediately placed into laboratory prepared bottles suitable for the required analyses. The sample containers were labelled with the job number, sample identification, date collected and sampler's initials;
- Sample bottles were immediately transferred to an ice filled cooler for preservation prior to being transported to the contract laboratory. Samples were accompanied with chain of custody documentation to the project laboratory;
- Surface water and leachate samples were submitted for laboratory analysis in accordance with the EPN 7189/2; and
- Quality assurance / quality control sampling included one blind duplicate and one split duplicate.

Stabilised field sampling results are provided in Table 10 below. Detailed field sheets can be provided upon request, as can calibration certificates of field equipment.

Table 10 Results of Final Field Measurements 2016-2017

Well ID	Date	Temp	pH	EC	DO	ORP	SWL
		°C	pH units	µS/cm	ppm	mV	mbgl
B2	Feb-17	13.4	6.86	2648	0.94	-149.2	7.544
B2	Aug-16	12.8	6.87	2333	9.44	-109.8	4.418
B4	Feb-17	13.9	6.66	1233	1.33	-85.6	6.618
B4	Aug-16	13.5	6.9	545	4.49	-80.8	5.096
B6	Feb-17	12.9	6.82	352.8	1.15	-114.9	2.119
B6	Aug-16	12.1	6.61	353.6	5.54	-79.9	1.258
B7	Feb-17	12.7	6.97	386.2	0.08	-66.3	3.054
B7	Aug-16	12.4	6.95	388.7	9.34	74.2	1.881
B8	Feb-17	13.6	6.83	506	0.54	-40.7	10.446
B8	Aug-16	13.6	6.74	440.3	6.14	98.4	7.23
B11	Feb-17	12.7	4.1	348.8	4.66	243.8	4.954
B11	Aug-16	12.2	3.6	206.3	6.29	320.4	3.315
B12	Feb-17	14.5	5.3	116.9	2.97	33	4.787
B12	Aug-16	14.2	5.69	143.8	6.08	79	3.321
B14	Feb-17	14	7.14	464.1	3.48	-66.8	1.737
B14	Aug-16	9.9	6.94	460.5	5.5	-53.1	0.632
B15	Feb-17	15.6	4.98	93.6	3.75	105.9	11.279
B15	Aug-16	13.6	6.07	115.7	4.24	122.6	6.586
B15	Aug-16	16	5.45	110	3.19	-9.4	9.374
B16	Feb-17	14.3	7.22	430.5	7.98	49.6	11.801
B16	Aug-16	14	6.78	465.5	6.64	103.9	7.886
B16	Aug-16	14.4	7.2	450.3	7.45	123.6	9.895
B17	Feb-17	14.1	6.92	519	0.68	79.4	10.514
B17	Aug-16	13.6	6.75	428.7	9.75	109.7	7.372
B17	Aug-16	13.8	6.97	515	0.66	83.8	8.599
B21A	Feb-17	14.5	7.22	697	1.59	-111.7	24.369
B21A	Aug-16	PURGED DRY BEFORE WATER BEGINIS TO PURGE					

Appendix B - Quality Control and Quality Assurance Information

Field Program

All fieldwork was conducted in general accordance with GHD's Standard Field Operating Procedures (SFOP), which are aimed at collecting environmental samples using uniform and systematic methods, as required by GHD's Quality Assurance system. Key requirements of these procedures are as follows:

- Decontamination procedures – including the use of new disposable gloves for the collection of each sample, decontamination of all multiple use sampling equipment between each sampling location using a phosphate free detergent (i.e. Decon 90) and the use of dedicated sampling containers provided by the laboratory;
- Sample identification procedures – collected samples were immediately transferred to sample containers of appropriate composition and preservation for the required laboratory analysis. All sample containers were clearly labelled with a sample number, sample location, sample depth and sample date. The sample containers were then transferred to an ice filled cooler for sample preservation prior to and during shipment to the testing laboratory;
- Chain of custody protocols – a chain-of-custody form was completed and forwarded to the testing laboratory with each discrete batch of samples; and
- Sample duplicate frequency – field duplicates (blinds and splits) were collected and analysed at a rate not less than 10%.

Field Quality Control

All field works were conducted by experienced environmental scientists in general accordance with GHD's SFOP. Field quality control procedures used during the project comprised the collection and analysis of the following:

Blind duplicates: Comprise a single sample that is divided into two separate sampling containers. Both samples are sent anonymously to the primary laboratory. Blind duplicates provide an indication of the analytical precision of the laboratory, but are inherently influenced by other factors such as sampling techniques and sample media heterogeneity.

Split duplicates: Identical to a blind duplicate, except that the primary sample is sent to the project (primary) laboratory and the duplicate is sent to a secondary laboratory (check laboratory).

One blind duplicate (QC1) and one split duplicate (QQC1) sample were collected and analysed during each quarterly monitoring event, as part of the overall sampling program.

The precision of the data is assessed by calculating the Relative Percent Difference (RPD) between duplicate sample pairs, using the following formula:

$$RPD(\%) = \frac{|C_o - C_d|}{C_o + C_d} \times 200$$

Where Co = Analyte concentration of the original sample
Cd = Analyte concentration of the duplicate sample

GHD adopts nominal acceptance criteria of 30% and 50% RPD for field duplicates of inorganics and organics, respectively. Blind and split duplicate samples should return RPDs within these criteria, however it is noted that the criteria will not always be achieved, particularly in heterogeneous soil or fill materials, or at low analyte concentrations.

The project laboratories (ALS Melbourne/ALS Sydney) adopted their internal procedures and NATA accredited methods in accordance with their quality assurance systems.

Laboratory Quality Control

Laboratory quality control procedures used during the project were:

Laboratory duplicate samples: The analytical laboratory collects duplicate sub samples from one sample submitted for analytical testing at a rate equivalent to one in twenty samples per analytical batch, or one sample per batch if less than twenty samples are analysed in a batch. A laboratory duplicate provides data on the analytical precision and reproducibility of the test result.

Spiked Samples: An authentic field sample is 'spiked' by adding an aliquot of known concentration of the target analyte(s) prior to sample extraction and analysis. A spike documents the effect of the sample matrix on the extraction and analytical techniques. Spiked samples will be analysed for each batch where samples are analysed for organic chemicals of concern.

Laboratory Control Sample: A reference standard of known concentration is analysed along with a batch of samples. The Laboratory Control Sample provides an indication of the analytical accuracy and the precision of the test method and is used for inorganic analyses.

Surrogate Standard/Spikes: These are organic compounds which are similar to the analyte of interest in terms of chemical composition, extractability, and chromatographic conditions (retention time), but which are not normally found in environmental samples. These surrogate compounds are 'spiked' into blanks, standards and samples submitted for organic analyses by gas-chromatographic techniques prior to sample extraction. Surrogate Standard/Spikes provide a means of checking that no gross errors have occurred during any stage of the test method leading to significant analyte loss.

Method Blank: Usually an organic or aqueous solution that is as free as possible of analytes of interest to which is added all the reagents, in the same volume, as used in the preparation and subsequent analysis of the samples. The reagent blank is carried through the complete sample preparation procedure and contains the same reagent concentrations in the final solution as in the sample solution used for analysis. The reagent blank is used to correct for possible contamination resulting from the preparation or processing of the sample.

The laboratory is required to provide this information to GHD. The individual testing laboratories conduct an internal assessment of the laboratory QC program; however, the results were also independently reviewed and assessed by GHD.

Laboratory duplicate samples should return RPDs within the NEPM acceptance criteria of ±30%. Percent recovery is used to assess spiked samples and surrogate standards. Percent recovery, although dependent on the type of analyte tested, the concentrations of analytes, and the sample matrix; should normally range from about 70-130%. Method (laboratory) blanks should return analyte concentrations as 'below the practical quantitation limit (PQL)'.

Laboratory QA/QC documentation is provided below.

Appendix C - Tabulated Data Against Trigger Values

Appendix
Table
Results against trigger values

| | | | Unassigned | | | | | | | Field | | Metals | | | | | | |

Appendix
Table
Results against trigger values

| | | Unassigned | | | | | | | Field | | Metals | | | | | | |

Appendix
Table
Results against trigger values

		Unassigned							Field		Metals																															
		Anionic Surfactants as MBAS	Conductivity (1:5 aqueous extract)	Dissolved Organic Carbon	Iodide	Oil and Grease	Phosphorus total (P2O5) (Filtered)	Thiosulphate	Electrical Conductivity (Field)	Temp (Field)	Aluminium	Arsenic	Arsenic (Filtered)	Cadmium	Cadmium (Filtered)	Chromium (hexavalent)	Chromium (III+VI)	Chromium (III+VI) (Filtered)	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Lead (Filtered)	Manganese	Manganese (Filtered)	Mercury	Mercury (Filtered)	Nickel	Nickel (Filtered)	Phosphorus	Phosphorus (Filtered)	Selenium	Selenium (Filtered)	Zinc	Zinc (Filtered)
		µg/L	µS/cm	mg/L	µg/L	mg/L	µg/L	µg/L	µS/cm	oC	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L
EQL		100		1	10	5	10	2000			0.01	0.001	0.001	0.1	0.1		1	1	1	1	50	50	1	1	1	1	0.0001	0.0001	1	1	0.01	0.01	0.01	0.01	5	5
ANZECC 2000 Irrigation - Long-term Trigger Values											5	0.1	0.1	10	10		100	100	200	200	200	200	200	200	200	200	0.002	0.002	200	200	0.05	0.05	0.02	0.02	2000	2000
ANZECC 2000 Irrigation - Short-term Trigger Values																																								
ANZECC 2000 - Stock Watering											**5**	**0.5**	**0.5**	**10**	**10**		**1000**	**1000**	**500**	**500**			**100**	**100**			**0.002**	**0.002**	**1000**	**1000**			**0.02**	**0.02**	**20000**	**20000**
ANZECC 2000 FW 95%											0.055			0.2	0.2	0.001	1	1	1.4	1.4			3.4	3.4	1900	1900	0.0006	0.0006	11	11			0.011	0.011	8	8
REC					5000							0.1	0.1	20	20	0.5			20000	20000			100	100	5000	5000	0.01	0.01	200	200			0.1	0.1		
LocCode	**Sampled_Date-Time**																																							
B2	16/02/2005	-	-	-	-	-	-	-	-	-	-	0	-	0	-	-	-	-	0	-	130	-	0	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	16/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	15/08/2005	-	-	-	-	-	-	-	581	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	18/11/2005	-	-	-	-	-	-	-	631	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	13/02/2006	-	-	-	-	-	-	-	609	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	22/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	8/08/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	20/10/2006	-	-	-	-	-	-	-	774	-	-	-	-	0	-	0	-	-	0	-	2680	1000	0	-	1610	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-
B2	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	19/04/2007	-	-	-	-	-	-	-	316	-	-	-	-	0	-	0	-	-	0	-	2080	20	0	-	430	-	-	-	-	-	0	-	-	-	-	33	-	-	-	-
B2	23/08/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	27/11/2007	-	-	-	-	-	-	-	4093	-	-	-	-	0	-	0.027	-	-	28	-	30,300	3140	24	-	740	-	-	-	0	-	-	-	-	-	-	390	-	-	-	-
B2	21/02/2008	-	-	-	-	-	-	-	5370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	21/05/2008	-	-	-	-	-	-	-	3560	-	0.42	-	-	0	-	0	-	-	7	-	6940	94	0	-	1950	-	-	-	0	-	-	-	-	-	-	18	-	-	-	-
B2	16/09/2008	-	-	-	-	-	-	-	2280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	26/11/2008	-	-	-	-	-	-	-	2280	-	-	-	-	0	-	0	-	-	0	-	13,200	7360	0	-	6040	-	-	-	12	-	-	-	0	-	-	12	-	-	-	-
B2	24/02/2009	-	-	-	-	-	-	-	2398	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	26/05/2009	-	-	-	-	-	-	-	1988	13.5	0.18	0	-	0.2	-	0	-	-	0	-	9190	2630	0	-	1970	-	0	-	11	-	-	-	0	-	-	12	-	-	-	-
B2	17/11/2009	-	-	-	-	-	-	-	6800	13.7	-	0.005	-	<0.1	-	0.01	-	-	<1	-	11,200	11,600	<1	-	2070	-	<0.0001	-	21	-	-	-	<0.01	-	<5	-	-	-	-	-
B2	1/02/2010	-	-	-	-	-	-	-	8000	9.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/05/2010	-	-	-	-	-	-	-	12,420	-	-	0.006	-	3.4	-	0.004	-	-	7	-	14,400	12,500	17	-	151	-	<0.0001	-	6	-	-	-	<0.01	-	80	-	-	-	-	-
B2	1/08/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/02/2011	-	-	-	-	-	-	-	1770	9.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/05/2011	-	-	-	-	-	-	-	1282	10.8	-	-	-	0.4	-	<0.001	-	-	35	-	410	130	6	-	327	-	-	-	20	-	-	-	-	-	-	143	-	-	-	-
B2	1/08/2011	-	-	-	-	-	-	-	1504	15.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/11/2011	-	-	-	-	-	-	-	3045	15.4	0.07	0.002	-	0.3	-	0.005	-	-	14	-	4940	4550	2	-	519	-	<0.0001	-	16	-	-	-	<0.01	-	92	-	-	-	-	-
B2	1/02/2012	-	-	-	-	-	-	-	3320	14.79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/05/2012	-	-	-	-	-	-	-	3740	11.72	-	-	-	0.5	-	0.001	-	-	20	-	12,800	11,500	8	-	195	-	-	-	41	-	-	-	-	-	-	397	-	-	-	-
B2	1/08/2012	-	-	-	-	-	-	-	3200	13.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/11/2012	-	-	-	-	-	-	-	3420	16.99	-	<0.001	-	2	-	0.004	-	-	22	-	11,200	9000	27	-	220	-	<0.0001	-	49	-	-	-	<0.01	-	558	-	-	-	-	-
B2	1/02/2013	-	-	-	-	-	-	-	3450	15.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/05/2013	-	-	-	-	-	-	-	3.35	12.4	-	-	-	2	-	0.004	-	-	34	-	8560	6420	27	-	271	-	-	-	54	-	-	-	-	-	-	490	-	-	-	-
B2	1/08/2013	-	-	-	-	-	-	-	2630	11.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/11/2013	-	-	-	-	-	-	-	2510	13.9	-	-	-	0.1	-	0.002	-	-	18	-	3320	<50	6	-	514	-	-	-	13	-	-	-	-	-	-	23	-	-	-	-
B2	1/02/2014	-	-	-	-	-	-	-	2270	16.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/05/2014	-	-	-	-	-	-	-	2	15.02	-	-	-	0.1	-	0.002	-	-	3	-	1590	60	2	-	461	-	-	-	7	-	-	-	-	-	-	12	-	-	-	-
B2	1/08/2014	-	-	-	-	-	-	-	2200	12.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/11/2014	-	-	-	-	-	-	-	420	13.7	-	-	-	<0.1	-	0.006	-	-	4	-	72,500	-	12	-	99	-	-	-	13	-	-	-	-	-	-	53	-	-	-	-
B2	1/02/2015	-	-	-	-	-	-	-	2230	17.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/04/2015	-	-	-	-	-	-	-	2710	15.1	-	0.009	-	3	-	0.045	-	-	88	-	77,000	370	102	-	2450	-	<0.0001	-	456	-	-	-	<0.01	-	1280	-	-	-	-	-
B2	1/05/2015	-	-	-	-	-	-	-	2380	11.3	-	-	-	0.1	-	0.014	-	-	4	-	4860	3150	11	-	852	-	-	-	24	-	-	-	-	-	-	85	-	-	-	-
B2	1/08/2015	-	-	-	-	-	-	-	2110	11.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/11/2015	-	-	-	-	-	-	-	2230	16.86	-	0.002	-	<0.1	-	0.01	-	-	4	-	4470	2810	8	-	781	-	<0.0001	-	31	-	-	-	<0.01	-	54	-	-	-	-	-
B2	4/08/2016	-	-	24	-	-	-	-	-	-	-	-	0.002	-	<0.1	-	<1	-	<1	-	27,900	15,600	-	<1	-	1500	-	<0.0001	-	9	0.11	-	-	<0.01	-	<5	-	-	-	-
B2	28/02/2017	-	-	14	820	-	-	-	-	-	-	-	0.002	-	<0.1	-	-	<1	-	<1	50,700	29,900	-	<1	-	3350	-	<0.0001	-	11	0.2	-	-	<0.01	-	<5	-	-	-	-
B21	28/11/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21	21/02/2008	-	-	-	-	-	-	-	1140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21	24/02/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	26/05/2009	-	-	-	-	-	-	-	258	13.5	10.6	0.008	-	1.5	-	0.038	-	-	39	-	18,900	0	309	-	1110	-	0	-	56	-	-	-	0	-	124	-	-	-	-	-
B21A	24/08/2009	-	-	-	-	-	-	-	586	10.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	17/11/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/11/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/05/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/08/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/11/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/02/2012	-	-	-	-	-	-	-	812	14.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/05/2012	-	-	-	-	-	-	-	835	11.69	-	-	-	0.1	-	0.004	-	-	43	-	4620	3670	67	-	1400	-	-	-	21	-	-	-	-	-	-	93	-	-	-	-
B21A	1/08/2012	-	-	-	-	-	-	-	835	12.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/08/2013	-	-	-	-	-	-	-	887	11.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/11/2013	-	-	-	-	-	-	-	850	13.45	-	-	-	0.3	-	0.011	-	-	20	-	5270	2740	49	-	1160	-	-	-	14	-	-	-	-	-	-	51	-	-	-	-
B21A	1/02/2014	-	-	-	-	-	-	-	755	14.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix
Table
Results against trigger values

| | | | Unassigned | | | | | | | Field | | Metals | | | | | | |

Appendix
Table
Results against trigger values

		Unassigned							Field		Metals																											
		Anionic Surfactants as MBAS	Conductivity (1:5 aqueous extract)	Dissolved Organic Carbon	Iodide	Oil and Grease	Phosphorus total (P2O5) (Filtered)	Thiosulphate	Electrical Conductivity (Field)	Temp (Field)	Aluminium	Arsenic	Arsenic (Filtered)	Cadmium	Cadmium (Filtered)	Chromium (hexavalent)	Chromium (III+VI)	Chromium (III+VI) (Filtered)	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Lead (Filtered)	Manganese	Manganese (Filtered)	Mercury	Mercury (Filtered)	Nickel	Nickel (Filtered)	Phosphorus	Phosphorus (Filtered)	Selenium	Selenium (Filtered)	Zinc	Zinc (Filtered)
		µg/L	µS/cm	mg/L	µg/L	mg/L	µg/L	µg/L	µS/cm	oC	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L
EQL		100		1	10	5	10	2000			0.01	0.001	0.001	0.1	0.1		1	1	1	1	50	50	1	1	1	1	0.0001	0.0001	1	1	0.01	0.01	0.01	0.01	5	5
ANZECC 2000 Irrigation - Long-term Trigger Values											5	0.1	0.1	10	10		100	100	200	200	200	200	200	200	200	200	0.002	0.002	200	200	0.05	0.05	0.02	0.02	2000	2000
ANZECC 2000 Irrigation - Short-term Trigger Values																																					
ANZECC 2000 - Stock Watering											**5**	**0.5**	**0.5**	**10**	**10**		**1000**	**1000**	**500**	**500**			**100**	**100**			**0.002**	**0.002**	**1000**	**1000**			**0.02**	**0.02**	**20000**	**20000**
ANZECC 2000 FW 95%											0.055			0.2	0.2	0.001	1	1	1.4	1.4			3.4	3.4	1900	1900	0.0006	0.0006	11	11			0.011	0.011	8	8
REC					5000							0.1	0.1	20	20	0.5			20000	20000			100	100	5000	5000	0.01	0.01	200	200			0.1	0.1		
LocCode	**Sampled_Date-Time**																																				
B8	18/11/2005	-	586	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	13/02/2006	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	22/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	20/10/2006	-	636	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	<0.05	-	<0.05	-	0.78	-	<0.05	-	<0.05	-	-	<0.05	-	0.12	-	-	-	<0.05	-
B8	8/11/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-
B8	19/04/2007	-	312	-	-	-	-	-	-	-	-	-	-	<0.03	-	-	<0.01	-	<0.04	-	2.49	-	<0.03	-	0.36	-	-	-	<0.02	-	0.19	-	-	-	0.036	-
B8	25/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.034	-	-	-	-	-	-
B8	3/08/2016	-	-	15	-	-	-	-	-	-	-	-	<0.001	-	0.1	-	-	<1	-	<1	29,500	<50	-	<1	-	80	-	<0.0001	-	2	1.33	-	-	<0.01	-	<5
B8	28/02/2017	-	-	1	<20	-	-	-	-	-	-	-	<0.001	-	<0.1	-	-	<1	-	<1	41,700	<50	-	<1	-	135	-	<0.0001	-	2	1.27	-	-	<0.01	-	<5
Landfill leachate	10/09/2013	100	-	-	-	11	-	31,000	-	-	0.59	0.021	-	0.8	-	-	60	-	**2590**	-	7530	-	16	-	945	-	<0.0001	-	64	-	3.42	-	<0.01	-	1370	-
Landfill leachate	18/11/2013	200	-	-	-	<5	-	<2000	-	-	0.33	0.014	-	0.2	-	-	62	-	**558**	-	2840	-	36	-	220	-	<0.0001	-	44	-	4.14	-	<0.01	-	977	-
Landfill leachate	4/03/2014	400	-	-	-	9	-	<2000	-	-	0.26	0.022	-	<0.1	-	-	66	-	**786**	-	2090	-	11	-	88	-	<0.0001	-	75	-	2.94	-	<0.01	-	1310	-
Landfill leachate	2/06/2014	200	-	-	-	<5	-	3000	-	-	0.4	0.02	-	0.2	-	-	110	-	**915**	-	4760	-	14	-	343	-	<0.001	-	67	-	3.7	-	<0.01	-	1180	-
Landfill leachate	17/06/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Landfill leachate	2/09/2014	300	-	-	-	<5	-	10,000	-	-	1.19	0.062	-	0.3	-	-	244	-	**866**	-	4890	-	14	-	516	-	<0.0001	-	93	-	9.48	-	<0.01	-	456	-
Landfill leachate	1/06/2015	100	-	-	-	12	-	18,000	-	-	3.47	0.047	-	0.3	-	-	334	-	**1010**	-	6010	-	14	-	311	-	<0.0001	-	100	-	9.55	-	<0.01	-	839	-
Landfill leachate	27/06/2016	500	-	-	-	<5	-	11,000	-	-	0.67	0.036	-	0.6	-	-	131	-	**664**	-	4400	-	28	-	583	-	<0.0001	-	48	-	2.35	-	<0.01	-	2340	-
Landfill leachate	22/09/2016	-	-	-	-	12	-	-	-	-	0.61	0.036	-	0.3	-	-	143	-	141	-	3590	-	11	-	456	-	<0.0001	-	51	-	4.42	-	<0.01	-	237	-
leachate pond 2	10/09/2013	300	-	-	-	<5	-	<2000	-	-	1.23	0.025	-	0.6	-	-	81	-	23	-	10,900	-	16	-	726	-	<0.0001	-	66	-	4.04	-	<0.01	-	864	-
S1	1/08/2016	-	-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	-
S1	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-
S1	28/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-	-	-
S10	2/08/2016	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.58	-	-	-	-	-
S2	1/08/2016	-	-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-
S2	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-
S2	28/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	<0.01	-	-	-	-
S3	1/08/2016	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35	-	-	-	-	-
S3	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05	-	-	-	-	-
S4	1/08/2016	-	-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-
S4	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-
S4	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-	-	-
S6	1/08/2016	-	-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-
S6	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-
S6	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-	-	-
S7	2/08/2016	-	-	-	-	-	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.44	-	-	-	-	-
S7	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.77	-	-	-	-	-
S7	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.9	20.5	-	-	-	-
S8	2/08/2016	-	-	-	-	-	230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	-	-	-
S8	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-
S9	2/08/2016	-	-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-
S9	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-
S9	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04	<0.01	-	-	-	-
SP3	2/08/2016	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.29	-	-	-	-	-
SP3	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.24	-	-	-	-	-
SP3	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	0.14	-	-	-	-

Appendix
Table
Results against trigger values

		TRH - NEPM 2013							TPH - NEPM 1999						TPH	BTEX & MAH						
		TRH F1 (TRH C6-C10 minus BTEX)	TRH C6 - C10 Fraction	TRH F2 (TRH C10-C16 minus Naphthalene)	TRH >C10 - C16 Fraction	TRH >C16 - C34 Fraction (F3)	TRH >C34 - C40 Fraction (F4)	TRH >C10 - C40 (Sum of Total) - Lab calc	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 (Sum of Total) - Lab calc	C6+ (Sum of Total) - Lab calc	BTEX (Sum of Total) - Lab Calc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		0.02	0.02	0.1	0.1	0.1	0.1	0.1	0.02	0.05	0.1	0.05	0.05		1	1	2	2	2	2	2
ANZECC 2000 Irrigation - Long-term Trigger Values																						
ANZECC 2000 Irrigation - Short-term Trigger Values																						
ANZECC 2000 - Stock Watering																						
ANZECC 2000 FW 95%																950			350		
REC																10	8000	3000			6000
LocCode	**Sampled_Date-Time**																				
B11	26/05/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	24/08/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	17/11/2009	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B11	1/02/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/05/2010	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B11	1/08/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/11/2010	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B11	1/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/05/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/08/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/11/2011	-	-	-	-	-	-	-	<0.02	<0.05	0.14	<0.05	-	0.14	-	<1	<2	<2	<2	<2	<2
B11	1/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/11/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<2	<2	<2	<2	<2
B11	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/11/2013	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B11	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/11/2014	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B11	1/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/04/2015	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B11	1/05/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/08/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/11/2015	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B11	3/08/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2
B11	27/02/2017	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2
B12	26/05/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	24/08/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	17/11/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/02/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/08/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/11/2010	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B12	1/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/05/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/08/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/11/2011	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B12	1/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/11/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<2	<2	<2	<2	<2
B12	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/11/2013	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B12	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/11/2014	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B12	1/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/04/2015	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B12	1/05/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/08/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/11/2015	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B12	3/08/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2
B12	27/02/2017	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2

| | | PAH | | | | | | | | | | | | | | | | | | |

		TRH - NEPM 2013							TPH - NEPM 1999						TPH	BTEX & MAH							PAH																					Inorganics											
		TRH F1 (TRH C6-C10 minus BTEX)	TRH C6 - C10 Fraction	TRH F2 (TRH C10-C16 minus Naphthalene)	TRH >C10 - C16 Fraction	TRH >C16 - C34 Fraction (F3)	TRH >C34 - C40 Fraction (F4)	TRH >C10 - C40 (Sum of Total) - Lab calc	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 (Sum of Total) - Lab calc	C6+ (Sum of Total) - Lab calc	BTEX (Sum of Total) - Lab Calc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Benzo(a)pyrene TEQ (zero) - Lab Calc	Benzo[b+j]fluoranthene	Benzo[k]fluoranthene	PAHs (Sum of Total) - Calc	Pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benz[a]anthracene	Benzo(a) pyrene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Benzo[b]&[k]fluoranthene	Benzo[g,h,i]perylene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	BOD	Bromide	COD	Cyanide Total	Electrical conductivity *(lab)	Kjeldahl Nitrogen Total	pH (Lab)	Sodium Absorption Ratio	Sulphide	TOC	Total Dissolved Solids	Total Dissolved Solids (Filtered)	Total Suspended Solids	Turbidity
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	pH_Units	SAR	mg/L	mg/L	mg/L	mg/L	mg/L	NTU
EQL		0.02	0.02	0.1	0.1	0.1	0.1	0.1	0.02	0.05	0.1	0.05	0.05		1	1	2	2	2	2	2	0.5	1	0.5	1	1	1	1	1	0.5	1	1		1	1	1	1	1	1	1	1	2	0.01	10	0.004	1	0.1	0.01		0.1		10	10	5	
ANZECC 2000 Irrigation - Long-term Trigger Values																																																						
ANZECC 2000 Irrigation - Short-term Trigger Values																																																					
ANZECC 2000 - Stock Watering																																																					
ANZECC 2000 FW 95%																950			350																					16				0.007										
REC																10	8000	3000			6000			0.1																				0.8										
LocCode	**Sampled_Date-Time**																																																					
B14	26/05/2009	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	-	-	45	0.067	-	-	6.84	-	-	-	-	-	729	-
B14	17/11/2009	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	-	-	53	<0.004	-	-	7.42	-	-	0	-	-	-	-
B14	1/02/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	-	-	90	<0.004	-	-	7.19	-	-	-	-	-	-	330
B14	1/05/2010	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	-	-	16	<0.004	-	-	6.72	-	-	-	-	-	-	-
B14	1/08/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	<0.004	-	-	6.68	-	-	-	-	-	-	-
B14	1/11/2010	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	-	-	54	<0.004	-	-	6.41	-	-	-	-	-	-	-
B14	1/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	-	-	7.51	-	-	-	-	-	-	600
B14	1/05/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	0.009	-	-	7.4	-	-	-	-	-	-	-
B14	1/11/2011	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	-	-	38	<0.004	-	-	6.45	-	-	-	-	-	-	-
B14	1/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	<0.004	-	-	6.74	-	-	-	-	-	-	-
B14	1/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	<0.004	-	-	6.98	-	-	-	-	-	-	-
B14	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	<0.004	-	-	6.79	-	-	-	520	-	-	-
B14	1/11/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<2	<2	<2	<2	<2	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	-	-	<10	<0.004	-	-	7.3	-	-	-	-	-	-	-
B14	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	6.3	-	-	-	-	-	-	-
B14	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	6.6	-	-	-	-	-	-	-
B14	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	7.28	-	-	-	-	-	-	-
B14	1/11/2013	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<5	-	-	22	<0.004	-	-	6.86	-	-	-	-	-	-	-
B14	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	5.27	-	-	-	-	-	-	-
B14	1/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	5.71	-	-	-	-	-	-	-
B14	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	5.94	-	-	-	-	-	-	-
B14	1/11/2014	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<5	-	-	<10	<0.004	-	-	5.8	-	-	-	-	-	-	-
B14	1/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	<0.04	-	-	5.93	-	-	-	-	-	-	-
B14	1/05/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	5.76	-	-	-	-	-	-	-
B14	1/08/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	7.04	-	-	-	-	-	-	-
B14	1/11/2015	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.05	<0.1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	6.69	-	-	-	-	-	-	898
B14	2/08/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	7	<1	7	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	0.085	-	<0.004	-	3.1	-	-	-	-	-	-	-
B14	27/02/2017	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	0.102	-	<0.004	-	4.4	-	-	-	-	-	427	-
B15	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	<0.004	-	-	6.76	-	-	-	-	-	-	-
B15	1/11/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<2	<2	<2	<2	<2	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	-	-	16	<0.004	-	-	5.29	-	-	-	-	-	-	-
B15	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	7	-	-	-	-	-	-	-
B15	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	<0.004	-	-	5.4	-	-	-	-	-	324	-
B15	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225	-
B15	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225	-
B15	1/11/2015	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.05	<0.1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	6.11	-	-	-	-	-	-	1000
B15	4/08/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	<0.004	297	<0.1	6.82	-	-	-	-	-	196	-
B15	15/12/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	5	<1	5	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	-	-	-	107	0.1	5.4	-	-	-	-	-	276	-
B16	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	7.16	-	-	-	-	-	-	-
B16	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	108	<0.004	-	-	-	-	-	-	-	-	-	-
B16	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	289	-
B16	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	259	<0.004	-	-	7.09	-	-	-	-	-	-	-
B16	1/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	<0.004	-	-	7.59	-	-	-	-	-	-	-
B16	1/08/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	<0.004	-	-	7.08	-	-	-	-	-	-	-
B16	1/11/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.84	-	-	-	-	-	-	950
B16	3/08/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	<0.004	635	<0.1	7.39	-	-	-	-	-	1500	-
B16	15/12/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	531	0.7	7.41	-	-	-	-	-	1610	-
B17	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.16	0	-	-	-	289	-
B17	1/11/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	<0.004	-	-	7.76	-	-	-	-	-	361	-
B17	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.4	0	-	-	-	361	-
B17	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	<0.004	-	-	6.8	-	-	-	-	-	324	-
B17	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	10.63	28	-	-	-	-	-	-
B17	1/11/2013	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<5	-	-	<10	<0.004	-	-	8.98	-	-	-	410	-	-	-
B17	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	7.32	-	-	-	-	-	-	-
B17	1/11/2014	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<5	-	-	<10	<0.004	-	-	7.4	-	-	-	-	-	-	-
B17	1/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	<0.004	-	-	6.77	-	-	-	-	-	-	-
B17	1/05/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	7.35	-	-	-	-	-	-	-
B17	1/08/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	<0.004	-	-	6.99	-	-	-	-	-	-	-
B17	1/11/2015	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.05	<0.1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	6.82	-	-	-	-	-	-	1000
B17	3/08/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	<0.004	603	2.7	7.36	-	-	-	-	-	9370	-
B17	15/12/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	628	4.3	7.36	-	-	-	-	-	4260	-

		TRH - NEPM 2013							TPH - NEPM 1999					TPH	BTEX & MAH						PAH																				Inorganics										
		TRH F1 (TRH C6-C10 minus BTEX)	TRH C6 - C10 Fraction	TRH F2 (TRH C10-C16 minus Naphthalene)	TRH >C10 - C16 Fraction	TRH >C16 - C34 Fraction (F3)	TRH >C34 - C40 Fraction (F4)	TRH >C10 - C40 (Sum of Total) - Lab calc	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 (Sum of Total) - Lab calc	C6+ (Sum of Total) - Lab calc	BTEX (Sum of Total) - Lab Calc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Benzo(a)pyrene TEQ (zero) - Lab Calc	Benzo[b+j]fluoranthene	PAHs (Sum of Total) - Calc	Pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benz[a]anthracene	Benzo(a) pyrene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Benzo[b]&[k]fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	BOD	Bromide	COD	Cyanide Total	Electrical conductivity *(lab)	Kjeldahl Nitrogen Total	pH (Lab)	Sodium Absorption Ratio	Sulphide	TOC	Total Dissolved Solids	Total Dissolved Solids (Filtered)	Total Suspended Solids	Turbidity
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	pH_Units	SAR	mg/L	mg/L	mg/L	mg/L	mg/L	NTU
EQL		0.02	0.02	0.1	0.1	0.1	0.1	0.1	0.02	0.05	0.1	0.05	0.05		1	1	2	2	2	2	2	0.5	1	0.5	1	1	1	1	1	0.5	1	1		1	1	1	1	1	1	1	2	0.01	10	0.004	1	0.1	0.01		0.1		10	10	5	
ANZECC 2000 Irrigation - Long-term Trigger Values																																																				
ANZECC 2000 Irrigation - Short-term Trigger Values																																																			
ANZECC 2000 - Stock Watering																																																			
ANZECC 2000 FW 95%																950			350																				16					0.007									
REC																10	8000	3000			6000			0.1																				0.8									
LocCode	**Sampled_Date-Time**																																																			
B2	16/02/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.2	-	-	-	7.23	-	-	-	-	-	-	0.7
B2	16/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	7.02	-	-	-	-	-	-	1.18
B2	15/08/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.6	-	-	-	6.81	-	-	-	-	-	400	0
B2	18/11/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.9	-	-	-	6.76	-	-	-	-	-	400	10.95
B2	13/02/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	6.89	-	-	-	-	-	400	7.26
B2	22/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	6.55	-	-	-	-	-	-	9.3
B2	8/08/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.6	-	-	-	6.58	-	-	-	-	-	-	34
B2	20/10/2006	-	-	-	-	-	-	-	0	0	0	0	-	0	-	0	0	0	-	0	-	-	-	-	0	-	-	0	0	-	0	0	-	0	0	0	0	0	0	0	0	-	-	37	0	-	-	7.14	-	-	-	-	-	400	-
B2	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	-	-	6.95	-	-	-	-	-	-	-
B2	19/04/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	0	-	-	7.1	-	-	-	-	-	-	-
B2	23/08/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	-	-	-	-	-	-	-	-	-	-
B2	27/11/2007	-	-	-	-	-	-	-	0	0	0	0	-	0	-	0	0	0	-	0	-	-	-	-	0	-	0	0	-	0	0	-	-	0	0	0	0	0	0	0	0	-	-	300	0	-	-	6.53	0	-	-	-	-	576	151
B2	21/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	0	-	-	7.27	-	-	-	-	-	484	137.4
B2	21/05/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	161.4	0	-	-	7	0	-	-	-	-	441	-
B2	16/09/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80.7	0	-	-	6.8	-	-	-	-	-	441	-
B2	26/11/2008	-	-	-	-	-	-	-	0	0	0	0	-	0	-	0	0	0	-	0	-	-	-	-	0	-	0	0	-	0	0	-	-	0	0	0	0	0	0	0	0	-	-	152.9	0	-	-	6.8	28	-	-	-	-	-	2.2
B2	24/02/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	0	-	-	6.74	-	-	411	-	-	-	20
B2	26/05/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0.02	-	-	6.49	-	-	0	-	-	-	-
B2	17/11/2009	-	-	-	-	-	-	-	<0.02	-	-	-	-	-	-	<1	<2	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	271	<0.004	-	-	7.28	-	-	-	-	-	-	-
B2	1/02/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	312	-	-	-	7.13	-	-	-	-	-	-	-
B2	1/05/2010	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	-	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	-	-	13	<0.004	-	-	6.65	-	-	-	-	-	-	-
B2	1/08/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	-	-	-	-	-	-	-	-	-	-
B2	1/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.22	-	-	-	-	-	-	2.1
B2	1/05/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54	<0.004	-	-	8.09	-	-	-	-	-	-	-
B2	1/08/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	<0.004	-	-	6.93	-	-	-	-	-	-	24.9
B2	1/11/2011	-	-	-	-	-	-	-	<0.02	<0.05	0.26	0.07	-	0.33	-	<1	<2	<2	<2	<2	-	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	-	-	83	<0.004	-	-	7.07	-	-	-	-	-	-	-
B2	1/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54	<0.004	-	-	4.57	-	-	-	-	-	-	-
B2	1/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	<0.004	-	-	3.53	-	-	519	-	-	-	-
B2	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	<0.004	-	-	4.09	-	-	-	-	-	-	-
B2	1/11/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	<0.004	-	-	3.17	-	-	-	-	-	-	-
B2	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	<0.004	-	-	2.7	-	-	-	-	-	-	-
B2	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	<0.004	-	-	4.1	-	-	-	-	-	-	-
B2	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	<0.004	-	-	7.71	-	-	-	-	-	-	-
B2	1/11/2013	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	<0.004	-	-	6.9	-	-	-	-	-	-	-
B2	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	<0.004	-	-	6.89	-	-	-	-	-	-	-
B2	1/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	<0.004	-	-	7.62	-	-	-	-	-	-	-
B2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	<0.004	-	-	7	-	-	-	-	-	-	-
B2	1/11/2014	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	5.4	-	-	-	-	-	-	-
B2	1/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	<0.004	-	-	7.11	-	-	-	-	-	-	-
B2	1/04/2015	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	-	-	-	-	<1	-	<1	<1	-	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	-	-	136	<0.004	-	-	6.73	-	-	-	-	-	-	-
B2	1/05/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	<0.004	-	-	7.14	-	-	-	-	-	-	-
B2	1/08/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	<0.004	-	-	6.49	-	-	-	-	-	-	-
B2	1/11/2015	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.05	<0.1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	<0.004	-	-	6.62	-	-	-	-	-	-	39.1
B2	4/08/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	<2	-	-	<0.004	2950	30.8	7.02	-	-	-	-	-	319	-
B2	28/02/2017	<0.02	<0.02	<0.1	<0.1	0.1	<0.1	0.1	<0.02	<0.05	0.11	<0.05	0.11	-	<1	<1	<2	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	11	1.03	-	<0.004	-	40.1	-	-	-	-	2210	-	-
B21	28/11/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	256	-
B21	21/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	0	-	-	7.22	-	-	-	-	-	169	600
B21	24/02/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	289	-
B21A	26/05/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69	0.051	-	-	9.08	-	-	-	-	-	-	-
B21A	24/08/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	0.02	-	-	7.1	-	-	-	-	-	-	600
B21A	17/11/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	289	-
B21A	1/11/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	289	-
B21A	1/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	324	-
B21A	1/05/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	324	-
B21A	1/08/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	289	-
B21A	1/11/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34	-	-	-	-	-	-	-
B21A	1/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42	<0.004	-	-	6.92	-	-	266	-	-	-	-
B21A	1/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	<0.004	-	-	6.67	-	-	0	-	-	-	-
B21A	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	<0.004	-	-	7.27	-	-	-	-	-	-	-
B21A	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<0.004	-	-	7.62	-	-	-	-	-	-	-
B21A	1/11/2013	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	<0.004	-	-	6.1	-	-	-	-	-	-	-
B21A	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	<0.004	-	-	7	-	-	-	-	-	-	-

Appendix
Table
Results against trigger values

		TRH - NEPM 2013							TPH - NEPM 1999						TPH	BTEX & MAH						
		TRH F1 (TRH C6-C10 minus BTEX)	TRH C6 - C10 Fraction	TRH F2 (TRH C10-C16 minus Naphthalene)	TRH >C10 - C16 Fraction	TRH >C16 - C34 Fraction (F3)	TRH >C34 - C40 Fraction (F4)	TRH >C10 - C40 (Sum of Total) - Lab calc	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 (Sum of Total) - Lab calc	C6+ (Sum of Total) - Lab calc	BTEX (Sum of Total) - Lab Calc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		0.02	0.02	0.1	0.1	0.1	0.1	0.1	0.02	0.05	0.1	0.05	0.05		1	1	2	2	2	2	2
ANZECC 2000 Irrigation - Long-term Trigger Values																						
ANZECC 2000 Irrigation - Short-term Trigger Values																						
ANZECC 2000 - Stock Watering																						
ANZECC 2000 FW 95%																950			350		
REC																10	8000	3000			6000
LocCode	Sampled_Date-Time																				
B21A	1/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/11/2014	-	-	-	-	-	-	-	<0.02	<0.05	<0.1	<0.05	-	<0.05	-	<1	<2	<2	<2	<2	<2
B21A	1/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/05/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/11/2015	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.05	<0.1	<0.05	-	<0.05	-	-	-	-	-	-	-
B21A	3/08/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2
B3	16/02/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	16/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	15/08/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	18/11/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	13/02/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	22/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	8/08/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	20/10/2006	-	-	-	-	-	-	-	0	0	0	0	-	0	-	0	0	0	-	0	-
B3	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	19/04/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	23/08/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	27/11/2007	-	-	-	-	-	-	-	0	0	0	0	-	0	-	0	0	0	-	0	-
B3	21/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	21/05/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	16/09/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	27/11/2008	-	-	-	-	-	-	-	0	0	0	0	-	0	-	0	0	0	-	0	-
B3	24/02/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	16/02/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	16/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	15/08/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	18/11/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	13/02/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	22/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	8/08/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	20/10/2006	-	-	-	-	-	-	-	0	0	0	0	-	0	-	0	0	0	-	0	-
B4	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	19/04/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	23/08/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	27/11/2007	-	-	-	-	-	-	-	0	0	0	0	-	0	-	0	0	0	-	0	-
B4	21/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	21/05/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	16/09/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	28/11/2008	-	-	-	-	-	-	-	0	0	0	0	-	0	-	0	0	0	-	0	-
B4	24/02/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	26/05/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	17/11/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	4/08/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2
B4	28/02/2017	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2
B6	16/02/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	22/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	15/08/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	18/11/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	13/02/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	16/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	20/10/2006	-	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	<5	<1	<1	<1	-	<2	-
B6	8/11/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	19/04/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	25/11/2008	-	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	<5	<1	-	<1	-	<2	-
B6	2/08/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2
B6	27/02/2017	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2
B7	16/02/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	16/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	15/08/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	18/11/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	13/02/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	22/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	20/10/2006	-	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	<5	<1	<1	<1	-	<2	-
B7	8/11/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	19/04/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	25/11/2008	-	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	<5	<1	-	<1	-	<2	-
B7	3/08/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2
B7	28/02/2017	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2
B8	16/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	15/08/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

| | | PAH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Inorganics | | | | | | | | | | | | | | | | | | |

		TRH - NEPM 2013							TPH - NEPM 1999						TPH	BTEX & MAH							PAH																				Inorganics											
		TRH F1 (TRH C6-C10 minus BTEX)	TRH C6 - C10 Fraction	TRH F2 (TRH C10-C16 minus Naphthalene)	TRH >C10 - C16 Fraction	TRH >C16 - C34 Fraction (F3)	TRH >C34 - C40 Fraction (F4)	TRH >C10 - C40 (Sum of Total) - Lab calc	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 (Sum of Total) - Lab calc	C6+ (Sum of Total) - Lab calc	BTEX (Sum of Total) - Lab Calc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Benzo(a)pyrene TEQ (zero) - Lab Calc	Benzo[b+j]fluoranthene	PAHs (Sum of Total) - Calc	Pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benz[a]anthracene	Benzo(a) pyrene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Benzo[b]&[k]fluoranthene	Benzo[g,h,i]perylene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	BOD	Bromide	COD	Cyanide Total	Electrical conductivity *(lab)	Kjeldahl Nitrogen Total	pH (Lab)	Sodium Absorption Ratio	Sulphide	TOC	Total Dissolved Solids	Total Dissolved Solids (Filtered)	Total Suspended Solids	Turbidity
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	pH_Units	SAR	mg/L	mg/L	mg/L	mg/L	mg/L	NTU
EQL		0.02	0.02	0.1	0.1	0.1	0.1	0.1	0.02	0.05	0.1	0.05	0.05		1	1	2	2	2	2	2	0.5	1	0.5	1	1	1	1	1	0.5	1	1		1	1	1	1	1	1	1	1	2	0.01	10	0.004	1	0.1	0.01		0.1		10	10	5	
ANZECC 2000 Irrigation - Long-term Trigger Values																																																						
ANZECC 2000 Irrigation - Short-term Trigger Values																																																					
ANZECC 2000 - Stock Watering																																																					
ANZECC 2000 FW 95%																950			350																				16				0.007										
REC																10	8000	3000			6000			0.1																				0.8										
LocCode	**Sampled_Date-Time**																																																					
B8	18/11/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	-	-	-	-	-	-	-	400	0
B8	13/02/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	-	-	-	-	-	-	-	441	11.88
B8	22/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	-	-	-	-	-	-	-	-	69
B8	20/10/2006	-	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	<5	<1	<1	<1	-	<2	-	-	-	-	<0.5	<0.5	<500	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	98.4	<0.005	-	-	-	-	-	-	-	441	-
B8	8/11/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118	-	-	-	-	-	-	-	-	-	216
B8	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<0.005	-	-	-	-	-	-	-	-	-
B8	19/04/2007	-	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	<5	<1	-	<1	-	<2	-	-	-	-	<0.5	<0.5	<500	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	136	<0.005	-	-	-	-	-	-	-	-	-
B8	25/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	-	-	-	-	-	-	-	-	-
B8	3/08/2016	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	6	-	-	<0.004	609	1.2	7.34	-	-	-	-	-	1490	-
B8	28/02/2017	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	<1	<1	<2	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	3	0.092	-	<0.004	-	0.5	-	-	-	-	472	-	-
Landfill leachate	10/09/2013	0.46	0.49	15.8	15.8	1.4	<0.1	17.2	0.53	19.1	1.98	0.06	21.1	-	25	<1	12	5	2	6	8	<2.5	-	<2.5	<5	<5	<5	<5	<5	<2.5	<5	<5	-	<5	<5	<5	<5	<5	<5	<5	<5	588	-	1930	-	-	417	-	6	-	4170	-	205	-
Landfill leachate	18/11/2013	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.05	<0.05	-	4	<1	4	<2	<2	<2	<2	<0.5	-	<0.5	<1	<1	<1	<1	<1	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	140	-	788	-	-	231	-	3.2	-	3290	-	189	-
Landfill leachate	4/03/2014	<0.02	<0.02	0.35	0.35	1.2	<0.1	1.55	<0.02	0.22	1.08	0.18	1.48	-	<1	<1	<2	<2	<2	<2	<2	<0.6	-	<0.6	<1	<1	<1	<1	<1	<0.6	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	74	-	938	-	-	99.9	-	<0.1	-	4920	-	194	-
Landfill leachate	2/06/2014	0.12	0.19	1.62	1.62	1.3	<0.1	2.92	0.2	1.28	1.63	<0.05	2.91	-	71	2	28	9	10	22	32	<5	-	<5	<10	<10	<10	<10	<10	<5	<10	<10	-	<10	<10	<10	<10	<10	<10	<5	<10	-	-	1260	-	-	247	-	0.4	-	-	-	-	-
Landfill leachate	17/06/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	149	-	-	-	-	-	-	-	-	8050	-	285	-
Landfill leachate	2/09/2014	0.05	0.07	2.39	2.39	2.7	<0.1	5.09	0.11	1.88	2.92	0.26	5.06	-	23	<1	6	2	5	10	15	<0.6	-	<0.5	<1	<1	<1	<1	<1	<0.5	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	217	-	2020	-	-	753	-	12.8	-	6070	-	76	-
Landfill leachate	1/06/2015	<0.02	<0.02	0.53	0.53	0.85	<0.1	1.38	<0.02	0.38	0.95	<0.05	1.33	-	<1	<1	<2	<2	<2	<2	<2	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<0.5	-	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	2	-	1490	-	-	521	-	1	-	5660	-	104	-
Landfill leachate	27/06/2016	0.02	0.05	1.01	1.01	0.91	<0.1	1.92	0.05	0.89	1.08	0.07	2.04	-	25	<1	9	3	4	9	13	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<0.5	-	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	56	-	1370	-	-	328	-	28.5	-	2790	-	44	-
Landfill leachate	22/09/2016	<0.02	<0.02	0.4	0.4	0.68	<0.1	1.08	<0.02	0.27	0.74	0.1	1.11	-	<1	<1	<2	<2	<2	<2	<2	-	<1	-	<1	<1	<1	<1	<1	<0.5	-	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	125	-	1380	-	-	403	-	7.2	-	-	1870 - 3330	84 - 462	-
leachate pond 2	10/09/2013	0.42	0.42	8.09	8.09	1.47	<0.1	9.56	0.45	9.2	1.87	0.1	11.2	-	2	<1	2	<2	<2	<2	<2	<2.5	-	<2.5	<5	<5	<5	<5	<5	<2.5	<5	<5	-	<5	<5	<5	<5	<5	<5	<5	<5	1240	-	2860	-	-	399	-	5	-	4870	-	482	-
S1	1/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	299	0.8	7.83	-	-	-	-	18	-
S1	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	440	0.4	8.1	-	-	-	-	<5	-
S1	28/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	-	0.3	-	-	-	-	-	<5	-
S10	2/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	272	4	7.48	-	-	-	-	153	-
S2	1/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	308	<0.1	7.81	-	-	-	-	7	-
S2	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	455	0.1	8.09	-	-	-	-	<5	-
S2	28/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	-	0.4	-	-	-	-	-	8	-
S3	1/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	375	4.4	7.53	-	-	-	-	116	-
S3	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	660	0.6	7.88	-	-	-	-	<5	-
S4	1/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	299	<0.1	7.8	-	-	-	-	6	-
S4	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	440	0.1	8.03	-	-	-	-	<5	-
S4	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	0.2	-	-	-	-	-	<5	-
S6	1/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	315	<0.1	7.84	-	-	-	-	8	-
S6	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	460	0.2	8.08	-	-	-	-	<5	-
S6	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	0.3	-	-	-	-	-	<5	-
S7	2/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	351	6	7.42	-	-	-	-	45	-
S7	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	270	7.5	7.05	-	-	-	-	737	-
S7	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	-	-	-	-	69.4	-	-	-	-	-	35	-
S8	2/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	350	5.9	7.38	-	-	-	-	16	-
S8	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	365	12.9	7.31	-	-	-	-	1110	-
S9	2/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	286	<0.1	7.76	-	-	-	-	30	-
S9	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	430	0.4	8.03	-	-	-	-	267	-
S9	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	0.5	-	-	-	-	-	91	-
SP3	2/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	416	2.7	7.48	-	-	-	-	<5	-
SP3	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	438	3.4	7.57	-	-	-	-	<5	-
SP3	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	4.1	-	-	-	-	-	16	-

Appendix
Table
Results against trigger values

| | | Nutrients | | | | | | | | | Alkalinity | | | | | Major Ions | | | | | | | | |

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Appendix
Table
Results against trigger values

		OC Pesticides														OP Pesticides																	
		DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenthion	Malathion	Methyl parathion	Monocrotophos	Parathion	Pirimphos-ethyl	Prothiofos
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	2	2	0.5	0.5
ANZECC 2000 Irrigation - Long-term Trigger Values																																		
ANZECC 2000 Irrigation - Short-term Trigger Values																																		
ANZECC 2000 - Stock Watering																																		
ANZECC 2000 FW 95%				0.2				0.02			0.2	0.09				0.02				0.01			0.01		0.15				0.05			0.004		
REC				200							100	3			3000	300	100			100			40	50	70	40	5	70	700	7	20	200	5	
LocCode	**Sampled_Date-Time**																																	
B11	26/05/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	24/08/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	17/11/2009	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B11	1/02/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/05/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/08/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/11/2010	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B11	1/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/05/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/08/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/11/2011	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B11	1/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/11/2012	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B11	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/11/2013	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B11	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/11/2014	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B11	1/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/04/2015	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B11	1/05/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/08/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	1/11/2015	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.2	<0.2	<0.5	<0.5
B11	3/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	26/05/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	24/08/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	17/11/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/02/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/08/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/11/2010	-	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<2	<2	<0.05	<0.05
B12	1/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/05/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/08/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/11/2011	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B12	1/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/11/2012	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B12	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/11/2013	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B12	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/11/2014	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B12	1/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/05/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	1/11/2015	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.2	<0.2	<0.5	<0.5
B12	3/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B12	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

		OC Pesticides															OP Pesticides																				
		DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenthion	Malathion	Methyl parathion	Monocrotophos	Parathion	Pirimphos-ethyl	Prothiofos
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	2	2	0.5	0.5
ANZECC 2000 Irrigation - Long-term Trigger Values																																				
ANZECC 2000 Irrigation - Short-term Trigger Values																																				
ANZECC 2000 - Stock Watering																																				
ANZECC 2000 FW 95%				0.2				0.02			0.2	0.09				0.02				0.01			0.01		0.15				0.05			0.004			
REC				200							100	3			3000	300	100			100			40	50	70	40	5	70	700	7	20	200	5		
LocCode	**Sampled_Date-Time**																																			
B14	26/05/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	17/11/2009	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B14	1/02/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/05/2010	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B14	1/08/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/11/2010	-	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<2	<2	<0.05	<0.05
B14	1/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/05/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/11/2011	-	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<2	<2	<0.05	<0.05
B14	1/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/11/2012	-	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<2	<2	<0.05	<0.05
B14	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/11/2013	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B14	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/11/2014	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B14	1/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/05/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/08/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	1/11/2015	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.2	<0.2	<0.5	<0.5
B14	2/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B14	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B15	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B15	1/11/2012	-	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<2	<2	<0.05	<0.05
B15	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B15	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B15	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B15	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B15	1/11/2015	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.2	<0.2	<0.5	<0.5
B15	4/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B15	15/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B16	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B16	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B16	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B16	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B16	1/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B16	1/08/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B16	1/11/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B16	3/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B16	15/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B17	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B17	1/11/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B17	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B17	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B17	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B17	1/11/2013	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B17	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B17	1/11/2014	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B17	1/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B17	1/05/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B17	1/08/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B17	1/11/2015	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.2	<0.2	<0.5	<0.5
B17	3/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B17	15/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

		OC Pesticides															OP Pesticides																				
		DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenthion	Malathion	Methyl parathion	Monocrotophos	Parathion	Pirimphos-ethyl	Prothiofos
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	2	2	0.5	0.5
ANZECC 2000 Irrigation - Long-term Trigger Values																																				
ANZECC 2000 Irrigation - Short-term Trigger Values																																				
ANZECC 2000 - Stock Watering																																				
ANZECC 2000 FW 95%				0.2				0.02			0.2	0.09				0.02				0.01			0.01		0.15				0.05			0.004			
REC				200							100	3			3000	300	100			100			40	50	70	40	5	70	700	7	20	200	5		
LocCode	**Sampled_Date-Time**																																			
B2	16/02/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	16/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	15/08/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	18/11/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	13/02/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	22/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	8/08/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	20/10/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	19/04/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	23/08/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	27/11/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	21/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	21/05/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	16/09/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	26/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	24/02/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	26/05/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	17/11/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/02/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/05/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/08/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/05/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/08/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/11/2011	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B2	1/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/11/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/02/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/05/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/11/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/11/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/04/2015	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B2	1/05/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/08/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	1/11/2015	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.2	<0.2	<0.5	<0.5
B2	4/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	28/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21	28/11/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21	21/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21	24/02/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	26/05/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	24/08/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	17/11/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/11/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/05/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/08/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/11/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/11/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix
Table
Results against trigger values

		OC Pesticides														OP Pesticides																	
		DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenthion	Malathion	Methyl parathion	Monocrotophos	Parathion	Pirimphos-ethyl	Prothiofos
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	2	2	0.5	0.5
ANZECC 2000 Irrigation - Long-term Trigger Values																																		
ANZECC 2000 Irrigation - Short-term Trigger Values																																		
ANZECC 2000 - Stock Watering																																		
ANZECC 2000 FW 95%				0.2				0.02			0.2	0.09				0.02				0.01			0.01		0.15				0.05			0.004		
REC				200							100	3			3000	300	100			100			40	50	70	40	5	70	700	7	20	200	5	
LocCode	**Sampled_Date-Time**																																	
B21A	1/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/11/2014	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B21A	1/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/05/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B21A	1/11/2015	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.2	<0.2	<0.5	<0.5
B21A	3/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	16/02/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	16/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	15/08/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	18/11/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	13/02/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	22/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	8/08/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	20/10/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	19/04/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	23/08/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	27/11/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	21/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	21/05/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	16/09/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	27/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	24/02/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	16/02/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	16/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	15/08/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	18/11/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	13/02/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	22/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	8/08/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	20/10/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	19/04/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	23/08/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	27/11/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	21/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	21/05/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	16/09/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	28/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	24/02/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	26/05/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	17/11/2009	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
B4	4/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4	28/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	16/02/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	22/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	15/08/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	18/11/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	13/02/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	16/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	20/10/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	8/11/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	19/04/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	25/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	2/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	16/02/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	16/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	15/08/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	18/11/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	13/02/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	22/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	20/10/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	8/11/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	19/04/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	25/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	3/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B7	28/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	16/05/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	15/08/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix
Table
Results against trigger values

		OC Pesticides														OP Pesticides																		
		DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenthion	Malathion	Methyl parathion	Monocrotophos	Parathion	Pirimphos-ethyl	Prothiofos
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	2	2	0.5	0.5
ANZECC 2000 Irrigation - Long-term Trigger Values																																		
ANZECC 2000 Irrigation - Short-term Trigger Values																																		
ANZECC 2000 - Stock Watering																																		
ANZECC 2000 FW 95%				0.2				0.02			0.2	0.09				0.02				0.01			0.01		0.15				0.05			0.004		
REC				200							100	3			3000	300	100			100			40	50	70	40	5	70	700	7	20	200	5	
LocCode	**Sampled_Date-Time**																																	
B8	18/11/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	13/02/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	22/05/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	20/10/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	8/11/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	22/01/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	19/04/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	25/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	3/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8	28/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Landfill leachate	10/09/2013	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
Landfill leachate	18/11/2013	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
Landfill leachate	4/03/2014	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
Landfill leachate	2/06/2014	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
Landfill leachate	17/06/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Landfill leachate	2/09/2014	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	14.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
Landfill leachate	1/06/2015	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	3.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5.1	<0.5	<2	<2	<2	<0.5	<0.5
Landfill leachate	27/06/2016	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
Landfill leachate	22/09/2016	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
leachate pond 2	10/09/2013	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	<0.5
S1	1/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	28/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	2/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	1/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	28/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	1/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	1/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	1/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	2/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	2/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	2/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP3	2/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP3	23/11/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP3	27/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix
Table
Results against trigger values

| | Phenols | | | | | | | | | | | | | | | | | | | VOCs | | | | | | | | | | | | | | | | | | |

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Appendix D - Field Sheets

This is B11 as B11 bore log is 7.95 mbgl

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: ~~B11~~ ~~B3~~ B11

Job Information
Client: DWMA
Project: 6-monthly monitoring
Proj. No.: 32181S1
Sampler: S. HUGHES

Sampling Information
Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell (Y) N
Pump Depth: – m
WLevel Meter Type: Dip / Fox / Int.Fce / Gge
NAPL Check:

Bore Information
SWL: 3.315 m
Date: 2/8/2016
Ref.datum: TOC
Bore Depth: 8.6 m
Screen From: ..... m To: ..... m
Logic Check:
Time: 0730
Stick Up: 0.62 m
Bore Diam.: 0.05 m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL ~~change~~ (m btoc)	Change (.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
0744	10	11.5	3.90	2865	–	200.8	–		> Orange / brown; strong odour,
0753	~~10~~ 15	11.4	3.80	291.4	4.83	260.7	6.15	-3.15	no sheen.
0759	~~15~~ 20	11.6	3.89	273.6	4.94	263.5	7.15	-4.15	> as above, more turbid
0809	~~20~~ ~~25~~ 25	11.5	4.66	172.3	5.10	190.7	7.45	-4.45	purging dry.
0816	~~25~~ 30	11.8	4.69	175.9	5.94	187.8	8.10	-5.2	> as above, purging dry.
	~~30~~						3.529		> " " " "
1630	40	12.1	4.03	193.2	3.67	238.8			> purging dry again, same
1635	45	12.2	3.59	210.8	6.63	299.9			observations as above.
1640	50	12.2	3.60	206.3	6.29	320.4			> " "
									> " "
			SAMPLED		nil	AM			

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See CoC.

Conditions:
Clear ☒
Overcast ☐
Rainfall:
low ☐
moderate ☐
~~high~~ ☐

Wind:
Nill (0 km/h) ☒
Low (1 - 5 km/h) ☐
Moderate (5 - 15 km/h) ☐
Strong (> 15 km/h) ☐

GHD | MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: BH4

Job Information		Sampling Information		Bore Information	
Client: DWMA		Sample Method: Waterra		SWL: 5.096 m	Logic Check:
Project: 6 monthly gw sampling		WQ Meter Type: YSI		Date: 4/8/16	Time: 1200
Proj. No.: 321815-1		Flow Cell: Y / N	Pump Depth: — m	Ref.datum:	Stick Up: m
Sampler: S-H.		WLevel Meter Type: Dip / Fox / Int.Fce / Gge		Bore Depth: 20.5 m	Bore Diam.: 0.1 m
		NAPL Check:		Screen From: m	To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
1205	10	13.3	7.05	538	5.20	-90.5			- black, mod. turbidity,
1209	15	13.3	6.96	541	5.38	-82.5			no sheen. (odour?)
1212	20	13.3	6.93	541	4.70	-81.8			- " "
1215	25	13.4	6.96	542	4.42	-80.3			- sheen, black / brown,
1218	30	13.4	6.93	543	4.48	-80.4			turbid
1225	40*	13.5	6.90	545	4.49	-80.8			- " "
		stable							
									sampled

unsure due to prox. of LP1

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C.

* Small volume purged due to well being in an awkward / dangerous spot.

Conditions:		Wind:	
Clear	☐	Nil (0 km/h)	☐
Overcast	☒	Low (1 - 5 km/h)	☐
Rainfall:		Moderate (5 - 15 km/h)	☒
low	☐	Strong (> 15 km/h)	☐
moderate	☐		
high	☐		

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

B14

Bore ID: ~~B12~~ TD-4.57

Job Information
Client: DWMA
Project: 6-monthly groundwater monitoring
Proj. No.: 32181511
Sampler: S. HUGHES

Sampling Information
Sample Method: waterra
WQ Meter Type: YSI
Flow Cell: Y / N
Pump Depth: — m
WLevel Meter Type: Dip / Fox / Int.Fce / Gge
NAPL Check:

Bore Information
SWL: 0.632 m
Date: 2/8/16
Ref.datum:
Bore Depth: 4.91 m
Screen From: ..... m To: ..... m
Logic Check:
Time: 1041
Stick Up: 0.68 m
Bore Diam.: 0.05 m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
1052	10	9.8	7.17	243.0	0.54	-20.0		>	Brown, turbid, no odour / sheen
1054	20	9.8	7.05	246.1	4.76	-17.5		>	as above; no change.
1058	30	9.8	6.99	459.3	4.93	-34.6		>	as above, no change.
1102	40	9.8	6.96	466.3	5.29	-41.7		>	" " "
1107	60	9.9	6.94	458.0	5.46	-50.2		>	"
1113	80	9.9	6.94	460.5	5.50	-53.1			
				SAMPLED					

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See CoC.

Conditions:
Clear [X]
Overcast [ ]
Rainfall: low [ ] moderate [ ] high [ ]

Wind:
Nill (0 km/h) [ ]
Low (1 - 5 km/h) [X]
Moderate (5 - 15 km/h) [ ]
Strong (> 15 km/h) [ ]

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: ~~B14~~ B12 TD -14

Job Information	Sampling Information	Bore Information
Client: DWMA	Sample Method: waterra	SWL: 3.321 m Logic Check:
Project: 6-monthly sampling	WQ Meter Type: YSI	Date: 2/8/2016 Time: 0842
Proj. No.: 32181511	Flow Cell: Y / N Pump Depth: — m	Ref.datum: Stick Up: 0.56 m
Sampler: S. Hughes	WLevel Meter Type: Dip / Fox / ~~Uni Edge~~ / Gge	Bore Depth: 10.50 m Bore Diam.: 0.05 m
	NAPL Check:	Screen From: m To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL ~~Depth~~ (m)	Change (.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
0852	10	13.6	6.00	107.9	5.10	155.2		>	clear initially, then brown,
0856	15	13.4	5.53	105.1	5.38	163.3	8.98	5.6 m	turbid, no sheen / odour.
0903	20	13.3	5.56	113.8	5.49	170.5	10.07	>	as above; no change.
		- purged dry after ~21 L							(purging dry?)
1503	30	14.3	6.59	152.1	5.17	55.4	3.486	>	as above; purging dry.
1512	35	14.2	5.76	143.0	6.31	74.1		>	" "
1516	40	14.2	5.69	143.8	6.08	79.0		>	" "
								>	purged dry again.
		- SAMPLED next AM.							

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See CoC.

Conditions:		Wind:	
Clear	☒	Nill (0 km/h)	☒
Overcast	☐	Low (1 - 5 km/h)	☐
Rainfall:		Moderate (5 - 15 km/h)	☐
low	☐	Strong (> 15 km/h)	☐
moderate	☐		
~~high~~	☐		

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: B2

Job Information	Sampling Information	Bore Information
Client: DWMA	Sample Method: waterra	SWL: 4.418 m
Project: 6-monthly gw monitoring	WQ Meter Type: YSI	Logic Check:
Proj. No.: 32181.5T	Flow Cell: Y / N	Pump Depth: m
Sampler: SH	WLevel Meter Type: Dip / Fox / Int.Fce / Gge	Date: 4/8/16
	NAPL Check:	Time: 10:49 ? unsure
		Ref.datum:
		Stick Up: m
		Bore Depth: 22.0 m
		Bore Diam.: 0.1 m
		Screen From: m To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
1050	10	12.7	6.83	2041	8.42	-60.9			turbid, - black, moderate odour,
1055	20	12.8	6.87	2183	8.95	-93.6			organic sheen
1100	30	12.9	6.87	2305	9.35	-104.3			- as above -
1103	40	13.0	6.87	2314	9.31	-109.3			- " "
1112	60	12.8	6.87	2331	9.40	-109.7			- no sig change.
1121	80	12.8	6.87	2333	9.44	-109.8			- " "
									- " "
									parameters stable
		SAMPLED							

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C.
- QC1 & QQC1

Conditions:		Wind:	
Clear	☒	Nil (0 km/h)	☐
Overcast	☐	Low (1 - 5 km/h)	☒
Rainfall:		Moderate (5 - 15 km/h)	☐
low	☐	Strong (> 15 km/h)	☐
moderate	☐		
high	☐		

GHD | MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: B6

Job Information		Sampling Information		Bore Information	
Client:	DWMA	Sample Method:	Waterra	SWL: 1.258 m	Logic Check:
Project:	6-monthly Groundwater sampling	WQ Meter Type:	YSI	Date: 2/8/16	Time: 0935
Proj. No.:	321815.1	Flow Cell: Y/N	Pump Depth: — m	Ref.datum:	Stick Up: 0.53 m
Sampler:	S. HUGHES	WLevel Meter Type: Dip / Fox / Int.Fce / Gge		Bore Depth: 6.80 m	Bore Diam.: 0.05 m
		NAPL Check:		Screen From: ..... m	To: ..... m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
0947	10	11.5	6.69	304.9	2.59	-7.2			turbid - Brown, no odour/sheen
0949	20	11.7	6.59	321.5	5.35	-32.8			- as above
0953	30	11.9	6.59	350.0	5.40	-50.1			- becoming clear, minor black sediment load.
0958	40	12.0	6.58	350.7	5.34	-59.9			- as above, minor turbidity.
1001	60	12.0	6.60	352.3	5.28	-70.6			- as above, no change.
1006	80	12.0	6.60	349.8	5.51	-75.8			- " "
1022	100	12.1	6.61	353.6	5.54	-79.9			
				SAMPLED					

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See CoC.

Conditions:		Wind:	
Clear	☒	Nil (0 km/h)	☒
Overcast	☐	Low (1 - 5 km/h)	☐
Rainfall:		Moderate (5 - 15 km/h)	☐
low	☐	Strong (> 15 km/h)	☐
moderate	☐		
high	☐		

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: 87

Job Information	Sampling Information	Bore Information
Client: DWMA	Sample Method: Waterra	SWL: 1.881 m — Logic Check:
Project: 6-monthly groundwater sampling	WQ Meter Type: YSI	Date: 3/8/16 — Time: 0810
Proj. No.:	Flow Cell: Y / N — Pump Depth: m	Ref.datum: — Stick Up: 0.97 m
Sampler:	WLevel Meter Type: Dip / Fox / Int.Fce / Gge	Bore Depth: 20.84 m — Bore Diam.: 0.05 m
	NAPL Check:	Screen From: m To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
0843	10	11.8	6.89	384.0	8.50	95.7			Brown/ light brown, turbid,
0850	20	11.9	6.96	385.0	9.05	79.0			no odour / sheen.
0854	30	12.3	6.98	389.2	9.05	81.8			as above
0858	40	12.3	6.97	388.5	9.14	82.5			" "
0902	60	12.4	6.96	388.0	9.22	76.8			" "
0907	80	12.4	6.95	379.4	9.29	71.2			" "
0910	100	12.4	6.95	388.7	9.34	74.2			- parameters stable
				SAMPLED					

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C.

Conditions:		Wind:	
Clear	☒	Nill (0 km/h)	☑
Overcast	☐	Low (1 - 5 km/h)	☐
Rainfall:		Moderate (5 - 15 km/h)	☐
low	☐	Strong (> 15 km/h)	☐
moderate	☐		
high	☐		

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: B8

Job Information		Sampling Information		Bore Information	
Client: DWMA		Sample Method: Waterra		SWL: 7.230 m	Logic Check:
Project: 6-monthly gound water sampling		WQ Meter Type: YSI		Date: 3/8/16	Time: ~~1125~~ 1130
Proj. No.: 32.18.151		Flow Cell: Y/N	Pump Depth: ....m	Ref.datum:	Stick Up: 0.87 m
Sampler: J. HUGHES		WLevel Meter Type: Dip / Fox / Int.Fce / Gge		Bore Depth: 19.1 m	Bore Diam.: 0.05 m
		NAPL Check:		Screen From:..... .....m	To:..... m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
1130	10	13.5	6.944	379.2	2.79	84.8		>	Brown, turbid, no sheen /
1135	20	13.6	6.87	386.1	3.40	87.0			odour.
1140	30	13.6	6.36	396.0	2.92	88.7		>	" "
1143	40	13.6	6.32	400.0	4.78	91.4		>	" "
1148	60	13.6	6.73	419.3	5.65	98.1		>	" "
1154	80	13.6	6.74	440.3	6.14	98.4		>	" "
									Parameters Stable
				SAMPLED					

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See CoC.

Conditions:		Wind:	
Clear	☒	Nil (0 km/h)	☐
Overcast	☐	Low (1 - 5 km/h)	☒
Rainfall:		Moderate (5 - 15 km/h)	☐
low	☒	Strong (> 15 km/h)	☐
moderate	☐		
high	☐		

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

B15

Bore ID: ~~B14~~ ~~B15~~

Job Information	Sampling Information	Bore Information
Client: DWMA	Sample Method: via waterra	SWL: 6.586 m Logic Check:
Project: 6-monthly groundwater monitoring	WQ Meter Type: YSI	Date: Time: 0815
Proj. No.: 32191S1	Flow Cell: Y / N Pump Depth: m	Ref.datum: 15.0 Stick Up: 0.3 m
Sampler: S. HUGHES	WLevel Meter Type: Dip / Fox / Int.Fce / Gge	Bore Depth: ~~15.0~~ m Bore Diam.: 0.05 m
	NAPL Check:	Screen From: m To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL ~~change~~ (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
0812	10	14.3	5.87	98.6	0.58	92.1		>	Brown/orange, turbid, strong odour.
0815	15	14.2	5.83	99.8	0.10	92.6			
0818	18	14.2	5.65	98.6	4.02	97.5		>	as above, purging dry?
0823							13.15m	>	purging dry after ~18L
0837							12.66m		
0838	20	13.6	6.07	115.7	4.24	122.6	13.23m	>	purging dry again.
0849							12.85		
			-Sampled	later	in the	Am.			

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C.

Conditions:		Wind:	
Clear	☒	Nill (0 km/h)	☐
Overcast	☐	Low (1 - 5 km/h)	☒
Rainfall:		Moderate (5 - 15 km/h)	☐
low	☐	Strong (> 15 km/h)	☐
moderate	☐		
high	☐		

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: B16

Job Information
Client: DWMA
Project: 6-monthly gw monitoring
Proj. No.: 32181511
Sampler: S. HUGHES

Sampling Information
Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: Y / N
Pump Depth: — m
WLevel Meter Type: Dip / Fox / Int.Fce / Gge
NAPL Check: —

Bore Information
SWL: 7.886 m
Date: 3/8/2016
Ref.datum:
Bore Depth: 15.77 m
Screen From: ..... m To: ..... m
Logic Check:
Time: 1410
Stick Up: 0.7 m
Bore Diam.: ..... m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
1421	10	14.2	6.83	469.4	8.62	104.0		>	Brown, turbid, minor odour?
1426	20	14.2	6.49	471.2	8.90	118.9			no sheen.
1430	30	14.1	6.59	477.1	9.06	112.3		>	as above
1433	40	14.1	6.61	476.4	9.12	110.6		>	as above.
1439	60	14.0	6.71	471.5	9.25	105.2		>	" "
1444	80	14.0	6.75	466.6	9.24	104.1		>	" "
1450	100	14.0	6.78	465.5	6.64	103.9			- parameters stable
			Sampled						

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C.

Conditions:
Clear ☒
Overcast ☐
Rainfall:
low ☒
moderate ☐
high ☐

Wind:
Nill (0 km/h) ☒
Low (1 - 5 km/h) ☐
Moderate (5 - 15 km/h) ☐
Strong (> 15 km/h) ☐

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: B~~B~~17

Job Information
Client: DWMA
Project: 6-monthly gw. monitoring
Proj. No.: 3218151
Sampler: S. HUGHES

Sampling Information
Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: Y (N) Pump Depth: - m
WLevel Meter Type: Dip / Fox / (Int.Fee) / Gge
NAPL Check: -

Bore Information
SWL: 7.372 m Logic Check:
Date: 3/8/2016 Time: 1530
Ref.datum: Stick Up: 0.5 m
Bore Depth: 15.0 m Bore Diam.: m
Screen From: m To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
1530	10	13.8	6.76	470.5	9.02	113.7			> Brown, very turbid, minor
1534	20	13.8	6.77	464.3	9.53	109.1			odour, no sheen.
1538	30	13.7	6.77	451.8	9.41	108.2			> " "
1550	40	13.7	6.76	457.2	9.78	108.3			> no change
1556	60	13.7	6.74	447.1	9.72	109.2			> " "
1602	80	13.6	6.73	432.0	9.63	109.8			> " "
1607	100	13.6	6.75	428.7	9.75	109.7			> parameters stable,
				SAMPLED					

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C.

Conditions:
Clear [X]
Overcast [ ]
Rainfall:
low [ ]
moderate [ ]
high [ ]

Wind:
Nill (0 km/h) [ ]
Low (1 - 5 km/h) [X]
Moderate (5 - 15 km/h) [ ]
Strong (> 15 km/h) [ ]

GHD | MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: B21A

Job Information
Client: DWMA
Project: 6-monthly Groundwater Monitoring
Proj. No.: 32181S1
Sampler: S. HUGHES

Sampling Information
Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: Y (N)
Pump Depth: – m
WLevel Meter Type: Dip / Fox / Interface / Gge
NAPL Check:

Bore Information
SWL: 24.327 m
Date: 2/8/2016
Ref.datum:
Bore Depth: 25.31 m
Screen From: ..... m To: ..... m
Logic Check:
Time: 1340
Stick Up: 0.66 m
Bore Diam.: 0.05 m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See S.O.C

- well purges dry before water begins to purge.

Conditions:
Clear [X]
Overcast [ ]
Rainfall:
low [ ]
moderate [ ]
high [ ]

Wind:
Nill (0 km/h) [X]
Low (1 - 5 km/h) [ ]
Moderate (5 - 15 km/h) [ ]
Strong (> 15 km/h) [ ]

GHD | MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

TDS ≈ 205.4 mg/L

Bore ID: SURFACE WATER

Job Information
Client: DWMP
Project: 6 monthly monitoring
Proj. No.: 32.18151
Sampler: S. HUGHES

Sampling Information
Sample Method: Surface
WQ Meter Type: YSI
Flow Cell: Y / N
Pump Depth: ..... m
WLevel Meter Type: Dip / Fox / Int.Fce / Gge
NAPL Check: .....

Bore Information
SWL: ..... m
Date: 1-2/8/16
Ref.datum: .....
Bore Depth: ..... m
Screen From: ..... m To: ..... m
Logic Check: .....
Time: .....
Stick Up: ..... m
Bore Diam.: ..... m

Time (Date)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (±mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
1/8	S4	9.4	7.17	217.5	[illegible]	36.8			> high flow, Brown, turbid,
"	S6	9.2	7.41	226.3	4.98	50.2			> " " , Brown, turbid
"	S3	8.0	7.63	267.5	4.88	70.8			> flowing, Brown, V. turbid
"	S2	9.3	7.25	221.1	5.11	63.5			> Brown, turbid
"	S1	8.8	7.52	217.8	5.04	75.1			> " "
2/8	SP3	7.3	8.37	287.7	–	7.2			
2/8	[illegible]	9.0	7.73	209.2	3.82	15.2			
2/8	S8	8.3	7.32	261.1	7.06	86.6			> brown, turbid, flowing
2/8	S9	8.7	6.89	248.5	5.44	78.3			strong / high.
2/8	S10	8.0	7.02	249.6	4.03	60.1			

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C.

Conditions:
Clear ☒
Overcast ☐
Rainfall:
low ☐
moderate ☐
high ☐

Wind:
Nil (0 km/h) ☐
Low (1 - 5 km/h) ☒
Moderate (5 - 15 km/h) ☐
Strong (> 15 km/h) ☐

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: B17

Job Information
Client: Duiverton
Project: Dec '16 Haz waste cell comE
Proj. No.: 32181S1
Sampler: S.H

Sampling Information
Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: Y (N)
Pump Depth: .....m
WLevel Meter Type: Dip / Fox / Int.Fce / Gge
NAPL Check: .....

Bore Information
SWL: 8.599 m
Date: 15/12/2016
Logic Check: .....
Time: 11:20
Ref.datum: .....
Bore Depth: 16.0 m
Stick Up: ..... m
Bore Diam.: 0.05 m
Screen From: ..... m To: ..... m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
11:50	5	14.5	7.08	543	0.98	91.5			+ Brown, highly turbid, no odour / sheen.
11:55	10	14.4	6.98	536	0.65	85.0			= as above.
11:59	15	14.4	6.99	533	0.64	83.0			- " "
12:02	20	14.3	6.98	529	0.58	82.2			= " "
12:06	25	13.8	6.97	515	0.66	83.8			
		S → Parameters stable;							
		SAMPLED							

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C

Conditions:
Clear [X]
Overcast [ ]
Rainfall:
low [ ]
moderate [ ]
high [ ]

Wind:
Nil (0 km/h) [ ]
Low (1 - 5 km/h) [X]
Moderate (5 - 15 km/h) [ ]
Strong (> 15 km/h) [ ]

Purging and Sampling Record

Bore ID: B16

Job Information
Client: Divertex
Project: Dec '16 Haz waste cell GME
Proj. No.: 32181.51
Sampler: SH

Sampling Information
Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: Y (N) Pump Depth: — m
WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge
NAPL Check:

Bore Information
SWL: 9.898 m
Date: 15/12/16
Ref.datum:
Bore Depth: m
Screen From: m To: m
Logic Check:
Time: 12:40
Stick Up: 0.3 m
Bore Diam.: 0.05 m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
1:01	5	15.1	7.27	478.8	7.95	131.6		—	Brown, turbid, no odour
1:05	10	15.4	7.25	477.2	8.03	129.5		—	" " " "
1:07	15	15.1	7.24	470.9	8.13	128.1		—	" " " "
1:09	20	15.0	7.20	466.2	7.60	127.6		—	" "
1:12	25	14.4	7.21	481.5	7.76	125.4		—	"
1:15	30	14.4	7.20	450.3	7.45	123.6			

SAMPLED

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C, QC1

Conditions:
Clear [X]
Overcast [ ]
Rainfall:
low [ ]
moderate [ ]
high [ ]

Wind:
Nill (0 km/h) [ ]
Low (1 - 5 km/h) [ ]
Moderate (5 - 15 km/h) [X]
Strong (> 15 km/h) [ ]

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: B15

Job Information
Client: DULVERTON
Project: Dec. '16 Haz. waste cell GME
Proj. No.: 3218151
Sampler: SH

Sampling Information
Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: Y (N) Pump Depth: – m
WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge
NAPL Check:

Bore Information
SWL: 9.374 m
Date: 15/12/16
Ref.datum:
Bore Depth: 15.2 m
Screen From: ..... m To: ..... m
Logic Check:
Time: 10:50
Stick Up: ..... m
Bore Diam.: 0.05 m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
10:56	5	15.6	5.61	120.6	1.57	10.5		–	Turbid, brown/orange, odour, no sheen.
11:02	10	15.9	5.50	114.0	1.88	4.0		–	as above
11:04	13	15.9	5.45	111.3	2.35	-5.0	12.88	–	as above, purging dry.
11:07	15	15.9	5.45	110.3	3.10	-9.5		–	as above, " "
11:11	17	16.0	5.45	110.0	3.19	-9.4		–	" " ~ dry
		left to recharge,							
		sampled @ 17:30pm							

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C.

Conditions:
Clear [x]
Overcast [ ]
Rainfall:
low [x]
moderate [ ]
high [ ]

Wind:
Nill (0 km/h) [x]
Low (1 - 5 km/h) [ ]
Moderate (5 - 15 km/h) [ ]
Strong (> 15 km/h) [ ]

Purging and Sampling Record

Bore ID: B15

Job Information
Client: DULVERTON
Project: Dec. '16 Haz. waste cell GME
Proj. No.: 3218151
Sampler: SH

Sampling Information
Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: Y/N Pump Depth: - m
WLevel Meter Type: Dip / Fox / Int.Fce / Gge
NAPL Check:

Bore Information
SWL: 9.374 m Logic Check:
Date: 15/12/16 Time: 10:50
Ref.datum: Stick Up: m
Bore Depth: 15.2 m Bore Diam.: 0.05 m
Screen From: m To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
10:56	5	15.6	5.61	120.6	1.57	10.5		-	Turbid, brown/orange, odour, no sheen.
11:02	10	15.9	5.50	114.0	1.88	4.0		-	as above
11:04	13	15.9	5.45	111.3	2.35	-5.0	12.98	-	as above, purging dry.
11:07	15	15.9	5.45	110.3	3.10	-9.5		-	as above
11:11	17	16.0	5.45	110.0	3.19	-9.4		-	" " ~ dry
		left to recharge,							
		sampled @ 17:30pm							

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C.

Conditions:
Clear [x]
Overcast [ ]
Rainfall:
low [x]
moderate [ ]
high [ ]

Wind:
Nil (0 km/h) [x]
Low (1 - 5 km/h) [ ]
Moderate (5 - 15 km/h) [ ]
Strong (> 15 km/h) [ ]

GHD | MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: B16

Job Information
Client: Duiverton
Project: Dec '16 Haz. waste cell GME
Proj. No.: 3218151
Sampler: SH

Sampling Information
Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: Y (N) Pump Depth: ~ m
WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge
NAPL Check:

Bore Information
SWL: 9.88 m Logic Check:
Date: 15/12/1 Time: 12:40
Ref.datum: Stick Up: 0.3 m
Bore Depth: m Bore Diam.: 0.05 m
Screen From: m To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
1:01	5	15.1	7.27	478.8	7.95	131.6		-	Brown, turbid, no odour
1:05	10	15.4	7.25	477.2	8.03	129.5		-	" " " "
1:07	15	15.1	7.24	470.9	8.13	128.1		-	" " " "
1:09	20	15.0	7.20	466.2	7.60	127.6		-	" "
1:12	25	14.4	7.21	451.5	7.76	125.4		-	"
1:15	30	14.4	7.20	450.3	7.45	123.6			
					SAMPLED				

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C, QC1

Conditions:
Clear [X]
Overcast [ ]
Rainfall:
low [ ]
moderate [ ]
high [ ]

Wind:
Nill (0 km/h) [ ]
Low (1 - 5 km/h) [X]
Moderate (5 - 15 km/h) [ ]
Strong (> 15 km/h) [ ]

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: B17

Job Information	Sampling Information	Bore Information
Client: Duiverton	Sample Method: Waterra	SWL: 8.599 m Logic Check:
Project: Dec '16 Haz wake well gauge	WQ Meter Type: YSI	Date: 15/12/2016 Time: 11:20
Proj. No.: 32181.51	Flow Cell: Y (N) Pump Depth: m	Ref.datum: Stick Up: m
Sampler: S.H.	WLevel Meter Type: Dip / Fox / Int.Foe / Gge	Bore Depth: 16.0 m Bore Diam.: 0.05 m
	NAPL Check:	Screen From: m To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
11:50	5	14.5	7.08	543	0.98	91.5		+	Brown, highly turbid, no odour / sheen.
11:55	10	14.4	6.98	536	0.65	85.0		+	as above.
11:59	15	14.4	6.99	533	0.64	83.0		-	" "
12:02	20	14.3	6.98	529	0.58	82.2		=	" "
12:06	25	13.8	6.97	515	0.66	83.8			
		S	→ Parameters	stable ;					
			SAMPLED						

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C

Conditions:		Wind:	
Clear	☒	Nill (0 km/h)	☐
Overcast	☐	Low (1 - 5 km/h)	☒
Rainfall:		Moderate (5 - 15 km/h)	☐
low	☐	Strong (> 15 km/h)	☐
moderate	☐		
high	☐		

Purging and Sampling Record

Bore ID: B17

Job Information
Client: Duluerton Landfill
Project: February 2017 GME
Proj. No.: 3218151
Sampler: SH

Sampling Information
Sample Method: Watera
WQ Meter Type: YSI
Flow Cell: (Y) / N
Pump Depth: ~~—~~ m
WLevel Meter Type: Dip / Fox / Int.Fce / Gge
NAPL Check:

Bore Information
SWL: 10.514 m
Date: 2/3/2017
Ref.datum:
Bore Depth: ~~16.0~~ 16.0 m
Screen From: ..... m To: ..... m
Logic Check:
Time: 0930
Stick Up: ~~—~~ -0.5~ m
Bore Diam.: 0.05 m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
0944	0.5	15.9	7.63	506	6.96	86.3			- clear, odour, no sheen.
0947	5	14.0	6.95	539	0.61	92.0			- Brown / orange, sediment, turbid, odour, no sheen.
0950	10	13.9	6.96	535	0.34	84.3			
0952	12	14.4	6.94	539	1.16*	82.7	10.75~		- as above, no change.
0958	16	13.9	6.94	518	0.31	79.6			→ purging dry? *potentially aerated probe due to purging dry.
1002	20	14.1	6.92	519	0.68	79.4			NOPE.
									- as above, no sig. change
				SAMPLED					

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

Purging and Sampling Record

Bore ID: B16

Job Information
Client: Dulverton Landfill
Project: February 2017 GME
Proj. No.: 3218151
Sampler: SH

Sampling Information
Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: (Y) / N Pump Depth: — m
WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge
NAPL Check:

Bore Information
SWL: 11.801 m Logic Check:
Date: 1/3/2017 Time: 1030
Ref.datum: Stick Up: 0.7 m
Bore Depth: 15.77 m Bore Diam.: 0.05 m
Screen From: .....m To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
1040	0.5	17.2	7.45	464.2	6.98	68.9		–	clear, no sed / turb, no odour / sheen
1043	5	14.5	7.16	416.7	7.27	70.8		–	brown, turbid
1047	10	14.7	7.16	427.7	7.51	68.5		–	possibly purging dry? NOPE.
1051	14	14.7	7.16	430.9	7.87	65.8		–	" " as above.
1059	18	14.9	7.22	432.5	7.78	54.1		–	" " "
1105	21	15.6	7.25	438.5	8.42	49.5		–	"
1110	25	14.3	7.22	430.5	7.98	49.6		–	"

SAMPLED

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

Purging and Sampling Record

Bore ID: B15

~3.7m water column

Job Information

Client: Riverton Landfill
Project: February 2017
GME
Proj. No.: 32181511
Sampler: SH

Sampling Information

Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: Y / N Pump Depth:.....m
WLevel Meter Type: Dip / Fox / Int.Fce / Gge
NAPL Check:

Bore Information

SWL: 11.279 m Logic Check:
Date: 1/3/17 Time: 845
Ref.datum: Stick Up: 0.3 m
Bore Depth: 15.0 m Bore Diam.: 0.05 m
Screen From:.....m To:..... m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
0900	0.5	16.4	8.42	106.9	8.08	31.8		-	Grey / brown, turbid, high sed, odour,
0901	2.5	15.6	6.11	94.1	2.45	38.0			no sheen. (first ~.2-.3 clear)
0903	5.0	15.2	5.19	89.1	2.74	107.7	12.754	-	" " increasing sed. + turb.
0907	7.0	15.7	4.97	92.6	5.94*	102.9		-	purging dry *sensor likely
0910	9.0	15.6	4.98	93.6	3.75*	105.9	13.782		oxidised due to bubbles f/ purging dry.
				Left to recharge					
								-	as above, no change,
									air bubbles in tubing
									when attempting to purge.

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

bores dry after ~18L ??

Purging and Sampling Record

Bore ID: ~~BH~~ B12 #

Job Information
Client: Dulverton Landfill
Project: Feb. 2017 GME
Proj. No.: 32191S1
Sampler: SH

Sampling Information
Sample Method: Waterra foot valve
WQ Meter Type: YSI
Flow Cell: Y / (N) Pump Depth: — m
WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge
NAPL Check:

Bore Information
SWL: 4.787 m Logic Check:
Date: 27/2/17 Time: 9:00
Ref.datum: Stick Up: 0.56 m
Bore Depth: 10.53 m Bore Diam.: 0.05 m
Screen From: m To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
9:14	3	14.3	7.14	123.8	2.55	-1.8			- Brown, turbid, odour, no sheen.
9:17	6	14.4	5.78	120.0	2.04	5.8			- as above, no change.
9:19	10	14.5	5.47	118.4	2.10	12.4			- " " " " purging dry.
9:22	15	14.4	5.36	116.9	2.74	20.0	8.79		- no sig. change
9:27	17	14.5	5.30	116.9	2.97	33.0	~~8.787~~		- purging dry.

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

* possibly still back to front w/ B12. (naming wise)

B12 is 14.335 m bgs on logs

✓ B14 – *4.57m

Purging and Sampling Record

Bore ID: "B12"

Job Information	Sampling Information	Bore Information
Client: Dulverton Landfill	Sample Method: Waterra	SWL: 1.737 m — Logic Check:
Project: February 2017 CMT.	WQ Meter Type: YSI	Date: 27/2/2017 — Time: 1140
Proj. No.: 32181S1	Flow Cell: Y / N — Pump Depth: m	Ref.datum: — Stick Up: m
Sampler: SH.	WLevel Meter Type: Dip / Fox / Int.Fce / Gge	Bore Depth: 4.90 m — Bore Diam.: 0.05 m
	NAPL Check:	Screen From: m To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
11:50	3	14.1	7.29	468.8	1.18	-103.8			- Brown, turbid, no odour / sheen.
11:52	6	14.1	7.13	469.8	0.87	-95.0			- as above; no sig. change.
11:54	10	14.2	7.10	468.1	0.74	-92.5			- " " " "
11:57	15	14.2	7.08	465.7	0.73	-90.5			- "
11:59	20	14.1	7.08	462.4	0.81	-86.7			- no change.
12:04	23	14.0	7.14	464.1	3.48	-66.8			- purging dry.
					emptied bucket inbetween readings				

SAMPLED

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

* Possibly swapped w/ B14; still labelled B12.

B14 loaded @ 4.47m by:

Purging and Sampling Record

B11

Bore ID: ~~B3~~ *

Job Information

Client: Dulverton
Project: February 2017 GMS
Proj. No.: 32181511
Sampler: SH

Sampling Information

Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: Y / N Pump Depth: — m
WLevel Meter Type: Dip / Fox / Int.Fce / Gge
NAPL Check:

Bore Information

SWL: 4.954 m Logic Check:
Date: 27/2/2017 Time: 0940
Ref.datum: Stick Up: 0.62 m
Bore Depth: 8.59 m Bore Diam.: 0.05 m
Screen From: ..... m To: ..... m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
10:03	3	12.6	4.24	295.5	1.32	174.4		—	Brown / orange, low turbidity, no
10:06	6	12.6	3.87	336.0	1.54	230.5			sheen, odour.
10:08	10	12.7	3.88	359.9	2.86	257.5		—	as above; no sig. change.
10:11	15	12.7	3.98	356.9	3.38	249.6		—	as above; purging dry.
10:14	~16.5	12.7	4.10	348.8	4.66	243.8	7.375	—	purging dry
								—	purged / purging dry.

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

* formerly known as B11. Purged dry after ~30 L ??

Purging and Sampling Record

Bore ID: B4

Job Information		Sampling Information		Bore Information	
Client: Dulverton Landfill		Sample Method: waterra		SWL: 6.618 m	Logic Check:
Project: February 2017 Cut		WQ Meter Type: YSI		Date: 28/2/17	Time: 12:15
Proj. No.: 32181S1		Flow Cell: (Y) N	Pump Depth: m	Ref.datum:	Stick Up: m
Sampler: SH		WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge		Bore Depth: 20.13 m	Bore Diam.: 0.1 m
		NAPL Check:		Screen From: m	To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
12:28	1	17.0	7.60	562	7.43	114.3			- clear, no odour / sheen
12:34	5	14.4	6.60	1442	0.12	-97.2			- Grey / dark grey, turbid,
12:38	10	14.2	6.60	1451	0.02	-100.1			high sed. load, minor odour,
12:41	15	14.2	6.62	1403	0.23	-94.2			no sheen.
12:44	20	14.3	6.61	1360	0.65	-90.3			- as above, no change.
12:50	25	13.9	6.67	1232	1.46	-79.0			- " " " "
12:52	30	13.9	6.66	1232	1.23	-87.7			- " "
12:55	35	13.9	6.66	12?.3	1.33	-85.6			- less turbid / sediment load.
			SAMPLED						

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

Purging and Sampling Record

Bore ID: B8

Job Information
Client: Dulverton Landfill
Project: February 2017 GMF
Proj. No.: 3218151
Sampler: SH

Sampling Information
Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: Y (N) Pump Depth: — m
WLevel Meter Type: Dip / Fox / Int.Fce / Gge
NAPL Check:

Bore Information
SWL: 10.446 m Logic Check:
Date: 28/2/2017 Time: 0910
Ref.datum: Stick Up: 0.87 m
Bore Depth: m Bore Diam.: 0.1 m
Screen From: m To: m

Time (Am)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
928	5	13.7	7.09	437.3	0.28	-70.6		-	Brown/[illegible], turbid, odour, no sheen.
931	10	13.6	6.89	486.3	0.19	-58.2		-	as above, no change.
934	15	13.7	6.87	491.7	0.15	-55.0		-	" " "
937	20	13.7	6.84	502.0	0.21	-57.9		-	"
941	25	13.6	6.83	500.0	0.31	-47.3		-	"
944	30	13.6	6.83	506.0	0.54	-40.7		-	"

SAMPLED

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

Purging and Sampling Record

Bore ID: B7

Job Information

Client: Dulverton Landfill
Project: February 2017 GME
Proj. No.: 32181S1
Sampler: SH

Sampling Information

Sample Method: Waterra
WQ Meter Type: YSI
Flow Cell: (Y) / N
Pump Depth:.....m
WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge
NAPL Check:

Bore Information

SWL: 3.054 m
Logic Check:
Date: 28/2/2017
Time: 10:30
Ref.datum:
Stick Up: m
Bore Depth: 20.84 m
Bore Diam.: 0.1 m
Screen From:.....m To:..... m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
10:50	5	12.8	7.16	387.1	0.10	-115.9			- Brown, turbidity, high sed. load, no
10:52	10	12.7	6.97	386.7	0.02	-104.9			sheen, odour.
10:55	15	12.8	6.98	386.9	0.01	-105.3			- as above; no change.
10:58	20	12.8	6.97	386.9	" - "	-100.6			- " " " "
11:00	25	12.7	6.97	386.8	" - "	-90.3			- Zero DO?
11:03	30	12.8	6.97	387.2	0.08	-77.4			- no sig. change.
11:06	35	12.7	6.97	386.2	" - "	-66.3			- " "
					SAMPLED				

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

Purging and Sampling Record

Bore ID: B6

Job Information	Sampling Information	Bore Information
Client: 3218151	Sample Method: Waterra	SWL: 2.119 m
Project: Dulverton Landfill February 2017	WQ Meter Type: YSI	Date: 27/2/17
Proj. No.: GMPE	Flow Cell: Y / N	Pump Depth:.....m
Sampler: SH	WLevel Meter Type: Dip / Fox / Int.Fce / Gge	Ref.datum:
	NAPL Check:	Bore Depth: 6.80 m
		Screen From:..... .....m
		Logic Check:
		Time: 10:45
		Stick Up: 0.53 m
		Bore Diam.: 0.01 m
		To:..... m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
10:57	3	13.2	7.37	361.3	1.08	-130.2		-	Clear, clean, no odour / sheen.
11:00	6	13.1	7.00	357.2	0.74	-129.4		-	as above, no sig. change.
11:03	10	13.0	6.90	355.9	0.58	-128.4		-	" " " "
11:06	15	13.0	6.80	355.0	0.46	-125.7		-	"
11:09	20	13.0	6.78	354.4	0.39	-126.0		-	"
11:12	25	12.9	6.82	352.8	1.15*	-114.9		-	no change.
			SAMPLED						

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C.

* DO falling, suspect high reading due to emptying bucket.

Purging and Sampling Record

Bore ID: B2

Job Information

Client: Diverton Landfill
Project: February GME 2017
Proj. No.: 32181S1
Sampler: SH

Sampling Information

Sample Method: watera
WQ Meter Type: YSI
Flow Cell: (Y) N
Pump Depth: ..... m
WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge
NAPL Check: .....

Bore Information

SWL: 7.544 m
Logic Check: .....
Date: 28/2/2017
Time: 1:40
Ref.datum: .....
Stick Up: ..... m
Bore Depth: ..... m
Bore Diam.: 0.1 m
Screen From: ..... m To: ..... m

Time (pm)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
1:48	2	14.3	6.89	2343	0.09	-141.8		-	Black / Grey, brackish, sheen, odour
1:51	5	14.5	6.83	2854	0.48	-127.2		-	as above, + turbid, + sediment load.
1:56	10	13.9	6.86	2726	0.07	-134.0		-	" " " "
2:00	15	13.7	6.86	2708	0.36	-142.7		-	"
2:03	20	13.7	6.86	2661	0.63	-147.0		-	"
2:06	25	13.4	6.86	2648	0.94	-149.2		-	"

SAMPLED

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

QC1 & QQC1

GHD MANAGEMENT ENGINEERING ENVIRONMENT

Purging and Sampling Record

Bore ID: Surface Waters

Job Information (Landfill V)
Client: Dulverton
Project: February 2017 GME
Proj. No.: 3218151
Sampler: SH

Sampling Information
Sample Method: Surface
WQ Meter Type: YSI
Flow Cell: Y / N Pump Depth: m
WLevel Meter Type: Dip / Fox / Int.Fce / Gge
NAPL Check:

Bore Information
SWL: m Logic Check:
Date: 27/2/2017 Time:
Ref.datum: Stick Up: m
Bore Depth: m Bore Diam.: m
Screen From: m To: m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
Stable When:		+/- 0.2 C	+/- 0.05 pH	+/- 3%	+/- 10%	+/- 10 mV			
10:30	SH	13.2	7.43	37.6	*10.88	129.8			V. minor turbidity, no sheen/odour/flocculation
11:45	S6	13.0	7.76	381.8	11.15	-57.1			as at SH; fish.
1:00	SP3	19.6	8.90	447.5	8.34	-0.8			- gross (strong odour, sheen, orange/brown)
1:30	S9	14.4	8.08	395.6	9.66	7.2			- clear, clean, no sheen/odour.
2:00	S7	14.0	7.76	2875	1.43	53.1			- stagnant, odour, no sheen, brown, turbid.
2:15	S8	FILLED		IN	- not	flowing			
3:00	S3	—	—	—	—	—	—	—	DRY
3:05	S2	14.3	7.91	379.1	10.59	-25.0			
1.5H	S2	16.9	8.20	383.3	12.54	-37.5			
1:15	S10	—	—	—	—	—	—	—	DRY

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

See C.O.C.

Conditions:
Clear ☐
Overcast ☒
Rainfall:
low ☐
moderate ☐
high ☐

Wind:
Nill (0 km/h) ☐
Low (1 - 5 km/h) ☒
Moderate (5 - 15 km/h) ☐
Strong (> 15 km/h) ☐

Purging and Sampling Record

Bore ID: B21A

Job Information
Client: Dulverton Landfill
Project: February 2017 CMR
Proj. No.: 32181S1
Sampler: SH

Sampling Information
Sample Method: Bailer*
WQ Meter Type: WST
Flow Cell: Y (N/A)
Pump Depth: .....m
WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge
NAPL Check: .....

Bore Information
SWL: 24.369 m
Logic Check: .....
Date: 27/2/2017
Time: 2:30pm
Ref.datum: .....
Stick Up: ..... m
Bore Depth: 25.5 m
Bore Diam.: 0.05 m
Screen From: ..... m To: ..... m

Time (.....)	Volume (L)	Temp (°C)	pH (pH units)	Elec.Cond (.....)	Dis.Oxygen (.....)	Ox-Red Pt. (± mV)	SWL change (m)	(.....)	Comment: Colour, turbidity, sediment load, sheen, odour
2:46	1	14.9	7.68	714	1.57	-19.8			- clear, grey sediment, no odour / sheen.
2:48	1.5	14.4	7.36	698	1.12	-92.1			- purging dry. as above.
2:51	2.0	14.6	7.25	699	1.44	-104.9			- v very little returns in bailer
2:55	2.5	14.5	7.22	697	1.59	-111.7			- as above; dry
									Sampled next day.

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc
* Bailer used due to waters being unsuitable (see report for details).

Appendix E - Laboratory Results

GHD

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3218151-8732/G:\32\18151\Dulverton Regional Waste Annual Report_CP.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	C. Palfreyman	R. Virtue	On File	R. Virtue	On File	26/04/2017