

Breen Resources Pty Ltd

Breen Resources Facility - EIS
Groundwater Impact Assessment

April 2021

Executive summary

Overview

Breen Resources Pty Ltd (Breen) owns and operates the Existing Breen Resource Facility at 330 Captain Cook Drive, Kurnell.

Breen is proposing to construct and operate a new integrated resource recovery facility to consolidate all functional recycling activities within the eastern part of the Proposal Site while delivering recreational space and other publicly accessible Embellished Marang Parklands in the western part of the Proposal Site to the community.

Ethos Urban has been engaged by Breen to author an Environmental Impact Statement (EIS) to support a development application for approval of the Proposal under Part 4 of the New South Wales (NSW) *Environmental Planning and Assessment Act 1979* (the EP&A Act). The EIS is being prepared in accordance with the provisions of the EP&A Act.

This report has been prepared by GHD to provide an assessment of groundwater impacts across the Proposal Site as an input to the EIS. This report addresses the Secretary of the NSW Department of Planning and Environment's Environmental Assessment Requirements (SSD-10412) dated 14 February 2020.

The assessment concludes that with the proposed mitigation and monitoring measures recommended, the identified potential adverse groundwater impacts are expected to be manageable and negligible.

Assessment method

The assessment includes a detailed desktop assessment coupled with a targeted site investigation with subsequent development of a conceptual model on which groundwater impacts associated with the Proposal have been assessed. A qualitative and analytical approach has been adopted to characterise the impacts to groundwater quality and quantity associated with the Proposal in the context of the NSW groundwater impacts assessment requirements and the Secretary's Environmental Assessment Requirements (SEARS). These methods were considered to be suitable to adequately characterise and manage potential impacts in accordance with the requirements of the SEARS. The findings of the assessment area summarised below.

Assessment findings

An assessment of water quality across the Proposal Site and at down-gradient receptors (being Quibray Bay, Weeney Bay and dune ponds) suggests that:

- While there are concentrations of contaminants present in on-site leachate and groundwater above adopted ecological, aquaculture and human health the impacts at down gradient receptors are not clearly discernible from those associated with the wider urban and industrial environment.
- Water quality within on-site infiltration ponds is generally of better quality than surrounding groundwater, as such infiltration via the ponds is currently expected to improve the quality of the surrounding groundwater.
- The water quality in the nearest dune pond (adjacent to the south western boundary of the Proposal Site) appears to be largely un-impacted by the Proposal with concentrations in surface water in the ponds primarily being below adopted ecological and human health criteria.

- The existing groundwater quality migrating off-site is within the current beneficial use potential of the nearest surrounding registered groundwater wells. It is also noted that the sand mine voids on the Besmaw property to the east are being backfilled under similar EPL conditions to that present at the eastern end of the Proposal Site and any registered groundwater wells on the Besmaw property will be preferentially influenced by those activities.
- The existing groundwater quality has a high acid neutralising capacity which will reduce the potential for the generation of acid sulfate soils associated with the Proposal.

There will be a large overall reduction in the generation of leachate associated with the Proposal relative to existing conditions, which is expected to result in groundwater of improved quality and lower volume migrating off-site. This effect will be most evident in western areas of the Proposal Site and represents a positive impact of the Proposal. The water quality produced by the growing medium used to create the Embellished Marang Parkland (Comprising VENM/ENM and material that meets a resource recovery order) is expected to be markedly better than existing leachate quality and any discharge will be offset by the large reduction in leachate being created by the Proposal Site.

Further to the above, the improved water quality from reduced leachate will be augmented by cleaner surface water run-off that is less affected by site activities. Pond infiltration volumes (and therefore cleaner water inputs) are also expected to increase near the new Resource Recovery Facility.

A monitoring program is proposed to monitor and respond to the emergence of any unforeseen impacts.

Groundwater abstraction for site use from a water supply well and or infiltration ponds is simulated to lower the groundwater table below minimum historical levels and expose PASS. A groundwater management plan (or acid sulfate soils management plan) will be developed for the Proposal Site that will consider options for preventing exposure of PASS by groundwater abstraction. A monitoring program has been proposed to provide input to this assessment and monitor for emerging impacts associated with potential impact. This includes further characterisation of baseline minimum groundwater elevations and monitoring of abstraction point water quality.

A reduction in groundwater elevations associated with reduced rainfall infiltration into landfills across the entire Proposal Site will occur. This has potential to decrease minimum groundwater elevations below historical minimums, albeit at small amounts, with exposure of PASS. The potential for impacts is considered to be further reduced by the high acid neutralising capacity of groundwater within and around the Proposal Site. Impacts could occur at downgradient GDE's in Quibray Bay, Weeney Bay and the dune ponds and at recreational users and aquatic ecosystems in the dune ponds, although the probability of occurrence is expected to be low. An acid sulfate soils management plan is proposed to be developed in accordance with relevant Australian (Water Quality Australia, June 2018) and NSW (ASSMAC, 1998) guidance to manage this potential impact. A management and monitoring program is also proposed to be developed in accordance with the Acid Sulfate Soil Manual (ASSMAC, 1998) and Australian guidance (Water Quality Australia, June 2018) to characterise and respond to the emergence of impacts associated with exposure of acid sulfate soils.

There will be an inherent potential for groundwater impacts from leaks and spills during:

- Construction of the Embellished Marang Parklands, playing fields (which will be carried out under a different development consent) (including decommissioning of the current wheel wash pond)

- Construction and operation of the New Resource Recovery Facility
- Construction and operational management plans will be implemented for the Proposal Site and will have appropriate procedures to manage these potential impacts. This will include:
- Emergency spill response protocols for managing clean-up of spills substances with the potential to contaminate groundwater
- Adequate and appropriate storage and handling of chemicals to reduce the potential for spills or infiltration into groundwater.
- Maintenance works practices and procedures that minimise the construction and operational footprint and prevent the liberation of dirty water from active areas and that prevent mixing with clean water from non-active areas.

Due to an expected improvement in groundwater quality migrating off-site, associated with the Proposal, cumulative impacts within the surrounding receiving environment are expected to improve. Any reduction in groundwater elevations at the Proposal Site boundary are not expected to extend to surrounding developments due to unchanged recharge conditions off-site.

A monitoring program is proposed to monitor for and respond to the emergence of potential adverse impacts. The monitoring program builds on the existing program required under the current EPL (EPL 4608) but with additional monitoring points to:

- Characterise/verify the improvement in groundwater quality associated with a reduction in leachate being generated from historical landfilling activities.
- Characterise/verify the improvement in surface water quality infiltrating (via infiltration ponds) to groundwater associated with improved site practices and land cover.
- Identify and respond to the potential for generation of acid sulphate soils on-site and off-site.
- Characterise the emergence of potential impacts associated with the New Resource Recovery Facility located in the eastern portion of the Proposal Site.

With the proposed mitigation and monitoring measures recommended, the identified potential adverse groundwater impacts are expected to be manageable and negligible.

Groundwater has been historically managed across the entire Proposal Site through a groundwater monitoring program required as part of the EPL. This existing monitoring program has been updated as part of this Groundwater Impact Assessment report and will need to continue for the life of the development.

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Definitions/terminology

Term	Definition
Associated facilities	Features ancillary to the resource recovery facility – including parking, wheel washes, recovered water basins, internal roadways, fencing and visual screening, signage, customer support facilities, storage areas and any other plant equipment or infrastructure that is ancillary to the operation of the Landfill or New Resource Recovery Facility that may need to be updated, replaced or installed from time to time.
Breen	Breen Resources Pty Ltd
C&D	Construction and Demolition Waste including excavated material such as rock and soil, waste asphalt, bricks, concrete, plasterboard, timber and vegetation, asbestos and contaminated soil
C&I	Commercial and Industrial Waste, being mixed waste sourced from manufacturers, shops and businesses.
ENM	Excavated Natural Material
EIS	Environmental Impact Statement
EPL	Environment Protection Licence issued by the Environment Protection Authority under the *Protection of the Environment Operations Act 1997*
Embellished Marang Parklands	The Marang Parkland as now proposed to be delivered as part of this SSDA, which contain a range of improvements and embellishments over and above the 2010 Voluntary Planning Agreement commitments.
Existing Breen Resources Facility	Existing facility owned by Breen Property Pty Ltd and operated by Breen Resources Pty Ltd at 330 Captain Cook Drive, Kurnell which receives excavated materials and selected C&D waste, and carries out site restoration by application of these materials to land in accordance with DA269/90 on: • Lot 1122 in DP794114 (Lot 1122); • Lot 1123 in DP794114 (Lot 1123); • Lot 5 in DP1158627 (Lot 5); Lot 6 in DP1158627 (Lot 6)
Former Landfill Area	Parts of the Existing Breen Resources Facility that were historically managed under one license as one site and used for landfilling pursuant to DA269/90 and EPL 4608, but where landfilling has since ceased, comprising parts of Lots 1122, 1123 and Lot 6 (noting that landfilling remains active on Lot 5).
Landfill	A landfill is an engineered, in-ground facility for the safe and secure disposal of waste by applying the waste to the land.
Light residual waste processing	Part of the proposed New Resource Recovery Facility and located within the processing buildings. Includes processing of residual light waste materials and light C&D and C&I waste. Processing would include sorting, shredding and screening of material to extract recyclables.
Marang Parklands	The regional recreation facilities and parklands proposed under the 2010 Voluntary Planning Agreement (VPA).
New Resource Recovery Facility	Proposed new facility on Lot 5 DP1158627 to receive and process up to 650,000 tonnes per year of C&D and non-putrescible C&I wastes. The New Resource Recovery Facility comprises: • Waste processing building – incorporating the Recycling Plant and light residuals processing • Soils processing building – incorporating soil processing plant • Concrete processing building – incorporating processing plant for concrete, aggregate, brick, tiles, rock and other similar materials. • Three weighbridges and an internal weighing zone • Site office and administration building • Workshop

Term	Definition
	• Parking area • Three wheel washes • Two recovered water basins • Internal roadways • Fencing and visual screening • Stockpiles and storage areas Skip bin storage area
Playing Fields	The playing fields and associated works approved under: • DA11-0665; • DA11-0941; • DA12-0083; • DA12-0439; and DA12-1066.
Proposal Site	The entirety of the Existing Breen Resources Facility, being Lot 1122 and Lot 1123, and Lot 5 and Lot 6
Recycling plant	Part of the New Resource Recovery Facility and located within the processing building. Includes plant and equipment to pre-process incoming C&D and C&I waste streams and separate waste into various recyclables using size, density and other separation technology.
SEARs	Secretary's Environmental Assessment Requirements. In this case SSD-10412 dated 14 February 2020.
SRF	Solid Recovered Fuel
SSDA	State significant development application
The Proposal	• Construction and operation of a resource management facility, comprising: - A resource recovery facility on Lot 5 to process up to 650,000 tonnes per year of C&D and non-putrescible C&I wastes, including consolidation of existing waste management activities within this part of the Proposal Site. - A waste disposal facility being the continuation of current landfilling, land rehabilitation operations and contouring by permanent application of some of the residual waste materials from the New Resource Recovery Facility to land on Lot 5. • Demolition and/or relocation to Lot 5 (as required) of the Existing Breen Resources Facility on Lots 1122, 1123 and 6 (this includes those parts of Lots 1122, 1123 and 6 that will comprise the Playing Fields). • Capping, closing and contouring areas within Lots 1122, 1123 and Lot 6 with suitable material recovered from the New Resource Recovery Facility and the material currently stockpiled on site that meets a relevant 2014 resource recovery orders. This includes ensuring a consistent and appropriate land form between the Embellished Marang Parklands and Lot 5. Some specific material would be imported to the site for capping and covering, such as low permeability clay. • Delivery of activated community space in the form of the Embellished Marang Parklands on Lots 1122, 1123 and Lot 6.
VENM	Virgin Excavated Natural Material
VPA	The Voluntary Planning Agreement entered into between Breen Holdings Pty Ltd (subsequently novated to Breen Property), Australand Kurnell Pty Ltd (now renamed Frasers Property Australia Limited) and Sutherland Shire Council in June 2010 which requires: • A staged transfer of 91 ha of land to public ownership for the purpose of environmental conservation and public open space.

Term	Definition
	• Construction of regional recreation facilities, including 10 playing fields, a skate park, 3 amenities buildings, walking and cycling tracks, picnic facilities and associated parking for over 400 cars. • Rehabilitation and landscaping of degraded land previously dredged for sand mining to support an ecological 'green corridor' stretching from the Towra Point Nature Reserve to the ocean at Wanda Beach.
DA269/90	A consent applying across the Proposal Site which provides for the establishment of a depot to receive excavated materials and selected demolition materials (including bricks, tiles and concrete spall), and for the restoration of the land by application of the materials to the land.
DA11-0665	A consent applying across part of the Proposal Site (i.e. parts of Lot 1122, Lot 11223, Lot 5 and Lot 6) as well as adjacent land, which provides a masterplan for the construction of playing fields in accordance with VPA. DA11-0665 is a Staged Development Consent, and subsequent detailed approvals are provided under the following related consents: • DA11-0941 for Stage 1B playing fields bulk earthworks • DA12-0083 for Stage 2 playing fields and the roads, services and landscaping for Stage 1B. • DA12-0439 for Stage 3 playing fields. • DA12-1066 for Stage 1C skate park. DA11-0665 also included the detailed development consent for the first stage of works, being the development of the Stage 1A playing fields on Lot 1 DP1101922.
DA11-0941	A consent applying across part of Lot 1122 for the development of the Stage 1B playing fields bulk earthworks. DA11-0941 is a Stage 2 consent, related to the partial delivery of the masterplan approved under Staged Development Consent DA11-0665.
DA12-0083	A consent applying across part of Lot 1122 and part of Lot 6 for the development of the Stage 2 playing fields and the roads, services and landscaping for Stage 1B playing fields. DA12-0083 is a Stage 2 consent, related to the partial delivery of the masterplan approved under Staged Development Consent DA11-0665.
DA12-0439	A consent applying across part of Lot 1122 for the development of the Stage 3 playing fields. DA11-0439is a Stage 2 consent, related to the partial delivery of the masterplan approved under Staged Development Consent DA11-0665.
DA12-1066	A consent applying on Lot 1 DP1101922 for the development of the Stage 1C skate park. DA11-0941 is a Stage 2 consent, related to the partial delivery of the masterplan approved under Staged Development Consent DA11-0665.

1. Introduction

1.1 Background

Breen Resources Pty Ltd (Breen) owns and operates the Existing Breen Resource Facility at 330 Captain Cook Drive, Kurnell comprising:

- Lot 1122 DP794114 (Lot 1122)
- Lot 1123 DP794114 (Lot 1123)
- Lot 5 DP1158627 (Lot 5)
- Lot 6 DP1158627 (Lot 6)

The Existing Breen Resources Facility currently receives excavated materials and selected construction and demolition (C&D) waste, and carries out site restoration by application of these materials to land.

Parts of the Existing Breen Resources Facility (Lot 1122 and Lot 1123, and Lot 6) are also subject to a Voluntary Planning Agreement (VPA) which requires the future provision of regional recreation facilities and parklands (named by Sutherland Shire Council as the Embellished Marang Parklands).

The Existing Breen Resources Facility infrastructure is located on land that, subject to approval of this Proposal will become developed Stages 2 and 3 of the Embellished Marang Parklands playing fields.

To deliver the Embellished Marang Parklands on Lots 1122 and 1123 and Lot 5, parts of the Existing Breen Resources Facility need to be demolished and/or relocated.

Breen is therefore proposing to construct and operate a new integrated resource recovery facility to consolidate all functional recycling activities within the eastern part of the Proposal Site, being on Lot 5. This will allow Breen to deliver the recreational space and other publicly accessible Embellished Marang Parklands in the western part of the Proposal Site to the community. It will also provide improved recycling capability in line with NSW Government priorities and targets to increase resource recovery from the C&D and C&I sectors.

The Proposal is comprised of the delivery of the Embellished Marang Parklands, the continuation of landfilling on the residual parts of Lot 5 and the construction of the New Resource Recovery Facility.

The Proposal will allow Breen to deliver this activated recreational space and other publicly accessible parklands in the western part of the Proposal Site to the community in accordance with the VPA.

The Proposal would contribute to the delivery of quality green, open and public space at Kurnell, supporting the Premier's priority to "increase the tree canopy and green cover across Greater Sydney by planting one million trees by 2022" and support the delivery of the Sydney Green Grid Objectives. The Proposal would also contribute to achieving the NSW Government's resource recovery targets as outlined in both the National Waste Policy: Less waste more resources and the NSW "Waste and Resource Recovery Strategy 2014-2021" by investing in technology to improve the quality of recycling activities at the Proposal Site, a key priority for the NSW EPA.

1.2 Purpose

Ethos Urban has been engaged by Breen to author an Environmental Impact Statement (EIS) to support a development application for approval of the Proposal under Part 4 of the New South Wales (NSW) *Environmental Planning and Assessment Act 1979* (the EP&A Act). The EIS is being prepared in accordance with the provisions of the EP&A Act.

This report has been prepared by GHD to provide an assessment of groundwater impacts as an input to the EIS. This report addresses the Secretary of the NSW Department of Planning and Environment's Environmental Assessment Requirements (SSD-10412) dated 14 February 2020.

1.3 Objectives

The objective of this report is to address the SEARS related to groundwater by:

- Describing the existing regional and local hydrogeological environment
- Assessing the impacts of constructing and operating the Proposal on groundwater
- Recommending measures to mitigate the impacts identified for construction and operation

1.4 The Proposal Site

1.4.1 Location

The Proposal Site is located within the Sutherland Shire Local Government Area, approximately 12 kilometres south of the Sydney Kingsford Smith Airport. The Proposal Site is situated on the Kurnell Peninsula, positioned between Quibray Bay (within Botany Bay) to the north and Bate Bay (being Cronulla and Wanda beaches) to the south. It is currently accessible from Captain Cook Drive and Lindum Road.

Figure 1-1 shows the location of the Proposal Site.



Figure 1-1 Proposal Site location

1.4.1 Site context

The Proposal Site is generally bounded to the north by Captain Cook Drive, which provides access from North Cronulla through to the village of Kurnell, as well as the main access to the existing Breen Resources Facility. Further to the north of Captain Cook Drive are the foreshores and waters of Botany Bay, including the Towra Point Nature Reserve.

Near the eastern end of the Proposal Site, Sporting Field No. 1 and the Skate Park have recently been constructed on Lot 1 DP 1101922 and are now operational. This new recreational area represents the closest existing sensitive receptor to the eastern part of the Proposal Site, where the resource recovery facility is proposed to be located.

An electricity transmission line easement runs along this boundary, between the Proposal Site and the Sporting Field No. 1 and Skate Park recreational area. The easement contains Ausgrid 132kV overhead electricity transmission lines. Further to the west, Hockey Fields No. 2 and No. 3 have also already been constructed on Lot 111 DP777967 and part of Lot 1123 DP794114, and are now operational.

To the south, the Proposal Site adjoins the Heritage Sand Dune and Cronulla State Park, which leads to Wanda Beach, fronting onto Bate Bay.

To the east, the Proposal Site is bounded by an unconstructed extension of Lindum Road, within which a pedestrian footpath has been constructed for beach and foreshore access. Beyond the Lindum Road reserve is Holt Land Rehabilitation Centre and is a sand mining site that has been progressively mined for construction sand and backfilled with virgin excavated natural materials.

To the west, the Proposal Site adjoins Charlotte Breen Memorial Reserve and Sydney Water's Cronulla wastewater treatment plant. Beyond Charlotte Breen Memorial Reserve to the south west is the new residential suburb of Greenhills Beach, comprising low density residential housing.

1.5 Proposal overview

The Proposal is comprised of the delivery of the Embellished Marang Parklands, the continuation of landfilling on the residual parts of Lot 5 and the construction of the New Resource Recovery Facility.

Specifically, the Proposal involves the following key integrated components:

- Construction and operation of a resource management facility, comprising:
  - A New Resource Recovery Facility on the eastern part of the Proposal Site (Lot 5), including consolidation of existing waste management activities within this part of the Proposal Site.
  - A waste disposal facility, being the continuation of current land restoration, landfilling and contouring operations at the Proposal Site by permanent application of some of the residual waste materials from the New Resource Recovery Facility to land on Lot 5.
- Use of suitable material processed by the New Resource Recovery Facility to cap, contour and re-profile areas of the Proposal Site and to construct the Embellished Marang Parklands on Lots 1122, 1123 and Lot 6.
- Re-profiling of parts of the Proposal Site within Lots 1122, 1123 and 6, with some existing waste materials from those lots.
- Delivery of an activated and integrated community space in the form of the Embellished Marang Parklands on Lots 1122,1123 and Lot 6, to provide a superior parkland to that

proposed under the VPA as detailed in Section 4.4.3 of the EIS (referred to as the Embellished Marang Parklands). This would include, among other things, integrated water usage and management and utilising personnel, plant, material and infrastructure across the whole of the Site.

To enable the above Proposal, the Existing Breen Resources Facility infrastructure on Lots 1122, 1123 and 6 (this includes those parts of Lot 1122 and 1123 and Lot 6 that will comprise the Playing Fields) will be demolished and/or relocated (as required) to Lot 5.

These are shown on Figure 1-2.



Figure 1-2 Proposal – key components

1.6 Definitions

The following terms are used within this report:

- 'The Proposal' is defined through Section 1.5.
- The 'Proposal Site' refers to the land the subject of the SSDA, which also reflects the entirety of the Existing Breen Resources Facility, being Lot 1122 and Lot 1123, and Lot 5 and Lot 6.

1.7 Secretary Environmental Assessment Requirements and agency requirements

The specific SEARs and agency requirements addressed in this report are summarised in Table 1-1 and Table 1-2.

Table 1-1 SEARs relevant to this assessment

Requirements	Where addressed in this report
Soil and Water – the EIS must address the following specific matters:	
Characterisation of the nature and extent of any contamination of the site based on the historic use as a landfill and a description of proposed measures.	Section 3 (Section 3.15)
An assessment of potential impacts to soil and water resources, topography, hydrology, groundwater, drainage lines, watercourses and riparian lands on or nearby the site, including mapping and description of existing background conditions and cumulative impacts.	Sections 5 (groundwater only)
A detailed site water balance including identification of water requirements for the life of the project, measures that would be implemented to ensure an adequate and secure water supply is available for the proposal and a detailed description of the measures to minimise the water use at the site.	Refer to the surface water management assessment (Cardno, 2021). A description of the groundwater balance for the site is provided in Sections 3.11 and Section 6.3.
Characterisation of water quality at the point of discharge to surface and/or groundwater against the relevant water quality criteria (including details of the contaminants of concern that may leach from the waste into the wastewater and proposed mitigation measures to manage any impacts to receiving waters and monitoring activities and methodologies).	Section 3.15
The assessment must include details of proposed surface and groundwater monitoring.	Section 6
Details of stormwater/wastewater management system including the capacity of onsite detention system(s), onsite sewage management and measures to treat, reuse or dispose of water.	Refer to the surface water management assessment (Cardno, 2021)
A description of erosion and sediment controls	Refer to the surface water management assessment (Cardno, 2021)
A detailed flooding assessment.	Refer to the Surface water management assessment (Cardno, 2021)

Table 1-2 Agency recommendations

Agency	Recommendations	Where addressed in this report
NSW Department of Planning Industry and Environment (DPIE) – DPI Strategy and Policy	DPI suggest that the following options be undertaken: • If Aquifer Interference Approval is not required for the project no additional groundwater monitoring need be conducted	The Proposal is considered to be an aquifer interference activity as indicated in Section 2.1.1 and has been assessed accordingly
	• If Aquifer Interference Approval is required for the project then it is mandatory that an impact assessment to estimate annual contaminant loads leaving the site be conducted. This will assist in quantifying the impact on the water quality of the bays nearby	
NSW Department of Planning Industry and Environment (DPIE) – Climate Change and Sustainability	**9.0** The EIS must map the following features relevant to water and soils including: • Acid Sulfate Soils (Class 1, 2, 3 or 4 on the Acid Sulfate Soil Planning Map).	Section 3 (excluding proposed intake and discharge locations as there are none proposed other than existing and future infiltration ponds, which are mapped. Please refer to the ecological report for characterisation relative to the biodiversity assessment method
	• Rivers, streams, wetlands, estuaries (as described in s4.2 of the Biodiversity Assessment Method	
	• Wetlands as described in s4.2 of the Biodiversity Assessment Method.	
	• Groundwater	
	• Groundwater dependent ecosystems	
	• Proposed intake and discharge locations	
	10.0 The EIS must describe background conditions for any water resource likely to be affected by the development, including: • Existing surface and groundwater	Section 3, particularly Sections 3.8 to 3.11 for groundwater levels and volumes
	• Hydrology, including volume, frequency and quality of discharges at proposed intake and discharge locations.	Section 3 and the surface water management assessment (Cardno, 2021)
	• Water Quality Objectives (as endorsed by the NSW Government http://www.environment.nsw.gov.au/ieo/index.htm) including groundwater as appropriate that represent the community's uses and values for the receiving waters	Sections 2.2.2 and 3.15 for groundwater quality and environmental values
	• Indicators and trigger values/criteria for the environmental values identified at (c) in accordance with the ANZECC	Sections 2.2.2 and 3.15 for groundwater

Agency	Recommendations	Where addressed in this report
	(2000) Guidelines for Fresh and Marine Water Quality and/or local objectives, criteria or targets endorsed by the NSW Government	quality and environmental values.
	• Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions http://www.environment.nsw.gov.au/research-and- publications/publications-search/risk-based-framework-for-considering-waterway- health-outcomes-in-strategic-land-use-planning	This report has been developed in accordance with the risk-based flowchart present in the framework document. It is noted that this framework is based on surface water run-off which is primarily dealt with in the surface water management assessment (Cardno, 2021)
	11.0 The EIS must assess the impact of the development on hydrology, including: • Water balance including quantity, quality and source	Section 5 Components of this recommendation are also provided in the surface water management assessment (Cardno, 2021) and the biodiversity technical report
	• Effects to downstream rivers, wetlands, estuaries, marine waters and floodplain areas	Section 5.3
	• Effects to downstream water-dependent fauna and flora including groundwater dependent ecosystems	Section 5.3
	• Impacts to natural processes and functions within rivers, wetlands, estuaries and floodplains that affect river system and landscape health such as nutrient flow, aquatic connectivity and access to habitat for spawning and refuge (e.g. river benches)	Section 5.3
	• Changes to environmental water availability, both regulated/licensed and unregulated/rules-based sources of such water	Section 5.3
	• Mitigating effects of proposed stormwater and wastewater management during and after construction on hydrological attributes such as volumes, flow rates, management methods and re-use options	Refer to the surface water management assessment (Cardno, 2021)

Agency	Recommendations	Where addressed in this report
	Identification of proposed monitoring of hydrological attributes	Section 6.7
NSW Environmental Protection Authority (EPA)	**B Proposal** **2.0 Description of the proposal** ***General*** Outline cleaner production actions, including: e) Water management system including all potential sources of water pollution, proposals for re-use, treatment etc, emission levels of any wastewater discharged, discharge points, summary of options explored to avoid a discharge, reduce its frequency or reduce its impacts, and rationale for selection of option to discharge	Section 1 and Section 5 Refer to the surface water management assessment (Cardno, 2021)
	Water Provide details of the project that are essential for predicting and assessing impacts to waters including: • The quantity and physio-chemical properties of all potential water pollutants and the risks they pose to the environment and human health, including the risks they pose to Water Quality Objectives in the ambient waters (as defined on http://www.environment.nsw.gov.au/ieo/index.htm, using technical criteria derived from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC 2000)	Section 3.15
	• The management of discharges with potential for water impacts.	The surface water management assessment (Cardno, 2021) describes the potential for offsite discharge and surface water quality A discussion of existing groundwater quality discharging from the site and impacts associated with the Proposal are provided in Sections 3.15 and 5.3
	• Drainage works and associated infrastructure; land-forming and excavations; working capacity of structures; and water resource requirements of the proposal.	Refer to the surface water management assessment (Cardno, 2021)

Agency	Recommendations	Where addressed in this report
	Outline site layout, demonstrating efforts to avoid proximity to water resources (especially for activities with significant potential impacts e.g. effluent ponds) and showing potential areas of modification of contours, drainage etc.	Refer to the surface water management assessment (Cardno, 2021)
	Outline how total water cycle considerations are to be addressed showing total water balances for the development (with the objective of minimising demands and impacts on water resources). Include water requirements (quantity, quality and source(s)) and proposed storm and wastewater disposal, including type, volumes, proposed treatment and management methods and re-use options.	Existing licences are presented in Section 2.1.1 and have been assessed as requiring removal to other areas of the Proposal Site as part of the approval
	4. Consideration of alternatives and justification for the proposal Consider the alternatives and justification for the proposal • Waste and water management	Refer to the surface water management assessment (Cardno, 2021)
	C Location **4. Water** Describe the catchment including proximity of the development to any waterways and provide an assessment of their sensitivity/significance from a public health, ecological and/or economic perspective. The Water Quality and River Flow Objectives on the website: http://www.environment.nsw.gov.au/ieo/index.htm should be used to identify the agreed environmental values and human uses for any affected waterways. This will help with the description of the local and regional area.	Section 3, Section 3.15
	E The Environmental Issues **4. Water** ***Describe baseline* conditions** • Describe existing surface and groundwater quality – an assessment needs to be undertaken for any water resource likely to be affected by the proposal and for all conditions (e.g. a wet weather sampling program is needed if runoff events may cause impacts). *Note: Methods of sampling and analysis need to conform with an accepted standard (e.g. Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC 2004) or be approved and*	Section 3, Section 3.15 The sampling methodology adopted for the field investigations are provided in Section 6 of the Contamination Status Report (GHD, 2021)

Agency	Recommendations	Where addressed in this report
	analyses undertaken by accredited laboratories)	
	• Provide site drainage details and surface runoff yield.	Refer to the surface water management assessment (Cardno, 2021)
	• State the ambient Water Quality and River Flow Objectives for the receiving waters. These refer to the community's agreed environmental values and human uses endorsed by the Government as goals for the ambient waters. These environmental values are published on the website: http://www.environment.nsw.gov.au/ieo/index.htm. The EIS should state the environmental values listed for the catchment and waterway type relevant to your proposal. NB: A consolidated and approved list of environmental values are not available for groundwater resources. Where groundwater may be affected the EIS should identify appropriate groundwater environmental values and justify the choice.	Section 2.2.2 and Section 3.15
	• State the indicators and associated trigger values or criteria for the identified environmental values. This information should be sourced from the ANZECC 2000 Guidelines for Fresh and Marine Water Quality (http://www.environment.gov.au/water/publications/quality/nwqms-guidelines-4-vol1.html) (Note that, as at 2004, the NSW Water Quality Objectives booklets and website contain technical criteria derived from the 1992 version of the ANZECC Guidelines. The Water Quality Objectives remain as Government Policy, reflecting the community's environmental values and long-term goals, but the technical criteria are replaced by the more recent ANZECC 2000 Guidelines). NB: While specific guidelines for groundwater are not available, the ANCECC 2000 Guidelines endorse the application of the trigger values and decision trees as a tool to assess risk to environmental values in groundwater.	Section 2.2.1, Section 2.2.2, Section 3.4, Section 3.12 and Section 3.15
	• State any locally specific objectives, criteria or targets, which have been endorsed by the government e.g. the Healthy Rivers Commission Inquiries or the NSW Salinity Strategy (DLWC,	Dryland salinity effects are not considered to be an environmental issue for this Proposal

Agency	Recommendations	Where addressed in this report
	2000) (http://www.environment.nsw.gov.au/salinity/government/nswstrategy.htm).	
	• Where site specific studies are proposed to revise the trigger values supporting the ambient Water Quality and River Flow Objectives, and the results are to be used for regulatory purposes (e.g. to assess whether a licensed discharge impacts on water quality objectives), then prior agreement from the EPA on the approach and study design must be obtained.	Section 3.15. Field investigations have been completed to document background water quality in accordance with the SEARS
	• Describe the state of the receiving waters and relate this to the relevant Water Quality and River Flow Objectives (i.e. are Water Quality and River Flow Objectives being achieved?). Proponents are generally only expected to source available data and information. However, proponents of large or high risk developments may be required to collect some ambient water quality / river flow / groundwater data to enable a suitable level of impact assessment. Issues to include in the description of the receiving waters could include: - A lake or estuary flushing characteristics	Section 2.2.1, Section 2.2.2, Section 3.4, Section 3.12 and Section 3.15
	- A specific human uses (e.g. exact location of drinking water offtake)	
	- A sensitive ecosystems or species conservation values	
	- A description of the condition of the local catchment e.g. erosion levels, soils, vegetation cover, etc.	
	- An outline of baseline groundwater information, including, but not limited to, depth to watertable, flow direction and gradient, groundwater quality, reliance on groundwater by surrounding users and by the environment	
	- Historic river flow data where available for the catchment	
	Assess impacts • No proposal should breach clause 120 of the Protection of the Environment Operations Act 1997 (i.e. pollution of waters is prohibited unless undertaken	An assessment of existing impacts and the Proposal impacts relative to the environmental values of the surrounding

Agency	Recommendations	Where addressed in this report
	in accordance with relevant regulations).	environment is provided in Sections 3.15 and 5.3
	• Identify and estimate the quantity of all pollutants that may be introduced into the water cycle by source and discharge point including residual discharges after mitigation measures are implemented.	Section 5. A qualitative approach has been adopted for the assessment of groundwater impacts using historical data
	• Include a rationale, along with relevant calculations, supporting the prediction of the discharges.	Section 5.2 and Section 5.3
	• Describe the effects and significance of any pollutant loads on the receiving environment. This should include impacts of residual discharges through modelling, monitoring or both, depending on the scale of the proposal. Determine changes to hydrology (including drainage patterns, surface runoff yield, flow regimes, wetland hydrologic regimes and groundwater).	A monitoring approach has been adopted, due to the availability of a large historical data set A qualitative interpretation of potential groundwater impacts has been made using the data
	• Describe water quality impacts resulting from changes to hydrologic flow regimes (such as nutrient enrichment or turbidity resulting from changes in frequency and magnitude of stream flow).	Section 5.2 and Section 5.3
	• Identify any potential impacts on quality or quantity of groundwater describing their source.	Section 5.2 and Section 5.3
	• Identify potential impacts associated with geomorphological activities with potential to increase surface water and sediment runoff or to reduce surface runoff and sediment transport. Also consider possible impacts such as bed lowering, bank lowering, instream siltation, floodplain erosion and floodplain siltation.	Refer to the surface water management assessment (Cardno, 2021)
	• Identify impacts associated with the disturbance of acid sulfate soils and potential acid sulfate soils.	Section 5.2 and Section 5.3
	• Containment of spills and leaks shall be in accordance with EPA's guidelines section 'Bunding and Spill Management' at http://www.epa.nsw.gov.au/mao/bundingspill.htm and the most recent versions of the Australian Standards referred to in the Guidelines. Containment should be designed for no-discharge.	Section 6 Also refer to the surface water management assessment (Cardno, 2021) and the contamination status report (GHD, 2021)

Agency	Recommendations	Where addressed in this report
	• The significance of the impacts listed above should be predicted. When doing this it is important to predict the ambient water quality and river flow outcomes associated with the proposal and to demonstrate whether these are acceptable in terms of achieving protection of the Water Quality and River Flow Objectives. In particular the following questions should be answered: • Will the proposal protect Water Quality and River Flow Objectives where they are currently achieved in the ambient waters; and	Current conditions may not achieve ambient water objectives, the Proposal is expected to improve ambient conditions
	• Will the proposal contribute towards the achievement of Water Quality and River Flow Objectives over time, where they are not currently achieved in the ambient waters.	The Proposal is expected to result in an improvement in ambient waters as indicated in Section 5.2 and Section 5.3
	• Consult with the EPA as soon as possible if a mixing zone is proposed (a mixing zone could exist where effluent is discharged into a receiving water body, where the quality of the water being discharged does not immediately meet water quality objectives. The mixing zone could result in dilution, assimilation and decay of the effluent to allow water quality objectives to be met further downstream, at the edge of the mixing zone). The EPA will advise the proponent under what conditions a mixing zone will and will not be acceptable, as well as the information and modelling requirements for assessment. • Note: The assessment of water quality impacts needs to be undertaken in a total catchment management context to provide a wide perspective on development impacts, in particular cumulative impacts.	Not applicable[1]
	• Where a licensed discharge is proposed, provide the rationale as to why it cannot be avoided through application of a reasonable level of performance, using available technology, management practice and industry guidelines.	A licensed discharge is not currently proposed. A site closure plan will be developed to manage leachate after the completion of all operational resource recovery activities

[1] *There is to be no discharge off-site as surface water and therefore a mixing zone is not applicable.*

Agency	Recommendations	Where addressed in this report
	• Where a licensed discharge is proposed, provide the rationale as to why it represents the best environmental outcome and what measures can be taken to reduce its environmental impact	A licensed discharge is not currently proposed. A site closure plan will be developed to manage leachate after the completion of all operational resource recovery activities
	• Reference should be made to relevant guidelines including Managing Urban Stormwater: Soils and Construction (Landcom, 2004), Guidelines for Fresh and Marine Water Quality ANZECC 2000), Environmental Guidelines: Use of effluent by Irrigation (DEC, 2004).	Refer to the surface water management assessment (Cardno, 2021) and Sections 2.2.1, 2.2.2, 3.4, 3.12 and 3.15 of this report
	Describe management and mitigation measures • Outline stormwater management to control pollutants at the source and contain them within the site. Also describe measures for maintaining and monitoring any stormwater controls.	Refer to the surface water management assessment (Cardno, 2021)
	• Outline erosion and sediment control measures directed at minimising disturbance of land, minimising water flow through the site and filtering, trapping or detaining sediment. Also include measures to maintain and monitor controls as well as rehabilitation strategies.	Refer to the surface water management assessment (Cardno, 2021)
	• Describe waste water treatment measures that are appropriate to the type and volume of waste water and are based on a hierarchy of avoiding generation of waste water; capturing all contaminated water (including stormwater) on the site; reusing/recycling waste water; and treating any unavoidable discharge from the site to meet specified water quality requirements.	Refer to the surface water management assessment (Cardno, 2021)
	• Outline pollution control measures relating to storage of materials, possibility of accidental spills (e.g. preparation of contingency plans), appropriate disposal methods, and generation of leachate.	Refer to the waste report and the Contamination Status report (GHD, 2021)
	• Describe hydrological impact mitigation measures including: - Site selection (avoiding sites prone to flooding and waterlogging, actively eroding or affected by deposition)	Refer to the surface water management assessment (Cardno, 2021)

Agency	Recommendations	Where addressed in this report
	- Minimising runoff	Refer to the surface water management assessment (Cardno, 2021)
	- Minimising reductions or modifications to flow regimes	Refer to the surface water management assessment (Cardno, 2021)
	- Avoiding modifications to groundwater.	Section 6 and the surface water management assessment (Cardno, 2021)
	• Describe groundwater impact mitigation measures including: - Site selection	Section 6
	- Retention of native vegetation and revegetation	Section 6. Refer to the ecological report for on-site impacts to native vegetation
	- Artificial recharge	Section 6 the surface water management assessment (Cardno, 2021) with regard to infiltration basin design
	- Providing surface storages with impervious linings	These are not part of the current proposal
	- Monitoring program.	Section 6
	• Describe geomorphological impact mitigation measures including: - Site selection	Refer to surface water management assessment (Cardno, 2021)
	- Erosion and sediment controls	Refer to surface water management assessment (Cardno, 2021)
	- Minimising instream works	Refer to surface water management assessment (Cardno, 2021)
	- Treating existing accelerated erosion and deposition	Refer to surface water management assessment (Cardno, 2021)
	- Monitoring program	Refer to surface water management assessment (Cardno, 2021)

Agency	Recommendations	Where addressed in this report
	• Any proposed monitoring should be undertaken in accordance with the Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC 2004).	Refer to the contaminated land status report (GHD, 2021) and noted in Section 6

1.8 Scope and structure of the report

1.8.1 Scope of report

The scope of works to be undertaken to meet the objectives presented in Section 1.3 included:

- A review of the following information:
  - Legislative documents that inform the assessment of groundwater impacts
  - The Proposal description and design plans
  - Previous modification documentation
  - Previous groundwater monitoring reports and data (groundwater elevations and quality)
  - Previous groundwater surface water reports completed by Cardno (Cardno, 2017; 2018)
  - Current landuse activities and details of the proposed works
  - Public databases to assess the environmental values for the surrounding groundwater/surface water environment including:
    - Acid sulphate soils maps
    - Groundwater monitoring data
    - Groundwater allocations
    - Groundwater dependent ecosystems
    - Contaminated sites
- Completion of a site visit on 4 August 2020 to better understand site activities and leachate / surface water / groundwater interactions.
- Processing and interpretation of field data collected to inform the assessment of groundwater impacts, which were collected as part of the Contamination Status Report (GHD, 2021) investigations. This included:
  - Hydraulic testing data
  - Groundwater elevation data
  - Surface water quality data
- Processing and interpretation of previous surface water and groundwater quality data collected across the Proposal Site between 1993 and 2020.
- The assessment of impacts using a conceptual model, data analysis and analytical modelling approach developed using the information collated by the works outlined above.
- Development of mitigation measures, including monitoring procedures, to mitigate conceptual data uncertainties, delineate the emergence of impacts and respond appropriately to emerging impacts.
- Development of this groundwater impact assessment to document the findings of the investigation.

1.8.2 Structure of report

This report is structured as follows:

- Chapter 1 – Introduction – this chapter introduces the Proposal and describes the Proposal Site
- Chapter 2 – Legislative and policy context – this chapter describes the legislative framework for NSW, by which groundwater impacts are to be assessed.
- Chapter 3 – Existing environment – this chapter describes the existing environmental characteristics of the Proposal Site relevant to the assessment of groundwater impacts.
- Chapter 4 – Conceptual model – this chapter describes the existing conceptual site model based on the information presented in the environmental setting
- Chapter 5 – Assessment of impacts – this chapter outlines the impact assessment methodology and qualitatively characterises potential impacts
- Chapter 6 – Mitigation and monitoring – this chapter outlines measures to manage potential impacts.
- Chapter 7 – Conclusions and recommendations – this chapter summarises the findings of the assessment.

2. Legislative and policy context

2.1 State legislation

2.1.1 Water Management Act 2000

The *Water Management Act 2000* (WM Act) is administered by the NSW Department of Planning, Industry and Environment - Water (DPIE - Water) and is intended to ensure that water resources are conserved and properly managed for sustainable use benefitting both present and future generations. The WM Act is also intended to provide a formal means for the protection and enhancement of the environmental qualities of waterways and their in-stream uses as well as to provide for protection of catchment conditions. The intent and objectives of the WM Act have been considered as part of this assessment. Specific requirements of the WM Act applicable to this assessment are discussed further below.

Water Sharing Plans

The WM Act requires the development of Water Sharing Plans (WSPs) to manage water use and access. WSPs aim to:

- Clarify the rights of the environment, basic landholder user rights, town water suppliers and other licensed users
- Define the long-term average annual extraction limit for water sources
- Set rules to manage impacts of extraction
- Facilitate the trading of water between users

WSP for the Greater Metropolitan Region Groundwater Sources

The Proposal Site is located within the Greater Metropolitan Region Groundwater Sources.

The WSP for the Greater Metropolitan Region Groundwater Sources covers 13 groundwater sources on the east coast of NSW within and surrounding Sydney. The Proposal Site is located within the Botany Sands Groundwater Source.

The WSP provides a legislative basis for specifying available groundwater and sharing of the groundwater between the environment and the consumer. The WSP set rules for approving water access licences and water supply works. These rules generally specify distances between groundwater access licences and water supply works to other groundwater assets to minimise impact.

Generally, water access licences should not be granted:

- For any use other than:
  - Local water utility
  - Major water utility
  - Domestic stock
  - Town water supply
  - Aquifer (aboriginal cultural), up to 10 ML/yr
  - Commercial access licences under a controlled allocation order made in relation to any unassigned water in this water source
- For managing surface water connectivity:

  - For areas adjoining unregulated water sources (i.e. rivers and creeks), existing works within 40 metres of the top of the high bank of a river or creek will have conditions imposed related to flow class after year 7 of the plan.

Generally water supply works approvals should not be granted or amended:

- For water supply works:
  - 400 metres from an aquifer access licence bore extracting greater than 20ML/yr on another landholding
  - 200 metres from an aquifer access licence bore extracting less than 20ML/yr on another landholding
  - 200 metres from a basic landholder rights bore on another landholding
  - 100 metres from a property boundary (unless written consent from neighbour)
  - 500 metres from a local or major water utility bore
  - 400 metres from a NSW Office of Water monitoring bore (unless written consent from NSW Office of Water).
- For bores near contamination:
  - Within 250 metres of contamination identified in the plan
  - 250–500 metres distance if there is no drawdown within 250 metres of contamination identified within the plan
  - A greater distance if there are other potential risks associated with contamination migration to the groundwater source
- For bores near sensitive environmental areas:
  - Less than 100 metres from bores used for basic landholder rights
  - Less than 200 metres from bores used for all other access licenses
  - Less than 40 metres of a river or stream or lagoon (3rd order or above)
  - Less than 40 metres of a 1st or 2nd order stream, unless drilled into underlying parent material and isolated from the shallow aquifer system
- For bores near groundwater dependent culturally significant sites as identified in the plan:
  - Less than 100 metres from bores used for basic landholder right
  - Less than 200 metres from bores used for all other access licences
- A replacement groundwater works:
  - Must be constructed to take groundwater from the same water source and to a depth specified by the minister
  - Within 20 metres of the existing bore
  - Replacement works may be at a greater distance than 20 metres if the Minister is satisfied that doing so will result in no greater impact on the groundwater source and its dependent ecosystem
  - The replacement work must not have a greater internal diameter or excavation footprint than the existing work unless it is no longer manufactured. If no longer manufactured, the internal diameter of the replacement work must be no greater than 110% of the existing work

Generally for the use of water supply works:

- The allocated licence volumes should not be exceeded in any one year for locations within 500 metres of contaminated sites.

The impacts to assets outlined above have been assessed and managed as part of this groundwater technical paper by assessing impacts in accordance with the NSW Aquifer Interference Policy (discussed below).

Botany Sands Groundwater Source

The Proposal Site is located within the Botany Sands Groundwater Source. The NSW government has been managing the extraction of groundwater from this source, via a Temporary Water Restrictions Order, due to contamination issues. In August 2003, an embargo was put in place on the northern part of the aquifer under section 113A of the *Water Act 1912* to prevent extraction. Then in June 2007, an embargo was placed on the rest of the aquifer to prevent additional commercial extraction. The Proposal Site is outside of the management area as the management zones are located to the north of Botany Bay.

The Botany Sands Groundwater Source has a total estimated rainfall recharge of 30,424 ML/yr. Once planned water to sustain the environment is removed, the Botany Sands Groundwater Source has a long-term average annual extraction limit of 14,684 ML/year (groundwater available for allocation to groundwater access licences). Of this volume, 11,156 ML/yr is allocated to approximately 80 groundwater access licences (groundwater take), 1,849 ML/yr is allocated for domestic and stock rights leaving 2,735 ML/yr (7,493 m^3/day) is unallocated.

Lots 1122 and 1123 have two water access licences (WAL) for groundwater extraction including a bore and groundwater extraction from excavation. These licences are still current and are WAL numbers 24555 and 24563 respectively. WAL 24555 has an announcement volume of 1ML per share per year and share components of 20ML. WAL 24563 has an announcement volume of 1ML per share per year and share components of 40ML.

Water Licences and Approvals

For this assessment the ‘take’ of groundwater primarily refers to extraction of groundwater from the groundwater resource defined in a relevant WSP as the Botany Sands Groundwater Source. The Proposal Site will require the existing licences to be transferred to new locations at eastern ends of the site, where the new Resource Recovery Facility will be located.

Key rules to consider in the plan that relate to the replacement of existing water access licenses include the following:

- Any replacement of a groundwater works must be located within 20 metres of the existing approved bore.
- Replacement bores may be at a greater distance than 20 metres if the Minister is satisfied that doing so will result in no greater impact on the groundwater source and its dependent ecosystems.
- The replacement work must not have a greater internal diameter or excavation footprint than the existing work unless it is no longer manufactured.
- Conversion of aquifer access licenses to another categories of licence is not permitted.

These rules indicate that movement of the existing licences will require re-assessment and approval in accordance with the water sharing plan rules outlined in the previous sub-section. Assessment of the impacts associated with the migration of the existing water access licences has been undertaken for this assessment. Assessment against the water sharing rules has not been undertaken as this will be undertaken as part of development of groundwater management plan for the site.

Further to this, any monitoring bores recommended (see Section 6.7), installed in accordance with the minimum bore construction requirements for water bores in Australia, for the purposes

of monitoring water levels or water quality are exempt from the requirement to obtain a water supply works approval if:

- It is completed as part of a condition of an approval under division 5.2 Part 5, of the EP&A Act (State significant infrastructure).
- Well installation details and bore log information is provided to WaterNSW within 60 days of completion of the water supply works.

NSW Aquifer Interference Policy

The NSW Aquifer Interference Policy (AIP) (NOW, 2012) was finalised in September 2012. The policy is used by DPIE-Water to assess the impacts of a Proposal on the surrounding environment, regardless of the legislation that applies to regulate the activity.

The policy adopts the definition of aquifer interference from the WM Act which includes:

- The penetration of an aquifer
- The interference with water in an aquifer
- The obstruction of flow of water in an aquifer
- The taking of water from an aquifer in the course of carrying out mining or any other activity prescribed by the regulations
- The disposal of water taken from an aquifer in the course of carrying out mining or any other activity prescribed by the regulations

The policy does not specify that this kind of activity is an aquifer interference activity but rather indicates that it has been developed to address certain activities including those with the potential to contaminate groundwater.

In regard to the criteria above, the Proposal Site will result in changes in groundwater quality (associated with leachate generation and potential acid sulfate soil exposure) and groundwater quantity (associated with rainfall recharge reduction and groundwater abstraction) that will:

- Penetrate an aquifer
- Take water from an aquifer
- Contaminate groundwater

On this basis, the Proposal is expected to represent an aquifer interference activity.

The AIP adopts minimal harm criteria as the primary tool for identifying more than minimal groundwater impacts.

The minimal harm (impact) criteria that relate to the the Botany Sands groundwater source, intersected by the Proposal, are summarised below:

- With regard to the water table, impact is considered to be minimal where the water table change is less than or equal to 10 per cent of the cumulative variation in the water table 40 metres from any high priority groundwater dependent ecosystem (GDE) or high priority culturally significant site listed in the WSP. A high priority GDE has a high conservation value and is listed in the WSP. If an impact is greater than this, it must be demonstrated to the Minister administering the WM Act's satisfaction, that the variation will not prevent the long-term viability of a GDE or culturally significant site. The WSP states there are three high priority GDEs within the Botany Sands Groundwater Source. This includes the Botany Wetlands, the Lachlan Swamps (both are located on the north side of Botany Bay and not in hydraulic connection with the Proposal Site) and Towra Point Estuarine Wetlands. The Towra Point Estuarine Wetlands are located north of the Proposal Site boundary.

The Botany Wetlands and the Lachlan Swamps are located on the northern side of Botany Bay. There is an additional GDE, Kurnell Dune Forest in the Sutherland Shire and City of Rockdale. However, this GDE does not have a location due to there being insufficient information on the location or that the GDE is located on private land where landowners have requested that the information not be made public.

- With regard to the water table, impact is considered to be minimal where there is less than a cumulative two metre decline at any water supply work. If the impact is greater, make good provisions apply.
- With regard to water pressure, impact is considered to be minimal where the cumulative decline in head is less than two metres at any water supply work. If the impact is greater, then further studies are required to satisfy the Minister that long-term viability of the affected water supply works will not be affected. Otherwise make good provisions will apply.
- With regard to water quality, impact is considered to be minimal where the change in groundwater quality is within the current beneficial use category of the groundwater source beyond 40 metres from the activity. If this cannot be achieved, studies are required to demonstrate that the change would not prevent the long-term viability of the dependent ecosystem, or affected water supply works.

The assessment considers the potential impacts identified against the criteria outlined above.

2.2 Policies and guidelines

2.2.1 NSW State Groundwater Policy Framework Document

The objective of the NSW State Groundwater Policy Framework Document (Department of Land and Water Conservation (DLWC), 1997) is to manage the State's groundwater resources so that they can sustain environmental, social and economic uses for the people of NSW.
The NSW groundwater policy has three component parts:

- NSW Groundwater Quantity Protection Policy (DLWC, 1997a)
- NSW Groundwater Quality Protection Policy (DLWC, 1998)
- NSW Groundwater Dependent Ecosystems Policy (DLWC, 2002)

NSW Groundwater Quantity Protection Policy

The principles of this policy include:

- Maintain total groundwater use within the sustainable yield of the aquifer from which it is withdrawn.
- Groundwater extraction shall be managed to prevent unacceptable local impacts.
- All groundwater extraction for water supply is to be licensed. Transfers of licensed entitlements may be allowed depending on the physical constraints of the groundwater system.

These principles are implemented under the WM Act and the AIP, which have been discussed above.

NSW Groundwater Quality Protection Policy

The objective of this policy is the ecologically sustainable management of the State's groundwater resources so as to:

- Slow and halt, or reverse any degradation in groundwater resources.

- Direct potentially polluting activities to the most appropriate local geological setting so as to minimise the risk to groundwater.
- Establish a methodology for reviewing new developments with respect to their potential impact on water resources that will provide protection to the resource commensurate with both the threat that the development poses and the value of the resource.
- Establish triggers for the use of more advanced groundwater protection tools such as groundwater vulnerability maps or groundwater protection zones.

These objectives of the policy are considered by assessing the Proposal Site against the requirements outlined in the relevant WSP and the AIP. This includes incorporating the environmental values (beneficial use category) and trigger values outlined in National Water Quality Management Strategy (NWQMS), presented below, into the impact assessment criteria outlined into the AIP.

NSW Groundwater Dependent Ecosystems Policy

This policy was designed to protect ecosystems which rely on groundwater for survival so that, wherever possible, the ecological processes and biodiversity of these dependent ecosystems are maintained or restored for the benefit of present and future generations.

The objectives of this policy are considered by assessing the Proposal Site against the requirements outlined in the WSP and the AIP. This includes criteria to be protective of groundwater dependent ecosystems.

2.2.2 National Water Quality Management Strategy (NWQMS)

The NWQMS provides a national framework for improving water quality in Australia's waterways. The main policy objective of the NWQMS is to achieve sustainable use of the nation's water resources; protecting and enhancing their quality, while maintaining economic and social development. The NWQMS process involves community and government interaction, and implementation of a management plan for each catchment, aquifer, estuary, coastal water or other water body. This includes the use of national guidelines for local implementation.

The NWQMS policy and principles document (ARMCANZ/ANZECC, April 1994) provides an overview of the principles for water quality management in Australia. The primary objective of the guideline/policy is:

"to achieve sustainable use of the nation's water resources by protecting and enhancing their quality while maintaining economic and social development".

The policy and principles document states that:

"the generally accepted mechanism for establishing in-stream or aquifer water quality requirements is a two-step process which involves:

- Establishing a set of environmental values, and
- Establishing scientifically based water quality criteria corresponding to each environmental value".

Environmental values are often interchanged with the term beneficial use (which is referred to in regard to minimum impact criteria set in the AIP in Section 2.1.1) and are identified in the guidance to include:

- Ecosystem protection
- Recreation and aesthetics
- Drinking water

- Agricultural water (irrigation and stock water)
- Industrial water

Ecosystem protection, in this context, refers to aquatic ecosystems which depend at least in part on groundwater to maintain ecosystem health (groundwater dependent ecosystems). Depending on the site setting, this may include surface water bodies such as wetlands, streams and rivers reliant on groundwater base flow, some estuarine and near-shore marine systems, as well as aquifer and cave ecosystems.

Criteria have been developed to characterise water quality relative to these environmental criteria and are discussed further below.

The criteria presented below have been considered as the basis for assessing:

- The current environmental values (beneficial use category in the AIP) of groundwater and receiving water bodies on which impacts can be assessed
- Management requirements for discharge to receiving water environments, which could include:
  - Discharge to surface water along current pathways or by direct discharge
  - Discharge to groundwater
  - Discharge to land

Australian and New Zealand Guidelines for Fresh and Marine Water Quality

For the Proposal Site, the national guidelines on water quality benchmarks within the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) are applicable and provide default trigger values of various analytes for comparison with sampled values. These guidelines were previously known as the ANZECC (2000) guidelines. The guideline is available online (http://www.waterquality.gov.au/anz-guidelines). The default guideline values for toxicants are the same as ANZECC (2000) guidelines.

Water criteria are presented in the guidelines for:

- Aquatic Ecosystems
- Primary Industries (which includes agricultural and industrial water criteria)

The environmental values and water quality criteria adopted for the Proposal Site are provided in Section 3.15.

The ANZG (2018) guidelines for protection of 99% of species in marine and fresh water ecosystems have been considered as a conservative trigger value for groundwater.

The ANZECC (2000) guidelines for the protection of marine estuaries and freshwater lakes and reservoirs has been considered due to the receiving waters. There are two freshwater ponds within the dune systems to the south west of the Proposal Site and the marine estuaries of Quibray and Weeney Bays to the north. In addition to these the marine aquaculture guidelines have been considered as a trigger value for surface water samples collected in Quibray and Weeney Bays.

Australian Drinking Water Guidelines

The Australian Drinking Water Guidelines (ADWG) (NHMRC, 2013) provide a framework for the appropriate management of drinking water supplies to achieve a safe and appropriate point of supply. The guidelines provide a base standard for aesthetic and health water quality levels.

Groundwater may have the potential to be used for potable purposes in surrounding properties and as such the ADWG may apply to this investigation. They also provide the basis for recreational water quality, which is discussed further below.

Recreational Water Quality

Guidelines for Managing Risks in Recreational Water (NHMRC, 2008) provides a framework to protect the health of humans from threats posed by the recreational use of coastal, estuarine and fresh waters.

These values are protective of human activities such as boating and fishing and have also been adopted as conservative screening criteria for assessing risks to construction workers encountering groundwater in excavations, recreational users coming into contact with irrigated groundwater and industrial water users.

The guidelines also provide a basis for using recently updated ADWG values for establishing revised criteria. This assumes that, during secondary contact activities, recreational users ingest ten times less water than they would ingest potable water per day and hence the recreational criteria are equivalent to ten times the ADWG criteria.

2.2.3 Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales

The document *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales* (DEC, 2004) lists the sampling and analysis methods to be used when acquiring water samples for compliance with environmental protection legislation, a relevant licence or relevant notice.

It is noted that this report has used historical field data collected by previous consultants. It is assumed that the data has been collected in accordance with this guidance.

2.2.4 Risk Assessment Guidelines for Groundwater Dependent Ecosystems

Risk Assessment Guidelines for Groundwater Dependent Ecosystems (NOW, 2012) comprises four volumes and provides a conceptual framework for identifying and assessing GDEs along with worked examples of assessments. The guidelines discuss the identification of high priority GDEs and also discuss the ecological value of GDEs. Where impacts remain to GDEs after this assessment, they will be considered further by biodiversity/ecological specialists to further characterise the impacts.

3. Existing environment

3.1 Climate

Rainfall data has been obtained from the closest Bureau of Meteorology (BOM) weather station site at Sydney Airport (BOM site number 066037). Sydney Airport has a rainfall record extending back to 1898. This data was obtained from scientific information for land owners (SILO) available from the Queensland Government website (https://data.qld.gov.au/dataset/silo-patched-point-datasets-for-queensland).

Most rainfall occurs in autumn with the highest average rainfall in June. The lowest rainfall occurs in spring. The average annual rainfall is 1080.1 millimetres.

Figure 3-1 presents the long-term monthly rainfall record for Sydney Airport along with the cumulative rainfall deviation (CRD).

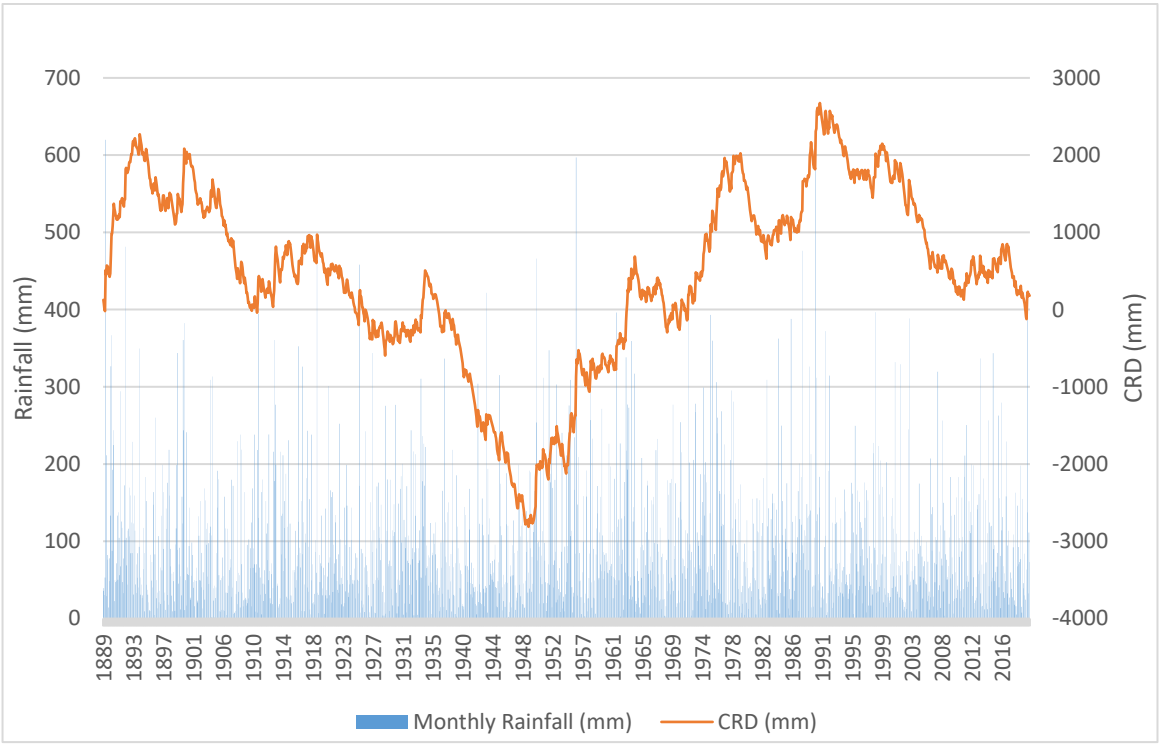


Figure 3-1 Rainfall and cumulative rainfall deviation for weather station Sydney Airport

The cumulative deviation plot shows three distinct and large scale climatic trends over the 131 years of observation.

Three periods of below average rainfall occur; the first from 1900 to 1910, the second from 1934 to 1949 and the third from 1999 to 2011. There is a prolonged period of above average rainfall between 1949 and 1990. These large-scale trends include numerous small and intermediate scale fluctuations.

Different types of aquifers have different responses to climatic variation, generally referred to as the groundwater response time. Shallow unconfined aquifers, such as those at the site, often respond to a small-scale fluctuation including individual rainfall events, whereas deeper regional scale and semi confined aquifers such as the Hawkesbury Sandstone often show trends that are more aligned with larger scale variations.

The average annual rainfall for Sydney Airport over the available 91 years is provided in Table 3-1. This data was obtained from the BOM website 13 July 2020 (http://www.bom.gov.au/).

Table 3-1 Average rainfall (mm)

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
066037	94.1	114.2	118.1	106.0	95.3	124.7	68.6	75.4	60.0	70.1	79.9	72.8	1080.1

Temperature and evapotranspiration (ET) data for Sydney Airport are provided in Table 3-2. Temperature is available for 81 years (1939 to present), while evapotranspiration data is available from 1889.

Mean daily evapotranspiration ranged from a minimum of 0.4 millimetres on 23/06/1974 to 9.4 millimetres on 01/01/2006 respectively. Average annual evapotranspiration for the monitoring period is 1,200.7 millimetres per annum.

Table 3-2 Temperature (Temp) and evapotranspiration (ET)

Record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean Max Temp (°C)	26.7	26.5	25.4	23.0	20.2	17.7	17.2	18.4	20.7	22.7	24.2	25.9	22.4
Mean Min Temp (°C)	19.0	19.1	17.6	14.3	11.0	8.8	7.3	8.2	10.6	13.3	15.5	17.6	13.5
ET (mm)	146.5	120.5	110.7	82.2	62.4	47.7	55.0	74.0	96.9	122.2	134.9	150.0	1200.7

3.2 Existing site facilities

The current site facilities and activities are shown on Figure 3-2, which are referred to when describing the Proposal in the remainder of Section 3.



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Current Site Facilities

Figure 3-2

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3.3 Topographical setting

Figure 3-3 presents a topographical survey for the Proposal Site, which was completed in June 2019. A site visit undertaken on 4 August 2020 indicated that the survey data presented in Figure 3-3 generally corresponds to the current site topography. The Proposal Site can be separated into three distinct topographical areas from west to east including:

- A western elevated area located within Lots 1122 and 1123
- A central elevated area associated with the landfill at cell B10 and spanning across Lot 6
- An eastern lower lying area comprising the new waste cell B11 and the area to the east of this cell

Topographical characteristics of each location are presented below.

3.3.1 Western areas

The western area can be broadly characterised as a large landfill mound. It extends south from Captain Cook Drive in the north to elevations greater than 45 m AHD at the top of the resource recovery order (RRO) material stockpile located toward the centre of the Proposal Site. The stockpile is a recent addition to this area of the Proposal Site (progressively developed since 2015). The area on-site to the south west of the stockpile is occupied by the concrete recycling facility and sits at elevations of approximately 35 m AHD. This area is flat to gently sloping and merges with elevated areas off site to the west and south west. Further off-site, to the south of the Proposal Site boundary the land surface slopes steeply down to less than 5 m AHD where the pond in Lot 1056 is located. The land surface also slopes steeply west from the active gypsum recycling area toward an off-site low point (of approximately 2 m AHD) near to the pond in Lot 1056. Parts of the active gypsum recycling also appear to slope south. The land surface between the Proposal Site and the Sydney Water sewerage treatment plant located to the west south west initially slopes up to approximately 40 m AHD at approximately 100 m from the Proposal Site boundary before dipping down to the treatment plant, which sits at an elevation of approximately 20 m AHD. This elevated area probably represents a surface water catchment divide between flow to the north (Botany Bay) and flow to the south (to the dune pond system).

Most other active areas (including stockpiled material) appear to be located on a broad north/northwest slope toward a low point encompassing the site offices and an infiltration pond north west of the Existing Breen Resources Facility. The Existing Breen Resources Facility is located at an elevation of approximately 6 m AHD. The lowest elevation contour present on the bank of the infiltration pond is 1 m AHD. It appears from the topographical contours in this area that the truck wash at the site office also drains to the infiltration pond.

The hockey complex (associated with Embellished Marang Parklands) is located to the east of the site offices and is situated above 5 m AHD.

The Proposal Site's north-south extent thins where the western area intersects with the central area of the Proposal Site. There is a low point in the topography here, which sits at an elevation of approximately 7 m AHD.

3.3.2 Central areas

The central topographical area includes the landfill primarily located at Cell B10. The landfill peak approximates an elevation of 34 m AHD.

The landfill slopes down to the south to a low point on the southern site boundary that approximates an elevation of 20 m AHD before sloping up again off-site.

The landfill slopes to the west where it intersects with the soil and general solid waste recycling facility which sits at an elevation of approximately 14 m AHD. This facility gradually slopes

northwest between the central and western topographical areas to a low point (drain) flanking the southern boundary of the hockey complex, which has an elevation of approximately 5 m AHD. This drain appears to connect to an infiltration pond where the minimum pond bank contour approximates 2 m AHD.

Leachate ponds are also located between the northern slopes of the landfill and the infiltration ponds to the north. They have a bund around them which rises approximately 0.5 m above the surrounding land surface to an elevation of approximately 4 m AHD (+/- 1 m). Internal areas of the ponds have elevations ranging between 0 and 1 m AHD.

The landfill slopes down to the east to new landfill cell B11, located within the eastern site area.

3.3.3 Eastern areas

The general land surface in the eastern area approximates 3.5 m AHD and appears to be relatively flat.

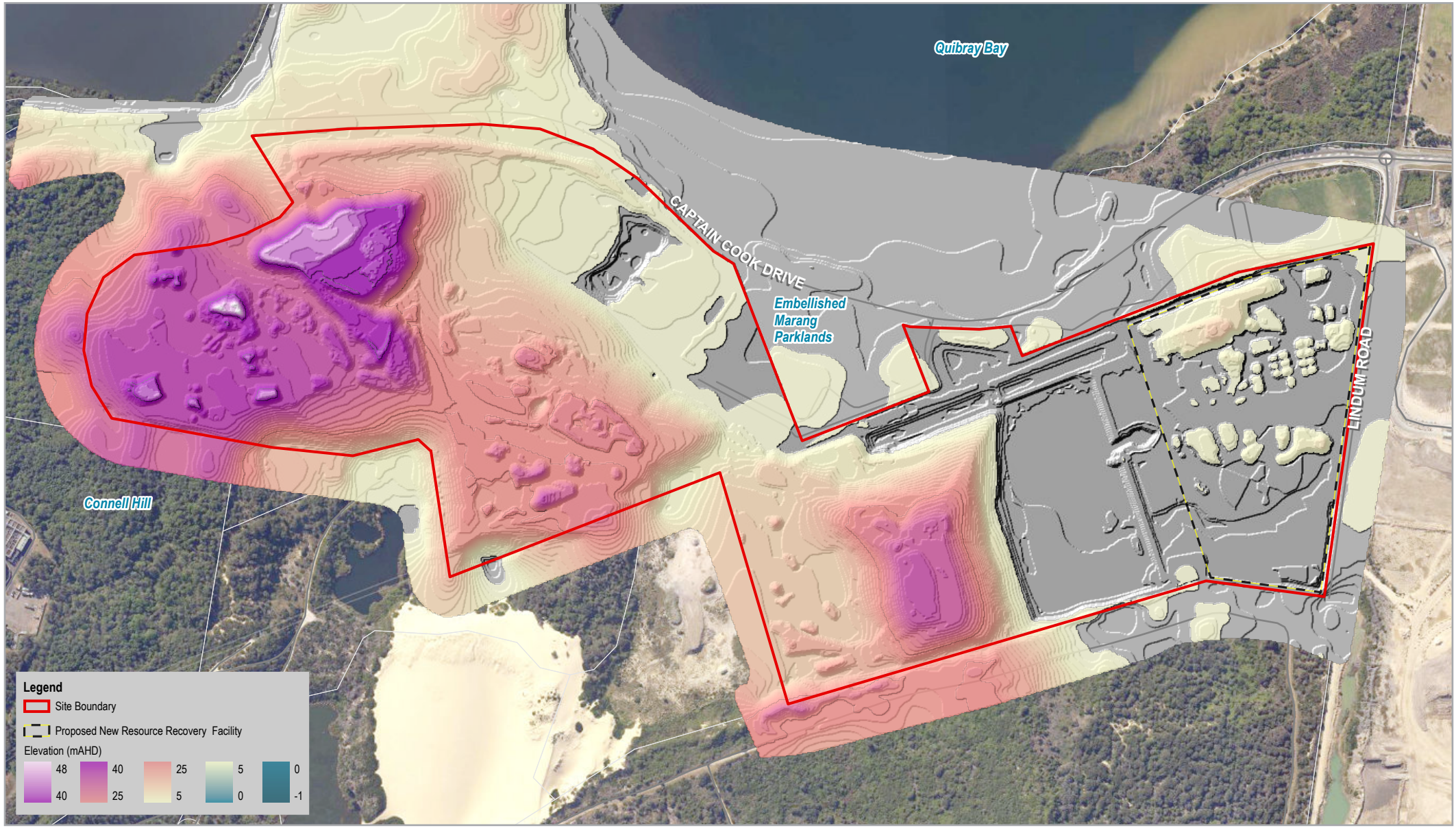
The newly developed landfill cell B11 is located immediately east of the central area landfill (Cell B10). The cell base is lower than the surrounding ground surface and generally approximates elevations of between 1 m AHD at the base of the cell sides and 0 m AHD in central areas. The leachate ponds extends across the northern extent of landfill cell B11.

There is a low point in the southern central areas to the east of cell B11 that dip down from 3.5 m AHD to elevations of between 1.5 m AHD and 2 m AHD. Water was observed to be ponding in these areas during a site visit on 4 August 2020.

There is a low point, which is identified as an infiltration drain along the south western boundary of this area, which has a minimum surveyed contour on its embankment of 1.5 m AHD. The Proposal Site visit on 4 August 2020 indicated it was connected by a culvert to the ponded area in southern central portions of the Proposal Site.

Northern areas of the Proposal Site appeared to slope north to a perimeter drain which had minimum surveyed elevation contours of 2 m AHD. An infiltration pond connected to this drain that was observed to be located in the north eastern corner of the Proposal Site during the Proposal Site visit on 4 August 2020 is not present in Figure 3-3.

A number of stockpiles (as noted on the Proposal Site visit on 4 August 2020) are present across the Proposal Site. Site staff have indicated that the large stockpile located along the northern boundary of the Proposal Site is the excavated material from Cell B11.



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Site Topography

Figure 3-3

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3.4 Surface water

3.4.1 Regional features

The Proposal Site area is located within the 'Direct to Botany Bay' sub-catchment of the larger Botany Bay catchment (Sydney Metropolitian Catchment Management Authority, 2011). The Botany Bay catchment covers about 1,165 km^2 (Figure 3-4). The 'direct to Botany Bay' surface water features all drain, either through stormwater drains or channels, directly into Botany Bay. The mouth of the Georges River is located to the north west of the Proposal Site. Weeney Bay and Quibray Bay are located to the north of the Proposal Site within Botany Bay. Bate Bay and Cronulla Beach are located to the south and south east of the Proposal Site.

To the north and northeast of the Proposal Site is the Towra Point Nature Reserve. The reserve forms the southern and eastern shores of Botany Bay and is the largest wetland of its type in the Sydney Basin. The reserve comprises a mixture of spits, bars, mudflats, dunes and beaches. The reserve is a RAMSAR wetland which include rare or unique wetlands and / or wetlands that are important for conserving biological diversity.

The WSP for the Greater Metropolitan Region Groundwater Sources 2011 lists Towra Point Nature Reserve as a high priority groundwater dependent ecosystem. The listing is based on the wetlands supporting three nationally threatened species under the EPBC Act and because they support biodiversity of the Sydney region and provide critical habitat for migratory shorebirds protected under international agreements. The three national threatened species are the grey-headed flying-fox, magenta lilly pilly and the green and golden bell frog. To the east of the Proposal Site and on the neighbouring property there is a surface water body within the dune system that is a dredge pond used for sand mining. The Proposal site visit undertaken by GHD on 4 August 2020, indicated that there was a significant volume of landscaping and soil stockpiling being undertaken on this property.

Botany Bay, while disturbed by industrial and urban activities, is used for a range of beneficial purposes such as recreation and fishing (despite the NSW Department of Primary Industries prohibition of commercial fishing in Botany Bay and Cooks River under the Fisheries Management (General) Regulation, 2010)). The Botany Bay Water Quality Improvement Plan (2011) has also been developed by the Sydney Metropolitan Catchment Management Authority to improve pollutant and suspended sediment loads to Botany Bay.

There are currently active oyster farm leases located in Quibray Bay.



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Regional Surface Water Features

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Figure 3-4

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3.4.2 Site features

On-site rainfall is expected to infiltrate or run-off and collect in topographic low points and either evaporate or infiltrate.

Figure 3-5 presents site surface water features for the Proposal Site. The features present in the figure are discussed below.

There are four infiltration ponds located across the site to capture site run-off and re-infiltrate the run-off directly into the Botany Sands aquifer. The ponds are located:

- To the northwest of the Proposal Site's existing office facilities located off Captain Cook Drive and within Lot 1123 (***Infiltration Point 1***). This pond is expected to receive water from western areas of the Proposal site that slope to the north. It was unclear during the Proposal Site visit on 4 August 2020 how surface water run-off in western areas of the Proposal Site migrates to this infiltration pond.
- To the east of the hockey complex and within Lot 5, noting that this is further to the east than the pond located on the hockey complex itself (***Infiltration Point 2***). This pond is serviced by a drain running along the south eastern boundary of the hockey complex. During the Proposal Site visit it was reported by site personnel that this pond received run-off from the landfill mound (Cell B10) and soil recycling area to the west of Cell B10.
- In the northeast corner of the Proposal Site and within Lot 5 (***Infiltration Point 3***). This infiltration point is serviced by a drain running along the northern site boundary from immediately west of the leachate ponds (discussed below). This drain may or may not be in direct connection with the Botany Sands Aquifer. The pond is expected to receive surface water run-off from northern areas of the Proposal Site that are located to the east of new waste Cell B11. During a site visit on 4 August 2020 perched surface water was observed to be present in a number locations in this area of the Proposal Site. Ponding around the infiltration pond itself was observed to be much higher than in the infiltration pond indicating that the landfill material in this location was of distinctly lower permeability than the Botany sands that were intersected by the infiltration pond.
- In the south eastern corner of the Proposal Site and within Lot 5 (***Infiltration Point 4***). This infiltration pond is a drainage line that is approximately 400 m long and extends along Lindum Road before extending west, along the southern site boundary to landfill Cell B11. This infiltration point is connected via a culvert to a large ponded area (associated with a low topography) located in the southern portion of the Proposal Site and east of Cell B11. Due to the depth of the culvert draining the pond the water levels in this area and the infiltration pond were observed to be similar during the Proposal Site visit on 4 August 2020.
- A number of ponds are located immediately south of the Proposal Site boundary in western areas of the Proposal Site (Lot 1056, Lot 1055) as indicated in Figure 3-5. The pond located within Lot 1056 and the ponds further to the south were visible from the concrete recycling facility during the Proposal Site visit on 4 August 2020 and appeared to be clear, vegetated and in an overall good condition. There was a relatively steep downwards slope to the ponds from the Proposal Site boundary. It appeared there was potential for surface water run-off from isolated active site areas toward to the ponds. There was previously a pond located at Lot 1059 that was associated with a broad low lying area. At the time of the Proposal Site visit on 4 August 2020, this area had been infilled and levelled with the Proposal Site.

Two leachate ponds are located to the north of Cell B10 and Cell B11. These are lined with an impermeable membrane and are not hydraulically connected with the underlying groundwater system. These lined leachate ponds receive leachate from a leachate collection system

associated with landfill cell B10. They are designed to be evaporation ponds and have no discharge off site.



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Surface Water Features

Figure 3-5

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3.5 Geology

Figure 3-6 presents the 1:100,000 Wollongong-Port Hacking Geological Map (Department of Mineral Resources 1985), which indicates that the Proposal Site and surrounding surface geology consists of Quaternary sediments (unconsolidated sands with minor peat, silts and clays and hard iron-cemented layers known as waterloo rock). The Quaternary sediments infilled drowned river valleys that were incised into the Hawkesbury Sandstone bedrock (in the Proposal Site vicinity) and are composed of predominantly unconsolidated to semi-unconsolidated permeable sands. These are interspersed with lenses and layers of peat, peaty sands, silts and clays (low permeability), which become more common at greater depths. The stratigraphic units encountered in the Proposal Site are discussed below and presented in Figure 3-7 to Figure 3-10.

Fill

The fill thicknesses in borehole logs around the Proposal Site perimeter vary between 0.4 metres and 3.5 metres, typically comprising sand, clay, clayey sand and gravelly sand with landfill materials including concrete, tiles and brick.

Landfill / Licenced EPL accepted waste

Prior to 1990 the Proposal Site was used for sand extraction. The sand was mined to depths of up to approximately -23 m AHD, while ensuring no collapse of sand into the void from beyond the Proposal Site boundary. Along the straight boundaries of the Proposal Site, mining has extended to the Proposal Site boundary but is curved internally at boundary corners due to the method of mining, which prevented mining out to these areas.

The Kurnell landfill commenced in 1990 and included infilling of the voids left by the sand extraction with virgin excavated natural materials (VENM) and excavated natural materials (ENM). Anecdotally, potential acid sulphate soils (PASS) have also been placed below the water table in accordance with EPL 4608 (licence variation dated 24 May 2005). Breen has advised that the PASS is likely to be less than 1% of the total backfill and in eastern site areas only. A clay liner was placed on top of this natural material (approximately 0.5 m thick (CES, 2020b) and then EPL licenced waste (See Section 3.15) was placed on top to current elevation levels. The top of the liner has been identified at elevations of between 1.5 m AHD and 3.4 m AHD in five leachate wells installed across the Proposal Site. The base of the liner has been identified at two leachate well locations (LW01 and LW04) located in western areas of the Proposal Site and ranges in thickness between 0.4 m and 1.1 m. The thickness of the clay liner in landfill Cell B10 was not characterised by the leachate wells drilled in this area, but test pitting along the interface between Cell B10 and Cell B11 in June 2014 (CES, 2017a) intersected the clay liner beneath Cell B10 at elevations between 1.3 m AHD and 3.3 m AHD, with a typical liner thickness of 0.9 m. The clay liner was comprised of medium to high plasticity clay.

There is currently no lithological characterisation of the material placed in the pond void cells, other than the material specifications in the EPL. Site observations of stockpiled material and discussions with site staff during a site visit on 4 August 2020 suggested that the stockpiled material had a high proportion of clays/fines, which had settled surface ponding and resulted in perched water. The site staff indicated that during infilling of the water filled voids, fine material (clays) settled more slowly than coarse materials (concrete, sandstone cobbles and sands), which may have resulted in layering of coarse and fine material within the voids. This process would increase the anisotropy of the vertical (lower) and horizontal (higher) hydraulic conductivity.

Six leachate wells were installed in the top layer of waste cells in 2016, with four wells (LW01 to LW04) installed in the western area and two wells (LW05 and LW06) installed in the eastern area (Cell B10). The borehole logs for the wells installed in the western area note a mixture of:

- Wood fragments with plastic and metal fragments
- Concrete cobble
- Net/fabric material
- Sandstone cobble
- Gravelly sand
- Clayey sand
- Brick and tiles

Quaternary sediments

The sediments from the erosion of the underlying and surrounding sandstone have been transported by waterways to form the Quaternary sediments. The Proposal Site is located on medium to fine 'marine' quartz sand and podsols (Qbd) and 'marine' quartz sand (Qmd).

Botany Sands also include aeolian deposits comprising well-sorted, poorly cemented, and fine to medium-grained quartz sands. Lenses and bands of inter-dunal peat and organic clay are also present within the unit. The average thickness of the Botany Sands is 15 to 20 metres (Hatley, 2004). Kurnell was once an island and with the gradual rise in sea level has infilled the bedrock channels with a tombolo forming between Kurnell and Cronulla. The depth of these sediments beneath the Proposal Site is unknown.

Bedrock

The alluvium, marine deposits and residual soils overlie Hawkesbury Sandstone.
The Hawkesbury Sandstone is composed of medium to coarse-grained quartz sandstone, with very minor shale and laminate lenses. The Hawkesbury Sandstone outcrops at the eastern end of the Kurnell peninsula. The depth to bedrock has not been characterised at the site.



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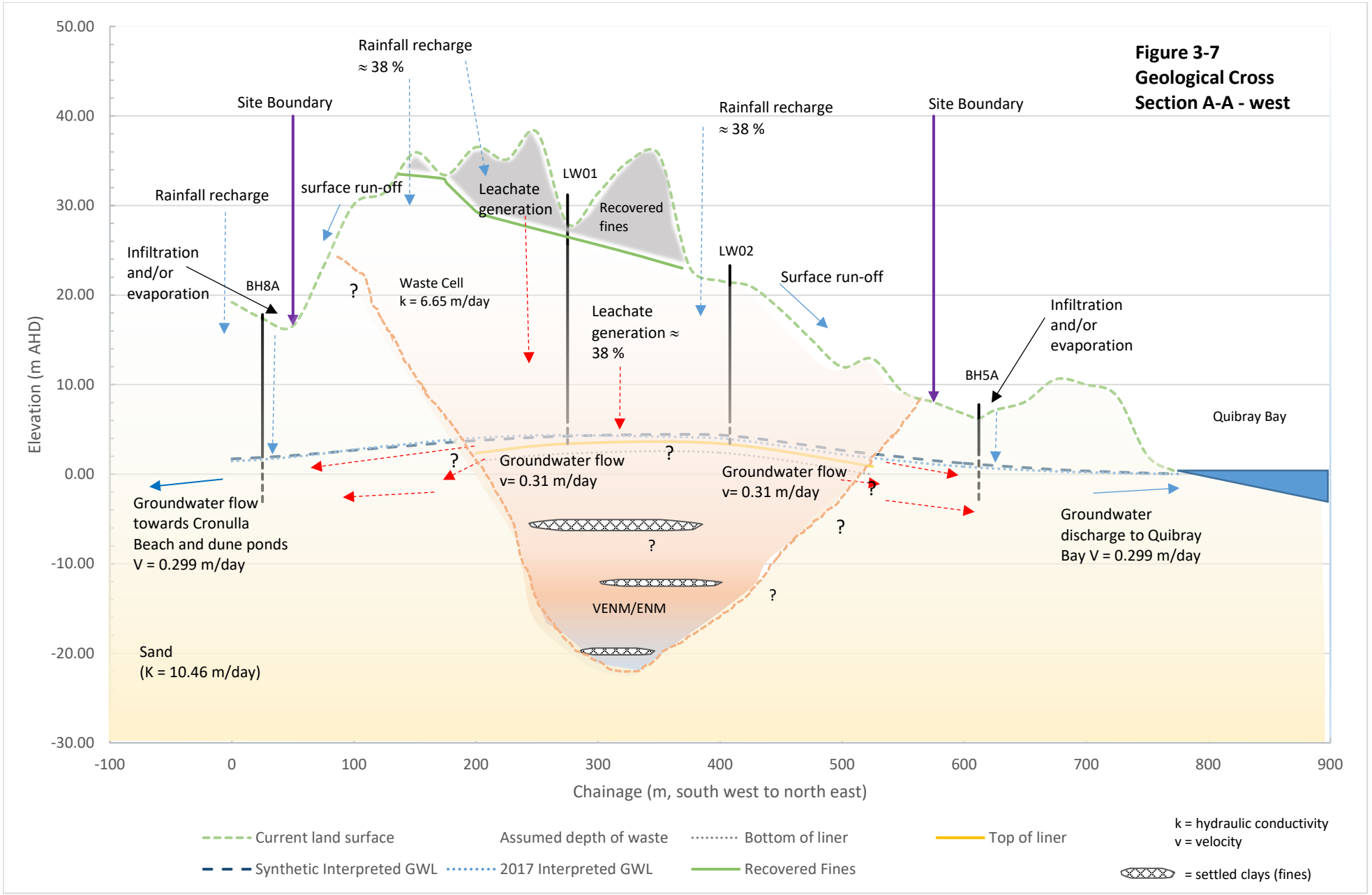
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Surface Geology

Figure 3-6

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Figure 3-7
Geological Cross Section A-A - west
Rainfall recharge ≈ 38 %
Site Boundary
Rainfall recharge
surface run-off
Leachate generation
LW01
Recovered fines
Rainfall recharge ≈ 38 %
Site Boundary
Infiltration and/or evaporation
BH8A
Waste Cell k = 6.65 m/day
LW02
Surface run-off
Leachate generation ≈ 38 %
Infiltration and/or evaporation
BH5A
Quibray Bay
Groundwater flow v= 0.31 m/day
Groundwater flow v= 0.31 m/day
Groundwater flow towards Cronulla Beach and dune ponds V = 0.299 m/day
Groundwater discharge to Quibray Bay V = 0.299 m/day
VENM/ENM
Sand (K = 10.46 m/day)
Elevation (m AHD)
Chainage (m, south west to north east)
Current land surface
Assumed depth of waste
Bottom of liner
Top of liner
Synthetic Interpreted GWL
2017 Interpreted GWL
Recovered Fines
k = hydraulic conductivity
v = velocity
= settled clays (fines)

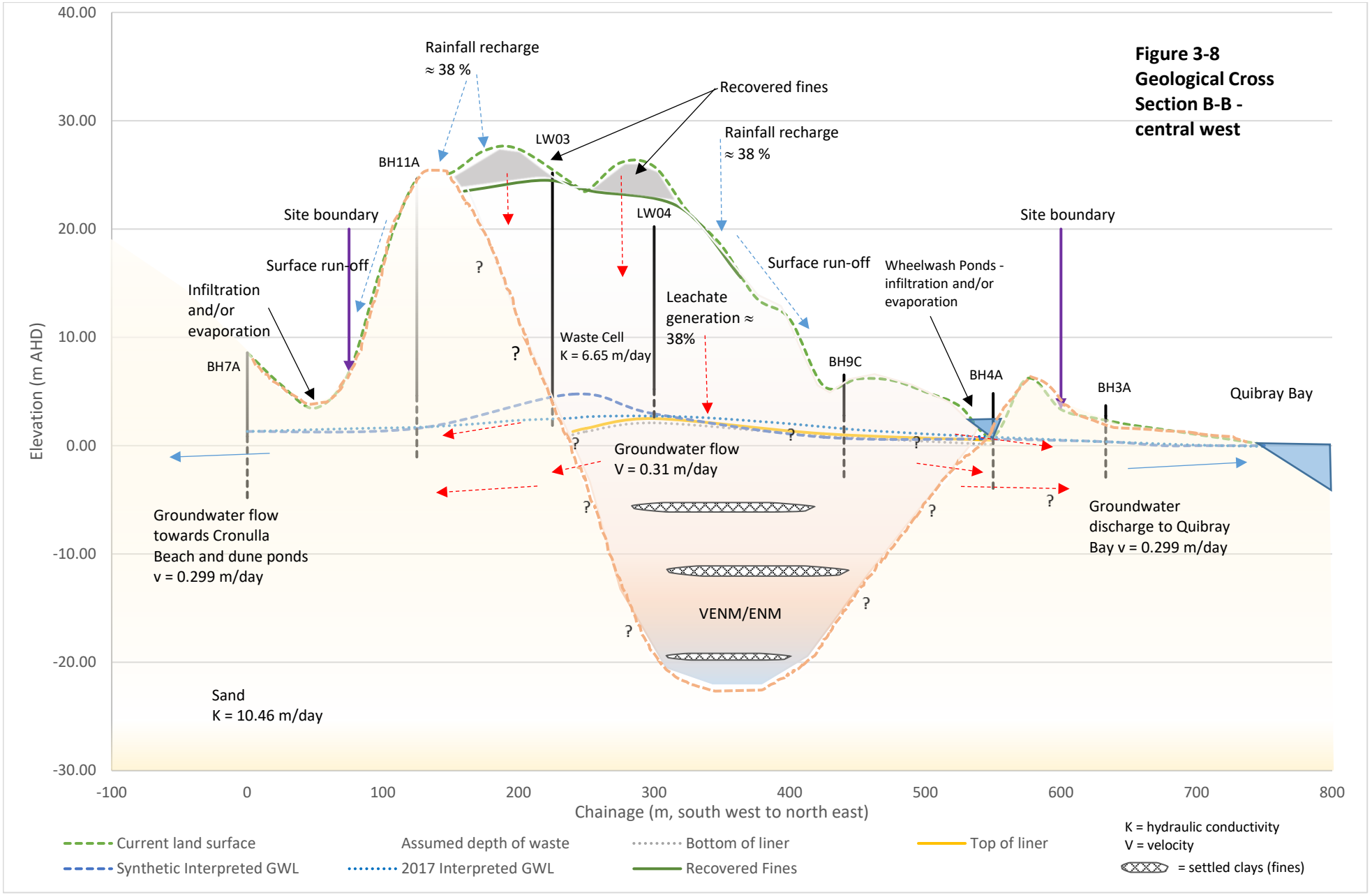


Figure 3-8 Geological Cross Section B-B - central west

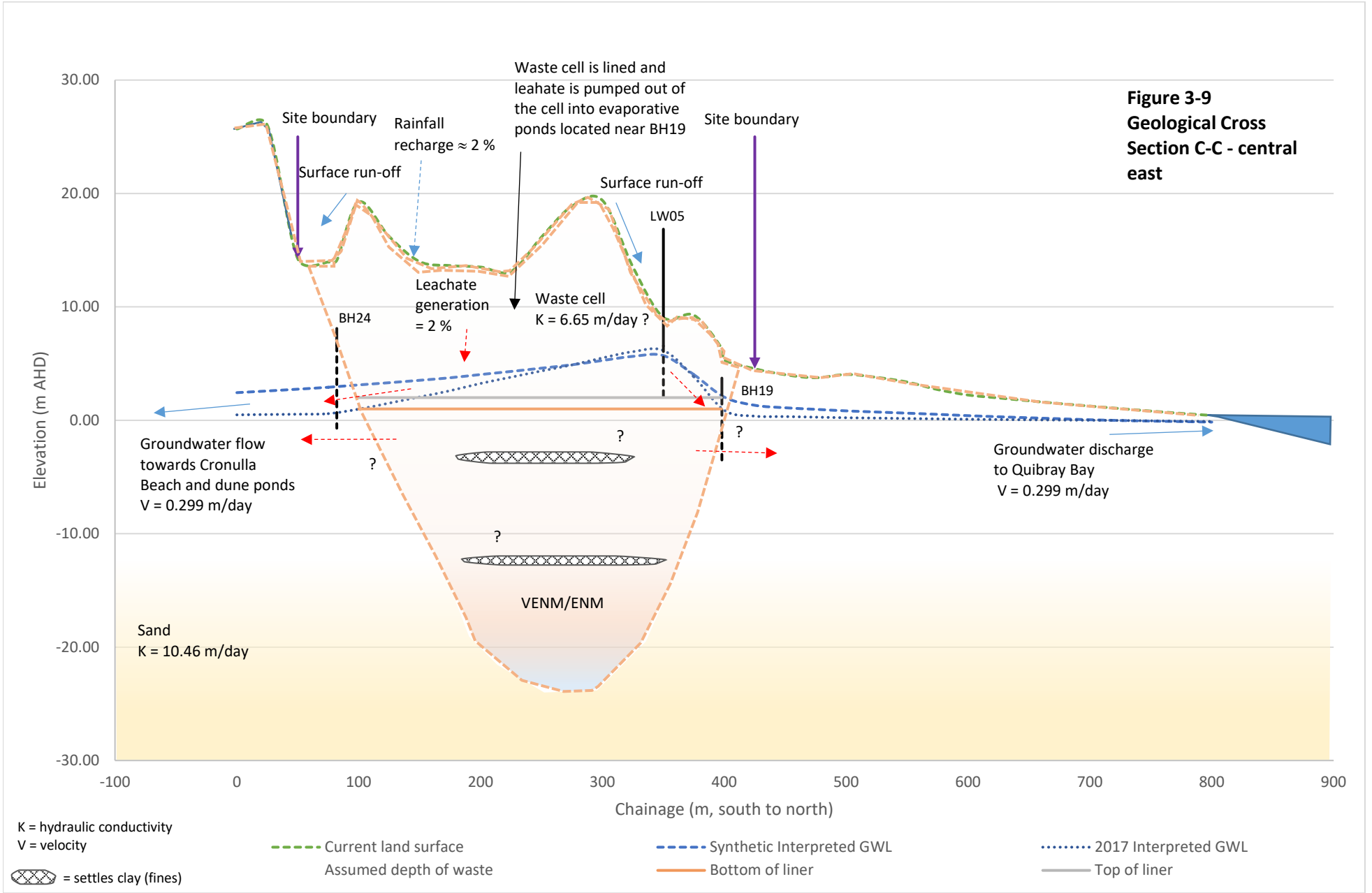
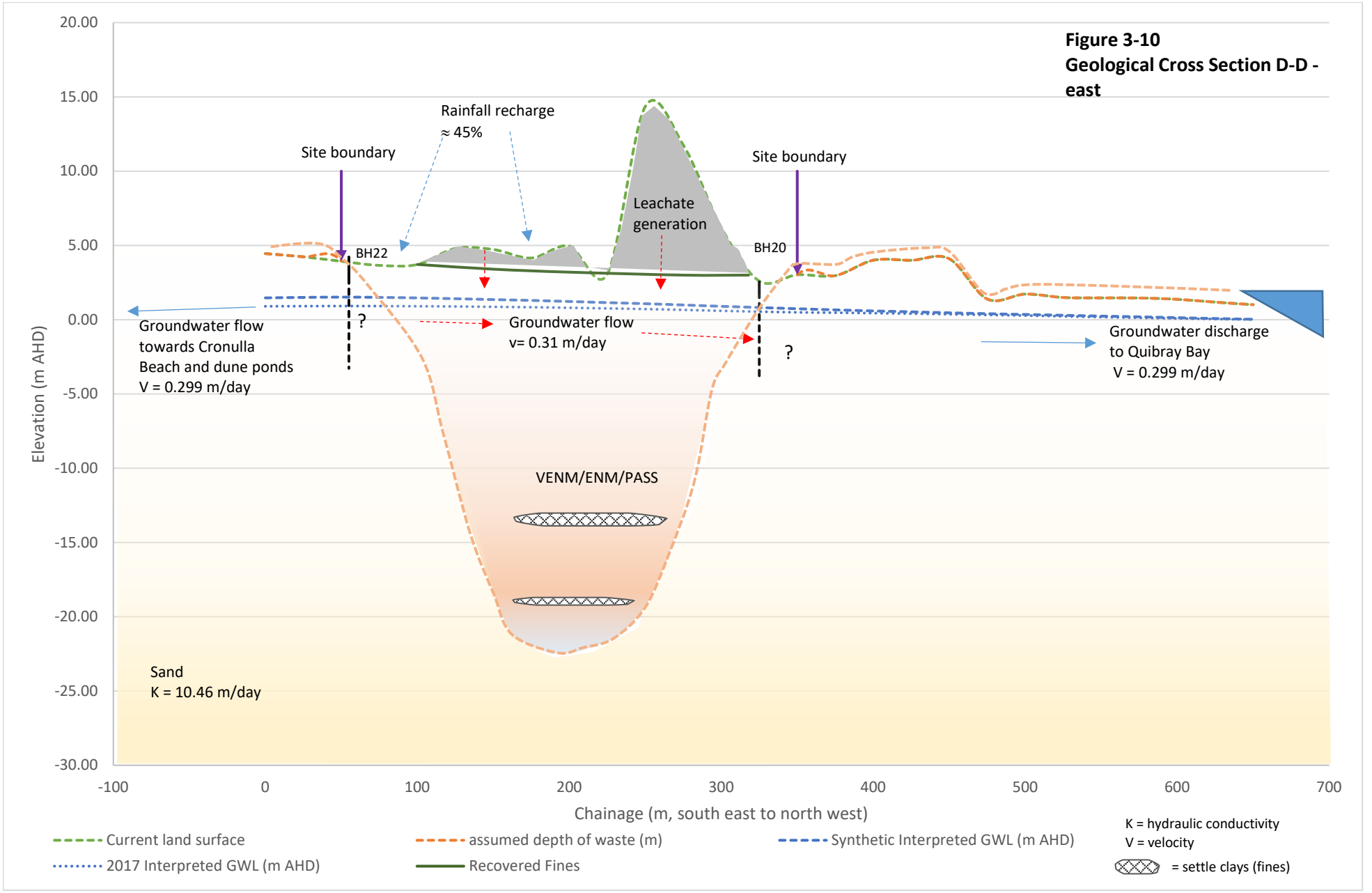

Figure 3-9
Geological Cross Section C-C - central east
Waste cell is lined and leahate is pumped out of the cell into evaporative ponds located near BH19
Site boundary
Rainfall recharge ≈ 2 %
Surface run-off
Surface run-off
Site boundary
LW05
Leachate generation = 2 %
Waste cell K = 6.65 m/day ?
BH24
BH19
Groundwater flow towards Cronulla Beach and dune ponds V = 0.299 m/day
Groundwater discharge to Quibray Bay V = 0.299 m/day
VENM/ENM
Sand K = 10.46 m/day
Elevation (m AHD)
Chainage (m, south to north)
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-100
0
100
200
300
400
500
600
700
800
900
K = hydraulic conductivity
V = velocity
= settles clay (fines)
Current land surface
Assumed depth of waste
Synthetic Interpreted GWL
Bottom of liner
2017 Interpreted GWL
Top of liner

Figure 3-10
Geological Cross Section D-D - east



3.6 Soil landscape

Based on the Soil Landscapes of Sydney (Lotsearch, 2020), the Proposal Site is within the soil landscape: Podsol (Cb27). This is characterised by "*coastal sand plains and dunes, lagoons and swampy areas: chief soils are leached sands. Associated are dunes of siliceous sands and/or calcareous sands fringing the coastline; and swampy areas of soils and soils with peaty surfaces.*"

3.7 Acid sulfate soils (ASS)

ASS are naturally occurring soils containing iron sulfides. When exposed to air, these oxidise and produce sulfuric acid. These soils are common along coastal areas and inland waterways, wetlands, and drainage channels. Based on the Port Hacking Acid Sulfate Soil Risk map (DLWC 1997), the Proposal Site is classified as being located within disturbed terrain at 2 to 4 metres AHD.

There is the potential for ASS to be present beneath the disturbed terrain and Table 3-3 presents the acid sulfate classification of locations within the Proposal Site (Sutherland Shire LEP, 2015) and is shown in Figure 3-11.

Table 3-3 Acid sulfate soil classifications

Location	Class
Lot 1122 DP 794114	2, 3, 4 and 5
Lot 1123 DP 794114	
Lot 6 DP 1158627	3 and 5
Lot 5 DP 1158627	3 and 4

Class 2 are classified as ASS likely to be found below the natural ground surface. Any works beneath the natural ground surface or works which are likely to lower the water table, will trigger the requirement for assessment and may require management.

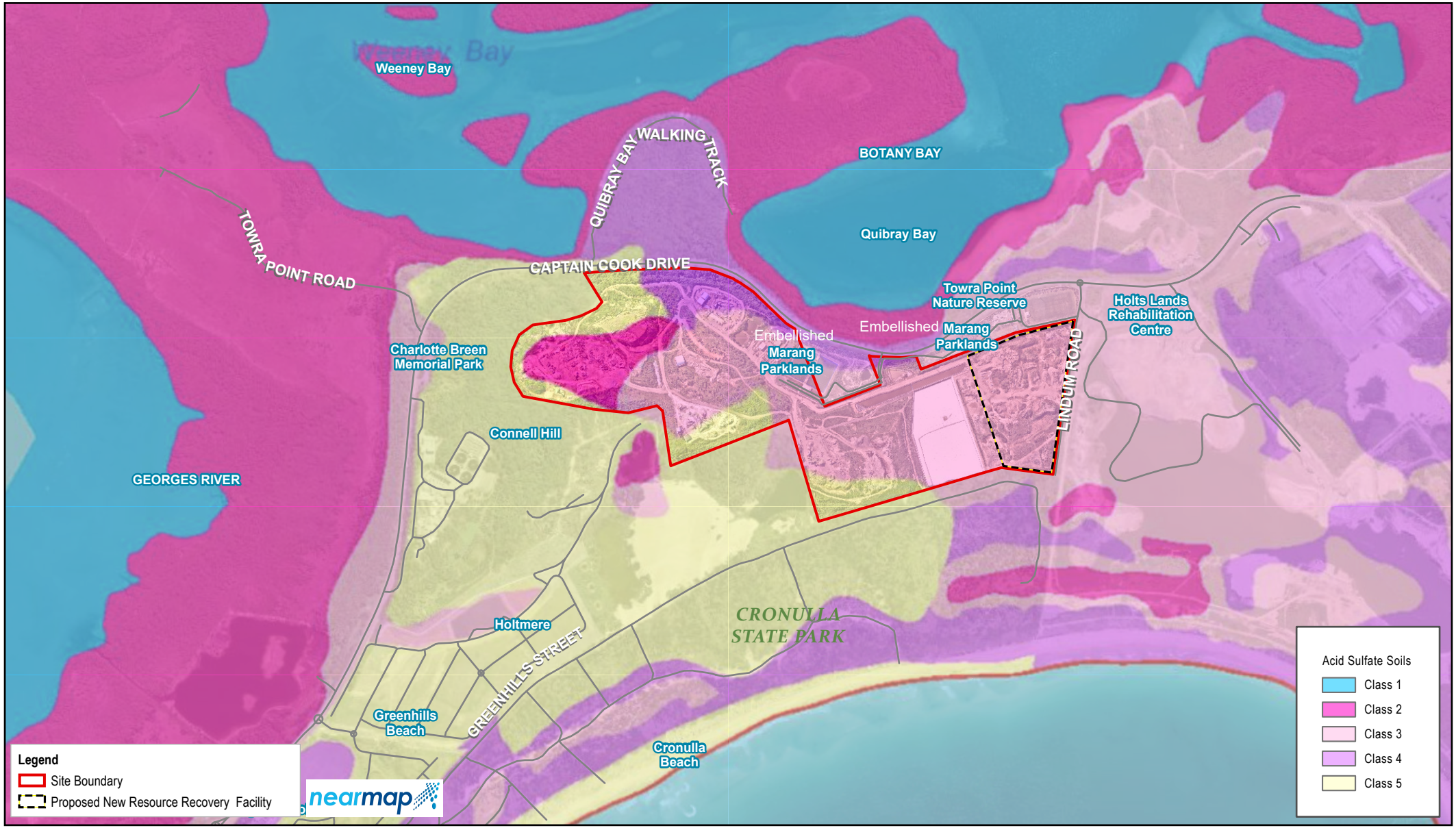
Class 3 are classified as ASS likely to be found beyond 1 metre below the natural ground surface. Any works that extend beyond 1 metre below the natural ground surface, or works which are likely to lower water table beyond 1 metre below the natural ground surface, will trigger the requirement for assessment and may require management.

Class 4 are classified as ASS are likely to be found beyond 2 metres below the natural ground surface. Any works that extend beyond 2 metres below the natural ground surface, or works which are likely to lower the water table beyond 2 metres below the natural ground surface, will trigger the requirement for assessment and may require management.

Class 5 are classified as unlikely to find ASS. However, they are adjacent to Class 1, 2, 3 and 4 land and therefore consideration is needed if lowering of the water table will affect the neighbouring areas.

There has been no investigation of ASS undertaken on the Proposal Site, however, the Proposal Site has been mined to depths of up to -23 m AHD, which has resulted in removal of PASS in mined areas that are below the water table. Potential acid sulfate soils (PASS) have also been placed below the water table in accordance with EPL 4608 (license variation dated 24 May 2005). Aerial photos for the Proposal Site (Lotsearch, 2020) indicate that only eastern areas of the Proposal Site had mine voids/ponds after 2005. Breen has advised that the PASS is likely to be less than 1% of the total backfill. Imported PASS material along with VENM has been placed in the voids between -23 m AHD and 2 m AHD, although Breen has indicated that it is more likely to be at depth.

Along the inside perimeter of the Proposal Site boundary where sand extraction was shallow or did not extend to the Proposal Site boundary the potential acid sulfate soils indicated in Figure 3-11 may still be present.



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Acid Sulfate Soil Classes

Figure 3-11

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Print date: 22 Oct 2020 - 13:26

Data source: Acid Sulfate Soil Classification © State Government of NSW and Department of Planning, Industry and Environment 1995. General Topo - NSW LPI DTDB 2020 (Date extracted: 21 July 2020); Cadastre - NSW LPIT DCDB 2020 (Date Extracted: 21 July 2020); Aerial Imagery - Sixmaps LPI_Imagery_Best: © Department of Customer Service 2020. Created by: kqvelasco

3.8 Hydrogeological conditions

3.8.1 Aquifer parameters

Botany Sands

The Botany Sands aquifer is considered to be unconfined and high permeability. Groundwater is contained in the pore spaces in the unconsolidated sediments and there is a strong hydraulic connection between surface water and groundwater. The estimated travel time between rainfall recharge and surface water features is expected to be days.

Published data from 1937 to 1997 for the Botany Sands was compiled by Bish et al. (2000), and further summarised by Hatley (2004). The aquifer characteristics of the Botany Sands are presented below in Table 3-4.

Table 3-4 Aquifer characteristics of the Botany Sands (Hatley, 2004)

Parameter	Range
Average thickness	15 to 20 m, up to 53 m in deeper paleochannels
Recharge (by rainfall infiltration)	6% (over estuarine sediments) to 37% (over sandy sediments)
Hydraulic gradient	0.003 to 0.01
Porosity	0.33 to 0.40
Variable storage coefficients	0.0004 to 0.26
Hydraulic conductivity (m/day)	1.4 to 85
Transmissivity (m^3/day/m)	230 to 630
Specific yields	0.11 to 0.26

Hydraulic conductivity data from an uncited previous investigation by URS for bores screened within the Botany Sands had a hydraulic conductivity of 20 m/day to 30 m/day and a porosity of 0.3 to 0.4. The groundwater velocity was estimated to be between 0.04 m/day to 0.2 m/day (CES, 2020b).

Hydraulic testing, in the form of short-term pumping tests, was conducted on 11 June 2020, on three monitoring wells at the Proposal Site that were interpreted to be screened within the Botany Sands. A submersible pump was lowered into the wells and pumped for 10 minutes. Ground level changes were measured using a submerged automatic data logger as well as manually using a water level dipper.

The data was analysed using the Theis (recovery) analytical method in the AQTESOLV software. Analytical outputs are included in Appendix A. Theis recovery applies a straight line solution for calculating transmissivity and storativity from residual drawdown data.

The results of the permeability testing are presented below in Table 3-5 and are similar but lower than the values for the Botany Sands presented in CES (2020b).

Table 3-5 Hydraulic conductivity data for the Proposal Site

Monitoring Well	Standing water Level (mBTOC)	Screened Interval (mBTOC)	Transmissivity (m2/day)	Saturated water column (m)	Hydraulic Conductivity (m/day)
BH9C	5.386	3.75 – 9.75	18.63	4.735 (7.1025)*	4.27
BH17	5.307	2.0 – 8.0	31.89	2.653 (3.98)*	8.01
BH22	2.665	1.4 – 7.5	128.8	4.495 (6.742)*	19.10

* Corrected aquifer thickness to account for zone over which flow into the well occurs.

Fill

There are four primary types of man-made fill materials associated with the Proposal Site. One is the landfill material (waste as part of their EPL) associated with the Proposal Site's operation, while the other types are general fill associated with resurfacing of the Proposal Site, the stockpiled RRO materials (fines and aggregates) and the clay liners present across western areas of the Proposal Site and beneath Cell B10.

Hydraulic conductivity data, estimated from falling slug testing completed by CES (2020b) for wells located within the landfill material are presented in Table 3-6. The estimated hydraulic conductivities have an average of 6.65 m/day with a range of 0.8 m/day (LW02) to 15.03 m/day (LW03). The larger range is expected to reflect the inherent variability in the landfilled material. On average the hydraulic conductivities appear to be slightly lower than those of the surrounding Botany Sands Aquifer.

As noted in Section 3.5 it is expected the vertical hydraulic conductivities within material placed in the sand mine voids and below the water table may have reduced vertical hydraulic conductivity due to the different settling velocities of coarse and fine material. This may reduce vertical migration of leachate, which is already retarded by the clay liners at or about 2 m AHD. The clay liners have been identified in drawings and leachate wells screened in landfill Cell B10 and partially in leachate wells identified in western areas of the Proposal Site.

There is currently no data characterising the hydraulic conductivity of the clay liners, the RRO material (although these are expected to above the water table and unsaturated) or the material emplaced in the sand mine voids below 2 m AHD.

Table 3-6 Hydraulic conductivity data within the waste (CES, 2017)

Bore location	Screen depth (mBGL)	Screen lithology	Hydraulic conductivity (m/day)
LW01	24.8 – 27.8	Waste (Clay, wood, sand)	15.03
LW02	16.0 – 19.0	Waste (clayey Sand to sandy Clay)	0.80
LW03	19.8 – 22.8	Waste (Gravelly Clay, concrete, wood)	14.26
LW04	14.4 – 17.4	Waste (wood, concrete, metal fragments)	1.98
LW05	10.3 – 14.8	Waste (wood, gravelly Clay, sandy Gravel)	5.56
LW06	24.3 – 27.3	Waste (metal, gravelly Clay, wood)	2.27

The waste is described as a mix of wood (timber and manufactured), brick, concrete, metal, plastic and ceramic fragment. It also includes black to dark brown sand and gravel with a trace of clay.

3.9 Groundwater elevations

3.9.1 Site groundwater elevations and flow direction

Figure 3-12 and Figure 3-13 present the interpolated groundwater contours for the Proposal Site in January 2017 and for the period field works took place in July and August 2020. These dates were selected as they represent the most complete data sets where leachate levels within the landfill and groundwater levels on the Proposal Site perimeter had been recorded. It is noted

that the 2020 data represents surface water, groundwater and leachate levels over the July to August period and are not instantaneous. Elevation data for LW06 from January 2017 has been included in the 2020 elevations. Elevation data for BH24 in both figures have been corrected to the current surface elevation as historical top of casing data was interpreted to be incorrect. This was considered to be suitable given that groundwater elevations do not vary significantly at each location over time. The contours include leachate levels within the landfill as this provides the only characterisation of groundwater levels within central areas of the Proposal Site and it is also expected that leachate levels do discharge to the groundwater systems. It is noted that there is a leachate collection system within Cell B10, that preferentially captures leachate before it can discharge to the surrounding groundwater system. There are differences between the two figures, which are partly associated with the available data used to interpolate groundwater contours. This is most evident in the inclusion / exclusion of LW06 and BH24 in an around Cell B10 in the figures.

Key points to note from the groundwater contour plots are:

- Groundwater/leachate mounds are apparent in Cell B10 (approximately 5.5 m AHD) and in western landfill areas of the Proposal Site near LB02 and LW03 (approximately 4.5 m AHD). These mounds appear to be relatively consistent between 2017 and 2020. There also appears to be a low rise (approximately 1 m AHD) in groundwater levels across eastern areas of the Proposal Site (east of Cell B11).
- Groundwater appears to migrate from these mounds to Quibray Bay in the north, Weeney Bay in the north west and the dune pond systems and Cronulla Beach to the south. It appears that the Proposal Site primarily discharges to Quibray Bay, which is part of Towra Point Aquatic Reserve.
- The contours indicate that the groundwater flows toward Greenhills Beach residential development and Sydney Water to the south west could occur, but there is a elevated ridge line through here which is expected to create a groundwater mound / flow divide that will result in groundwater migration either to the north and west toward Weeney Bay and Woolooware Bay or south to the dune ponds.
- It appears that the infiltration pond water elevations are at similar levels to surrounding groundwater suggesting that they have a high degree of connection and that they are likely to be a surface expression of groundwater.



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Site groundwater elevations and groundwater contours – 2017

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Revision No. **-**
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Figure 3-12

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Print date: 22 Oct 2020 - 12:44

Data source: General Topo - NSW LPI DTDB 2020 (Date extracted: 21 July 2020); Cadastre - NSW LPIT DCDB 2020 (Date Extracted: 21 July 2020); Aerial Imagery - Sixmaps . Created by: kqvelasco



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Site groundwater elevations and groundwater contours – 2020

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Figure 3-13

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Data source: General Topo - NSW LPI DTDB 2020 (Date extracted: 21 July 2020); Cadastre - NSW LPIT DCDB 2020 (Date Extracted: 21 July 2020); Aerial Imagery - Sixmaps . Created by: kqvelasco

3.9.2 Depth to groundwater

Figure 3-7 to Figure 3-10 present the groundwater elevations relative to the surface topography which highlights the relative depths to groundwater across the Proposal Site. The cross sections are located on Figure 3-6. The information presented is summarised below:

- Conceptual cross section A-A and B-B:
  - Groundwater\leachate beneath the landfill in western areas of the Proposal Site is deep (generally greater than 20 m below ground surface - bgs) and does not intersect with RRO materials.
  - As the groundwater approaches the north site boundary and the land surface elevation falls groundwater generally approximates depths of less than two metres, with expected intersection of groundwater by the surface water infiltration ponds across the Proposal Site (see Figure 3-5). From the Proposal Site boundary the groundwater is expected to become shallower before discharging to Quibray Bay.
  - As the groundwater approaches the southern site boundary and the land surface elevation falls groundwater generally approximates depths of less than two metres, with expected intersection of groundwater by the off-site ponds across the Proposal Site (see Figure 3-5), which are nearly intersected by cross-section B-B. Beyond the ponds the groundwater is expected to deepen below the coastal fore dune (up to 13 m deep) before becoming shallow again and discharging to the Tasman Sea via Cronulla Beach. Due to the depth to groundwater in fore dune areas the vegetation is unlikely to be groundwater dependent.
- Conceptual cross section C-C:
  - Groundwater/leachate beneath the Cell B10 landfill is generally greater than 10 m below ground surface.
  - As the groundwater approaches the north site boundary and the land surface elevation falls groundwater generally approximates depths of less than three metres. From the Proposal Site boundary the groundwater is expected to become increasing shallower before discharging to Quibray Bay.
  - As the groundwater approaches the southern site boundary the land surface elevation rises again resulting in depths to groundwater increasing (> 15 m bgs) before becoming shallow again and discharging to the Tasman Sea via Cronulla Beach. Due to the depth to groundwater in these areas, dune vegetation is unlikely to be groundwater dependent.
- Conceptual cross section D-D:
  - Groundwater/leachate beneath low lying eastern areas of the Proposal Site is generally within 2 to 3 metres of ground surface, noting that there are isolated stockpiles across the Proposal Site where groundwater is deeper.
  - As the groundwater approaches the north site boundary and the land surface elevation increases slightly (depth to groundwater approximates 4 m bgs) before falling (and depth to groundwater decreasing) and discharging into Quibray Bay.
  - As the groundwater flows cross the eastern site boundary it intersects with the Besmaw property trading as Holt Land Rehabilitation Centre (Besmaw). There is ongoing construction works on this property and as such the depth to groundwater is expected to vary until becoming exposed in the Besmaw property's surface water body (approximately 500 m east).

3.9.3 Temporal changes in groundwater elevations

Groundwater levels in the on-site bores have been monitored by Consulting Environmental Scientists (CES) from 2013 to present. Figure 3-14 shows all available water levels in on-site and boundary bores from 2013 to present and rainfall from Sydney Airport AMO Bureau of Meteorology weather station. In general, water levels are approximately consistent over time with no notable relationship to long term variations in rainfall. It is noted that the quarterly frequency of monitoring may have prevented characterisation of short-term response to rainfall events.

Figure 3-14 shows available groundwater levels in on-site and boundary wells from 2013 to present and rainfall from Sydney Airport AMO Bureau of Meteorology weather station. Other than in the leachate well (LB02) and wells BH6A and BH14A most wells fluctuate between 0 m AHD and 2 m AHD. The minimum and median groundwater elevations ranges for wells around the Proposal Site approximated 0.29 m and 2.1 m respectively over the monitoring period. This suggests water elevations are generally consistent over time with no notable long term climatic variations.

It is noted that BH6A is in a location of recent increases in land surface elevations associated with preparing this area for sports field development, which may be responsible for increasing levels since 2016. Whether the change is associated with actual changes in groundwater in this area or changes to the elevations of the measuring point as the land has been raised has not been confirmed.

Groundwater elevations in BH14A appear to have fallen after installation to stabilised elevations of between 1 m AHD and 2 m AHD.

Groundwater elevations at the time of sand mining have not been quantified, however, due to removal of the sand dunes, excavation of voids and expected active dewatering during mining, groundwater elevations around the Proposal Site are expected to have been lower during that time.

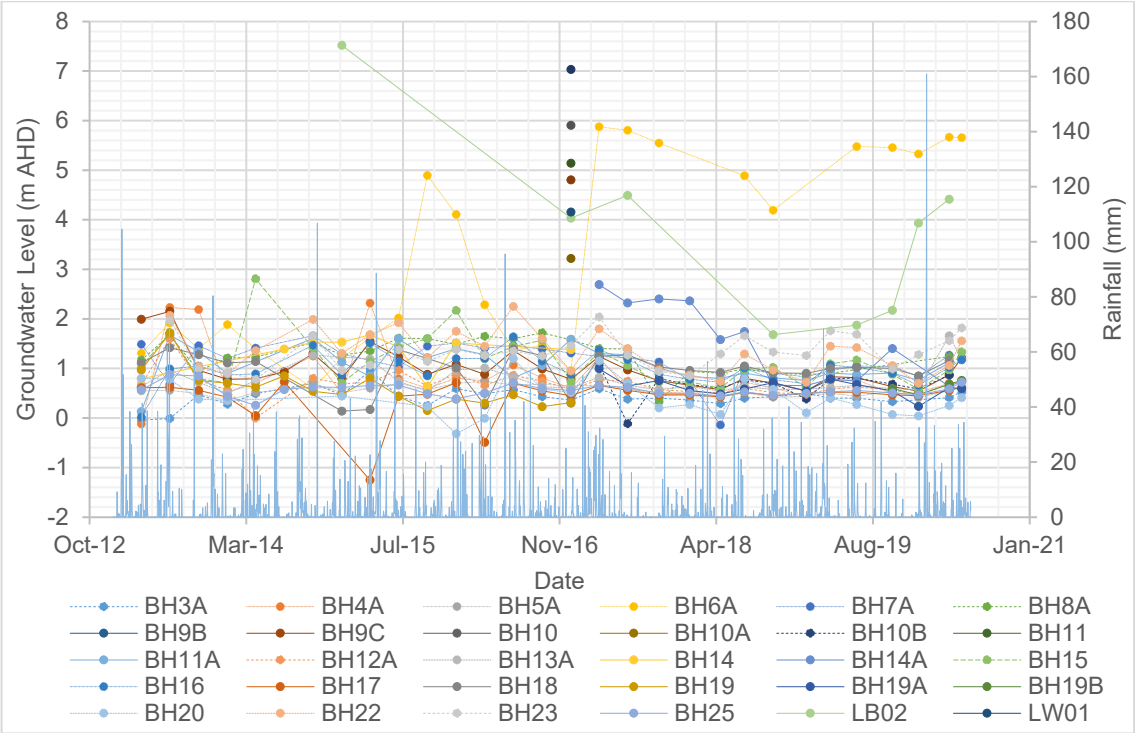


Figure 3-14 Site groundwater levels over time

To further assess the short term response in groundwater elevations for the Botany Sands three wells with high frequency monitoring records were identified in the surrounding area. The three wells are located to the north-east and east of the Proposal Site. GW075062 is located about 2.75 kilometres to the north-east, GW075061 is located about 1.2 kilometres to the north-east of the Proposal Site and GW075060 about 1.3 km to the east and their well details are presented in Table 3-7. Groundwater levels in these wells are presented in Figure 3-15 and appear to show a near immediate response to rainfall events, although the magnitude of change in groundwater levels does not always reflect the magnitude of the rainfall event. The overall fluctuations in these wells over the monitoring period approximated 0.8 metres in GW075060, 1.0 metre in GW075061 and approximately 0.5 metres in GW075062.

The largest groundwater level response to rainfall was present in GW075061 in June 2016 and approximated 0.7 m. This provides an indication of expected groundwater level response associated with rainfall events across the region and on the Proposal Site.

Table 3-7 Groundwater wells in area of the Proposal Site with continuous monitoring dataset

Well ID	Duration of Monitoring	Elevation (mAHD)	Bore depth (m)	Lithology	Groundwater levels (mAHD)
GW075060	01/012016 – 14/03/2017	13.226	6.1	Sand	Min: 11.17 Max: 11.99 Mean: 11.56
GW075061	01/01/2016 – 14/03/2017	13.229	5.35	Sand	Min: 11.13 Max: 12.18 Mean: 1.57
GW075062	01/01/2016 – 25/03/2020	13. 272	33	Sand	Min: 12.48 Max: 12.97 Mean: 12.73

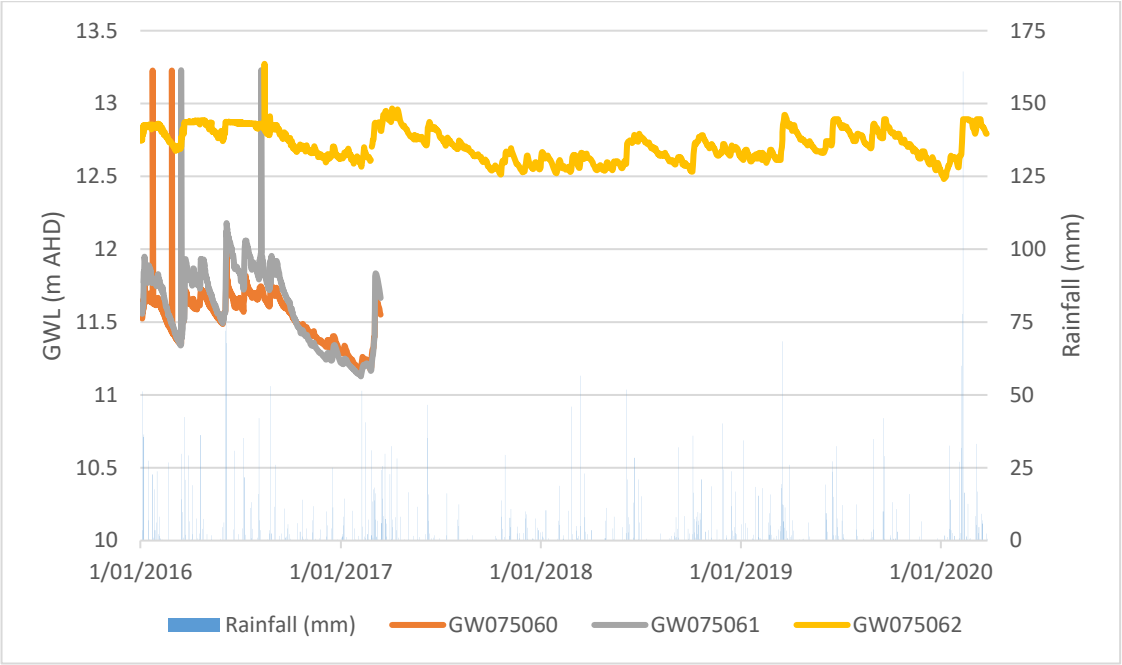


Figure 3-15 Local groundwater levels with rainfall

The CRD curve provided in Figure 3-1 of Section 3.1 provides an understanding of the long term climatic conditions with a declining curve representing below average rainfall and an increasing curve representing above average rainfall. The CRD curve indicates that the data range (2016 to 2018) is a period with lower than average rainfall. The groundwater elevations in wells near to the Proposal Site (GW070560, GW070561 and GW0750562) do not respond to this decrease in rainfall, which also suggests that the aquifer in the vicinity of the Proposal Site does not respond to long term climatic conditions.

3.10 Groundwater flow velocities

Groundwater flow velocities can be estimated by rearranging the Darcy flow equation as follows:

$$v = \frac{ki}{n}$$

Where:

- k = Hydraulic conductivity (m/day)
- i = Hydraulic gradient (m/m – dimensionless)
- n = Effective porosity (m^3/m^3 – dimensionless)
- v = Groundwater velocity (m/day)

The estimated regional flow velocities across the Proposal Site using the data presented in Section 3.8 and Section 3.9 above are presented in Table 3-8.

Table 3-8 Estimated groundwater flow velocities

Input Parameter	Unit	Landfill			Botany Sands			Source
		Low	Likely	High	Low	Likely	High	
Hydraulic conductivity (k)	m/day	0.8	6.65[a]	15.03	4.27[b]	10.46[c]	30	Estimated range from data presented in Section 3.7.1.
Gradient (i)	Dimension less	0.004	0.007	0.009	0.006	0.010	0.013	Gradients calculated by data collected by CES January 2017.
Effective porosity (n)	Dimension less	0.1	0.15	0.3	0.3	0.35	0.4	Weight and Sondereger (2001).
Groundwater velocity (v)	m/day	0.032	0.310	0.451	0.085	0.299	0.975	Modified Darcy equation.

[a] Average value from CES (2017) hydraulic conductivity data

[b] Lowest value from GHD site hydraulic conductivity data.

[c.] Average value from GHD site hydraulic conductivity data.

Table 3-8 suggests that groundwater flow velocities range from 0.09 m/day to 0.97 m/day in the Botany Sands and from 0.03 m/day to 0.45 m/day in areas of waste / landfill.

The low end and high end values are expected to be conservative values that do not reflect bulk aquifer conditions and correlation between input parameters (i.e. high hydraulic conductivities are usually associated with lower gradient and higher effective porosities). Most likely groundwater flow velocities are expected to approximate 0.310 m/day for the landfill aquifer and 0.299 m/day for the Botany Sands Groundwater Source. This is based on the adoption of parameters most representative of bulk formation hydraulic properties for these aquifer systems.

Using these values the migration times from the groundwater mounds in the centre of the Proposal Site to Quibray Bay are expected to be in the order of 2.7 to 5.9 years, assuming flow paths from the mounds range from 300 m to 650 m and assuming groundwater flow velocities of 0.3 m/day. Travel times from the Proposal Site boundary to Towra Point Reserve will generally be less than 1 year.

Based on the calculated flow rates it is expected that current water quality present in peripheral groundwater wells at the Proposal Site and discharging to Towra Point reserve and the dune ponds to the south are indicative of material landfilled prior to 2014.

3.11 Existing water balance

Rainfall recharge can be used to provide an overall understanding of the groundwater inputs and therefore site water balance. Relevant recharge estimates from regional studies and site modelling works are provided below.

Recharge to the Botany Sands Groundwater Source is primarily through direct rainfall infiltration (Hatley, 2004) and ranges between six per cent over estuarine sediments to 37 per cent over sands (Bish, Realica, & Wischusen, 2000).

HELP[2] modelling has been completed for the Proposal Site (CES, 2020) to characterise potential leachate management requirements. Detail on the model design is provided in (CES, 2020). The results of the modelling are summarised below:

- Average annual leachate generation rates across the site with the exclusions of Cell B10 and Cell B11 was approximately 35.5% of annual rainfall which equated to 73,512 m^3/year (201 m^3/day). This excludes Cell B10 and Cell B11 located within Lot 5 and Lot 6 which have leachate capture systems. .
- Average annual leachate generation rates estimated for the western landfill areas (Areas A1 and A2) were approximately 53 % of annual rainfall. This equated to 458,156 m^3/yr (1,255 m^3/day) of generated leachate, assuming the landfill approximates an area of 24.9 Ha. These areas are the primary locations that will be capped as part of the Proposal.

Further to the above estimates completed by CES (CES, 2020), MUSIC modelling completed by Cardno (Cardno, 2021) has been adapted by Cardno to characterise the overall change in surface water budgets across the Proposal Site. This has included separating the MUSIC model into four main surface water catchments for the Proposal Site (North, West, South and South-east). A more detailed discussion of the catchments is provided in Section 5.3 where a comparison of changes in current and future conditions is provided.

The catchments do not overlap with the HELP model catchments, primarily because the objectives for the modelling were different. However, broad comparisons can be made with regard to recharge rates.

The MUSIC modelling indicates that existing site rainfall recharge rates (including via infiltration ponds) broadly approximate 40 % of total rainfall or a volume of 330 ML/yr (900m^3/day). This is higher than the rainfall recharge rate reported for the on-site catchments modelled by CES (CES, 2020) using HELP of 36 % (noting that this value excludes rainfall run-off infiltration).

Actual leachate volumes being generated from the current landfills, including those being directed from Cell B10 into the leachate ponds, are not currently being recorded and as such the HELP and MUSIC modelling results have not been qualified against site data.

Other factors that will influence groundwater recharge rates on a localised basis include:

- The clay liner placed above the in-filled sand mine voids beneath the western landfills at approximately 2 m AHD across the Proposal Site, which will preferentially redirect infiltrated rainfall to the edges of the liner before infiltrating to the Botany Sands.
- Cells B10 and B11 in the eastern area of the Proposal Site, which have been lined and have leachate collection systems that will collect and manage any recharge.
- The two long rectangle leachate collection ponds located to the north of Cells B10 and B11 (see Figure 3-5) have a compacted clay liner with a welded HDPE liner and would have no recharge into the groundwater systems.

An additional way to assess overall groundwater budgets is to assess the overall flow regimes based on the groundwater flow conditions present at a site. This can be established using the Darcy equation which is:

$$Q = KiA$$

Where:

[2] *Hydrologic Evaluation of Landfill Performance (HELP) software.*

Q = Discharge (m^3/day)

K = Hydraulic conductivity (m/day)

i = Groundwater gradient (m)

A = Cross-sectional area of groundwater discharge (m^2), which is the aquifer depth - D (m) multiplied by a unit width of aquifer - L (m).

Assuming the aquifer parameters for the Botany sands outlined in Table 3-9 and that the Proposal Site represents a regional groundwater mound discharging in all directions and that the groundwater discharge occurs in the upper 10 metres of the aquifer the estimated site discharge rates range between 68 m^3/day and 10,800 m^3/day with a best case value of 1,464 m^3/day.

Table 3-9 Estimated range in site discharge

Scenario	K (m/day)	i (m/m)	D (m)	L (m)*	A (m2)	Q (m3/day)
Low end	4.27	0.004	1	4000	4000	68
Best case	10.5	0.007	5	4000	20000	1,464
High end	30	0.009	10	4000	40000	10,800

* Assumed length of the northern and southern Proposal Site boundaries perpendicular to groundwater flow.

The best case result presented in Table 3-9 shows broad correlation with the MUSIC modelling result for the Proposal Site of 900 m^3/day and the HELP modelling of 617 m^3/day. This provides confidence that the models are representative and that the overall groundwater balance for the Proposal Site will most likely be between 617 m^3/day and 1,464 m^3/day.

3.12 Registered groundwater users

Review of available data from the Lotsearch report identified 11 registered groundwater wells used for water supply purposes within a one kilometre radius of the Proposal Site. The majority of the wells are shallow (<20 metres in depth) and expected to be screened within the Botany Sands Groundwater Source and alluvial sediments. The location of these wells is shown on Figure 3-16 and summary data for the wells is provided in Table 3-10.

Wells GW109177, GW107432, GW071908 and GW109178 are all part of the Besmaw site located to the east and appear to have been within the vicinity of active stockpiling for construction works during the Proposal Site visit on 4 August. As such it is considered unlikely that these wells would still be present. However, these wells could potentially be down-gradient of the Proposal Site and should be considered to be potentially present. The Besmaw site has been also been infilled with the same landfilling activities under a similar EPL as the site. Therefore these groundwater wells would be subject to similar water quality conditions as the Proposal Site. While groundwater from areas previously filled with VENM may migrate to the Besmaw site, groundwater migration from landfilled waste areas to does not appear to occur (refer to Figure 3-13). Due to the nature of groundwater flow from the Proposal site to Quibray Bay wells (GW068824, GW068825, GW109383, GW107771) further to the east are unlikely to be down gradient of the Proposal Site. These wells are listed as domestic, irrigation and industrial water supply wells. GW107432 is a domestic water supply well, however, given it is located on an industrial site it is unlikely to be used for domestic purposes.

GW107820 and GW102032 appear to be associated with the dune ponds to the south west of the Proposal Site and may be impacted by migration from the Proposal Site. It is noted that GW102032 is for research purposes and unlikely to be a significant source of human health

exposure. It is also associated with the ponds in this area, with no bore installation details provided on the WaterNSW real-time data website.

GW107821 appears to be associated with development of the ponds at Greenhills Beach residential development and has no bore installation details provided on the WaterNSW real-time data website. Further, due to the topography, and associated groundwater flow paths in this area, it is also unlikely to be down hydraulic gradient of the Proposal Site.

Based on the interpreted groundwater contours presented in Figure 3-13 the remaining wells are unlikely to be down-gradient of the site.

Table 3-10 Registered groundwater users within one kilometre of the Proposal Site (Lotsearch, 2020)

Well ID	Purpose	Status	Distance from site (m)	Drilled depth (mbgl)	Screen lithology	SWL (mbgl)	Salinity (mg/L)	Yield (L/s)
GW107432	Domestic	unknown	75 m east	4	sand	2	good	0.5
GW109177	Industrial	Unknown	89 m east	3	-	-	-	-
GW102032	Experiment / research	Unknown	103 m South west	7.5	Sand and marine clay	1.04	-	2.5
GW071908	Irrigation	Unknown	281 m south east	29.3	-	3.4	500	8.8
GW107820	Recreation	Unknown	290 m south west		-	-	-	-
GW109383	Industrial	Unknown	324 m east	7	Sands	-	-	-
GW109178	Industrial – sand & gravel	Unknown	335 m South east	3	-	-	-	-
GW107771	Stock	Unknown	336 m east	5	-	-	-	20
GW068825	Irrigation	Unknown	528 m east	15	Sand to white sandstone	1.2	501-1000	13.4
GW107821	Recreation	Unknown	743 m south west	-	-	-	-	-
GW068824	Irrigation	Unknown	859 m east	18	Sand, silty clay, white sandstone	1.2	0 -500	3.7

Notes: '–' = no data



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Metres

Map Projection: Transverse Mercator
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Registered Groundwater Users within One Kilometre of the Site (Lotsearch, 2020)

Project No. **12529041**
Revision No. **-**
Date **22/10/2020**

Figure 3-16

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Print date: 22 Oct 2020 - 12:05

Data source: General Topo - NSW LPI DTDB 2020 (Date extracted: 21 July 2020); Cadastre - NSW LPIT DCDB 2020 (Date Extracted: 21 July 2020); Aerial Imagery - Nearmap (Image Date: 12 April 2020) and Sixmaps . Created by: kqvelasco

3.13 Groundwater dependent ecosystems

Potential GDEs were identified by reviewing the Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources (2011) and the Bureau of Meteorology Groundwater Dependent Ecosystems Atlas. There are two GDEs located within the Kurnell area, namely the Towra Point Estuarine Wetlands and the Kurnell Dune Forest in the Sutherland Shire and City of Rockdale.

The Towra Point Estuarine Wetlands are protected by the EPBC Act as they are of national environmental significance. This includes a national heritage place, wetland of international importance, 6 threatened ecological communities, 69 threatened species, 76 migratory species and 101 marine species. The reserve comprises a mixture of spits, bars, mudflats, dunes and beaches. The reserve is a RAMSAR wetland that are classified as rare or unique wetlands, or wetlands that are important for conserving biological diversity.

The location of Towra Point Reserve is presented in Figure 3-4 and terrestrial GDE's, as presented in the Bureau of Meteorology Groundwater Dependent Ecosystems Atlas are presented in Figure 3-17. The vegetation identified within the delineated GDE areas adjacent to the site include:

- Estuarine saltmarsh
- Estuarine mangrove forest
- Coastal foredune scrub
- Coastal sand forest
- Coastal sandstone gully forest
- Floodplain swamp forest

There is no information in regard to the location of the Kurnell Dune Forest vegetation community.



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Groundwater dependent ecosystems (BoM web atlas, 2020)

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Date **22/10/2020**

Figure 3-17

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Print date: 22 Oct 2020 - 12:49

Data source: Terrestrial GDE - © Commonwealth of Australia (Bureau of Meteorology) 2017, Extracted: 11 September 2020. General Topo - NSW LPI DTDB 2020 (Date extracted: 21 July 2020); Cadastre - NSW LPI DCDB 2020 (Date Extracted: 21 July 2020); Regional Inset Map - NSW DPI 2016 (Towra Point Aquatic Reserve , Date Extracted: 17 August 2020.) Aerial Imagery - Sixmaps LPI_Imagery_Best: © Department of Finance, Services & Innovation 2018. Created by: kqvelasco

3.14 Contaminated sites

The Lotsearch report lists properties on the NSW EPA's contaminated land record. The report did not identify any site within 500 metres of the Proposal Site. However, one site was within 1000 metres of the Proposal Site for which there are written notices on the Contaminated Land: Record of Notices issued by the NSW EPA under the *Contaminated Land Management Act 1997* (CLM Act). There was also one additional site within 1000 metres of the Proposal Site that is on the list of contaminated sites notified under Section 60 of the CLM Act or otherwise reported to the NSW EPA. These are listed in Table 3-11 and shown on Figure 3-18.

Table 3-11 Regulated and notified contaminated sites

Site description	Site address	Contamination type	Proximity to the Proposal Site	EPA assessment and management
Former Phillips Imperial chemicals site	260 Captain Cook Drive	Chemical industry	620 m east	Regulated under the CLM Act not required
Abbott Australasia	Captain Cook Drive	Volatile aromatic compounds, chlorinated hydrocarbons, heavy metals, Polycyclic aromatic hydrocarbons, total recoverable hydrocarbons and codeine associated with a filter cake waste disposal area.	976 m east	Contamination formerly regulated under the CLM Act. Voluntary proposal has been completed in February 2005 with a site audit statement.



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Date **12/03/2021**

Contaminated Sites

Figure 3-18

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Print date: 12 Mar 2021 - 14:43

Data source: General Topo - NSW LPI DTDB 2020 (Date extracted: 21 July 2020); Cadastre - NSW LPI DCDB 2020 (Date Extracted: 21 July 2020); Regional Inset Map - NSW DPI 2016 (Towra Point Aquatic Reserve , Date Extracted: 17 August 2020.) Aerial Imagery - Nearmap, Breen Resources Pty Ltd, Sixmaps LPI_Imagery_Best: © Department of Finance, Services & Innovation 2018. Created by: eibbertson

3.15 Existing water and soil quality

3.15.1 Historical activities impacting groundwater quality

The Kurnell peninsula has been subject to extensive sand mining historically, with estimates in excess of over 170 million tonnes of sand extracted since the 1930s (https://www.ssec.org.au/our_environment/our_bioregion/kurnell/issues/sandmining.htm). The Proposal Site has been used for sand extraction since the 1960s. Sand extraction activities produced dredge ponds surrounded by a relatively flat area. The Proposal Site was delineated to the north, south and west by elevated areas up to approximately 30 m relative to Australian Height Datum (AHD) (CES, 2020b).

Breen began landfilling activities in 1990. Landfill clay liners were installed at the bottom of excavations in Lot 1122, and Lot 1123 DP794114, and Lot 6 DP1158627 (CES, 2020f). Construction details of the liners are not available. Based on the limited information available, liners were most likely installed at depths between 18 and 20 m below the 2017 level of waste (CES, 2020b). Excavations produced by sand extraction activities are understood to have been filled with virgin excavated natural materials and potential acid sulphate soils (below the water table).

There are currently two environment protection licences (EPL) for the Proposal Site. There is one for resource recovery and waste storage and the other is for resource recovery and waste disposal. As part of EPL 4608 the Proposal Site is licenced to receive and dispose of:

- Immobilised wastes able to be landfilled
- VENM
- Waste tyres
- Paper or cardboard
- Glass, plastics, rubber, plasterboard, ceramics, bricks, concrete or metal
- Building and demolition waste
- Asphalt waste (including asphalt from road construction and waterproofing works)
- Ferric sludge
- Dredge spoil
- Soils (that meet the General Solid Waste criteria)
- Soils (that meet the General Solid Waste (non-putrescible) criteria)

As part of the EPL 20697, Breen is licenced to receive and store:

- Grit and screenings from potable water and water reticulation plants that has been dewatered so that it does not contain any free liquids
- Wood waste
- Cured concrete waste from a batch plant
- Synthetic fibre waste (fibreglass, polyesters and other plastics) being waste that is packed securely to prevent dust emissions, but excluding asbestos waste
- Grit, sediment, litter, and gross pollutants collected in, and removed from, stormwater treatment devices or stormwater management systems, that has been dewatered so that it does not contain free liquids
- Wastes collected by or on behalf of local councils from street sweeping

- Household waste from municipal clean-up (excluding food waste)
- Waste tyres
- Soils (meeting the general solid waste criteria)
- Soils containing brick, concrete, timber or metal (meeting the general solid waste (non-putrescible) criteria)
- Paper or cardboard
- Glass, plastics, rubber, plasterboard, ceramics, bricks, concrete or metal
- Building and demolition waste
- Asphalt waste (including asphalt from road construction and waterproofing works)
- VENM

As part of EPL 4608 Breen is required to conduct quarterly groundwater monitoring of 21 wells and one leachate bore.

The leachate bore is monitored yearly for:

- Metals - Aluminium, arsenic, barium, cadmium, hexavalent chromium, total chromium, cobalt, copper, lead, magnesium, manganese, mercury, zinc
- Major cation and anions (including alkalinity) – calcium (Ca), magnesium (Mg), potassium (K), sodium (Na), chloride (Cl), fluoride (F) and sulphate (SO4), carbonate
- Nutrients - Ammonia (NH3), Nitrate (NO3), nitrite (NO2), Total phosphorus (TP)
- Petroleum hydrocarbon – total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs)
- Physio-chemical parameters –pH, total dissolved solids (TDS), total organic carbon (TOC), total suspended solids (TSS)
- Pesticides – Organochlorine pesticides (OCPs) and organophosphate pesticides (OPPs)
- Phenols – total phenolics

The leachate bore is to be monitored quarterly for conductivity and standing water level only.

The 22 groundwater wells are monitored for:

- Metals (yearly) - Aluminium, arsenic, barium, cadmium, hexavalent chromium, total chromium, cobalt, copper, lead, magnesium, manganese, mercury, zinc
- Major cation and anions (including alkalinity) (quarterly) – calcium (Ca), magnesium (Mg), potassium (K), sodium (Na), chloride (Cl), fluoride (F) and sulphate (SO4) carbonate
- Nutrients - Ammonia (NH3), Nitrate (NO3); nitrite (NO2)
- Petroleum hydrocarbon – total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs)
- Physio-chemical parameters – pH, total dissolved solids (TDS), total organic carbon (TOC)
- Pesticides – Organochlorine pesticides (OCPs) and organophosphate pesticides (OPPs)
- Phenols – total phenolics

The groundwater quality at the Proposal Site has historically been of reflective of landfilling activities. A summary of the available data for the Proposal Site is provided below.

3.15.2 Water quality criteria

Groundwater and leachate across the Proposal Site is currently being sampled for the analytes listed above and the results are presented in Tables 1B to B8 of Appendix B. A total of 22 wells (including one dedicated leachate well – LB02 screened within the waste) have been sampled as part of the EPL.

The groundwater, leachate and surface water quality data in the tables have been compared against criteria that are protective of the surrounding receiving environment. These criteria are listed below and are presented in Tables 1B to 8B of Appendix B.

Relevant water quality criteria includes:

- Human Health:
  - Australian drinking water guidelines (ADWG) to be protective of potential off-site users. The aesthetic and health values have been included.
  - Australian drinking water guidelines (ADWG) values multiplied by ten in accordance with recommendations in the NEPC (2013) and NHMRC (2008) to be protective of recreational receptors at the proposed parklands / open space. This will also be protective for on-site worker exposure to leachate as this is a conservative guideline and domestic (on neighbouring industrial sites), industrial and recreational uses of groundwater and surface water.
  - NEPC (2013) health screening levels (HSLs) commercial / industrial guidelines to be applied to the area to remain as the landfill facility. These are groundwater depth based criteria. The recreational guidelines can be applied to the areas that are to become parklands and sporting fields.
  - Human health issues associated with exposure to contaminated groundwater within excavations include the CRC Care (2011) HSLs intrusive maintenance workers.
- Ecological:
  - ANZG (2018) guideline values for the protection of 95 per cent of species in marine ecosystems. The unknown level of species protection is included for analytes that do not have a 99% criteria value. The 95 per cent of species protection in freshwater has also been included for the two freshwater ponds to the south west of the Proposal Site.
  - ANZECC (2000) default trigger values (DTV) for south-east Australia for slightly disturbed ecosystems. Marine values have been adopted for this assessment as they are aligned with the marine guidelines selection above.
  - ANZECC (2000) DTV for freshwater lake and reservoirs. These freshwater values have been adopted for this assessment as they align with the freshwater guidelines selection above.
  - ANZECC (2000) for the protection of aquaculture species have been adopted for the surface water assessment undertaken in Quibray and Weeney Bays. There are current oyster farm leases in both of these bays.

3.15.3 Soil criteria

The soil data is for recovered fines and aggregates. The NSW EPA have issued resource recovery orders, including “Part 9, Clause 93 of the Protection of the Environment Operations (waste) Regulation 2014 – The recovered aggregate order 2014” and the “Part 9, Clause 93 of the Protection of the Environment Operations (waste) Regulation 2014 – The “continuous process” recovered fines order 2014. The RRO material collected at the Proposal Site are sampled and analysed weekly. All results must be below the screening criteria in the resource recovery orders.

These soil results have been compared against criteria that are protective of the surrounding receiving environment. These criteria are listed below and are presented in Table B7 and Table B8 of Appendix B.

- Human Health
  - NEPC (2013) health investigation levels (HIL) for recreational land uses (HIL C) and for commercial/industrial land uses (HIL D).
- Ecological
  - NEPC (2013) ecological investigation levels (EIL) for urban residential and public open space land uses (EIL C) and for commercial and industrial land uses (EIL D).
  - NEPC (2013) ecological screening levels (ESL) for urban residential and public open space land uses (ESL C) for commercial/industrial land uses (ESL D).

3.15.4 Groundwater and leachate quality

Summary of historical groundwater quality data

Previous studies have included surface water and groundwater sampling at the Proposal Site. These were reviewed to characterise the current water quality conditions. The Proposal has then been assessed and management measures derived based on this assessment.
The location of these wells are presented in Figure 3-19.

Historical data is intermittent in frequency but extends back to 1993. There are gaps in the data between 2008 and 2012. It is noted that the data could not be verified against original laboratory outputs.

The groundwater wells are located around the boundary of the Proposal Site and there is one leachate bore LB02 that is located in the western area of the Proposal Site as presented in Figure 3-19. During a site walkover an additional four leachate wells (that were installed in 2017) were located. These leachate wells are not part of the sampling for the EPL. These wells are also shown on Figure 3-19 and are labelled LW02, LW03, LW04 and LW05. An abstraction well (AB01) was drilled prior to 2007 and has not been sampled since 2007 and was not located during a site visit for this EIS to identify leachate wells across the Proposal Site.

The wells have been sampled for a range of COPCs and physico-chemical parameters as presented in Appendix B.



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Groundwater and Leachate Monitoring Wells

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Revision No. **-**
Date **12/03/2021**

Figure 3-19

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Print date: 12 Mar 2021 - 14:56

Data source: General Topo - NSW LPI DTDB 2020 (Date extracted: 21 July 2020); Cadastre - NSW LPI DCDB 2020 (Date Extracted: 21 July 2020); Regional Inset Map - NSW DPI 2016 (Towra Point Aquatic Reserve , Date Extracted: 17 August 2020.) Aerial Imagery - Nearmap, Breen Resources Pty Ltd, Sixmaps . Created by: eibbertson

Groundwater

A detailed review of the historical groundwater results and exceedances of the adopted screening criteria in provided in the Contamination Status Report (GHD, 2021). Observations relevant to this assessment are provided below.

Aluminium, arsenic, cadmium, chromium (III + IV and Hexavalent), cobalt, copper, lead, manganese and zinc had exceedances of the ecological screening criteria. Aluminium, arsenic, lead, manganese and zinc had exceedances of the adopted human health screening criteria. The concentrations in the leachate results for arsenic and zinc were higher than that present in leachate on site, indicating the concentrations of these metals are more likely to be associated with natural background conditions or historical activities unrelated to recent landfilling activities. There was no marked difference between the concentrations of other metals in leachate wells relative to the surrounding groundwater system.

BTEX and TRH concentration results were either less than the laboratory limit of reporting or had low detectable concentrations. There were no exceedances of the adopted screening criteria.

PAH concentration results were all less than the laboratory limit of reporting with the exception of two naphthalene results, which were below screening criteria. The freshwater ecological criteria was below the laboratory limit of reporting for anthracene and benzo(a)pyrene.

OCPs and OPPs results were all less than the laboratory limit of reporting, it is noted however, that the adopted marine and freshwater ecological criteria was below the laboratory limit of reporting for the majority of the OCP and OPP analytes with criteria.

The only contaminant identified to be above the adopted recreational criteria for human health was arsenic, which is considered to be indicative of background conditions or historical site activities that are no longer resulting in elevated arsenic across the Proposal Site.

The pH (field) results for groundwater monitoring wells are shown in Figure 3-20 and indicate that the pH for groundwater is mostly in the range of 6 to 8.5 with an average of 7.4. There are a number of peaks and troughs in the data set where all site pH observations have risen or fallen. This may be associated with meter calibration issues at the time of sampling or climatic variations. Overall there appears to be a broad but slight trend of decreasing pH over the period of monitoring and an increasing variability. The latest data had reported pH values in the same range as data collected prior to 2007. It is also noted that the range in leachate pH, as discussed in the following sub-section is generally between 6.5 and 8.0 suggesting that values below a pH of 6.5 (since 2012 and which has a reducing trend) may be associated with other climatic or site stressors as opposed to the migration of landfill leachate off-site. The pH (field) and pH (lab) results are commonly outside of the criteria ranges in the ADWG (2011) aesthetic guidelines (pH 6.5 – 8.5) and the ANZECC (2000) guidelines for marine estuaries (pH 7.0 – 8.5) and freshwater lakes and reservoirs (pH 6.5 – 8.0).

Ammonia concentrations across the Proposal Site (including leachate wells) are presented in Figure 3-22 with the sample date provided in the legend. The highest concentrations of ammonia (up to 22 mg/L in BH5A) currently migrating off-site are in wells along the north western boundary of the Proposal Site (between BH12A and BH10B). The concentrations in this area are primarily above the adopted ecological criterion of 0.91 mg/L (marine and freshwater). There is a lower relative concentration at BH4A (0.016 mg/L), which may represent beneficial effects of the surface water infiltration pond that this well is located next to. Concentrations migrating across the southern and western site boundary are also generally lower than elsewhere and below the adopted criterion. Concentrations along the north eastern and eastern site boundary are variable but lower than in the north-west, with most wells having ammonia

concentrations (eg. BH20 has 0.005 mg/L) that were below the adopted criterion and others having ammonia concentrations (eg BH14A has 2.2 mg/L) above the adopted criterion.

Time series plots for ammonia have been created for each well location as ammonia is a key contaminant associated with landfilling and are presented in Appendix C. The plots include the 95 percentile criteria for freshwater ecosystems (0.9 mg/L) which is slightly more conservative than the adopted marine criteria of 0.91 mg/L. They also include linear trend lines to highlight trends in the data set over time. The plots show that ammonia concentrations vary considerably over time and that they are commonly above the adopted ecological screening criteria. Monitoring wells BH9C and BH5A located on the north western boundary of the Proposal Site, have the highest concentrations of ammonia compared to the other wells. Monitoring well BH9C is located near the current entrance of the Proposal Site and monitoring well BH5A is located off-site along Captain Cook Drive near the western portion of the Proposal Site. Monitoring well BH12A, the next well west of BH5A, also has high concentrations of ammonia (approximately 9 mg/L relative to the adopted criterion of 0.9 mg/L). These two wells appear to have had recent upward trends that may be associated with historical variability or indicative of a longer-term trend associated with site activities. Ammonia concentrations in monitoring well BH10B have increased rapidly over the last three rounds to approximately 18 mg/L. BH13A and BH14A have also reported concentrations of ammonia above the adopted ecological screening criterion (0.9 mg/L) during the last three rounds of sampling.

Monitoring well BH6A, while currently at concentrations below the adopted criterion was as high as 18 mg/L prior to July 2019 and represents maximum concentrations potentially migrating off-site in a southerly direction; it also has an overall upward trend. Ammonia concentrations in other wells located on the southern site boundary are generally low, with BH7A, BH8A, BH16 and BH24 having values that are consistently below the adopted criteria and trending downward. BH23 at the eastern end does, however, have recent concentrations above the adopted criteria.

The ammonia time series plots indicate that ammonia concentrations in groundwater appear to pulse, which may be associated with climatic variations. The observed upward trends at some wells across the Proposal Site may be part of that pattern. BH9C has the highest reported concentration (of ammonia 29 mg/L), which was reported in October 2014 and which has currently not been exceeded by other wells with current upward trends.

The TDS results for groundwater monitoring wells are presented in Figure 3-21 and are mostly indicative of freshwater with an average concentration of 643 mg/L and with the majority of TDS values being under 1000 mg/L. It appears that the TDS concentrations have had a slight increase over the monitoring period and are becoming more variable (as a higher overall range in each well). BH6A, BH19 and BH10B, located near to Cell B10 appear to have higher TDS concentrations relative to other wells since 2012. The TDS concentrations in BH6A appear to have fallen significantly in more recent times with BH10B increasing significantly. Elsewhere across the Proposal Site TDS concentrations appear stable other than the broad trends noted above. The average concentration of TDS exceeds the ADWG (2011) aesthetic guidelines of 600 mg/L. Average TDS concentrations in leachate bores since 2007 approximates 2,400 mg/L (min 1,800 mg/L, max 4,200 mg/L – see) while average TDS concentrations in surrounding groundwater wells since 2007 approximate 700 mg/L (min 110 mg/L, max 3,900 mg/L at BH25). This suggests that on average there is significant attenuation of leachate migrating off-site in groundwater. It is noted that trends in TDS concentrations at wells BH5A, BH9C, BH10B, BH12A and BH13A broadly correspond to those for ammonia.

Electrical conductivity field parameters exceed the ANZECC (2000) freshwater lakes and reservoirs guidelines. Dissolved oxygen field parameters exceed ANZECC (2000) freshwater

lakes and reservoirs and marine estuaries guidelines. These guidelines are for surface water systems and are therefore a guide only.

The historical averages for bicarbonate in groundwater wells generally range between 84 mg/L in BH16 (min of 45 mg/L) and approximately 615 mg/L in BH6A. The lowest concentrations are generally present in wells located at eastern ends of the Proposal Site (BH16, BH19A, BH20, BH22 and BH23) where groundwater elevations are lower (increasing the potential for PASS exposure) and where there is less influence from the very high bicarbonate concentrations in landfill leachate that influences groundwater migrating off-site. These bicarbonate results provide a conservative approximation of the alkalinity of groundwater, which is an indicator of the capacity of groundwater to neutralise acid. Comparison of the results (and the associated average pH values) against alkalinity and pH criteria in Table 4.5 of the national acid sulfate soil guidelines for dewatering of shallow groundwater (Water Quality Australia, June 2018) indicates that the concentrations of alkalinity in groundwater have a high to very high acid neutralising capacity. A high to very high acid neutralising capacity is listed in Table 4.5 as being adequate to maintain acceptable pH levels in the future but should be considered in the context of acid accounting.

It is also noted that in the wells at the eastern end of the Proposal Site, where concentrations are lowest, bicarbonate concentrations appear to be stable with no ongoing downward trend. This indicates that there is unlikely to be an emerging impact associated with acidification, which is where PASS may have previously been deposited in sand mine voids.

Leachate

Leachate was initially characterised across the Proposal Site in one Leachate bore LB01 between 2003 and 2007. An additional leachate sampling location (LD002) was installed in 2015 and decommissioned in 2017. Leachate water quality was also characterised across the Proposal Site by CES (2020b) in six leachate wells on two occasions (December 2016 and January 2017). Leachate quality sampling was subsequently stopped until the sampling of LB02 was commenced in July 2019. The leachate results are presented in Tables B3 and B4 of Appendix B.

A detailed review of the historical leachate results and exceedances of the adopted screening criteria in provided in the Contamination Status Report (GHD, 2021). Observations relevant to this assessment are provided below.

The pH of the leachate is between 6.5 and 8 (CES, 2020b). Ammonia concentrations from 2016 to present ranged from 130 mg/L in LW01 to 830 mg/L in LW06 (CES, 2020b). It is noted that LW06 is located in Cell B10 which is associated with a leachate collection and management system. Ammonia concentrations exceed the human health ADWG (2011) aesthetic value.

Bicarbonate concentrations in the leachate range between 1,800 mg/L and 4,100 mg/L indicating that they have a very high capacity to neutralise acidification associated with PASS exposure.

Figure 3-20 Field pH

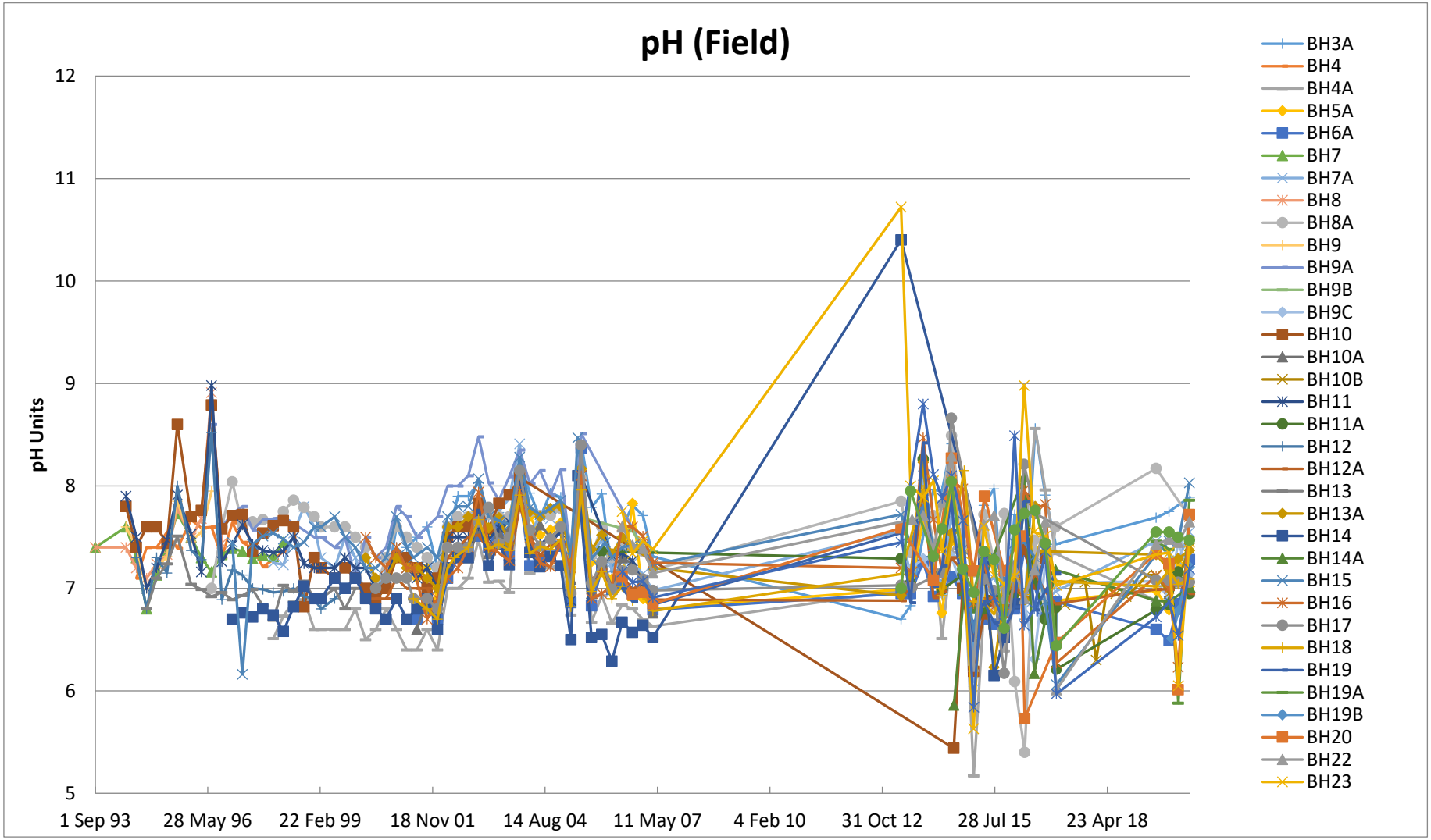
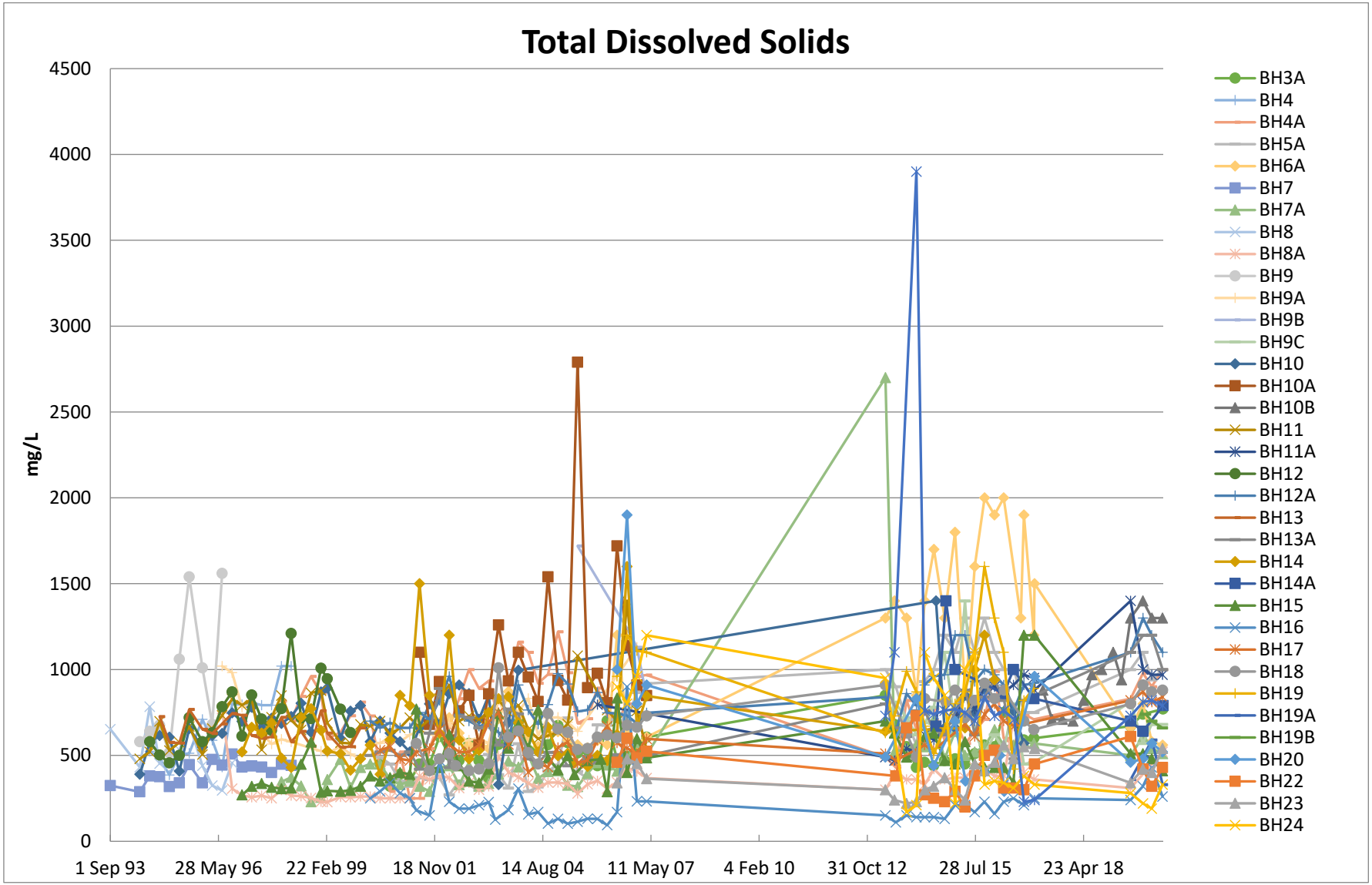
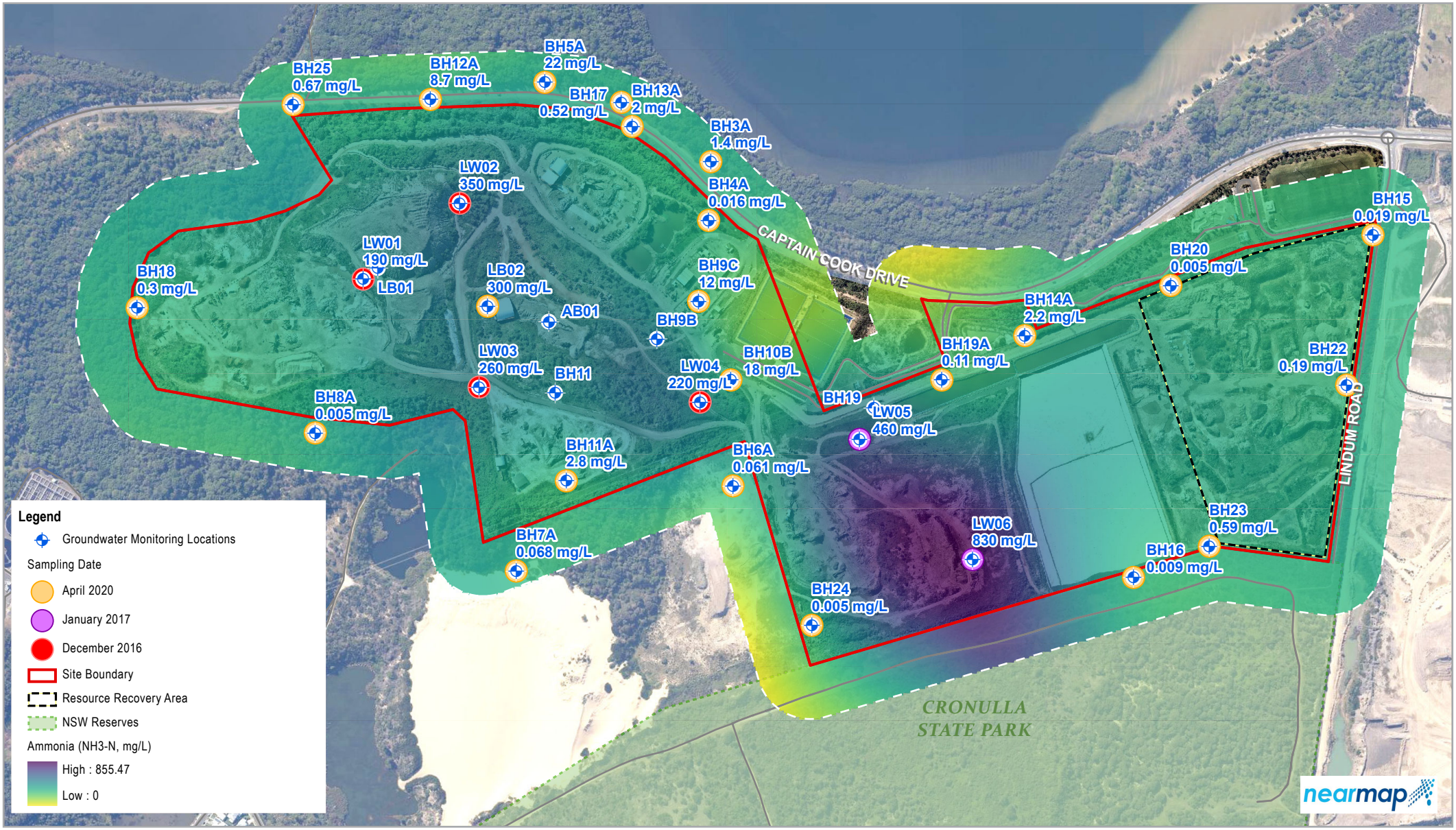


Figure 3-21 TDS results





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Paper Size ISO A4

0 50 100 150 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

Breen Resources Pty Ltd
Breen Resource Facility – EIS

Project No. **12529041**
Revision No. **-**
Date **07/10/2020**

Ammonia Concentrations

Figure 3-22

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Print date: 11 Sep 2020 - 20:57

Data source: General Topo - NSW LPI DTDB 2020 (Date extracted: 21 July 2020); Cadastre - NSW LPIT DCDB 2020 (Date Extracted: 21 July 2020); Aerial Imagery - Sixmaps . Created by: kqvelasco

3.15.5 Surface water quality

Summary of historical surface water quality data

Historical groundwater sampling results for on-site surface water bodies between 1998 and 2007 are presented in URS (2007 January). Surface water sampling locations included the concrete recycling pond (CRP), the historic western wheel wash pond (HWWWP), the wheel wash pond (WWP) and the pond in Lot 1124 (Lot 1124). URS (2007 January) reported that the composition of the surface waters indicated the source of the water was a mixture of rainwater and groundwater. The locations of these surface water sample locations are presented on Figure 3-23. The surface water sampling locations CRP, HWWWP and Lot 1124 no longer exist. The historical surface water results are presented in Tables B5 and B6 of Appendix B.

Surface water samples exceeded the human health ADWG (2011) for pH (field) results, TDS, hardness, sodium, chloride, sulfate, ammonia and arsenic concentrations.

Exceedances of the adopted ecological assessment criteria for freshwater and marine water (ANZG, 2018) were detected at all sampling locations for metals (arsenic, chromium, copper lead and zinc) during most of the sampling rounds. Ammonia concentrations exceeded the adopted ecological assessment criteria (ANZG, 2018 and ANZECC, 2000) in most samples. Electrical conductivity and pH consistently exceeded the ANZECC (2000) criteria in most samples.

Concentrations of metals and ammonia in surface water are generally lower than in groundwater and leachate indicating that surface water infiltration points across the Proposal Site are likely to improve groundwater quality migrating off-site.



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Paper Size ISO A4

0 50 100 150 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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Breen Resource Facility – EIS

Project No. **12529041**
Revision No. **0**
Date **12/03/2021**

Surface Water Sampling Locations

Figure 3-23

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Print date: 12 Mar 2021 - 15:15

Data source: General Topo - NSW LPI DTDB 2020 (Date extracted: 21 July 2020); Cadastre - NSW LPIT DCDB 2020 (Date Extracted: 21 July 2020); Aerial Imagery - Sixmaps . Created by: eibbertson

Current field investigations

GHD undertook surface water sampling in June and August/September 2020 (refer to Breen Resources Facility – EIS, Contamination Status Report (GHD, 2021)). In June 2020, five samples were collected from surface water bodies on site. Their respective locations are shown on Figure 3-23.

In August/September pore water sampling and surface water sampling was conducted off-site. One pore water and surface water sample was collected in Weeney Bay, four pore water and one surface water sample was collected in Quibray Bay and one surface water sample was collected from the freshwater pond within the dune system to the west of the Proposal Site. The sample locations are shown on Figure 3-23.

The methodology and a detailed assessment of the results against the adopted screening criteria are reported in the Breen Resources Facility – EIS, Contamination Status Report (GHD, 2021). A detailed review of the historical and current analytical results in all media is discussed in Section 9 of the Contamination Status Report (GHD, 2021) with the tabulated results for the current surface water sampling provided in Appendix F of the report. The conclusions of the discussion in the contamination report are presented below.

Based on the available data, there is no conclusive evidence that groundwater impacts from the Proposal Site are linked to elevated pore water concentrations in down-gradient Quibray Bay.

One pore water sample was collected in Weeney Bay. There is no evidence that impacted groundwater from the Proposal Site is posing an unacceptable risk to Weeney Bay.

It is noted that in general the Quibray Bay surface water sample results were more impacted than Weeney Bay. While there is insufficient data to be conclusive, Weeney Bay is more sheltered from the rest of Botany Bay, and in particular from potential historical impacts arising from heavy industries to the east of the Proposal Site along the Kurnell Peninsula.

Similar to the ecological exceedances, ANZECC (2000) marine aquaculture guidelines were exceeded for a number of metals and nutrients at SW7 and/or SW8. Insufficient data is available to confirm whether the concentrations measured in this assessment are indicative of long term averages, or whether there are seasonal fluctuations. While the measured data indicate potential adverse effects to aquaculture in Towra Point Nature Reserve, such as Oyster Leases, evaluation of the data suggests that some, if not all, impacts may be associated with sources other than the Proposal Site.

3.15.6 RRO material - soil quality

RRO materials produced by the new Resource Recovery Facility will form part of the proposed growing media in the Embellished Marang Parklands and be placed above the low permeability clay capping layer for the Proposal Site (CES, 2020a). This RRO material will have varying thicknesses depending on the final landform elevations and expected to be at least:

- 150 mm to 1000 mm below the final surface level (FSL) in open parkland areas
- 300 mm to 500 mm below the FSL on sports fields.

GHD has compared results provided against the adopted human health and ecological assessment criteria in Table B7 and Table B8 of Appendix B.

Breen Resources Facility – EIS, Contamination Status Report (GHD, 2021) provides a detailed summary of the potential human health and ecological impacts for the soils. The discussion in the report indicates that the RRO material used for reprofiling the Proposal Site is considered unlikely to pose ecological and/or human health risks during future works and during future use of the Proposal Site as open space land.

4. Conceptual model

Based on a review the existing environmental data presented in Section 3 the following conceptual model for the Proposal Site has been developed. The conceptual site model forms the basis of the assessment of groundwater impacts.

Figure 3-6 presents the location of conceptual cross-sections highlighting the groundwater flow conditions at various locations across the Proposal Site.

The conceptual cross-sections are presented in Figure 3-7 to Figure 3-10 and are summarised below.

Leachate is being generated by the landfilled material that has been placed above the clay liner at approximately 2 m AHD and extends up to approximately 35 m AHD. Resource recovery order fines have been placed on top of landfill materials to approximately 46 m AHD.

The leachate has been characterised within landfill Cell B10 and within the landfill material in western areas of the Proposal Site above approximately 2 m AHD. VENM / EMN / PASS placed within the former sand mining voids and below approximately 2 m AHD has not been characterised. However, as only natural material has been placed below 2 m AHD this material is not expected to be generating leachate.

Leachate influenced groundwater appears to be migrating off-site to the north (Quibray Bay, Weeney Bay) and south (Dune Ponds and Cronulla Beach).

Noting that groundwater is not used for potable purposes and that due to the small discharge of groundwater relative to tidal flushing that Oyster leases are not considered to be viable receptors, the contaminants of concern in the groundwater migrating off-site include:

Human health COPC

- Benzene, which is in leachate and not present at concentrations exceeding criteria in groundwater migrating offsite
- Arsenic, noting that this is expected to be representative of background water quality conditions and that exceedances of recreational criteria are primarily historic with only one exceedance of recreational criteria (BH11A Jan 2020) since 2008

Ecological COPC

- pH
- Ammonia
- Nitrogen (intermittent)
- Phosphorus (intermittent)
- Metals (chromium, copper, lead, nickel exceedances are common while aluminium, cadmium, copper, lead and manganese are uncommon). While there are exceedances of arsenic and zinc, concentrations are generally higher in groundwater than leachate indicating that concentrations of these metals represent natural background conditions
- Benzene (intermittent and isolated only)
- Ethylbenzene (intermittent and isolated only)

While there are no criteria for TRH it is noted that there are elevated concentrations in the F2 to F3 range present in leachate that are intermittently present, at low detection levels, in perimeter monitoring wells.

Due to the nature of groundwater conditions relative to surface water, dissolved oxygen and suspended solids in groundwater are generally not representative of conditions at downgradient receptors.

Electrical conductivity (EC), noting that data suggest that the EC in the dune ponds is not being impacted.

Leachate from the Cell B10 landfill is being collected and managed. The cell has a clay liner at about 1 to 2 m AHD and accumulated leachate is abstracted and directed to evaporation ponds, with subsequent re-irrigation over the landfill surface when conditions are suitable. There are no other containment and collection systems in place elsewhere across the Proposal Site, other than at the new Cell B11 landfill.

Groundwater and leachate levels are at depth (> 10 m bgs) in central and western areas of the Proposal Site and sit at elevations of approximately 4 to 6 m AHD beneath the Cell B10 landfill and the landfill and RRO material stockpile area located in the western part of the Proposal Site. In eastern areas groundwater is close to ground surface and has minimal mounding with groundwater sitting at elevations of approximately 1 to 1. 5 m AHD.

Groundwater migration from the Cell B10 landfill will be impeded by the leachate collection system, whereas elsewhere it is unimpeded.

While there is a trend of decreasing pH, this does not appear to be associated with off-site migration of leachate influenced groundwater as, on average, leachate pH is higher than the surrounding groundwater system.

Trends in ammonia over time suggest that in some locations ammonia concentrations may still be increasing in groundwater migrating off-site. This is most evident in wells located on the northern boundary at the western end of the Proposal Site. This may be due to changes in site activities in these areas or climatic variations. They are currently within the range of the historical concentrations observed and may be part of a historical pattern of pulsing concentrations evident in the historical data.

Bicarbonate in leachate and surrounding groundwater indicates groundwater has a high to very capacity to neutralise acidification associated with exposure of PASS.

Surface water infiltration ponds generally have better water quality than the surrounding groundwater system and are expected to improve the quality of groundwater migrating off-site.

There are no contaminated sites in hydraulic connection with groundwater migrating of site.

Groundwater migrating offsite is expected to migrate at velocities of 0.3 m/day, which suggests that:

- Travel times for groundwater currently present at the Proposal Site centre would approximate 2.7 to 5.9 years.
- Travel times for groundwater from the Proposal Site boundary to the dune ponds and Towra Point reserve (Quibray Bay and Weeney Bay) would be less than 1.5 years.

This suggests that the status of the surrounding environment are broadly representative of historical landfilling activities at the Proposal Site.

Groundwater discharge from the Proposal Site is expected to approximate 1,464 m^3/day, which is broadly consistent with rainfall recharge estimates from MUSIC modelling completed by Cardno and HELP modelling completed by CES (CES, 2020) for the Proposal Site.

The primary groundwater receptor includes Towra Point Reserve which is a RAMSAR wetland and is listed as a high priority GDE in the water sharing plan for greater metropolitan groundwater source as well as a high probability terrestrial GDE on the BoM web atlas.

The reserve is a marine environment. Quibray Bay, located within Towra Point reserve appears to be the primary discharge point for groundwater migrating off-site, where mature stands of mangroves and active oyster farm leases are present. The oyster farm leases are in open water and the water quality in Quibray Bay is expected to be dominated by tidal flow rather than groundwater. Recreational fishing and collecting shell fish are prohibited in this area and there is no access for recreational swimming. Further, contaminant concentrations in groundwater associated with the Proposal Site only exceed the recreational criteria for arsenic, which are associated with historical concentrations that are not representative of the current site conditions and which are expected to be representative of background concentrations. Surface water and pore water sampling in these receptors has identified concentrations above adopted aquaculture and ecological criteria. However, if there are impacts within these receptors potentially sourced from the Proposal Site they are not clearly discernible from background influences associated with the urban and industrial setting around Botany Bay.

To the south of the Proposal Site a number of dune ponds are present, which are expected to be freshwater sources and directly connected to groundwater. It appears there is direct public access to the ponds and they may be used for swimming. Water quality sampling in the pond closest to the site has water quality that is below adopted recreational and freshwater criteria, suggesting that the landfill (at the time of sampling) has limited influence on the pond water quality. Alternatively, groundwater migration to the south will be to Cronulla Beach. This flow path may be limited to some degree by groundwater mounding beneath the foredune during wetter periods. Vegetation on the foredune of Cronulla Beach is elevated and unlikely to be groundwater dependent, unless around pond areas (which appear to be unimpacted as noted above).

There are water supply bores potentially down-gradient of the Proposal Site that may still be in existence, regardless, if they are present the current water quality in groundwater migrating off-site at the potential locations of these wells is suitable for recreational and industrial use. Domestic water supply wells potentially located on neighbouring industrial sites are not expected to be used for uses more sensitive than recreational uses and are therefore also not likely to be adversely impacted by current site activities.

There is potential for impacts to onsite receptors from groundwater used (from interconnected ponds and groundwater wells) for recreational purposes (irrigation), site activities (such as dust suppression) or intersected by construction or site maintenance works, which will require management.

Potential acid sulphate soils are located around the Proposal Site, particularly to the north on the shores of Quibray Bay and Weeney Bay. There are also zones to the south of the eastern site boundary and at the dune lakes. There may also be PASS on site within sand mining voids below elevations of approximately 2 m AHD, although these are expected to be primarily located in eastern areas of the Proposal Site and of small volumes. It is also noted that groundwater surrounding the Proposal Site appears to have a high capacity to buffer against acidification. Regardless, any potential drawdown, whether active or passive, could result in the generation of acid groundwater with subsequent increasing concentrations of metals.

5. Assessment of impacts

5.1 Assessment Method

The impact assessment characterises the potential changes to groundwater conditions associated with construction and operation of the Proposal and the potential impacts to the range of beneficial uses or values of the receiving environments identified in Section 3.

The following groundwater conditions were the focus of the impact assessment:

- Groundwater drawdown associated with changes in rainfall recharge to the landfill, surface water infiltration system changes and groundwater abstraction for site use.
- Groundwater quality – changes to the beneficial use potential for groundwater.

Groundwater drawdown – An overall comparison of the change in sealed, vegetative (evapotranspiration) and sport fields areas and revised locations of infiltration points relative to existing conditions has been undertaken pre-Proposal and post-Proposal development to assess the overall impacts on groundwater recharge. This assessment has been qualitatively informed by the results of the surface water management assessment (Cardno, 2021) water balance and HELP (CES, 2020) modelling of the current and proposed capping conditions.

The potential for off-site drawdown impacts associated migration of the existing water access licences (60 ML/year) to the new Resource Recovery Facility was completed using:

- A water balance approach coupled with a Theis (1935) / Hantush (1961) analytical solution assessment in the AQTESOVE software (Duffield, 2007) for abstraction of 40 ML/yr (WAL 24563) from the new infiltration pond on the northern boundary of the new Resource Recovery Facility (Figure 5-1).
- A groundwater well abstraction of 20 ML/yr (WAL 24555) using the Theis (1935) / Hantush (1961) analytical solution in the AQTESOVE software (Duffield, 2007).

Groundwater quality beneficial use potential – Section 5.1.1 presents the criteria that have been established to be protective of the environmental values potentially impacted by the Proposal . These criteria have been used as the design and construction requirements for groundwater discharging from the Proposal. Acute and diffuse groundwater quality impacts associated with the Proposal construction and operation are difficult to predict as they are associated with future sources that do not currently exist. As such, impacts have been assumed to have the potential to occur during construction and operation and management and monitoring measures for these potential impacts have been recommended.

5.1.1 Assessment Criteria

The AIP (NOW, 2012) requires that potential impacts on groundwater sources, including their users and high priority GDEs, are assessed against minimal impact considerations, outlined in Table 1 of the policy (see Section 3.2.1 of the AIP). If the predicted impacts are less than the Level 1 minimal impact considerations, then these impacts are considered to be acceptable. The predicted groundwater impacts have been assessed with reference to the minimal impact considerations for highly productive groundwater sources for coastal sand water sources.
A highly productive (high yields and total dissolved solids less than 1,500 mg/L) system was selected using the conceptual understanding of the hydrogeological conditions of the Proposal Site (outlined in Section 3). These criteria are as follows:

- Water table – less than or equal to ten per cent cumulative variation in the water table, allowing for typical climatic ‘post-water sharing plan’ variations, at a distance of 40 metres from any high priority GDE or high priority culturally significant site listed in the schedule of

the relevant WSP. Given the current range in groundwater wells on site (see Figure 3-14 in Section 3.9.3) this approximates between 0.029 m to 0.21 m depending on the location across the site.

- Water table – a maximum two metres water table decline cumulatively at any water supply work.
- Water pressure – a cumulative pressure head decline of not more than a two metre decline at any water supply work.
- Water quality – any change in the groundwater quality should not lower the beneficial use category of the groundwater source beyond a distance of 40 metres from the activity.

These criteria have been adopted to identify potentially adverse impacts. Mitigation measures are proposed in Section 6 to address any potentially adverse impacts. These criteria need to be considerate of the changing conditions temporally and spatially in order to provide a comprehensive assessment of impacts.

5.2 Potential sources of groundwater impacts

The final landform is presented in Figure 5-1 with conceptual cross-sections presented in Figure 5-2 to Figure 5-5 depicting the final land surface. A more detailed layout of the New Resource Recovery Facility is presented in Figure 5-6. Key points in regard to potential changes to groundwater conditions associated with the Proposal are listed below:

- The land surface will be re-contoured with the works unlikely to result in interaction with the groundwater table, as indicated in the conceptual cross-sections. The revised land surface under the Proposal will not intersect groundwater and as such there will be no need for construction dewatering. The material used for re-contouring will include material produced by the New Resource Recovery Facility, and some of the existing resource recovery fines and aggregates currently present in western areas of the Proposal Site (Figure 3-2).
- The existing Breen Resources Facility will be moved to the eastern end of the Proposal site with one large infiltration pond being placed on the north eastern site boundary and one on the southern site boundary at the location of existing ponds (Figure 5-1. These ponds will collect all surface water run-off from the New Resource Recovery Facility.
- The infiltration pond present near the current Existing Breen Resources Facility in the western areas of the Proposal Site will be infilled. There will be no replacement pond in this location, although it will be broadly replaced by smaller ponds and vegetated swales located around the sports field in this area.
- Additional leachate will be being generated by Cell B11, however it will be contained within a suitably designed leachate collection system. The management of leachate after site closure will be considered as part of a site closure plan.
- In the western Embellished Marang Parkland areas, the final capping material (Appendix E) will include additional low permeability capping over the current landfill material with a subsequent reduction in the migration of rainfall infiltration into the existing landfill. As such it is expected to reduce the generation of leachate from the existing landfills and therefore reduce leachate impacted groundwater migrating off-site in western Embellished Marang Parkland areas. Rainfall infiltration will be further reduced by increased evapotranspiration associated with revegetation of currently active areas. There will be seepage water generated from the RRO fines / aggregates located above capping material, the quality of which has not been quantified to date. Additional volumes could be generated by irrigation across the Proposal Site to maintain Embellished Marang Parkland health. Given this material is and will be compliant with the relevant resource recovery orders (NSW EPA ,

2014) (NSW EPA, 2014b), and those orders identify the material as being suitable for landscaping works, it is expected to generate water quality that is better than the leachate currently emanating from the existing landfill. The spreading of RRO material to create the final landform will result in increased surface area exposed to rainfall infiltration and an increased potential for seepage water from RRO material to be generated relative to current conditions. Based on this the overall water quality emanating from beneath Embellished Marang Parkland areas is expected to improve and be similar to or lower in quantity.

Any surface run-off from the parklands will flow downslope and re-infiltrate to groundwater in flatter areas or be directed to onsite swales and ponds where it will infiltrate back into groundwater.

It is expected the irrigation water will be sourced from either a reticulated supply, 'recycled water' from Sydney Water or harvested surface water run-off from the Proposal Site.

- The conversion of currently active processing areas (such as the heavy and light waste, the concrete and the gypsum recycling facilities as wells as the bin storage area) in western areas of the Proposal Site to parkland and/or sports fields will reduce processing based liberation of contamination to the underlying landfill and/or to surface water run-off. This would result in an increased potential for improved water quality migrating off-site in these areas.
- In the sporting field areas (the subject of other development approvals) the final capping material (Appendix E) will include additional low permeability capping over the landfilled material with a subsequent reduction in the migration of rainfall infiltration into the existing landfill material and therefore the generation of leachate. This is expected to reduce the overall leachate being generated from existing landfill material and migrating off-site from beneath sporting fields. Due to the flattened surfaces on the sporting fields there is expected to be less surface water run-off and increased rainfall infiltration, which is expected to result in increased volumes of groundwater being generated from the RRO fines located above the capping material relative to existing conditions. The water quality migrating from this material is currently unknown, however, as above, given this material is and will be compliant with the relevant resource recovery orders (NSW EPA , 2014) (NSW EPA, 2014b) and those orders suggest this material is suitable for landscaping works, it is not expected to generate water quality worse than what is emanating from the existing landfill. The spreading of this stockpiled material to create the final landform will increase the surface area exposed to rainfall infiltration. This will also increase the potential for seepage water quality to be generated from the RRO materials relative to current conditions. Irrigation of the sports fields will also act to increase infiltration. Based on this, the overall water quality emanating from beneath sporting fields is expected to improve and be of a greater quantity.

  Any surface run-off from the sport fields will be directed to swales and ponds located around the edge of the sports fields were it will infiltrate back into groundwater.

  It has not been determined where irrigation water will be sourced from for the Proposal. It is expected to be either from a reticulated supply or 'recycled water' from Sydney Water or harvested surface water run-off from the Proposal Site.
- In the New Resource Recovery Facility areas, the final capping material (Appendix E) will not include any low permeability capping over the landfilled VENM / ENM material, but will instead include structural fill / treated ground suitable for development of the New Resource Recovery Facility infrastructure. Despite this, improved site management that minimises surface water run-off from active areas and increases the diversion of clean surface water to infiltration ponds is expected to improve the quality of water directed to

surface water ponds. Due to a greater presence of impermeable surfaces, including road, hard stand and roof areas at the New Resource Recovery Facility, there is expected to be an increase in clean surface water run-off to infiltration ponds. This is expected to improve groundwater quality migrating off-site to the north and south and reduce the volume of leachate being generated from the underlying landfill and migrating off-site.

- It has been assumed that groundwater abstraction associated with the current licenses (approximating 160 m^3/day or 60 ML/day) will be required for the new RFF site operations (wheel washing and dust suppression) and will be transferred to the new Resource Recovery Facility. These groundwater takes have potential to create a groundwater drawdown that impacts the surrounding environment.
- The existing landfills at Cell B10 and Cell B11 (on Lots 5 and 6) have underlying leachate management systems that will collect and divert leachate to leachate ponds that are not connected with groundwater. It is expected that rehabilitation of the land surface at Cell B10 will result in reduced leachate generation and migration off-site.
- Cell B11 has recently been lined and is ready for placement of waste. The lining of this landfill will reduce the overall rainfall infiltration that has occurred to date, which will result in less groundwater influence by leachate migrating off-site. There will be an increase in leachate being generated by this landfill that will need to be effectively captured and managed as part of the leachate management system.
- Construction works are proposed to be staged as follows:
  - Construction of 25% of the Embellished Marang Parkland in western areas (Lots 1122 and 1123) of the Proposal Site. The works will include stripping back intermediate covers, re-profiling with capping installed in accordance with the approved capping design and then preparation of surface covering, such as planting of trees, car parking and paths.
  - While the Embellished Marang Parkland works are being undertaken, the New Resource Recovery Facility at the eastern end of the Proposal Site will be under development.
  - Once the New Resource Recovery Facility has been completed the existing recycling facility and other site activities in parkland areas such as the concrete recycling facilities will be moved to the new recycling facility. The remaining Embellished Marang Parkland and sports fields in these areas will then be developed. This will include stripping back intermediate covers, re-profiling with capping installed in accordance with the approved capping design and then preparation of surface covering, such as planting of trees, grass on sports fields, car parking and paths.
  - Following this work the soil recycling facility located on the western edge of Cell B10 (on Lot 6) will be relocated to the New Resource Recovery Facility with the areas infilled with licenced waste and then capped. It will subsequently be re-profiled with capping installed in accordance with the approved capping design that includes preparation of surface covering for sports fields using grass.

During construction there will be increased potential for liberation of contaminants associated with construction activities, which will require management. This will be particularly relevant around the areas of water such as the infilling or construction of ponds.

Based on historical aerial photography presented in the Lotsearch report (Lotsearch, 2020) for 2007, 2014, 2019, the construction footprint is not expected to represent a significant change in active areas. The removal of the intermediate cover as construction progresses may temporarily increase the potential for rainfall infiltration and generation of leachate, although it would be of similar quality to existing conditions. Increased leachate generation

would be most likely (although not expected) at the start of construction when other parts of the Proposal Site have not had the design cap installed, but as construction and capping progresses the overall leachate generation potential is expected to decrease.

This temporary potential effect would be most pronounced in the Lot 1122 and 1123 Embellished Marang Parkland and sports fields areas. At the location of the New Resource Recovery Facility where there is currently no surface covering, there would not be a significant change in rainfall infiltration during construction. Cells B10 and B11 have their own leachate management systems that will not result in increased seepage to groundwater.

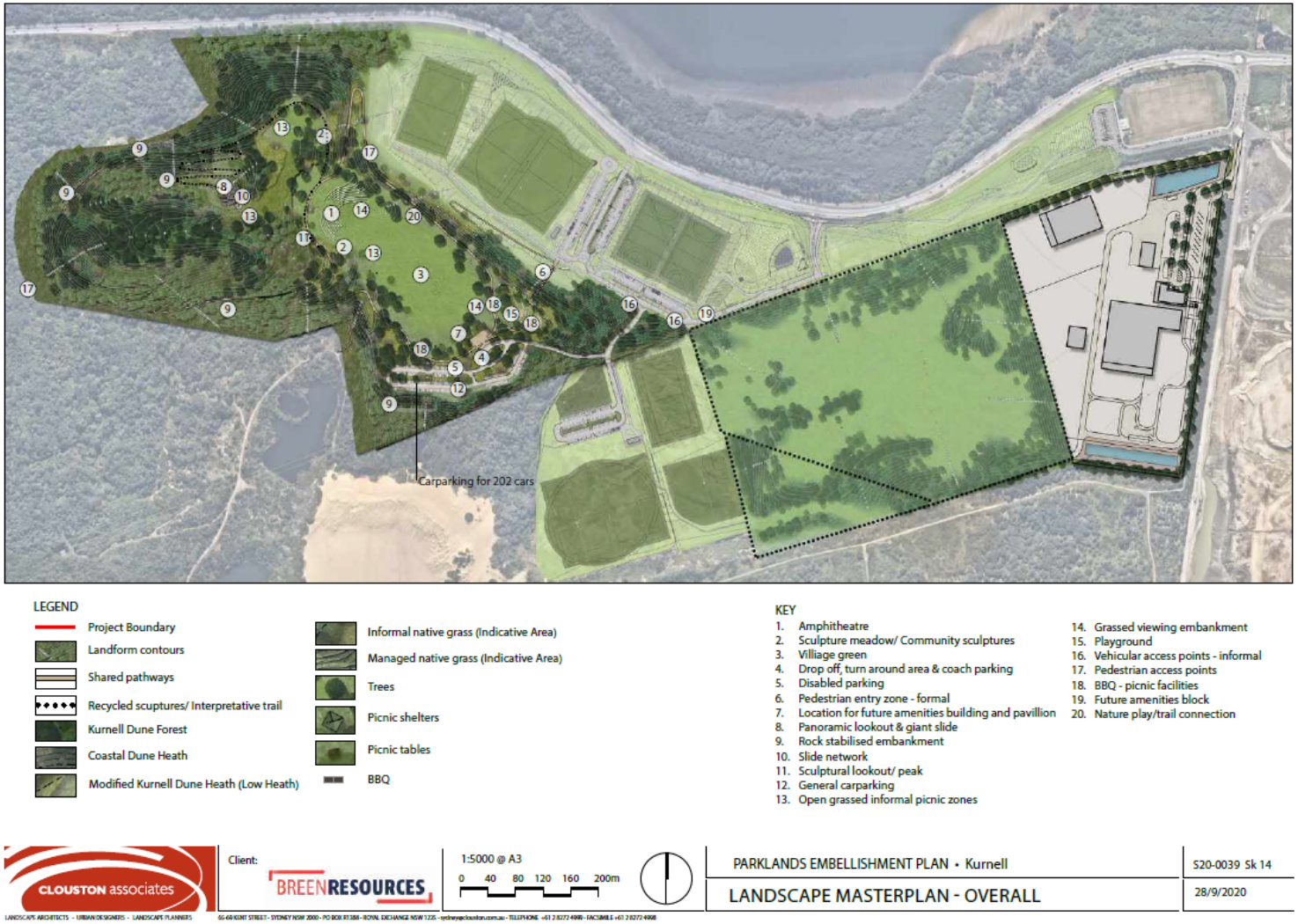
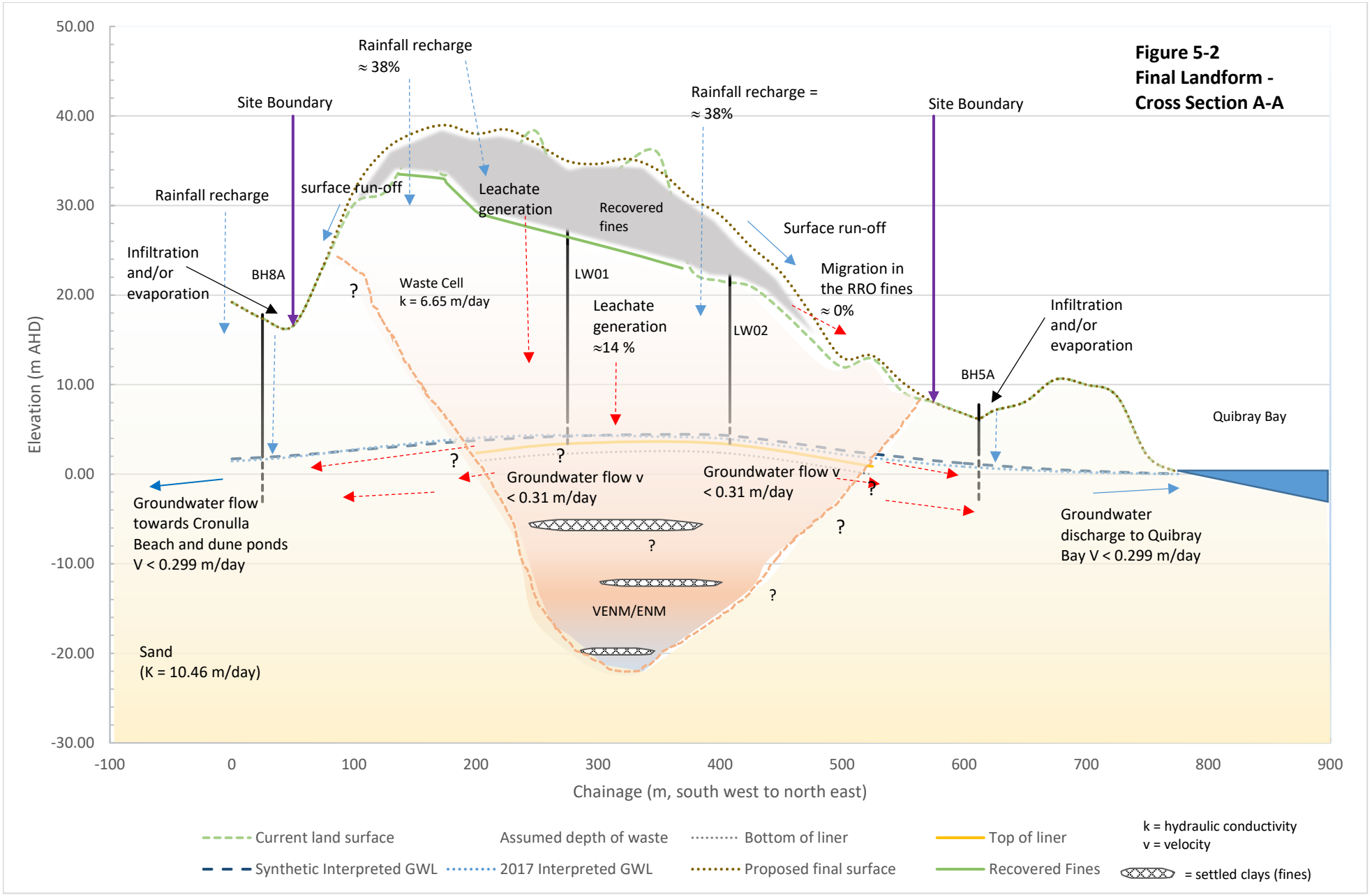


Figure 5-1 Final Landform


Figure 5-2
Final Landform -
Cross Section A-A
Rainfall recharge
≈ 38%
Site Boundary
Rainfall recharge =
≈ 38%
Site Boundary
Rainfall recharge
surface run-off
Leachate
generation
Recovered
fines
Surface run-off
Infiltration
and/or
evaporation
BH8A
Waste Cell
k = 6.65 m/day
LW01
Migration in
the RRO fines
≈ 0%
Leachate
generation
≈14 %
LW02
Infiltration
and/or
evaporation
BH5A
Quibray Bay
Groundwater flow v
< 0.31 m/day
Groundwater flow v
< 0.31 m/day
Groundwater flow
towards Cronulla
Beach and dune ponds
V < 0.299 m/day
Groundwater
discharge to Quibray
Bay V < 0.299 m/day
VENM/ENM
Sand
(K = 10.46 m/day)
Elevation (m AHD)
Chainage (m, south west to north east)
Current land surface
Assumed depth of waste
Bottom of liner
Top of liner
k = hydraulic conductivity
v = velocity
Synthetic Interpreted GWL
2017 Interpreted GWL
Proposed final surface
Recovered Fines
= settled clays (fines)

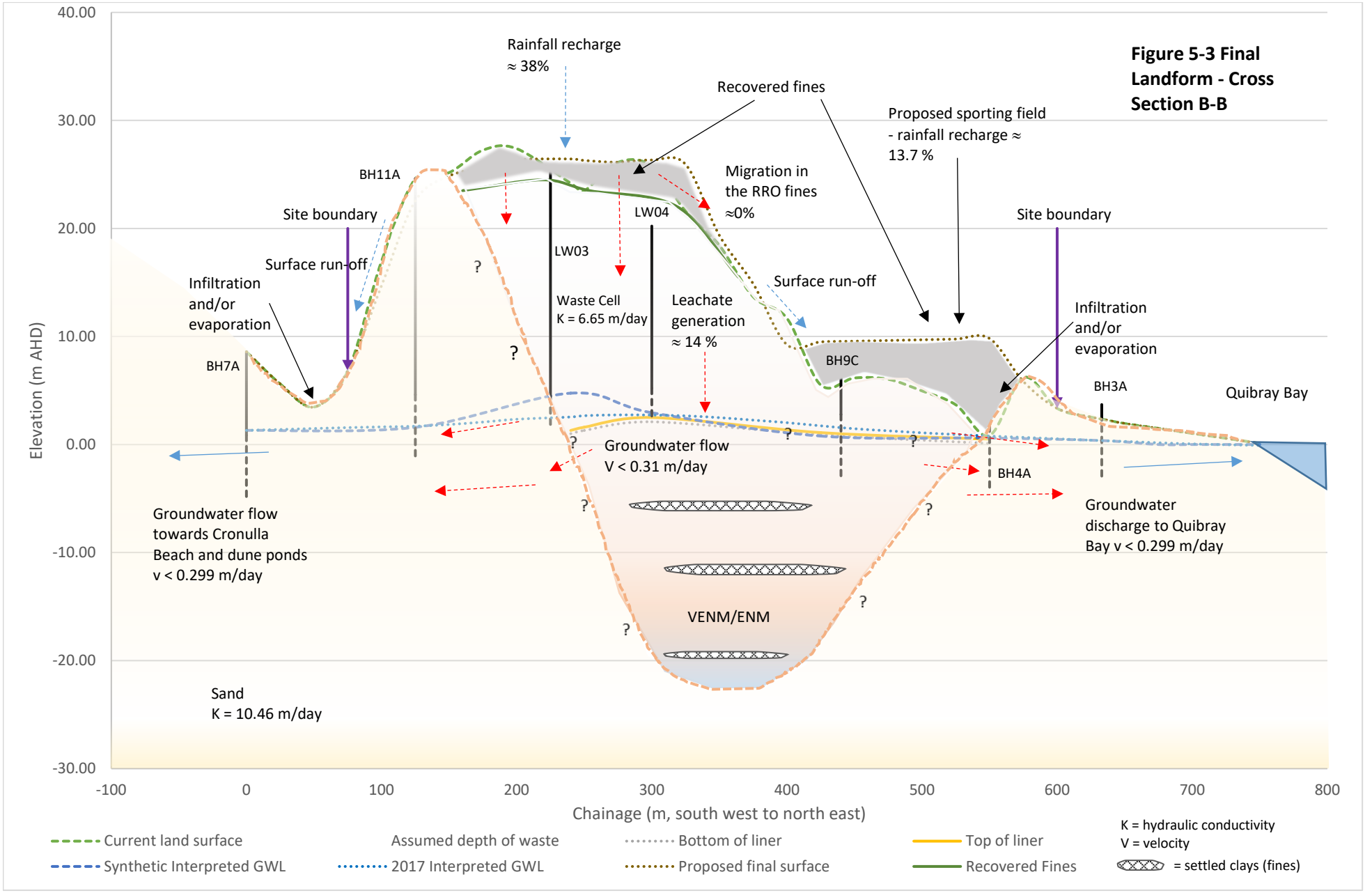

Figure 5-3 Final Landform - Cross Section B-B
Rainfall recharge ≈ 38%
Recovered fines
Proposed sporting field - rainfall recharge ≈ 13.7 %
Migration in the RRO fines ≈0%
BH11A
Site boundary
LW04
LW03
Surface run-off
Infiltration and/or evaporation
Waste Cell K = 6.65 m/day
Leachate generation ≈ 14 %
Surface run-off
Site boundary
Infiltration and/or evaporation
BH9C
BH3A
Quibray Bay
BH7A
Groundwater flow V < 0.31 m/day
BH4A
Groundwater flow towards Cronulla Beach and dune ponds v < 0.299 m/day
Groundwater discharge to Quibray Bay v < 0.299 m/day
VENM/ENM
Sand K = 10.46 m/day
Elevation (m AHD)
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-100
0
100
200
300
400
500
600
700
800
Chainage (m, south west to north east)
Current land surface
Assumed depth of waste
Bottom of liner
Top of liner
K = hydraulic conductivity
V = velocity
Synthetic Interpreted GWL
2017 Interpreted GWL
Proposed final surface
Recovered Fines
= settled clays (fines)

Figure 5-4
Final Landorm - Cross Section C-C

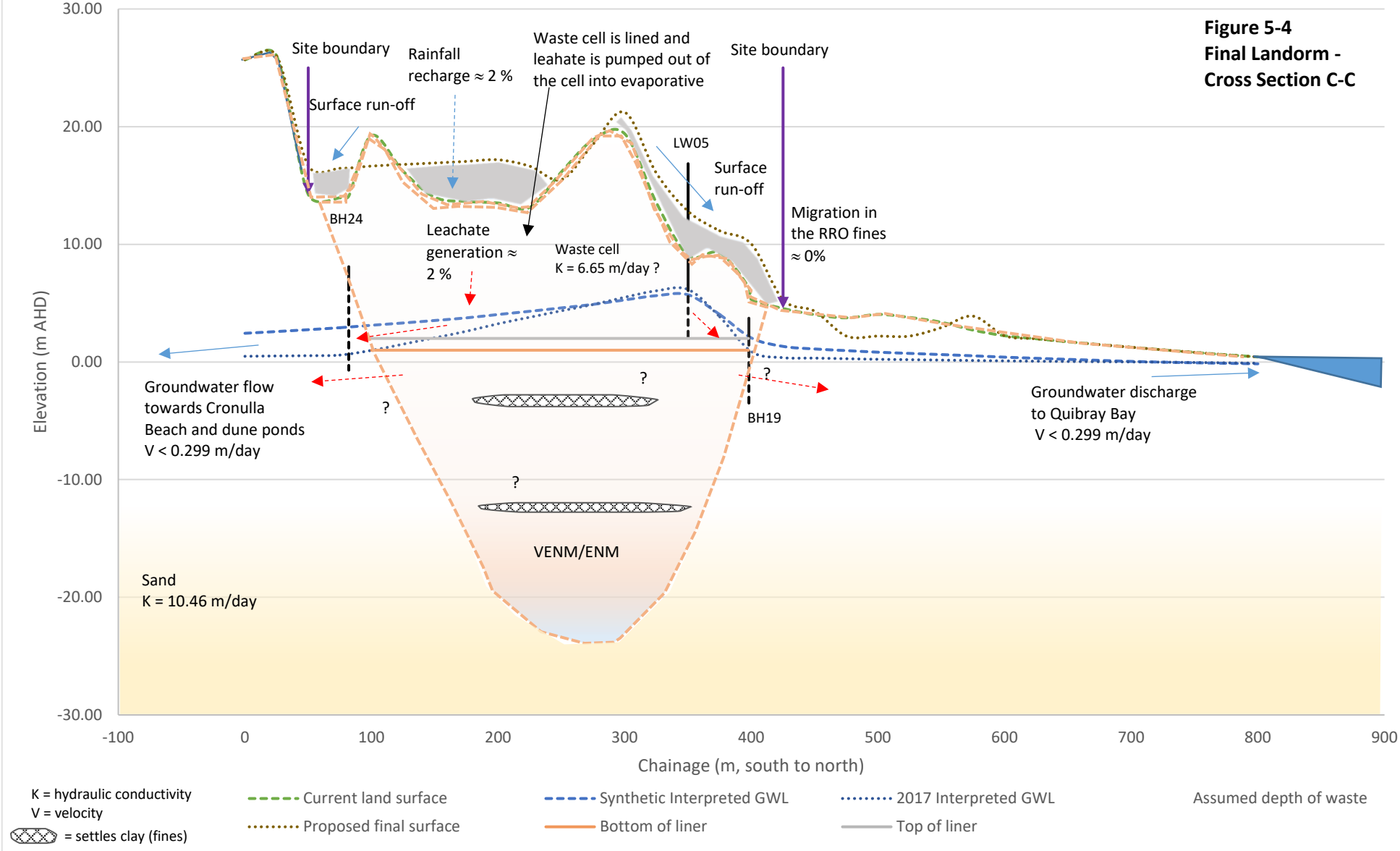
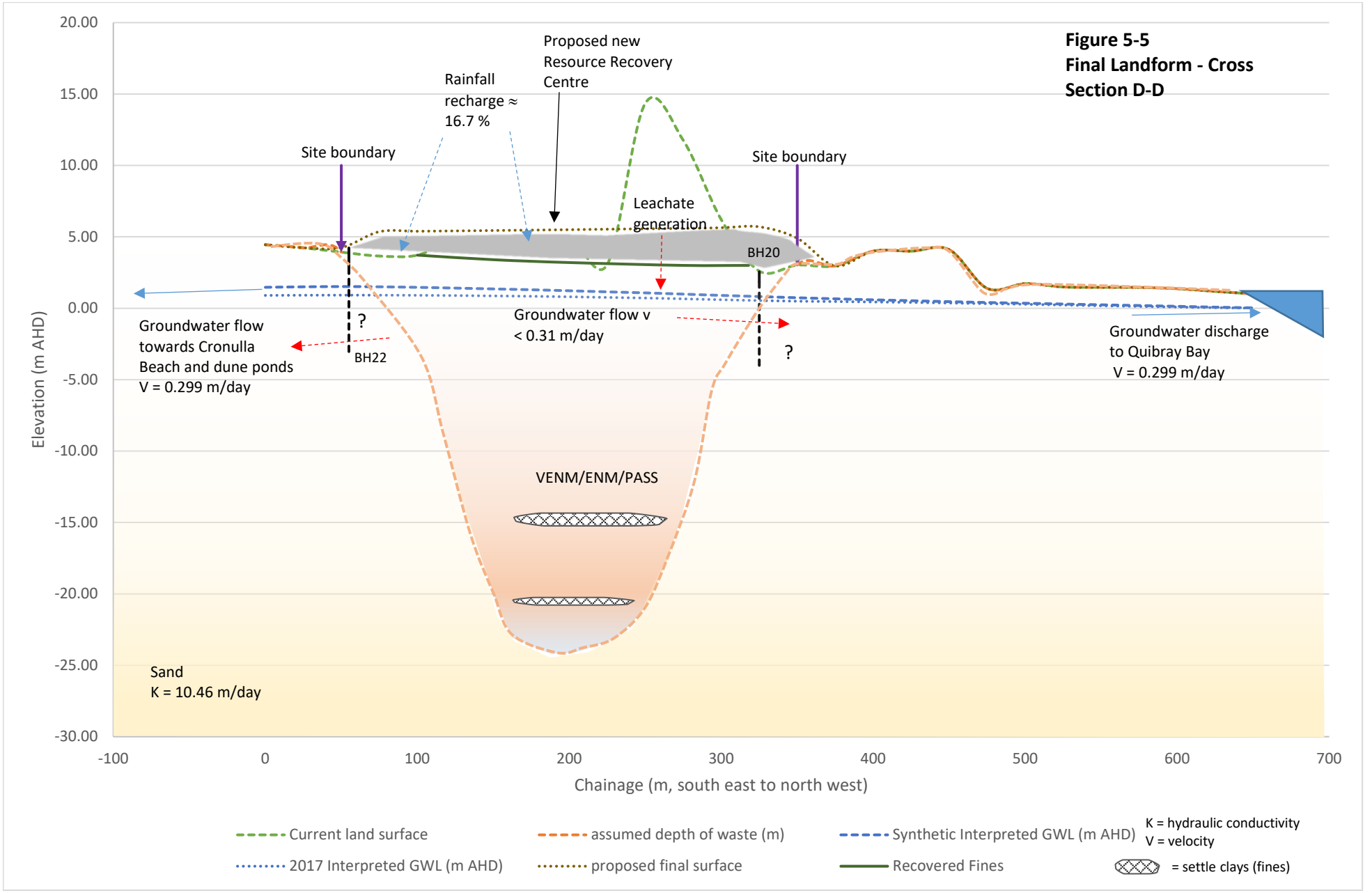


Figure 5-5
Final Landform - Cross Section D-D





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Paper Size ISO A4

0 30 60

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

GHD

Breen Resources Pty Ltd
Breen Resources Facility – EIS

New Resource Recovery Facility Layout

Project No. **12529041**
Revision No. **-**
Date **22/10/2020**

Figure 5-6

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Print date: 22 Oct 2020 - 13:00

Data source: General Topo - NSW LPI DTDB 2020 (Date extracted: 21 July 2020); Cadastre - NSW LPIT DCDB 2020 (Date Extracted: 21 July 2020); Aerial Imagery - Sixmaps public_NSW_Imagery: © Department of Customer Service 2020. Created by: kqvelasco

5.3 Impact Assessment

5.3.1 Groundwater abstraction impacts

There are existing water access licenses, which include abstraction from the existing and wheel wash pond (WAL 24563 – 40 ML/yr) and a groundwater well abstraction from an unknown location at the Proposal Site (WAL 24555 – 20 ML/yr). These combined volumes approximate 160 m^3/day, which is expected to represent the expected site water use requirements.

As noted in Section 5.1 the drawdown impacts associated with abstraction from the infiltration pond were estimated using a water balance approach coupled with a Theis (1935) / Hantush (1961) analytical solution in the AQTESOLV software (Duffield, 2007), while the groundwater well abstraction drawdown impacts were estimated using the Theis (1935) / Hantush (1961) analytical solution. The inputs and results for each assessment are presented below. The AQTESOLV analytical assessment outputs are provided in Appendix D.

Infiltration Pond Assessment

The infiltration pond located on the northern boundary of the new Resource Recovery Facility (Figure 5-1) was used as the infiltration pond where water would be sourced for site use.

The water balance included the following input parameters:

- Daily time steps for rainfall and evaporation from the Sydney Airport BoM weather station for the last 120 years
- A conservative run-off coefficient of 50 per cent of rainfall. The catchment size for the Proposal Site provided in the Cardno surface water assessment (Cardno, 2021) of 72,300 m^2.
- The infiltration pond to be built has a proposed length of 78 m by 14 m wide that intersects groundwater.
- The current groundwater abstraction from the existing wheel wash pond of 110 m^3/day (as per the existing licence – 40 ML/yr) is transferred to the new pond.
- The groundwater in-flow to the pond was calculated using Darcy's equation (See Section 3.11) and assuming a conservative hydraulic conductivity for the sand aquifer of 4.27 m/day (see Table 3-5). The radius of influence was calculated using the Sichardt formula.

The water balance has a maximum of 272 m^3/day recharging groundwater from the pond during periods of high rainfall and a maximum of 131 m^3/day flowing back into the pond during dry periods. Dry periods when there was no surface water inflow to the ponds and only groundwater inputs approximated an average of 9 days, a maximum of 80 days and had a 95th percentile of 27 days. On a long-term basis the overall take from the ponds approximate 6.3 m^3/day.

The abstraction rate of 131 m^3/day was used to assess the drawdown impacts from the pond in AQTESOLV, after a dry period of 9 days, 27 days and 80 days. The results are presented in Figure 5-7 and are summarised below:

- During an average dry period, drawdown associated with the water balance in the infiltration pond was estimated to be 0.36 m at the pond edge with the 0.1 m drawdown contour located 57 m from the pond edge.
- During a 95th percentile dry period, drawdown associated with the water balance in the infiltration pond was estimated to be 0.49 m at the pond edge with the 0.1 m drawdown contour located 100 m from the pond edge.

- During a worst case dry period, drawdown associated with the water balance in the infiltration pond will be 0.63 m at the pond edge with the 0.1 m drawdown contour located 170 m from the pond edge.

While the drawdown curves are interpreted to intersect Quibray Bay they are not expected to be sufficient to result in inland migration of the seawater, although a drop in heads will result in a rise/up-coning in the saltwater wedge, which is expected to be present beneath the Proposal Site (under existing conditions).

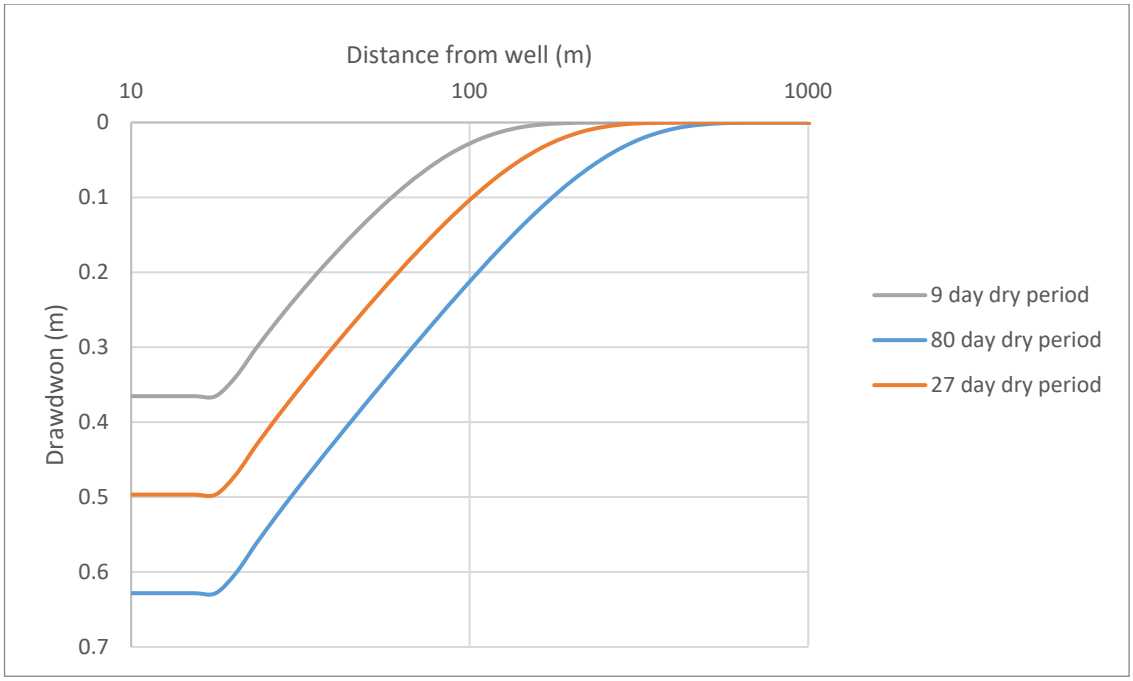


Figure 5-7 Simulated drawdown from the Proposed infiltration pond

Groundwater well abstraction

Input parameters

A pumping simulation was undertaken in AQTESOLV using the Theis (1935) / Hantush (1961) analytical solution assuming the existing licenced take of 20 ML/yr (an abstraction rate of 55 m^3/day for a period of 365 days) and a water supply well that fully penetrated the underlying sand aquifer (estimated to be 20 m thick). Worst case and likely case scenarios were modelled using hydraulic conductivities of 4.27 m/day and 10.46 m/day respectively (see Table 3-8). The assessment assumes that the well would be located within Botany Sands near to the northern site boundary of the new Resource Recovery Facility. The results are presented in Figure 5-8 and are summarised below:

- The drawdown at the pumping well after 365 days of pumping is expected to range between 0.4 m and 0.94 m.
- The distance to the 0.1 m drawdown ranges between 70 m for the most likely case scenario to 186 m for the worst case scenario.

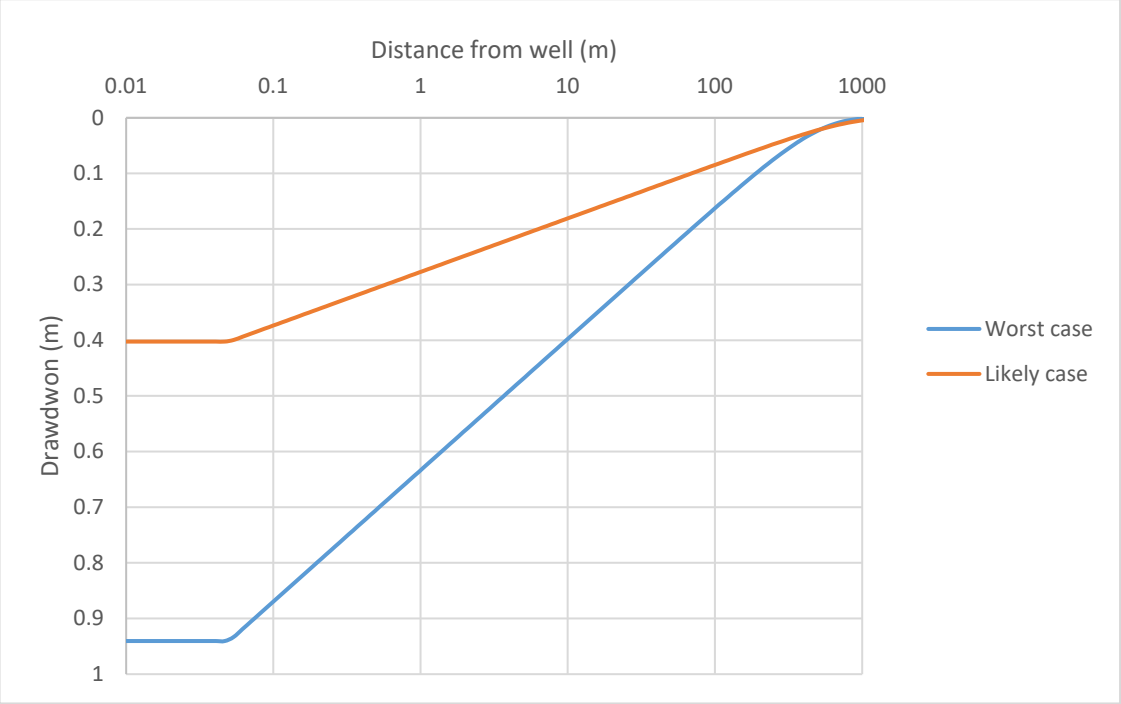


Figure 5-8 Simulated drawdown from the Proposed abstraction well

Impacts to registered water supply wells

The amount of groundwater change in registered groundwater wells associated with the pond and infiltration pond drawdown would be insufficient to represent an adverse impact relative to the 2 m water table drawdown criteria listed in the AIP.

Impacts to GDEs in Quibray Bay and Weeney Bay

The amount of groundwater drawdown is unlikely to represent an adverse impact to down-gradient terrestrial GDEs located within Towra Point reserve. This is because these are tidally influenced systems where changes in groundwater elevations would be tidally dominated. For any terrestrial GDE's sitting up-gradient of the high tide mark, the change in groundwater elevations is unlikely to result in a downward movement of groundwater elevations beyond the vegetation root zones.

Groundwater drawdown will change by more than the AIP minimal impact criteria which is estimated to be less than 0.06 m in this area (see Section 5.1.1). However, given the conditions outlined above and that the expected changes 40 m from the GDE are interpreted to be less than 0.12 m adverse impacts are not expected.

Impacts to recreational users and oyster leases in Quibray Bay, Weeney Bay and Cronulla Beach

Oyster leases and recreational users are located within open water tidal zones in Quibray Bay and as such their water supply will not be adversely impacted by groundwater abstraction at the new Resource Recovery Facility.

Acid sulphate soils

The proposed groundwater drawdown will lower the groundwater table below minimum groundwater elevations in this area. This has potential to expose naturally occurring acid sulphate soils inside the Proposal Site boundary and in offsite areas (see Section 3.7), Further there is potential for there to be exposure of the small amount of imported PASS deposited in sand mine voids in this area. As such, there is a potentially adverse impacts associated with

abstraction of groundwater from the ponds and wells in this area, which will require management.

Impacts to recreational users and aquatic ecosystems in the dune ponds

The dune ponds are not within the radius of groundwater drawdown influence associated with the proposed groundwater abstractions and will therefore not be adversely affected by the abstraction.

5.3.2 Recharge reduction impacts

The MUSIC modelling completed by Cardno (Cardno, 2021) has been adapted by Cardno to characterise the overall change in surface water budgets across the Proposal Site, this has included separating the MUSIC model into four main surface water catchments for the Proposal Site (North, West, South and South-east) as presented in Figure 5-9. The model has been used to relate the current site conditions to future site conditions.



Figure 5-9 MUSIC modelling catchments

The tabulated change in the water budgets as a percentage of total rainfall for each catchment relative to existing conditions is presented in Table 5-1. It is noted that the infiltration component is expected to include rainfall infiltration and infiltration via on-site surface water ponds.
The following key points are noted with regard the proposed water budgets. The overall change in infiltration to groundwater across the Proposal Site is expected to fall from 39.8% of total rainfall to 34.4% of total rainfall, which represents a 13.6% reduction in the total groundwater budget. Due to the new landfill capping across the Proposal Site there will be a significant change in how rainfall migrates through the unsaturated zone to the groundwater table, but the overall groundwater volumes leaving site are expected to be approximately 13.6% less than prior to Proposal development. As presented in Table 5-2, infiltration to groundwater will be lower in some areas such as in the South-east catchment where off-site groundwater discharge is estimated to be approximately 21% less (normalised for catchment size changes). In the south and west catchments it will increase by 54% and 70% (normalised for catchment size changes) respectively. The northern catchment is expected to have a 22% decrease. These localised changes to groundwater discharge will be buffered by the groundwater system on-site and off-site acting as a whole.

Table 5-1 Surface water budgets for the Proposal Site (percent of total rainfall 816 ML/yr)

Location	Stage	West	North	South	South east	Total
Rainfall	Current	4.4%	57.6%	21.2%	16.9%	100%
	Future (Proposal)	3.5%	66.6%	15.3%	14.5%	100%
Evapotranspiration	Current	1.7%	24.3%	9.5%	6.8%	42%
	Future (Proposal)	2.4%	39.9%	9.8%	7.6%	60%
Infiltration to groundwater.	Current	0.4%	28.2%	2.2%	9.0%	40%
	Future (Proposal)	0.5%	25.4%	2.4%	6.1%	34%
Off-site surface water flows	Current	2.5%	5.1%	9.5%	1.1%	18%
	Future (Proposal)	0.6%	1.3%	3.1%	0.9%	6%

Table 5-2 Rainfall infiltration (percent of total catchment rainfall)

Catchment	Current	Future (Proposal)	Percent Change
West	8.8	14.9	70.1
North	49.0	38.2	-22.1
South	10.3	15.9	54.0
South east	53.2	41.9	-21.3

Notes:

A negative value represents a reduction in rainfall infiltration of the Proposal relative to current conditions.

A 13.6 % reduction in groundwater volumes migrating offsite would be represented as a reduction in groundwater flow gradients and subsequently a 13.6% reduction in water elevations along the groundwater flow path.

The groundwater elevations along the northern site boundary generally range between 0.6 m AHD and 0.8 m AHD and as such the groundwater elevations in this area are expected to fall to between 0.52 and 0.69 m AHD (which equates to falls of between 0.08 m and 0.11 m).

Along the southern western site boundary where groundwater elevations generally range between 1.3 m AHD and 1.9 m AHD groundwater elevations could fall to between 1.12 m AHD and 1.64 m AHD (which equates to falls of between 0.18 m and 0.26 m). In reality the falls in groundwater elevations in this area are expected to be less than half of these values (0.09 m to 0.13 m) due to the large off-site catchment areas relative to the onsite catchment, where existing rainfall recharge will remain the same.

In eastern areas of the Proposal Site, at the location of the new Resource Recovery Facility, groundwater elevations approximate 1.3 m AHD to 1.8 m AHD. As such groundwater elevations in this area can be expected to fall to between 1.12 m AHD and 1.56 m AHD (which equates to falls of between 0.18 m and 0.24 m). As noted above the changes along the southern boundary are expected to be less the half of these values (0.09 m to 0.12 m) due to the large off-site catchment areas relative to the onsite catchment, where existing rainfall recharge will remain the same.

These reductions will not apply to landfilled areas on site that are being capped. In capping areas, once rainfall has infiltrated beneath the root zone it will flow through the RRO material until it reaches the capping layer on which it will flow horizontally and emerge as seepage at the

edge of capping and infiltrate to groundwater. Some of the water will migrate through the capping layer and into the landfill and generate leachate. The leachate generated will be much lower than prior to the Proposal.

HELP[3] modelling has been completed for the Proposal Site (CES, 2020) to characterise potential leachate generation under current conditions and once the Proposal is completed. The focus in this instance is on on western landfilled areas and an area that includes the proposed sport fields west of landfill cell B10 and the existing soil treatment facility (Figure 3-2), which are proposed to be capped. Detail on the landfill cap used to represent existing conditions is presented in CES (2020). The landfill capping conditions adopted for the Proposed conditions were designed to represent those presented in Appendix E and essentially include a re-vegetation and RRO material layer placed above a compacting clay liner, which will be placed on top of the existing landfills.

The results of the HELP modelling have been interpreted as follows:

- In the western landfill areas rainfall recharge will fall from approximately 38 % of annual rainfall (103,680 m^3/yr) under current conditions to 14.3 % of annual rainfall (30,151 m^3/yr) under Proposed conditions. This represents a 71 % reduction in rainfall recharging the underlying groundwater system relative to existing conditions.
- The HELP modelling indicates that almost the entire amount of infiltrating rainfall (albeit a 71 % reduction) migrates beneath the compacted clay liner to become leachate as opposed to migrating along the top of the cap in the RRO material and infiltrating back to groundwater at the capping extent. This is considered to be a manifestation of the HELP model design which does not facilitate lateral drainage within the RRO material (simulating a designed drainage layer was considered to be conceptually unconservative). As such it is expected that there will be lower leachate generated than currently predicting by the HELP modelling and a greater proportion of seepage from the RRO materials.
- In the sports field areas and soil recycling area west of Cell B10 the leachate generated from rainfall recharge was simulated to fall from approximately 42 % (27,560 m^3/yr) of annual rainfall under current conditions to 9 % (5,772 m^3/yr) of annual rainfall under Proposed conditions. This represents a 79% reduction in leachate volumes being generated.

The large reductions in leachate generation will result in a flattening of the groundwater/leachate elevations beneath capped areas, but only a small reduction in groundwater elevations at the edge of the capped areas due to only a 13.6% reduction in groundwater infiltration on a site wide basis (including surface water run-off inputs) and a 22% reduction on localised catchment basis (see Table 5-2). For example, conservatively interpreted groundwater elevations of 2 m at the edge of the capping are expected to fall to approximately 1.56 m AHD with a flat groundwater mound up-gradient of this and beneath the landfill.

The results indicate that there will be a large reduction in the generation of leachate associated with capping of landfill areas, which will result in a significant improvement in water quality migrating offsite.

The results suggest that while there will be a large reduction in leachate volumes generated, the reduction in the overall groundwater balance and thus groundwater elevations will be significantly less.

While not characterised, groundwater elevations at the Proposal Site boundary after the Proposal has been developed are expected to be above the low end groundwater level range

[3] *Hydrologic Evaluation of Landfill Performance (HELP) software.*

previously experienced during historical sand mining, when groundwater elevations would have been significantly deflated by lowering of the ground surface and exposure of the groundwater table in the mine void ponds to evaporative affects.

Impacts to registered water supply wells

The amount of groundwater change in registered groundwater wells associated with a reduction in recharge would be insufficient to represent an adverse impact relative to the 2 m water table drawdown criteria listed in the AIP.

Impacts to GDEs in Quibray Bay and Weeney Bay

The amount of groundwater level change is unlikely to represent an adverse impact to down-gradient terrestrial GDEs located within Towra Point reserve. This is because these are tidally influenced systems where changes in groundwater elevations would be tidally dominated. For any terrestrial GDE's sitting up-gradient of the high tide mark, the change in groundwater elevations is unlikely to result in a downward movement of groundwater elevations beyond the vegetation root zones.

There is potential for the groundwater elevations to change by more than the AIP minimal impact criteria which is estimated to be less than 0.07 m in this area (see section 5.1.1). However, given the conditions outlined above and that the expected changes 40 m from the GDE are interpreted to be less than 0.12 m adverse impacts are not expected.

Impacts to recreational users and oyster leases in Quibray Bay, Weeney Bay and Cronulla Beach

Oyster leases and recreational users are located within Quibray Bay open water tidal zones and as such their water supply is unlikely to be affected by a reduction in groundwater discharge.

Impacts to acid sulphate soils

Off-site acid sulphate soils

As the Proposal Site is located in an area of high acid sulphate soils risk, any reduction in groundwater levels beyond the current range in groundwater elevations could result in exposure of acid sulphate soils along the foreshore of Quibray Bay and Weeney Bay, as well as to the south of the eastern end of the Proposal Site and the dune ponds (see Section 3.7). The potential for this impact to occur may be lowered by historic sand mining activities that could have resulted in the presence of groundwater levels below those that currently exist and which may have oxidised any potential acid sulphate soils.

Further to this the acid neutralising capacity of the groundwater system in this area appears to be high (See Section 3.15.2) and is buffered further by leachate.

While the potential for impacts is expected to be low, with groundwater level changes expected to be small (generally less than 0.12 m in offsite locations), any groundwater level changes outside of the previous climatic range have the potential to result in the generation of acid sulphate soils and will therefore require management. Due to the low potential for impact a monitoring approach to managing this impact is considered to be appropriate.

On-site acid sulphate soils

A reduction in groundwater elevations onsite to below 2 m AHD has the potential to expose potential acid sulphate soils deposited as part of landfilling of the former landfill voids. The effect of this would be a lowering of pH and liberation of metals in groundwater (See Section 3.7).

Site information indicates that PASS is unlikely to have been deposited beneath the western landfilled areas (see Section 3.7). Further to this, groundwater levels beneath the landfills are

expected to remain relatively high (above 1.5 m AHD), which will limit exposure of VENM below the capping material.

At the location of the new Resource Recovery Facility groundwater level reductions are estimated to be less than 0.22 m, which is expected to have a low potential to expose PASS historically deposited in the sand mine voids.

Further to this, the acid neutralising capacity of the groundwater system beneath the landfills and at the new Resource Recovery Facility appears to be high (see Section 3.15.2). The landfill leachate also has a high acid neutralising capacity. A reduction in leachate generation will reduce the acid neutralising capacity of groundwater influenced by leachate. However, in eastern areas of the Proposal Site where the influence of landfill leachate on groundwater is lower, the acid neutralising capacity of groundwater is still high.

Regardless, any groundwater level changes outside of the previous climatic range have the potential to result in the generation of acid sulphate soils and will therefore require management. Due to a low potential for impact a monitoring approach to managing this impact is considered to be appropriate.

Impacts to recreational users and aquatic ecosystems in the dune ponds

The dune ponds are located off-site to the south of the Proposal Site and a reduction to groundwater level could potentially lower levels in the dune ponds and result in a loss of beneficial use of the ponds for recreational purposes and as aquatic ecosystems. The water quality in the dune ponds does not appear to be influenced by leachate migrating off-site, which indicates that the water in the ponds may be sourced from other areas, such as local run-off and localised rainfall infiltration. Further to this, groundwater elevation reductions (and thus surface water elevations) around the ponds due to recharge reduction associated with the proposal are expected to be less than 0.12 m and may actually rise (see Table 5-2).

This suggests the pond has a low potential to be adversely impacted, however, the changes may be more than the minimal impact criteria for groundwater dependent ecosystems and potentially expose PASS in the pond.

Due to a low potential for impact a monitoring approach to managing this impact is considered to be appropriate.

5.3.3 Infiltration pond impacts

Proposed infiltration ponds are expected to be designed so that the base of the ponds sits approximately 1 m above average groundwater elevation, although it is proposed that the north eastern pond at the new Resource Recovery Facility will extend below the groundwater table to provide a water supply for the Proposal Site. The impacts on groundwater drawdown from obtaining a water supply for the new Resource Recovery Facility from this site are presented in Section 5.3.1 above.

For infiltration ponds located above the groundwater table there will be a positive impact that will result in recharging of the groundwater system during wet periods, with the ponds drying up during dry periods and not impacting the groundwater system. As such adverse impacts to groundwater elevations will be negligible.

The existing pond located in western areas of the Proposal Site appear to have a limited impact on surrounding groundwater elevations as indicated in Figure 3-13 of Section 3.9, where surface water levels are high relative to groundwater levels. This effect is less evident at infiltration ponds at the eastern end of the Proposal Site.

The infiltration ponds will be removed from the western areas of the Proposal Site, which has potential to result in a reduction in groundwater elevations down gradient of the Proposal Site.

Existing site data indicates (as presented in Figure 3-13 of Section 3.9) that there is a limited effect of this pond on surrounding groundwater elevations suggesting that any changes in groundwater elevations will be minor when the pond is removed. Further to this, any change in the groundwater system will be to conditions that were present prior to the pond development. As such adverse impacts are not expected.

Current water quality data across the Proposal Site indicates that existing infiltration ponds are likely to improve groundwater quality migrating off-site, which represents a positive impact for the Proposal. Further to this, the surface water management assessment (Cardno, 2021) indicates that the overall water quality of surface water run-off to the infiltration ponds will improve. On this basis it is expected that there will be a positive impact on groundwater quality associated with infiltration from the ponds.

The removal of the western pond could result in an isolated change in groundwater quality, however, the pond removal would result in a return to conditions present prior to emplacement of the pond. Further to this, groundwater migrating beneath the pond will be less impacted by leachate and therefore of improved quality. As such adverse groundwater quality impacts associated with removal of the pond are not expected.

Construction and decommissioning of infiltration ponds will have the potential to introduce contamination into groundwater, which would act as a new source of impact and potentially reduce the beneficial use potential of groundwater at down gradient GDE's. This will require management.

5.3.4 Groundwater water quality impacts from the generation of leachate

With regard to changes in groundwater quality the AIP requires that changes in groundwater quality should not lower the beneficial use category of the groundwater source beyond a distance of 40 metres from the activity.

The existing conditions of the Proposal Site are resulting in migration of leachate influenced groundwater off-site that are in exceedance of the surrounding beneficial use criteria, however:

- Water quality data indicates that the current concentrations in pore water and surface water in Quibray Bay and Weeney Bay are not resulting in impacts discernible from background conditions. It is also expected that the migration of leachate influenced groundwater off-site will reduce (by up to 90% relative to current conditions) as the Proposal is progressively developed.
- The dune ponds do not appear to be adversely impacted by existing site activities.
- While the affects to down-gradient groundwater users have not been characterised, domestic and industrial wells identified off-site are not used for purposes that are inconsistent with the current water quality migrating off-site. Further to this, the wells located on the neighbouring Besmaw property, are subject to landfilling practices that are similar to the Proposal Site that will generate similar groundwater quality conditions.

It is noted that leachate influenced groundwater concentrations appear to be increasing in some wells on-site which are within the range of historical values and could be associated with ongoing pulses of leachate influenced groundwater migrating off-site (identified in historical monitoring data). With the implementation of the Proposal and the large reduction in leachate generation (approximately 71 % of current conditions), these trends are expected to be reversed within 6 years. In the short term these potential impacts and the associated response are being managed under the monitoring program for the existing EPL (EPL 4608).

Construction of the Embellished Marang Parklands, as well as the sport fields (which will be constructed under a different development approval) is not expected to result in additional

exposed areas than currently present across the active site. As such, it is not expected that there will be a construction based increase in rainfall infiltration and leachate generation during construction. As capping/ground treatment progresses any potential for increased leachate generation will quickly subside.

During operation, the Proposal is expected to reduce the volume of leachate being generated from beneath capped Embellished Marang Parkland and sport field areas, from beneath Cell B11 (due to the liner), from beneath the New Resource Recovery Facility (due to better site surface water management) and from the rehabilitated soil recycling areas on Cell B10 (due to reduced recharge from capping). This is will result in an overall improvement in the potential water quality impacts at off-site receptors.

While leachate volumes being generated from the historical landfill material beneath the emplaced capping is expected to fall, there will be an increase in seepage from RRO material placed over the capping material. While this is expected to be much cleaner than leachate generated from the underlying landfill the water quality that will be generated is currently not characterised. Infiltration of seepage from the RRO material is expected to dilute leachate/groundwater migrating off-site as it infiltrates to groundwater at the capping edges and thus improve water quality. Monitoring will be needed to verify this.

Overall it is expected that the beneficial use potential for groundwater migrating off-site during construction and operation of the Proposal will improve, thereby meeting the beneficial use criteria. As such, adverse water quality impacts to groundwater quality are not expected.

A site closure plan will be developed to manage the ongoing generation of leachate from landfill cells B10 and B11 after the completion of landfilling in this area.

Impacts to registered water supply wells

As noted above a gradual improvement in water quality migrating off-site, associated with a reduction in the generation of leachate from the Proposal Site, is expected (from the commencement of construction capping and ground treatment onwards). As such the beneficial use potential of groundwater is expected to improve or be maintained at down-gradient water supply wells. This will also be from an existing condition of suitable water quality. Therefore adverse impacts to groundwater supply wells are expected to be negligible.

Impacts to GDEs in Quibray Bay and Weeney Bay

As noted above, a gradual improvement in water quality migrating off-site, associated with a reduction in the generation of leachate from the Proposal Site, is expected. As such the beneficial use potential of groundwater is expected to improve or be maintained at down gradient GDE's. Therefore, adverse water quality impacts at down-gradient GDE's will be negligible.

Impacts to oyster leases and recreational users in Quibray Bay, Weeney Bay and Cronulla Beach

As noted above a gradual improvement in groundwater quality migrating off-site, associated with a reduction in the generation of leachate from the Proposal Site, is expected. The improved groundwater quality coupled with a lower groundwater discharge from the Proposal Site will result in an overall improvement in water quality discharging to Quibray Bay, Weeney Bay and Cronulla Beach. Therefore, adverse impacts to water quality at these receptors will be negligible.

Impacts to acid sulphate soils

As noted above, a gradual improvement in water quality migrating off-site, associated with a reduction in the generation of leachate from the Proposal Site, is expected. Regardless, acid sulphate soils are not expected to be adversely impacted by changes in groundwater quality migrating off-site, noting that the pH of leachate is similar to or higher than surrounding groundwater. It is noted that the additional acid neutralising capacity associated with leachate influenced groundwater will be reduced, but is not expected to reduce the acid neutralising capacity beyond a high level. As such, adverse impacts associated with this change are not expected.

Impacts to recreational users and aquatic ecosystems in the dune ponds

As noted above, a gradual improvement in groundwater quality migrating off-site, associated with a reduction in the generation of leachate from the Proposal Site, is expected. This improvement coupled with a lower leachate discharge is expected to improve the beneficial use potential of groundwater or maintain the water quality at the down-gradient dune ponds.

5.3.5 Leaks and spills from construction activities

There will be an increased potential for release of contaminants from construction activities that will require management to prevent impacts to the surrounding environment.

5.3.6 Leaks and spills from operation activities

With improved site facilities relative to current conditions as a part of the Proposal, the potential for a release of contamination associated with operational activities is considered to be low. However, measures will need to be implemented to manage the potential for, and respond to the occurrence of, contamination releases. The potential for these releases will primarily be associated with the New Resource Recovery Facility.

5.4 Cumulative Impacts

Due to an expected reduction in overall impacts with the Proposal Site, associated with a reduction in the generation of leachate migrating off-site, the contribution to any cumulative impacts within the wider area are expected to reduce.

There are no developments currently proposed within the vicinity of the Proposal Site that are expected to result in additional cumulative impacts in the future.

There are a range of existing uses surrounding the Proposal Site, which have been ongoing for many years. This includes:

- The Besmaw property located to the east of the Proposal Site, which includes sand mining and mine void infilling under similar EPL conditions (for void infilling) to the Proposal Site.
- The Cronulla wastewater treatment plant, which is located to the south east of the Proposal Site.

There will be existing impacts associated with these developments, although due to the geography of the peninsula, groundwater migrating from these sites is expected to primarily discharge to different locations of Quibray Bay, Woolooware Bay and/or Cronulla Beach than to groundwater migrating from the Proposal Site.

The Cronulla wastewater treatment plant has been in operation since the late 1950's and has had various upgrades to expand and improve treatment facilities over time. Groundwater migration beneath the treatment system is expected to discharge to Woolooware Bay, which is

expected to be a minor discharge point from the Proposal Site, due to the presence of an anticipated flow divide in this area associated with a topographical high.

Further to the above, the stage of the Greenhills Beach residential development closest to the Proposal Site was approved in 2011 and has subsequently been completed. The surface water management system, outlined in the statement of environmental effects (SEE), for the development (as presented on the Sutherland Shire Council website – DA101253) was designed to direct surface water run-off to Pond 6 for subsequent infiltration to groundwater. Pond 6 is located along the northern boundary of the Greenhills Beach residential development. Based on the topography of the peninsula in this area groundwater migrating from the ponds are expected to discharge to Woolooware Bay, which as noted above is expected to be a minor discharge point from the Proposal Site.

Regardless, the Proposal is expected to result in a reduction in off-site migration of leachate.

Lowering of groundwater elevations associated with a reduction in recharge is expected to be generally less than 0.16 m at the Proposal Site boundaries. Within the wider catchment where the aforementioned developments are located, due to unchanged rainfall recharge at these developments, the impacts on groundwater elevations would be negligible and not cumulative.

6. Mitigation and monitoring

6.1 Summary of impacts requiring management and mitigation

The project is expected to result in a significant improvement in groundwater quality migrating offsite, however, there are some potential impacts that will require mitigation and or management measures. These are listed below:

- Groundwater abstraction at the Proposal Site has potential to result in groundwater drawdown that will expose acid sulfate soils. The impact will most likely emerge at on-site abstraction points before emerging off-site providing the opportunity for early detection on site.
- Generation of acid sulfate soils inside the Proposal Site perimeter and in downgradient areas due to a reduction in groundwater elevations below historical minimums, albeit small. This has potential to adversely impact:
  - The dunes ponds.
  - Downgradient GDE's in Quibray Bay and Weeney Bay.
- Without management, construction / infilling of infiltration ponds will have the potential to introduce new contaminants into groundwater.
- Release of new contaminants to surface water and groundwater by general construction and operation activities may result in adverse impacts down-gradient.

Further to the above potential impacts, additional measures should be taken to verify that the conceptual conclusions made for the site assessment are correct, particularly with regard to improved water quality of seepage from the RRO material relative to the leachate. A monitoring program to do this is presented in Section 6.7.

The proposed mitigation and monitoring measures to manage these potential impacts are outlined below.

6.2 Groundwater abstraction

To manage the exposure of acid sulfate soils associated with groundwater abstraction from infiltration ponds and abstraction wells a groundwater management plan (or included within an acid sulfate soils management plan) should be developed for the Proposal Site.

Options that could be considered to manage exposure of PASS include:

- Additional investigations to characterise the presence or absence of the PASS in the zone of drawdown influence and if present the potential for the generation of PASS to be buffered by the acid neutralising capacity of the existing groundwater.
- Abstraction when pond elevations are above minimum groundwater elevations. Baseline high frequency groundwater elevation monitoring would be required to effectively characterise minimum groundwater elevations.
- Spreading the take of groundwater over multiple locations (ponds and wells) to minimise drawdown at each location or replacing the groundwater abstraction (which has higher localised drawdown), with surface water abstraction.
- Harvesting of water during periods of high pond levels for use when pond levels are low.
- Reduction in groundwater take at times of low groundwater levels to prevent intersection of PASS.
- Using alternative water supply sources as needed to prevent impacts.

While noting that the water quality is expected to be suitable for use as a wheel wash and for dust suppression. The groundwater management plan should also consider the impacts to site users being exposed to the water being used across the Proposal Site.

The water sharing plan water sharing rules should be considered in the assessment of the groundwater abstraction options noting that current information indicates there is potential for the current infiltration ponds to be located within the acceptable distances of other water supply wells in this area. Although, impacts using currently licenced volumes have been assessed to have negligible impacts on the surrounding wells.

6.3 Recharge reduction

Due to the presence of a high acid neutralising capacity in the groundwater migrating offsite and given that the offsite change in groundwater elevations due to a reduction in recharge are expected to be small, the potential for the generation of acid sulphate soils by recharge reduction is considered to be low. Due to the low potential for impact a monitoring approach to managing this impact is considered to be appropriate.

A monitoring program to do this is outlined in Section 6.7. The monitoring program should be coupled with an acid sulphate soils management plan for construction and operation that has been developed in accordance with the acid sulfate soils manual (ASSMAC, 1998).

6.4 Mitigating potential impacts to water quality

General construction and operation activities

Construction and operational environmental management plans will be developed for the Proposal Site and will include management methods and procedures to reduce the potential for impacts to groundwater quality due to construction activities. The measures will include, but not be limited to:

- Emergency spill response protocols for managing clean-up of spills substances with the potential to contaminate groundwater.
- Adequate and appropriate storage and handling of chemicals to reduce the potential for spills or infiltration into groundwater.
- Maintain works practices and procedures that minimise the construction and operational footprint and prevent the liberation of dirty water from active areas and that prevent mixing with clean water from non-active areas.

Chemicals should be handled and stored in accordance with environmental management practices (including isolated and bunded storage areas) to minimise chemical release to the environment. Spillage control or containment systems should be based on the hydrologic conditions prevailing at the time of the spill. Containment systems should be designed to limit the potential for infiltration to the underlying groundwater systems.

Procedures to manage leaks and spills would be detailed in construction and operational environmental management plans.

A monitoring program will be required to verify that construction and operational activities do not result in a reduction in the beneficial use potential of groundwater migrating off site to downgradient GDE's and surrounding water supply wells. A monitoring program to do this is outlined in Section 6.7.

6.5 Infiltration pond excavations

To minimise the potential for groundwater contamination during infilling of the wheel wash pond (see Figure 3-2) consideration should be given to the following mitigation measures:

- Use of clean VENM of similar characteristics to the surrounding sands for backfilling the ponds.
- Implementation of the construction protocols outlined in Section 6.4:

To ensure that construction and operation of the ponds on the Proposal Site does not result in negative impacts to groundwater elevations and water quality at down-gradient receptors, a monitoring program is recommended. A monitoring program to do this is outlined in Section 6.7.

6.6 Site closure plan

A site closure plan will be required to manage the ongoing generation of leachate after the completion of landfilling and operational activities.

6.7 Monitoring program

A groundwater monitoring program should be implemented at the Proposal Site to characterise the emergence of any construction and operational impacts from the Proposal.

The existing groundwater monitoring program, undertaken as part of the EPL 4608 is considered to have suitable coverage and frequency to provide a baseline to characterise the emergence of impacts during construction and operation.

It is recommended, however, that it is expanded to include surface water sampling and additional leachate sampling for the purpose of characterising emerging impacts from PASS exposure, characterising surface water quality infiltrating to groundwater and ensuring that ongoing leachate water quality is stable.

Two new groundwater monitoring wells are also proposed around the new Resource Recovery Facility to better characterise groundwater migrating off the Proposal Site from beneath the new Resource Recovery Facility.

A summary of the proposed monitoring program is presented in Table 6-1 with the sampling locations presented in Figure 6-1.

The frequency of sampling at each location is considered suitable to identify any emerging impacts that require management.

Table 6-1 Monitoring program

Location	EPL 4608 ID	Media	Frequency	Monitoring type	Period
BH3A	3	Groundwater	Quarterly	Elevation (data logger) and water quality	Baseline / construction and operation
BH4A	4	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH5A	5	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation

Location	EPL 4608 ID	Media	Frequency	Monitoring type	Period
BH6A	6	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH7A	7	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH8A	8	Groundwater	Quarterly	Elevation (data logger) and water quality	Baseline / construction and operation
BH9C	9	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH10B	11	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH11A	12	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH12A	13	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH13A	14	Groundwater	Quarterly	Elevation (data logger) and water quality	Baseline / construction and operation
BH14A	15	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH15	16	Groundwater	Quarterly	Elevation(data logger) and water quality	Baseline / construction and operation
BH16	17	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH17	18	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH18	19	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH19B	26	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation

Location	EPL 4608 ID	Media	Frequency	Monitoring type	Period
BH20	27	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH22	28	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH23	29	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH24	30	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH25	31	Groundwater	Quarterly	Elevation (data logger) and water quality	Baseline / construction and operation
BH26	New	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
BH27	New	Groundwater	Quarterly	Elevation and water quality	Baseline / construction and operation
Infiltration point 2 – Appendix C (Cardno, 2021)	New location	Surface water	Quarterly	Water quality and elevation	Baseline and construction and operation
Infiltration point 3 – Appendix C (Cardno, 2021)	New location	Surface water	Quarterly	Water quality	Baseline and construction
Infiltration point 4 – Appendix C (Cardno, 2021)	New location	Surface water	Quarterly	Water quality and elevation	Baseline and construction
New infiltration pond 3 – Appendix C (Cardno, 2021)	New location	Surface water	Quarterly	Water quality	Operation
New infiltration pond 4 – Appendix C (Cardno, 2021)	New location	Surface water	Quarterly	Water quality	Operation
Dune pond	New location	Surface water	Quarterly	Elevation (data logger) and water quality	Baseline / construction and operation
Leachate ponds	Existing	Leachate	Quarterly	Water quality	Baseline and construction
Groundwater abstraction	New location	Groundwater	Quarterly	Water quality	Baseline and construction

The proposed parameters to be assessed and the recommend frequency are presented in Table 6-2 and are based on the identified contaminants of concern summarised in Section 4 and those required by EPL 4608.

Table 6-2 Proposed analytical schedule

Parameter	Frequency	Media
Electrical conductivity (field)	Yearly	All
pH (field and laboratory)	Quarterly	All
Standing Water Level (field)	Quarterly	All
Total dissolved solids	Quarterly	All
Total organic carbon	Quarterly	Surface water / leachate
Total suspended solids	Yearly	Surface water / leachate
Nitrate	Yearly	All
Nitrite	Yearly	All
Nitrogen (ammonia)	Quarterly	All
Phosphorus	Yearly	All
Aluminium	Yearly	All
Arsenic	Yearly	All
Barium	Yearly	All
Cadmium	Yearly	All
Chromium (hexavalent)	Yearly	All
Chromium (total)	Yearly	All
Cobalt	Yearly	All
Copper	Yearly	All
Lead	Yearly	All
Magnesium	Quarterly	All
Manganese	Yearly	All
Mercury	Yearly	All
Nickel	Yearly	All
Zinc	Yearly	All
Benzene	Yearly	All
Ethyl benzene	Yearly	All
Toluene	Yearly	All
Xylene	Yearly	All
Total recoverable hydrocarbons (F1 to F4)	Yearly	All
Polycyclic aromatic hydrocarbons	Yearly	All
Total Phenolics	Yearly	All
Organochlorine pesticides	Yearly	All
Organophosphate pesticides	Yearly	All
Calcium	Quarterly	All
Carbonate	Quarterly	All
Chloride	Quarterly	All
Fluoride	Yearly	All

Parameter	Frequency	Media
Potassium	Quarterly	All
Sodium	Quarterly	All
Sulfate	Quarterly	All
Bicarbonate and carbonate alkalinity	Quarterly	All



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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
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Breen Resources Pty Ltd
Breen Resource Facility – EIS

Proposed monitoring program locations

Project No. **12529041**
Revision No. **-**
Date **30/10/2020**

Figure 6-1

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6.7.1 Monitoring criteria

The baseline data for the Proposal Site should be used as the primary data set for assessing the emergence of adverse impacts. This is based on the premise in the SEARs and regulatory comments that the Proposal should not result in adverse impacts relative to existing conditions.

Water Quality Criteria

Water quality criteria should be developed to assess the emergence of impacts during construction and operation (test data) against the baseline monitoring data (control or reference data).This would include establishing statistical methods for assessing trends in the data sets and criteria in which the changes are considered to be potentially adverse. The criteria should be developed in accordance with the recommendations made in ANZG (2018) and ANZECC (2000) and could include comparison of the 80th percentile reference (existing) value for each analyte at each location against the 50th percentile value in the construction and operation data sets.

The criteria for acid sulfate soil exposure should be developed in accordance with the ASSMAC (1998) and Water Quality Australia (June 2018) acid sulfate soils guidance.

Subsequent to the identification of impacts above background/existing conditions, the data should be compared against the relevant criteria that are protective of the down-gradient receiving environments. This is expected to include:

- The ANZG (2018) criteria for the protection of 95% of freshwater species in the dune ponds.
- The NHMRC (2008) criteria for the protection of the recreational users of surface water potentially using Towra Point Reserve or the dune pond systems.
- The primary industries criteria for the protection of aquiculture (ANZECC & ARMCANZ, 2000a).

Exceedances beyond the established criteria would trigger the response procedures outlined in Section 6.7.2.

Water elevation criteria

Within perimeter monitoring wells, groundwater elevation criterion would be linked to the minimal impact criterion present in the AIP, which should be derived primarily for the purposes of protecting down-gradient ecosystems in Quibray Bay, Weeney Bay and Cronulla Beach and recreational criteria and ecology in the dune lakes. This criterion generally includes no more than a 10% change in the cumulative seasonal variation change in background elevations as established by historical and baseline monitoring.

To facilitate a better understanding of the climatic range in groundwater elevations, data loggers are proposed to be installed within a number of wells surrounding the Proposal Site. These wells have been strategically placed up gradient of, or near to, the locations of potential acid sulphate soils, GDEs and the dune ponds.

To prevent the generation of acid sulphate soils and liberation of metals, the groundwater elevation criteria would include any migration below historical lows in groundwater elevations within wells located near to off-site PASS. Historical lows would be characterised by baseline monitoring.

6.7.2 Impact Response

If emergent impacts were identified outside the range of established criteria, it is expected that the following actions would be implemented:

- Further investigation to characterise impacts further. This may include groundwater and surface water modelling or additional field investigations that characterise impacts at key areas of concern.
- Development of engineered solutions to adequately respond to impacts identified. These are expected to include enhanced infiltration measures to limit the impacts associated with reduced infiltration to groundwater.

For acid sulphate soil impacts, the impact response procedures would be developed in accordance with the NSW acid sulfate soils manual (ASSMAC, 1998) and Australian acid sulfate soil guidance (Water Quality Australia, June 2018).

For water quality impacts, the impact response procedures would be developed in accordance with applicable Australian and NSW contaminated land guidelines including, but not limited to the:

- NEPM (NEPC, 2013)
- Contaminated land guidelines for consultants reporting on contaminated land (NSW EPA, 2020)
- The water quality guidance presented in Section 2.2

6.7.3 Construction Monitoring

The baseline groundwater and introduction of the surface water sampling should be continued through the overall construction of the Embellished Marang Parklands, sporting fields and New Resource Recovery Facility at the current frequency for the purpose of:

- Characterising and responding to predicted impacts
- Identifying and responding to any impacts outside the predicted impacts

6.7.4 Operational Monitoring

Operation monitoring would continue in all wells around the New Resource Recovery Facility until the operations cease. Monitoring would continue after cessation of recycling activities until such time that field data confidently characterises the potential for delayed emergence of impacts. The length of the post operation monitoring period should be linked to retarded groundwater travel times from the centre of site activities to the Proposal Site boundary wells.

After construction of the Embellished Marang Parklands and sport fields areas in Western areas of the Proposal Site, monitoring would continue until such time that field data confidently characterises the potential for emergence of impacts.

This approach will facilitate a staged surrender of the EPL (EPL 4608) monitoring program as landfill areas are closed, covered and capped.

7. Conclusions and recommendations

A groundwater impact assessment has been undertaken to assess the potential groundwater impacts associated with the Proposal on the surrounding environment. The findings of the assessment area summarised below.

Overall, with the proposed mitigation and monitoring measures recommended in Section 6, the identified potential adverse groundwater impacts are expected to be manageable and negligible.

An assessment of water quality across the Proposal Site and at down-gradient receptors (being Quibray Bay, Weeney Bay and dune ponds) suggests that:

- While there are concentrations of contaminants present in on-site leachate and groundwater above adopted ecological, aquaculture and human health the impacts at down gradient receptors are not clearly discernible from those associated with the wider urban and industrial environment.
- Water quality within on-site infiltration ponds is generally of better quality than surrounding groundwater, as such infiltration via the ponds is currently expected to improve the quality of the surrounding groundwater.
- The water quality in the nearest dune pond (adjacent to the south western boundary of the Proposal Site) appears to be largely un-impacted by the Proposal with concentrations in surface water in the ponds primarily being below adopted ecological and human health criteria.
- The existing groundwater quality migrating off-site is within the current beneficial use potential of the nearest surrounding registered groundwater wells. It is also noted that the sand mine voids on the Besmaw property to the east are being backfilled under similar EPL conditions to that present at the eastern end of the Proposal Site and any registered groundwater wells on the Besmaw property will be preferentially influenced by those activities.
- The existing groundwater quality has a high acid neutralising capacity, which will reduce the potential for the generation of acid sulfate soils associated with the Proposal.

There will be a large overall reduction in the generation of leachate associated with the Proposal relative to existing conditions, which is expected to result in groundwater of improved quality and lower volume migrating off-site. This effect will be most evident in western areas of the Proposal Site and represents a positive impact of the Proposal. The water quality produced by the growing medium used to create the Embellished Marang Parkland (Comprising VENM/ENM and material that meets a resource recovery order) is expected to be markedly better than existing leachate quality and any discharge will be offset by the large reduction in leachate being created by the Proposal Site.

Further to the above, the improved water quality from reduced leachate will be augmented by cleaner surface water run-off that is less affected by site activities. Pond infiltration volumes (and therefore cleaner water inputs) are also expected to increase near the new Resource Recovery Facility.

A monitoring program is proposed to monitor and respond to the emergence of any unforeseen impacts.

Groundwater abstraction for site use from a water supply well and or infiltration ponds is estimated to lower the groundwater table below minimum historical levels and expose PASS. A groundwater management plan (or acid sulfate soils management plan) will be developed for

the Proposal Site that will consider options for preventing exposure PASS by groundwater abstraction. A monitoring program has been proposed to monitor for emerging impacts associated with potential impact. This includes further characterisation of baseline minimum groundwater elevations and monitoring of abstraction point water quality.

A reduction in groundwater elevations associated with reduced rainfall infiltration into landfills across the entire Proposal Site will occur. This has potential to decrease minimum groundwater elevations below historical minimums, albeit at small amounts, with exposure of PASS. The potential for impacts is considered to be further reduced by the high acid neutralising capacity of groundwater within and around the Proposal Site. Impacts could occur at downgradient GDE's in Quibray Bay, Weeney Bay and the dune ponds and at recreational users and aquatic ecosystems in the dune ponds, although the probability of occurrence is expected to be low. An acid sulfate soils management plan is proposed to be developed in accordance with relevant Australian (Water Quality Australia, June 2018) and NSW (ASSMAC, 1998) guidance to manage this potential impact. A management and monitoring program is proposed to be developed in accordance with the Acid Sulfate Soil Manual (ASSMAC, 1998) and Australian guidance (Water Quality Australia, June 2018) to characterise and respond to the emergence of impacts associated with exposure of acid sulfate soils.

There will be an inherent potential for groundwater impacts from leaks and spills during:

- Construction of the Embellished Marang Parklands, playing fields (which will be carried out under a different development consent) (including decommissioning of the current wheel wash pond).
- Construction and operation of the New Resource Recovery Facility.

Construction and operational management plans will be implemented for the Proposal Site and will have appropriate procedures to manage these potential impacts. This will include:

- Emergency spill response protocols for managing clean-up of spills substances with the potential to contaminate groundwater.
- Adequate and appropriate storage and handling of chemicals to reduce the potential for spills or infiltration into groundwater.
- Maintenance works practices and procedures that minimise the construction and operational footprint and prevent the liberation of dirty water from active areas and that prevent mixing with clean water from non-active areas.

Due to an expected improvement in groundwater quality migrating off-site, associated with the Proposal, cumulative impacts within the surrounding receiving environment are expected to improve. Any reduction in groundwater elevations at the Proposal Site boundary are not expected to extend to surrounding developments due to unchanged recharge conditions off-site.

A monitoring program is proposed to monitor for and respond to the emergence of potential adverse impacts. The monitoring program builds on the existing program required under the current EPL (EPL 4608) but with additional monitoring points to:

- Characterise/verify the improvement in groundwater quality associated with a reduction in leachate being generated from historical landfilling activities.
- Characterise/verify the improvement in surface water quality infiltrating (via infiltration ponds) to groundwater associated with improved site practices and land cover.
- Identify and respond to the potential for generation of acid sulphate soils on-site and off-site.
- Characterise the emergence of potential impacts associated with the New Resource Recovery Facility located in the eastern portion of the Proposal Site.

With the proposed mitigation and monitoring measures recommended, the identified potential adverse groundwater impacts are expected to be manageable and negligible.

8. Limitations

This document has been prepared by GHD for Breen Resources Pty Ltd and may only be used and relied on by Breen Resources Pty Ltd for the purpose agreed between GHD and the Breen Resources Pty Ltd in Section 1.2.

GHD otherwise disclaims responsibility to any person other than Breen Resources Pty Ltd 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. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Breen Resources Pty Ltd 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.

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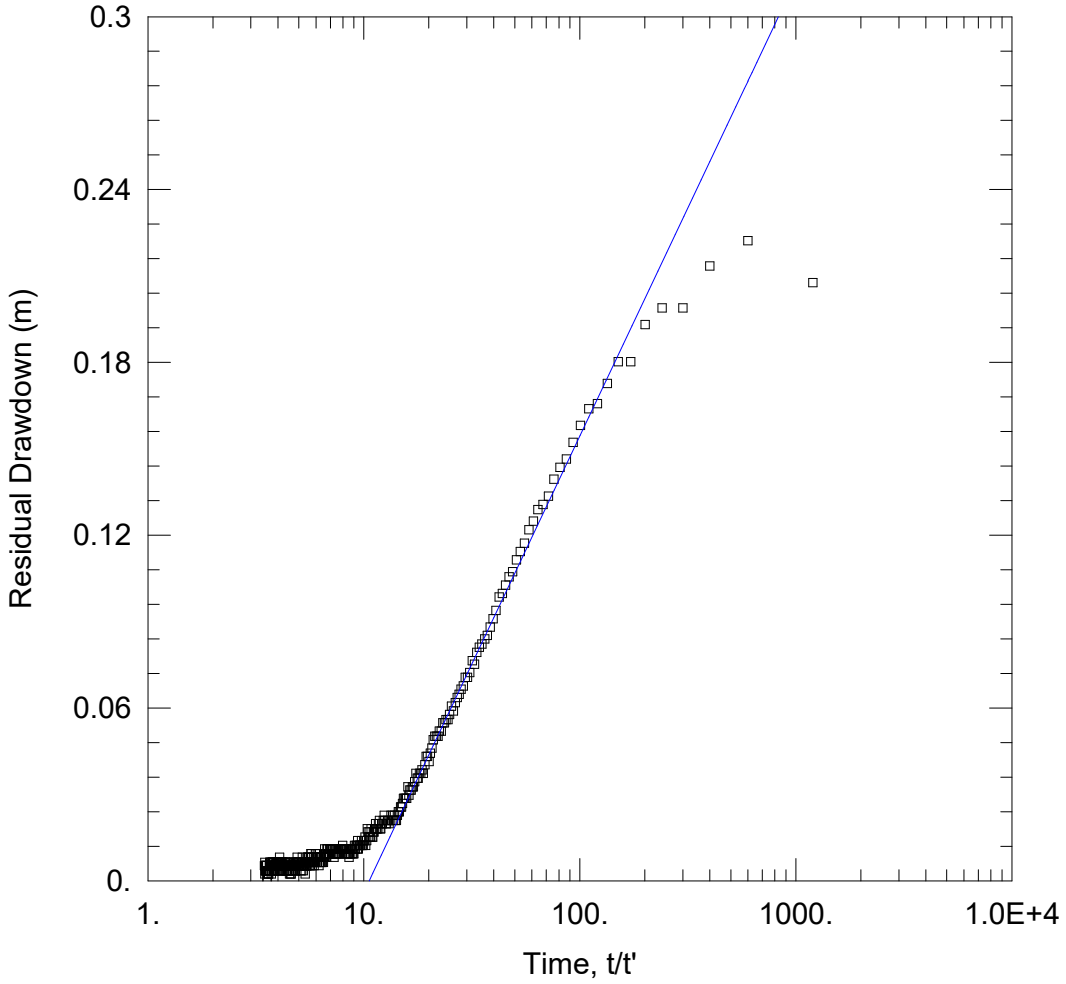
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Appendices

Appendix A – Hydraulic testing results



WELL TEST ANALYSIS

Data Set: G:\21\12529041\Tech\Groundwater\BH9C.aqt
Date: 06/24/20 Time: 21:03:19

PROJECT INFORMATION

Company: GHD
Client: Breen Resources
Project: 21/12529041
Test Well: BH9C
Test Date: 11/06/2020

AQUIFER DATA

Saturated Thickness: 7.103 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
BH9c	0	0

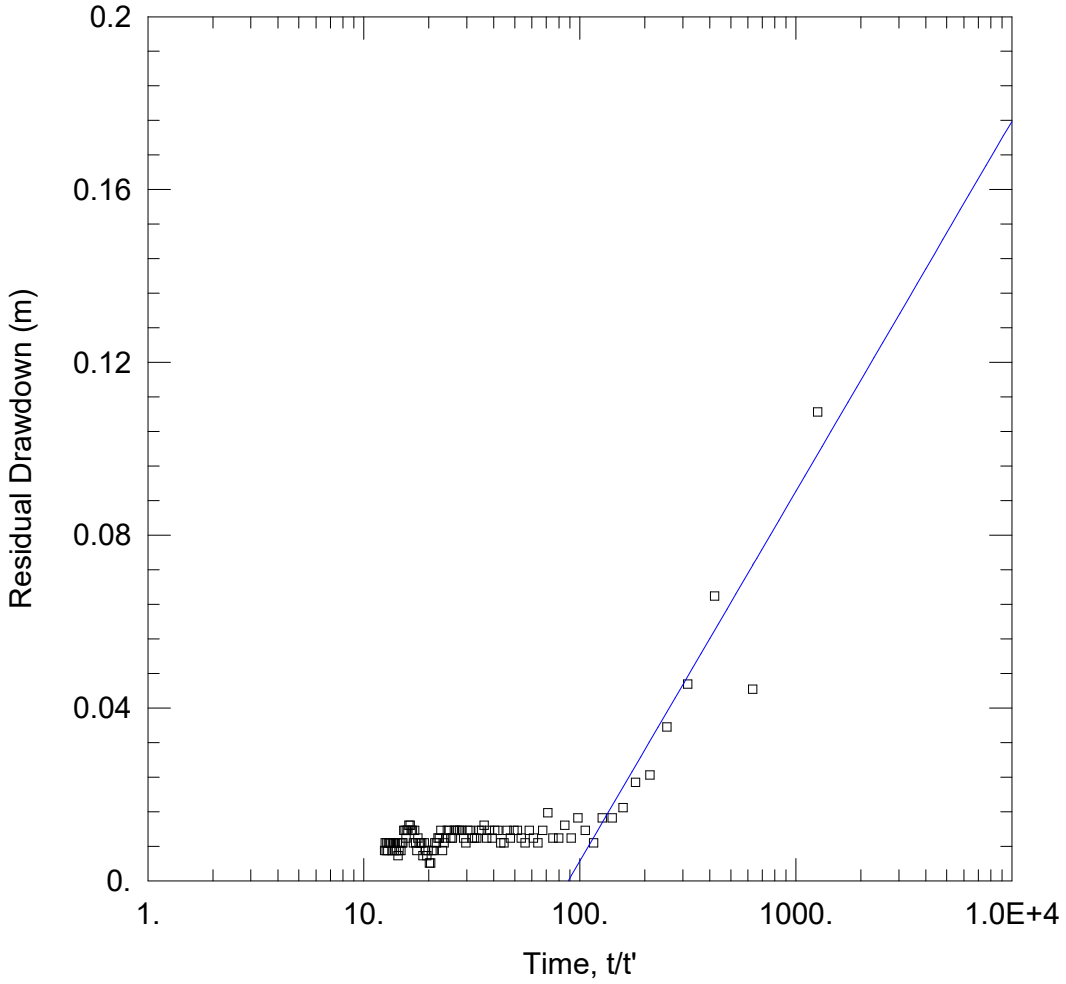
Observation Wells

Well Name	X (m)	Y (m)
BH9c	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 18.63 m^2/day S/S' = 10.6



WELL TEST ANALYSIS

Data Set: G:\21\12529041\Tech\Groundwater\BH17.aqt
Date: 06/24/20 Time: 21:12:57

PROJECT INFORMATION

Company: GHD
Client: Breen Resources
Project: 21/12529041
Test Well: BH17
Test Date: 11/06/2020

AQUIFER DATA

Saturated Thickness: 3.98 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
BH17	0	0

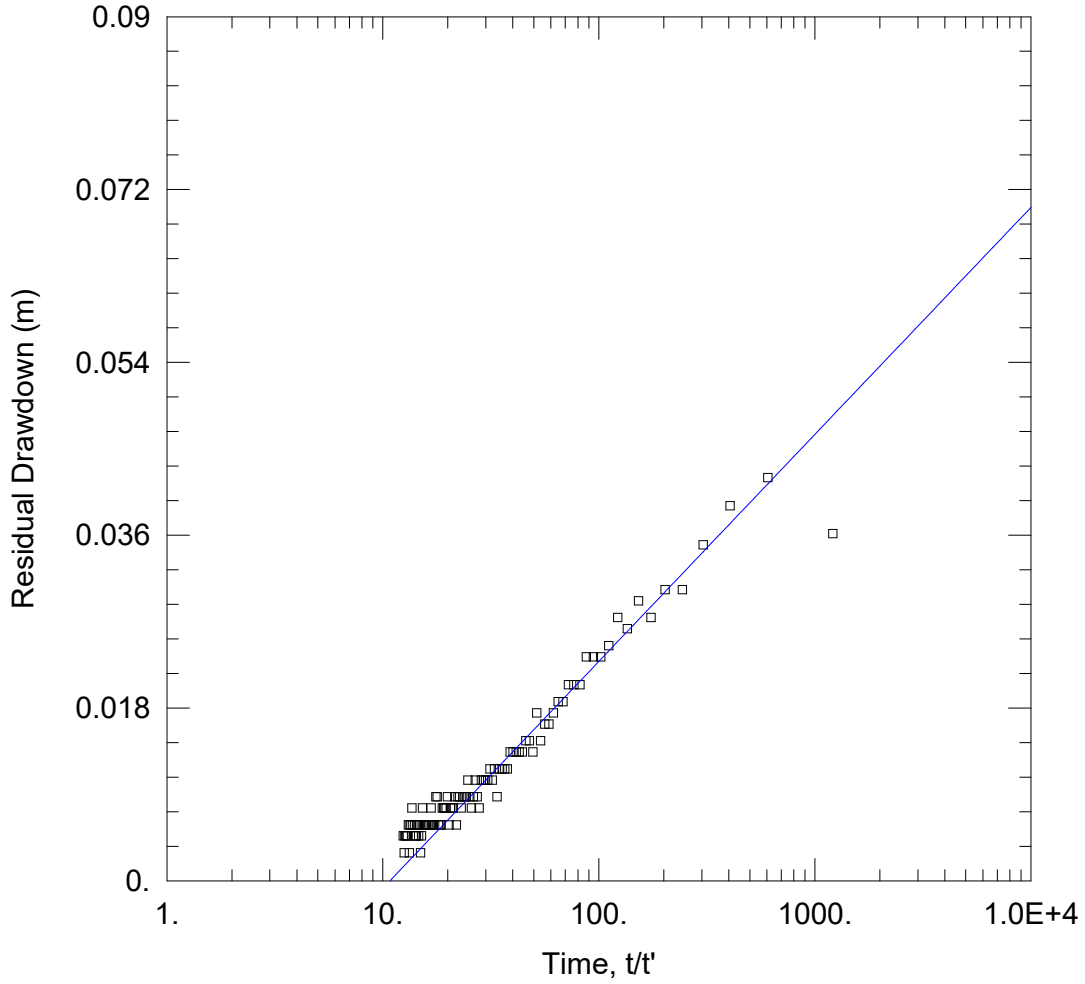
Observation Wells

Well Name	X (m)	Y (m)
BH17	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 31.89 m^2/day S/S' = 88.46



WELL TEST ANALYSIS

Data Set: G:\21\12529041\Tech\Groundwater\BH22.aqt
Date: 06/24/20 Time: 21:12:35

PROJECT INFORMATION

Company: GHD
Client: Breen Resources
Project: 21/12529041
Test Well: BH22
Test Date: 11/06/2020

AQUIFER DATA

Saturated Thickness: 6.742 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
BH22	0	0

Observation Wells

Well Name	X (m)	Y (m)
BH22	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 128.8 m^2/day S/S' = 10.8

Appendix B - Tables Historical Analytical Results

	Field Parameters						Inorganics					Unassigned	Acidity & Alkalinity	Major Ions									Nutrients					Organic Indicators	Metals											
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Dissolved Organic Carbon (Filtered)	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)	Cobalt	Copper	Iron	Lead	Manganese
	mbTOC	pH Units	µS/cm	mg/L	mV	°C	pH Units	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	meq/L	meq/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	mg/L	mg/L	mg/L	mg/L
ADWG 2011 Aesthetic (v3.5 updated 2018)		6.5-8.5					6.5-8.5	600									180	250	250				0.411						0.2							1	0.3		0.1
ADWG 2011 Health (v3.5 updated 2018)																			500[#2]	1.5				11.29[#3]	0.91[#4]		50			0.01	2	0.002		0.05		2		0.01	0.5
NHMRC Recreational Guidelines 2008 - Health																			5000[#2]	15				112.9[#3]	9.1[#5]		500			0.1	20	0.02		0.5		20		0.1	5
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																																						
2-4m																																						
4-8m																																						
>8m																																						
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand																																						
2-4m																																						
4-8m																																						
>8m																																						
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand																																						
2-4m																																						
4-8m																																						
>8m																																						

SampleCode	Location_Code	Sampled_Date_Time	Matrix_Type																																				
BH5A_02 Jul 19_-	BH5A	2/07/2019	water	7.33	6.98	925	2.39	-76.3	19.5	7.2	1000	-	650	<5	-	-	170	28	27	120	160	84	<0.1	-	-	19	-	-	-	-	27	-	-	-	-	-	-	-	-	-	-
BH5A_24 Oct 19_-	BH5A	24/10/2019	water	7.23	6.79	1692	2.5	55	20	6.9	1100	-	710	<5	-	-	190	33	32	140	170	27	0.1	-	-	23	-	-	-	-	26	-	-	-	-	-	-	-	-	-	-
BH5A_15 Jan 20_-	BH5A	15/01/2020	water	7.36	7.24	1544	0.9	-12.5	20.5	7.1	940	-	630	<5	-	-	170	28	24	130	160	31	<0.1	-	-	19	1.2	<0.005	-	-	19	<0.01	0.092	0.052	<0.0001	<0.001	<0.005	0.002	0.003	-	<0.001	0.7
BH5A_23 Apr 20_-	BH5A	23/04/2020	water	7.22	7.02	1567	2.61	-13	20.3	7.3	1000	-	670	<5	-	-	160	31	25	120	180	36	<0.1	-	-	22	-	-	-	-	26	-	-	-	-	-	-	-	-	-	-
Statistical Summary																																							
Number of Results				404	1114	887	421	421	421	420	1116	2	420	420	695	22	440	442	442	442	441	441	387	22	22	1115	127	127	431	628	420	106	801	106	106	610	106	106	630	1	632	106
Number of Detects				404	1114	887	421	421	421	420	1116	2	420	0	691	22	440	442	442	442	441	440	286	22	22	1012	104	56	423	592	415	29	756	106	6	475	2	23	462	1	411	86
Minimum Concentration				0.43	5.17	2.1	0.03	-1033	7.3	5.8	94	740	40	<1	<1	106	9	2.9	1	11	9	2	<0.1	3.25	3.34	<0.005	<0.005	<0.005	0.01	<0.01	<1	<0.005	0	0.003	<0.0001	0.0005	0.001	<0.001	<0.001	0.23	<0.001	<0.001
Minimum Detect				0.43	5.17	2.1	0.03	ND	7.3	5.8	94	740	40	ND	1	106	9	2.9	1	11	9	2	0.1	3.25	3.34	0.005	0.006	0.005	0.01	0.01	1	0.01	0.001	0.003	0.0002	0.0005	0.001	0.001	0.001	0.23	0.001	0.006
Maximum Concentration				29.8	10.72	36800	10.15	496	28.4	8.1	3900	1100	1900	<5	129	686	1200	88	170	540	1000	480	0.7	20	22.1	240	51	0.31	24.8	32	490	0.2	0.328	0.29	0.0011	0.03	<0.5	0.022	0.028	0.23	0.028	2.5
Maximum Detect				29.8	10.72	36800	10.15	496	28.4	8.1	3900	1100	1900	ND	129	686	1200	88	170	540	1000	480	0.7	20	22.1	240	51	0.31	24.8	32	490	0.2	0.328	0.29	0.0011	0.03	0.007	0.022	0.028	0.23	0.028	2.5
Average Concentration				7.4	7.3	985	2.6	-12	19	7.2	643		378	1.3	14	365	156	21	9.8	75	86	97	0.15	11	12	2.1	1.9	0.028	2.8	1.7	27	0.014	0.029	0.049	0.000086	0.0026	0.0076	0.0012	0.0019		0.0011	0.2
Median Concentration				4.29	7.3	913	2.3	-4	19.3	7.2	610	920	370	0.5	10	398	150	19	7.8	55	60	75	0.13	10.7	11.45	0.24	0.12	0.005	1.1	0.16	10	0.005	0.004	0.0275	0.00005	0.001	0.0025	0.0005	0.001	0.23	0.001	0.0375
Standard Deviation				7	0.49	1308	1.8	123	2.6	0.38	313		209	0.99	13	157	85	12	10	60	82	85	0.092	4.3	4.8	8	5.5	0.056	4	3.7	51	0.03	0.055	0.055	0.00016	0.0033	0.024	0.003	0.0028		0.0017	0.39
Number of Guideline Exceedances				0	55	0	0	0	0	19	576	0	0	0	0	0	0	0	0	21	14	30	0	0	0	510	6	0	0	0	0	1	294	0	0	0	1	0	0	0	9	40
Number of Guideline Exceedances(Detects Only)				0	55	0	0	0	0	19	576	0	0	0	0	0	0	0	0	21	14	30	0	0	0	510	6	0	0	0	0	1	294	0	0	0	0	0	0	0	9	40

Env Stds Comments

#1:Natural concentrations generally <0.01 mg/L
#2:Not specifically guideline value: >500mg/L can have purgative effects
#3:Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427
#4:Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).
#5:Guideline value calculated by dividing Nitrite (as Nitrite) value (30 mg/L) by molecular weight (3.2967033).
#6:Not limiting: Derived water HSL exceeds water solubility limit

			BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16													PAHs - extended	SVOCs	OC Pesticides																															
	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b&k)fluoranthene	Hexachlorocyclohexane	4,4'-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene
	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	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
ADWG 2011 Aesthetic (v3.5 updated 2018)		3[#1]		25	3			20																																																				
ADWG 2011 Health (v3.5 updated 2018)	0.001		1	800	300			600														0.01																				9		20												10	0.3		
NHMRC Recreational Guidelines 2008 - Health	0.01		10	8000	3000			6000														0.1																				90		200												100	3		
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																																																														
2-4m			NL[#6]	NL[#6]	NL[#6]			NL[#6]																						NL[#6]																															
4-8m			NL[#6]	NL[#6]	NL[#6]			NL[#6]																						NL[#6]																															
>8m			NL[#6]	NL[#6]	NL[#6]			NL[#6]																						NL[#6]																															
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand																																																															
2-4m			*NL*[#6]	*NL*[#6]	*NL*[#6]			*NL*[#6]																						*NL*[#6]																															
4-8m			*NL*[#6]	*NL*[#6]	*NL*[#6]			*NL*[#6]																						*NL*[#6]																															
>8m			*NL*[#6]	*NL*[#6]	*NL*[#6]			*NL*[#6]																						*NL*[#6]																															
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand																																																														
2-4m			5000	NL[#6]	NL[#6]			NL[#6]																						NL[#6]																															
4-8m			5000	NL[#6]	NL[#6]			NL[#6]																						NL[#6]																															
>8m			5000	NL[#6]	NL[#6]			NL[#6]																						NL[#6]																															

| SampleCode | Location_Code | Sampled_Date_Time | Matrix_Type | | | | | | | | | | | | | | | | | | |

		OP Pesticides								Chlorinated Hydrocarbons	henols - tota	
	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Phenolics Total	Phenols
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ADWG 2011 Aesthetic (v3.5 updated 2018)										10		
ADWG 2011 Health (v3.5 updated 2018)	300	10	10		4	7	4	7		300		
NHMRC Recreational Guidelines 2008 - Health	3000	100	100		40	70	40	70		3000		
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand												
2-4m												
4-8m												
>8m												
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand												
2-4m												
4-8m												
>8m												
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand												
2-4m												
4-8m												
>8m												

SampleCode	Location_Code	Sampled_Date_Time	Matrix_Type											
BH5A_02 Jul 19_-	BH5A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-
BH5A_24 Oct 19_-	BH5A	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-
BH5A_15 Jan 20_-	BH5A	15/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<50	-
BH5A_23 Apr 20_-	BH5A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-

Statistical Summary

Number of Results	105	85	85	85	85	85	85	85	85	4	105	2
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	2
Minimum Concentration	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5	<50	3
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3
Maximum Concentration	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5	<50	8
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8
Average Concentration	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.5	25	
Median Concentration	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.5	25	5.5
Standard Deviation	0	0	0	0	0	0	0	0	0	0	0	
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments

#1:Natural concentrations generally <0.01 mg/L
#2:Not specifically guideline value: >500mg/L can have purgative effects
#3:Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.
#4:Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by m
#5:Guideline value calculated by dividing Nitrite (as Nitrite) value (30 mg/L) by mc
#6:Not limiting: Derived water HSL exceeds water solubility limit

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																
AB01_01 Jul 01_-	AB01	1/07/2001	water	-	7.4	**1000**	-	-	-	-	620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	<0.01	12	-	-	0.055	-	-	0.002	-
AB01_01 Oct 01_-	AB01	1/10/2001	water	-	7.5	**1000**	-	-	-	-	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	<0.01	12	-	-	0.078	-	-	<0.001	-
AB01_01 Jan 02_-	AB01	1/01/2002	water	-	7.5	**1100**	-	-	-	-	620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	<0.01	12	-	-	0.059	-	-	<0.001	-
AB01_01 Apr 02_-	AB01	1/04/2002	water	-	7.8	**990**	-	-	-	-	610	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6	0.01	14	-	-	0.109	-	-	0.001	-
AB01_01 Jul 02_-	AB01	1/07/2002	water	-	7.9	**900**	-	-	-	-	570	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	<0.01	9	-	-	0.064	-	-	<0.001	-
AB01_01 Apr 03_-	AB01	1/04/2003	water	-	7.93	**1070**	-	-	-	-	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	0.02	21	-	-	0.097	-	-	<0.001	-
AB01_01 Jul 04_-	AB01	1/07/2004	water	-	7.67	-	-	-	-	-	744	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	19	-	-	0.132	-	-	-	-
AB01_01 Jan 05_-	AB01	1/01/2005	water	-	7.89	-	-	-	-	-	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.117	9	-	-	0.066	-	-	<0.001	-
BH10_01 Jun 94_-	BH10	1/06/1994	water	-	7.8	**1077**	-	-	-	-	390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	0.0172	-	-	0.008	-
BH10_01 Sep 94_-	BH10	1/09/1994	water	-	7.4	**885**	-	-	-	-	576	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	-	-	0.018	-	-	0.003	-
BH10_01 Dec 94_-	BH10	1/12/1994	water	-	7.6	**899**	-	-	-	-	616	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	-	-	0.01	-	-	0.0005	-
BH10_01 Mar 95_-	BH10	1/03/1995	water	-	7.6	**1047**	-	-	-	-	606	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	-	-	0.013	-	-	0.003	-
BH10_01 Jun 95_-	BH10	1/06/1995	water	-	7.44	**834**	-	-	-	-	408	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	-	-	0.023	-	-	0.003	-
BH10_01 Sep 95_-	BH10	1/09/1995	water	-	***8.6***	**852**	-	-	-	-	656	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6	0.17	21	-	-	0.011	-	-	0.0007	-
BH10_01 Jan 96_-	BH10	1/01/1996	water	-	7.7	**721**	-	-	-	-	548	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	-	18	-	-	0.01	-	-	0.001	-
BH10_01 Apr 96_-	BH10	1/04/1996	water	-	7.76	**595**	-	-	-	-	616	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	0.08	22	-	-	0.024	-	-	0.001	-
BH10_01 Jul 96_-	BH10	1/07/1996	water	-	***8.79***	**866**	-	-	-	-	628	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	0.34	12	-	-	0.014	-	-	0.006	-
BH10_01 Oct 96_-	BH10	1/10/1996	water	-	7.58	**1066**	-	-	-	-	748	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	0.79	21	-	-	0.03	-	-	0.001	-
BH10_01 Jan 97_-	BH10	1/01/1997	water	-	7.71	**1168**	-	-	-	-	698	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	0.1	34	-	-	0.04	-	-	0.001	-
BH10_01 Apr 97_-	BH10	1/04/1997	water	-	7.72	**1097**	-	-	-	-	780	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	0.01	27	-	-	0.029	-	-	0.007	-
BH10_01 Jul 97_-	BH10	1/07/1997	water	-	7.36	**1146**	-	-	-	-	660	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6	0.2	20	-	-	0.015	-	-	0.001	-
BH10_01 Oct 97_-	BH10	1/10/1997	water	-	7.54	**1155**	-	-	-	-	716	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	0.03	14	-	-	0.022	-	-	0.001	-
BH10_01 Jan 98_-	BH10	1/01/1998	water	-	7.61	**1061**	-	-	-	-	686	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	0.25	8	-	-	0.017	-	-	0.001	-
BH10_01 Apr 98_-	BH10	1/04/1998	water	-	7.66	**1142**	-	-	-	-	726	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	0.01	14	-	-	0.017	-	-	0.018	-
BH10_01 Jul 98_-	BH10	1/07/1998	water	-	7.6	**1110**	-	-	-	-	804	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	0.01	19	-	-	0.01	-	-	0.001	-
BH10_01 Oct 98_-	BH10	1/10/1998	water	-	*6.82*	**1020**	-	-	-	-	634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	0.01	16	-	-	0.01	-	-	0.002	-
BH10_01 Jan 99_-	BH10	1/01/1999	water	-	7.3	**1430**	-	-	-	-	870	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.1	0.01	13	-	-	0.019	-	-	0.001	-
BH10_01 Mar 99_-	BH10	1/03/1999	water	-	7.2	**1500**	-	-	-	-	892	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	0.03	12	-	-	0.015	-	-	0.003	-
BH10_01 Jul 99_-	BH10	1/07/1999	water	-	7.1	**964**	-	-	-	-	599	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	0.24	6	-	-	0.004	-	-	0.004	-
BH10_01 Oct 99_-	BH10	1/10/1999	water	-	7.2	**1468**	-	-	-	-	758	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.3	0.08	20	-	-	0.011	-	-	0.002	-
BH10_01 Jan 00_-	BH10	1/01/2000	water	-	7.1	**1200**	-	-	-	-	790	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4	0.04	14	-	-	0.015	-	-	0.002	-
BH10_01 Apr 00_-	BH10	1/04/2000	water	-	*7*	**890**	-	-	-	-	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	0.11	9	-	-	0.01	-	-	0.011	-
BH10_01 Jul 00_-	BH10	1/07/2000	water	-	*6.9*	**1100**	-	-	-	-	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	0.03	14	-	-	0.009	-	-	0.006	-
BH10_01 Oct 00_-	BH10	1/10/2000	water	-	*7*	**1000**	-	-	-	-	630	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4	0.08	14	-	-	0.004	-	-	0.002	-
BH10_01 Jan 01_-	BH10	1/01/2001	water	-	7.3	**860**	-	-	-	-	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0.04	16	-	-	0.01	-	-	0.014	-
BH10_01 Apr 01_-	BH10	1/04/2001	water	-	7.3	**780**	-	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	0.18	10	-	-	0.008	-	-	0.002	-
BH10_01 Jul 01_-	BH10	1/07/2001	water	-	7.2	**1100**	-	-	-	-	660	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	0.01	10	-	-	0.015	-	-	0.002	-
BH10_01 Oct 01_-	BH10	1/10/2001	water	-	*7*	**1200**	-	-	-	-	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.4	0.24	10	-	-	0.009	-	-	0.001	-
BH10_01 Jan 02_-	BH10	1/01/2002	water	-	7.1	**1200**	-	-	-	-	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	0.01	10	-	-	0.006	-	-	0.001	-
BH10_01 Apr 02_-	BH10	1/04/2002	water	-	7.5	**1300**	-	-	-	-	860	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	0.19	14	-	-	0.009	-	-	0.002	-
BH10_01 Jul 02_-	BH10	1/07/2002	water	-	7.6	**1300**	-	-	-	-	910	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.6	0.06	15	-	-	0.017	-	-	<0.001	-
BH10_01 Oct 02_-	BH10	1/10/2002	water	-	7.6	**1300**	-	-	-	-	860	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	15	-	-	0.015	-	-	0.002	-
BH10_01 Jan 03_-	BH10	1/01/2003	water	-	7.83	**1200**	-	-	-	-	710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.9	0.97	17	-	-	0.012	-	-	0.005	-
BH10_01 Apr 03_-	BH10	1/04/2003	water	-	7.58	**1340**	-	-	-	-	850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	0.01	38	-	-	0.014	-	-	0.001	-
BH10_01 Jul 03_-	BH10	1/07/2003	water	-	7.83	**397**	-	-	-	-	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	0.01	8	-	-	0.008	-	-	0.001	-
BH10_01 Oct 03_-	BH10	1/10/2003	water	-	7.91	**1000**	-	-	-	-	692	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	0.01	20	-	-	0.007	-	-	0.001	-
BH10_01 Jan 04_-	BH10	1/01/2004	water	-	**8.08**	**1400**	-	-	-	-	996	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.9	0.01	22	-	-	0.008	-	-	0.005	-
BH10_29 Jul 14_-	BH10	29/07/2014	water	3.45	***5.44***	**1126**	***1.46***	175	15.7	*6.7*	1400	-	460	<1	-	340	37	11	100	76	480	<0.1	-	-	***0.23***	-	-	-	-	-	130	-	-	-	-	-	-
BH10_15 Oct 14_-	BH10	15/10/2014	water	2.24	*7*	**912**	***0.66***	8	16.5	7.1	660	-	360	<1	-	180	19	9.2	81	45	140	<0.1	-	-	***0.32***	-	-	-	-	-	100	-	-	-	-	-	-
BH10_20 Jan 15_-	BH10	20/01/2015	water	2.83	***6.19***	**859**	***0.77***	-12	19.6	*6.8*	660	-	340	<1	-	190	21	14	51	58	88	0.1	-	-	***0.34***	0.018	0.013	-	-	-	200	<0.005	0.008	0.089	<0.0001	-	<0.01
BH10_22 Apr 15_-	BH10	22/04/2015	water	2.18	*6.75*	**926**	***2.67***	87	17.9	*6.8*	850	-	410	<1	-	210	21	8.5	88	74	150	<0.1	-	-	***0.075***	-	-	-	-	-	120	-	-	-	-	-	-
BH10_21 Jul 15_-	BH10	21/07/2015	water	2.1	*6.88*	**336**	***2.36***	-5	16.6	*6.9*	750	-	430	<1	-	230	19	8.6	55	61	110	0.1	-	-	***0.29***	-	-	-	-	-	99	-	-	-	-	-	-
BH10_20 Oct 15_-	BH10	20/10/2015	water	2.9	*6.87*	**8300**	***1.84***	89	20.4	7.5	890	-	500	<1	-	220	18	9.2	56	70	130	0.2	-	-	***0.43***	-	-	-	-	-	33	-	-	-	-	-	-
BH10_20 Jan 16_-	BH10	20/01/2016	water	2.4	7.11	**1041**	***2.73***	-46	28.2	7.1	830	-	440	<1	-	220	20	11	81	55	160	0.3	-	-	***0.45***	0.079	0.05	-	-	-	61	<0.005	0.001	0.13	<0.0001	<0.001	<0.01
BH10_14 Apr 16_-	BH10	14/04/2016	water	3.21	7.38	**1219**	***1.3***	-68	21.1	7.2	860	-	550	<5	-	230	20	11	63	48	120	0.2	-	-	***0.53***	-	-	-	-	-	77	-	-	-	-	-	-
BH10_13 Jul 16_-	BH10	13/07/2016	water	2.55	7.04	**1090**	***2.36***	71	14.9	*7*	760	-	430	<5	-	220	19	5.7	53	44	200	0.1	-	-	***0.11***	-	-	-	-	-	130	-	-	-	-	-	-
BH10_18 Oct 16_-	BH10	18/10/2016	water	2.45	7.29	**841**	***1.41***	-42	18	7.3	570	-	360	<5	-	180	14	7.5	34	26	91	0.2	-	-	***0.16***	-	-	-	-	-	100	-	-	-	-	-	-
BH10A_01 Jul 01_-	BH10A	1/07/2001	water	-	*6.6*	**1700**	-	-	-	-	1100	-	-	-	-	-	-	-	-	-	-	-	-	-	***2.15***	-	-	4	0.01	21	-	0.019	-	-	0.004	-
BH10A_01 Oct 01_-	BH10A	1/10/2001	water	-	*6.9*	**1200**	-	-	-	-	680	-	-	-	-	-	-	-	-	-	-	-	-	-	***3.2***	-	-	4	0.01	23	-	0.022	-	-	0.004	-
BH10A_01 Jan 02_-	BH10A	1/01/2002	water	-	*6.8*	**1700**	-	-	-	-	930	-	-	-	-	-	-	-	-	-	-	-	-	-	***4.4***	-	-	7.4	0.01	19	-	0.016	-	-	0.002	-
BH10A_01 Apr 02_-	BH10A	1/04/2002	water	-	7.4	**1000**	-	-	-	-	590	-	-	-	-	-	-	-	-	-	-	-	-	-	***3.61***	-	-	6.2	<0.01	16	-	0.035	-	-	0.003	-
BH10A_01 Jul 02_-	BH10A	1/07/2002	water	-	7.4	**1200**	-	-	-	-	760	-	-	-	-	-	-	-	-	-	-	-	-	-	***10.5***	-	-	7.8	<0.01	16	-	0.002	-	-	0.003	-
BH10A_01 Oct 02_-	BH10A	1/10/2002	water	-	7.3	**1400**	-	-	-	-	850	-	-	-	-	-	-	-	-	-	-	-	-	-	***9.22***	-	-	12	<0.01	19	-	0.047	-	-	0.003	-

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		
Sample ID	**Location Code**	**Date**	**Matrix Type**																															
BH10A_01 Jan 03_-	BH10A	1/01/2003	water	-	7.59	**950**	-	-	-	-	560	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	0.03	21	-	-	0.04	-	-	0.006	-
BH10A_01 Apr 03_-	BH10A	1/04/2003	water	-	7.34	**1330**	-	-	-	-	858	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.2	0.01	44	-	-	0.037	-	-	0.001	-
BH10A_01 Jul 03_-	BH10A	1/07/2003	water	-	7.54	**1720**	-	-	-	-	1260	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0.01	36	-	-	0.015	-	-	0.005	-
BH10A_01 Oct 03_-	BH10A	1/10/2003	water	-	7.58	**1430**	-	-	-	-	934	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	0.01	28	-	-	0.024	-	-	0.001	-
BH10A_01 Jan 04_-	BH10A	1/01/2004	water	-	7.98	**1610**	-	-	-	-	1100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	0.01	27	-	-	0.02	-	-	0.005	-
BH10A_01 Apr 04_-	BH10A	1/04/2004	water	-	7.43	-	-	-	-	-	956	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	42	-	-	0.025	-	-	-	-
BH10A_01 Jul 04_-	BH10A	1/07/2004	water	-	7.62	-	-	-	-	-	814	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	24	-	-	0.009	-	-	-	-
BH10A_01 Oct 04_-	BH10A	1/10/2004	water	-	7.5	-	-	-	-	-	1540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	24	-	-	0.016	-	-	-	-
BH10A_01 Jan 05_-	BH10A	1/01/2005	water	-	7.58	-	-	-	-	-	936	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.015	55	-	-	0.028	-	-	0.001	-
BH10A_01 Apr 05_-	BH10A	1/04/2005	water	-	7.09	-	-	-	-	-	822	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	16	-	-	0.01	-	-	-	-
BH10A_01 Jul 05_-	BH10A	1/07/2005	water	-	7.84	-	-	-	-	-	2790	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.012	23	-	-	0.006	-	-	-	-
BH10A_01 Oct 05_-	BH10A	1/10/2005	water	-	*6.95*	-	-	-	-	-	894	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.038	18	-	-	0.008	-	-	-	-
BH10A_01 Jan 06_-	BH10A	1/01/2006	water	-	7.26	-	-	-	-	-	978	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.014	19	-	-	0.018	-	-	<0.005	-
BH10A_01 Apr 06_-	BH10A	1/04/2006	water	-	7.01	-	-	-	-	-	806	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.019	21	-	-	0.031	-	-	-	-
BH10A_01 Jul 06_-	BH10A	1/07/2006	water	-	7.3	-	-	-	-	-	1720	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	24	-	-	0.009	-	-	-	-
BH10A_01 Oct 06_-	BH10A	1/10/2006	water	-	7.24	-	-	-	-	-	1140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	22	-	-	0.012	-	-	-	-
BH10A_01 Jan 07_-	BH10A	1/01/2007	water	-	7.08	-	-	-	-	-	910	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	22	-	-	0.113	-	-	<0.005	-
BH10A_01 Apr 07_-	BH10A	1/04/2007	water	-	*6.76*	-	-	-	-	-	848	-	-	-	686	193	31	12	71	118	2	-	15.6	17.1	**12.3**	0.031	<0.01	-	-	25	-	-	0.022	-	-	-	-
BH10B_12 Apr 17_-	BH10B	12/04/2017	water	2.61	*6.84*	**1341**	***0.5***	-36	20.3	*6.9*	880	-	450	<5	-	220	20	9	48	55	250	0.1	-	-	***0.52***	-	-	-	-	-	71	-	-	-	-	-	-
BH10B_05 Jul 17_-	BH10B	5/07/2017	water	3.8	7.1	**1130**	***1.73***	-42	18.3	7.4	710	-	370	<5	-	190	17	9.5	49	44	170	0.2	-	-	***0.66***	-	-	-	-	-	24	-	-	-	-	-	-
BH10B_09 Oct 17_-	BH10B	9/10/2017	water	2.89	7.06	**1041**	***1.35***	-98	20.7	7.2	710	-	350	<5	-	200	20	12	47	53	160	0.1	-	-	***0.71***	-	-	-	-	-	25	-	-	-	-	-	-
BH10B_15 Jan 18_-	BH10B	15/01/2018	water	3.01	***6.3***	**1006**	***0.53***	-1.2	20.8	***6.2***	700	-	370	<5	-	200	19	11	48	54	160	0.2	-	-	***0.76***	0.01	<0.005	-	-	-	34	<0.01	0.008	0.12	<0.0001	<0.001	<0.05
BH10B_23 Apr 18_-	BH10B	23/04/2018	water	3.08	7.01	**1068**	***1.02***	-48	22.7	*6.8*	820	-	400	<5	-	220	22	14	43	50	130	0.1	-	-	***0.81***	-	-	-	-	-	26	-	-	-	-	-	-
BH10B_09 Jul 18_-	BH10B	9/07/2018	water	2.92	*6.95*	**1486**	***1.41***	-112	17.5	7.1	970	-	470	<5	-	280	26	14	69	76	270	0.1	-	-	***1.1***	-	-	-	-	-	33	-	-	-	-	-	-
BH10B_08 Oct 18_-	BH10B	8/10/2018	water	2.98	*6.92*	**1306**	***0.61***	-86.3	18.6	*7*	1000	-	530	<5	-	260	23	13	68	70	240	0.2	-	-	***0.83***	-	-	-	-	-	37	-	-	-	-	-	-
BH10B_22 Jan 19_-	BH10B	22/01/2019	water	3.3	7.03	**1526**	***2.3***	-100.6	24.2	7.3	1100	***1100***	550	<5	-	270	26	14	51	77	170	0.2	-	-	***0.96***	<0.005	0.006	-	-	-	35	0.01	0.009	0.16	<0.0001	<0.001	<0.005
BH10B_09 Apr 19_-	BH10B	9/04/2019	water	2.89	7.13	**1346**	***0.13***	-137.6	22.4	7.2	940	-	560	<5	-	260	26	15	66	87	170	0.2	-	-	***1.4***	-	-	-	-	-	140	-	-	-	-	-	-
BH10B_02 Jul 19_-	BH10B	2/07/2019	water	2.88	7.13	**1506**	***3.18***	-98.8	18.1	7.1	1300	-	670	<5	-	320	32	15	62	99	250	0.2	-	-	***1.7***	-	-	-	-	-	120	-	-	-	-	-	-
BH10B_24 Oct 19_-	BH10B	24/10/2019	water	3	*6.95*	**1730**	***2.52***	-68.4	20.4	*7*	1400	-	730	<5	-	380	36	16	83	120	210	0.1	-	-	***1.7***	-	-	-	-	-	23	-	-	-	-	-	-
BH10B_15 Jan 20_-	BH10B	15/01/2020	water	3.1	7.09	**2019**	***1.37***	-23.1	22.2	7.1	1300	-	750	<5	-	290	27	19	140	98	200	0.2	-	-	***13***	0.02	<0.005	-	-	-	27	0.01	0.01	0.24	<0.0001	<0.001	<0.005
BH10B_22 Apr 20_-	BH10B	22/04/2020	water	2.82	7.39	**2037**	***0.4***	-117.2	22.1	7.1	1300	-	760	<5	-	280	28	24	160	230	110	0.2	-	-	***18***	-	-	-	-	-	30	-	-	-	-	-	-
BH11_01 Jun 94_-	BH11	1/06/1994	water	-	7.9	**940**	-	-	-	-	480	-	-	-	-	-	-	-	-	-	-	-	-	-	***7.5***	-	-	-	-	17	-	-	0.0659	-	0.005	-
BH11_01 Sep 94_-	BH11	1/09/1994	water	-	7.5	**950**	-	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	-	-	***4.3***	-	-	-	-	39	-	-	0.105	-	0.003	-
BH11_01 Dec 94_-	BH11	1/12/1994	water	-	*7*	**895**	-	-	-	-	698	-	-	-	-	-	-	-	-	-	-	-	-	-	***4***	-	-	-	-	55	-	-	0.129	-	0.001	-
BH11_01 Mar 95_-	BH11	1/03/1995	water	-	7.2	**1264**	-	-	-	-	528	-	-	-	-	-	-	-	-	-	-	-	-	-	***4.4***	-	-	-	-	31	-	-	0.153	-	0.001	-
BH11_01 Jun 95_-	BH11	1/06/1995	water	-	7.47	**933**	-	-	-	-	576	-	-	-	-	-	-	-	-	-	-	-	-	-	***3.8***	-	-	-	-	27	-	-	0.162	-	0.001	-
BH11_01 Sep 95_-	BH11	1/09/1995	water	-	7.91	**819**	-	-	-	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-	***4.8***	-	-	7.3	0.05	26	-	-	0.186	-	0.005	-
BH11_01 Jan 96_-	BH11	1/01/1996	water	-	7.53	**979**	-	-	-	-	505	-	-	-	-	-	-	-	-	-	-	-	-	-	***5.92***	-	-	7.9	-	10	-	-	0.143	-	0.001	-
BH11_01 Apr 96_-	BH11	1/04/1996	water	-	7.16	**970**	-	-	-	-	656	-	-	-	-	-	-	-	-	-	-	-	-	-	***3.63***	-	-	5.4	0.04	25	-	-	0.171	-	0.001	-
BH11_01 Jul 96_-	BH11	1/07/1996	water	-	***8.98***	**1139**	-	-	-	-	733	-	-	-	-	-	-	-	-	-	-	-	-	-	***5.93***	-	-	9.7	0.03	37	-	-	0.18	-	0.003	-
BH11_01 Oct 96_-	BH11	1/10/1996	water	-	7.26	**1219**	-	-	-	-	828	-	-	-	-	-	-	-	-	-	-	-	-	-	***4.73***	-	-	7.2	0.38	42	-	-	0.15	-	0.008	-
BH11_01 Jan 97_-	BH11	1/01/1997	water	-	7.42	**1436**	-	-	-	-	792	-	-	-	-	-	-	-	-	-	-	-	-	-	***5.99***	-	-	6.9	0.06	54	-	-	0.137	-	0.001	-
BH11_01 Apr 97_-	BH11	1/04/1997	water	-	7.62	**1176**	-	-	-	-	828	-	-	-	-	-	-	-	-	-	-	-	-	-	***5.93***	-	-	12.5	0.01	32	-	-	0.165	-	0.006	-
BH11_01 Jul 97_-	BH11	1/07/1997	water	-	7.43	**921**	-	-	-	-	532	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.14***	-	-	4.4	0.05	14	-	-	0.158	-	0.001	-
BH11_01 Oct 97_-	BH11	1/10/1997	water	-	7.37	**1133**	-	-	-	-	722	-	-	-	-	-	-	-	-	-	-	-	-	-	***3.31***	-	-	4.5	0.01	33	-	-	0.164	-	0.001	-
BH11_01 Jan 98_-	BH11	1/01/1998	water	-	7.35	**1345**	-	-	-	-	848	-	-	-	-	-	-	-	-	-	-	-	-	-	***7.74***	-	-	9.9	0.06	21	-	-	0.169	-	0.001	-
BH11_01 Apr 98_-	BH11	1/04/1998	water	-	7.36	**1167**	-	-	-	-	706	-	-	-	-	-	-	-	-	-	-	-	-	-	***7.43***	-	-	11.4	0.01	11	-	-	0.183	-	0.018	-
BH11_01 Jul 98_-	BH11	1/07/1998	water	-	7.5	**963**	-	-	-	-	648	-	-	-	-	-	-	-	-	-	-	-	-	-	***7.48***	-	-	8.4	0.01	33	-	-	0.13	-	0.005	-
BH11_01 Oct 98_-	BH11	1/10/1998	water	-	7.24	**1400**	-	-	-	-	864	-	-	-	-	-	-	-	-	-	-	-	-	-	***5.41***	-	-	11	0.09	62	-	-	0.06	-	0.005	-
BH11_01 Nov 98_-	BH11	1/11/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 99_-	BH11	1/01/1999	water	-	7.2	**1440**	-	-	-	-	876	-	-	-	-	-	-	-	-	-	-	-	-	-	***2.57***	-	-	6.5	0.01	32	-	-	0.138	-	0.001	-
BH11_01 Mar 99_-	BH11	1/03/1999	water	-	7.2	**1200**	-	-	-	-	689	-	-	-	-	-	-	-	-	-	-	-	-	-	***7.5***	-	-	7.5	0.03	26	-	-	0.12	-	0.002	-
BH11_01 Jul 99_-	BH11	1/07/1999	water	-	7.2	**1040**	-	-	-	-	573	-	-	-	-	-	-	-	-	-	-	-	-	-	***5.25***	-	-	6.7	0.01	11	-	-	0.022	-	0.005	-
BH11_01 Oct 99_-	BH11	1/10/1999	water	-	7.3	**1006**	-	-	-	-	570	-	-	-	-	-	-	-	-	-	-	-	-	-	***10***	-	-	10.3	0.01	21	-	-	0.084	-	0.003	-
BH11_01 Jan 00_-	BH11	1/01/2000	water	-	7.2	**1100**	-	-	-	-	680	-	-	-	-	-	-	-	-	-	-	-	-	-	***8.97***	-	-	10	0.01	27	-	-	0.163	-	0.002	-
BH11_01 Apr 00_-	BH11	1/04/2000	water	-	7.2	**1100**	-	-	-	-	670	-	-	-	-	-	-	-	-	-	-	-	-	-	***8.63***	-	-	8.4	0.01	19	-	-	0.083	-	0.012	-
BH11_01 Jul 00_-	BH11	1/07/2000	water	-	*7*	**1200**	-	-	-	-	700	-	-	-	-	-	-	-	-	-	-	-	-	-	***7.9***	-	-	11	0.01	22	-	-	0.144	-	0.006	-
BH11_01 Oct 00_-	BH11	1/10/2000	water	-	7.1	**1100**	-	-	-	-	620	-	-	-	-	-	-	-	-	-	-	-	-	-	***5.09***	-	-	7.4	0.01	16	-	-	0.023	-	0.003	-
BH11_01 Jan 01_-	BH11	1/01/2001	water	-	7.4	**1100**	-	-	-	-	660	-	-	-	-	-	-	-	-	-	-	-	-	-	***6.48***	-	-	8	0.01	27	-	-	0.154	-	0.016	-
BH11_01 Apr 01_-	BH11	1/04/2001	water	-	7.2	**1200**	-	-	-	-	720	-	-	-	-	-	-	-	-	-	-	-	-	-	***7.9***	-	-	8	0.02	24	-	-	0.163	-	0.004	-
BH11_01 Jul 01_-	BH11	1/07/2001	water	-	7.1	**1100**	-	-	-	-	660	-	-	-	-	-	-	-	-	-	-	-	-	-	***4.21***	-	-	8.4	0.03	20	-	-	0.112	-	0.003	-
BH11_01 Oct 01_-	BH11	1/10/2001	water	-	7.2	**1200**	-	-	-	-	710	-	-	-	-	-	-	-	-	-	-	-	-	-	***8.9***	-	-	9.6	0.01	30	-	-	0.108	-	0.002	-
BH11_01 Jan 02_-	BH11	1/01/2002	water	-	*7*	**1400**	-	-	-	-	830	-	-	-	-	-	-	-	-	-	-	-	-	-	***11.2***	-	-	13	0.01	38	-	-	0.102	-	0.003	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

Breen Resources Pty Ltd
Kurnell Landfill Facility
Breen Resource Facility - EIS

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																
BH11_01 Apr 02_-_	BH11	1/04/2002	water	-	7.5	**1500**	-	-	-	-	910	-	-	-	-	-	-	-	-	-	-	-	-	-	***10.7***	-	-	0.6	<0.01	33	-	-	0.14	-	-	0.005	-
BH11_01 Jul 02_-_	BH11	1/07/2002	water	-	7.5	**1200**	-	-	-	-	700	-	-	-	-	-	-	-	-	-	-	-	-	-	***10.4***	-	-	10	<0.01	20	-	-	0.144	-	-	0.004	-
BH11_01 Oct 02_-_	BH11	1/10/2002	water	-	7.5	**1300**	-	-	-	-	730	-	-	-	-	-	-	-	-	-	-	-	-	-	***13.4***	-	-	17	<0.01	24	-	-	0.064	-	-	0.001	-
BH11_01 Jan 03_-_	BH11	1/01/2003	water	-	7.61	**970**	-	-	-	-	710	-	-	-	-	-	-	-	-	-	-	-	-	-	***11.1***	-	-	11	0.02	22	-	-	0.134	-	-	0.004	-
BH11_01 Apr 03_-_	BH11	1/04/2003	water	-	7.48	**1210**	-	-	-	-	742	-	-	-	-	-	-	-	-	-	-	-	-	-	***6.87***	-	-	14.2	0.01	37	-	-	0.154	-	-	0.001	-
BH11_01 Jul 03_-_	BH11	1/07/2003	water	-	7.59	**1370**	-	-	-	-	824	-	-	-	-	-	-	-	-	-	-	-	-	-	***14.6***	-	-	13.9	0.01	38	-	-	0.067	-	-	0.005	-
BH11_01 Oct 03_-_	BH11	1/10/2003	water	-	7.65	**1250**	-	-	-	-	750	-	-	-	-	-	-	-	-	-	-	-	-	-	***6.68***	-	-	15.7	0.02	29	-	-	0.083	-	-	0.001	-
BH11_01 Jan 04_-_	BH11	1/01/2004	water	-	**8**	**1170**	-	-	-	-	792	-	-	-	-	-	-	-	-	-	-	-	-	-	***9.3***	-	-	14.1	0.01	30	-	-	0.099	-	-	0.005	-
BH11_01 Apr 04_-_	BH11	1/04/2004	water	-	7.43	-	-	-	-	-	650	-	-	-	-	-	-	-	-	-	-	-	-	-	***9.99***	-	-	-	0.01	24	-	-	0.082	-	-	-	-
BH11_01 Jul 04_-_	BH11	1/07/2004	water	-	7.43	-	-	-	-	-	596	-	-	-	-	-	-	-	-	-	-	-	-	-	***8.68***	-	-	-	0.01	19	-	-	0.087	-	-	-	-
BH11_01 Jan 05_-_	BH11	1/01/2005	water	-	7.54	-	-	-	-	-	634	-	-	-	-	-	-	-	-	-	-	-	-	-	***9.82***	-	-	-	0.013	8	-	-	0.089	-	-	0.001	-
BH11_01 Apr 05_-_	BH11	1/04/2005	water	-	*6.88*	-	-	-	-	-	682	-	-	-	-	-	-	-	-	-	-	-	-	-	***3.8***	-	-	-	0.012	16	-	-	0.024	-	-	-	-
BH11_01 Jul 05_-_	BH11	1/07/2005	water	-	**8.1**	-	-	-	-	-	1080	-	-	-	-	-	-	-	-	-	-	-	-	-	***5.92***	-	-	-	0.024	21	-	-	0.119	-	-	<0.005	-
BH11_01 Apr 06_-_	BH11	1/04/2006	water	-	7.32	-	-	-	-	-	764	-	-	-	-	-	-	-	-	-	-	-	-	-	***1.01***	-	-	-	0.01	29	-	-	0.074	-	-	-	-
BH11_01 Jul 06_-_	BH11	1/07/2006	water	-	7.34	-	-	-	-	-	700	-	-	-	-	-	-	-	-	-	-	-	-	-	***4.93***	-	-	-	<0.01	28	-	-	0.059	-	-	-	-
BH11_01 Oct 06_-_	BH11	1/10/2006	water	-	7.27	-	-	-	-	-	1400	-	-	-	-	-	-	-	-	-	-	-	-	-	***7.22***	-	-	-	<0.01	22	-	-	0.081	-	-	-	-
BH11_01 Jan 07_-_	BH11	1/01/2007	water	-	7.04	-	-	-	-	-	760	-	-	-	-	-	-	-	-	-	-	-	-	-	***7.36***	-	-	-	<0.01	18	-	-	<0.001	-	-	<0.001	-
BH11_01 Apr 07_-_	BH11	1/04/2007	water	-	*6.94*	-	-	-	-	-	530	-	-	-	464	117	28	11	48	79.7	4	-	10.5	11.6	***7.65***	0.014	<0.01	-	-	15	-	-	0.093	-	-	-	-
BH11A_01 Jan 06_-_	BH11A	1/01/2006	water	-	7.36	-	-	-	-	-	796	-	-	-	-	-	-	-	-	-	-	-	-	-	***4.01***	-	-	-	0.01	22	-	-	0.119	-	-	<0.005	-
BH11A_16 Apr 13_-_	BH11A	16/04/2013	water	24.49	7.29	**698**	***0.83***	-95	18.7	**8.1**	490	-	400	<1	-	83	14	2.6	56	72	23	0.11	-	-	***0.76***	-	-	-	-	-	6	-	-	-	-	-	-
BH11A_09 Jul 13_-_	BH11A	9/07/2013	water	22.94	7.05	**537**	***4.9***	-95	18.2	7.7	470	-	300	<1	-	98	17	3.3	61	59	16	-	-	-	***0.54***	-	-	-	-	-	4	-	-	-	-	-	-
BH11A_29 Oct 13_-_	BH11A	29/10/2013	water	23.28	**8.26**	**640**	***1.78***	-134	20	7.3	540	-	340	<1	-	120	18	2.9	66	66	41	-	-	-	***0.96***	-	-	-	-	-	8	-	-	-	-	-	-
BH11A_28 Jan 14_-_	BH11A	28/01/2014	water	23.72	7.12	**562**	***3.53***	-96	19.6	7.1	520	-	330	<1	-	120	22	2.9	53	64	57	0.1	-	-	***0.71***	0.009	<0.01	-	-	-	4	<0.005	0.025	0.013	<0.0001	<0.001	<0.005
BH11A_16 Apr 14_-_	BH11A	16/04/2014	water	16.7	*6.99*	**596**	***1.61***	-63	21.3	*6.7*	620	-	350	<1	-	130	24	3.2	65	64	75	<0.1	-	-	***0.64***	-	-	-	-	-	5	-	-	-	-	-	-
BH11A_16 Apr 14_-2	BH11A	16/04/2014	water	16.7	*6.99*	**596**	***1.61***	-63	21.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_09 Jul 14_-_	BH11A	9/07/2014	water	-	-	**891**	***7.37***	45	20	7.3	590	-	330	<1	-	130	27	3.5	64	81	53	<0.1	-	-	***0.6***	-	-	-	-	-	4	-	-	-	-	-	-
BH11A_16 Oct 14_-_	BH11A	16/10/2014	water	23.01	7.13	**1042**	***1.74***	-103	19.5	7.3	650	-	310	<1	-	130	31	3	69	98	100	<0.1	-	-	***0.42***	-	-	-	-	-	4	-	-	-	-	-	-
BH11A_21 Jan 15_-_	BH11A	21/01/2015	water	23.49	*6.56*	**1005**	***0.3***	-103	18.6	7.1	720	-	440	<1	-	150	29	4.5	76	99	32	0.12	-	-	***1.4***	<0.1	<0.01	-	-	-	6	<0.005	0.004	0.022	<0.0001	-	<0.01
BH11A_23 Apr 15_-_	BH11A	23/04/2015	water	23.78	*6.8*	**622**	***1.43***	-69	21.1	7.1	860	-	460	<1	-	140	38	3.4	100	120	47	<0.1	-	-	***0.32***	-	-	-	-	-	7	-	-	-	-	-	-
BH11A_21 Jul 15_-_	BH11A	21/07/2015	water	23.02	*6.9*	**969**	***2.54***	-97	17	*6.8*	770	-	360	<1	-	130	33	2.9	95	120	83	0.1	-	-	***0.36***	-	-	-	-	-	7	-	-	-	-	-	-
BH11A_21 Oct 15_-_	BH11A	21/10/2015	water	23.4	*6.88*	**535**	***2.23***	-78	21	7.1	910	-	480	<1	-	170	39	3.9	100	140	77	0.1	-	-	***2***	-	-	-	-	-	10	-	-	-	-	-	-
BH11A_21 Jan 16_-_	BH11A	21/01/2016	water	23.22	*6.95*	**1332**	***3.73***	-90	22.6	7.1	900	-	440	<1	-	180	36	5.3	110	130	100	0.1	-	-	***0.5***	<0.1	<0.01	-	-	-	13	<0.005	0.006	0.025	<0.0001	<0.001	<0.01
BH11A_19 Apr 16_-_	BH11A	19/04/2016	water	23.34	7.88	**1309**	***1.27***	-91	20.1	7.2	870	-	440	<5	-	170	35	4.5	91	100	100	<0.1	-	-	***0.62***	-	-	-	-	-	5	-	-	-	-	-	-
BH11A_13 Jul 16_-_	BH11A	13/07/2016	water	23.81	7.1	**1351**	***3.28***	-75	14.6	7.2	910	-	430	<5	-	180	32	3.9	110	130	140	0.1	-	-	***0.46***	-	-	-	-	-	5	-	-	-	-	-	-
BH11A_18 Oct 16_-_	BH11A	18/10/2016	water	23.56	*6.7*	**1281**	***2.2***	-51	17	*6.9*	970	-	650	<5	-	210	43	5.9	110	130	60	0.1	-	-	***3.8***	-	-	-	-	-	13	-	-	-	-	-	-
BH11A_19 Jan 17_-_	BH11A	19/01/2017	water	23.03	*6.81*	**1387**	***1.81***	-70	21.1	*7*	950	-	610	<5	-	190	35	5.5	110	140	88	0.1	-	-	***2.5***	<0.005	<0.005	-	-	-	22	<0.01	0.005	0.027	<0.0001	<0.001	<0.005
BH11A_25 Jan 17_-_	BH11A	25/01/2017	water	2.94	***6.21***	**1249**	***0.38***	72	20.4	*6.9*	880	-	400	<5	-	220	19	9.3	55	45	230	0.2	-	-	***0.42***	0.01	0.022	-	-	-	12	<0.01	0.001	0.14	<0.0001	<0.001	<0.05
BH11A_02 Jul 19_-_	BH11A	2/07/2019	water	23.74	*6.79*	**1263**	***3.78***	-132.7	18.3	*7*	1400	-	540	<5	-	240	36	25	120	130	300	0.2	-	-	***0.97***	-	-	-	-	-	28	-	-	-	-	-	-
BH11A_25 Oct 19_-_	BH11A	25/10/2019	water	23.71	*6.84*	**1430**	***3.01***	-64.8	19.8	7.4	1000	-	540	<5	-	210	36	5.9	100	110	120	0.2	-	-	***1.4***	-	-	-	-	-	13	-	-	-	-	-	-
BH11A_14 Jan 20_-_	BH11A	14/01/2020	water	23.86	7.16	**1564**	***2.4***	-110.8	20.2	*6.8*	970	-	560	<5	-	190	33	4.5	97	120	120	0.1	-	-	***0.87***	<0.05	<0.005	-	-	-	12	<0.01	0.2	0.029	<0.0001	<0.001	<0.5
BH11A_22 Apr 20_-_	BH11A	22/04/2020	water	23.5	*6.95*	**1487**	***3.03***	-88.2	20	*6.9*	970	-	620	<5	-	200	34	5.8	92	130	110	0.1	-	-	***2.8***	-	-	-	-	-	15	-	-	-	-	-	-
BH12_01 Sep 94_-_	BH12	1/09/1994	water	-	7.3	**990**	-	-	-	-	580	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.6***	-	-	-	-	35	-	-	0.002	-	-	0.003	-
BH12_01 Dec 94_-_	BH12	1/12/1994	water	-	*6.8*	**1115**	-	-	-	-	502	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	-	-	19	-	-	0.003	-	-	0.001	-
BH12_01 Mar 95_-_	BH12	1/03/1995	water	-	7.3	**982**	-	-	-	-	456	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	-	-	12	-	-	0.002	-	-	0.001	-
BH12_01 Jun 95_-_	BH12	1/06/1995	water	-	7.15	**975**	-	-	-	-	500	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	-	-	13	-	-	0.002	-	-	0.001	-
BH12_01 Sep 95_-_	BH12	1/09/1995	water	-	**8**	**958**	-	-	-	-	720	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	0.6	3.58	12	-	-	0.002	-	-	0.003	-
BH12_01 Jan 96_-_	BH12	1/01/1996	water	-	7.37	**848**	-	-	-	-	580	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	-	23	-	-	0.002	-	-	0.001	-
BH12_01 Apr 96_-_	BH12	1/04/1996	water	-	7.28	**920**	-	-	-	-	632	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.27***	-	-	0.7	7.68	13	-	-	0.003	-	-	0.001	-
BH12_01 Jul 96_-_	BH12	1/07/1996	water	-	***8.52***	**1135**	-	-	-	-	784	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	12.2	1	-	-	0	-	-	0.001	-
BH12_01 Oct 96_-_	BH12	1/10/1996	water	-	*6.89*	**1316**	-	-	-	-	870	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.23***	-	-	0.5	7.97	12	-	-	0.002	-	-	0.008	-
BH12_01 Jan 97_-_	BH12	1/01/1997	water	-	7.18	**1193**	-	-	-	-	612	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.29***	-	-	2.6	0.19	34	-	-	0.003	-	-	0.001	-
BH12_01 Apr 97_-_	BH12	1/04/1997	water	-	7.13	**1158**	-	-	-	-	852	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.25***	-	-	2.4	3.16	10	-	-	0.006	-	-	0.008	-
BH12_01 Jul 97_-_	BH12	1/07/1997	water	-	*7*	**1245**	-	-	-	-	712	-	-	-	-	-	-	-	-	-	-	-	-	-	***1.32***	-	-	2.2	2.8	13	-	-	0.002	-	-	0.002	-
BH12_01 Oct 97_-_	BH12	1/10/1997	water	-	*6.99*	**1085**	-	-	-	-	646	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.92***	-	-	1.6	1.46	6	-	-	0.01	-	-	0.001	-
BH12_01 Jan 98_-_	BH12	1/01/1998	water	-	*6.96*	**1370**	-	-	-	-	772	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.7***	-	-	1.3	4.15	7	-	-	0.001	-	-	0.001	-
BH12_01 Apr 98_-_	BH12	1/04/1998	water	-	*6.97*	**1970**	-	-	-	-	1210	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.11***	-	-	1.6	3.1	12	-	-	0.002	-	-	0.002	-
BH12_01 Jul 98_-_	BH12	1/07/1998	water	-	*7*	**1040**	-	-	-	-	718	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.06***	-	-	0.8	1.84	8	-	-	0.004	-	-	0.001	-
BH12_01 Oct 98_-_	BH12	1/10/1998	water	-	*6.92*	**1160**	-	-	-	-	714	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	0.8	1.47	8	-	-	0.01	-	-	0.001	-
BH12_01 Jan 99_-_	BH12	1/01/1999	water	-	*6.9*	**1580**	-	-	-	-	1008	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.5***	-	-	1.4	7.19	9	-	-	0.004	-	-	0.004	-
BH12_01 Mar 99_-_	BH12	1/03/1999	water	-	*6.8*	**1600**	-	-	-	-	946	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.54***	-	-	1.2	0.67	12	-	-	0.004	-	-	0.003	-
BH12_01 Jul 99_-_	BH12	1/07/1999	water	-	*6.9*	**1410**	-	-	-	-	769	-	-	-	-	-	-	-	-	-	-	-	-	-	***2.72***	-	-	3.1	0.16	93	-	-	0.005	-	-	0.006	-
BH12_01 Oct 99_-_	BH12	1/10/1999	water	-	*7*	**1203**	-	-	-	-	633	-	-	-	-	-	-	-	-	-	-	-	-	-	***1.98***	-	-	2.6	0.01	2	-	-	0.005	-	-	0.003	-
BH12A_01 Apr 00_-_	BH12A	1/04/2000	water	-	*6.9*	**1100**	-	-	-	-	700	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.2	7.7	4	-	-	0.003	-	-	0.01	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																
BH12A_01 Jul 00_-	BH12A	1/07/2000	water	-	*6.9*	**1100**	-	-	-	-	660	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	4.77	4	-	-	0.003	-	-	0.006	-
BH12A_01 Oct 00_-	BH12A	1/10/2000	water	-	*6.9*	**1200**	-	-	-	-	690	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	5.81	3	-	-	0.003	-	-	0.003	-
BH12A_01 Jan 01_-	BH12A	1/01/2001	water	-	7.1	**1100**	-	-	-	-	660	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.5	4.82	10	-	-	0.003	-	-	0.014	-
BH12A_01 Apr 01_-	BH12A	1/04/2001	water	-	*7*	**1100**	-	-	-	-	660	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	0.2	4.87	4	-	-	0.003	-	-	0.003	-
BH12A_01 Jul 01_-	BH12A	1/07/2001	water	-	*7*	**1100**	-	-	-	-	750	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	3.73	5	-	-	0.003	-	-	0.003	-
BH12A_01 Oct 01_-	BH12A	1/10/2001	water	-	*7*	**1200**	-	-	-	-	710	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.01	14.6	4	-	-	0.002	-	-	0.001	-
BH12A_01 Jan 02_-	BH12A	1/01/2002	water	-	*6.8*	**1500**	-	-	-	-	820	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	23.8	4	-	-	0.001	-	-	0.001	-
BH12A_01 Apr 02_-	BH12A	1/04/2002	water	-	7.3	**1400**	-	-	-	-	960	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.1	32	6	-	-	0.004	-	-	0.003	-
BH12A_01 Jul 02_-	BH12A	1/07/2002	water	-	7.4	**1100**	-	-	-	-	740	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.1	20.7	3	-	-	0.003	-	-	0.002	-
BH12A_01 Oct 02_-	BH12A	1/10/2002	water	-	7.5	**1200**	-	-	-	-	700	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.1	13.2	3	-	-	0.003	-	-	<0.001	-
BH12A_01 Jan 03_-	BH12A	1/01/2003	water	-	7.52	**810**	-	-	-	-	670	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	0.5	6.91	5	-	-	0.003	-	-	0.001	-
BH12A_01 Apr 03_-	BH12A	1/04/2003	water	-	7.37	**965**	-	-	-	-	684	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.7	7.28	11	-	-	0.002	-	-	0.001	-
BH12A_01 Jul 03_-	BH12A	1/07/2003	water	-	7.46	**1040**	-	-	-	-	634	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	1.1	7.76	8	-	-	0.014	-	-	0.001	-
BH12A_01 Oct 03_-	BH12A	1/10/2003	water	-	7.23	**1040**	-	-	-	-	558	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.4	13.8	4	-	-	0.002	-	-	0.001	-
BH12A_01 Jan 04_-	BH12A	1/01/2004	water	-	7.8	**1120**	-	-	-	-	910	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	0.4	19.6	10	-	-	0.002	-	-	0.005	-
BH12A_01 Apr 04_-	BH12A	1/04/2004	water	-	7.51	-	-	-	-	-	764	-	-	-	-	-	-	-	-	-	-	-	***0.15***	-	-	-	11.9	5	-	-	0.003	-	-	-	-
BH12A_01 Jul 04_-	BH12A	1/07/2004	water	-	7.32	-	-	-	-	-	682	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	-	9.31	16	-	-	0.002	-	-	-	-
BH12A_01 Oct 04_-	BH12A	1/10/2004	water	-	7.43	-	-	-	-	-	796	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	-	9.49	6	-	-	0.002	-	-	-	-
BH12A_01 Jan 05_-	BH12A	1/01/2005	water	-	7.43	-	-	-	-	-	976	-	-	-	-	-	-	-	-	-	-	-	***0.059***	-	-	-	12.4	3	-	-	0.03	-	-	0.01	-
BH12A_01 Apr 05_-	BH12A	1/04/2005	water	-	*6.95*	-	-	-	-	-	916	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	-	6.82	3	-	-	0.002	-	-	-	-
BH12A_01 Jul 05_-	BH12A	1/07/2005	water	-	7.96	-	-	-	-	-	756	-	-	-	-	-	-	-	-	-	-	-	***0.032***	-	-	-	2.95	3	-	-	0.003	-	-	-	-
BH12A_01 Oct 05_-	BH12A	1/10/2005	water	-	7.08	-	-	-	-	-	764	-	-	-	-	-	-	-	-	-	-	-	***0.105***	-	-	-	1.57	8	-	-	0.002	-	-	-	-
BH12A_01 Jan 06_-	BH12A	1/01/2006	water	-	7.19	-	-	-	-	-	866	-	-	-	-	-	-	-	-	-	-	-	***0.053***	-	-	-	2.22	5	-	-	0.002	-	-	<0.005	-
BH12A_01 Apr 06_-	BH12A	1/04/2006	water	-	7.02	-	-	-	-	-	748	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	-	4.62	5	-	-	0.002	-	-	-	-
BH12A_01 Jul 06_-	BH12A	1/07/2006	water	-	7.12	-	-	-	-	-	744	-	-	-	-	-	-	-	-	-	-	-	***0.033***	-	-	-	4.53	6	-	-	0.002	-	-	-	-
BH12A_01 Oct 06_-	BH12A	1/10/2006	water	-	*6.99*	-	-	-	-	-	732	-	-	-	-	-	-	-	-	-	-	-	***0.155***	-	-	-	20.3	4	-	-	0.002	-	-	-	-
BH12A_01 Jan 07_-	BH12A	1/01/2007	water	-	7.06	-	-	-	-	-	686	-	-	-	-	-	-	-	-	-	-	-	***0.137***	-	-	-	20.2	3	-	-	0.002	-	-	<0.001	-
BH12A_01 Apr 07_-	BH12A	1/04/2007	water	-	*6.89*	-	-	-	-	-	748	-	-	-	463	185	19	9	23	48.7	34	-	12	11.3	***0.418***	18.5	<0.01	-	-	7	-	-	0.002	-	-	-	-
BH12A_17 Apr 13_-	BH12A	17/04/2013	water	10.09	*6.88*	**5.1**	***0.44***	40	18.1	7.7	840	-	510	<1	-	190	20	11	98	100	67	<0.1	-	-	***0.38***	-	-	-	-	-	15	-	-	-	-	-	-
BH12A_09 Jul 13_-	BH12A	9/07/2013	water	9.16	7.04	**965**	***2.83***	19	18.8	7.9	610	-	390	<1	-	160	16	5.8	54	55	34	-	-	-	***0.1***	-	-	-	-	-	4	-	-	-	-	-	-
BH12A_29 Oct 13_-	BH12A	29/10/2013	water	10	7.96	**1218**	***4.34***	-18	18.4	7.4	860	-	460	<1	-	200	22	10	87	97	75	-	-	-	***1.1***	-	-	-	-	-	14	-	-	-	-	-	-
BH12A_28 Jan 14_-	BH12A	28/01/2014	water	10.2	*6.91*	**974**	***4.2***	39	21.1	7.2	790	-	460	<1	-	210	27	12	110	86	66	<0.1	-	-	***0.5***	13	0.025	-	-	-	11	<0.005	0.002	0.063	<0.0001	<0.001	<0.005
BH12A_14 Apr 14_-	BH12A	14/04/2014	water	4.23	*6.97*	**1550**	***3.18***	117	21	7.3	910	-	530	<1	-	200	25	11	120	120	72	<0.1	-	-	***1.9***	-	-	-	-	-	11	-	-	-	-	-	-
BH12A_07 Jul 14_-	BH12A	7/07/2014	water	-	7.3	**1373**	***2.67***	52	20.2	*7*	960	-	560	<1	-	200	29	15	130	160	140	<0.1	-	-	***4.8***	-	-	-	-	-	15	-	-	-	-	-	-
BH12A_15 Oct 14_-	BH12A	15/10/2014	water	9.96	7.17	**1106**	***3.47***	56	17.5	*7*	970	-	550	<1	-	210	33	17	130	200	<5	<0.1	-	-	***5.9***	-	-	-	-	-	15	-	-	-	-	-	-
BH12A_21 Jan 15_-	BH12A	21/01/2015	water	10.07	*6.54*	**1538**	***1.26***	-53	22.3	7.2	1200	-	570	<1	-	220	34	20	160	190	130	<0.1	-	-	***5.7***	4.6	0.018	-	-	-	19	<0.005	0.003	0.13	<0.0001	-	<0.01
BH12A_23 Apr 15_-	BH12A	23/04/2015	water	10.04	*6.9*	**1706**	***1.35***	63	20.2	7.1	1200	-	620	<1	-	200	35	19	180	180	120	<0.1	-	-	***8.3***	-	-	-	-	-	20	-	-	-	-	-	-
BH12A_21 Jul 15_-	BH12A	21/07/2015	water	9.8	*6.9*	**1236**	***2.73***	3	20	*6.9*	930	-	490	<1	-	170	21	11	110	120	73	0.2	-	-	***2***	-	-	-	-	-	10	-	-	-	-	-	-
BH12A_20 Oct 15_-	BH12A	20/10/2015	water	10.12	*6.83*	**529**	***2.69***	112	20.4	7.4	1000	-	510	<1	-	170	23	18	90	140	76	<0.1	-	-	***5.3***	-	-	-	-	-	10	-	-	-	-	-	-
BH12A_21 Jan 16_-	BH12A	21/01/2016	water	9.87	*6.99*	**1154**	***2.54***	41	24.6	7.2	970	-	530	<1	-	190	31	22	120	140	88	<0.1	-	-	***4.1***	5.4	0.18	-	-	-	12	<0.005	0.003	0.1	<0.0001	<0.001	<0.01
BH12A_14 Apr 16_-	BH12A	14/04/2016	water	10.1	*6.91*	**1489**	***1.07***	-212	20.4	7.3	910	-	530	<5	-	180	26	16	100	130	78	0.1	-	-	***3.4***	-	-	-	-	-	15	-	-	-	-	-	-
BH12A_21 Jul 16_-	BH12A	21/07/2016	water	9.9	7.14	**1316**	***1.49***	-94	16.9	*7*	770	-	500	<5	-	160	27	16	90	85	63	0.4	-	-	***3.1***	-	-	-	-	-	10	-	-	-	-	-	-
BH12A_18 Oct 16_-	BH12A	18/10/2016	water	10.02	*6.97*	**1365**	***2.44***	57	21.3	7.3	910	-	560	<5	-	210	29	16	95	130	58	0.1	-	-	***1.9***	-	-	-	-	-	10	-	-	-	-	-	-
BH12A_19 Jan 17_-	BH12A	19/01/2017	water	10.18	*6.85*	**1535**	***1.81***	39	21	7.5	920	-	560	<5	-	200	31	18	150	150	74	<0.1	-	-	***1.5***	7	0.01	-	-	-	16	<0.01	0.003	0.074	<0.0001	<0.001	<0.005
BH12A_03 Jul 19_-	BH12A	3/07/2019	water	10.13	*6.99*	**1713**	***1.3***	-82.2	19.8	7.3	1100	-	650	<5	-	220	41	23	140	200	92	<0.1	-	-	***5.1***	-	-	-	-	-	22	-	-	-	-	-	-
BH12A_25 Oct 19_-	BH12A	25/10/2019	water	10.2	*6.99*	**1860**	***4.13***	75.8	21.4	7.5	1300	-	590	<5	-	200	39	26	170	210	110	<0.1	-	-	***5.6***	-	-	-	-	-	22	-	-	-	-	-	-
BH12A_13 Jan 20_-	BH12A	13/01/2020	water	10.29	7.05	**1788**	***1.96***	-227.8	21.5	*7*	1200	-	650	<5	-	180	35	26	170	230	88	<0.1	-	-	***9.1***	0.58	<0.005	-	-	-	23	0.01	0.003	0.11	<0.0001	<0.001	<0.005
BH12A_23 Apr 20_-	BH12A	23/04/2020	water	10.08	*6.95*	**1653**	***3.39***	11.2	21.2	7.2	1100	-	580	<5	-	180	30	28	130	180	110	<0.1	-	-	***8.7***	-	-	-	-	-	16	-	-	-	-	-	-
BH13_01 Dec 94_-	BH13	1/12/1994	water	-	*6.8*	**984**	-	-	-	-	726	-	-	-	-	-	-	-	-	-	-	-	***0.8***	-	-	-	-	31	-	-	0.004	-	-	0.001	-
BH13_01 Mar 95_-	BH13	1/03/1995	water	-	7.1	**1093**	-	-	-	-	576	-	-	-	-	-	-	-	-	-	-	-	***0.5***	-	-	-	-	12	-	-	0.0015	-	-	0.003	-
BH13_01 Jun 95_-	BH13	1/06/1995	water	-	7.24	**961**	-	-	-	-	572	-	-	-	-	-	-	-	-	-	-	-	***0.3***	-	-	-	-	17	-	-	0.018	-	-	0.001	-
BH13_01 Sep 95_-	BH13	1/09/1995	water	-	7.51	**1004**	-	-	-	-	768	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	0.5	3.59	11	-	-	0.014	-	-	0.002	-
BH13_01 Jan 96_-	BH13	1/01/1996	water	-	7.04	**995**	-	-	-	-	652	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	0.9	-	18	-	-	0.003	-	-	0.001	-
BH13_01 Apr 96_-	BH13	1/04/1996	water	-	*6.99*	**1034**	-	-	-	-	628	-	-	-	-	-	-	-	-	-	-	-	***0.51***	-	-	1.5	5.15	16	-	-	0.003	-	-	0.001	-
BH13_01 Jul 96_-	BH13	1/07/1996	water	-	*6.92*	**934**	-	-	-	-	684	-	-	-	-	-	-	-	-	-	-	-	***0.19***	-	-	1.4	0.57	26	-	-	0.013	-	-	0.001	-
BH13_01 Oct 96_-	BH13	1/10/1996	water	-	*6.96*	**1127**	-	-	-	-	744	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	0.6	1.02	19	-	-	0.004	-	-	0.001	-
BH13_01 Jan 97_-	BH13	1/01/1997	water	-	*6.89*	**1284**	-	-	-	-	734	-	-	-	-	-	-	-	-	-	-	-	***1.61***	-	-	2.8	1	25	-	-	0.008	-	-	0.001	-
BH13_01 Apr 97_-	BH13	1/04/1997	water	-	*6.93*	**905**	-	-	-	-	616	-	-	-	-	-	-	-	-	-	-	-	***2.3***	-	-	2.3	0.63	15	-	-	0.008	-	-	0.004	-
BH13_01 Jul 97_-	BH13	1/07/1997	water	-	*6.99*	**1013**	-	-	-	-	600	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.9	0.55	15	-	-	0.008	-	-	0.002	-
BH13_01 Oct 97_-	BH13	1/10/1997	water	-	*6.83*	**1021**	-	-	-	-	608	-	-	-	-	-	-	-	-	-	-	-	***0.9***	-	-	1.7	0.55	13	-	-	0.01	-	-	0.001	-
BH13_01 Jan 98_-	BH13	1/01/1998	water	-	*6.69*	**1108**	-	-	-	-	722	-	-	-	-	-	-	-	-	-	-	-	***0.92***	-	-	1.8	0.27	7	-	-	0.02	-	-	0.001	-
BH13_01 Apr 98_-	BH13	1/04/1998	water	-	7.03	**1141**	-	-	-	-	580	-	-	-	-	-	-	-	-	-	-	-	***5.21***	-	-	6.8	0.23	17	-	-	0.019	-	-	0.001	-
BH13_01 Jul 98_-	BH13	1/07/1998	water	-	*6.97*	**1106**	-	-	-	-	640	-	-	-	-	-	-	-	-	-	-	-	***4.61***	-	-	4.6	0.29	22	-	-	0.007	-	-	0.001	-

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																	
BH13_01 Oct 98_-	BH13	1/10/1998	water	-	7.07	**925**	-	-	-	-	554	-	-	-	-	-	-	-	-	-	-	-	-	***0.19***	-	-	1.1	3.16	17	-	-	0.01	-	-	0.001	-
BH13_01 Jan 99_-	BH13	1/01/1999	water	-	*6.9*	**1211**	-	-	-	-	760	-	-	-	-	-	-	-	-	-	-	-	-	***3.3***	-	-	4.8	0.35	36	-	-	0.049	-	-	0.003	-
BH13_01 Mar 99_-	BH13	1/03/1999	water	-	*6.9*	**980**	-	-	-	-	630	-	-	-	-	-	-	-	-	-	-	-	-	***1.3***	-	-	2.3	0.37	12	-	-	0.02	-	-	0.011	-
BH13_01 Jul 99_-	BH13	1/07/1999	water	-	*7*	**917**	-	-	-	-	547	-	-	-	-	-	-	-	-	-	-	-	-	***0.93***	-	-	2.9	0.2	14	-	-	0.007	-	-	0.005	-
BH13_01 Oct 99_-	BH13	1/10/1999	water	-	*6.8*	-	-	-	-	-	551	-	-	-	-	-	-	-	-	-	-	-	-	***0.69***	-	-	1.4	3.41	2	-	-	0.064	-	-	0.002	-
BH13_01 Jan 00_-	BH13	1/01/2000	water	-	*7*	**1100**	-	-	-	-	660	-	-	-	-	-	-	-	-	-	-	-	-	***1.66***	-	-	3.2	0.47	12	-	-	0.103	-	-	0.002	-
BH13A_01 Apr 00_-	BH13A	1/04/2000	water	-	7.3	**820**	-	-	-	-	500	-	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	0.2	0.12	4	-	-	0.017	-	-	0.006	-
BH13A_01 Jul 00_-	BH13A	1/07/2000	water	-	7.1	**880**	-	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	0.5	0.21	3	-	-	0.011	-	-	0.005	-
BH13A_01 Oct 00_-	BH13A	1/10/2000	water	-	7.1	**910**	-	-	-	-	530	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.5	0.72	3	-	-	0.006	-	-	0.002	-
BH13A_01 Jan 01_-	BH13A	1/01/2001	water	-	7.3	**840**	-	-	-	-	500	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	2.03	8	-	-	0.004	-	-	0.011	-
BH13A_01 Apr 01_-	BH13A	1/04/2001	water	-	7.2	**890**	-	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	4.23	3	-	-	0.006	-	-	0.002	-
BH13A_01 Jul 01_-	BH13A	1/07/2001	water	-	7.2	**760**	-	-	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	6.4	2	-	-	0.009	-	-	0.003	-
BH13A_01 Oct 01_-	BH13A	1/10/2001	water	-	7.1	**1100**	-	-	-	-	630	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	0.7	1.53	5	-	-	0.006	-	-	0.001	-
BH13A_01 Jan 02_-	BH13A	1/01/2002	water	-	*7*	**1500**	-	-	-	-	890	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.5	1.79	5	-	-	0.001	-	-	0.001	-
BH13A_01 Apr 02_-	BH13A	1/04/2002	water	-	7.6	**690**	-	-	-	-	430	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.2	0.91	2	-	-	0.004	-	-	0.002	-
BH13A_01 Jul 02_-	BH13A	1/07/2002	water	-	7.6	**1100**	-	-	-	-	730	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.2	0.93	3	-	-	0.004	-	-	<0.001	-
BH13A_01 Oct 02_-	BH13A	1/10/2002	water	-	7.7	**1100**	-	-	-	-	720	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.2	1.25	4	-	-	0.005	-	-	0.025	-
BH13A_01 Jan 03_-	BH13A	1/01/2003	water	-	7.72	**890**	-	-	-	-	660	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	0.3	0.27	4	-	-	0.008	-	-	<0.001	-
BH13A_01 Apr 03_-	BH13A	1/04/2003	water	-	7.59	**955**	-	-	-	-	676	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.8	1.69	10	-	-	0.004	-	-	0.001	-
BH13A_01 Jul 03_-	BH13A	1/07/2003	water	-	7.69	**881**	-	-	-	-	560	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.9	1.51	12	-	-	0.014	-	-	0.001	-
BH13A_01 Oct 03_-	BH13A	1/10/2003	water	-	7.44	**1120**	-	-	-	-	770	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.6	3.02	8	-	-	0.005	-	-	0.001	-
BH13A_01 Jan 04_-	BH13A	1/01/2004	water	-	**8.15**	**955**	-	-	-	-	742	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.6	1.22	12	-	-	0.004	-	-	0.005	-
BH13A_01 Apr 04_-	BH13A	1/04/2004	water	-	7.75	-	-	-	-	-	480	-	-	-	-	-	-	-	-	-	-	-	-	***0.06***	-	-	-	1	5	-	-	0.003	-	-	-	-
BH13A_01 Jul 04_-	BH13A	1/07/2004	water	-	7.7	-	-	-	-	-	458	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	0.53	9	-	-	0.003	-	-	-	-
BH13A_01 Oct 04_-	BH13A	1/10/2004	water	-	7.78	-	-	-	-	-	518	-	-	-	-	-	-	-	-	-	-	-	-	***0.07***	-	-	-	1.28	5	-	-	0.003	-	-	-	-
BH13A_01 Jan 05_-	BH13A	1/01/2005	water	-	7.8	-	-	-	-	-	518	-	-	-	-	-	-	-	-	-	-	-	-	***0.057***	-	-	-	5.96	3	-	-	0.02	-	-	0.01	-
BH13A_01 Apr 05_-	BH13A	1/04/2005	water	-	7.23	-	-	-	-	-	440	-	-	-	-	-	-	-	-	-	-	-	-	***0.034***	-	-	-	3.7	1	-	-	0.003	-	-	-	-
BH13A_01 Jul 05_-	BH13A	1/07/2005	water	-	**8.17**	-	-	-	-	-	452	-	-	-	-	-	-	-	-	-	-	-	-	***0.198***	-	-	-	5.53	1	-	-	0.002	-	-	-	-
BH13A_01 Oct 05_-	BH13A	1/10/2005	water	-	7.38	-	-	-	-	-	494	-	-	-	-	-	-	-	-	-	-	-	-	***0.091***	-	-	-	2.82	2	-	-	0.002	-	-	-	-
BH13A_01 Jan 06_-	BH13A	1/01/2006	water	-	7.52	-	-	-	-	-	456	-	-	-	-	-	-	-	-	-	-	-	-	***0.062***	-	-	-	3.84	2	-	-	0.002	-	-	0.001	-
BH13A_01 Apr 06_-	BH13A	1/04/2006	water	-	7.34	-	-	-	-	-	474	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	-	2.91	3	-	-	0.002	-	-	-	-
BH13A_01 Jul 06_-	BH13A	1/07/2006	water	-	7.5	-	-	-	-	-	504	-	-	-	-	-	-	-	-	-	-	-	-	***0.052***	-	-	-	3.79	4	-	-	0.002	-	-	-	-
BH13A_01 Oct 06_-	BH13A	1/10/2006	water	-	7.38	-	-	-	-	-	456	-	-	-	-	-	-	-	-	-	-	-	-	**0.011**	-	-	-	1.16	4	-	-	0.002	-	-	-	-
BH13A_01 Jan 07_-	BH13A	1/01/2007	water	-	7.37	-	-	-	-	-	460	-	-	-	-	-	-	-	-	-	-	-	-	***0.024***	-	-	-	3.42	2	-	-	0.003	-	-	<0.001	-
BH13A_01 Apr 07_-	BH13A	1/04/2007	water	-	7.2	-	-	-	-	-	498	-	-	-	305	119	10	6	32	44.7	58	-	8.33	8.56	***0.118***	2.97	0.011	-	-	6	-	-	0.003	-	-	-	-
BH13A_17 Apr 13_-	BH13A	17/04/2013	water	3.8	*6.93*	**2.4**	***0.36***	18	18.2	7.8	800	-	390	<1	-	160	18	8.7	60	59	140	0.16	-	-	**0.01**	-	-	-	-	6	-	-	-	-	-	-	-
BH13A_09 Jul 13_-	BH13A	9/07/2013	water	3.48	7.13	**182**	***4.43***	6	16.7	7.7	660	-	270	<1	-	160	15	9.4	71	82	100	-	-	-		-	-	-	-	3	-	-	-	-	-	-	-
BH13A_29 Oct 13_-	BH13A	29/10/2013	water	3.72	**8.23**	**16.8**	***3.74***	-39	17.7	7.6	610	-	370	<1	-	160	13	5.8	55	41	83	-	-	-	**0.01**	-	-	-	-	4	-	-	-	-	-	-	-
BH13A_28 Jan 14_-	BH13A	28/01/2014	water	3.94	7.12	**907**	***5.81***	29	19.8	7.6	760	-	450	<1	-	200	23	4.9	60	58	140	0.14	-	-		1.4	<0.01	-	-	3	<0.005	0.003	0.018	<0.0001	<0.001	<0.005
BH13A_14 Apr 14_-	BH13A	14/04/2014	water	3.68	7.01	**688**	***3.72***	183	20.1	7.6	760	-	440	<1	-	190	17	8.8	80	56	130	0.14	-	-		-	-	-	-	3	-	-	-	-	-	-	-
BH13A_07 Jul 14_-	BH13A	7/07/2014	water	-	7.54	**928**	***3.38***	75	19.4	7.2	650	-	400	<1	-	150	13	9.5	78	58	97	0.13	-	-		-	-	-	-	4	-	-	-	-	-	-	-
BH13A_15 Oct 14_-	BH13A	15/10/2014	water	3.17	7.22	**917**	***2.85***	70	17.2	7.3	620	-	410	<1	-	150	18	8.8	89	60	55	0.19	-	-	***0.079***	-	-	-	-	6	-	-	-	-	-	-	-
BH13A_27 Apr 15_-	BH13A	27/04/2015	water	3.25	7.13	**917**	***4.1***	58	18.4	7.3	880	-	570	<1	-	170	31	16	120	66	90	0.27	-	-	***1.8***	-	-	-	-	9	-	-	-	-	-	-	-
BH13A_21 Jul 15_-	BH13A	21/07/2015	water	3.7	***6.23***	**878**	***3.82***	57	17.6	7.1	620	-	330	<1	-	140	13	4.8	59	69	67	0.2	-	-		-	-	-	-	6	-	-	-	-	-	-	-
BH13A_20 Oct 15_-	BH13A	20/10/2015	water	3.9	*6.89*	**441**	***4.9***	85	24.4	7.6	840	-	380	<1	-	180	18	7.4	62	68	210	0.2	-	-		-	-	-	-	4	-	-	-	-	-	-	-
BH13A_21 Jan 16_-	BH13A	21/01/2016	water	3.47	7.12	**1102**	***2.27***	57	26.6	7.9	940	-	530	<1	-	210	21	13	120	90	120	0.1	-	-		0.4	<0.01	-	-	8	<0.005	0.004	0.025	<0.0001	<0.001	<0.01
BH13A_19 Apr 16_-	BH13A	19/04/2016	water	3.43	*6.89*	**1081**	***1.75***	-49	20	7.5	820	-	470	<5	-	170	14	11	120	80	83	0.2	-	-		-	-	-	-	7	-	-	-	-	-	-	-
BH13A_21 Jul 16_-	BH13A	21/07/2016	water	3.61	7.8	**805**	***3.12***	120	17.5	7.4	480	-	320	<5	-	110	11	5.9	46	40	42	0.2	-	-	0.006	-	-	-	-	3	-	-	-	-	-	-	-
BH13A_18 Oct 16_-	BH13A	18/10/2016	water	3.81	7.36	**1145**	***2.12***	38	20.3	7.5	820	-	470	<5	-	190	17	7.1	97	80	110	0.2	-	-	0.006	-	-	-	-	8	-	-	-	-	-	-	-
BH13A_03 Jul 19_-	BH13A	3/07/2019	water	3.78	7.33	**1093**	***2.6***	63.4	18.6	7.6	1100	-	650	<5	-	220	46	17	130	120	200	0.2	-	-	***3.8***	-	-	-	-	13	-	-	-	-	-	-	-
BH13A_25 Oct 19_-	BH13A	25/10/2019	water	3.85	7.18	**1619**	***3.02***	59.8	20.1	7.8	1200	-	610	<5	-	240	42	16	140	120	180	0.2	-	-	***2.7***	-	-	-	-	13	-	-	-	-	-	-	-
BH13A_13 Jan 20_-	BH13A	13/01/2020	water	3.87	7.29	**1850**	***0.9***	-225.9	21.1	7.1	1200	-	710	<5	-	220	42	16	150	130	160	0.2	-	-	***3.6***	0.068	0.006	-	-	16	0.01	0.01	0.034	<0.0001	<0.001	<0.005
BH13A_23 Apr 20_-	BH13A	23/04/2020	water	2.78	7.37	**1167**	***3.79***	115.3	20.2	7.4	1000	-	400	<5	-	180	29	9.7	74	100	260	0.2	-	-	***2***	-	-	-	-	6	-	-	-	-	-	-	-
BH14_01 Jan 97_-	BH14	1/01/1997	water	-	*6.7*	**758**	-	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	-	***0.45***	-	-	3.2	0.45	27	-	-	0.013	-	-	0.001	-
BH14_01 Apr 97_-	BH14	1/04/1997	water	-	*6.76*	**750**	-	-	-	-	664	-	-	-	-	-	-	-	-	-	-	-	-	***0.16***	-	-	1.4	2.8	33	-	-	0.003	-	-	0.005	-
BH14_01 Jul 97_-	BH14	1/07/1997	water	-	*6.72*	**987**	-	-	-	-	630	-	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	1.1	3.48	32	-	-	0.001	-	-	0.003	-
BH14_01 Oct 97_-	BH14	1/10/1997	water	-	*6.8*	**1080**	-	-	-	-	688	-	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	1.6	3.28	16	-	-	0.002	-	-	0.002	-
BH14_01 Jan 98_-	BH14	1/01/1998	water	-	*6.74*	**757**	-	-	-	-	484	-	-	-	-	-	-	-	-	-	-	-	-	***0.61***	-	-	1.1	0.02	27	-	-	0.001	-	-	0.001	-
BH14_01 Apr 98_-	BH14	1/04/1998	water	-	*6.58*	**778**	-	-	-	-	430	-	-	-	-	-	-	-	-	-	-	-	-	***0.99***	-	-	1.5	0.01	26	-	-	0.01	-	-	0.001	-
BH14_01 Jul 98_-	BH14	1/07/1998	water	-	*6.82*	**1076**	-	-	-	-	722	-	-	-	-	-	-	-	-	-	-	-	-	***0.13***	-	-	2.8	4.95	32	-	-	0.003	-	-	0.001	-
BH14_01 Oct 98_-	BH14	1/10/1998	water	-	7.02	-	-	-	-	-	772	-	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	3.2	18.4	21	-	-	0.01	-	-	0.001	-
BH14_01 Jan 99_-	BH14	1/01/1999	water	-	*6.9*	**941**	-	-	-	-	646	-	-	-	-	-	-	-	-	-	-	-	-	***0.2***	-	-	1.2	0.21	86	-	-	0.005	-	-	0.003	-
BH14_01 Mar 99_-	BH14	1/03/1999	water	-	*6.9*	**612**	-	-	-	-	525	-	-	-	-	-	-	-	-	-	-	-	-	***0.26***	-	-	1.5	2.6	26	-	-	0.005	-	-	0.008	-

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		
Sample ID	**Location Code**	**Date**	**Matrix Type**																															
BH14_01 Jul 99_-	BH14	1/07/1999	water	-	7.1	**894**	-	-	-	-	510	-	-	-	-	-	-	-	-	-	-	-	***0.19***	-	-	2	3.24	18	-	-	0.003	-	-	0.006	-
BH14_01 Oct 99_-	BH14	1/10/1999	water	-	*7*	-	-	-	-	-	414	-	-	-	-	-	-	-	-	-	-	-	***0.18***	-	-	1.5	0.15	5	-	-	0.003	-	-	0.002	-
BH14_01 Jan 00_-	BH14	1/01/2000	water	-	7.1	**730**	-	-	-	-	480	-	-	-	-	-	-	-	-	-	-	-	***0.25***	-	-	1.6	0.1	26	-	-	0.005	-	-	0.002	-
BH14_01 Apr 00_-	BH14	1/04/2000	water	-	*6.9*	**840**	-	-	-	-	560	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	1.8	7.33	22	-	-	0.003	-	-	0.008	-
BH14_01 Jul 00_-	BH14	1/07/2000	water	-	*6.8*	**650**	-	-	-	-	390	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	1.6	0.09	26	-	-	0.004	-	-	0.005	-
BH14_01 Oct 00_-	BH14	1/10/2000	water	-	*6.7*	**870**	-	-	-	-	590	-	-	-	-	-	-	-	-	-	-	-	***0.12***	-	-	1.6	0.62	19	-	-	0.002	-	-	0.002	-
BH14_01 Jan 01_-	BH14	1/01/2001	water	-	*6.9*	**1200**	-	-	-	-	850	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	2	8.2	30	-	-	0.003	-	-	0.009	-
BH14_01 Apr 01_-	BH14	1/04/2001	water	-	*6.7*	**1200**	-	-	-	-	790	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	1.8	7.44	22	-	-	0.004	-	-	0.003	-
BH14_01 Jul 01_-	BH14	1/07/2001	water	-	*6.8*	**2500**	-	-	-	-	1500	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	2.6	18.9	27	-	-	0.005	-	-	0.005	-
BH14_01 Oct 01_-	BH14	1/10/2001	water	-	*6.9*	**1500**	-	-	-	-	850	-	-	-	-	-	-	-	-	-	-	-	***0.06***	-	-	1.4	3.79	16	-	-	0.005	-	-	0.001	-
BH14_01 Jan 02_-	BH14	1/01/2002	water	-	*6.6*	**1000**	-	-	-	-	630	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	1.2	0.21	18	-	-	0.01	-	-	0.001	-
BH14_01 Apr 02_-	BH14	1/04/2002	water	-	7.2	**1700**	-	-	-	-	1200	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	1.8	8	17	-	-	0.005	-	-	0.003	-
BH14_01 Jul 02_-	BH14	1/07/2002	water	-	7.3	**950**	-	-	-	-	590	-	-	-	-	-	-	-	-	-	-	-	***0.11***	-	-	1	2.07	11	-	-	0.004	-	-	<0.001	-
BH14_01 Oct 02_-	BH14	1/10/2002	water	-	7.3	**750**	-	-	-	-	480	-	-	-	-	-	-	-	-	-	-	-	***0.11***	-	-	0.7	0.1	11	-	-	0.005	-	-	0.002	-
BH14_01 Jan 03_-	BH14	1/01/2003	water	-	7.72	**850**	-	-	-	-	530	-	-	-	-	-	-	-	-	-	-	-	***0.08***	-	-	0.6	0.14	13	-	-	0.005	-	-	0.001	-
BH14_01 Apr 03_-	BH14	1/04/2003	water	-	7.22	**1110**	-	-	-	-	750	-	-	-	-	-	-	-	-	-	-	-	***0.16***	-	-	0.8	0.11	22	-	-	0.002	-	-	0.001	-
BH14_01 Jul 03_-	BH14	1/07/2003	water	-	7.43	**1200**	-	-	-	-	830	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	1.1	7.08	18	-	-	0.004	-	-	0.001	-
BH14_01 Oct 03_-	BH14	1/10/2003	water	-	7.23	**945**	-	-	-	-	842	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	1.7	0.21	14	-	-	0.004	-	-	0.001	-
BH14_01 Jan 04_-	BH14	1/01/2004	water	-	7.98	**690**	-	-	-	-	690	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	0.6	0.05	16	-	-	0.003	-	-	0.005	-
BH14_01 Apr 04_-	BH14	1/04/2004	water	-	7.35	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-	-	-	***0.22***	-	-	-	1.25	17	-	-	0.003	-	-	-	-
BH14_01 Jul 04_-	BH14	1/07/2004	water	-	7.21	-	-	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	0.01	23	-	-	0.003	-	-	-	-
BH14_01 Oct 04_-	BH14	1/10/2004	water	-	7.31	-	-	-	-	-	664	-	-	-	-	-	-	-	-	-	-	-	***0.22***	-	-	-	3.89	24	-	-	0.003	-	-	-	-
BH14_01 Jan 05_-	BH14	1/01/2005	water	-	7.22	-	-	-	-	-	498	-	-	-	-	-	-	-	-	-	-	-	***3.37***	-	-	-	0.172	20	-	-	0.008	-	-	0.001	-
BH14_01 Apr 05_-	BH14	1/04/2005	water	-	***6.5***	-	-	-	-	-	512	-	-	-	-	-	-	-	-	-	-	-	***0.731***	-	-	-	0.01	25	-	-	0.014	-	-	-	-
BH14_01 Jun 05_-	BH14	1/06/2005	water	-	**8.1**	-	-	-	-	-	456	-	-	-	-	-	-	-	-	-	-	-	***0.397***	-	-	-	0.031	17	-	-	0.004	-	-	-	-
BH14_01 Oct 05_-	BH14	1/10/2005	water	-	*6.52*	-	-	-	-	-	436	-	-	-	-	-	-	-	-	-	-	-	***0.533***	-	-	-	0.025	21	-	-	0.016	-	-	-	-
BH14_01 Jan 06_-	BH14	1/01/2006	water	-	*6.55*	-	-	-	-	-	500	-	-	-	-	-	-	-	-	-	-	-	***0.266***	-	-	-	0.055	25	-	-	0.032	-	-	0.002	-
BH14_01 Apr 06_-	BH14	1/04/2006	water	-	***6.29***	-	-	-	-	-	470	-	-	-	-	-	-	-	-	-	-	-	***0.166***	-	-	-	0.036	25	-	-	0.032	-	-	-	-
BH14_01 Jul 06_-	BH14	1/07/2006	water	-	*6.67*	-	-	-	-	-	622	-	-	-	-	-	-	-	-	-	-	-	***0.338***	-	-	-	0.01	26	-	-	0.016	-	-	-	-
BH14_01 Oct 06_-	BH14	1/10/2006	water	-	*6.57*	-	-	-	-	-	1600	-	-	-	-	-	-	-	-	-	-	-	***0.384***	-	-	-	0.039	33	-	-	0.009	-	-	-	-
BH14_01 Jan 07_-	BH14	1/01/2007	water	-	*6.64*	-	-	-	-	-	666	-	-	-	-	-	-	-	-	-	-	-	***0.398***	-	-	-	0.023	23	-	-	0.022	-	-	<0.001	-
BH14_01 Apr 07_-	BH14	1/04/2007	water	-	*6.52*	-	-	-	-	-	846	-	-	-	232	133	25	7	47	83.8	224	-	10.9	11.6	***0.594***	0.02	0.012	-	-	34	-	-	0.036	-	-	-	-
BH14_16 Apr 13_-	BH14	16/04/2013	water	2.84	***10.4***	**36,800**	***1.1***	-939	25	7.4	640	-	300	<1	-	-	14	20	64	120	55	<0.1	-	-	***0.1***	-	-	-	-	21	-	-	-	-	-	-	-
BH14_22 Apr 15_-	BH14	22/04/2015	water	1.95	7.28	**842**	***2.28***	-1	18.9	7.2	660	-	300	<1	-	160	23	10	110	86	140	0.18	-	-	***0.13***	-	-	-	-	-	-	82	-	-	-	-	-
BH14_22 Jul 15_-	BH14	22/07/2015	water	2.2	***6.15***	**1182**	***4.2***	33	15.4	*6.8*	1000	-	400	<1	-	210	38	7.6	120	110	250	0.2	-	-	***0.018***	-	-	-	-	-	-	28	-	-	-	-	-
BH14_20 Oct 15_-	BH14	20/10/2015	water	3	*6.52*	**5100**	***1.54***	17	23.3	7.2	1200	-	410	<1	-	210	40	6.9	160	170	370	0.1	-	-	***0.19***	-	-	-	-	-	-	28	-	-	-	-	-
BH14_20 Jan 16_-	BH14	20/01/2016	water	2.12	*6.85*	**1078**	***3.5***	-14	23.8	*6.9*	940	-	360	<1	-	180	32	8.7	120	91	170	0.1	-	-	***0.027***	6.5	0.017	-	-	-	-	31	<0.005	<0.001	0.08	<0.0001	<0.001	<0.01
BH14A_29 Jul 14_-	BH14A	29/07/2014	water	2.24	***5.86***	**995**	***2.39***	201	16	7.5	670	-	700	<1	-	280	35	15	88	70	12	0.24	-	-	***1.5***	-	-	-	-	-	-	170	-	-	-	-	-
BH14A_29 Oct 14_-	BH14A	29/10/2014	water	2.1	*6.98*	**1996**	***0.92***	115	17.9	*6.9*	1400	-	500	<1	-	230	44	10	260	140	400	0.16	-	-	***0.91***	-	-	-	-	-	-	39	-	-	-	-	-
BH14A_20 Jan 15_-	BH14A	20/01/2015	water	2.1	*6.81*	**1301**	***0.22***	-134	21	7.3	1000	-	590	<1	-	330	48	17	160	110	150	0.14	-	-	***1.4***	<0.1	<0.01	-	-	-	-	230	0.01	0.006	0.14	<0.0001	-	<0.01
BH14A_14 Apr 16_-	BH14A	14/04/2016	water	3.01	**8.09**	**1094**	***2.51***	-7	21.2	*6.9*	860	-	360	<5	-	170	28	8	96	67	140	0.2	-	-	***0.039***	-	-	-	-	-	-	41	-	-	-	-	-
BH14A_13 Jul 16_-	BH14A	13/07/2016	water	2.61	***6.17***	**1273**	***4.82***	105	13.6	*7*	1000	-	400	<5	-	220	37	7.2	94	100	250	0.1	-	-	**0.012**	-	-	-	-	-	-	68	-	-	-	-	-
BH14A_19 Jan 17_-	BH14A	19/01/2017	water	3.83	7.18	**1105**	***2.95***	19	21	*7*	830	-	290	<5	-	180	17	6.4	82	75	200	0.1	-	-	0.008	2	<0.005	-	-	-	-	6	<0.01	0.003	0.02	<0.0001	<0.001	<0.005
BH14A_02 Jul 19_-	BH14A	2/07/2019	water	3.88	*6.88*	**486.9**	***3.95***	-78.6	17.4	*7*	700	-	430	<5	-	150	27	9.3	68	82	59	0.2	-	-	***0.98***	-	-	-	-	-	-	26	-	-	-	-	-
BH14A_24 Oct 19_-	BH14A	24/10/2019	water	3.22	*6.87*	**976**	***3.52***	-33.2	19.5	7.1	640	-	390	<5	-	190	34	12	62	70	44	0.2	-	-	***1.3***	-	-	-	-	-	-	21	-	-	-	-	-
BH14A_27 Apr 20_-	BH14A	27/04/2020	water	3.98	7.01	**1128**	***0.31***	-110.9	20.9	*6.8*	790	-	390	<5	-	200	37	11	85	110	88	0.2	-	-	***2.2***	-	-	-	-	-	-	25	-	-	-	-	-
BH15_01 Jan 97_-	BH15	1/01/1997	water	-	7.45	**493**	-	-	-	-	270	-	-	-	-	-	-	-	-	-	-	-	***1.1***	-	-	0.4	1.1	7	-	-	0.002	-	-	0.001	-
BH15_01 Apr 97_-	BH15	1/04/1997	water	-	***6.16***	**490**	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.23	6	-	-	0.002	-	-	0.002	-
BH15_01 Jul 97_-	BH15	1/07/1997	water	-	7.43	**609**	-	-	-	-	336	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.2	0.25	6	-	-	0.006	-	-	0.001	-
BH15_01 Oct 97_-	BH15	1/10/1997	water	-	7.51	**530**	-	-	-	-	314	-	-	-	-	-	-	-	-	-	-	-	***0.19***	-	-	0.6	0.01	3	-	-	0.01	-	-	0.001	-
BH15_01 Jan 98_-	BH15	1/01/1998	water	-	7.54	**576**	-	-	-	-	306	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	0.3	0.01	1	-	-	0.001	-	-	0.001	-
BH15_01 Apr 98_-	BH15	1/04/1998	water	-	7.48	**636**	-	-	-	-	310	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	0.02	3	-	-	0.004	-	-	0.001	-
BH15_01 Jul 98_-	BH15	1/07/1998	water	-	7.4	**675**	-	-	-	-	448	-	-	-	-	-	-	-	-	-	-	-	***0.08***	-	-	0.6	0.11	10	-	-	0.014	-	-	0.001	-
BH15_01 Oct 98_-	BH15	1/10/1998	water	-	7.45	-	-	-	-	-	578	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	0.19	6	-	-	0.02	-	-	0.001	-
BH15_01 Jan 99_-	BH15	1/01/1999	water	-	7.6	**518**	-	-	-	-	286	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.02	11	-	-	0.009	-	-	0.002	-
BH15_01 Mar 99_-	BH15	1/03/1999	water	-	7.6	**449**	-	-	-	-	293	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	0.01	1	-	-	0.009	-	-	0.004	-
BH15_01 Jul 99_-	BH15	1/07/1999	water	-	7.7	**584**	-	-	-	-	290	-	-	-	-	-	-	-	-	-	-	-	***0.54***	-	-	0.6	0.01	3	-	-	0.003	-	-	0.004	-
BH15_01 Oct 99_-	BH15	1/10/1999	water	-	7.5	-	-	-	-	-	296	-	-	-	-	-	-	-	-	-	-	-	***0.13***	-	-	0.5	0.01	2	-	-	0.01	-	-	0.001	-
BH15_01 Jan 00_-	BH15	1/01/2000	water	-	7.4	**540**	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-	***0.09***	-	-	0.2	0.02	2	-	-	0.005	-	-	0.001	-
BH15_01 Apr 00_-	BH15	1/04/2000	water	-	7.2	**650**	-	-	-	-	380	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	0.1	0.01	2	-	-	0.009	-	-	0.006	-
BH15_01 Jul 00_-	BH15	1/07/2000	water	-	7.2	**630**	-	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	***0.14***	-	-	0.4	0.01	1	-	-	0.003	-	-	0.004	-
BH15_01 Oct 00_-	BH15	1/10/2000	water	-	7.3	**650**	-	-	-	-	370	-	-	-	-	-	-	-	-	-	-	-	***0.09***	-	-	0.7	0.01	2	-	-	0.001	-	-	0.001	-
BH15_01 Jan 01_-	BH15	1/01/2001	water	-	7.7	**660**	-	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	***0.32***	-	-	0.3	0.01	4	-	-	0.004	-	-	0.009	-

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																
BH15_01 Apr 01_-_	BH15	1/04/2001	water	-	7.4	**660**	-	-	-	-	390	-	-	-	-	-	-	-	-	-	-	-	***0.19***	-	-	0.3	0.01	2	-	-	0.005	-	-	0.002	-
BH15_01 Jun 01_-_	BH15	1/06/2001	water	-	7.3	**1300**	-	-	-	-	770	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	0.3	0.03	4	-	-	0.022	-	-	0.004	-
BH15_01 Oct 01_-_	BH15	1/10/2001	water	-	7.4	**730**	-	-	-	-	420	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	0.3	0.02	2	-	-	0.013	-	-	0.001	-
BH15_01 Jan 02_-_	BH15	1/01/2002	water	-	7.3	**740**	-	-	-	-	430	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	0.4	0.01	3	-	-	0.001	-	-	0.001	-
BH15_01 Apr 02_-_	BH15	1/04/2002	water	-	7.7	**940**	-	-	-	-	620	-	-	-	-	-	-	-	-	-	-	-	***0.07***	-	-	0.3	0.08	3	-	-	0.012	-	-	0.002	-
BH15_01 Jul 02_-_	BH15	1/07/2002	water	-	7.8	**770**	-	-	-	-	440	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	0.3	0.02	1	-	-	0.004	-	-	<0.001	-
BH15_01 Oct 02_-_	BH15	1/10/2002	water	-	7.8	**640**	-	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	***0.07***	-	-	0.3	0.1	1	-	-	0.004	-	-	0.002	-
BH15_01 Jan 03_-_	BH15	1/01/2003	water	-	**8.07**	**580**	-	-	-	-	340	-	-	-	-	-	-	-	-	-	-	-	***0.25***	-	-	0.2	0.02	2	-	-	0.003	-	-	0.004	-
BH15_01 Apr 03_-_	BH15	1/04/2003	water	-	7.7	**758**	-	-	-	-	420	-	-	-	-	-	-	-	-	-	-	-	***0.15***	-	-	0.5	0.01	7	-	-	0.001	-	-	0.001	-
BH15_01 Jul 03_-_	BH15	1/07/2003	water	-	7.66	**1340**	-	-	-	-	744	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.2	0.02	7	-	-	0.021	-	-	0.001	-
BH15_01 Oct 03_-_	BH15	1/10/2003	water	-	7.62	**866**	-	-	-	-	542	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.2	0.01	4	-	-	0.003	-	-	0.001	-
BH15_01 Jan 04_-_	BH15	1/01/2004	water	-	**8.28**	**886**	-	-	-	-	674	-	-	-	-	-	-	-	-	-	-	-	***0.27***	-	-	0.5	0.01	8	-	-	0.003	-	-	0.005	-
BH15_01 Apr 04_-_	BH15	1/04/2004	water	-	7.79	-	-	-	-	-	542	-	-	-	-	-	-	-	-	-	-	-	***0.18***	-	-	-	0.06	2	-	-	0.003	-	-	-	-
BH15_01 Jul 04_-_	BH15	1/07/2004	water	-	7.72	-	-	-	-	-	766	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	-	0.01	11	-	-	0.003	-	-	-	-
BH15_01 Oct 04_-_	BH15	1/10/2004	water	-	7.78	-	-	-	-	-	484	-	-	-	-	-	-	-	-	-	-	-	***0.11***	-	-	-	0.74	4	-	-	0.002	-	-	-	-
BH15_01 Jan 05_-_	BH15	1/01/2005	water	-	7.86	-	-	-	-	-	416	-	-	-	-	-	-	-	-	-	-	-	***2.36***	-	-	-	0.06	3	-	-	0.002	-	-	0.001	-
BH15_01 Apr 05_-_	BH15	1/04/2005	water	-	7.31	-	-	-	-	-	498	-	-	-	-	-	-	-	-	-	-	-	***0.221***	-	-	-	0.034	7	-	-	0.002	-	-	-	-
BH15_01 Jun 05_-_	BH15	1/06/2005	water	-	**8.47**	-	-	-	-	-	388	-	-	-	-	-	-	-	-	-	-	-	***1.33***	-	-	-	0.011	2	-	-	0.002	-	-	-	-
BH15_01 Oct 05_-_	BH15	1/10/2005	water	-	7.29	-	-	-	-	-	470	-	-	-	-	-	-	-	-	-	-	-	***0.813***	-	-	-	0.017	2	-	-	0.001	-	-	-	-
BH15_01 Feb 06_-_	BH15	1/02/2006	water	-	7.45	-	-	-	-	-	478	-	-	-	-	-	-	-	-	-	-	-	***0.55***	-	-	-	0.028	3	-	-	0.001	-	-	<0.001	-
BH15_01 Apr 06_-_	BH15	1/04/2006	water	-	7.3	-	-	-	-	-	288	-	-	-	-	-	-	-	-	-	-	-	***0.306***	-	-	-	0.01	16	-	-	<0.001	-	-	-	-
BH15_01 Jul 06_-_	BH15	1/07/2006	water	-	7.4	-	-	-	-	-	834	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	-	0.947	3	-	-	0.001	-	-	-	-
BH15_01 Oct 06_-_	BH15	1/10/2006	water	-	7.42	-	-	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	***5***	-	-	-	1.46	5	-	-	0.002	-	-	-	-
BH15_01 Jan 07_-_	BH15	1/01/2007	water	-	7.41	-	-	-	-	-	598	-	-	-	-	-	-	-	-	-	-	-	***0.542***	-	-	-	<0.01	5	-	-	0.004	-	-	<0.001	-
BH15_01 Apr 07_-_	BH15	1/04/2007	water	-	7.23	-	-	-	-	-	486	-	-	-	249	99	19	3	46	77.7	84	-	8.6	8.92	***0.975***	<0.01	<0.01	-	-	8	-	-	0.005	-	-	-	-
BH15_16 Apr 13_-_	BH15	16/04/2013	water	4.65	7.72	**910**	***1.41***	-67	20.2	7.8	700	-	420	<1	-	130	23	3.2	83	94	49	0.31	-	-	***0.035***	-	-	-	-	-	5	-	-	-	-	-	-
BH15_09 Jul 13_-_	BH15	9/07/2013	water	3.94	7.42	**401**	***5.07***	-41	16.8	7.7	630	-	290	<1	-	135	22	5	63	65	86	-	-	-	***0.015***	-	-	-	-	-	3	-	-	-	-	-	-
BH15_29 Oct 13_-_	BH15	29/10/2013	water	4.88	7.81	**846**	***4.98***	-78	17.8	7.5	490	-	370	<1	-	120	19	2.5	48	25	67	-	-	-	***0.037***	-	-	-	-	-	5	-	-	-	-	-	-
BH15_28 Jan 14_-_	BH15	28/01/2014	water	4.96	7.41	**922**	***2.3***	-23	19.9	7.3	500	-	370	<1	-	130	25	3.6	54	63	48	0.36	-	-	***0.21***	0.22	<0.01	-	-	-	4	<0.005	0.003	0.006	<0.0001	<0.001	<0.005
BH15_16 Apr 14_-_	BH15	16/04/2014	water	2.86	7.4	**919**	***1.6***	-1	19.3	7.2	610	-	370	<1	-	150	27	3.4	44	74	46	0.35	-	-	***0.13***	-	-	-	-	-	4	-	-	-	-	-	-
BH15_07 Jul 14_-_	BH15	7/07/2014	water	-	7.9	**548**	***4.8***	13	15.7	7.5	630	-	400	<1	-	140	28	4	63	53	63	0.32	-	-	0.009	-	-	-	-	-	4	-	-	-	-	-	-
BH15_07 Jul 14_-2	BH15	7/07/2014	water	-	7.9	**548**	***4.8***	13	15.7	7.3	500	-	420	<1	-	150	28	3.9	63	53	64	0.31	-	-		-	-	-	-	-	4	-	-	-	-	-	-
BH15_16 Oct 14_-_	BH15	16/10/2014	water	4.26	7.38	**878**	***0.84***	77	18.3	7.4	470	-	380	<1	-	120	27	4.4	49	55	38	0.35	-	-	***0.66***	-	-	-	-	-	4	-	-	-	-	-	-
BH15_20 Jan 15_-_	BH15	20/01/2015	water	4.96	*6.57*	**612**	***1.3***	59	24.9	*6.9*	450	-	420	<1	-	160	21	8.5	31	15	36	0.4	-	-		0.21	<0.01	-	-	-	14	<0.005	0.003	0.008	<0.0001	-	<0.01
BH15_22 Apr 15_-_	BH15	22/04/2015	water	4.53	7.26	**818**	***0.6***	-67	18.2	7.3	580	-	400	<1	-	130	26	4.2	56	63	62	0.3	-	-	***0.98***	-	-	-	-	-	7	-	-	-	-	-	-
BH15_22 Jul 15_-_	BH15	22/07/2015	water	4.24	7.31	**749**	***2.38***	-47	15.9	7.2	450	-	330	<1	-	110	20	8.4	32	31	32	0.4	-	-	***0.029***	-	-	-	-	-	5	-	-	-	-	-	-
BH15_20 Oct 15_-_	BH15	20/10/2015	water	4.07	7.07	**1403**	***3.31***	68	22.8	7.6	430	-	360	<1	-	160	20	12	31	27	26	0.4	-	-	***0.034***	-	-	-	-	-	21	-	-	-	-	-	-
BH15_20 Jan 16_-_	BH15	20/01/2016	water	3.5	7.44	**739**	***2.29***	79	22.5	7.4	430	-	440	<1	-	190	25	13	120	29	20	0.4	-	-	0.009	0.79	0.01	-	-	-	24	<0.005	0.002	0.01	<0.0001	<0.001	<0.01
BH15_14 Apr 16_-_	BH15	14/04/2016	water	4.47	7.45	**620**	***2.26***	34	20.4	7.2	430	-	440	<5	-	180	21	10	30	16	15	0.4	-	-	0.009	-	-	-	-	-	27	-	-	-	-	-	-
BH15_13 Jul 16_-_	BH15	13/07/2016	water	4.23	7.31	**774**	***4.35***	-67	15.1	7.5	340	-	340	<5	-	110	23	7.4	34	34	19	0.4	-	-	***0.096***	-	-	-	-	-	4	-	-	-	-	-	-
BH15_18 Oct 16_-_	BH15	18/10/2016	water	2.95	*6.87*	**1522**	***6.87***	-28	17.2	*6.9*	1200	-	460	<5	-	230	41	6.6	140	130	240	0.1	-	-	***0.14***	-	-	-	-	-	42	-	-	-	-	-	-
BH15_25 Jan 17_-_	BH15	25/01/2017	water	2.25	***6.06***	**1884**	***0.25***	14	21.4	*6.7*	1200	-	400	<5	-	220	41	8.1	160	130	320	0.2	-	-	***0.53***	0.02	<0.005	-	-	-	26	<0.01	0.003	0.008	<0.0001	<0.001	<0.05
BH15_02 Jul 19_-_	BH15	2/07/2019	water	4.5	7.33	**381.7**	***2.99***	-134.3	19.1	7.6	510	-	340	<5	-	110	20	7	28	67	12	0.4	-	-	***0.1***	-	-	-	-	-	3	-	-	-	-	-	-
BH15_24 Oct 19_-_	BH15	24/10/2019	water	4.79	7.46	**774**	***4.26***	55.2	19.6	7.6	510	-	310	<5	-	120	20	7	29	65	19	0.4	-	-	***0.038***	-	-	-	-	-	4	-	-	-	-	-	-
BH15_14 Jan 20_-_	BH15	14/01/2020	water	5.09	7.45	**742**	***2.65***	-6.5	20.2	7.5	480	-	350	<5	-	120	20	6.9	34	61	28	0.4	-	-	***0.19***	<0.005	<0.005	-	-	-	5	<0.01	0.003	0.006	<0.0001	<0.001	<0.005
BH15_22 Apr 20_-_	BH15	22/04/2020	water	4.7	**8.03**	**705**	***1.27***	-26.8	21.1	7.6	410	-	290	<5	-	130	15	5.8	38	49	71	0.4	-	-	***0.019***	-	-	-	-	-	11	-	-	-	-	-	-
BH16_01 Apr 00_-_	BH16	1/04/2000	water	-	7.5	**370**	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.71	3	-	-	0.003	-	-	0.003	-
BH16_01 Jul 00_-_	BH16	1/07/2000	water	-	7.3	**520**	-	-	-	-	290	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	1.2	0.16	2	-	-	0.002	-	-	0.002	-
BH16_01 Oct 00_-_	BH16	1/10/2000	water	-	7.2	**560**	-	-	-	-	340	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.2	0.12	3	-	-	0.002	-	-	0.002	-
BH16_01 Jan 01_-_	BH16	1/01/2001	water	-	7.4	**490**	-	-	-	-	280	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.4	0.06	5	-	-	0.002	-	-	0.005	-
BH16_01 Apr 01_-_	BH16	1/04/2001	water	-	7.2	**400**	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.4	0.18	16	-	-	0.003	-	-	0.001	-
BH16_01 Jun 01_-_	BH16	1/06/2001	water	-	7.2	**320**	-	-	-	-	180	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.6	0.1	4	-	-	0.004	-	-	0.001	-
BH16_01 Oct 01_-_	BH16	1/10/2001	water	-	*6.7*	**320**	-	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.2	0.03	6	-	-	0.011	-	-	0.001	-
BH16_01 Jan 02_-_	BH16	1/01/2002	water	-	*6.9*	**830**	-	-	-	-	470	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	0.6	0.12	6	-	-	0.018	-	-	0.001	-
BH16_01 Apr 02_-_	BH16	1/04/2002	water	-	7.1	**330**	-	-	-	-	230	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.3	0.01	7	-	-	0.025	-	-	<0.001	-
BH16_01 Jul 02_-_	BH16	1/07/2002	water	-	7.2	**340**	-	-	-	-	190	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.2	<0.01	2	-	-	0.021	-	-	<0.001	-
BH16_01 Oct 02_-_	BH16	1/10/2002	water	-	7.4	**340**	-	-	-	-	190	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.1	0.01	26	-	-	0.017	-	-	0.007	-
BH16_01 Jan 03_-_	BH16	1/01/2003	water	-	7.94	**310**	-	-	-	-	210	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	0.2	0.08	3	-	-	0.02	-	-	<0.001	-
BH16_01 Apr 03_-_	BH16	1/04/2003	water	-	7.41	**414**	-	-	-	-	228	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.01	11	-	-	0.03	-	-	0.001	-
BH16_01 Jun 03_-_	BH16	1/06/2003	water	-	7.37	**202**	-	-	-	-	126	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.2	0.03	7	-	-	0.009	-	-	0.001	-
BH16_01 Oct 03_-_	BH16	1/10/2003	water	-	7.27	**232**	-	-	-	-	182	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.2	0.03	10	-	-	0.009	-	-	0.001	-
BH16_01 Jan 04_-_	BH16	1/01/2004	water	-	7.95	**322**	-	-	-	-	306	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	0.3	0.03	6	-	-	0.009	-	-	0.005	-
BH16_01 Apr 04_-_	BH16	1/04/2004	water	-	7.49	-	-	-	-	-	156	-	-	-	-	-	-	-	-	-	-	-	***0.07***	-	-	-	0.02	1	-	-	0.006	-	-	-	-

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																
BH16_01 Jul 04_-	BH16	1/07/2004	water	-	7.25	-	-	-	-	-	170	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	0.01	6	-	-	0.006	-	-	-	-
BH16_01 Oct 04_-	BH16	1/10/2004	water	-	7.21	-	-	-	-	-	103	-	-	-	-	-	-	-	-	-	-	-	***0.07***	-	-	-	0.01	5	-	-	0.008	-	-	-	-
BH16_01 Jan 05_-	BH16	1/01/2005	water	-	7.44	-	-	-	-	-	130	-	-	-	-	-	-	-	-	-	-	-	***1.75***	-	-	-	0.017	2	-	-	0.01	-	-	0.001	-
BH16_01 Apr 05_-	BH16	1/04/2005	water	-	7.2	-	-	-	-	-	102	-	-	-	-	-	-	-	-	-	-	-	***0.063***	-	-	-	0.01	1	-	-	0.012	-	-	-	-
BH16_01 Jul 05_-	BH16	1/07/2005	water	-	**8.1**	-	-	-	-	-	114	-	-	-	-	-	-	-	-	-	-	-	***0.026***	-	-	-	0.019	3	-	-	0.009	-	-	-	-
BH16_01 Oct 05_-	BH16	1/10/2005	water	-	*6.9*	-	-	-	-	-	131	-	-	-	-	-	-	-	-	-	-	-	***0.101***	-	-	-	0.01	1	-	-	0.005	-	-	-	-
BH16_01 Jan 06_-	BH16	1/01/2006	water	-	*6.95*	-	-	-	-	-	130	-	-	-	-	-	-	-	-	-	-	-	**0.012**	-	-	-	0.017	3	-	-	0.008	-	-	<0.001	-
BH16_01 Apr 06_-	BH16	1/04/2006	water	-	7.02	-	-	-	-	-	94	-	-	-	-	-	-	-	-	-	-	-	**0.012**	-	-	-	0.047	3	-	-	0.005	-	-	-	-
BH16_01 Jul 06_-	BH16	1/07/2006	water	-	7.61	-	-	-	-	-	170	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	0.148	2	-	-	0.001	-	-	-	-
BH16_01 Oct 06_-	BH16	1/10/2006	water	-	7.6	-	-	-	-	-	900	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	0.185	5	-	-	0.002	-	-	-	-
BH16_01 Jan 07_-	BH16	1/01/2007	water	-	7.51	-	-	-	-	-	232	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	0.323	3	-	-	0.002	-	-	<0.001	-
BH16_01 Apr 07_-	BH16	1/04/2007	water	-	7.25	-	-	-	-	-	232	-	-	-	106	39	5	2	19	31.4	16	-	3.25	3.34	***0.017***	0.465	0.036	-	-	7	-	-	0.002	-	-	-	-
BH16_16 Apr 13_-	BH16	16/04/2013	water	2.05	7.2	**231**	***1.08***	-1	13.3	*7*	150	-	110	<1	-	28	6.4	1.4	13	21	5	<0.1	-	-		-	-	-	-	-	4	-	-	-	-	-	-
BH16_22 Jul 13_-	BH16	22/07/2013	water	1.08	7.16	**334**	***1.79***	-9	15	*6.9*	110	-	70	<1	-	23	4.3	1.4	12	15	4	-	-	-	***0.016***	-	-	-	-	-	5	-	-	-	-	-	-
BH16_29 Oct 13_-	BH16	29/10/2013	water	1.02	**8.47**	**245**	***5.08***	55	18.9	7.3	150	-	92	<1	-	34	5	1.7	11	15	9	-	-	-	0.005	-	-	-	-	-	5	-	-	-	-	-	-
BH16_28 Jan 14_-	BH16	28/01/2014	water	1.2	7.67	**257**	***2.29***	-73	19.6	7.1	140	-	100	<1	-	36	4.8	2	12	18	7	<0.1	-	-	0.008	0.036	0.006	-	-	-	2	<0.005	0.003	0.005	<0.0001	<0.001	<0.005
BH16_16 Apr 14_-	BH16	16/04/2014	water	1.18	7.14	**135**	***2.67***	-8	22.2	*6.8*	140	-	80	<1	-	24	4.6	1.5	12	15	5	<0.1	-	-	***0.021***	-	-	-	-	-	2	-	-	-	-	-	-
BH16_09 Jul 14_-	BH16	9/07/2014	water	-	**8.05**	**142.3**	***3.85***	-133	19.7	7.1	140	-	76	<1	-	26	5.1	1.8	12	14	5	<0.1	-	-		-	-	-	-	-	5	-	-	-	-	-	-
BH16_16 Oct 14_-	BH16	16/10/2014	water	0.6	7.97	**303**	***1.8***	44	16.8	*6.9*	130	-	74	<1	-	33	5.5	2.4	16	32	5	<0.1	-	-		-	-	-	-	-	3	-	-	-	-	-	-
BH16_20 Jan 15_-	BH16	20/01/2015	water	1.2	*6.85*	**334**	***0.93***	-5	20.4	**6.4**	230	-	89	<5	-	36	7.4	2.4	40	42	6	0.1	-	-		-	-	-	-	-	7	-	-	-	-	-	-
BH16_13 Jul 16_-	BH16	13/07/2016	water	0.43	7.77	**249**	***4.29***	-6	13.6	*6.7*	250	-	45	<5	-	18	4.7	2.6	28	40	13	<0.1	-	-		-	-	-	-	-	10	-	-	-	-	-	-
BH16_18 Oct 16_-	BH16	18/10/2016	water	0.92	7.82	**256**	***3.49***	2	19.3	*6.9*	210	-	60	<5	-	24	4.9	2.2	47	62	10	<0.1	-	-		-	-	-	-	-	5	-	-	-	-	-	-
BH16_25 Jan 17_-	BH16	25/01/2017	water	1.19	***6.27***	**434**	***0.28***	7	19	**6.5**	250	-	130	<5	-	40	4.6	2	55	57	12	0.1	-	-	<0.005	0.49	0.1	-	-	-	3	<0.01	0.002	0.008	<0.0001	<0.001	<0.005
BH16_02 Jul 19_-	BH16	2/07/2019	water	1.05	7.12	**378.1**	***2.7***	-71.9	17	*6.6*	240	-	59	<5	-	25	6.6	2.9	47	84	16	<0.1	-	-	***0.03***	-	-	-	-	-	7	-	-	-	-	-	-
BH16_24 Oct 19_-	BH16	24/10/2019	water	1.17	*7*	**467**	***4.23***	-9.3	17.8	*6.9*	320	-	73	<5	-	30	6.1	2.6	47	89	14	<0.1	-	-	***0.026***	-	-	-	-	-	9	-	-	-	-	-	-
BH16_14 Jan 20_-	BH16	14/01/2020	water	1.41	***6.23***	**667**	***2.41***	-51.4	19.4	**6**	430	-	130	<5	-	63	6.4	3	69	120	21	0.1	-	-	***0.038***	0.14	0.086	-	-	-	6	0.01	0.004	0.023	<0.0001	<0.001	<0.005
BH16_22 Apr 20_-	BH16	22/04/2020	water	1.05	7.7	**462.5**	***3.14***	-73.3	19.2	7.2	260	-	110	<5	-	43	5.2	2.7	45	77	18	0.1	-	-	0.009	-	-	-	-	-	4	-	-	-	-	-	-
BH17_01 Jul 00_-	BH17	1/07/2000	water	-	*7*	**890**	-	-	-	-	530	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	1.4	2.44	5	-	-	0.001	-	-	0.004	-
BH17_01 Oct 00_-	BH17	1/10/2000	water	-	7.1	**900**	-	-	-	-	550	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.5	1.25	4	-	-	0.001	-	-	0.002	-
BH17_01 Jan 01_-	BH17	1/01/2001	water	-	7.1	**790**	-	-	-	-	480	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.5	2.11	7	-	-	0.001	-	-	0.007	-
BH17_01 Apr 01_-	BH17	1/04/2001	water	-	7.1	**720**	-	-	-	-	470	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.7	2.26	7	-	-	0.001	-	-	0.002	-
BH17_01 Jun 01_-	BH17	1/06/2001	water	-	*6.9*	**830**	-	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	0.3	2.24	6	-	-	0.003	-	-	0.002	-
BH17_01 Oct 01_-	BH17	1/10/2001	water	-	*6.9*	**930**	-	-	-	-	540	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.5	4.51	5	-	-	0.001	-	-	0.001	-
BH17_01 Jan 02_-	BH17	1/01/2002	water	-	*6.8*	**1100**	-	-	-	-	650	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.17***	-	-	0.5	9.25	7	-	-	0.001	-	-	0.001	-
BH17_01 Apr 02_-	BH17	1/04/2002	water	-	7.4	**880**	-	-	-	-	560	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.4	5.27	7	-	-	0.001	-	-	0.001	-
BH17_01 Jul 02_-	BH17	1/07/2002	water	-	7.4	**830**	-	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.3	2.49	5	-	-	0.001	-	-	0.001	-
BH17_01 Oct 02_-	BH17	1/10/2002	water	-	7.4	**870**	-	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.2	5	5	-	-	<0.001	-	-	0.03	-
BH17_01 Jan 03_-	BH17	1/01/2003	water	-	7.65	**770**	-	-	-	-	560	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	0.2	4.34	4	-	-	0.001	-	-	0.004	-
BH17_01 Apr 03_-	BH17	1/04/2003	water	-	7.79	**1000**	-	-	-	-	694	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.5	3.12	7	-	-	0.001	-	-	0.001	-
BH17_01 Jul 03_-	BH17	1/07/2003	water	-	7.44	**1120**	-	-	-	-	750	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.6	3.7	10	-	-	0.003	-	-	0.001	-
BH17_01 Oct 03_-	BH17	1/10/2003	water	-	7.5	**844**	-	-	-	-	564	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.8	4.71	9	-	-	0.001	-	-	0.001	-
BH17_01 Jan 04_-	BH17	1/01/2004	water	-	**8.15**	**858**	-	-	-	-	636	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	0.8	6.7	9	-	-	0.001	-	-	0.005	-
BH17_01 Apr 04_-	BH17	1/04/2004	water	-	7.57	-	-	-	-	-	402	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.06***	-	-	-	6	4	-	-	0.001	-	-	-	-
BH17_01 Jul 04_-	BH17	1/07/2004	water	-	7.41	-	-	-	-	-	452	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	0.24	12	-	-	0.001	-	-	-	-
BH17_01 Oct 04_-	BH17	1/10/2004	water	-	7.48	-	-	-	-	-	432	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.08***	-	-	-	3.97	8	-	-	0.001	-	-	-	-
BH17_01 Jan 05_-	BH17	1/01/2005	water	-	7.6	-	-	-	-	-	546	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.077***	-	-	-	5.17	4	-	-	0.01	-	-	0.01	-
BH17_01 Apr 05_-	BH17	1/04/2005	water	-	*6.96*	-	-	-	-	-	578	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.055***	-	-	-	2.97	6	-	-	0.001	-	-	-	-
BH17_01 Jul 05_-	BH17	1/07/2005	water	-	**8.4**	-	-	-	-	-	454	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.525***	-	-	-	7.42	7	-	-	<0.001	-	-	-	-
BH17_01 Oct 05_-	BH17	1/10/2005	water	-	7.05	-	-	-	-	-	472	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.218***	-	-	-	6.02	5	-	-	<0.001	-	-	-	-
BH17_01 Jan 06_-	BH17	1/01/2006	water	-	7.26	-	-	-	-	-	588	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.557***	-	-	-	2.92	7	-	-	<0.001	-	-	0.001	-
BH17_01 Apr 06_-	BH17	1/04/2006	water	-	*6.99*	-	-	-	-	-	670	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.13***	-	-	-	0.886	6	-	-	<0.001	-	-	-	-
BH17_01 Jul 06_-	BH17	1/07/2006	water	-	7.17	-	-	-	-	-	572	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.39***	-	-	-	2.32	8	-	-	<0.001	-	-	-	-
BH17_01 Oct 06_-	BH17	1/10/2006	water	-	7.18	-	-	-	-	-	542	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.241***	-	-	-	1.91	8	-	-	<0.001	-	-	-	-
BH17_01 Jan 07_-	BH17	1/01/2007	water	-	7.09	-	-	-	-	-	512	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.129***	-	-	-	2.55	6	-	-	<0.001	-	-	<0.001	-
BH17_01 Apr 07_-	BH17	1/04/2007	water	-	*6.98*	-	-	-	-	-	596	-	-	-	301	128	15	16	38	60.7	111	-	9.67	10	***1.16***	1.1	0.023	-	-	10	-	-	<0.001	-	-	-	-
BH17_17 Apr 13_-	BH17	17/04/2013	water	5.31	7.03	**656**	***0.22***	4	15.6	7.9	510	-	240	<1	-	96	7.9	6	42	44	95	0.13	-	-	***0.036***	-	-	-	-	-	5	-	-	-	-	-	-
BH17_22 Jul 13_-	BH17	22/07/2013	water	5.3	7.01	**553**	***0.78***	27	15	7.2	470	-	300	<1	-	160	11	4.9	42	39	85	-	-	-		-	-	-	-	-	4	-	-	-	-	-	-
BH17_14 Apr 14_-	BH17	14/04/2014	water	5.87	7.15	**868**	***2.44***	82	19.3	7.5	560	-	310	<1	-	170	12	6.2	54	51	75	0.1	-	-		-	-	-	-	-	5	-	-	-	-	-	-

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																
BH17_07 Jul 14_-	BH17	7/07/2014	water	5.19	***8.66***	**866**	***3.52***	109	16.5	7.2	530	-	270	<1	-	140	12	5	55	52	120	<0.1	-	-		-	-	-	-	-	5	-	-	-	-	-	-
BH17_22 Apr 15_-	BH17	22/04/2015	water	7.17	7.09	**918**	***0.93***	-25	17.9	7.3	680	-	400	<1	-	160	14	14	66	56	110	0.13	-	-		-	-	-	-	-	7	-	-	-	-	-	-
BH17_21 Jul 15_-	BH17	21/07/2015	water	5.48	*6.98*	**781**	***2.78***	-4	17.6	*7*	610	-	300	<1	-	120	12	10	57	49	100	0.1	-	-		-	-	-	-	-	5	-	-	-	-	-	-
BH17_20 Oct 15_-	BH17	20/10/2015	water	5.44	***6.17***	**1187**	***3.4***	24	24.7	7.4	740	-	430	<1	-	160	14	13	75	70	120	0.1	-	-	***0.044***	-	-	-	-	-	6	-	-	-	-	-	-
BH17_21 Jan 16_-	BH17	21/01/2016	water	5.21	7.21	**929**	***0.95***	16	23	7.3	800	-	490	<1	-	210	17	19	540	62	120	0.1	-	-	***0.021***	0.03	<0.01	-	-	-	10	<0.005	<0.001	0.088	<0.0001	<0.001	<0.01
BH17_14 Apr 16_-	BH17	14/04/2016	water	6.41	**8.21**	**575**	***2.56***	103	19	7.1	700	-	420	<5	-	150	12	11	95	61	85	0.1	-	-	***0.033***	-	-	-	-	-	8	-	-	-	-	-	-
BH17_21 Jul 16_-	BH17	21/07/2016	water	5.22	7.73	**924**	***2.97***	144	17.2	*7*	670	-	370	<5	-	140	13	12	83	51	99	0.1	-	-	***0.019***	-	-	-	-	-	7	-	-	-	-	-	-
BH17_02 Jul 19_-	BH17	2/07/2019	water	5.4	7.08	**677**	***3.49***	-33.6	18.5	7.3	820	-	420	<5	-	190	19	21	43	54	180	<0.1	-	-	***0.54***	-	-	-	-	-	8	-	-	-	-	-	-
BH17_24 Oct 19_-	BH17	24/10/2019	water	5.45	7.08	**1220**	***2.13***	72.3	19.1	*7*	870	-	520	<5	-	230	22	19	40	59	120	0.1	-	-	***0.9***	-	-	-	-	-	9	-	-	-	-	-	-
BH17_15 Jan 20_-	BH17	15/01/2020	water	5.47	7.06	**1231**	***1.13***	-2.3	19.7	*7*	810	-	600	<5	-	220	20	20	56	83	66	0.1	-	-	***0.95***	0.03	<0.005	-	-	-	11	0.01	0.004	0.1	<0.0001	<0.001	<0.005
BH17_23 Apr 20_-	BH17	23/04/2020	water	5.36	7.06	**1201**	***0.7***	-12.1	20.1	*7*	840	-	550	<5	-	190	17	15	60	80	63	0.1	-	-	***0.52***	-	-	-	-	-	11	-	-	-	-	-	-
BH18_01 Jun 01_-	BH18	1/06/2001	water	-	*6.9*	**830**	-	-	-	-	570	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.53	1	-	-	0.003	-	-	0.002	-
BH18_01 Oct 01_-	BH18	1/10/2001	water	-	*6.8*	**760**	-	-	-	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.5	0.96	3	-	-	0.002	-	-	0.001	-
BH18_01 Jan 02_-	BH18	1/01/2002	water	-	*6.7*	**820**	-	-	-	-	480	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.7	1.22	4	-	-	0.001	-	-	0.001	-
BH18_01 Apr 02_-	BH18	1/04/2002	water	-	7.2	**850**	-	-	-	-	510	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.2	1.1	3	-	-	0.002	-	-	0.001	-
BH18_01 Jun 02_-	BH18	1/06/2002	water	-	7.3	**750**	-	-	-	-	440	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.1	1.42	1	-	-	0.002	-	-	0.001	-
BH18_01 Oct 02_-	BH18	1/10/2002	water	-	7.4	**710**	-	-	-	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.1	1.86	1	-	-	0.002	-	-	0.026	-
BH18_01 Jan 03_-	BH18	1/01/2003	water	-	7.67	**590**	-	-	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	<0.1	1.91	1	-	-	0.002	-	-	0.002	-
BH18_01 Apr 03_-	BH18	1/04/2003	water	-	7.39	**687**	-	-	-	-	452	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.3	2.14	12	-	-	0.002	-	-	<0.001	-
BH18_01 Jul 03_-	BH18	1/07/2003	water	-	7.43	**1470**	-	-	-	-	1010	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.11***	-	-	3.1	15.9	21	-	-	0.004	-	-	<0.005	-
BH18_01 Oct 03_-	BH18	1/10/2003	water	-	7.37	**947**	-	-	-	-	606	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	1.1	4.58	9	-	-	0.003	-	-	<0.001	-
BH18_01 Jan 04_-	BH18	1/01/2004	water	-	7.91	**895**	-	-	-	-	642	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.3	2.17	7	-	-	0.002	-	-	<0.005	-
BH18_01 Apr 04_-	BH18	1/04/2004	water	-	7.34	-	-	-	-	-	516	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	-	1.01	6	-	-	0.002	-	-	-	-
BH18_01 Jul 04_-	BH18	1/07/2004	water	-	7.41	-	-	-	-	-	450	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	2.9	<1	-	-	0.002	-	-	-	-
BH18_01 Oct 04_-	BH18	1/10/2004	water	-	7.38	-	-	-	-	-	744	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.08***	-	-	-	5.92	6	-	-	0.003	-	-	-	-
BH18_01 Jan 05_-	BH18	1/01/2005	water	-	7.48	-	-	-	-	-	654	-	-	-	-	-	-	-	-	-	-	-	-	-	***1.43***	-	-	-	3.35	3	-	-	0.002	-	-	<0.001	-
BH18_01 Apr 05_-	BH18	1/04/2005	water	-	*6.82*	-	-	-	-	-	634	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.053***	-	-	-	2.52	<1	-	-	0.002	-	-	-	-
BH18_01 Jul 05_-	BH18	1/07/2005	water	-	7.96	-	-	-	-	-	534	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.033***	-	-	-	3.78	<1	-	-	0.002	-	-	-	-
BH18_01 Oct 05_-	BH18	1/10/2005	water	-	*6.97*	-	-	-	-	-	540	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.062***	-	-	-	4.11	<1	-	-	0.002	-	-	-	-
BH18_01 Jan 06_-	BH18	1/01/2006	water	-	7.16	-	-	-	-	-	606	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.021***	-	-	-	4.38	1	-	-	0.002	-	-	0.002	-
BH18_01 Apr 06_-	BH18	1/04/2006	water	-	*6.9*	-	-	-	-	-	618	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	3.93	2	-	-	0.002	-	-	-	-
BH18_01 Jul 06_-	BH18	1/07/2006	water	-	7.02	-	-	-	-	-	602	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	4	2	-	-	0.002	-	-	-	-
BH18_01 Oct 06_-	BH18	1/10/2006	water	-	*6.88*	-	-	-	-	-	676	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	8.51	4	-	-	0.002	-	-	-	-
BH18_01 Jan 07_-	BH18	1/01/2007	water	-	*6.94*	-	-	-	-	-	664	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	6.85	1	-	-	0.002	-	-	<0.001	-
BH18_01 Apr 07_-	BH18	1/04/2007	water	-	*6.78*	-	-	-	-	-	730	-	-	-	458	166	19	2	44	106	37	-	11.8	12.9	***0.109***	2.99	0.021	-	-	6	-	-	0.002	-	-	-	-
BH18_16 Apr 13_-	BH18	16/04/2013	water	27.02	7.14	**4500**	***0.41***	-6	18.4	7.5	910	-	530	<1	-	190	21	2.7	66	97	72	<0.1	-	-	***0.031***	-	-	-	-	-	3	-	-	-	-	-	-
BH18_30 Oct 13_-	BH18	30/10/2013	water	5.36	7.96	**753**	***2.31***	-1	16.9	7.7	630	-	290	<1	-	140	12	5.7	47	40	120	-	-	-	***0.011***	-	-	-	-	-	5	-	-	-	-	-	-
BH18_28 Jan 14_-	BH18	28/01/2014	water	5.5	7.17	**907**	***2.01***	51	18	7.4	490	-	300	<1	-	170	13	6	47	53	100	<0.1	-	-	0.008	2.5	0.027	-	-	-	4	<0.005	<0.001	0.042	<0.0001	<0.001	<0.005
BH18_16 Apr 14_-	BH18	16/04/2014	water	26.99	*6.93*	**52.5**	***2.25***	50	26.1	*6.8*	830	-	540	<1	-	200	31	3.1	87	100	72	0.11	-	-	0.006	-	-	-	-	-	2	-	-	-	-	-	-
BH18_29 Oct 14_-	BH18	29/10/2014	water	29.8	**8.15**	**831**	***3.79***	72	19.2	7.1	810	-	530	<1	-	220	33	9.2	52	51	42	0.11	-	-		-	-	-	-	-	5	-	-	-	-	-	-
BH18_21 Jan 15_-	BH18	21/01/2015	water	27.99	*6.87*	**1175**	***0.97***	64	21.8	*7*	880	-	500	<1	-	220	31	5	77	94	80	0.11	-	-	0.008	5.6	<0.01	-	-	-	3	<0.005	0.003	0.027	<0.0001	-	<0.01
BH18_23 Apr 15_-	BH18	23/04/2015	water	27.96	*6.86*	**1126**	***1.76***	81	21.9	*7*	720	-	550	<1	-	190	33	3	96	100	74	0.14	-	-		-	-	-	-	-	4	-	-	-	-	-	-
BH18_21 Jul 15_-	BH18	21/07/2015	water	26.75	*6.75*	**819**	***5.24***	69	17.6	*7*	820	-	500	<1	-	210	27	8	44	67	23	0.1	-	-		-	-	-	-	-	5	-	-	-	-	-	-
BH18_21 Oct 15_-	BH18	21/10/2015	water	26.93	7.02	**495**	***5.75***	35	22.4	7.1	920	-	460	<1	-	190	27	4.7	84	120	97	0.1	-	-		-	-	-	-	-	4	-	-	-	-	-	-
BH18_21 Jan 16_-	BH18	21/01/2016	water	27.12	7.09	**1115**	***7.25***	13	25.5	7.3	830	-	560	<1	-	200	33	4.2	93	91	55	0.1	-	-	0.007	1.7	<0.01	-	-	-	5	<0.005	0.007	0.022	<0.0001	<0.001	<0.01
BH18_19 Apr 16_-	BH18	19/04/2016	water	27.87	*6.94*	**1111**	***3.02***	59	21.9	7.2	880	-	510	<5	-	190	30	3.6	83	99	50	0.1	-	-		-	-	-	-	-	4	-	-	-	-	-	-
BH18_18 Oct 16_-	BH18	18/10/2016	water	5.37	7.6	**1005**	***2.75***	19	19.2	7.5	700	-	360	<5	-	180	18	14	58	45	150	0.1	-	-	***0.94***	-	-	-	-	-	6	-	-	-	-	-	-
BH18_19 Jan 17_-	BH18	19/01/2017	water	5.47	7.07	**934**	***2.04***	61	19.5	7.4	650	-	270	<5	-	140	15	12	49	55	190	0.1	-	-	***0.78***	0.064	<0.005	-	-	-	9	<0.01	<0.001	0.067	<0.0001	<0.001	<0.005
BH18_03 Jul 19_-	BH18	3/07/2019	water	27.11	7.02	**1280**	***2.37***	101.4	21.6	7.2	800	-	550	<5	-	190	32	6.4	58	90	60	0.1	-	-	***1.9***	-	-	-	-	-	3	-	-	-	-	-	-
BH18_25 Oct 19_-	BH18	25/10/2019	water	27.13	7.18	**1300**	***4.26***	61.7	23.2	7.5	910	-	510	<5	-	200	30	7.8	62	83	52	0.1	-	-	***1.4***	-	-	-	-	-	3	-	-	-	-	-	-
BH18_13 Jan 20_-	BH18	13/01/2020	water	27.28	7.04	**1299**	***1.88***	-154.8	23.1	*6.9*	870	-	500	<5	-	180	29	6.8	65	88	58	0.1	-	-	***1.9***	17	0.019	-	-	-	4	<0.01	0.002	0.031	<0.0001	<0.001	<0.005
BH18_23 Apr 20_-	BH18	23/04/2020	water	26.97	7.09	**1310**	***1.62***	97.4	22.5	7.1	880	-	530	<5	-	190	30	6.2	56	83	67	0.1	-	-	***0.3***	-	-	-	-	-	3	-	-	-	-	-	-
BH19_01 Jul 06_-	BH19	1/07/2006	water	-	*7*	-	-	-	-	-	960	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.608***	-	-	-	<0.01	16	-	-	0.066	-	-	-	-
BH19_01 Oct 06_-	BH19	1/10/2006	water	-	*6.87*	-	-	-	-	-	1200	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.556***	-	-	-	<0.01	18	-	-	0.07	-	-	-	-
BH19 _01 Jan 07_-	BH19	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_01 Jan 07_-	BH19	1/01/2007	water	-	*7*	-	-	-	-	-	1110	-	-	-	-	-	-	-	-	-	-	-	-	-	***1.92***	-	-	-	<0.01	12	-	-	0.047	-	-	<0.001	-
BH19_01 Apr 07_-	BH19	1/04/2007	water	-	*6.84*	-	-	-	-	-	1100	-	-	-	448	138	28	14	240	460	7	-	20	22.1	***3.94***	<0.01	0.015	-	-	17	-	-	0.051	-	-	-	-
BH19_16 Apr 13_-	BH19	16/04/2013	water	2.75	7.54	**836**	***1.1***	-154	25	7.5	630	-	330	<1	-	130	14	9.9	61	70	89	0.14	-	-	***1.7***	-	-	-	-	-	14	-	-	-	-	-	-
BH19_09 Jul 13_-	BH19	9/07/2013	water	26.71	*6.86*	**755**	***4.4***	135	20.1	7.5	730	-	510	<1	-	200	30	9	42	52	31	-	-	-		-	-	-	-	-	4	-	-	-	-	-	-
BH19_29 Oct 13_-	BH19	29/10/2013	water	26.85	**8.42**	**1401**	***4.18***	37	21.1	7.2	990	-	540	<1	-	260	30	4.5	74	82	86	-	-	-	**0.01**	-	-	-	-	-	5	-	-	-	-	-	-
BH19_28 Jan 14_-	BH19	28/01/2014	water	27.02	7.02	**1405**	***5.49***	55	22.8	*7*	870	-	530	<1	-	210	28	3.4	79	110	82	0.11	-	-	0.006	0.98	0.018	-	-	-	2	<0.005	0.004	0.023	<0.0001	<0.001	<0.005
BH19_16 Apr 14_-	BH19	16/04/2014	water	3.1	7.22	**914**	***1.26***	-73	19.9	*7*	670	-	390	<1	-	150	15	10	71	71	65	0.14	-	-	***1.4***	-	-	-	-	-	12	-	-	-	-	-	-
BH19_07 Jul 14_-	BH19	7/07/2014	water	-	7.91	**397**	***2.01***	370	13.7	7.2	510	-	280	<1	-	120	12	10	45	34	67	0.14	-	-	***0.71***	-	-	-	-	-	9	-	-	-	-	-	-

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions								Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																															
BH19_29 Jul 14_-	BH19	29/07/2014	water	2.87	7.57	**867**	***2.78***	115	18.5	7.3	540	-	330	<1	-	210	24	14	47	38	110	0.18	-	-	***0.98***	-	-	-	-	-	200	-	-	-	-	-	-
BH19_16 Oct 14_-	BH19	16/10/2014	water	3.18	*6.97*	**884**	***1.41***	59	17.6	7.1	660	-	310	<1	-	170	19	5.8	47	-	-	<0.1	-	-	0.009	-	-	-	-	-	30	-	-	-	-	-	-
BH19_20 Jan 15_-	BH19	20/01/2015	water	3.25	***6.49***	**919**	***0.03***	87	19.6	7.1	800	-	300	<1	-	170	18	6.1	52	47	200	<0.1	-	-	0.005	0.009	<0.01	-	-	-	19	0.09	0.001	0.012	<0.0001	-	<0.01
BH19_22 Apr 15_-	BH19	22/04/2015	water	2.92	*6.87*	**1222**	***2.72***	68	18.9	*6.8*	870	-	430	<1	-	190	22	10	65	48	160	<0.1	-	-	***0.059***	-	-	-	-	-	30	-	-	-	-	-	-
BH19_21 Jul 15_-	BH19	21/07/2015	water	3.28	*6.67*	**1199**	***2.71***	29	16.8	*6.8*	1100	-	390	<1	-	260	26	7.5	63	78	330	<0.1	-	-	0.007	-	-	-	-	-	35	-	-	-	-	-	-
BH19_20 Oct 15_-	BH19	20/10/2015	water	3.57	*6.59*	**337**	***1.85***	84	20.6	7.2	1600	-	450	<1	-	320	35	8.1	68	86	480	<0.1	-	-	***0.048***	-	-	-	-	-	65	-	-	-	-	-	-
BH19_20 Jan 16_-	BH19	20/01/2016	water	3.34	*6.82*	**1546**	***2.63***	60	24.7	*6.9*	1300	-	400	<1	-	300	34	9.1	68	63	370	<0.1	-	-	***0.05***	4.5	0.31	-	-	-	76	0.05	0.002	0.026	<0.0001	<0.001	<0.01
BH19_14 Apr 16_-	BH19	14/04/2016	water	3.42	7.85	**1415**	***1.61***	21	22	*6.9*	1100	-	470	<5	-	290	28	9.4	67	49	270	<0.1	-	-		-	-	-	-	-	160	-	-	-	-	-	-
BH19_13 Jul 16_-	BH19	13/07/2016	water	26.74	*6.79*	**1234**	***3.8***	91	16.6	7.6	420	-	240	<5	-	97	9.7	1.1	41	74	21	0.2	-	-		-	-	-	-	-	3	-	-	-	-	-	-
BH19_18 Oct 16_-	BH19	18/10/2016	water	26.87	*6.97*	**780**	***2.29***	-22	17	*7*	820	-	570	<5	-	210	31	7.2	70	100	25	0.1	-	-	***0.016***	-	-	-	-	-	3	-	-	-	-	-	-
BH19_19 Jan 17_-	BH19	19/01/2017	water	27.83	7.15	**1270**	***2.09***	51	22	7.2	890	-	420	<5	-	180	28	5.1	100	130	210	0.1	-	-	***0.29***	6.6	<0.005	-	-	-	5	<0.01	0.015	0.029	0.0002	<0.001	<0.005
BH19A_02 Jul 19_-	BH19A	2/07/2019	water	3.44	7.46	**253.2**	***3.81***	2.7	16.8	*7*	360	-	100	<5	-	94	8.6	6.6	21	32	140	<0.1	-	-	***0.018***	-	-	-	-	-	51	-	-	-	-	-	-
BH19A_24 Oct 19_-	BH19A	24/10/2019	water	3.57	7.38	**655**	***3.64***	54.3	18.7	*7*	490	-	96	<5	-	120	10	6.7	24	39	160	<0.1	-	-	<0.005	-	-	-	-	-	37	-	-	-	-	-	-
BH19A_15 Jan 20_-	BH19A	15/01/2020	water	3.88	***5.88***	**762**	***0.63***	-19.6	21.5	***5.8***	590	-	160	<5	-	120	11	6.1	27	170	40	<0.1	-	-	***0.099***	0.084	<0.005	-	-	-	16	0.14	0.002	0.016	<0.0001	0.001	<0.005
BH19A_22 Apr 20_-	BH19A	22/04/2020	water	3.5	7.86	**508**	***1.96***	-60.3	22.5	7.1	330	-	140	<5	-	92	7.1	5.6	25	27	92	<0.1	-	-	***0.11***	-	-	-	-	-	57	-	-	-	-	-	-
BH19B_18 Nov 19_-	BH19B	18/11/2019	water	4.28	*6.51*	**1115**	***0.16***	70.9	21.3	*7*	740	***740***	410	<5	-	170	29	9.2	34	57	140	<0.1	-	-	***0.069***	<0.005	<0.005	-	-	-	34	0.15	0.024	0.01	<0.0001	<0.001	<0.005
BH19B_15 Jan 20_-	BH19B	15/01/2020	water	4.4	*6.78*	**975**	***0.05***	-28	20.6	*6.8*	700	-	440	<5	-	160	21	9.2	40	68	63	<0.1	-	-	***1.1***	<0.005	<0.005	-	-	-	26	0.2	0.089	0.035	<0.0001	0.001	<0.05
BH19B_22 Apr 20_-	BH19B	22/04/2020	water	4.19	7.21	**976**	***2.24***	-13.5	21.9	7.2	660	-	410	<5	-	180	24	7	38	44	130	<0.1	-	-	***0.1***	-	-	-	-	-	73	-	-	-	-	-	-
BH20_01 Jul 06_-	BH20	1/07/2006	water	-	7.11	-	-	-	-	-	1000	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.65***	-	-	-	<0.01	10	-	-	0.019	-	-	-
BH20_01 Oct 06_-	BH20	1/10/2006	water	-	*6.94*	-	-	-	-	-	1900	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.515***	-	-	-	0.013	12	-	-	0.02	-	-	-
BH20 _01 Jan 07_-	BH20	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_01 Jan 07_-	BH20	1/01/2007	water	-	*6.96*	-	-	-	-	-	800	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.53***	-	-	-	<0.01	9	-	-	0.019	-	-	-
BH20_01 Apr 07_-	BH20	1/04/2007	water	-	*6.85*	-	-	-	-	-	910	-	-	-	364	175	25	10	53	90	211	-	13.3	14.2	***0.537***	<0.01	0.09	-	-	13	-	-	0.021	-	-	-
BH20_16 Apr 13_-	BH20	16/04/2013	water	1.75	7.59	28.4	***1.92***	-974	18	7.5	490	-	240	<1	-	91	14	7.8	52	51	66	<0.1	-	-	***0.46***	-	-	-	-	-	18	-	-	-	-	-	-
BH20_28 Jan 14_-	BH20	28/01/2014	water	3.02	7.08	**1208**	***2.67***	66	18.5	7.1	830	-	380	<1	-	180	19	14	94	120	99	0.12	-	-	***1.2***	<0.1	<0.01	-	-	-	18	<0.005	0.005	0.066	<0.0001	<0.001	<0.005
BH20_07 Jul 14_-	BH20	7/07/2014	water	-	**8.27**	**405**	***4.54***	53	12.3	7.3	440	-	210	<1	-	110	17	10	55	46	86	<0.1	-	-	***0.32***	-	-	-	-	-	44	-	-	-	-	-	-
BH20_21 Jan 15_-	BH20	21/01/2015	water	2.11	7.17	**645**	***0.24***	-134	21.8	7.3	700	-	310	<1	-	150	24	18	86	95	63	<0.1	-	-	***1.6***	0.006	0.009	-	-	-	130	<0.005	0.002	0.11	<0.0001	-	<0.01
BH20_27 Apr 15_-	BH20	27/04/2015	water	5.8	7.9	**259.9**	***0.23***	23	15.1	*6.9*	350	-	50	<1	-	35	6.7	6	34	40	35	<0.1	-	-	***0.018***	-	-	-	-	-	18	-	-	-	-	-	-
BH20_20 Oct 15_-	BH20	20/10/2015	water	2.32	7.17	**262**	***1.85***	74	19.9	7.5	400	-	190	<1	-	97	14	9.8	54	72	55	<0.1	-	-	***0.025***	-	-	-	-	-	19	-	-	-	-	-	-
BH20_10 Mar 16_-	BH20	10/03/2016	water	2.87	7.51	**801**	***2.41***	-40	20.8	*7*	500	-	200	<1	-	96	14	7.1	50	49	59	0.2	-	-	***0.43***	10	0.009	-	-	-	21	<0.005	<0.001	0.058	<0.0001	<0.001	<0.01
BH20_19 Apr 16_-	BH20	19/04/2016	water	2.56	***5.73***	**425**	***2.01***	15	20.8	*6.6*	290	-	59	<5	-	51	8	3.9	32	34	61	0.1	-	-		-	-	-	-	-	9	-	-	-	-	-	-
BH20_25 Jan 17_-	BH20	25/01/2017	water	3.41	***6.47***	**1248**	***0.3***	53	19.9	7.3	960	-	370	<5	-	190	21	9.2	81	52	250	<0.1	-	-	***0.081***	0.28	0.055	-	-	-	21	0.08	0.001	0.014	<0.0001	<0.001	<0.005
BH20_02 Jul 19_-	BH20	2/07/2019	water	2.28	7.34	**522**	***10.15***	24.2	16.5	*6.9*	460	-	92	<5	-	90	14	9.6	37	51	140	0.1	-	-	***0.048***	-	-	-	-	-	12	-	-	-	-	-	-
BH20_24 Oct 19_-	BH20	24/10/2019	water	2.48	7.24	**566**	***6.54***	27.5	18.3	7.3	480	-	200	<5	-	92	13	5.7	31	45	85	0.2	-	-	***0.2***	-	-	-	-	-	9.9	-	-	-	-	-	-
BH20_14 Jan 20_-	BH20	14/01/2020	water	2.51	***6.01***	**688**	***0.29***	15.8	21.7	***6.1***	570	-	230	<5	-	100	16	5.5	40	60	100	0.1	-	-	***0.5***	0.01	<0.005	-	-	-	7	0.05	0.007	0.073	<0.0001	<0.001	<0.05
BH20_22 Apr 20_-	BH20	22/04/2020	water	2.3	7.72	**746**	***3.01***	21.3	20.3	7.4	520	-	200	<5	-	72	21	7.4	74	67	100	0.1	-	-	<0.005	-	-	-	-	-	15	-	-	-	-	-	-
BH22_01 Jul 06_-	BH22	1/07/2006	water	-	7.6	-	-	-	-	-	460	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.053***	-	-	-	0.53	9	-	-	0.007	-	-	-
BH22_01 Oct 06_-	BH22	1/10/2006	water	-	7.42	-	-	-	-	-	600	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.095***	-	-	-	0.47	7	-	-	0.003	-	-	-
BH22 _01 Jan 07_-	BH22	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_01 Jan 07_-	BH22	1/01/2007	water	-	7.39	-	-	-	-	-	486	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.081***	-	-	-	0.627	7	-	-	0.006	-	-	-
BH22_01 Apr 07_-	BH22	1/04/2007	water	-	7.15	-	-	-	-	-	524	-	-	-	146	87	15	6	50	81.1	143	-	7.92	8.18	***0.108***	0.465	0.051	-	-	12	-	-	0.005	-	-	-
BH22_22 Jul 13_-	BH22	22/07/2013	water	1.77	7.67	**312**	***2.13***	-14	15.6	7.1	380	-	180	<1	-	100	13	6.3	46	45	95	-	-	-	***0.041***	-	-	-	-	-	22	-	-	-	-	-	-
BH22_29 Oct 13_-	BH22	29/10/2013	water	2.17	7.71	**896**	***2.14***	-26	18.1	7.5	660	-	300	<1	-	130	19	10	74	70	110	-	-	-	***0.46***	-	-	-	-	-	19	-	-	-	-	-	-
BH22_28 Jan 14_-	BH22	28/01/2014	water	2.2	7.36	**1065**	***3.35***	-58	19.2	7.3	730	-	370	<1	-	150	22	11	82	95	110	0.18	-	-	***0.92***	0.011	0.019	-	-	-	13	<0.005	0.004	0.077	<0.0001	<0.001	<0.005
BH22_16 Apr 14_-	BH22	16/04/2014	water	2.86	7.84	**388**	***1.61***	-33	18.4	*6.8*	270	-	120	<1	-	62	4.7	4.4	15	18	56	0.32	-	-	***0.026***	-	-	-	-	-	6	-	-	-	-	-	-
BH22_07 Jul 14_-	BH22	7/07/2014	water	-	**8.29**	**314**	***1.8***	-62	16.6	7.6	250	-	140	<1	-	62	4.3	4.1	13	13	24	0.29	-	-		-	-	-	-	-	19	-	-	-	-	-	-
BH22_16 Oct 14_-	BH22	16/10/2014	water	2.23	-	**375**	***1.36***	7	16.4	7.6	230	-	120	<1	-	55	3.9	4	18	20	33	0.3	-	-	0.006	-	-	-	-	-	14	-	-	-	-	-	-
BH22_20 Jan 15_-	BH22	20/01/2015	water	2.92	***6.24***	**302**	***0.4***	12	19.2	7.2	290	-	91	<1	-	50	3.9	3.5	12	21	29	0.31	-	-	***0.026***	0.016	<0.01	-	-	-	32	0.02	0.004	0.012	<0.0001	-	<0.01
BH22_22 Apr 15_-	BH22	22/04/2015	water	2.54	7.62	**298**	***1.2***	-27	17.3	7.2	200	-	120	<1	-	50	3.4	3.4	16	18	19	0.3	-	-	***0.011***	-	-	-	-	-	39	-	-	-	-	-	-
BH22_22 Jul 15_-	BH22	22/07/2015	water	2.3	7.71	**596**	***5.55***	-84	12.8	7.2	380	-	160	<1	-	72	8	7.1	48	57	62	0.3	-	-	***0.4***	-	-	-	-	-	14	-	-	-	-	-	-
BH22_20 Oct 15_-	BH22	20/10/2015	water	3.01	*6.9*	**2500**	***2.19***	57	18.3	7.5	500	-	230	<1	-	100	12	8	61	70	94	0.2	-	-	***0.097***	-	-	-	-	-	18	-	-	-	-	-	-
BH22_20 Jan 16_-	BH22	20/01/2016	water	2.47	7.19	**835**	***3.19***	-48	20.8	7.4	530	-	280	<1	-	110	15	11	74	55	71	0.1	-	-	0.008	0.04	<0.01	-	-	-	22	0.01	0.004	0.028	<0.0001	<0.001	<0.01
BH22_14 Apr 16_-	BH22	14/04/2016	water	2.77	*6.9*	**522**	***0.65***	-200	19.3	*7*	310	-	190	<5	-	68	8.9	8.4	31	21	22	0.4	-	-	***0.14***	-	-	-	-	-	28	-	-	-	-	-	-
BH22_13 Jul 16_-	BH22	13/07/2016	water	1.35	7.18	**273**	***3.83***	-47	17.3	***6.1***	310	-	40	<5	-	63	8.9	6.5	27	32	120	<0.1	-	-	***0.061***	-	-	-	-	-	38	-	-	-	-	-	-
BH22_18 Oct 16_-	BH22	18/10/2016	water	1.97	7.65	**519**	***1.96***	-34	17.3	7.4	300	-	210	<5	-	73	10	4.9	28	29	19	<0.1	-	-	***0.088***	-	-	-	-	-	7	-	-	-	-	-	-
BH22_25 Jan 17_-	BH22	25/01/2017	water	2.04	***6.01***	**652**	***0.28***	-15	20	***6.5***	450	-	200	<5	-	90	12	5.4	39	34	110	<0.1	-	-	***0.78***	<0.005	<0.005	-	-	-	8	<0.01	0.002	0.057	<0.0001	<0.001	<0.05
BH22_02 Jul 19_-	BH22	2/07/2019	water	2.8	7.43	**820**	***5.29***	-75.1	18.5	7.6	610	-	270	<5	-	110	16	13	52	72	130	0.2	-	-	***0.12***	-	-	-	-	-	12	-	-	-	-	-	-
BH22_24 Oct 19_-	BH22	24/10/2019	water	3.16	7.48	**574**	***1.29***	56.3	18.4	7.5	420	-	180	<5	-	83	12	12	36	43	76	0.3	-	-	***0.084***	-	-	-	-	-	16	-	-	-	-	-	-
BH22_14 Jan 20_-	BH22	14/01/2020	water	3.52	7.45	**452.2**	***0.11***	-23	20.5	7.4	320	-	120	<5	-	56	8.4	11	24	35	64	0.3	-	-	***0.13***	<0.005	<0.005	-	-	-	8	0.04	0.01	0.013	<0.0001	<0.001	<0.005
BH22_22 Apr 20_-	BH22	22/04/2020	water	3.16	7.65	**687**	***0.85***	-71.6	20.4	7.5	430	-	240	<5	-	91	12	11	39	57	75	0.3	-	-	***0.19***	-	-	-	-	-	17	-	-	-	-	-	-
BH23_01 Jul 06_-	BH23	1/07/2006	water	-	7.75	-	-	-	-	-	340	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.016***	-	-	-	0.588	3	-	-	0.006	-	-	-
BH23_01 Oct 06_-	BH23	1/10/2006	water	-	7.34	-	-	-	-	-	480	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	0.835	3	-	-	0.005	-	-	-
BH23 _01 Jan 07_-	BH23	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																															
BH23_01 Jan 07_-	BH23	1/01/2007	water	-	7.463	-	-	-	-	-	452	-	-	-	-	-	-	-	-	-	-	-	***0.017***	-	-	-	0.475	3	-	-	0.006	-	-	<0.001	-
BH23_01 Apr 07_-	BH23	1/04/2007	water	-	7.38	-	-	-	-	-	364	-	-	-	150	66	6	5	29	56.7	36	-	5.2	5.34	***0.032***	0.821	0.075	-	-	4	-	-	0.006	-	-	-	-
BH23_16 Apr 13_-	BH23	16/04/2013	water	-	***10.72***	**8.6**	***1.79***	-1033	19.7	7.6	300	-	170	<1	-	63	5.4	2.6	32	43	11	<0.1	-	-		-	-	-	-	-	16	-	-	-	-	-
BH23_09 Jul 13_-	BH23	9/07/2013	water	2.15	**8**	**251**	***0.98***	-65	15.2	7.6	240	-	150	<1	-	-	8.3	3.4	16	20	34	-	-	-	***0.027***	-	-	-	-	-	48	-	-	-	-	-
BH23_29 Oct 13_-	BH23	29/10/2013	water	3.18	7.89	**259**	***1.1***	-101	17.6	7.6	220	-	130	<1	-	87	5.2	3.7	14	10	28	-	-	-	0.006	-	-	-	-	-	39	-	-	-	-	-
BH23_28 Jan 14_-	BH23	28/01/2014	water	3.33	**8.05**	**372**	***1.51***	-32	18.6	7.2	230	-	160	<1	-	61	5.6	4	15	13	24	0.37	-	-	0.005	0.12	<0.01	-	-	-	10	0.05	0.005	0.011	<0.0001	<0.001	<0.005
BH23_16 Apr 14_-	BH23	16/04/2014	water	3.78	7.36	**315**	***1.4***	-49	20.1	7.1	300	-	180	<1	-	72	6.6	4.5	35	45	22	0.1	-	-	***0.072***	-	-	-	-	-	5	-	-	-	-	-
BH23_07 Jul 14_-	BH23	7/07/2014	water	-	**8.04**	**458**	***2.29***	-74	17.2	7.5	320	-	180	<1	-	77	7.6	6.4	35	43	29	0.11	-	-	***0.041***	-	-	-	-	-	5	-	-	-	-	-
BH23_16 Oct 14_-	BH23	16/10/2014	water	2.9	7.34	**657**	***1.79***	-17	17.3	7.4	370	-	200	<1	-	93	8.5	10	39	62	36	0.13	-	-	***0.018***	-	-	-	-	-	8	-	-	-	-	-
BH23_20 Jan 15_-	BH23	20/01/2015	water	3.6	***5.63***	**517**	***0.27***	87	19.9	***6.5***	300	-	160	<1	-	68	7.1	5.7	37	54	20	0.15	-	-		0.69	0.027	-	-	-	6	<0.005	0.003	0.023	<0.0001	-	<0.01
BH23_22 Apr 15_-	BH23	22/04/2015	water	3.49	7.61	**418**	***2.08***	14	17.7	*7*	240	-	110	<1	-	60	5.8	3.7	28	36	18	<0.1	-	-	0.007	-	-	-	-	-	8	-	-	-	-	-
BH23_22 Jul 15_-	BH23	22/07/2015	water	3.18	7.13	**629**	***5.31***	-100	15.5	*7*	450	-	230	<1	-	100	9.1	6.8	38	53	51	0.2	-	-	***0.04***	-	-	-	-	-	11	-	-	-	-	-
BH23_20 Oct 15_-	BH23	20/10/2015	water	3.42	7.04	**266**	***3.64***	4	23	7.4	410	-	250	<1	-	92	9.3	5.7	59	79	29	<0.1	-	-		-	-	-	-	-	15	-	-	-	-	-
BH23_20 Jan 16_-	BH23	20/01/2016	water	3.18	7.12	**789**	***2.7***	-19	21.6	7.2	460	-	280	<1	-	110	9	9.1	53	39	35	0.2	-	-	0.009	1.4	0.017	-	-	-	15	<0.005	0.006	0.031	<0.0001	<0.001	<0.01
BH23_14 Apr 16_-	BH23	14/04/2016	water	3.3	***8.98***	**722**	***1.72***	-15	20.4	*6.7*	560	-	200	<5	-	110	7.6	11	41	22	67	0.2	-	-	***0.044***	-	-	-	-	-	12	-	-	-	-	-
BH23_13 Jul 16_-	BH23	13/07/2016	water	1.97	7.55	**769**	***2.11***	-85	11.1	7.3	480	-	160	<5	-	93	13	10	57	54	140	0.3	-	-	***1***	-	-	-	-	-	16	-	-	-	-	-
BH23_18 Oct 16_-	BH23	18/10/2016	water	2.62	7.51	**817**	***1.71***	23	18.5	*6.8*	550	-	190	<5	-	120	16	11	53	53	130	0.2	-	-	***1.4***	-	-	-	-	-	16	-	-	-	-	-
BH23_25 Jan 17_-	BH23	25/01/2017	water	3.27	7.03	**846**	***0.27***	-86	16.4	7.7	540	-	260	<5	-	97	14	12	67	59	94	0.4	-	-	***5.7***	<0.005	<0.005	-	-	-	14	<0.01	0.005	0.015	<0.0001	<0.001	<0.005
BH23_02 Jul 19_-	BH23	2/07/2019	water	2.87	7.33	**256.7**	***3.54***	-160.7	18.5	7.3	340	-	190	<5	-	66	7.5	6.2	28	50	23	0.2	-	-	***0.032***	-	-	-	-	-	7	-	-	-	-	-
BH23_24 Oct 19_-	BH23	24/10/2019	water	3.57	7.35	**551**	7.59	52.4	20.8	7.2	420	-	180	<5	-	80	9.7	9	30	61	23	0.1	-	-	***0.56***	-	-	-	-	-	15	-	-	-	-	-
BH23_15 Jan 20_-	BH23	15/01/2020	water	3.28	***6.05***	**585**	***0.15***	-51.9	21.1	***5.9***	400	-	150	<5	-	64	8.2	7.3	33	66	21	<0.1	-	-	***1.8***	0.01	<0.005	-	-	-	13	0.02	0.007	0.027	<0.0001	<0.001	<0.005
BH23_22 Apr 20_-	BH23	22/04/2020	water	3	7.45	**893**	***3.77***	-94.7	21.5	7.2	540	-	290	<5	-	110	11	7.1	62	96	60	0.2	-	-	***0.59***	-	-	-	-	-	11	-	-	-	-	-
BH24_01 Jul 06_-	BH24	1/07/2006	water	-	7.16	-	-	-	-	-	900	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.219***	-	-	-	<0.01	11	-	-	0.067	-	-	-
BH24_01 Oct 06_-	BH24	1/10/2006	water	-	7.06	-	-	-	-	-	800	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.167***	-	-	-	<0.01	6	-	-	0.061	-	-	-
BH24_01 Jan 07_-	BH24	1/01/2007	water	-	7.07	-	-	-	-	-	960	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.102***	-	-	-	<0.01	4	-	-	0.048	-	-	-
BH24_01 Apr 07_-	BH24	1/04/2007	water	-	*6.91*	-	-	-	-	-	1200	-	-	-	150	62	8	6	21	31.5	54	-	4.83	5.01	***0.417***	<0.01	<0.01	-	-	9	-	-	0.004	-	-	-
BH24_16 Apr 13_-	BH24	16/04/2013	water	9.01	7.45	**1033**	***0.73***	186	15.2	**8.1**	950	-	390	<1	-	130	12	13	170	40	260	0.19	-	-	***0.98***	-	-	-	-	-	42	-	-	-	-	-
BH24_29 Oct 13_-	BH24	29/10/2013	water	3.58	***8.8***	**278**	***1.77***	-3	18.4	7.3	170	-	72	<1	-	34	2.9	2	28	27	11	-	-	-	***0.049***	-	-	-	-	-	5	-	-	-	-	-
BH24_28 Jan 14_-	BH24	28/01/2014	water	3.65	**8.11**	**259**	***2.02***	-75	19.2	*7*	210	-	130	<1	-	55	6.1	3.4	28	42	13	<0.1	-	-		1.5	0.26	-	-	-	4	<0.005	<0.001	0.01	<0.0001	<0.001	<0.005
BH24_16 Apr 14_-	BH24	16/04/2014	water	9.1	7.88	**1392**	***3.83***	-67	19.3	7.7	1100	-	610	<1	-	230	34	16	100	34	220	0.15	-	-	***0.9***	-	-	-	-	-	21	-	-	-	-	-
BH24_09 Jul 14_-	BH24	9/07/2014	water	-	**8.1**	**781**	***2.25***	-55	19.4	7.9	950	-	580	<1	-	240	28	17	110	30	180	0.14	-	-	***1.7***	-	-	-	-	-	26	-	-	-	-	-
BH24_16 Oct 14_-	BH24	16/10/2014	water	8.65	7.66	**1060**	***2.15***	-15	21.7	7.9	850	-	530	<1	-	220	33	15	65	36	190	0.12	-	-	***1.5***	-	-	-	-	-	20	-	-	-	-	-
BH24_21 Jan 15_-	BH24	21/01/2015	water	12.63	***5.84***	**373**	***2.24***	119	18.8	***6.5***	220	-	110	<1	-	60	7.1	4.1	15	19	43	<0.1	-	-	**0.011**	51	<0.01	-	-	-	6	<0.005	0.002	0.021	<0.0001	-	<0.01
BH24_22 Apr 15_-	BH24	22/04/2015	water	5.6	7.33	**1157**	***3.61***	17.5	17.5	7.5	1000	-	600	<1	-	230	33	16	56	35	180	0.12	-	-	***0.17***	-	-	-	-	-	11	-	-	-	-	-
BH24_22 Jul 15_-	BH24	22/07/2015	water	12.2	*6.91*	**1306**	***4.45***	-31	16.8	7.6	1100	-	510	<1	-	320	50	18	58	60	330	0.2	-	-	***1.5***	-	-	-	-	-	22	-	-	-	-	-
BH24_21 Oct 15_-	BH24	21/10/2015	water	3.04	*6.66*	**339**	***3.33***	31	20.8	*7*	330	-	250	<1	-	96	8.7	4.2	14	14	40	<0.1	-	-	0.006	-	-	-	-	-	3	-	-	-	-	-
BH24_20 Jan 16_-	BH24	20/01/2016	water	12.54	**8.49**	**463**	***4.79***	58	26.1	7.1	350	-	300	<1	-	110	9.6	4.3	11	11	19	<0.1	-	-	0.007	0.072	<0.01	-	-	-	10	<0.005	0.003	0.028	<0.0001	<0.001	<0.01
BH24_14 Apr 16_-	BH24	14/04/2016	water	6.89	*6.64*	**526**	***1.59***	22	19.5	*6.8*	340	-	230	<5	-	91	7.2	3.3	15	9	21	<0.1	-	-		-	-	-	-	-	7	-	-	-	-	-
BH24_13 Jul 16_-	BH24	13/07/2016	water	12.24	*6.8*	**514**	***3.21***	68	14.8	*6.8*	310	-	210	<5	-	99	8.3	3.5	12	20	50	<0.1	-	-		-	-	-	-	-	14	-	-	-	-	-
BH24_18 Oct 16_-	BH24	18/10/2016	water	3.31	7.36	**364**	***1.57***	-6	18.8	7.2	380	-	270	<5	-	110	13	16	35	31	21	<0.1	-	-	0.006	-	-	-	-	-	28	-	-	-	-	-
BH24_25 Jan 17_-	BH24	25/01/2017	water	3.1	***5.97***	**326**	***0.25***	31	19.3	*6.8*	330	-	210	<5	-	59	6.9	14	40	34	12	<0.1	-	-	***0.069***	1.6	0.15	-	-	-	16	<0.01	0.005	0.024	<0.0001	<0.001	<0.005
BH24_02 Jul 19_-	BH24	2/07/2019	water	12.75	*6.72*	**375**	***4.77***	64	18.1	*6.7*	280	-	210	<5	-	73	5.6	3.1	12	12	21	<0.1	-	-	0.009	-	-	-	-	-	9	-	-	-	-	-
BH24_25 Oct 19_-	BH24	25/10/2019	water	12.77	*6.87*	**405.1**	***6.1***	79.8	18	7.1	220	-	190	<5	-	79	6.1	3	12	19	21	<0.1	-	-	<0.005	-	-	-	-	-	6	-	-	-	-	-
BH24_14 Jan 20_-	BH24	14/01/2020	water	12.92	*6.54*	**253.6**	***3.88***	-48.8	18.8	***6.3***	190	-	77	<5	-	39	3.7	1.9	11	23	23	<0.1	-	-	<0.005	0.075	<0.005	-	-	-	2	<0.01	0.002	0.01	<0.0001	<0.001	<0.005
BH24_23 Apr 20_-	BH24	23/04/2020	water	12.57	7.19	**474.5**	***4.22***	65.4	20.7	*6.6*	330	-	110	<5	-	66	4.8	4	28	50	73	<0.1	-	-	<0.005	-	-	-	-	-	4	-	-	-	-	-	-
BH25_17 Apr 13_-	BH25	17/04/2013	water	7.29	*7*	**1014**	***0.25***	-41	15.7	7.7	730	-	360	<1	-	130	14	3.5	130	210	13	0.19	-	-	***0.56***	-	-	-	-	-	5	-	-	-	-	-	-
BH25_09 Jul 13_-	BH25	9/07/2013	water	9.14	7.95	**954**	***1.02***	-159	17.8	**8.1**	1100	-	510	<1	-	190	22	16	150	38	240	-	-	-	***1.3***	-	-	-	-	-	31	-	-	-	-	-	-
BH25_28 Jan 14_-	BH25	28/01/2014	water	10.77	7.31	**2710**	***3.46***	-90	21.5	7.3	3900	-	1100	<1	-	1200	79	30	320	1000	84	0.21	-	-	***8.8***	<0.1	<0.01	-	-	-	36	<0.005	0.002	0.27	<0.0001	<0.001	<0.005
BH25_16 Apr 14_-	BH25	16/04/2014	water	7.6	7.58	**1243**	***0.83***	-125	21	7.5	760	-	380	<1	-	140	17	3.4	140	190	10	0.21	-	-	***0.49***	-	-	-	-	-	3	-	-	-	-	-	-
BH25_07 Jul 14_-	BH25	7/07/2014	water	7.28	**8.04**	**1185**	***2.29***	-120	17.2	7.4	740	-	360	<1	-	150	17	3.7	140	210	12	0.18	-	-	***0.62***	-	-	-	-	-	3	-	-	-	-	-	-
BH25_15 Oct 14_-	BH25	15/10/2014	water	7.23	7.19	**1141**	***0.86***	-182	17.7	7.3	760	-	360	<1	-	140	19	3.8	160	230	19	0.22	-	-	***0.5***	-	-	-	-	-	4	-	-	-	-	-	-
BH25_21 Jan 15_-	BH25	21/01/2015	water	7.24	*6.96*	**1198**	***0.21***	-87	20.8	***6***	770	-	370	<1	-	130	18	4.1	170	220	14	0.2	-	-	***0.39***	14	<0.01	-	-	-	4	<0.005	<0.001	0.01	<0.0001	-	<0.01
BH25_22 Apr 15_-	BH25	22/04/2015	water	7.2	7.36	**1491**	***7.36***	-132	18	7.2	750	-	350	<1	-	140	17	3.7	160	210	31	0.19	-	-	***0.51***	-	-	-	-	-	5	-	-	-	-	-	-
BH25_21 Jul 15_-	BH25	21/07/2015	water	7.19	7.28	**1072**	***0.97***	-152	19.4	7.2	700	-	370	<1	-	130	17	3.5	150	200	9	0.2	-	-	***0.64***	-	-	-	-	-	4	-	-	-	-	-	-
BH25_20 Oct 15_-	BH25	20/10/2015	water	7.37	*6.61*	**531**	***2.3***	80	20.1	7.3	840	-	310	<1	-	140	18	3.8	150	210	81	0.2	-	-	***0.59***	-	-	-	-	-	4	-	-	-	-	-	-
BH25_21 Jan 16_-	BH25	21/01/2016	water	7.47	7.57	**829**	***2.27***	-58	25.7	7.7	730	-	400	<1	-	150	18	4.4	160	200	9	0.2	-	-	***0.48***	0.29	<0.01	-	-	-	5	<0.005	<0.001	0.009	<0.0001	<0.001	<0.01
BH25_14 Apr 16_-	BH25	14/04/2016	water	7.35	7.73	**1248**	***1.24***	-244	19.4	7.5	760	-	380	<5	-	120	16	3.4	160	190	10	0.2	-	-	***0.43***	-	-	-	-	-	4	-	-	-	-	-	-
BH25_21 Jul 16_-	BH25	21/07/2016	water	7.15	7.76	**1241**	***2.83***	41	17	7.5	710	-	400	<5	-	130	17	4.1	140	160	8	0.2	-	-	***0.54***	-	-	-	-	-	4	-	-	-	-	-	-
BH25_18 Oct 16_-	BH25	18/10/2016	water	12.31	7.44	**430**	***3.72***	18	19.3	*6.7*	230	-	160	<5	-	63	5.4	3.1	12	13	24	<0.1	-	-	***0.018***	-	-	-	-	-	5	-	-	-	-	-	-
BH25_25 Jan 17_-	BH25	25/01/2017	water	12.67	***6.44***	**371**	***3.05***	13	18.9	*6.9*	240	-	150	<5	-	60	5.7	2.8	14	15	33	<0.1	-	-	<0.005	0.12	<0.005	-	-	-	3	<0.01	0.002	0.012	<0.0001	<0.001	<0.005
BH25_02 Jul 19_-	BH25	2/07/2019	water	7.3	7.55	**664**	***5.2***	-176.3	19.4	7.7	730	-	410	<5	-	140	18	3.9	120	180	54	0.2	-	-	***0.61***	-	-	-	-	-	4	-	-	-	-	-	-
BH25_25 Oct 19_-	BH25	25/10/2019	water	7.35	7.55	**1329**	***4.07***	64.6	20.1	**8**	810	-	410	<5	-	150	20	4.2	130	180	10	0.2	-	-	***0.55***	-	-	-	-	-	5	-	-	-	-	-	-
BH25_13 Jan 20_-	BH25	13/01/2020	water	7.39	7.5	**1341**	***0.2***	-312.4	21.4	7.4	820	-	420	<5	-	140	20	3.8	140	220	15	0.2	-	-	***0.48***	<0.005	<0.005	-	-	-	4	<0.01	<0.001	0.011	<0.0001	<0.001	<0.005

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																
BH25_23 Apr 20_-	BH25	23/04/2020	water	7.27	7.47	**1276**	***2.25***	-101.8	20.2	7.5	790	-	420	<5	-	140	19	3.7	110	210	16	0.2	-	-	***0.67***	-	-	1.6	0.92	-	4	-	-	-	-	-
BH3A_01 Jul 00_-	BH3A	1/07/2000	water	-	7.1	**710**	-	-	-	-	450	-	-	-	-	-	-	-	-	-	-	-	-	***0.36***	-	-	1.6	0.92	5	-	-	0.002	-	-	0.004	-
BH3A_01 Oct 00_-	BH3A	1/10/2000	water	-	*7*	**560**	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-	-	***0.06***	-	-	0.4	1.11	4	-	-	0.001	-	-	0.002	-
BH3A_01 Jan 01_-	BH3A	1/01/2001	water	-	7.6	**660**	-	-	-	-	390	-	-	-	-	-	-	-	-	-	-	-	-	***1.16***	-	-	1.8	0.12	11	-	-	0.005	-	-	0.007	-
BH3A_01 Apr 01_-	BH3A	1/04/2001	water	-	7.4	**610**	-	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	***0.77***	-	-	1.6	0.24	7	-	-	0.002	-	-	0.001	-
BH3A_01 Jul 01_-	BH3A	1/07/2001	water	-	7.5	**780**	-	-	-	-	450	-	-	-	-	-	-	-	-	-	-	-	-	***1.33***	-	-	2.2	0.26	7	-	-	0.002	-	-	0.003	-
BH3A_01 Oct 01_-	BH3A	1/10/2001	water	-	7.6	**800**	-	-	-	-	450	-	-	-	-	-	-	-	-	-	-	-	-	***1.55***	-	-	1.8	0.58	8	-	-	0.001	-	-	0.002	-
BH3A_01 Jan 02_-	BH3A	1/01/2002	water	-	7.2	**970**	-	-	-	-	610	-	-	-	-	-	-	-	-	-	-	-	-	***1.18***	-	-	1.8	0.61	6	-	-	0.001	-	-	0.001	-
BH3A_01 Apr 02_-	BH3A	1/04/2002	water	-	7.5	**800**	-	-	-	-	500	-	-	-	-	-	-	-	-	-	-	-	-	***1.09***	-	-	1.4	4.09	8	-	-	0.003	-	-	0.011	-
BH3A_01 Jul 02_-	BH3A	1/07/2002	water	-	7.9	**850**	-	-	-	-	470	-	-	-	-	-	-	-	-	-	-	-	-	***1.64***	-	-	2	0.19	6	-	-	0.002	-	-	<0.001	-
BH3A_01 Oct 02_-	BH3A	1/10/2002	water	-	7.9	**940**	-	-	-	-	570	-	-	-	-	-	-	-	-	-	-	-	-	***1.4***	-	-	1.6	0.34	7	-	-	<0.001	-	-	0.003	-
BH3A_01 Jan 03_-	BH3A	1/01/2003	water	-	**8.03**	**840**	-	-	-	-	470	-	-	-	-	-	-	-	-	-	-	-	-	***1.44***	-	-	1.6	1.43	6	-	-	0.002	-	-	<0.001	-
BH3A_01 Apr 03_-	BH3A	1/04/2003	water	-	7.68	**626**	-	-	-	-	364	-	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	0.7	0.75	11	-	-	0.001	-	-	0.001	-
BH3A_01 Jul 03_-	BH3A	1/07/2003	water	-	7.74	**905**	-	-	-	-	564	-	-	-	-	-	-	-	-	-	-	-	-	***1.67***	-	-	2.4	1.47	10	-	-	0.001	-	-	0.001	-
BH3A_01 Oct 03_-	BH3A	1/10/2003	water	-	7.67	**905**	-	-	-	-	620	-	-	-	-	-	-	-	-	-	-	-	-	***1.25***	-	-	1.6	0.02	14	-	-	0.001	-	-	0.001	-
BH3A_01 Jan 04_-	BH3A	1/01/2004	water	-	**8.24**	**979**	-	-	-	-	694	-	-	-	-	-	-	-	-	-	-	-	-	***1.48***	-	-	2.2	0.08	14	-	-	0.001	-	-	0.005	-
BH3A_01 Apr 04_-	BH3A	1/04/2004	water	-	7.93	-	-	-	-	-	530	-	-	-	-	-	-	-	-	-	-	-	-	***1.66***	-	-	-	0.01	7	-	-	0.001	-	-	-	-
BH3A_01 Jul 04_-	BH3A	1/07/2004	water	-	7.69	-	-	-	-	-	532	-	-	-	-	-	-	-	-	-	-	-	-	***1.26***	-	-	-	0.01	8	-	-	0.001	-	-	-	-
BH3A_01 Oct 04_-	BH3A	1/10/2004	water	-	7.93	-	-	-	-	-	562	-	-	-	-	-	-	-	-	-	-	-	-	***1.67***	-	-	-	0.01	9	-	-	0.001	-	-	-	-
BH3A_01 Jan 05_-	BH3A	1/01/2005	water	-	7.89	-	-	-	-	-	674	-	-	-	-	-	-	-	-	-	-	-	-	***1.59***	-	-	-	0.034	6	-	-	0.01	-	-	0.01	-
BH3A_01 Apr 05_-	BH3A	1/04/2005	water	-	7.4	-	-	-	-	-	574	-	-	-	-	-	-	-	-	-	-	-	-	***1.75***	-	-	-	0.015	7	-	-	0.002	-	-	-	-
BH3A_01 Jul 05_-	BH3A	1/07/2005	water	-	**8.43**	-	-	-	-	-	514	-	-	-	-	-	-	-	-	-	-	-	-	***1.59***	-	-	-	0.148	6	-	-	<0.001	-	-	-	-
BH3A_01 Oct 05_-	BH3A	1/10/2005	water	-	7.79	-	-	-	-	-	528	-	-	-	-	-	-	-	-	-	-	-	-	***1.41***	-	-	-	0.026	5	-	-	<0.001	-	-	-	-
BH3A_01 Jan 06_-	BH3A	1/01/2006	water	-	7.92	-	-	-	-	-	440	-	-	-	-	-	-	-	-	-	-	-	-	***0.99***	-	-	-	0.021	7	-	-	<0.001	-	-	<0.001	-
BH3A_01 Apr 06_-	BH3A	1/04/2006	water	-	7.16	-	-	-	-	-	702	-	-	-	-	-	-	-	-	-	-	-	-	***0.021***	-	-	-	1.15	6	-	-	0.002	-	-	-	-
BH3A_01 Jul 06_-	BH3A	1/07/2006	water	-	7.59	-	-	-	-	-	476	-	-	-	-	-	-	-	-	-	-	-	-	***1.31***	-	-	-	<0.01	8	-	-	<0.001	-	-	-	-
BH3A_01 Oct 06_-	BH3A	1/10/2006	water	-	7.81	-	-	-	-	-	494	-	-	-	-	-	-	-	-	-	-	-	-	***1.48***	-	-	-	<0.01	7	-	-	<0.001	-	-	-	-
BH3A_01 Jan 07_-	BH3A	1/01/2007	water	-	7.71	-	-	-	-	-	534	-	-	-	-	-	-	-	-	-	-	-	-	***1.24***	-	-	-	0.014	5	-	-	<0.001	-	-	<0.001	-
BH3A_01 Apr 07_-	BH3A	1/04/2007	water	-	7.31	-	-	-	-	-	606	-	-	-	313	102	15	7	82	89.7	98	-	10.1	10.8	***1.97***	0.027	<0.01	-	-	10	-	-	<0.001	-	-	-	-
BH3A_16 Apr 13_-	BH3A	16/04/2013	water	4.94	*6.7*	**1039**	***0.46***	214	19.2	7.2	850	-	460	<1	-	180	23	9.9	63	56	150	0.14	-	-		-	-	-	-	-	9	-	-	-	-	-	-
BH3A_09 Jul 13_-	BH3A	9/07/2013	water	2.59	*6.83*	**975**	***5.02***	11	16	7.2	680	-	220	<1	-	150	14	6.3	48	49	150	-	-	-		-	-	-	-	-	7	-	-	-	-	-	-
BH3A_30 Oct 13_-	BH3A	30/10/2013	water	3.23	7.52	**492**	***1.83***	-51	16.8	**8**	550	-	150	<1	-	91	14	9.9	47	37	150	-	-	-	***2.2***	-	-	-	-	-	5	-	-	-	-	-	-
BH3A_28 Jan 14_-	BH3A	28/01/2014	water	3.42	7.96	**461**	***3.98***	-130	19.1	7.8	430	-	150	<1	-	84	14	9.7	43	40	150	0.18	-	-	***2.1***	0.007	<0.01	-	-	-	5	<0.005	<0.001	0.008	<0.0001	<0.001	<0.005
BH3A_14 Apr 14_-	BH3A	14/04/2014	water	3.21	7.95	**659**	***2.87***	-78	19.1	**8**	460	-	150	<1	-	83	13	10	45	36	130	0.17	-	-	***2.1***	-	-	-	-	-	4	-	-	-	-	-	-
BH3A_07 Jul 14_-	BH3A	7/07/2014	water	-	**8.41**	**667**	***2.63***	-38	15.8	*6.8*	440	-	110	<1	-	81	13	10	42	37	180	0.17	-	-	***2.1***	-	-	-	-	-	5	-	-	-	-	-	-
BH3A_15 Oct 14_-	BH3A	15/10/2014	water	3	7.56	**690**	***2.59***	-102	15.3	7.8	470	-	150	<1	-	100	13	12	44	39	160	0.2	-	-	***1.8***	-	-	-	-	-	9	-	-	-	-	-	-
BH3A_21 Jan 15_-	BH3A	21/01/2015	water	3.24	***6.3***	**691**	***0.13***	20	18.2	*6.7*	480	-	150	<1	-	98	14	12	43	38	160	0.16	-	-	***1.8***	0.036	0.005	-	-	-	5	0.02	<0.001	0.003	<0.0001	-	<0.01
BH3A_22 Apr 15_-	BH3A	22/04/2015	water	2.74	7.81	**620**	***2.76***	-72	17.2	7.8	450	-	160	<1	-	88	12	11	43	34	140	0.19	-	-	***1.5***	-	-	-	-	-	5	-	-	-	-	-	-
BH3A_21 Jul 15_-	BH3A	21/07/2015	water	3.26	7.97	**685**	***3.22***	-50	14.8	*6.7*	510	-	110	<1	-	91	12	11	42	36	180	0.2	-	-	***1.6***	-	-	-	-	-	5	-	-	-	-	-	-
BH3A_20 Oct 15_-	BH3A	20/10/2015	water	3.45	*6.65*	**950**	***3.28***	23.4	19.7	7.1	560	-	110	<1	-	93	14	9.8	42	39	240	0.2	-	-	***1.7***	-	-	-	-	-	5	-	-	-	-	-	-
BH3A_21 Jan 16_-	BH3A	21/01/2016	water	3.11	7.72	**679**	***1.24***	-81	22.1	7.4	550	-	130	<1	-	110	15	12	44	31	240	0.2	-	-	***1.2***	0.3	0.006	-	-	-	6	<0.005	<0.001	0.01	<0.0001	<0.001	<0.01
BH3A_14 Apr 16_-	BH3A	14/04/2016	water	4.07	*6.7*	**1055**	***2.47***	67	19.4	*7*	750	-	360	<5	-	160	12	9.6	53	44	150	0.2	-	-	**0.01**	-	-	-	-	-	9	-	-	-	-	-	-
BH3A_21 Jul 16_-	BH3A	21/07/2016	water	3.75	***8.56***	**892**	***3.43***	78	17	*6.8*	690	-	140	<5	-	130	10	9.1	50	29	240	0.2	-	-	0.014	-	-	-	-	-	9	-	-	-	-	-	-
BH3A_18 Oct 16_-	BH3A	18/10/2016	water	3.27	7.91	**555**	***3.08***	-5	18.3	7.4	590	-	120	<5	-	120	17	12	36	46	220	0.2	-	-	***1.6***	-	-	-	-	-	5	-	-	-	-	-	-
BH3A_19 Jan 17_-	BH3A	19/01/2017	water	3.34	7.43	**828**	***3.79***	-36	19.5	**8**	600	-	140	<5	-	120	18	11	39	51	250	0.2	-	-	***1.4***	0.03	0.009	-	-	-	5	<0.01	<0.001	0.012	<0.0001	<0.001	<0.005
BH3A_02 Jul 19_-	BH3A	2/07/2019	water	3.3	7.69	**729**	***2.28***	167.1	19.2	7.7	670	-	140	<5	-	130	17	12	34	37	280	0.2	-	-	***1.1***	-	-	-	-	-	5	-	-	-	-	-	-
BH3A_24 Oct 19_-	BH3A	24/10/2019	water	3.37	7.75	**956**	***2.08***	61.7	18.8	7.6	740	-	140	<5	-	170	21	12	32	42	310	0.2	-	-	***1.1***	-	-	-	-	-	6	-	-	-	-	-	-
BH3A_27 Apr 20_-	BH3A	27/04/2020	water	3.29	7.89	**999**	***1.72***	-147.1	20.8	7.7	770	-	150	<5	-	150	19	11	33	49	340	0.2	-	-	***1.4***	-	-	-	-	-	4	-	-	-	-	-	-
BH4_01 Sep 94_-	BH4	1/09/1994	water	-	7.1	**790**	-	-	-	-	524	-	-	-	-	-	-	-	-	-	-	-	-	-	***1***	-	-	-	-	17	-	-	0.003	-	-	0.003	-
BH4_01 Dec 94_-	BH4	1/12/1994	water	-	7.4	**771**	-	-	-	-	484	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.5***	-	-	-	-	23	-	-	0.002	-	-	0.001	-
BH4_01 Mar 95_-	BH4	1/03/1995	water	-	7.4	**923**	-	-	-	-	386	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.5***	-	-	-	-	18	-	-	0.003	-	-	0.004	-
BH4_01 Jun 95_-	BH4	1/06/1995	water	-	7.55	**816**	-	-	-	-	504	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.4***	-	-	-	-	12	-	-	0.005	-	-	0.001	-
BH4_01 Sep 95_-	BH4	1/09/1995	water	-	7.39	**1002**	-	-	-	-	512	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	1.6	0.06	17	-	-	0.003	-	-	0.003	-
BH4_01 Jan 96_-	BH4	1/01/1996	water	-	7.67	**903**	-	-	-	-	710	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.75***	-	-	1.4	-	3	-	-	0.005	-	-	0.001	-
BH4_01 Apr 96_-	BH4	1/04/1996	water	-	7.59	**926**	-	-	-	-	588	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.6***	-	-	1.1	0.06	16	-	-	0.005	-	-	0.001	-
BH4_01 Jul 96_-	BH4	1/07/1996	water	-	7.6	**810**	-	-	-	-	432	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.7***	-	-	1.6	0.76	20	-	-	0	-	-	0.001	-
BH4_01 Oct 96_-	BH4	1/10/1996	water	-	7.3	**1338**	-	-	-	-	798	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.64***	-	-	1	0.4	15	-	-	0.01	-	-	0.003	-
BH4_01 Jan 97_-	BH4	1/01/1997	water	-	7.64	**1281**	-	-	-	-	796	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.58***	-	-	0.9	0.09	12	-	-	0.002	-	-	0.001	-
BH4_01 Apr 97_-	BH4	1/04/1997	water	-	7.45	**957**	-	-	-	-	808	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.65***	-	-	0.7	0.08	14	-	-	0.003	-	-	0.003	-
BH4_01 Jul 97_-	BH4	1/07/1997	water	-	7.39	**1179**	-	-	-	-	792	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.41***	-	-	1.6	0.03	15	-	-	0.005	-	-	0.001	-
BH4_01 Oct 97_-	BH4	1/10/1997	water	-	7.21	**1529**	-	-	-	-	792	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.5***	-	-	0.8	0.21	12	-	-	0.005	-	-	0.002	-
BH4_01 Jan 98_-	BH4	1/01/1998	water	-	7.28	**1388**	-	-	-	-	1020	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.39***	-	-	0.5	0.09	7	-	-	0.003	-	-	0.001	-
BH4_01 Apr 98_-	BH4	1/04/1998	water	-	7.36	**1445**	-	-	-	-	1020	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.16***	-	-	0.6	0.01	8	-	-	0.002	-	-	0.001	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		
Sample ID	**Location Code**	**Date**	**Matrix Type**																															
BH4A_01 Jan 98_-	BH4A	1/01/1998	water	-	*6.51*	**1110**	-	-	-	-	816	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	-	-	0.004	-
BH4A_01 Apr 98_-	BH4A	1/04/1998	water	-	*6.73*	**1162**	-	-	-	-	702	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	-
BH4A_01 Jul 98_-	BH4A	1/07/1998	water	-	*6.87*	**1100**	-	-	-	-	844	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
BH4A_01 Oct 98_-	BH4A	1/10/1998	water	-	*6.89*	**1490**	-	-	-	-	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
BH4A_01 Jan 99_-	BH4A	1/01/1999	water	-	*6.6*	**1420**	-	-	-	-	863	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
BH4A_01 Mar 99_-	BH4A	1/03/1999	water	-	*6.6*	**954**	-	-	-	-	596	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.009	-
BH4A_01 Jul 99_-	BH4A	1/07/1999	water	-	*6.6*	**1050**	-	-	-	-	634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.008	-
BH4A_01 Oct 99_-	BH4A	1/10/1999	water	-	*6.6*	**1273**	-	-	-	-	731	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	-
BH4A_01 Jan 00_-	BH4A	1/01/2000	water	-	*6.8*	**1200**	-	-	-	-	810	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	-
BH4A_01 Apr 00_-	BH4A	1/04/2000	water	-	***6.5***	**1100**	-	-	-	-	730	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.017	-
BH4A_01 Jul 00_-	BH4A	1/07/2000	water	-	*6.6*	**730**	-	-	-	-	440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.006	-
BH4A_01 Oct 00_-	BH4A	1/10/2000	water	-	*6.8*	**490**	-	-	-	-	290	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-
BH4A_01 Jan 01_-	BH4A	1/01/2001	water	-	*6.6*	**760**	-	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.007	-
BH4A_01 Apr 01_-	BH4A	1/04/2001	water	-	***6.4***	**440**	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-
BH4A_01 Jul 01_-	BH4A	1/07/2001	water	-	***6.4***	**450**	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-
BH4A_01 Oct 01_-	BH4A	1/10/2001	water	-	*6.6*	**870**	-	-	-	-	540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	-
BH4A_01 Jan 02_-	BH4A	1/01/2002	water	-	***6.4***	**1300**	-	-	-	-	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-
BH4A_01 Apr 02_-	BH4A	1/04/2002	water	-	*7*	**960**	-	-	-	-	660	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.009	-
BH4A_01 Jul 02_-	BH4A	1/07/2002	water	-	*7*	**1200**	-	-	-	-	830	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	-
BH4A_01 Oct 02_-	BH4A	1/10/2002	water	-	7.1	**1500**	-	-	-	-	1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.009	-
BH4A_01 Jan 03_-	BH4A	1/01/2003	water	-	7.47	**1300**	-	-	-	-	890	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.005	-
BH4A_01 Apr 03_-	BH4A	1/04/2003	water	-	7.06	**1360**	-	-	-	-	934	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	-
BH4A_01 Jul 03_-	BH4A	1/07/2003	water	-	7.07	**1100**	-	-	-	-	714	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
BH4A_01 Oct 03_-	BH4A	1/10/2003	water	-	*6.96*	**1280**	-	-	-	-	862	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
BH4A_01 Jan 04_-	BH4A	1/01/2004	water	-	7.94	**1440**	-	-	-	-	1160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.005	-
BH4A_01 Apr 04_-	BH4A	1/04/2004	water	-	7.15	-	-	-	-	-	1100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 04_-	BH4A	1/07/2004	water	-	7.21	-	-	-	-	-	920	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 04_-	BH4A	1/10/2004	water	-	7.2	-	-	-	-	-	972	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 05_-	BH4A	1/01/2005	water	-	7.24	-	-	-	-	-	1220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-
BH4A_01 Apr 05_-	BH4A	1/04/2005	water	-	*6.74*	-	-	-	-	-	982	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 05_-	BH4A	1/07/2005	water	-	**8.37**	-	-	-	-	-	688	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 05_-	BH4A	1/10/2005	water	-	*6.67*	-	-	-	-	-	714	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 06_-	BH4A	1/01/2006	water	-	*6.93*	-	-	-	-	-	892	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.006	-
BH4A_01 Apr 06_-	BH4A	1/04/2006	water	-	*6.66*	-	-	-	-	-	734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 06_-	BH4A	1/07/2006	water	-	*6.84*	-	-	-	-	-	694	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 06_-	BH4A	1/10/2006	water	-	*6.8*	-	-	-	-	-	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 07_-	BH4A	1/01/2007	water	-	*6.7*	-	-	-	-	-	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.006	-
BH4A_01 Apr 07_-	BH4A	1/04/2007	water	-	*6.63*	-	-	-	-	-	968	-	-	-	535	231	26	11	56	83.5	211	-	16.4	17.4	***0.948***	3.37	<0.01	-	-	14	-	-	<0.001	-	-	-
BH4A_17 Apr 13_-	BH4A	17/04/2013	water	3.74	*6.98*	**618**	***0.17***	-43	18.5	7.9	490	-	170	<1	-	73	11	8.6	41	47	130	0.16	-	-	***2.2***	-	-	-	-	-	5	-	-	-	-	-
BH4A_22 Jul 13_-	BH4A	22/07/2013	water	3.71	7.01	**551**	***1.23***	-52	15.9	7.5	430	-	170	<1	-	110	13	11	49	42	130	-	-	-	***2.5***	-	-	-	-	-	4	-	-	-	-	-
BH4A_30 Oct 13_-	BH4A	30/10/2013	water	7.01	7.92	**1306**	***3.33***	-69	18.3	7.9	820	-	350	<1	-	140	16	3.4	150	190	28	-	-	-	***0.57***	-	-	-	-	-	5	-	-	-	-	-
BH4A_28 Jan 14_-	BH4A	28/01/2014	water	7.42	7.45	**1277**	***3.1***	144	19.6	7.8	650	-	360	<1	-	150	18	3.7	140	210	12	0.2	-	-	***0.47***	0.013	<0.01	-	-	-	3	<0.005	<0.001	0.008	<0.0001	<0.001	<0.005
BH4A_14 Apr 14_-	BH4A	14/04/2014	water	4.12	*6.51*	**958**	***4.08***	255	18.2	7.1	750	-	260	<1	-	170	14	9.3	53	46	210	0.12	-	-		-	-	-	-	-	6	-	-	-	-	-
BH4A_07 Jul 14_-	BH4A	7/07/2014	water	-	7.35	**1011**	***4.78***	280	16	*6.7*	770	-	330	<1	-	190	15	10	46	41	230	<0.1	-	-		-	-	-	-	-	8	-	-	-	-	-
BH4A_15 Oct 14_-	BH4A	15/10/2014	water	3.57	7.56	**1171**	***1.29***	110	15.3	7.2	590	-	180	<1	-	140	13	7.1	47	45	200	0.2	-	-	***0.25***	-	-	-	-	-	6	-	-	-	-	-
BH4A_21 Jan 15_-	BH4A	21/01/2015	water	4.32	***5.17***	**814**	***0.19***	176	20.5	***5.9***	700	-	130	<1	-	140	11	9.2	39	39	260	0.12	-	-	***0.14***	0.46	0.006	-	-	-	7	0.02	<0.001	0.028	0.0011	-	<0.01
BH4A_27 Apr 15_-	BH4A	27/04/2015	water	2.5	*6.89*	**800**	***5.35***	46	16.1	*6.9*	570	-	68	<1	-	110	7.6	9.1	48	49	210	0.1	-	-		-	-	-	-	-	5	-	-	-	-	-
BH4A_21 Jul 15_-	BH4A	21/07/2015	water	4.03	*6.91*	**885**	***3.05***	10	16.2	*6.8*	640	-	220	<1	-	140	13	7	61	50	160	0.2	-	-		-	-	-	-	-	9	-	-	-	-	-
BH4A_20 Oct 15_-	BH4A	20/10/2015	water	4.22	***6.39***	**1101**	***2.63***	49.5	20.5	7.1	710	-	350	<1	-	190	21	7.7	66	63	240	0.1	-	-		-	-	-	-	-	7	-	-	-	-	-
BH4A_20 Jan 16_-	BH4A	20/01/2016	water	4.02	*6.89*	**136**	***3.2***	91	25.9	*6.9*	990	-	290	<1	-	250	21	14	98	58	340	0.1	-	-	0.008	1.8	<0.01	-	-	-	10	0.02	<0.001	0.053	0.0006	<0.001	<0.01
BH4A_14 Apr 16_-	BH4A	14/04/2016	water	3.21	7.4	**810**	***3.09***	-32	19	***6.4***	600	-	91	<5	-	100	14	12	40	30	260	0.2	-	-	***1.3***	-	-	-	-	-	18	-	-	-	-	-	-
BH4A_21 Jul 16_-	BH4A	21/07/2016	water	3.13	***8.56***	**811**	***1.96***	-195	18.7	7.6	560	-	130	<5	-	110	14	13	38	30	210	0.2	-	-	***1.5***	-	-	-	-	-	4	-	-	-	-	-	-
BH4A_18 Oct 16_-	BH4A	18/10/2016	water	7.26	7.96	**1187**	***2.3***	-86	20.6	7.7	740	-	430	<5	-	150	19	3.5	150	170	12	0.2	-	-	***0.59***	-	-	-	-	-	4	-	-	-	-	-	-
BH4A_19 Jan 17_-	BH4A	19/01/2017	water	7.3	7.34	**1021**	***2.61***	-124	21	7.9	710	-	430	<5	-	130	17	3.3	140	200	10	0.2	-	-	***0.5***	<0.005	<0.005	-	-	-	6	<0.01	<0.001	0.01	<0.0001	<0.001	<0.005
BH4A_03 Jul 19_-	BH4A	3/07/2019	water	4.05	*6.88*	**1067**	***1.83***	107.2	18.2	7.1	830	-	310	<5	-	210	15	11	38	51	270	0.1	-	-	***0.061***	-	-	-	-	-	8	-	-	-	-	-	-
BH4A_25 Oct 19_-	BH4A	25/10/2019	water	4.33	7.22	**1201**	***4.4***	79.7	19.1	7.1	980	-	340	<5	-	240	17	11	38	52	260	0.1	-	-	***0.033***	-	-	-	-	-	7	-	-	-	-	-	-
BH4A_13 Jan 20_-	BH4A	13/01/2020	water	4.31	7.29	**1212**	***0.62***	-246.9	20	*7*	900	-	250	<5	-	210	14	11	32	49	360	0.2	-	-	***0.045***	0.58	0.026	-	-	-	7	0.01	<0.001	0.045	0.0009	0.001	<0.005
BH4A_23 Apr 20_-	BH4A	23/04/2020	water	4.12	*6.93*	**1225**	***2.19***	112.7	20.5	*7*	1000	-	200	<5	-	200	14	11	58	93	390	0.2	-	-	***0.016***	-	-	-	-	-	9	-	-	-	-	-	-
BH5A_01 Jul 00_-	BH5A	1/07/2000	water	-	*6.9*	**860**	-	-	-	-	490	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	3.61	3	-	-	0.003	-	-	0.004	-
BH5A_01 Oct 00_-	BH5A	1/10/2000	water	-	*7*	**790**	-	-	-	-	450	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.6	4.36	3	-	-	0.002	-	-	0.002	-
BH5A_01 Jan 01_-	BH5A	1/01/2001	water	-	7.3	**600**	-	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-	***2.03***	-	-	0.3	0.01	5	-	-	0.003	-	-	0.008	-
BH5A_01 Apr 01_-	BH5A	1/04/2001	water	-	7.3	**560**	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	2.18	2	-	-	0.002	-	-	0.002	-
BH5A_01 Jul 01_-	BH5A	1/07/2001	water	-	7.1	**580**	-	-	-	-	370	-	-	-	-	-	-	-	-	-	-	-	-	-	***2.88***	-	-	0.5	0.06	5	-	-	0.002	-	-	0.002	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																
BH5A_01 Oct 01_-	BH5A	1/10/2001	water	-	7.2	**640**	-	-	-	-	360	-	-	-	-	-	-	-	-	-	-	-	***0.98***	-	-	1.2	1.35	3	-	-	0.002	-	-	0.001	-
BH5A_01 Jan 02_-	BH5A	1/01/2002	water	-	*6.9*	**570**	-	-	-	-	370	-	-	-	-	-	-	-	-	-	-	-	***0.06***	-	-	0.2	1.58	2	-	-	0.001	-	-	0.001	-
BH5A_01 Apr 02_-	BH5A	1/04/2002	water	-	7.6	**460**	-	-	-	-	270	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.8	1.5	3	-	-	0.002	-	-	0.005	-
BH5A_01 Jul 02_-	BH5A	1/07/2002	water	-	7.6	**600**	-	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	***1.04***	-	-	1	3.37	2	-	-	0.002	-	-	<0.001	-
BH5A_01 Jan 03_-	BH5A	1/01/2003	water	-	7.8	**630**	-	-	-	-	300	-	-	-	-	-	-	-	-	-	-	-	***1.02***	-	-	<0.1	13.6	2	-	-	0.002	-	-	<0.001	-
BH5A_01 Apr 03_-	BH5A	1/04/2003	water	-	7.52	**771**	-	-	-	-	506	-	-	-	-	-	-	-	-	-	-	-	***0.49***	-	-	2.2	16.8	9	-	-	0.002	-	-	0.001	-
BH5A_01 Jul 03_-	BH5A	1/07/2003	water	-	7.48	**635**	-	-	-	-	388	-	-	-	-	-	-	-	-	-	-	-	***0.13***	-	-	1.2	6.43	8	-	-	0.002	-	-	0.001	-
BH5A_01 Oct 03_-	BH5A	1/10/2003	water	-	7.7	**540**	-	-	-	-	310	-	-	-	-	-	-	-	-	-	-	-	***0.45***	-	-	0.5	4.86	1	-	-	0.001	-	-	0.008	-
BH5A_01 Jan 04_-	BH5A	1/01/2004	water	-	**8.12**	**807**	-	-	-	-	568	-	-	-	-	-	-	-	-	-	-	-	***0.65***	-	-	1.4	1.7	12	-	-	0.002	-	-	0.005	-
BH5A_01 Apr 04_-	BH5A	1/04/2004	water	-	7.7	-	-	-	-	-	290	-	-	-	-	-	-	-	-	-	-	-	***0.11***	-	-	-	2.75	3	-	-	0.001	-	-	-	-
BH5A_01 Jul 04_-	BH5A	1/07/2004	water	-	7.52	-	-	-	-	-	316	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	4.39	7	-	-	0.001	-	-	-	-
BH5A_01 Oct 04_-	BH5A	1/10/2004	water	-	7.57	-	-	-	-	-	410	-	-	-	-	-	-	-	-	-	-	-	***0.44***	-	-	-	3.74	10	-	-	0.002	-	-	-	-
BH5A_01 Jan 05_-	BH5A	1/01/2005	water	-	7.64	-	-	-	-	-	444	-	-	-	-	-	-	-	-	-	-	-	***0.078***	-	-	-	4.76	2	-	-	0.02	-	-	0.01	-
BH5A_01 Apr 05_-	BH5A	1/04/2005	water	-	7.01	-	-	-	-	-	718	-	-	-	-	-	-	-	-	-	-	-	***8.15***	-	-	-	2.59	10	-	-	0.003	-	-	-	-
BH5A_01 Jul 05_-	BH5A	1/07/2005	water	-	**8.16**	-	-	-	-	-	406	-	-	-	-	-	-	-	-	-	-	-	***0.122***	-	-	-	3.88	1	-	-	0.001	-	-	-	-
BH5A_01 Oct 05_-	BH5A	1/10/2005	water	-	7.26	-	-	-	-	-	366	-	-	-	-	-	-	-	-	-	-	-	***1.22***	-	-	-	3.95	4	-	-	<0.001	-	-	-	-
BH5A_01 Jan 06_-	BH5A	1/01/2006	water	-	7.21	-	-	-	-	-	678	-	-	-	-	-	-	-	-	-	-	-	***3.55***	-	-	-	2.23	7	-	-	0.002	-	-	0.001	-
BH5A_01 Apr 06_-	BH5A	1/04/2006	water	-	7.09	-	-	-	-	-	676	-	-	-	-	-	-	-	-	-	-	-	***7.1***	-	-	-	2.02	3	-	-	0.003	-	-	-	-
BH5A_01 Jul 06_-	BH5A	1/07/2006	water	-	7.07	-	-	-	-	-	742	-	-	-	-	-	-	-	-	-	-	-	***9.76***	-	-	-	2.32	9	-	-	0.002	-	-	-	-
BH5A_01 Oct 06_-	BH5A	1/10/2006	water	-	7.83	-	-	-	-	-	706	-	-	-	-	-	-	-	-	-	-	-	***15.4***	-	-	-	3.28	12	-	-	0.002	-	-	-	-
BH5A_01 Jan 07_-	BH5A	1/01/2007	water	-	*6.9*	-	-	-	-	-	866	-	-	-	-	-	-	-	-	-	-	-	***6.69***	-	-	-	1.19	11	-	-	0.002	-	-	<0.001	-
BH5A_01 Apr 07_-	BH5A	1/04/2007	water	-	*6.8*	-	-	-	-	-	918	-	-	-	580	176	31	15	117	198	58	-	16.8	18.4	***6.56***	1.04	<0.01	-	-	14	-	-	0.001	-	-	-
BH5A_17 Apr 13_-	BH5A	17/04/2013	water	7.22	*6.99*	**1322**	***0.28***	-8	16.3	7.7	1000	-	530	<1	-	180	27	19	110	130	180	<0.1	-	-	***16***	-	-	-	-	-	18	-	-	-	-	-	-
BH5A_22 Jul 13_-	BH5A	22/07/2013	water	7.21	7.02	**1298**	***0.47***	-11	15.1	7.1	900	-	530	<1	-	240	31	20	130	140	180	-	-	-	***13***	-	-	-	-	-	16	-	-	-	-	-	-
BH5A_30 Oct 13_-	BH5A	30/10/2013	water	2.63	7.7	**906**	***2.3***	22	15.4	7.3	700	-	320	<1	-	180	18	7.1	50	47	130	-	-	-	0.006	-	-	-	-	-	13	-	-	-	-	-	-
BH5A_28 Jan 14_-	BH5A	28/01/2014	water	4.3	7.16	**807**	***3.2***	49	18	*6.9*	560	-	210	<1	-	130	12	7.4	45	45	150	0.13	-	-		1.8	0.005	-	-	-	7	0.01	<0.001	0.02	0.0005	0.002	<0.005
BH5A_14 Apr 14_-	BH5A	14/04/2014	water	7.25	*6.76*	**1513**	***2.15***	-17	20.4	7.3	930	-	570	<1	-	200	32	18	140	120	120	<0.1	-	-	***7.2***	-	-	-	-	-	18	-	-	-	-	-	-
BH5A_07 Jul 14_-	BH5A	7/07/2014	water	7.2	7.46	**1544**	***2.9***	110	18.1	*7*	1000	-	580	<1	-	180	33	24	130	140	160	<0.1	-	-	***15***	-	-	-	-	-	20	-	-	-	-	-	-
BH5A_15 Oct 14_-	BH5A	15/10/2014	water	7.07	7.35	**1626**	***4.17***	56	16.8	*7*	1200	-	580	<1	-	210	35	27	150	180	180	<0.1	-	-	***18***	-	-	-	-	-	23	-	-	-	-	-	-
BH5A_21 Jan 15_-	BH5A	21/01/2015	water	7.26	*6.56*	**1541**	***0.17***	-60	20.2	***6.2***	1100	-	570	<1	-	210	38	28	150	150	190	<0.1	-	-	***13***	0.12	<0.01	-	-	-	20	<0.005	0.009	0.064	<0.0001	-	<0.01
BH5A_22 Apr 15_-	BH5A	22/04/2015	water	7.17	*6.91*	**1815**	***0.83***	-89	18.6	7.1	1300	-	630	<1	-	210	41	34	150	150	200	<0.1	-	-	***18***	-	-	-	-	-	21	-	-	-	-	-	-
BH5A_21 Jul 15_-	BH5A	21/07/2015	water	7.07	*6.84*	**1096**	***4.03***	42	15.7	7.1	1100	-	550	<1	-	200	36	20	150	150	170	<0.1	-	-	***8.5***	-	-	-	-	-	23	-	-	-	-	-	-
BH5A_20 Oct 15_-	BH5A	20/10/2015	water	7.2	*6.74*	**663**	***2.01***	117	21.1	7.3	1300	-	610	<1	-	210	40	21	170	180	180	<0.1	-	-	***11***	-	-	-	-	-	21	-	-	-	-	-	-
BH5A_21 Jan 16_-	BH5A	21/01/2016	water	7.07	7.04	**1238**	***1.22***	-12	25.2	7.4	1100	-	670	<1	-	210	41	25	210	180	180	<0.1	-	-	***10***	0.02	0.007	-	-	-	23	<0.005	0.02	0.046	<0.0001	<0.001	<0.01
BH5A_14 Apr 16_-	BH5A	14/04/2016	water	7.03	7.49	**1667**	***2.26***	-138	20.6	7.5	1000	-	530	<5	-	160	27	22	130	150	190	0.1	-	-	***20***	-	-	-	-	-	19	-	-	-	-	-	-
BH5A_21 Jul 16_-	BH5A	21/07/2016	water	7.1	7.38	**1619**	***1.73***	-23	17.3	*7*	1000	-	520	<5	-	180	30	20	130	140	120	<0.1	-	-	***10***	-	-	-	-	-	18	-	-	-	-	-	-
BH5A_18 Oct 16_-	BH5A	18/10/2016	water	4.01	*6.79*	**629**	***1.56***	47	18.2	7.1	750	-	320	<5	-	180	16	7.2	43	32	190	0.2	-	-	**0.014**	-	-	-	-	-	7	-	-	-	-	-	-
BH5A_19 Jan 17_-	BH5A	19/01/2017	water	4.22	*6.88*	**521**	***2.61***	38	20.9	7.4	750	-	290	<5	-	170	14	10	47	42	260	0.1	-	-	0.009	1.8	<0.005	-	-	-	20	<0.01	<0.001	0.042	0.0008	0.002	<0.005
BH5A_02 Jul 19_-	BH5A	2/07/2019	water	7.33	*6.98*	**925**	***2.39***	-76.3	19.5	7.2	1000	-	650	<5	-	170	28	27	120	160	84	<0.1	-	-	***19***	-	-	-	-	-	27	-	-	-	-	-	-
BH5A_24 Oct 19_-	BH5A	24/10/2019	water	7.23	*6.79*	**1692**	***2.5***	55	20	*6.9*	1100	-	710	<5	-	190	33	32	140	170	27	0.1	-	-	***23***	-	-	-	-	-	26	-	-	-	-	-	-
BH5A_15 Jan 20_-	BH5A	15/01/2020	water	7.36	7.24	**1544**	***0.9***	-12.5	20.5	7.1	940	-	630	<5	-	170	28	24	130	160	31	<0.1	-	-	***19***	1.2	<0.005	-	-	-	19	<0.01	0.092	0.052	<0.0001	<0.001	<0.005
BH5A_23 Apr 20_-	BH5A	23/04/2020	water	7.22	7.02	**1567**	***2.61***	-13	20.3	7.3	1000	-	670	<5	-	160	31	25	120	180	36	<0.1	-	-	***22***	-	-	-	-	-	26	-	-	-	-	-	-
BH6A_01 Jul 01_-	BH6A	1/07/2001	water	-	*6.7*	**1100**	-	-	-	-	710	-	-	-	-	-	-	-	-	-	-	-	***0.95***	-	-	2	0.01	11	-	-	0.02	-	-	0.004	-
BH6A_01 Oct 01_-	BH6A	1/10/2001	water	-	*6.8*	**1100**	-	-	-	-	680	-	-	-	-	-	-	-	-	-	-	-	***1.42***	-	-	2	0.01	11	-	-	0.013	-	-	0.002	-
BH6A_01 Jan 02_-	BH6A	1/01/2002	water	-	*6.7*	**1300**	-	-	-	-	690	-	-	-	-	-	-	-	-	-	-	-	***2.04***	-	-	3.4	0.01	15	-	-	0.01	-	-	0.001	-
BH6A_01 Apr 02_-	BH6A	1/04/2002	water	-	7.1	**1200**	-	-	-	-	720	-	-	-	-	-	-	-	-	-	-	-	***2.37***	-	-	4	0.01	14	-	-	0.02	-	-	0.006	-
BH6A_01 Jul 02_-	BH6A	1/07/2002	water	-	7.3	**1000**	-	-	-	-	630	-	-	-	-	-	-	-	-	-	-	-	***2.01***	-	-	3	0.05	10	-	-	0.009	-	-	<0.001	-
BH6A_01 Oct 02_-	BH6A	1/10/2002	water	-	7.4	**990**	-	-	-	-	560	-	-	-	-	-	-	-	-	-	-	-	***2.54***	-	-	2.6	<0.01	10	-	-	0.01	-	-	<0.001	-
BH6A_01 Jan 03_-	BH6A	1/01/2003	water	-	7.51	**960**	-	-	-	-	580	-	-	-	-	-	-	-	-	-	-	-	***2.92***	-	-	3.2	0.19	13	-	-	0.004	-	-	0.005	-
BH6A_01 Apr 03_-	BH6A	1/04/2003	water	-	7.4	**941**	-	-	-	-	540	-	-	-	-	-	-	-	-	-	-	-	***0.98***	-	-	2	0.03	24	-	-	0.017	-	-	0.001	-
BH6A_01 Jul 03_-	BH6A	1/07/2003	water	-	7.63	**1100**	-	-	-	-	714	-	-	-	-	-	-	-	-	-	-	-	***0.3***	-	-	1.5	0.05	24	-	-	0.014	-	-	0.001	-
BH6A_01 Oct 03_-	BH6A	1/10/2003	water	-	7.32	**1320**	-	-	-	-	872	-	-	-	-	-	-	-	-	-	-	-	***1.19***	-	-	3.3	0.01	21	-	-	0.009	-	-	0.001	-
BH6A_01 Jan 04_-	BH6A	1/01/2004	water	-	7.92	**1090**	-	-	-	-	724	-	-	-	-	-	-	-	-	-	-	-	***2.19***	-	-	3.5	0.01	22	-	-	0.011	-	-	0.005	-
BH6A_01 Apr 04_-	BH6A	1/04/2004	water	-	7.22	-	-	-	-	-	606	-	-	-	-	-	-	-	-	-	-	-	***1.85***	-	-	-	0.01	36	-	-	0.009	-	-	-	-
BH6A_01 Jul 04_-	BH6A	1/07/2004	water	-	7.28	-	-	-	-	-	552	-	-	-	-	-	-	-	-	-	-	-	***1.25***	-	-	-	0.01	22	-	-	0.005	-	-	-	-
BH6A_01 Oct 04_-	BH6A	1/10/2004	water	-	7.31	-	-	-	-	-	630	-	-	-	-	-	-	-	-	-	-	-	***1.67***	-	-	-	0.01	13	-	-	0.008	-	-	-	-
BH6A_01 Jan 05_-	BH6A	1/01/2005	water	-	7.41	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-	-	-	***3.36***	-	-	-	0.015	10	-	-	0.006	-	-	0.001	-
BH6A_01 Apr 05_-	BH6A	1/04/2005	water	-	*6.86*	-	-	-	-	-	588	-	-	-	-	-	-	-	-	-	-	-	***2.08***	-	-	-	0.01	12	-	-	0.006	-	-	-	-
BH6A_ 01 Jul 05_-	BH6A	1/07/2005	water	-	**8.37**	-	-	-	-	-	562	-	-	-	-	-	-	-	-	-	-	-	***2.34***	-	-	-	0.035	11	-	-	0.006	-	-	-	-
BH6A_01 Oct 05_-	BH6A	1/10/2005	water	-	*6.83*	-	-	-	-	-	544	-	-	-	-	-	-	-	-	-	-	-	***1.19***	-	-	-	0.028	9	-	-	0.003	-	-	-	-
BH6A_01 Jan 06_-	BH6A	1/01/2006	water	-	7.19	-	-	-	-	-	586	-	-	-	-	-	-	-	-	-	-	-	***1.28***	-	-	-	0.01	11	-	-	0.006	-	-	<0.005	-
BH6A_01 Apr 06_-	BH6A	1/04/2006	water	-	*6.99*	-	-	-	-	-	562	-	-	-	-	-	-	-	-	-	-	-	***0.24***	-	-	-	0.01	11	-	-	0.01	-	-	-	-
BH6A_01 Jul 06_-	BH6A	1/07/2006	water	-	7.04	-	-	-	-	-	1200	-	-	-	-	-	-	-	-	-	-	-	***0.759***	-	-	-	0.021	15	-	-	0.005	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																
BH6A_01 Oct 06_-_	BH6A	1/10/2006	water	-	*6.95*	-	-	-	-	-	656	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.014	12	-	-	0.004	-	-	-	-
BH6A_01 Jan 07_-_	BH6A	1/01/2007	water	-	7.08	-	-	-	-	-	568	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.013	7	-	-	0.01	-	-	<0.001	-
BH6A_01 Apr 07_-_	BH6A	1/04/2007	water	-	*6.79*	-	-	-	-	-	606	-	-	-	432	141	19	6	52	92.9	37	-	11	12	*1.77*	0.024	<0.01	-	-	11	-	-	0.01	-	-	-
BH6A_17 Apr 13_-_	BH6A	17/04/2013	water	14.81	*6.95*	**294**	***0.04***	-100	16.3	7.8	1300	-	680	<1	-	250	48	13	120	230	110	0.14	-	-	*2.9*	-	-	-	-	-	67	-	-	-	-	-
BH6A_09 Jul 13_-_	BH6A	9/07/2013	water	14.2	*6.95*	**1362**	***1.59***	-90	17.1	7.7	1400	-	700	<1	-	290	45	16	140	250	100	-	-	-	*4.2*	-	-	-	-	-	51	-	-	-	-	-
BH6A_29 Oct 13_-_	BH6A	29/10/2013	water	14.72	7.26	**1910**	***1.3***	-56	18.7	7.3	1300	-	610	<1	-	250	44	13	130	200	84	-	-	-	*2.8*	-	-	-	-	-	44	-	-	-	-	-
BH6A_28 Jan 14_-_	BH6A	28/01/2014	water	7.42	*6.92*	**1023**	***2.46***	5	20.1	7.1	850	-	540	<1	-	200	35	18	140	150	170	<0.1	-	-	*9*	0.32	<0.01	-	-	-	18	<0.005	0.004	0.051	<0.0001	<0.001	0.007
BH6A_16 Apr 14_-_	BH6A	16/04/2014	water	14.72	7.03	**1950**	***1.42***	-78	19	*6.8*	1400	-	670	<1	-	250	43	14	180	270	54	0.15	-	-	*3.8*	-	-	-	-	-	67	-	-	-	-	-
BH6A_09 Jul 14_-_	BH6A	9/07/2014	water	-	7.11	**1233**	***1.85***	-52	18.6	7.1	1700	-	730	<1	-	280	46	23	240	340	61	0.17	-	-	*8.1*	-	-	-	-	-	81	-	-	-	-	-
BH6A_16 Oct 14_-_	BH6A	16/10/2014	water	15.52	*6.95*	**2046**	***0.64***	-120	20.1	7.1	1300	-	650	<1	-	280	42	20	180	310	120	0.15	-	-	*8.2*	-	-	-	-	-	65	-	-	-	-	-
BH6A_20 Jan 15_-_	BH6A	20/01/2015	water	14.9	*6.64*	**2060**	***1.03***	-105	21.4	7.3	1800	-	710	<1	-	280	48	23	250	360	100	0.19	-	-	*8.6*	<0.1	<0.01	-	-	-	92	<0.005	0.004	0.16	<0.0001	-	<0.01
BH6A_27 Apr 15_-_	BH6A	27/04/2015	water	23.17	*6.7*	**910**	***2.75***	-27	17.9	7.2	850	-	420	<1	-	140	37	4.1	110	120	61	0.11	-	-	***0.26***	-	-	-	-	-	6	-	-	-	-	-
BH6A_22 Jul 15_-_	BH6A	22/07/2015	water	14.1	*6.65*	**1599**	***3.14***	-56	15.9	*6.8*	1600	-	690	<1	-	260	41	23	200	310	110	0.2	-	-	*10*	-	-	-	-	-	78	-	-	-	-	-
BH6A_21 Oct 15_-_	BH6A	21/10/2015	water	11.22	*6.76*	**1530**	***0.87***	-92	22.4	7.2	2000	-	820	<1	-	290	47	28	240	400	100	0.2	-	-	*14*	-	-	-	-	-	87	-	-	-	-	-
BH6A_20 Jan 16_-_	BH6A	20/01/2016	water	12.01	*6.8*	**2658**	***2.23***	-118	28.4	7.1	1900	-	860	<1	-	340	50	41	310	340	80	0.2	-	-	*18*	1.3	0.13	-	-	-	100	<0.005	0.003	0.29	<0.0001	<0.001	<0.01
BH6A_14 Apr 16_-_	BH6A	14/04/2016	water	13.83	7.37	**2990**	***0.68***	-90	21.2	7.5	2000	-	880	<5	-	330	46	38	280	190	60	0.3	-	-	*17*	-	-	-	-	-	100	-	-	-	-	-
BH6A_20 Sep 16_-_	BH6A	20/09/2016	water	14.75	*6.78*	**2186**	***0.12***	-78.3	19.1	7.1	1300	-	620	<5	-	240	39	22	220	290	59	0.2	-	-	*7.3*	-	-	-	-	-	65	-	-	-	-	-
BH6A_18 Oct 16_-_	BH6A	18/10/2016	water	14.65	*6.77*	**2360**	***1.4***	-70	20.1	7.2	1900	-	850	<5	-	320	53	29	270	400	88	0.2	-	-	*12*	-	-	-	-	-	84	-	-	-	-	-
BH6A_19 Jan 17_-_	BH6A	19/01/2017	water	7.12	***6.47***	**1036**	***2.57***	85	20.6	7.6	1200	-	770	<5	-	220	41	24	160	180	120	0.1	-	-	*13*	0.29	<0.005	-	-	-	27	<0.01	0.044	0.051	<0.0001	<0.001	<0.005
BH6A_25 Jan 17_-_	BH6A	25/01/2017	water	15.16	*6.87*	**2109**	***0.9***	-90	21.1	7.3	1500	-	740	<5	-	230	39	28	270	320	44	0.2	-	-	*12*	<0.005	<0.005	-	-	-	68	<0.01	0.004	0.17	<0.0001	0.001	<0.05
BH6A_02 Jul 19_-_	BH6A	2/07/2019	water	10.64	*6.6*	**754**	***5.01***	50.4	18.4	*6.6*	660	-	180	<5	-	170	14	6.4	29	55	230	<0.1	-	-	***0.15***	-	-	-	-	-	110	-	-	-	-	-
BH6A_25 Oct 19_-_	BH6A	25/10/2019	water	10.66	***6.49***	**955**	***3.75***	79.4	19	*7*	800	-	280	<5	-	210	23	10	32	49	230	<0.1	-	-	***0.11***	-	-	-	-	-	52	-	-	-	-	-
BH6A_14 Jan 20_-_	BH6A	14/01/2020	water	10.79	*6.85*	**801**	***2.3***	-129.5	19.2	***6.5***	580	-	250	<5	-	140	14	2.3	18	34	140	<0.1	-	-	***0.035***	0.37	0.024	-	-	-	9	0.01	0.004	0.055	<0.0001	<0.001	<0.05
BH6A_23 Apr 20_-_	BH6A	23/04/2020	water	10.45	7.28	**759**	***2.03***	-88.1	19.4	*6.8*	560	-	260	<5	-	130	16	4.8	22	34	130	<0.1	-	-	***0.061***	-	-	-	-	-	12	-	-	-	-	-
BH7_01 Sep 93_-_	BH7	1/09/1993	water	-	7.4	**430**	-	-	-	-	324	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.3***	-	-	-	-	23	-	-	0.328	-	-	0.0036	-
BH7_01 Jun 94_-_	BH7	1/06/1994	water	-	7.6	**660**	-	-	-	-	288	-	-	-	-	-	-	-	-	-	-	-	-	-	*1.1*	-	-	-	-	3	-	-	0.24	-	-	0.004	-
BH7_01 Sep 94_-_	BH7	1/09/1994	water	-	7.3	**650**	-	-	-	-	380	-	-	-	-	-	-	-	-	-	-	-	-	-	*1.2*	-	-	-	-	22	-	-	0.305	-	-	0.003	-
BH7_01 Dec 94_-_	BH7	1/12/1994	water	-	*6.8*	**400**	-	-	-	-	376	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.2***	-	-	-	-	13	-	-	0.284	-	-	0.001	-
BH7_01 Mar 95_-_	BH7	1/03/1995	water	-	7.13	**698**	-	-	-	-	318	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.8***	-	-	-	-	15	-	-	0.273	-	-	0.001	-
BH7_01 Jun 95_-_	BH7	1/06/1995	water	-	7.41	**647**	-	-	-	-	340	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.4***	-	-	-	-	22	-	-	0.204	-	-	0.001	-
BH7_01 Sep 95_-_	BH7	1/09/1995	water	-	7.73	**703**	-	-	-	-	446	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	1.2	0.07	22	-	-	0.199	-	-	0.004	-
BH7_01 Jan 96_-_	BH7	1/01/1996	water	-	7.5	**633**	-	-	-	-	340	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.5***	-	-	1.2	-	24	-	-	0.214	-	-	0.001	-
BH7_01 Apr 96_-_	BH7	1/04/1996	water	-	7.3	**717**	-	-	-	-	476	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.48***	-	-	1	0.07	35	-	-	0.219	-	-	0.001	-
BH7_01 Jul 96_-_	BH7	1/07/1996	water	-	7.16	**727**	-	-	-	-	443	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.48***	-	-	0.8	0.03	18	-	-	0.204	-	-	0.001	-
BH7_01 Oct 96_-_	BH7	1/10/1996	water	-	7.33	**855**	-	-	-	-	508	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.74***	-	-	0.9	0.18	14	-	-	0.279	-	-	0.001	-
BH7_01 Jan 97_-_	BH7	1/01/1997	water	-	7.39	**856**	-	-	-	-	432	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.44***	-	-	2.1	0.07	31	-	-	0.126	-	-	0.001	-
BH7_01 Apr 97_-_	BH7	1/04/1997	water	-	7.36	**706**	-	-	-	-	438	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.55***	-	-	0.7	0.35	17	-	-	0.238	-	-	0.003	-
BH7_01 Jul 97_-_	BH7	1/07/1997	water	-	7.29	**837**	-	-	-	-	432	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.36***	-	-	0.9	0.33	17	-	-	0.23	-	-	0.002	-
BH7_01 Oct 97_-_	BH7	1/10/1997	water	-	7.32	**843**	-	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.57***	-	-	1.3	0.01	7	-	-	0.21	-	-	0.001	-
BH7_01 Jan 98_-_	BH7	1/01/1998	water	-	7.31	**875**	-	-	-	-	448	-	-	-	-	-	-	-	-	-	-	-	-	-	*1.29*	-	-	1.3	0.36	10	-	-	0.239	-	-	0.001	-
BH7_01 Apr 98_-_	BH7	1/04/1998	water	-	7.45	**869**	-	-	-	-	442	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.65***	-	-	1.3	0.04	6	-	-	0.185	-	-	0.001	-
BH7A_01 Jan 98_-_	BH7A	1/01/1998	water	-	7.25	**565**	-	-	-	-	346	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.17***	-	-	0.8	0.18	9	-	-	0.042	-	-	0.001	-
BH7A_01 Apr 98_-_	BH7A	1/04/1998	water	-	7.23	**663**	-	-	-	-	372	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	0.6	27.8	6	-	-	0.002	-	-	0.001	-
BH7A_01 Jul 98_-_	BH7A	1/07/1998	water	-	7.54	**437**	-	-	-	-	322	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.6	2.25	5	-	-	0.004	-	-	0.001	-
BH7A_01 Oct 98_-_	BH7A	1/10/1998	water	-	7.8	**416**	-	-	-	-	230	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.5	0.11	38	-	-	0.01	-	-	0.002	-
BH7A_01 Jan 99_-_	BH7A	1/01/1999	water	-	7.6	**439**	-	-	-	-	256	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	0.1	1.5	4	-	-	0.004	-	-	0.001	-
BH7A_01 Mar 99_-_	BH7A	1/03/1999	water	-	7.3	**479**	-	-	-	-	359	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	4.9	3	-	-	0.006	-	-	0.005	-
BH7A_01 Jul 99_-_	BH7A	1/07/1999	water	-	7.2	**842**	-	-	-	-	476	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.9*	-	-	1.9	0.37	7	-	-	0.01	-	-	0.005	-
BH7A_01 Oct 99_-_	BH7A	1/10/1999	water	-	7.5	**532**	-	-	-	-	313	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	0.3	0.08	4	-	-	0.004	-	-	0.001	-
BH7A_01 Jan 00_-_	BH7A	1/01/2000	water	-	7.3	**690**	-	-	-	-	430	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	2.66	6	-	-	0.004	-	-	0.002	-
BH7A_01 Apr 00_-_	BH7A	1/04/2000	water	-	*6.9*	**690**	-	-	-	-	450	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	0.1	4.74	4	-	-	0.005	-	-	0.007	-
BH7A_01 Jul 00_-_	BH7A	1/07/2000	water	-	*6.9*	**760**	-	-	-	-	450	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.8	1.79	4	-	-	0.003	-	-	0.003	-
BH7A_01 Oct 00_-_	BH7A	1/10/2000	water	-	7.2	**640**	-	-	-	-	360	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.4	1.25	3	-	-	0.002	-	-	0.002	-
BH7A_01 Jan 01_-_	BH7A	1/01/2001	water	-	7.4	**560**	-	-	-	-	330	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	0.4	0.27	7	-	-	0.001	-	-	0.008	-
BH7A_01 Apr 01_-_	BH7A	1/04/2001	water	-	7.3	**610**	-	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.31	2	-	-	0.003	-	-	0.001	-
BH7A_01 Jul 01_-_	BH7A	1/07/2001	water	-	7.2	**520**	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	0.3	0.08	3	-	-	0.004	-	-	0.002	-
BH7A_01 Oct 01_-_	BH7A	1/10/2001	water	-	7.3	**570**	-	-	-	-	290	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	0.04	3	-	-	0.005	-	-	0.001	-
BH7A_01 Jan 02_-_	BH7A	1/01/2002	water	-	7.1	**750**	-	-	-	-	430	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	0.81	3	-	-	0.001	-	-	0.001	-
BH7A_01 Apr 02_-_	BH7A	1/04/2002	water	-	7.6	**700**	-	-	-	-	440	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.22***	-	-	0.4	0.34	5	-	-	0.008	-	-	0.004	-
BH7A_01 Jul 02_-_	BH7A	1/07/2002	water	-	7.6	**570**	-	-	-	-	330	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	0.2	0.05	2	-	-	0.009	-	-	<0.001	-
BH7A_01 Oct 02_-_	BH7A	1/10/2002	water	-	7.7	**770**	-	-	-	-	440	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.32***	-	-	0.4	0.02	4	-	-	0.018	-	-	0.021	-
BH7A_01 Jan 03_-_	BH7A	1/01/2003	water	-	7.73	**430**	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	1.2	0.33	2	-	-	0.006	-	-	<0.001	-
BH7A_01 Apr 03_-_	BH7A	1/04/2003	water	-	7.69	**590**	-	-	-	-	336	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.08	14	-	-	0.012	-	-	0.001	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																
BH7A_01 Jul 03_-	BH7A	1/07/2003	water	-	7.75	**656**	-	-	-	-	392	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.32***	-	-	0.6	0.01	10	-	-	0.018	-	-	0.001	-
BH7A_01 Oct 03_-	BH7A	1/10/2003	water	-	7.88	**667**	-	-	-	-	466	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.08***	-	-	0.5	0.06	13	-	-	0.02	-	-	0.001	-
BH7A_01 Jan 04_-	BH7A	1/01/2004	water	-	**8.41**	**678**	-	-	-	-	432	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.11***	-	-	0.4	0.01	8	-	-	0.042	-	-	0.005	-
BH7A_01 Apr 04_-	BH7A	1/04/2004	water	-	7.54	-	-	-	-	-	504	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.11***	-	-	-	0.03	20	-	-	0.032	-	-	-	-
BH7A_01 Jul 04_-	BH7A	1/07/2004	water	-	7.7	-	-	-	-	-	366	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	0.02	1	-	-	0.017	-	-	-	-
BH7A_01 Oct 04_-	BH7A	1/10/2004	water	-	7.68	-	-	-	-	-	406	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.14***	-	-	-	0.01	4	-	-	0.019	-	-	-	-
BH7A_01 Jan 05_-	BH7A	1/01/2005	water	-	7.8	-	-	-	-	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.61***	-	-	-	0.037	5	-	-	0.035	-	-	0.001	-
BH7A_01 Apr 05_-	BH7A	1/04/2005	water	-	7.27	-	-	-	-	-	326	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.086***	-	-	-	0.035	1	-	-	0.02	-	-	-	-
BH7A_01 Jul 05_-	BH7A	1/07/2005	water	-	7.77	-	-	-	-	-	318	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	-	0.041	1	-	-	0.011	-	-	-	-
BH7A_01 Oct 05_-	BH7A	1/10/2005	water	-	7.34	-	-	-	-	-	396	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.173***	-	-	-	0.03	1	-	-	0.037	-	-	-	-
BH7A_01 Jan 06_-	BH7A	1/01/2006	water	-	7.47	-	-	-	-	-	458	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.108***	-	-	-	0.053	3	-	-	0.044	-	-	0.002	-
BH7A_01 Apr 06_-	BH7A	1/04/2006	water	-	7.19	-	-	-	-	-	444	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.08***	-	-	-	0.01	4	-	-	0.094	-	-	-	-
BH7A_01 Jul 06_-	BH7A	1/07/2006	water	-	7.26	-	-	-	-	-	408	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.061***	-	-	-	<0.01	4	-	-	0.039	-	-	-	-
BH7A_01 Oct 06_-	BH7A	1/10/2006	water	-	7.25	-	-	-	-	-	482	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.088***	-	-	-	0.17	4	-	-	0.039	-	-	-	-
BH7A_01 Jan 07_-	BH7A	1/01/2007	water	-	7.14	-	-	-	-	-	576	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.192***	-	-	-	0.18	3	-	-	0.016	-	-	<0.001	-
BH7A_01 Apr 07_-	BH7A	1/04/2007	water	-	*6.98*	-	-	-	-	-	504	-	-	-	446	136	23	2	22	30.9	14	-	9.68	10.1	***0.145***	0.151	0.027	-	-	7	-	-	0.022	-	-	-	-
BH7A_17 Apr 13_-	BH7A	17/04/2013	water	2.17	7.56	**2.1**	***0.83***	29	17.3	7.7	2700	-	1900	<1	-	200	88	170	470	490	210	0.15	-	-	***240***	-	-	-	-	-	310	-	-	-	-	-	-
BH7A_09 Jul 13_-	BH7A	9/07/2013	water	2.98	7.12	**863**	***2.04***	-20	18.4	7.8	520	-	430	<1	-	130	21	2.7	38	34	11	-	-	-	***0.2***	-	-	-	-	-	6	-	-	-	-	-	-
BH7A_29 Oct 13_-	BH7A	29/10/2013	water	2.2	**8.1**	**924**	***3.16***	-11	19	7.5	540	-	420	<1	-	150	24	2.1	19	22	26	-	-	-	**0.012**	-	-	-	-	-	5	-	-	-	-	-	-
BH7A_28 Jan 14_-	BH7A	28/01/2014	water	2.46	7.23	**926**	***3.92***	36	20.3	7.3	560	-	410	<1	-	150	25	2.3	27	32	28	0.11	-	-	0.009	12	0.15	-	-	-	4	<0.005	0.005	0.024	<0.0001	<0.001	<0.005
BH7A_16 Apr 14_-	BH7A	16/04/2014	water	2.25	7.02	**780**	***2.12***	86	21.5	7.2	550	-	410	<1	-	140	22	1.6	33	32	19	0.16	-	-	***0.061***	-	-	-	-	-	6	-	-	-	-	-	-
BH7A_09 Jul 14_-	BH7A	9/07/2014	water	-	7.71	**600**	***4.2***	79	19.6	7.5	710	-	420	<1	-	170	26	2.2	38	50	23	0.12	-	-		-	-	-	-	-	7	-	-	-	-	-	-
BH7A_16 Oct 14_-	BH7A	16/10/2014	water	2	7.13	**852**	***0.92***	-74	18.9	7.4	480	-	400	<1	-	140	22	2	32	26	19	0.19	-	-	***0.45***	-	-	-	-	-	10	-	-	-	-	-	-
BH7A_21 Jan 15_-	BH7A	21/01/2015	water	2.37	***6.09***	**818**	***0.13***	85	19.8	***6.4***	640	-	410	<1	-	150	25	3.3	25	31	32	0.11	-	-	***0.041***	6.6	0.26	-	-	-	7	<0.005	0.005	0.03	<0.0001	-	<0.01
BH7A_23 Apr 15_-	BH7A	23/04/2015	water	8.93	7.08	**1848**	***2.08***	-91	20	7.2	500	-	370	<1	-	130	22	2.1	24	28	27	0.22	-	-	***0.36***	-	-	-	-	-	8	-	-	-	-	-	-
BH7A_21 Jul 15_-	BH7A	21/07/2015	water	2.63	7.1	**836**	***3.46***	-35	17.4	7.1	520	-	390	<1	-	140	21	3.1	26	36	23	0.2	-	-	***0.058***	-	-	-	-	-	18	-	-	-	-	-	-
BH7A_21 Oct 15_-	BH7A	21/10/2015	water	2.21	*6.94*	**330**	***3.35***	25	20.5	7.3	550	-	320	<1	-	130	20	2.7	26	43	71	0.1	-	-		-	-	-	-	-	9	-	-	-	-	-	-
BH7A_21 Jan 16_-	BH7A	21/01/2016	water	2.15	7.26	**979**	***4.29***	67	24.1	7.1	650	-	410	<1	-	160	26	3.3	41	44	38	0.2	-	-	***0.26***	0.57	0.011	-	-	-	16	<0.005	0.002	0.028	<0.0001	<0.001	<0.01
BH7A_19 Apr 16_-	BH7A	19/04/2016	water	2.25	*6.8*	**755**	***2.35***	-37	21.3	7.4	550	-	420	<5	-	160	25	3	29	30	41	0.2	-	-	***0.078***	-	-	-	-	-	16	-	-	-	-	-	-
BH7A_13 Jul 16_-	BH7A	13/07/2016	water	2.2	7.33	**896**	***3.86***	-76	15.2	7.8	560	-	440	<5	-	140	23	2.2	27	36	26	0.2	-	-	***0.18***	-	-	-	-	-	17	-	-	-	-	-	-
BH7A_18 Oct 16_-	BH7A	18/10/2016	water	2.27	*6.88*	**631**	***2.5***	40	16.8	7.3	580	-	440	<5	-	150	23	2.3	29	27	36	0.2	-	-	**0.012**	-	-	-	-	-	8	-	-	-	-	-	-
BH7A_19 Jan 17_-	BH7A	19/01/2017	water	2.35	*6.97*	**787**	***2.17***	-4	20.1	*7*	570	-	380	<5	-	150	25	1.7	21	28	85	0.1	-	-	0.009	9.8	0.21	-	-	-	5	<0.01	0.011	0.026	<0.0001	<0.001	<0.005
BH7A_02 Jul 19_-	BH7A	2/07/2019	water	2.61	7.46	**712**	**6.92**	-36.5	18.6	7.4	500	-	420	<5	-	120	22	2	17	26	21	0.2	-	-	***0.076***	-	-	-	-	-	4	-	-	-	-	-	-
BH7A_25 Oct 19_-	BH7A	25/10/2019	water	2.62	7.32	**858**	***3.68***	51	19.1	7.8	610	-	420	<5	-	150	24	2.4	21	36	31	0.2	-	-	***0.12***	-	-	-	-	-	4	-	-	-	-	-	-
BH7A_14 Jan 20_-	BH7A	14/01/2020	water	2.82	7.27	**794**	7.74	-252.7	19.7	7.1	540	-	420	<5	-	140	25	2.1	17	27	26	0.2	-	-	0.006	4.7	0.19	-	-	-	3	<0.01	0.005	0.024	<0.0001	<0.001	<0.005
BH7A_23 Apr 20_-	BH7A	23/04/2020	water	2.39	7.55	**860**	***2.44***	-19.6	19.3	7.2	510	-	410	<5	-	140	22	2.3	25	48	34	0.2	-	-	***0.068***	-	-	-	-	-	4	-	-	-	-	-	-
BH8_01 Sep 93_-	BH8	1/09/1993	water	-	7.4	**800**	-	-	-	-	652	-	-	-	-	-	-	-	-	-	-	-	-	-	***1.3***	-	-	-	-	60	-	-	0.0116	-	-	0.003	-
BH8_01 Jun 94_-	BH8	1/06/1994	water	-	7.4	**1020**	-	-	-	-	432	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.6***	-	-	-	-	3	-	-	0.042	-	-	0.006	-
BH8_01 Sep 94_-	BH8	1/09/1994	water	-	7.2	**1130**	-	-	-	-	784	-	-	-	-	-	-	-	-	-	-	-	-	-	***1.5***	-	-	-	-	49	-	-	0.013	-	-	0.003	-
BH8_01 Dec 94_-	BH8	1/12/1994	water	-	7.1	**805**	-	-	-	-	452	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.2***	-	-	-	-	27	-	-	0.013	-	-	0.001	-
BH8_01 Mar 95_-	BH8	1/03/1995	water	-	7.24	**957**	-	-	-	-	442	-	-	-	-	-	-	-	-	-	-	-	-	-	***1.2***	-	-	-	-	15	-	-	0.025	-	-	0.001	-
BH8_01 Jun 95_-	BH8	1/06/1995	water	-	7.33	**1012**	-	-	-	-	532	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.7***	-	-	-	-	21	-	-	0.04	-	-	0.001	-
BH8_01 Sep 95_-	BH8	1/09/1995	water	-	7.78	**916**	-	-	-	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	1.3	0.02	18	-	-	0.038	-	-	0.003	-
BH8_01 Jan 96_-	BH8	1/01/1996	water	-	7.49	**783**	-	-	-	-	440	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.32***	-	-	1.1	-	19	-	-	0.05	-	-	0.001	-
BH8_01 Apr 96_-	BH8	1/04/1996	water	-	7.68	**730**	-	-	-	-	324	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.46***	-	-	0.7	0.06	11	-	-	0.056	-	-	0.001	-
BH8_01 Jul 96_-	BH8	1/07/1996	water	-	***8.91***	**699**	-	-	-	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.85***	-	-	1.7	0.16	7	-	-	0.055	-	-	0.001	-
BH8_01 Oct 96_-	BH8	1/10/1996	water	-	7.44	**681**	-	-	-	-	456	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.55***	-	-	0.8	0.26	8	-	-	0.073	-	-	0.001	-
BH8A_01 Jul 96_-	BH8A	1/07/1996	water	-	*7*	**394**	-	-	-	-	770	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.63	18	-	-	0.002	-	-	0.001	-
BH8A_01 Oct 96_-	BH8A	1/10/1996	water	-	7.6	**448**	-	-	-	-	306	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	0.1	1.32	2	-	-	0.002	-	-	0.001	-
BH8A_01 Jan 97_-	BH8A	1/01/1997	water	-	**8.04**	**470**	-	-	-	-	268	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	2.07	8	-	-	0.008	-	-	0.001	-
BH8A_01 Apr 97_-	BH8A	1/04/1997	water	-	7.62	**379**	-	-	-	-	256	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	1.32	3	-	-	0.002	-	-	0.001	-
BH8A_01 Jul 97_-	BH8A	1/07/1997	water	-	7.65	**463**	-	-	-	-	266	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.2	2.04	4	-	-	0.002	-	-	0.002	-
BH8A_01 Oct 97_-	BH8A	1/10/1997	water	-	7.67	**468**	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.88***	-	-	1.3	1.61	4	-	-	0.01	-	-	0.001	-
BH8A_01 Jan 98_-	BH8A	1/01/1998	water	-	7.61	**458**	-	-	-	-	298	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.37	4	-	-	0.004	-	-	0.001	-
BH8A_01 Apr 98_-	BH8A	1/04/1998	water	-	7.75	**449**	-	-	-	-	266	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.6	1.59	3	-	-	0.002	-	-	0.001	-
BH8A_01 Jul 98_-	BH8A	1/07/1998	water	-	7.86	**406**	-	-	-	-	262	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.6	1.5	4	-	-	0.003	-	-	0.001	-
BH8A_01 Oct 98_-	BH8A	1/10/1998	water	-	7.79	**429**	-	-	-	-	252	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.82	10	-	-	0.01	-	-	0.002	-
BH8A_01 Jan 99_-	BH8A	1/01/1999	water	-	7.7	**437**	-	-	-	-	230	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	0.5	0.58	5	-	-	0.002	-	-	0.001	-
BH8A_01 Mar 99_-	BH8A	1/03/1999	water	-	7.6	**354**	-	-	-	-	228	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.4	0.57	9	-	-	0.003	-	-	0.005	-
BH8A_01 Jul 99_-	BH8A	1/07/1999	water	-	7.6	**482**	-	-	-	-	258	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.4	0.48	1	-	-	0.003	-	-	0.004	-
BH8A_01 Oct 99_-	BH8A	1/10/1999	water	-	7.6	**475**	-	-	-	-	255	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.4	0.28	7	-	-	0.003	-	-	0.001	-
BH8A_01 Jan 00_-	BH8A	1/01/2000	water	-	7.5	**440**	-	-	-	-	260	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.75	2	-	-	0.003	-	-	0.001	-
BH8A_01 Apr 00_-	BH8A	1/04/2000	water	-	7.4	**460**	-	-	-	-	260	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.59	1	-	-	0.003	-	-	0.005	-

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																
BH8A_01 Jul 00_-	BH8A	1/07/2000	water	-	*7*	**460**	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	1.2	0.47	2	-	-	0.002	-	-	0.003	-
BH8A_01 Oct 00_-	BH8A	1/10/2000	water	-	7.3	**460**	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.6	0.51	1	-	-	0.002	-	-	0.001	-
BH8A_01 Jan 01_-	BH8A	1/01/2001	water	-	7.6	**430**	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.46	10	-	-	0.002	-	-	0.005	-
BH8A_01 Apr 01_-	BH8A	1/04/2001	water	-	7.5	**430**	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.2	0.46	2	-	-	0.004	-	-	0.003	-
BH8A_01 Jul 01_-	BH8A	1/07/2001	water	-	7.4	**580**	-	-	-	-	380	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.5	0.25	3	-	-	0.003	-	-	0.003	-
BH8A_01 Oct 01_-	BH8A	1/10/2001	water	-	7.3	**650**	-	-	-	-	360	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	0.12	2	-	-	0.002	-	-	0.001	-
BH8A_01 Jan 02_-	BH8A	1/01/2002	water	-	7.2	**650**	-	-	-	-	380	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.4	0.14	2	-	-	0.001	-	-	0.001	-
BH8A_01 Apr 02_-	BH8A	1/04/2002	water	-	7.6	**620**	-	-	-	-	370	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.5	0.11	4	-	-	0.002	-	-	0.004	-
BH8A_01 Jul 02_-	BH8A	1/07/2002	water	-	7.7	**590**	-	-	-	-	310	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.1	0.06	1	-	-	0.002	-	-	<0.001	-
BH8A_01 Oct 02_-	BH8A	1/10/2002	water	-	7.7	**590**	-	-	-	-	340	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.1	0.08	1	-	-	0.002	-	-	0.013	-
BH8A_01 Jan 03_-	BH8A	1/01/2003	water	-	7.74	**400**	-	-	-	-	300	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	0.4	0.12	2	-	-	0.002	-	-	0.005	-
BH8A_01 Apr 03_-	BH8A	1/04/2003	water	-	7.72	**493**	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.21	11	-	-	0.001	-	-	0.001	-
BH8A_01 Jul 03_-	BH8A	1/07/2003	water	-	7.7	**757**	-	-	-	-	496	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	0.11	11	-	-	0.003	-	-	0.001	-
BH8A_01 Oct 03_-	BH8A	1/10/2003	water	-	7.7	**562**	-	-	-	-	402	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.3	0.05	9	-	-	0.002	-	-	0.001	-
BH8A_01 Jan 04_-	BH8A	1/01/2004	water	-	**8.05**	**573**	-	-	-	-	374	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.1	0.09	7	-	-	0.002	-	-	0.005	-
BH8A_01 Apr 04_-	BH8A	1/04/2004	water	-	7.75	-	-	-	-	-	338	-	-	-	-	-	-	-	-	-	-	-	***0.06***	-	-	-	0.06	9	-	-	0.002	-	-	-	-
BH8A_01 Jul 04_-	BH8A	1/07/2004	water	-	7.71	-	-	-	-	-	312	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	0.08	1	-	-	0.001	-	-	-	-
BH8A_01 Oct 04_-	BH8A	1/10/2004	water	-	7.71	-	-	-	-	-	342	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	-	0.16	2	-	-	0.002	-	-	-	-
BH8A_01 Jan 05_-	BH8A	1/01/2005	water	-	7.78	-	-	-	-	-	342	-	-	-	-	-	-	-	-	-	-	-	***1.15***	-	-	-	0.131	2	-	-	0.002	-	-	<0.001	-
BH8A_01 Apr 05_-	BH8A	1/04/2005	water	-	7.3	-	-	-	-	-	334	-	-	-	-	-	-	-	-	-	-	-	***0.036***	-	-	-	0.052	1	-	-	0.001	-	-	-	-
BH8A_01 Jul 05_-	BH8A	1/07/2005	water	-	**8.07**	-	-	-	-	-	278	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	-	0.062	1	-	-	0.001	-	-	-	-
BH8A_01 Oct 05_-	BH8A	1/10/2005	water	-	7.32	-	-	-	-	-	332	-	-	-	-	-	-	-	-	-	-	-	***0.068***	-	-	-	0.05	1	-	-	0.001	-	-	-	-
BH8A_01 Jan 06_-	BH8A	1/01/2006	water	-	7.6	-	-	-	-	-	352	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	-	0.035	1	-	-	0.001	-	-	0.002	-
BH8A_01 Apr 06_-	BH8A	1/04/2006	water	-	7.3	-	-	-	-	-	306	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	-	0.065	1	-	-	0.001	-	-	-	-
BH8A_01 Jul 06_-	BH8A	1/07/2006	water	-	7.4	-	-	-	-	-	344	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	0.122	2	-	-	0.001	-	-	-	-
BH8A_01 Oct 06_-	BH8A	1/10/2006	water	-	-	-	-	-	-	-	428	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	0.079	-	-	-	0.001	-	-	-	-
BH8A_01 Jan 07_-	BH8A	1/01/2007	water	-	7.36	-	-	-	-	-	406	-	-	-	-	-	-	-	-	-	-	-	***0.066***	-	-	-	0.212	2	-	-	0.002	-	-	<0.001	-
BH8A_01 Apr 07_-	BH8A	1/04/2007	water	-	7.18	-	-	-	-	-	368	-	-	-	245	95	8	1	22	50.9	13	-	6.38	6.61	***0.051***	0.188	0.019	-	-	6	-	-	0.002	-	-	-	-
BH8A_17 Apr 13_-	BH8A	17/04/2013	water	16.66	7.85	**3000**	***0.29***	-17	17	7.9	300	-	250	<1	-	78	6.2	1	23	30	8	0.13	-	-	0.007	-	-	-	-	-	2	-	-	-	-	-	-
BH8A_09 Jul 13_-	BH8A	9/07/2013	water	16.16	7.35	**410**	**6.65**	81	16.9	7.8	390	-	250	<1	-	98	8.8	1.3	35	48	10	-	-	-		-	-	-	-	-	1	-	-	-	-	-	-
BH8A_29 Oct 13_-	BH8A	29/10/2013	water	16.88	7.71	**440**	***3.11***	35	18.1	7.7	360	-	230	<1	-	98	8.8	1.2	39	55	27	-	-	-	0.007	-	-	-	-	-	2	-	-	-	-	-	-
BH8A_28 Jan 14_-	BH8A	28/01/2014	water	16.62	7.71	**618**	8.7	73	20.2	7.4	360	-	240	<1	-	91	8.8	1.2	36	54	13	0.14	-	-		0.14	<0.01	-	-	-	1	<0.005	0.002	0.008	<0.0001	<0.001	<0.005
BH8A_16 Apr 14_-	BH8A	16/04/2014	water	16.6	7.82	**533**	***6.23***	79	20.5	7.5	330	-	240	<1	-	79	7.5	1.1	36	42	10	0.14	-	-		-	-	-	-	-	<1	-	-	-	-	-	-
BH8A_09 Jul 14_-	BH8A	9/07/2014	water	-	**8.49**	**353**	***7.17***	45	17.9	7.1	420	-	190	<1	-	90	8.6	1.2	40	39	65	0.12	-	-		-	-	-	-	-	<1	-	-	-	-	-	-
BH8A_16 Oct 14_-	BH8A	16/10/2014	water	16.31	7.54	**665**	***4.39***	44	18.9	7.6	360	-	250	<1	-	98	9.1	1.3	40	57	14	0.12	-	-		-	-	-	-	-	<1	-	-	-	-	-	-
BH8A_21 Jan 15_-	BH8A	21/01/2015	water	16.56	7.16	**555**	***5.76***	18.3	18.3	7.6	370	-	240	<1	-	97	9.2	1.3	34	48	10	0.14	-	-		0.086	<0.01	-	-	-	2	<0.005	0.002	0.01	<0.0001	-	<0.01
BH8A_23 Apr 15_-	BH8A	23/04/2015	water	16.48	7.72	**540**	***3.68***	84	19.4	7.5	370	-	240	<1	-	89	8.5	1.2	37	42	12	0.16	-	-		-	-	-	-	-	3	-	-	-	-	-	-
BH8A_21 Jul 15_-	BH8A	21/07/2015	water	16.22	7.26	**714**	***5.67***	49	16.6	7.1	430	-	220	<1	-	89	8.6	1.1	46	75	14	0.2	-	-		-	-	-	-	-	<1	-	-	-	-	-	-
BH8A_21 Oct 15_-	BH8A	21/10/2015	water	16.23	7.73	**243**	***3.4***	48	20.2	7.7	420	-	240	<1	-	90	8.8	1.2	40	68	14	0.2	-	-		-	-	-	-	-	2	-	-	-	-	-	-
BH8A_21 Jan 16_-	BH8A	21/01/2016	water	16.34	***6.09***	**774**	8.6	126	22.7	7.6	380	-	45	<1	-	95	9.2	1.4	37	63	13	0.2	-	-		0.27	<0.01	-	-	-	34	<0.005	0.002	0.008	<0.0001	<0.001	<0.01
BH8A_19 Apr 16_-	BH8A	19/04/2016	water	16.18	***5.4***	**557**	***4.84***	55	19.6	7.7	380	-	230	<5	-	94	9.2	1.2	35	57	12	0.2	-	-		-	-	-	-	-	1	-	-	-	-	-	-
BH8A_13 Jul 16_-	BH8A	13/07/2016	water	16.23	7.47	**399**	***1.91***	71	14.3	7.2	710	-	560	<5	-	210	32	8.9	43	67	27	0.1	-	-		-	-	-	-	-	6	-	-	-	-	-	-
BH8A_18 Oct 16_-	BH8A	18/10/2016	water	16.11	*6.81*	**980**	***2.46***	-179	16	7.6	400	-	270	<5	-	100	9.9	1.2	47	55	15	0.2	-	-		-	-	-	-	-	1	-	-	-	-	-	-
BH8A_19 Jan 17_-	BH8A	19/01/2017	water	16.25	7.6	**614**	***6.17***	53	20.1	7.6	360	-	280	<5	-	93	8.5	1.2	37	49	15	0.1	-	-	<0.005	0.067	<0.005	-	-	-	6	<0.01	0.002	0.009	<0.0001	<0.001	<0.005
BH8A_02 Jul 19_-	BH8A	2/07/2019	water	9.87	**8.17**	**455.9**	***9.78***	53.1	16.5	7.7	310	-	230	<5	-	76	7.2	1	26	42	12	0.2	-	-	**0.01**	-	-	-	-	-	<1	-	-	-	-	-	-
BH8A_22 Apr 20_-	BH8A	22/04/2020	water	16.59	7.7	**753**	8.03	39.9	18.1	7.5	520	-	250	<5	-	110	11	1.4	45	120	34	0.1	-	-	<0.005	-	-	-	-	-	1	-	-	-	-	-	-
BH9_01 Jun 94_-	BH9	1/06/1994	water	-	7.6	**1210**	-	-	-	-	580	-	-	-	-	-	-	-	-	-	-	-	***10***	-	-	-	-	18	-	-	0.0722	-	-	0.009	-
BH9_01 Sep 94_-	BH9	1/09/1994	water	-	7.4	**1090**	-	-	-	-	640	-	-	-	-	-	-	-	-	-	-	-	***5.3***	-	-	-	-	58	-	-	0.117	-	-	0.004	-
BH9_01 Dec 94_-	BH9	1/12/1994	water	-	*7*	**1068**	-	-	-	-	676	-	-	-	-	-	-	-	-	-	-	-	***5.3***	-	-	-	-	129	-	-	0.095	-	-	0.001	-
BH9_01 Mar 95_-	BH9	1/03/1995	water	-	7.2	**1242**	-	-	-	-	516	-	-	-	-	-	-	-	-	-	-	-	***5.3***	-	-	-	-	35	-	-	0.192	-	-	0.003	-
BH9_01 Jun 95_-	BH9	1/06/1995	water	-	7.31	**1670**	-	-	-	-	1060	-	-	-	-	-	-	-	-	-	-	-	***4***	-	-	-	-	41	-	-	0.0149	-	-	0.002	-
BH9_01 Sep 95_-	BH9	1/09/1995	water	-	7.85	**1784**	-	-	-	-	1540	-	-	-	-	-	-	-	-	-	-	-	***2***	-	-	4.5	0.1	29	-	-	0.071	-	-	0.009	-
BH9_01 Jan 96_-	BH9	1/01/1996	water	-	7.46	**1224**	-	-	-	-	1010	-	-	-	-	-	-	-	-	-	-	-	***5.44***	-	-	7	-	5	-	-	0.108	-	-	0.001	-
BH9_01 Apr 96_-	BH9	1/04/1996	water	-	7.55	**659**	-	-	-	-	680	-	-	-	-	-	-	-	-	-	-	-	***0.79***	-	-	1.2	0.05	25	-	-	0.031	-	-	0.002	-
BH9_01 Jul 96_-	BH9	1/07/1996	water	-	7.95	**1655**	-	-	-	-	1560	-	-	-	-	-	-	-	-	-	-	-	***2.99***	-	-	15.3	1.68	24	-	-	0.018	-	-	0.002	-
BH9A_01 Jul 96_-	BH9A	1/07/1996	water	-	***8.6***	**1229**	-	-	-	-	1020	-	-	-	-	-	-	-	-	-	-	-	***9.18***	-	-	14.6	0.06	25	-	-	0.191	-	-	0.002	-
BH9A_01 Oct 96_-	BH9A	1/10/1996	water	-	7.6	**1521**	-	-	-	-	982	-	-	-	-	-	-	-	-	-	-	-	***14.5***	-	-	15.4	0.45	31	-	-	0.207	-	-	0.004	-
BH9A_01 Jan 97_-	BH9A	1/01/1997	water	-	7.73	**1502**	-	-	-	-	780	-	-	-	-	-	-	-	-	-	-	-	***9.97***	-	-	14.7	0.43	88	-	-	0.153	-	-	0.001	-
BH9A_01 Apr 97_-	BH9A	1/04/1997	water	-	7.8	**1116**	-	-	-	-	792	-	-	-	-	-	-	-	-	-	-	-	***12.9***	-	-	12.9	0.02	33	-	-	0.203	-	-	0.005	-
BH9A_01 Jul 97_-	BH9A	1/07/1997	water	-	7.57	**1140**	-	-	-	-	632	-	-	-	-	-	-	-	-	-	-	-	***8.32***	-	-	10	0.05	28	-	-	0.186	-	-	0.002	-
BH9A_01 Oct 97_-	BH9A	1/10/1997	water	-	7.67	**1030**	-	-	-	-	566	-	-	-	-	-	-	-	-	-	-	-	***8.42***	-	-	10.4	0.01	17	-	-	0.17	-	-	0.001	-
BH9A_01 Jan 98_-	BH9A	1/01/1998	water	-	7.68	**1022**	-	-	-	-	594	-	-	-	-	-	-	-	-	-	-	-	***9.06***	-	-	8.9	0.08	18	-	-	0.165	-	-	0.008	-
BH9A_01 Apr 98_-	BH9A	1/04/1998	water	-	7.7	**987**	-	-	-	-	578	-	-	-	-	-	-	-	-	-	-	-	***9.51***	-	-	12.8	0.01	21	-	-	0.177	-	-	0.006	-

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09*[#1]			*7-8.5*		*0.5*													*0.015*[#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09**[#1]			**6.5-8**		**5**													**0.01**[#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9[#3]							0.055[#4]	0.013[#5]		0.0002	0.001[#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91[#7]										0.0055	0.0044[#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		

Sample ID	Location Code	Date	Matrix Type																																
BH9A_01 Nov 98_-	BH9A	1/11/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 99_-	BH9A	1/01/1999	water	-	7.5	**957**	-	-	-	-	525	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	0.171	-	-	0.001	-
BH9A_01 Mar 99_-	BH9A	1/03/1999	water	-	7.5	**869**	-	-	-	-	512	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-	-	0.17	-	-	0.003	-
BH9A_01 Jul 99_-	BH9A	1/07/1999	water	-	7.4	**990**	-	-	-	-	551	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	0.019	-	-	0.005	-
BH9A_01 Oct 99_-	BH9A	1/10/1999	water	-	7.5	**893**	-	-	-	-	508	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	-	-	0.169	-	-	0.009	-
BH9A_01 Jan 00_-	BH9A	1/01/2000	water	-	7.1	**720**	-	-	-	-	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	-	-	0.196	-	-	0.004	-
BH9A_01 Apr 00_-	BH9A	1/04/2000	water	-	7.5	**930**	-	-	-	-	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	0.211	-	-	0.009	-
BH9A_01 Jul 00_-	BH9A	1/07/2000	water	-	7.3	**950**	-	-	-	-	570	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34	-	-	0.169	-	-	0.005	-
BH9A_01 Oct 00_-	BH9A	1/10/2000	water	-	7.4	**970**	-	-	-	-	610	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	-	-	0.064	-	-	0.006	-
BH9A_01 Jan 01_-	BH9A	1/01/2001	water	-	7.8	**840**	-	-	-	-	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49	-	-	0.212	-	-	0.01	-
BH9A_01 Apr 01_-	BH9A	1/04/2001	water	-	7.7	**940**	-	-	-	-	620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41	-	-	0.197	-	-	0.004	-
BH9A_01 Jul 01_-	BH9A	1/07/2001	water	-	7.5	**1100**	-	-	-	-	640	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	-	-	0.247	-	-	0.005	-
BH9A_01 Jan 02_-	BH9A	1/01/2002	water	-	7.7	**980**	-	-	-	-	610	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	-	-	0.124	-	-	0.003	-
BH9A_01 Apr 02_-	BH9A	1/04/2002	water	-	**8**	**1100**	-	-	-	-	690	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	-	-	0.205	-	-	0.005	-
BH9A_01 Jul 02_-	BH9A	1/07/2002	water	-	**8**	**960**	-	-	-	-	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-	-	0.153	-	-	0.001	-
BH9A_01 Oct 02_-	BH9A	1/10/2002	water	-	**8.1**	**980**	-	-	-	-	590	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	-	-	0.169	-	-	0.002	-
BH9A_01 Jan 03_-	BH9A	1/01/2003	water	-	**8.48**	**850**	-	-	-	-	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	-	-	0.145	-	-	0.002	-
BH9A_01 Apr 03_-	BH9A	1/04/2003	water	-	**8.03**	**1070**	-	-	-	-	570	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	-	-	0.129	-	-	0.001	-
BH9A_01 Jul 03_-	BH9A	1/07/2003	water	-	7.86	**1250**	-	-	-	-	826	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	0.14	-	-	0.001	-
BH9A_01 Oct 03_-	BH9A	1/10/2003	water	-	**8.09**	**1010**	-	-	-	-	690	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	-	-	0.193	-	-	0.002	-
BH9A_01 Jan 04_-	BH9A	1/01/2004	water	-	**8.35**	**1010**	-	-	-	-	756	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	-	-	0.168	-	-	0.005	-
BH9A_01 Apr 04_-	BH9A	1/04/2004	water	-	**8.02**	-	-	-	-	-	832	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	0.175	-	-	-	-
BH9A_01 Jul 04_-	BH9A	1/07/2004	water	-	**8.15**	-	-	-	-	-	618	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46	-	-	0.165	-	-	-	-
BH9A_01 Oct 04_-	BH9A	1/10/2004	water	-	7.91	-	-	-	-	-	718	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	0.073	-	-	-	-
BH9A_01 Jan 05_-	BH9A	1/01/2005	water	-	**8.16**	-	-	-	-	-	722	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	-	-	0.171	-	-	0.001	-
BH9A_01 Apr 05_-	BH9A	1/04/2005	water	-	7.32	-	-	-	-	-	694	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	0.008	-	-	-	-
BH9A_01 Jul 05_-	BH9A	1/07/2005	water	-	***8.51***	-	-	-	-	-	640	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-	-	0.082	-	-	-	-
BH9A_01 Jan 07_-	BH9A	1/01/2007	water	-	7.4	**1815**	-	-	-	-	1130	-	-	-	502	119	20	21	187	136	153	0.7	16.3	17.1	6.44	<0.01	<0.01	-	-	40	-	0.06	0.097	0.072	<0.0001	0.002	0.001
BH9B_01 Jul 05_-	BH9B	1/07/2005	water	-	7.69	-	-	-	-	-	1720	-	-	-	-	-	-	-	-	-	-	-	-	-	5.69	-	-	-	<0.01	68	-	-	0.073	-	-	-	-
BH9B_01 Oct 06_-	BH9B	1/10/2006	water	-	7.56	-	-	-	-	-	1240	-	-	-	-	-	-	-	-	-	-	-	-	-	8.58	-	-	-	<0.01	44	-	-	0.101	-	-	-	-
BH9B_01 Jan 07_-	BH9B	1/01/2007	water	-	7.4	-	-	-	-	-	1130	-	-	-	-	-	-	-	-	-	-	-	-	-	6.44	-	-	-	<0.01	40	-	-	0.097	-	-	0.002	-
BH9B_01 Apr 07_-	BH9B	1/04/2007	water	-	7.36	-	-	-	-	-	832	-	-	-	460	86	14	22	178	156	73	-	13.8	15.1	11.9	0.014	<0.01	-	-	47	-	-	0.118	-	-	-	-
BH9C_17 Apr 13_-	BH9C	17/04/2013	water	4.54	7.26	**861**	***0.62***	-9	25	7.3	640	-	450	<1	-	150	17	11	50	62	45	0.2	-	-	1.5	-	-	-	-	-	52	-	-	-	-	-	-	-
BH9C_09 Jul 13_-	BH9C	9/07/2013	water	4.38	7.19	**1210**	***2.1***	-112	18.9	7.8	810	-	550	<1	-	140	20	26	120	100	10	-	-	-	16	-	-	-	-	-	29	-	-	-	-	-	-	-
BH9C_29 Oct 13_-	BH9C	29/10/2013	water	5.57	7.29	**1210**	***3.9***	-130	7.3	7.4	720	-	570	<1	-	170	21	21	99	81	40	-	-	-	15	-	-	-	-	-	60	-	-	-	-	-	-	-
BH9C_28 Jan 14_-	BH9C	28/01/2014	water	5.75	7.08	**1077**	***2.96***	44	19.4	*7*	620	-	480	<1	-	9	16	13	60	62	39	0.22	-	-	5.6	0.19	0.083	-	-	-	66	0.01	0.012	0.05	<0.0001	<0.001	<0.005
BH9C_16 Apr 14_-	BH9C	16/04/2014	water	5.74	*6.95*	**1136**	***1.42***	270	18.4	*6.9*	690	-	530	<1	-	170	20	15	64	61	52	0.18	-	-	7.8	-	-	-	-	-	32	-	-	-	-	-	-	-
BH9C_07 Jul 14_-	BH9C	7/07/2014	water	5.6	7.31	**46.8**	***2.72***	496	17.3	*7*	780	-	540	<1	-	170	19	16	68	64	53	0.19	-	-	8.4	-	-	-	-	-	95	-	-	-	-	-	-	-
BH9C_15 Oct 14_-	BH9C	15/10/2014	water	5.23	*6.99*	**1614**	***0.64***	-91	17.8	*7*	1100	-	1700	<1	-	410	43	36	190	150	85	0.2	-	-	29	-	-	-	-	-	120	-	-	-	-	-	-	-
BH9C_20 Jan 15_-	BH9C	20/01/2015	water	5.74	***6.18***	**894**	***0.29***	13	19.5	*6.6*	690	-	480	<1	-	160	20	14	58	57	49	0.22	-	-	6.6	0.072	0.058	-	-	-	35	<0.005	0.006	0.095	<0.0001	-	<0.01
BH9C_22 Apr 15_-	BH9C	22/04/2015	water	4.99	*7*	**1739**	***0.12***	-79	17.9	*6.8*	1400	-	1200	<1	-	350	35	35	200	150	110	0.19	-	-	27	-	-	-	-	-	280	-	-	-	-	-	-	-
BH9C_21 Jul 15_-	BH9C	21/07/2015	water	5.3	*6.84*	**913**	***0.41***	-124	18.9	*6.8*	630	-	710	<1	-	230	19	11	58	50	41	0.2	-	-	6.5	-	-	-	-	-	280	-	-	-	-	-	-	-
BH9C_20 Oct 15_-	BH9C	20/10/2015	water	5.65	*6.85*	**1700**	***1.92***	95	24.1	7.1	510	-	440	<1	-	180	16	8.1	47	39	45	0.2	-	-	4.6	-	-	-	-	-	110	-	-	-	-	-	-	-
BH9C_20 Jan 16_-	BH9C	20/01/2016	water	5.45	7.2	**927**	***3.67***	69	23.2	7.2	620	-	480	<1	-	210	17	11	59	45	50	0.2	-	-	5.8	2	0.16	-	-	-	150	0.01	0.012	0.079	<0.0001	<0.001	<0.01
BH9C_14 Apr 16_-	BH9C	14/04/2016	water	5.65	*6.88*	**877**	***1.7***	42	20	*6.9*	530	-	550	<5	-	330	15	7.7	41	32	46	0.3	-	-	***0.89***	-	-	-	-	-	430	-	-	-	-	-	-	-
BH9C_13 Jul 16_-	BH9C	13/07/2016	water	5.17	***6.31***	**1749**	***2.15***	16.8	16.8	7.2	800	-	640	<5	-	220	29	22	100	83	86	0.2	-	-	22	-	-	-	-	-	100	-	-	-	-	-	-	-
BH9C_18 Oct 16_-	BH9C	18/10/2016	water	5.54	7.23	**477**	***2.41***	48	20.3	*7*	450	-	520	<5	-	250	20	7.5	28	23	19	0.2	-	-	4.8	-	-	-	-	-	230	-	-	-	-	-	-	-
BH9C_19 Jan 17_-	BH9C	19/01/2017	water	5.75	7.05	**691**	***1.6***	11	21.5	*6.9*	460	-	500	<5	-	310	17	6.2	26	23	31	0.2	-	-	1.5	0.51	0.021	-	-	-	490	<0.01	0.012	0.09	<0.0001	<0.001	<0.005
BH9C_02 Jul 19_-	BH9C	2/07/2019	water	5.72	7.07	**1110**	8.28	-6.2	16.3	*7*	810	-	580	<5	-	190	23	16	71	85	88	0.2	-	-	13	-	-	-	-	-	150	-	-	-	-	-	-	-
BH9C_24 Oct 19_-	BH9C	24/10/2019	water	5.9	*6.9*	**830**	***3.02***	73.7	20.4	*6.9*	570	-	340	<5	-	160	9	5.9	26	32	86	0.2	-	-	***0.19***	-	-	-	-	-	30	-	-	-	-	-	-	-
BH9C_13 Jan 20_-	BH9C	13/01/2020	water	5.99	7.45	**828**	7.55	-415.7	20.3	*7*	680	-	370	<5	-	150	11	8	39	59	100	0.2	-	-	4.5	0.67	0.009	-	-	-	10	0.04	0.008	0.06	<0.0001	<0.001	<0.005
BH9C_23 Apr 20_-	BH9C	23/04/2020	water	5.66	7.14	**1059**	***3.02***	0.9	21.5	7.3	680	-	480	<5	-	140	24	13	57	60	77	0.2	-	-	12	-	-	-	-	-	27	-	-	-	-	-	-	-
Statistical Summary																																			
Number of Results				404	1114	887	421	421	421	420	1116	2	420	420	22	440	442	442	442	441	441	387	22	22	1115	127	127	431	628	695	420	106	801	106	106	610	106
Number of Detects				404	1114	887	421	421	421	420	1116	2	420	0	22	440	442	442	442	441	440	286	22	22	1012	104	56	423	592	691	415	29	756	106	6	475	2
Minimum Concentration				0.43	5.17	2.1	0.03	-1033	7.3	5.8	94	740	40	<1	106	9	2.9	1	11	9	2	<0.1	3.25	3.34	<0.005	<0.005	<0.005	0.01	<0.01	<1	<1	<0.005	0	0.003	<0.0001	0.0005	0.001
Minimum Detect				0.43	5.17	2.1	0.03	ND	7.3	5.8	94	740	40	ND	106	9	2.9	1	11	9	2	0.1	3.25	3.34	0.005	0.006	0.005	0.01	0.01	1	1	0.01	0.001	0.003	0.0002	0.0005	0.001
Maximum Concentration				29.8	10.72	36800	10.15	496	28.4	8.1	3900	1100	1900	<5	686	1200	88	170	540	1000	480	0.7	20	22.1	240	51	0.31	24.8	32	129	490	0.2	0.328	0.29	0.0011	0.03	<0.5
Maximum Detect				29.8	10.72	36800	10.15	496	28.4	8.1	3900	1100	1900	ND	686	1200	88	170	540	1000	480	0.7	20	22.1	240	51	0.31	24.8	32	129	490	0.2	0.328	0.29	0.0011	0.03	0.007
Average Concentration				7.4	7.3	985	2.6	-12	19	7.2	643		378	1.3	365	156	21	9.8	75	86	97	0.15	11	12	2.1	1.9	0.028	2.8	1.7	14	27	0.014	0.029	0.049	0.000086	0.0026	0.0076
Median Concentration				4.29	7.3	913	2.3	-4	19.3	7.2	610	920	370	0.5	398	150	19	7.8	55	60	75	0.13	10.7	11.45	0.24	0.12	0.005	1.1	0.16	10	10	0.005	0.004	0.0275	0.00005	0.001	0.0025
Standard Deviation				7	0.49	1308	1.8	123	2.6	0.38	313		209	0.99	157	85	12	10	60	82	85	0.092	4.3	4.8	8	5.5	0.056	4	3.7	13	51	0.03	0.055	0.055	0.00016	0.0033	0.024

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity			Major Ions									Nutrients					Organic Indicators		Metals					
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (total as CaCO3)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon	Aluminium	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/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	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*													*0.015* [#2]												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**													**0.01** [#2]												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																						0.9 [#3]							0.055 [#4]	0.013 [#5]		0.0002	0.001 [#6]	0.001
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																						0.91 [#7]										0.0055	0.0044 [#8]	0.0044
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																		
Sample ID **Location Code** **Date** **Matrix Type**																																		
Number of Guideline Exceedances	0	385	886	414	0	0	144	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1038	0	0	0	0	0	0	6	245	0	6	481	106
Number of Guideline Exceedances(Detects Only)	0	385	886	414	0	0	144	0	2	0	0	0	0	0	0	0	0	0	0	0	0	976	0	0	0	0	0	0	6	245	0	6	473	2

Env Stds Comments

#1:calculated from % Saturation
#2:assumed same as NH4
#3:Measured as NH3-N at pH 8
#4:(pH >6.5)
#5:In absence of total As guideline, As (V) guideline has been adopted.
#6:Guideline for Cr (VI) adopted
#7:Ammonia as total ammonia, measured as [NH3-N] at pH 8.
#8:In absence of total Cr guideline, Cr (VI) guideline has been adopted.
#9:Freshwater DGV adopted (insufficient marine toxicity data)

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16												PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2							
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																															0.003

Sample ID	Location Code	Date	Matrix Type																																									
AB01_01 Jul 01_-	AB01	1/07/2001	water	-	<0.001	-	<0.001	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Oct 01_-	AB01	1/10/2001	water	-	<0.001	-	<0.001	-	-	0.036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Jan 02_-	AB01	1/01/2002	water	-	0.001	-	<0.001	-	-	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Apr 02_-	AB01	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Jul 02_-	AB01	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Apr 03_-	AB01	1/04/2003	water	-	<0.001	-	<0.001	-	-	0.026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Jul 04_-	AB01	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Jan 05_-	AB01	1/01/2005	water	-	<0.001	-	<0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jun 94_-	BH10	1/06/1994	water	-	0.005	-	0.003	-	-	0.034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Sep 94_-	BH10	1/09/1994	water	-	0.006	-	0.003	-	-	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Dec 94_-	BH10	1/12/1994	water	-	0.002	-	0.001	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Mar 95_-	BH10	1/03/1995	water	-	0.003	-	0.001	-	-	0.045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jun 95_-	BH10	1/06/1995	water	-	0.006	-	0.003	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Sep 95_-	BH10	1/09/1995	water	-	0.002	-	0.001	-	-	0.038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 96_-	BH10	1/01/1996	water	-	0.001	-	0.001	-	-	0.079	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 96_-	BH10	1/04/1996	water	-	0.002	-	0.001	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 96_-	BH10	1/07/1996	water	-	0.002	-	0.013	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 96_-	BH10	1/10/1996	water	-	0.003	-	0.001	-	-	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 97_-	BH10	1/01/1997	water	-	0.001	-	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 97_-	BH10	1/04/1997	water	-	0.001	-	0.001	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 97_-	BH10	1/07/1997	water	-	0.001	-	0.001	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 97_-	BH10	1/10/1997	water	-	0.001	-	0.001	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 98_-	BH10	1/01/1998	water	-	0.003	-	0.001	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 98_-	BH10	1/04/1998	water	-	0.001	-	0.001	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 98_-	BH10	1/07/1998	water	-	0.001	-	0.001	-	-	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 98_-	BH10	1/10/1998	water	-	0.001	-	0.002	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 99_-	BH10	1/01/1999	water	-	0.001	-	0.001	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Mar 99_-	BH10	1/03/1999	water	-	0.012	-	0.001	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 99_-	BH10	1/07/1999	water	-	0.002	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 99_-	BH10	1/10/1999	water	-	0.001	-	0.001	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 00_-	BH10	1/01/2000	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 00_-	BH10	1/04/2000	water	-	0.003	-	0.001	-	-	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 00_-	BH10	1/07/2000	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 00_-	BH10	1/10/2000	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 01_-	BH10	1/01/2001	water	-	0.001	-	0.001	-	-	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 01_-	BH10	1/04/2001	water	-	0.001	-	0.001	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 01_-	BH10	1/07/2001	water	-	0.002	-	0.001	-	-	0.051	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 01_-	BH10	1/10/2001	water	-	0.002	-	0.001	-	-	0.042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 02_-	BH10	1/01/2002	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 02_-	BH10	1/04/2002	water	-	0.002	-	<0.001	-	-	0.054	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 02_-	BH10	1/07/2002	water	-	0.001	-	<0.001	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 02_-	BH10	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 03_-	BH10	1/01/2003	water	-	<0.001	-	<0.001	-	-	0.047	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 03_-	BH10	1/04/2003	water	-	0.002	-	0.001	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 03_-	BH10	1/07/2003	water	-	0.001	-	0.001	-	-	0.026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 03_-	BH10	1/10/2003	water	-	0.001	-	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 04_-	BH10	1/01/2004	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_29 Jul 14_-	BH10	29/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_15 Oct 14_-	BH10	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_20 Jan 15_-	BH10	20/01/2015	water	<0.001	<0.001	-	<0.001	0.32		0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH10_22 Apr 15_-	BH10	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_21 Jul 15_-	BH10	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_20 Oct 15_-	BH10	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_20 Jan 16_-	BH10	20/01/2016	water	<0.001	0.001	-	<0.001	0.23		<0.001	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH10_14 Apr 16_-	BH10	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_13 Jul 16_-	BH10	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_18 Oct 16_-	BH10	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jul 01_-	BH10A	1/07/2001	water	-	0.001	-	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Oct 01_-	BH10A	1/10/2001	water	-	0.001	-	0.001	-	-	0.047	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jan 02_-	BH10A	1/01/2002	water	-	0.001	-	0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Apr 02_-	BH10A	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.059	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jul 02_-	BH10A	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.059	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Oct 02_-	BH10A	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16														PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2							
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																															0.003

Sample ID	Location Code	Date	Matrix Type																																									
BH10A_01 Jan 03_-	BH10A	1/01/2003	water	-	<0.001	-	<0.001	-	-	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Apr 03_-	BH10A	1/04/2003	water	-	0.003	-	0.001	-	-	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jul 03_-	BH10A	1/07/2003	water	-	0.001	-	0.001	-	-	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Oct 03_-	BH10A	1/10/2003	water	-	0.001	-	0.001	-	-	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jan 04_-	BH10A	1/01/2004	water	-	0.001	-	0.001	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Apr 04_-	BH10A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jul 04_-	BH10A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Oct 04_-	BH10A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jan 05_-	BH10A	1/01/2005	water	-	0.001	-	0.001	-	-	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Apr 05_-	BH10A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jul 05_-	BH10A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Oct 05_-	BH10A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jan 06_-	BH10A	1/01/2006	water	-	<0.001	-	<0.001	-	-	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Apr 06_-	BH10A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jul 06_-	BH10A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Oct 06_-	BH10A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jan 07_-	BH10A	1/01/2007	water	-	<0.001	-	<0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Apr 07_-	BH10A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_12 Apr 17_-	BH10B	12/04/2017	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_05 Jul 17_-	BH10B	5/07/2017	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_09 Oct 17_-	BH10B	9/10/2017	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_15 Jan 18_-	BH10B	15/01/2018	water	<0.001	0.001	-	<0.001	0.35	<0.00005	0.036	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH10B_23 Apr 18_-	BH10B	23/04/2018	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_09 Jul 18_-	BH10B	9/07/2018	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_08 Oct 18_-	BH10B	8/10/2018	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_22 Jan 19_-	BH10B	22/01/2019	water	<0.001	<0.001	-	<0.001	0.44	<0.00005	0.035	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH10B_09 Apr 19_-	BH10B	9/04/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_02 Jul 19_-	BH10B	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_24 Oct 19_-	BH10B	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_15 Jan 20_-	BH10B	15/01/2020	water	<0.001	<0.001	-	<0.001	0.52	<0.00005	0.011	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	84	140	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH10B_22 Apr 20_-	BH10B	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jun 94_-	BH11	1/06/1994	water	-	0.005	-	0.003	-	-	0.058	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Sep 94_-	BH11	1/09/1994	water	-	0.005	-	0.003	-	-	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Dec 94_-	BH11	1/12/1994	water	-	0.001	-	0.001	-	-	0.078	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Mar 95_-	BH11	1/03/1995	water	-	0.002	-	0.001	-	-	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jun 95_-	BH11	1/06/1995	water	-	0.001	-	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Sep 95_-	BH11	1/09/1995	water	-	0.002	-	0.001	-	-	0.038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 96_-	BH11	1/01/1996	water	-	0.001	-	0.001	-	-	0.105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 96_-	BH11	1/04/1996	water	-	0.002	-	0.004	-	-	0.102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 96_-	BH11	1/07/1996	water	-	0.001	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 96_-	BH11	1/10/1996	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 97_-	BH11	1/01/1997	water	-	0.002	-	0.001	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 97_-	BH11	1/04/1997	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 97_-	BH11	1/07/1997	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 97_-	BH11	1/10/1997	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 98_-	BH11	1/01/1998	water	-	0.002	-	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 98_-	BH11	1/04/1998	water	-	0.001	-	0.001	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 98_-	BH11	1/07/1998	water	-	0.001	-	0.001	-	-	0.096	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 98_-	BH11	1/10/1998	water	-	0.005	-	0.003	-	-	0.406	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Nov 98_-	BH11	1/11/1998	water	-	-	-	0.002	-	-	0.021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 99_-	BH11	1/01/1999	water	-	0.002	-	0.001	-	-	0.042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Mar 99_-	BH11	1/03/1999	water	-	0.007	-	0.001	-	-	0.048	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 99_-	BH11	1/07/1999	water	-	0.001	-	0.001	-	-	0.045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 99_-	BH11	1/10/1999	water	-	0.004	-	0.001	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 00_-	BH11	1/01/2000	water	-	0.001	-	0.001	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 00_-	BH11	1/04/2000	water	-	0.001	-	0.001	-	-	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 00_-	BH11	1/07/2000	water	-	0.001	-	0.001	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 00_-	BH11	1/10/2000	water	-	0.001	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 01_-	BH11	1/01/2001	water	-	0.001	-	0.001	-	-	0.041	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 01_-	BH11	1/04/2001	water	-	0.001	-	0.001	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 01_-	BH11	1/07/2001	water	-	0.001	-	0.001	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 01_-	BH11	1/10/2001	water	-	0.001	-	0.001	-	-	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 02_-	BH11	1/01/2002	water	-	0.001	-	0.001	-	-	0.057	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16												PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2							
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																															0.003

Sample ID	Location Code	Date	Matrix Type																																									
BH11_01 Apr 02_-	BH11	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.049	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 02_-	BH11	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.052	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 02_-	BH11	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 03_-	BH11	1/01/2003	water	-	<0.001	-	<0.001	-	-	0.055	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 03_-	BH11	1/04/2003	water	-	0.002	-	0.001	-	-	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 03_-	BH11	1/07/2003	water	-	0.001	-	0.001	-	-	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 03_-	BH11	1/10/2003	water	-	0.001	-	0.001	-	-	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 04_-	BH11	1/01/2004	water	-	0.001	-	0.001	-	-	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 04_-	BH11	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 04_-	BH11	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 05_-	BH11	1/01/2005	water	-	0.001	-	0.001	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 05_-	BH11	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 05_-	BH11	1/07/2005	water	-	<0.001	-	<0.001	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 06_-	BH11	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 06_-	BH11	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 06_-	BH11	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 07_-	BH11	1/01/2007	water	-	<0.001	-	<0.001	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 07_-	BH11	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_01 Jan 06_-	BH11A	1/01/2006	water	-	<0.001	-	<0.001	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_16 Apr 13_-	BH11A	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_09 Jul 13_-	BH11A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_29 Oct 13_-	BH11A	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_28 Jan 14_-	BH11A	28/01/2014	water	0.02	<0.001	-	<0.001	0.38		0.01	<1	<1	<1	<2	<1	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH11A_16 Apr 14_-	BH11A	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_16 Apr 14_-2	BH11A	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_09 Jul 14_-	BH11A	9/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_16 Oct 14_-	BH11A	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_21 Jan 15_-	BH11A	21/01/2015	water	0.006	<0.001	-	<0.001	0.57	0.00005	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH11A_23 Apr 15_-	BH11A	23/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_21 Jul 15_-	BH11A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_21 Oct 15_-	BH11A	21/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_21 Jan 16_-	BH11A	21/01/2016	water	0.009	<0.001	-	<0.001	0.38		0.051	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH11A_19 Apr 16_-	BH11A	19/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_13 Jul 16_-	BH11A	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_18 Oct 16_-	BH11A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_19 Jan 17_-	BH11A	19/01/2017	water	0.022	<0.001	-	<0.001	0.59	<0.00005	0.014	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH11A_25 Jan 17_-	BH11A	25/01/2017	water	<0.001	<0.001	-	<0.001	0.31	<0.00005	0.001	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH11A_02 Jul 19_-	BH11A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_25 Oct 19_-	BH11A	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_14 Jan 20_-	BH11A	14/01/2020	water	<0.001	0.002	-	<0.001	0.45	<0.00005	0.016	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH11A_22 Apr 20_-	BH11A	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Sep 94_-	BH12	1/09/1994	water	-	0.005	-	0.003	-	-	0.039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Dec 94_-	BH12	1/12/1994	water	-	0.003	-	0.001	-	-	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Mar 95_-	BH12	1/03/1995	water	-	0.002	-	0.001	-	-	0.049	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jun 95_-	BH12	1/06/1995	water	-	0.001	-	0.001	-	-	0.053	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Sep 95_-	BH12	1/09/1995	water	-	0.005	-	0.001	-	-	0.081	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jan 96_-	BH12	1/01/1996	water	-	0.001	-	0.001	-	-	0.154	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Apr 96_-	BH12	1/04/1996	water	-	0.002	-	0.002	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jul 96_-	BH12	1/07/1996	water	-	0.001	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Oct 96_-	BH12	1/10/1996	water	-	0.003	-	0.002	-	-	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jan 97_-	BH12	1/01/1997	water	-	0.002	-	0.001	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Apr 97_-	BH12	1/04/1997	water	-	0.003	-	0.001	-	-	0.026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jul 97_-	BH12	1/07/1997	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Oct 97_-	BH12	1/10/1997	water	-	0.002	-	0.001	-	-	0.053	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jan 98_-	BH12	1/01/1998	water	-	0.002	-	0.001	-	-	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Apr 98_-	BH12	1/04/1998	water	-	0.003	-	0.001	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jul 98_-	BH12	1/07/1998	water	-	0.001	-	0.002	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Oct 98_-	BH12	1/10/1998	water	-	0.005	-	0.001	-	-	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jan 99_-	BH12	1/01/1999	water	-	0.002	-	0.001	-	-	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Mar 99_-	BH12	1/03/1999	water	-	0.006	-	0.001	-	-	0.056	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jul 99_-	BH12	1/07/1999	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Oct 99_-	BH12	1/10/1999	water	-	0.003	-	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 00_-	BH12A	1/04/2000	water	-	0.002	-	0.001	-	-	0.386	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16													PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2							
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																															0.003

Sample ID	Location Code	Date	Matrix Type																																									
BH12A_01 Jul 00_-	BH12A	1/07/2000	water	-	0.002	-	0.001	-	-	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 00_-	BH12A	1/10/2000	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 01_-	BH12A	1/01/2001	water	-	0.001	-	0.001	-	-	0.058	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 01_-	BH12A	1/04/2001	water	-	0.001	-	0.001	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jul 01_-	BH12A	1/07/2001	water	-	0.001	-	0.001	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 01_-	BH12A	1/10/2001	water	-	0.001	-	0.001	-	-	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 02_-	BH12A	1/01/2002	water	-	0.001	-	0.001	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 02_-	BH12A	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jul 02_-	BH12A	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 02_-	BH12A	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.048	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 03_-	BH12A	1/01/2003	water	-	<0.001	-	<0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 03_-	BH12A	1/04/2003	water	-	0.001	-	0.003	-	-	0.021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jul 03_-	BH12A	1/07/2003	water	-	0.001	-	0.001	-	-	0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 03_-	BH12A	1/10/2003	water	-	0.001	-	0.001	-	-	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 04_-	BH12A	1/01/2004	water	-	0.001	-	0.001	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 04_-	BH12A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jul 04_-	BH12A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 04_-	BH12A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 05_-	BH12A	1/01/2005	water	-	0.01	-	0.01	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 05_-	BH12A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jul 05_-	BH12A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 05_-	BH12A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 06_-	BH12A	1/01/2006	water	-	<0.001	-	<0.001	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 06_-	BH12A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jul 06_-	BH12A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 06_-	BH12A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 07_-	BH12A	1/01/2007	water	-	0.001	-	<0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 07_-	BH12A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_17 Apr 13_-	BH12A	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_09 Jul 13_-	BH12A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_29 Oct 13_-	BH12A	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_28 Jan 14_-	BH12A	28/01/2014	water	<0.001	0.003	-	<0.001	0.029		0.012	<1	2	<1	<2	<1	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH12A_14 Apr 14_-	BH12A	14/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_07 Jul 14_-	BH12A	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_15 Oct 14_-	BH12A	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_21 Jan 15_-	BH12A	21/01/2015	water	0.002	0.003	-	<0.001	0.087		0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH12A_23 Apr 15_-	BH12A	23/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_21 Jul 15_-	BH12A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_20 Oct 15_-	BH12A	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_21 Jan 16_-	BH12A	21/01/2016	water	0.001	0.002	-	<0.001	0.053		0.026	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH12A_14 Apr 16_-	BH12A	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_21 Jul 16_-	BH12A	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_18 Oct 16_-	BH12A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_19 Jan 17_-	BH12A	19/01/2017	water	0.001	0.001	-	<0.001	0.03	<0.00005	0.005	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH12A_03 Jul 19_-	BH12A	3/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_25 Oct 19_-	BH12A	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_13 Jan 20_-	BH12A	13/01/2020	water	0.003	0.009	-	<0.001	0.16	<0.00005	0.066	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	70	300	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH12A_23 Apr 20_-	BH12A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Dec 94_-	BH13	1/12/1994	water	-	0.009	-	0.001	-	-	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Mar 95_-	BH13	1/03/1995	water	-	0.002	-	0.001	-	-	0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jun 95_-	BH13	1/06/1995	water	-	0.001	-	0.001	-	-	0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Sep 95_-	BH13	1/09/1995	water	-	0.002	-	0.001	-	-	0.036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jan 96_-	BH13	1/01/1996	water	-	0.001	-	0.001	-	-	0.173	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Apr 96_-	BH13	1/04/1996	water	-	0.002	-	0.002	-	-	0.036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jul 96_-	BH13	1/07/1996	water	-	0.001	-	0.001	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Oct 96_-	BH13	1/10/1996	water	-	0.002	-	0.002	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jan 97_-	BH13	1/01/1997	water	-	0.002	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Apr 97_-	BH13	1/04/1997	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jul 97_-	BH13	1/07/1997	water	-	0.001	-	0.001	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Oct 97_-	BH13	1/10/1997	water	-	0.001	-	0.001	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jan 98_-	BH13	1/01/1998	water	-	0.001	-	0.001	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Apr 98_-	BH13	1/04/1998	water	-	0.001	-	0.007	-	-	0.059	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jul 98_-	BH13	1/07/1998	water	-	0.008	-	0.002	-	-	0.162	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16												PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																														0.003

Sample ID	Location Code	Date	Matrix Type																																								
BH13_01 Oct 98_-	BH13	1/10/1998	water	-	0.002	-	0.001	-	-	0.018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jan 99_-	BH13	1/01/1999	water	-	0.009	-	0.001	-	-	0.046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Mar 99_-	BH13	1/03/1999	water	-	0.001	-	0.001	-	-	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jul 99_-	BH13	1/07/1999	water	-	0.001	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Oct 99_-	BH13	1/10/1999	water	-	0.002	-	0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jan 00_-	BH13	1/01/2000	water	-	0.001	-	0.001	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 00_-	BH13A	1/04/2000	water	-	0.001	-	0.001	-	-	0.052	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 00_-	BH13A	1/07/2000	water	-	0.002	-	0.001	-	-	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 00_-	BH13A	1/10/2000	water	-	0.001	-	0.001	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 01_-	BH13A	1/01/2001	water	-	0.002	-	0.001	-	-	0.051	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 01_-	BH13A	1/04/2001	water	-	0.002	-	0.001	-	-	0.034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 01_-	BH13A	1/07/2001	water	-	0.001	-	0.001	-	-	0.044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 01_-	BH13A	1/10/2001	water	-	0.001	-	0.001	-	-	0.056	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 02_-	BH13A	1/01/2002	water	-	0.001	-	0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 02_-	BH13A	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 02_-	BH13A	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 02_-	BH13A	1/10/2002	water	-	0.001	-	<0.001	-	-	0.031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 03_-	BH13A	1/01/2003	water	-	0.002	-	<0.001	-	-	0.065	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 03_-	BH13A	1/04/2003	water	-	0.001	-	0.001	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 03_-	BH13A	1/07/2003	water	-	0.001	-	0.001	-	-	0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 03_-	BH13A	1/10/2003	water	-	0.001	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 04_-	BH13A	1/01/2004	water	-	0.001	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 04_-	BH13A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 04_-	BH13A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 04_-	BH13A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 05_-	BH13A	1/01/2005	water	-	0.01	-	0.01	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 05_-	BH13A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 05_-	BH13A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 05_-	BH13A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 06_-	BH13A	1/01/2006	water	-	<0.001	-	<0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 06_-	BH13A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 06_-	BH13A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 06_-	BH13A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 07_-	BH13A	1/01/2007	water	-	<0.001	-	<0.001	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 07_-	BH13A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_17 Apr 13_-	BH13A	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_09 Jul 13_-	BH13A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_29 Oct 13_-	BH13A	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_28 Jan 14_-	BH13A	28/01/2014	water	<0.001	<0.001	-	<0.001	<0.001		0.002	<1	<1	<1	<2	<1	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH13A_14 Apr 14_-	BH13A	14/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_07 Jul 14_-	BH13A	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_15 Oct 14_-	BH13A	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_27 Apr 15_-	BH13A	27/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_21 Jul 15_-	BH13A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_20 Oct 15_-	BH13A	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_21 Jan 16_-	BH13A	21/01/2016	water	<0.001	<0.001	-	<0.001	<0.001		<0.001	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH13A_19 Apr 16_-	BH13A	19/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_21 Jul 16_-	BH13A	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_18 Oct 16_-	BH13A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_03 Jul 19_-	BH13A	3/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_25 Oct 19_-	BH13A	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_13 Jan 20_-	BH13A	13/01/2020	water	0.002	0.008	-	<0.001	0.5	<0.00005	0.055	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	65	170	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH13A_23 Apr 20_-	BH13A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 97_-	BH14	1/01/1997	water	-	0.001	-	0.001	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 97_-	BH14	1/04/1997	water	-	0.002	-	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 97_-	BH14	1/07/1997	water	-	0.001	-	0.001	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 97_-	BH14	1/10/1997	water	-	0.001	-	0.001	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 98_-	BH14	1/01/1998	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 98_-	BH14	1/04/1998	water	-	0.001	-	0.004	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 98_-	BH14	1/07/1998	water	-	0.001	-	0.002	-	-	0.036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 98_-	BH14	1/10/1998	water	-	0.015	-	0.001	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 99_-	BH14	1/01/1999	water	-	0.002	-	0.001	-	-	0.052	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Mar 99_-	BH14	1/03/1999	water	-	0.002	-	0.001	-	-	0.059	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16												PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																														0.003

Sample ID	Location Code	Date	Matrix Type																																									
BH14_01 Jul 99_-	BH14	1/07/1999	water	-	0.003	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 99_-	BH14	1/10/1999	water	-	0.001	-	0.001	-	-	0.022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 00_-	BH14	1/01/2000	water	-	0.001	-	0.001	-	-	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 00_-	BH14	1/04/2000	water	-	0.001	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 00_-	BH14	1/07/2000	water	-	0.002	-	0.001	-	-	0.058	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 00_-	BH14	1/10/2000	water	-	0.001	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 01_-	BH14	1/01/2001	water	-	0.002	-	0.001	-	-	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 01_-	BH14	1/04/2001	water	-	0.002	-	0.001	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 01_-	BH14	1/07/2001	water	-	0.003	-	0.001	-	-	0.044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 01_-	BH14	1/10/2001	water	-	0.002	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 02_-	BH14	1/01/2002	water	-	0.001	-	0.001	-	-	0.051	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 02_-	BH14	1/04/2002	water	-	0.002	-	<0.001	-	-	0.101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 02_-	BH14	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 02_-	BH14	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 03_-	BH14	1/01/2003	water	-	0.001	-	<0.001	-	-	0.096	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 03_-	BH14	1/04/2003	water	-	0.001	-	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 03_-	BH14	1/07/2003	water	-	0.001	-	0.001	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 03_-	BH14	1/10/2003	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 04_-	BH14	1/01/2004	water	-	0.001	-	0.001	-	-	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 04_-	BH14	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 04_-	BH14	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 04_-	BH14	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 05_-	BH14	1/01/2005	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 05_-	BH14	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jun 05_-	BH14	1/06/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 05_-	BH14	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 06_-	BH14	1/01/2006	water	-	<0.001	-	<0.001	-	-	0.049	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 06_-	BH14	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 06_-	BH14	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 06_-	BH14	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 07_-	BH14	1/01/2007	water	-	<0.001	-	<0.001	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 07_-	BH14	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_16 Apr 13_-	BH14	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_22 Apr 15_-	BH14	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_22 Jul 15_-	BH14	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_20 Oct 15_-	BH14	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_20 Jan 16_-	BH14	20/01/2016	water	0.001	0.003	-	<0.001	0.15		0.003	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH14A_29 Jul 14_-	BH14A	29/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14A_29 Oct 14_-	BH14A	29/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14A_20 Jan 15_-	BH14A	20/01/2015	water	<0.001	<0.001	-	<0.001	0.42		<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH14A_14 Apr 16_-	BH14A	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14A_13 Jul 16_-	BH14A	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14A_19 Jan 17_-	BH14A	19/01/2017	water	<0.001	<0.001	-	<0.001	<0.005	<0.00005	0.002	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH14A_02 Jul 19_-	BH14A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14A_24 Oct 19_-	BH14A	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14A_27 Apr 20_-	BH14A	27/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 97_-	BH15	1/01/1997	water	-	0.001	-	0.001	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 97_-	BH15	1/04/1997	water	-	0.001	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 97_-	BH15	1/07/1997	water	-	0.001	-	0.001	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 97_-	BH15	1/10/1997	water	-	0.002	-	0.001	-	-	0.022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 98_-	BH15	1/01/1998	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 98_-	BH15	1/04/1998	water	-	0.001	-	0.003	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 98_-	BH15	1/07/1998	water	-	0.001	-	0.001	-	-	0.018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 98_-	BH15	1/10/1998	water	-	0.001	-	0.001	-	-	0.021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 99_-	BH15	1/01/1999	water	-	0.001	-	0.001	-	-	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Mar 99_-	BH15	1/03/1999	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 99_-	BH15	1/07/1999	water	-	0.003	-	0.001	-	-	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 99_-	BH15	1/10/1999	water	-	0.005	-	0.001	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 00_-	BH15	1/01/2000	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 00_-	BH15	1/04/2000	water	-	0.001	-	0.001	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 00_-	BH15	1/07/2000	water	-	0.002	-	0.001	-	-	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 00_-	BH15	1/10/2000	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 01_-	BH15	1/01/2001	water	-	0.002	-	0.001	-	-	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16														PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																															0.003

Sample ID	Location Code	Date	Matrix Type																																									
BH15_01 Apr 01_-	BH15	1/04/2001	water	-	0.003	-	0.001	-	-	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jun 01_-	BH15	1/06/2001	water	-	0.001	-	0.001	-	-	0.041	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 01_-	BH15	1/10/2001	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 02_-	BH15	1/01/2002	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 02_-	BH15	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 02_-	BH15	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 02_-	BH15	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 03_-	BH15	1/01/2003	water	-	<0.001	-	<0.001	-	-	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 03_-	BH15	1/04/2003	water	-	0.001	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 03_-	BH15	1/07/2003	water	-	0.001	-	0.001	-	-	0.022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 03_-	BH15	1/10/2003	water	-	0.002	-	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 04_-	BH15	1/01/2004	water	-	0.001	-	0.001	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 04_-	BH15	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 04_-	BH15	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 04_-	BH15	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 05_-	BH15	1/01/2005	water	-	0.001	-	0.001	-	-	0.031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 05_-	BH15	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jun 05_-	BH15	1/06/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 05_-	BH15	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Feb 06_-	BH15	1/02/2006	water	-	<0.001	-	<0.001	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 06_-	BH15	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 06_-	BH15	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 06_-	BH15	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 07_-	BH15	1/01/2007	water	-	<0.001	-	<0.001	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 07_-	BH15	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_16 Apr 13_-	BH15	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_09 Jul 13_-	BH15	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_29 Oct 13_-	BH15	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_28 Jan 14_-	BH15	28/01/2014	water	<0.001	<0.001	-	<0.001	0.022		<0.001	<1	<1	<1	<2	<1	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH15_16 Apr 14_-	BH15	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_07 Jul 14_-	BH15	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_07 Jul 14_-2	BH15	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_16 Oct 14_-	BH15	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_20 Jan 15_-	BH15	20/01/2015	water	<0.001	<0.001	-	<0.001	0.034		0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH15_22 Apr 15_-	BH15	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_22 Jul 15_-	BH15	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_20 Oct 15_-	BH15	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_20 Jan 16_-	BH15	20/01/2016	water	<0.001	<0.001	-	<0.001	0.007		<0.001	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH15_14 Apr 16_-	BH15	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_13 Jul 16_-	BH15	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_18 Oct 16_-	BH15	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_25 Jan 17_-	BH15	25/01/2017	water	<0.001	<0.001	-	<0.001	0.037	<0.00005	0.007	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH15_02 Jul 19_-	BH15	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_24 Oct 19_-	BH15	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_14 Jan 20_-	BH15	14/01/2020	water	<0.001	<0.001	-	<0.001	0.033	<0.00005	0.002	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH15_22 Apr 20_-	BH15	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 00_-	BH16	1/04/2000	water	-	0.002	-	0.001	-	-	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jul 00_-	BH16	1/07/2000	water	-	0.001	-	0.001	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 00_-	BH16	1/10/2000	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 01_-	BH16	1/01/2001	water	-	0.003	-	0.001	-	-	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 01_-	BH16	1/04/2001	water	-	0.001	-	0.001	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jun 01_-	BH16	1/06/2001	water	-	0.002	-	0.001	-	-	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 01_-	BH16	1/10/2001	water	-	0.001	-	0.001	-	-	0.052	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 02_-	BH16	1/01/2002	water	-	0.001	-	0.001	-	-	0.016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 02_-	BH16	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.053	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jul 02_-	BH16	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 02_-	BH16	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.069	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 03_-	BH16	1/01/2003	water	-	<0.001	-	<0.001	-	-	0.061	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 03_-	BH16	1/04/2003	water	-	0.002	-	0.001	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jun 03_-	BH16	1/06/2003	water	-	0.002	-	0.001	-	-	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 03_-	BH16	1/10/2003	water	-	0.001	-	0.001	-	-	0.042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 04_-	BH16	1/01/2004	water	-	0.001	-	0.001	-	-	0.063	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 04_-	BH16	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16												PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																														0.003
Sample ID	**Location Code**	**Date**	**Matrix Type**																																								
BH16_01 Jul 04_-	BH16	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 04_-	BH16	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 05_-	BH16	1/01/2005	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 05_-	BH16	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jul 05_-	BH16	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 05_-	BH16	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 06_-	BH16	1/01/2006	water	-	<0.001	-	<0.001	-	-	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 06_-	BH16	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jul 06_-	BH16	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 06_-	BH16	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 07_-	BH16	1/01/2007	water	-	<0.001	-	<0.001	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 07_-	BH16	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_16 Apr 13_-	BH16	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_22 Jul 13_-	BH16	22/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_29 Oct 13_-	BH16	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_28 Jan 14_-	BH16	28/01/2014	water	<0.001	<0.001	-	<0.001	0.088		<0.001	<1	<1	<1	<2	<1	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH16_16 Apr 14_-	BH16	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_09 Jul 14_-	BH16	9/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_16 Oct 14_-	BH16	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_20 Jan 15_-	BH16	20/01/2015	water	<0.001	<0.001	-	<0.001	0.22		0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH16_22 Apr 15_-	BH16	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_22 Jul 15_-	BH16	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_20 Oct 15_-	BH16	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_20 Jan 16_-	BH16	20/01/2016	water	<0.001	<0.001	-	<0.001	0.17		<0.001	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH16_14 Apr 16_-	BH16	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_13 Jul 16_-	BH16	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_18 Oct 16_-	BH16	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_25 Jan 17_-	BH16	25/01/2017	water	<0.001	<0.001	-	<0.001	0.13	<0.00005	0.015	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH16_02 Jul 19_-	BH16	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_24 Oct 19_-	BH16	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_14 Jan 20_-	BH16	14/01/2020	water	0.001	0.01	-	<0.001	0.18	<0.00005	0.11	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH16_22 Apr 20_-	BH16	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jul 00_-	BH17	1/07/2000	water	-	0.001	-	0.004	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 00_-	BH17	1/10/2000	water	-	0.002	-	0.002	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 01_-	BH17	1/01/2001	water	-	0.001	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 01_-	BH17	1/04/2001	water	-	0.001	-	0.001	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jun 01_-	BH17	1/06/2001	water	-	0.001	-	0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 01_-	BH17	1/10/2001	water	-	0.001	-	0.001	-	-	0.022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 02_-	BH17	1/01/2002	water	-	0.001	-	0.001	-	-	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 02_-	BH17	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jul 02_-	BH17	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 02_-	BH17	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 03_-	BH17	1/01/2003	water	-	<0.001	-	<0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 03_-	BH17	1/04/2003	water	-	0.001	-	0.001	-	-	0.022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jul 03_-	BH17	1/07/2003	water	-	0.001	-	0.001	-	-	0.034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 03_-	BH17	1/10/2003	water	-	0.002	-	0.001	-	-	0.016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 04_-	BH17	1/01/2004	water	-	0.001	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 04_-	BH17	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jul 04_-	BH17	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 04_-	BH17	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 05_-	BH17	1/01/2005	water	-	0.01	-	0.01	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 05_-	BH17	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jul 05_-	BH17	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 05_-	BH17	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 06_-	BH17	1/01/2006	water	-	<0.001	-	<0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 06_-	BH17	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jul 06_-	BH17	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 06_-	BH17	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 07_-	BH17	1/01/2007	water	-	<0.001	-	<0.001	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 07_-	BH17	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_17 Apr 13_-	BH17	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_22 Jul 13_-	BH17	22/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_14 Apr 14_-	BH17	14/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16													PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2							
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																															0.003
Sample ID	**Location Code**	**Date**	**Matrix Type**																																								
BH17_07 Jul 14_-	BH17	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_22 Apr 15_-	BH17	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_21 Jul 15_-	BH17	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_20 Oct 15_-	BH17	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_21 Jan 16_-	BH17	21/01/2016	water	<0.001	<0.001	-	<0.001	<0.001		0.004	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH17_14 Apr 16_-	BH17	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_21 Jul 16_-	BH17	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_02 Jul 19_-	BH17	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_24 Oct 19_-	BH17	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_15 Jan 20_-	BH17	15/01/2020	water	<0.001	0.01	-	<0.001	0.11	<0.00005	0.034	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH17_23 Apr 20_-	BH17	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jun 01_-	BH18	1/06/2001	water	-	0.001	-	0.001	-	-	0.044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Oct 01_-	BH18	1/10/2001	water	-	0.001	-	0.001	-	-	0.087	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jan 02_-	BH18	1/01/2002	water	-	0.001	-	0.001	-	-	0.092	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Apr 02_-	BH18	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.064	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jun 02_-	BH18	1/06/2002	water	-	<0.001	-	<0.001	-	-	0.091	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Oct 02_-	BH18	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jan 03_-	BH18	1/01/2003	water	-	<0.001	-	0.002	-	-	0.077	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Apr 03_-	BH18	1/04/2003	water	-	0.001	-	<0.001	-	-	0.042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jul 03_-	BH18	1/07/2003	water	-	0.003	-	<0.001	-	-	0.066	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Oct 03_-	BH18	1/10/2003	water	-	<0.001	-	<0.001	-	-	0.057	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jan 04_-	BH18	1/01/2004	water	-	<0.001	-	<0.001	-	-	0.052	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Apr 04_-	BH18	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jul 04_-	BH18	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Oct 04_-	BH18	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jan 05_-	BH18	1/01/2005	water	-	<0.001	-	<0.001	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Apr 05_-	BH18	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jul 05_-	BH18	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Oct 05_-	BH18	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jan 06_-	BH18	1/01/2006	water	-	0.001	-	<0.001	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Apr 06_-	BH18	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jul 06_-	BH18	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Oct 06_-	BH18	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jan 07_-	BH18	1/01/2007	water	-	<0.001	-	<0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Apr 07_-	BH18	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_16 Apr 13_-	BH18	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_30 Oct 13_-	BH18	30/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_28 Jan 14_-	BH18	28/01/2014	water	<0.001	<0.001	-	<0.001	0.009		0.03	<1	<1	<1	<2	<1	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH18_16 Apr 14_-	BH18	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_29 Oct 14_-	BH18	29/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_21 Jan 15_-	BH18	21/01/2015	water	<0.001	<0.001	-	<0.001	0.007		0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH18_23 Apr 15_-	BH18	23/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_21 Jul 15_-	BH18	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_21 Oct 15_-	BH18	21/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_21 Jan 16_-	BH18	21/01/2016	water	<0.001	<0.001	-	<0.001	<0.001		0.002	<1	<1	<1	<1	-	<1	-	<10	70	<100	<100	<10	58	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH18_19 Apr 16_-	BH18	19/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_18 Oct 16_-	BH18	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_19 Jan 17_-	BH18	19/01/2017	water	<0.001	0.002	-	<0.001	0.01	<0.00005	0.006	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH18_03 Jul 19_-	BH18	3/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_25 Oct 19_-	BH18	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_13 Jan 20_-	BH18	13/01/2020	water	<0.001	0.007	-	<0.001	0.01	<0.00005	0.035	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH18_23 Apr 20_-	BH18	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_01 Jul 06_-	BH19	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_01 Oct 06_-	BH19	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19 _01 Jan 07_-	BH19	1/01/2007	water	-	-	-	-	-	-	-	<1	<2	<2	<2	-	-	-	<20	<50	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-
BH19_01 Jan 07_-	BH19	1/01/2007	water	-	<0.001	-	<0.001	-	-	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_01 Apr 07_-	BH19	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_16 Apr 13_-	BH19	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_09 Jul 13_-	BH19	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_29 Oct 13_-	BH19	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_28 Jan 14_-	BH19	28/01/2014	water	<0.001	<0.001	-	<0.001	<0.001		0.005	<1	<1	<1	<2	<1	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH19_16 Apr 14_-	BH19	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_07 Jul 14_-	BH19	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16												PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																															0.003

Sample ID	Location Code	Date	Matrix Type																																									
BH19_29 Jul 14_-	BH19	29/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_16 Oct 14_-	BH19	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_20 Jan 15_-	BH19	20/01/2015	water	<0.001	0.001	-	<0.001	<0.001		0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH19_22 Apr 15_-	BH19	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_21 Jul 15_-	BH19	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_20 Oct 15_-	BH19	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_20 Jan 16_-	BH19	20/01/2016	water	<0.001	<0.001	-	<0.001	0.008		<0.001	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH19_14 Apr 16_-	BH19	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_13 Jul 16_-	BH19	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_18 Oct 16_-	BH19	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_19 Jan 17_-	BH19	19/01/2017	water	<0.001	<0.001	-	<0.001	0.012	<0.00005	0.008	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH19A_02 Jul 19_-	BH19A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19A_24 Oct 19_-	BH19A	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19A_15 Jan 20_-	BH19A	15/01/2020	water	<0.001	0.017	-	0.001	0.013	<0.00005	0.19	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH19A_22 Apr 20_-	BH19A	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19B_18 Nov 19_-	BH19B	18/11/2019	water	<0.001	0.01	-	<0.001	0.017	<0.00005	0.026	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH19B_15 Jan 20_-	BH19B	15/01/2020	water	<0.001	<0.001	-	<0.001	0.04	<0.00005	0.01	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH19B_22 Apr 20_-	BH19B	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_01 Jul 06_-	BH20	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_01 Oct 06_-	BH20	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20 _01 Jan 07_-	BH20	1/01/2007	water	<1	<2	<2	<2	<2	-	-	<1	<2	<2	<2	-	-	-	<20	<50	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_01 Jan 07_-	BH20	1/01/2007	water	-	0.001	-	<0.001	-	-	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_01 Apr 07_-	BH20	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_16 Apr 13_-	BH20	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_28 Jan 14_-	BH20	28/01/2014	water	<0.001	<0.001	-	<0.001	0.31		0.002	<1	<1	<1	<2	<1	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH20_07 Jul 14_-	BH20	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_21 Jan 15_-	BH20	21/01/2015	water	<0.001	<0.001	-	<0.001	0.37		<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH20_27 Apr 15_-	BH20	27/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_20 Oct 15_-	BH20	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_10 Mar 16_-	BH20	10/03/2016	water	<0.001	<0.001	-	<0.001	0.19		0.057	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH20_19 Apr 16_-	BH20	19/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_25 Jan 17_-	BH20	25/01/2017	water	<0.001	<0.001	-	<0.001	0.006	<0.00005	0.001	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH20_02 Jul 19_-	BH20	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_24 Oct 19_-	BH20	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_14 Jan 20_-	BH20	14/01/2020	water	0.002	<0.001	-	<0.001	0.23	<0.00005	0.12	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH20_22 Apr 20_-	BH20	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_01 Jul 06_-	BH22	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_01 Oct 06_-	BH22	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22 _01 Jan 07_-	BH22	1/01/2007	water	-	-	-	-	-	-	-	<5	<5	<5	<5	<5	-	-	-	-	-	-	<20	<50	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-
BH22_01 Jan 07_-	BH22	1/01/2007	water	-	<0.001	-	<0.001	-	-	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_01 Apr 07_-	BH22	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_22 Jul 13_-	BH22	22/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_29 Oct 13_-	BH22	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_28 Jan 14_-	BH22	28/01/2014	water	<0.001	<0.001	-	<0.001	0.091		0.007	<1	<1	<1	<2	<1	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH22_16 Apr 14_-	BH22	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_07 Jul 14_-	BH22	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_16 Oct 14_-	BH22	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_20 Jan 15_-	BH22	20/01/2015	water	<0.001	<0.001	-	<0.001	0.029		<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH22_22 Apr 15_-	BH22	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_22 Jul 15_-	BH22	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_20 Oct 15_-	BH22	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_20 Jan 16_-	BH22	20/01/2016	water	<0.001	<0.001	-	<0.001	<0.001		<0.001	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH22_14 Apr 16_-	BH22	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_13 Jul 16_-	BH22	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_18 Oct 16_-	BH22	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_25 Jan 17_-	BH22	25/01/2017	water	<0.001	<0.001	-	<0.001	0.18	<0.00005	0.054	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH22_02 Jul 19_-	BH22	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_24 Oct 19_-	BH22	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_14 Jan 20_-	BH22	14/01/2020	water	<0.001	0.009	-	<0.001	0.007	<0.00005	0.033	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH22_22 Apr 20_-	BH22	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_01 Jul 06_-	BH23	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_01 Oct 06_-	BH23	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23 _01 Jan 07_-	BH23	1/01/2007	water	-	-	-	-	-	-	-	<5	<5	<5	<5	<5	-	-	-	-	-	-	<20	<50	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16														PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2							
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																															0.003
Sample ID	**Location Code**	**Date**	**Matrix Type**																																								
BH23_01 Jan 07_-	BH23	1/01/2007	water	-	<0.001	-	<0.001	-	-	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_01 Apr 07_-	BH23	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_16 Apr 13_-	BH23	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_09 Jul 13_-	BH23	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_29 Oct 13_-	BH23	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_28 Jan 14_-	BH23	28/01/2014	water	<0.001	<0.001	-	<0.001	0.031		<0.001	<1	<1	<1	<2	<1	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH23_16 Apr 14_-	BH23	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_07 Jul 14_-	BH23	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_16 Oct 14_-	BH23	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_20 Jan 15_-	BH23	20/01/2015	water	0.001	0.001	-	<0.001	0.006		0.016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH23_22 Apr 15_-	BH23	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_22 Jul 15_-	BH23	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_20 Oct 15_-	BH23	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_20 Jan 16_-	BH23	20/01/2016	water	<0.001	<0.001	-	<0.001	<0.001		<0.001	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH23_14 Apr 16_-	BH23	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_13 Jul 16_-	BH23	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_18 Oct 16_-	BH23	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_25 Jan 17_-	BH23	25/01/2017	water	<0.001	<0.001	-	<0.001	0.017	<0.00005	0.001	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH23_02 Jul 19_-	BH23	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_24 Oct 19_-	BH23	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_15 Jan 20_-	BH23	15/01/2020	water	<0.001	0.006	-	<0.001	0.08	<0.00005	0.17	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	92	180	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<2	<50	-	<0.2	-	<0.2
BH23_22 Apr 20_-	BH23	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_01 Jul 06_-	BH24	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_01 Oct 06_-	BH24	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_01 Jan 07_-	BH24	1/01/2007	water	-	<0.001	-	<0.001	-	-	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_01 Apr 07_-	BH24	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_16 Apr 13_-	BH24	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_29 Oct 13_-	BH24	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_28 Jan 14_-	BH24	28/01/2014	water	<0.001	<0.001	-	<0.001	<0.001		<0.001	<1	<1	<1	<2	<1	-	-	-	-	-	-	-	-	<10	<50	160	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH24_16 Apr 14_-	BH24	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_09 Jul 14_-	BH24	9/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_16 Oct 14_-	BH24	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_21 Jan 15_-	BH24	21/01/2015	water	<0.001	<0.001	-	<0.001	0.02		<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH24_22 Apr 15_-	BH24	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_22 Jul 15_-	BH24	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_21 Oct 15_-	BH24	21/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_20 Jan 16_-	BH24	20/01/2016	water	<0.001	<0.001	-	<0.001	0.008		<0.001	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH24_14 Apr 16_-	BH24	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_13 Jul 16_-	BH24	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_18 Oct 16_-	BH24	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_25 Jan 17_-	BH24	25/01/2017	water	<0.001	0.002	-	<0.001	0.029	<0.00005	0.047	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH24_02 Jul 19_-	BH24	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_25 Oct 19_-	BH24	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_14 Jan 20_-	BH24	14/01/2020	water	<0.001	0.001	-	<0.001	<0.005	<0.00005	0.033	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH24_23 Apr 20_-	BH24	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_17 Apr 13_-	BH25	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_09 Jul 13_-	BH25	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_28 Jan 14_-	BH25	28/01/2014	water	0.001	<0.001	-	<0.001	1.1		0.003	<1	<1	<1	<2	<1	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH25_16 Apr 14_-	BH25	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_07 Jul 14_-	BH25	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_15 Oct 14_-	BH25	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_21 Jan 15_-	BH25	21/01/2015	water	<0.001	<0.001	-	<0.001	0.021		0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH25_22 Apr 15_-	BH25	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_21 Jul 15_-	BH25	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_20 Oct 15_-	BH25	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_21 Jan 16_-	BH25	21/01/2016	water	<0.001	<0.001	-	<0.001	0.014		0.004	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH25_14 Apr 16_-	BH25	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_21 Jul 16_-	BH25	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_18 Oct 16_-	BH25	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_25 Jan 17_-	BH25	25/01/2017	water	<0.001	<0.001	-	<0.001	0.011	<0.00005	0.002	<1	<1	<1	<2	<1	-	-	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH25_02 Jul 19_-	BH25	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_25 Oct 19_-	BH25	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_13 Jan 20_-	BH25	13/01/2020	water	<0.001	<0.001	-	<0.001	0.021	<0.00005	0.013	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16														PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2							
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																															0.003
Sample ID	**Location Code**	**Date**	**Matrix Type**																																								
BH25_23 Apr 20_-	BH25	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 00_-	BH3A	1/07/2000	water	-	0.002	-	0.001	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 00_-	BH3A	1/10/2000	water	-	0.002	-	0.002	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 01_-	BH3A	1/01/2001	water	-	0.001	-	0.001	-	-	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 01_-	BH3A	1/04/2001	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 01_-	BH3A	1/07/2001	water	-	0.001	-	0.001	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 01_-	BH3A	1/10/2001	water	-	0.001	-	0.001	-	-	0.026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 02_-	BH3A	1/01/2002	water	-	0.001	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 02_-	BH3A	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 02_-	BH3A	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 02_-	BH3A	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 03_-	BH3A	1/01/2003	water	-	0.003	-	<0.001	-	-	0.137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 03_-	BH3A	1/04/2003	water	-	0.001	-	0.001	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 03_-	BH3A	1/07/2003	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 03_-	BH3A	1/10/2003	water	-	0.001	-	0.001	-	-	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 04_-	BH3A	1/01/2004	water	-	0.001	-	0.001	-	-	0.016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 04_-	BH3A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 04_-	BH3A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 04_-	BH3A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 05_-	BH3A	1/01/2005	water	-	0.01	-	0.01	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 05_-	BH3A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 05_-	BH3A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 05_-	BH3A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 06_-	BH3A	1/01/2006	water	-	<0.001	-	<0.001	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 06_-	BH3A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 06_-	BH3A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 06_-	BH3A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 07_-	BH3A	1/01/2007	water	-	<0.001	-	<0.001	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 07_-	BH3A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_16 Apr 13_-	BH3A	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_09 Jul 13_-	BH3A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_30 Oct 13_-	BH3A	30/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_28 Jan 14_-	BH3A	28/01/2014	water	<0.001	<0.001	-	<0.001	<0.001		0.002	<1	<1	<1	<2	<1	-	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH3A_14 Apr 14_-	BH3A	14/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_07 Jul 14_-	BH3A	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_15 Oct 14_-	BH3A	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_21 Jan 15_-	BH3A	21/01/2015	water	<0.001	0.003	-	<0.001	0.012		<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH3A_22 Apr 15_-	BH3A	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_21 Jul 15_-	BH3A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_20 Oct 15_-	BH3A	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_21 Jan 16_-	BH3A	21/01/2016	water	<0.001	<0.001	-	<0.001	<0.001		0.004	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH3A_14 Apr 16_-	BH3A	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_21 Jul 16_-	BH3A	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_18 Oct 16_-	BH3A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_19 Jan 17_-	BH3A	19/01/2017	water	<0.001	<0.001	-	<0.001	<0.005	<0.00005	0.003	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH3A_02 Jul 19_-	BH3A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_24 Oct 19_-	BH3A	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_27 Apr 20_-	BH3A	27/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Sep 94_-	BH4	1/09/1994	water	-	0.005	-	0.003	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Dec 94_-	BH4	1/12/1994	water	-	0.003	-	0.003	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Mar 95_-	BH4	1/03/1995	water	-	0.004	-	0.001	-	-	0.031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Jun 95_-	BH4	1/06/1995	water	-	0.001	-	0.002	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Sep 95_-	BH4	1/09/1995	water	-	0.001	-	0.001	-	-	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Jan 96_-	BH4	1/01/1996	water	-	0.001	-	0.001	-	-	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Apr 96_-	BH4	1/04/1996	water	-	0.001	-	0.001	-	-	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Jul 96_-	BH4	1/07/1996	water	-	0.002	-	0.001	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Oct 96_-	BH4	1/10/1996	water	-	0.003	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Jan 97_-	BH4	1/01/1997	water	-	0.001	-	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Apr 97_-	BH4	1/04/1997	water	-	0.002	-	0.001	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Jul 97_-	BH4	1/07/1997	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Oct 97_-	BH4	1/10/1997	water	-	0.001	-	0.001	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Jan 98_-	BH4	1/01/1998	water	-	0.003	-	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Apr 98_-	BH4	1/04/1998	water	-	0.002	-	0.005	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16												PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																														0.003
Sample ID	**Location Code**	**Date**	**Matrix Type**																																								
BH4A_01 Jan 98_-	BH4A	1/01/1998	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 98_-	BH4A	1/04/1998	water	-	0.001	-	0.005	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 98_-	BH4A	1/07/1998	water	-	0.002	-	0.001	-	-	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 98_-	BH4A	1/10/1998	water	-	0.002	-	0.001	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 99_-	BH4A	1/01/1999	water	-	0.003	-	0.001	-	-	0.049	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Mar 99_-	BH4A	1/03/1999	water	-	0.003	-	0.001	-	-	0.081	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 99_-	BH4A	1/07/1999	water	-	0.002	-	0.001	-	-	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 99_-	BH4A	1/10/1999	water	-	0.003	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 00_-	BH4A	1/01/2000	water	-	0.001	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 00_-	BH4A	1/04/2000	water	-	0.002	-	0.001	-	-	0.026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 00_-	BH4A	1/07/2000	water	-	0.002	-	0.002	-	-	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 00_-	BH4A	1/10/2000	water	-	0.002	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 01_-	BH4A	1/01/2001	water	-	0.003	-	0.001	-	-	0.034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 01_-	BH4A	1/04/2001	water	-	0.003	-	0.001	-	-	0.057	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 01_-	BH4A	1/07/2001	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 01_-	BH4A	1/10/2001	water	-	0.002	-	0.001	-	-	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 02_-	BH4A	1/01/2002	water	-	0.001	-	0.001	-	-	0.057	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 02_-	BH4A	1/04/2002	water	-	0.001	-	<0.001	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 02_-	BH4A	1/07/2002	water	-	0.002	-	<0.001	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 02_-	BH4A	1/10/2002	water	-	0.003	-	<0.001	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 03_-	BH4A	1/01/2003	water	-	0.004	-	<0.001	-	-	0.087	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 03_-	BH4A	1/04/2003	water	-	0.002	-	0.001	-	-	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 03_-	BH4A	1/07/2003	water	-	0.001	-	0.001	-	-	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 03_-	BH4A	1/10/2003	water	-	0.002	-	0.001	-	-	0.082	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 04_-	BH4A	1/01/2004	water	-	0.001	-	0.001	-	-	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 04_-	BH4A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 04_-	BH4A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 04_-	BH4A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 05_-	BH4A	1/01/2005	water	-	0.01	-	0.01	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 05_-	BH4A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 05_-	BH4A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 05_-	BH4A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 06_-	BH4A	1/01/2006	water	-	0.003	-	<0.001	-	-	0.045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 06_-	BH4A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 06_-	BH4A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 06_-	BH4A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 07_-	BH4A	1/01/2007	water	-	0.002	-	<0.001	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 07_-	BH4A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_17 Apr 13_-	BH4A	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_22 Jul 13_-	BH4A	22/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_30 Oct 13_-	BH4A	30/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_28 Jan 14_-	BH4A	28/01/2014	water	<0.001	<0.001	-	<0.001	0.019		0.001	<1	<1	<1	<2	<1	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH4A_14 Apr 14_-	BH4A	14/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_07 Jul 14_-	BH4A	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_15 Oct 14_-	BH4A	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_21 Jan 15_-	BH4A	21/01/2015	water	<0.001	0.002	-	<0.001	0.043		0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH4A_27 Apr 15_-	BH4A	27/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_21 Jul 15_-	BH4A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_20 Oct 15_-	BH4A	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_20 Jan 16_-	BH4A	20/01/2016	water	<0.001	<0.001	-	<0.001	<0.001		<0.001	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH4A_14 Apr 16_-	BH4A	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_21 Jul 16_-	BH4A	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_18 Oct 16_-	BH4A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_19 Jan 17_-	BH4A	19/01/2017	water	<0.001	<0.001	-	<0.001	0.014	<0.00005	0.002	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH4A_03 Jul 19_-	BH4A	3/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_25 Oct 19_-	BH4A	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_13 Jan 20_-	BH4A	13/01/2020	water	<0.001	0.016	-	<0.001	0.023	<0.00005	0.039	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH4A_23 Apr 20_-	BH4A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 00_-	BH5A	1/07/2000	water	-	0.001	-	0.002	-	-	0.039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Oct 00_-	BH5A	1/10/2000	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 01_-	BH5A	1/01/2001	water	-	0.001	-	0.01	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 01_-	BH5A	1/04/2001	water	-	0.002	-	0.001	-	-	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 01_-	BH5A	1/07/2001	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16												PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2							
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																															0.003

Sample ID	Location Code	Date	Matrix Type																																									
BH5A_01 Oct 01_-	BH5A	1/10/2001	water	-	0.001	-	0.001	-	-	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 02_-	BH5A	1/01/2002	water	-	0.001	-	0.002	-	-	0.018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 02_-	BH5A	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 02_-	BH5A	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 03_-	BH5A	1/01/2003	water	-	0.001	-	<0.001	-	-	0.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 03_-	BH5A	1/04/2003	water	-	0.001	-	0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 03_-	BH5A	1/07/2003	water	-	0.001	-	0.001	-	-	0.031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Oct 03_-	BH5A	1/10/2003	water	-	<0.001	-	<0.001	-	-	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 04_-	BH5A	1/01/2004	water	-	0.001	-	0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 04_-	BH5A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 04_-	BH5A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Oct 04_-	BH5A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 05_-	BH5A	1/01/2005	water	-	0.01	-	0.01	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 05_-	BH5A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 05_-	BH5A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Oct 05_-	BH5A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 06_-	BH5A	1/01/2006	water	-	<0.001	-	<0.001	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 06_-	BH5A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 06_-	BH5A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Oct 06_-	BH5A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 07_-	BH5A	1/01/2007	water	-	0.001	-	<0.001	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 07_-	BH5A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_17 Apr 13_-	BH5A	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_22 Jul 13_-	BH5A	22/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_30 Oct 13_-	BH5A	30/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_28 Jan 14_-	BH5A	28/01/2014	water	<0.001	<0.001	-	<0.001	<0.001		0.009	<1	<1	<1	<2	<1	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH5A_14 Apr 14_-	BH5A	14/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_07 Jul 14_-	BH5A	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_15 Oct 14_-	BH5A	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_21 Jan 15_-	BH5A	21/01/2015	water	0.002	0.002	-	<0.001	0.69		0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH5A_22 Apr 15_-	BH5A	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_21 Jul 15_-	BH5A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_20 Oct 15_-	BH5A	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_21 Jan 16_-	BH5A	21/01/2016	water	0.002	<0.001	-	<0.001	0.59		0.002	<1	<1	<1	<1	-	<1	-	<10	65	170	<100	<10	65	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH5A_14 Apr 16_-	BH5A	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_21 Jul 16_-	BH5A	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_18 Oct 16_-	BH5A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_19 Jan 17_-	BH5A	19/01/2017	water	<0.001	<0.001	-	<0.001	0.025	<0.00005	<0.001	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH5A_02 Jul 19_-	BH5A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_24 Oct 19_-	BH5A	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_15 Jan 20_-	BH5A	15/01/2020	water	0.002	0.003	-	<0.001	0.7	<0.00005	0.022	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	53	190	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH5A_23 Apr 20_-	BH5A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jul 01_-	BH6A	1/07/2001	water	-	0.001	-	0.001	-	-	0.107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Oct 01_-	BH6A	1/10/2001	water	-	0.001	-	0.001	-	-	0.053	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jan 02_-	BH6A	1/01/2002	water	-	0.001	-	0.001	-	-	0.084	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Apr 02_-	BH6A	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.066	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jul 02_-	BH6A	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.067	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Oct 02_-	BH6A	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jan 03_-	BH6A	1/01/2003	water	-	<0.001	-	<0.001	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Apr 03_-	BH6A	1/04/2003	water	-	0.002	-	0.001	-	-	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jul 03_-	BH6A	1/07/2003	water	-	0.001	-	0.001	-	-	0.066	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Oct 03_-	BH6A	1/10/2003	water	-	0.001	-	0.001	-	-	0.057	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jan 04_-	BH6A	1/01/2004	water	-	0.001	-	0.001	-	-	0.356	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Apr 04_-	BH6A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jul 04_-	BH6A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Oct 04_-	BH6A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jan 05_-	BH6A	1/01/2005	water	-	0.001	-	0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Apr 05_-	BH6A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A _01 Jul 05_-	BH6A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Oct 05_-	BH6A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jan 06_-	BH6A	1/01/2006	water	-	<0.001	-	<0.001	-	-	0.016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Apr 06_-	BH6A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jul 06_-	BH6A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16												PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																														0.003

Sample ID	Location Code	Date	Matrix Type																																									
BH6A_01 Oct 06_-	BH6A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jan 07_-	BH6A	1/01/2007	water	-	<0.001	-	<0.001	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Apr 07_-	BH6A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_17 Apr 13_-	BH6A	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_09 Jul 13_-	BH6A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_29 Oct 13_-	BH6A	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_28 Jan 14_-	BH6A	28/01/2014	water	0.001	<0.001	-	<0.001	0.47		0.002	<1	<1	<1	<2	<1	-	-	-	<10	<50	120	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH6A_16 Apr 14_-	BH6A	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_09 Jul 14_-	BH6A	9/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_16 Oct 14_-	BH6A	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_20 Jan 15_-	BH6A	20/01/2015	water	0.002	<0.001	-	<0.001	2.5		0.003	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH6A_27 Apr 15_-	BH6A	27/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_22 Jul 15_-	BH6A	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_21 Oct 15_-	BH6A	21/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_20 Jan 16_-	BH6A	20/01/2016	water	0.002	<0.001	-	<0.001	2		0.003	<1	<1	<1	<1	-	<1	<10	280	490	<100	<10	150	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH6A_14 Apr 16_-	BH6A	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_20 Sep 16_-	BH6A	20/09/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_18 Oct 16_-	BH6A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_19 Jan 17_-	BH6A	19/01/2017	water	0.002	0.001	-	<0.001	0.81	<0.00005	0.004	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH6A_25 Jan 17_-	BH6A	25/01/2017	water	0.001	<0.001	-	<0.001	1.7	<0.00005	0.002	<1	<1	<1	<1	-	-	<2	<10	170	230	<100	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH6A_02 Jul 19_-	BH6A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_25 Oct 19_-	BH6A	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_14 Jan 20_-	BH6A	14/01/2020	water	<0.001	0.006	-	<0.001	0.12	<0.00005	0.022	<1	<1	<1	<1	-	-	<2	<10	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH6A_23 Apr 20_-	BH6A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Sep 93_-	BH7	1/09/1993	water	-	0.0193	-	0.003	-	-	0.0076	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jun 94_-	BH7	1/06/1994	water	-	0.005	-	0.003	-	-	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Sep 94_-	BH7	1/09/1994	water	-	0.005	-	0.004	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Dec 94_-	BH7	1/12/1994	water	-	0.001	-	0.001	-	-	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Mar 95_-	BH7	1/03/1995	water	-	0.001	-	0.001	-	-	0.081	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jun 95_-	BH7	1/06/1995	water	-	0.002	-	0.001	-	-	0.034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Sep 95_-	BH7	1/09/1995	water	-	0.003	-	0.001	-	-	0.055	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jan 96_-	BH7	1/01/1996	water	-	0.001	-	0.001	-	-	0.067	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Apr 96_-	BH7	1/04/1996	water	-	0.001	-	0.001	-	-	0.022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jul 96_-	BH7	1/07/1996	water	-	0.001	-	0.001	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Oct 96_-	BH7	1/10/1996	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jan 97_-	BH7	1/01/1997	water	-	0.001	-	0.001	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Apr 97_-	BH7	1/04/1997	water	-	0.001	-	0.001	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jul 97_-	BH7	1/07/1997	water	-	0.001	-	0.001	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Oct 97_-	BH7	1/10/1997	water	-	0.001	-	0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jan 98_-	BH7	1/01/1998	water	-	0.001	-	0.001	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Apr 98_-	BH7	1/04/1998	water	-	0.001	-	0.004	-	-	0.022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 98_-	BH7A	1/01/1998	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 98_-	BH7A	1/04/1998	water	-	0.002	-	0.006	-	-	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 98_-	BH7A	1/07/1998	water	-	0.001	-	0.002	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 98_-	BH7A	1/10/1998	water	-	0.003	-	0.006	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 99_-	BH7A	1/01/1999	water	-	0.002	-	0.001	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Mar 99_-	BH7A	1/03/1999	water	-	0.007	-	0.001	-	-	0.044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 99_-	BH7A	1/07/1999	water	-	0.001	-	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 99_-	BH7A	1/10/1999	water	-	0.018	-	0.001	-	-	0.018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 00_-	BH7A	1/01/2000	water	-	0.002	-	0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 00_-	BH7A	1/04/2000	water	-	0.002	-	0.001	-	-	0.158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 00_-	BH7A	1/07/2000	water	-	0.002	-	0.001	-	-	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 00_-	BH7A	1/10/2000	water	-	0.001	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 01_-	BH7A	1/01/2001	water	-	0.002	-	0.001	-	-	0.042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 01_-	BH7A	1/04/2001	water	-	0.001	-	0.001	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 01_-	BH7A	1/07/2001	water	-	0.002	-	0.001	-	-	0.047	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 01_-	BH7A	1/10/2001	water	-	0.002	-	0.001	-	-	0.042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 02_-	BH7A	1/01/2002	water	-	0.001	-	0.001	-	-	0.045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 02_-	BH7A	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 02_-	BH7A	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.058	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 02_-	BH7A	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 03_-	BH7A	1/01/2003	water	-	<0.001	-	<0.001	-	-	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 03_-	BH7A	1/04/2003	water	-	0.002	-	0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

				Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16														PAHs - extended	Phenols - total				
				Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
				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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																													
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																														
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)					0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75												0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)				0.0014																																								0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)				0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75														0.2				1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)								0.08						350																															0.003
Sample ID	**Location Code**	**Date**	**Matrix Type**																																										
BH7A_01 Jul 03_-	BH7A	1/07/2003	water	-	0.001	-	0.001	-	-	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 03_-	BH7A	1/10/2003	water	-	0.001	-	0.001	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 04_-	BH7A	1/01/2004	water	-	0.001	-	0.001	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 04_-	BH7A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 04_-	BH7A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 04_-	BH7A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 05_-	BH7A	1/01/2005	water	-	0.001	-	0.001	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 05_-	BH7A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 05_-	BH7A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 05_-	BH7A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 06_-	BH7A	1/01/2006	water	-	<0.001	-	<0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 06_-	BH7A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 06_-	BH7A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 06_-	BH7A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 07_-	BH7A	1/01/2007	water	-	<0.001	-	<0.001	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 07_-	BH7A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_17 Apr 13_-	BH7A	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_09 Jul 13_-	BH7A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_29 Oct 13_-	BH7A	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_28 Jan 14_-	BH7A	28/01/2014	water	<0.001	<0.001	-	<0.001	0.069		<0.001	<1	<1	<1	<2	<1	-	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH7A_16 Apr 14_-	BH7A	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_09 Jul 14_-	BH7A	9/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_16 Oct 14_-	BH7A	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_21 Jan 15_-	BH7A	21/01/2015	water	<0.001	0.002	-	<0.001	0.098		0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH7A_23 Apr 15_-	BH7A	23/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_21 Jul 15_-	BH7A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_21 Oct 15_-	BH7A	21/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_21 Jan 16_-	BH7A	21/01/2016	water	<0.001	<0.001	-	<0.001	0.16		0.008	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH7A_19 Apr 16_-	BH7A	19/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_13 Jul 16_-	BH7A	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_18 Oct 16_-	BH7A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_19 Jan 17_-	BH7A	19/01/2017	water	<0.001	<0.001	-	<0.001	0.083	<0.00005	0.003	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH7A_02 Jul 19_-	BH7A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_25 Oct 19_-	BH7A	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_14 Jan 20_-	BH7A	14/01/2020	water	<0.001	0.006	-	<0.001	0.038	<0.00005	0.026	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH7A_23 Apr 20_-	BH7A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Sep 93_-	BH8	1/09/1993	water	-	0.028	-	0.003	-	-	0.0165	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Jun 94_-	BH8	1/06/1994	water	-	0.005	-	0.003	-	-	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Sep 94_-	BH8	1/09/1994	water	-	0.005	-	0.003	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Dec 94_-	BH8	1/12/1994	water	-	0.001	-	0.001	-	-	0.094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Mar 95_-	BH8	1/03/1995	water	-	0.002	-	0.001	-	-	0.059	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Jun 95_-	BH8	1/06/1995	water	-	0.001	-	0.001	-	-	0.022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Sep 95_-	BH8	1/09/1995	water	-	0.002	-	0.001	-	-	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Jan 96_-	BH8	1/01/1996	water	-	0.001	-	0.001	-	-	0.109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Apr 96_-	BH8	1/04/1996	water	-	0.001	-	0.002	-	-	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Jul 96_-	BH8	1/07/1996	water	-	0.001	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Oct 96_-	BH8	1/10/1996	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 96_-	BH8A	1/07/1996	water	-	0.001	-	0.001	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 96_-	BH8A	1/10/1996	water	-	0.007	-	0.001	-	-	0.085	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 97_-	BH8A	1/01/1997	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 97_-	BH8A	1/04/1997	water	-	0.001	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 97_-	BH8A	1/07/1997	water	-	0.001	-	0.001	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 97_-	BH8A	1/10/1997	water	-	0.002	-	0.001	-	-	0.058	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 98_-	BH8A	1/01/1998	water	-	0.001	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 98_-	BH8A	1/04/1998	water	-	0.001	-	0.001	-	-	0.018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 98_-	BH8A	1/07/1998	water	-	0.001	-	0.001	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 98_-	BH8A	1/10/1998	water	-	0.001	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 99_-	BH8A	1/01/1999	water	-	0.002	-	0.001	-	-	0.042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Mar 99_-	BH8A	1/03/1999	water	-	0.005	-	0.001	-	-	0.031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 99_-	BH8A	1/07/1999	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 99_-	BH8A	1/10/1999	water	-	0.028	-	0.001	-	-	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 00_-	BH8A	1/01/2000	water	-	0.001	-	0.001	-	-	0.041	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 00_-	BH8A	1/04/2000	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16														PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75										0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																								0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75												0.2				1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																														0.003
Sample ID	**Location Code**	**Date**	**Matrix Type**																																								
BH8A_01 Jul 00_-	BH8A	1/07/2000	water	-	0.002	-	0.001	-	-	0.049	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 00_-	BH8A	1/10/2000	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 01_-	BH8A	1/01/2001	water	-	0.001	-	0.001	-	-	0.055	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 01_-	BH8A	1/04/2001	water	-	0.001	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 01_-	BH8A	1/07/2001	water	-	0.001	-	0.001	-	-	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 01_-	BH8A	1/10/2001	water	-	0.001	-	0.001	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 02_-	BH8A	1/01/2002	water	-	0.001	-	0.001	-	-	0.045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 02_-	BH8A	1/04/2002	water	-	<0.001	-	<0.001	-	-	0.036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 02_-	BH8A	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.049	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 02_-	BH8A	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.063	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 03_-	BH8A	1/01/2003	water	-	<0.001	-	<0.001	-	-	<0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 03_-	BH8A	1/04/2003	water	-	0.002	-	0.001	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 03_-	BH8A	1/07/2003	water	-	0.002	-	0.001	-	-	0.082	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 03_-	BH8A	1/10/2003	water	-	0.002	-	0.001	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 04_-	BH8A	1/01/2004	water	-	0.001	-	0.001	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 04_-	BH8A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 04_-	BH8A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 04_-	BH8A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 05_-	BH8A	1/01/2005	water	-	0.001	-	<0.001	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 05_-	BH8A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 05_-	BH8A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 05_-	BH8A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 06_-	BH8A	1/01/2006	water	-	0.001	-	<0.001	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 06_-	BH8A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 06_-	BH8A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 06_-	BH8A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 07_-	BH8A	1/01/2007	water	-	<0.001	-	<0.001	-	-	0.039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 07_-	BH8A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_17 Apr 13_-	BH8A	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_09 Jul 13_-	BH8A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_29 Oct 13_-	BH8A	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_28 Jan 14_-	BH8A	28/01/2014	water	<0.001	<0.001	-	<0.001	<0.001		0.002	<1	<1	<1	<2	<1	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH8A_16 Apr 14_-	BH8A	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_09 Jul 14_-	BH8A	9/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_16 Oct 14_-	BH8A	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_21 Jan 15_-	BH8A	21/01/2015	water	<0.001	<0.001	-	<0.001	<0.001		0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH8A_23 Apr 15_-	BH8A	23/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_21 Jul 15_-	BH8A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_21 Oct 15_-	BH8A	21/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_21 Jan 16_-	BH8A	21/01/2016	water	<0.001	<0.001	-	<0.001	<0.001		<0.001	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH8A_19 Apr 16_-	BH8A	19/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_13 Jul 16_-	BH8A	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_18 Oct 16_-	BH8A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_19 Jan 17_-	BH8A	19/01/2017	water	<0.001	<0.001	-	<0.001	<0.005	<0.00005	<0.001	<1	<1	<1	<1	-	-	<2	<10	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH8A_02 Jul 19_-	BH8A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_22 Apr 20_-	BH8A	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Jun 94_-	BH9	1/06/1994	water	-	0.005	-	0.003	-	-	0.034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Sep 94_-	BH9	1/09/1994	water	-	0.005	-	0.003	-	-	0.062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Dec 94_-	BH9	1/12/1994	water	-	0.006	-	0.001	-	-	0.052	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Mar 95_-	BH9	1/03/1995	water	-	0.005	-	0.001	-	-	0.102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Jun 95_-	BH9	1/06/1995	water	-	0.002	-	0.001	-	-	0.026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Sep 95_-	BH9	1/09/1995	water	-	0.005	-	0.002	-	-	0.069	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Jan 96_-	BH9	1/01/1996	water	-	0.001	-	0.001	-	-	206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Apr 96_-	BH9	1/04/1996	water	-	0.011	-	0.028	-	-	0.074	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Jul 96_-	BH9	1/07/1996	water	-	0.003	-	0.001	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 96_-	BH9A	1/07/1996	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 96_-	BH9A	1/10/1996	water	-	0.004	-	0.004	-	-	0.258	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 97_-	BH9A	1/01/1997	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 97_-	BH9A	1/04/1997	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 97_-	BH9A	1/07/1997	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 97_-	BH9A	1/10/1997	water	-	0.001	-	0.001	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 98_-	BH9A	1/01/1998	water	-	0.008	-	0.001	-	-	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 98_-	BH9A	1/04/1998	water	-	0.001	-	0.001	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16														PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																															0.003

Sample ID	Location Code	Date	Matrix Type																																									
BH9A_01 Nov 98_-	BH9A	1/11/1998	water	-	-	-	0.001	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 99_-	BH9A	1/01/1999	water	-	0.002	-	0.001	-	-	0.039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Mar 99_-	BH9A	1/03/1999	water	-	0.005	-	0.002	-	-	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 99_-	BH9A	1/07/1999	water	-	0.001	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 99_-	BH9A	1/10/1999	water	-	0.003	-	0.001	-	-	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 00_-	BH9A	1/01/2000	water	-	0.001	-	0.001	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 00_-	BH9A	1/04/2000	water	-	0.001	-	0.002	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 00_-	BH9A	1/07/2000	water	-	0.003	-	0.001	-	-	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 00_-	BH9A	1/10/2000	water	-	0.001	-	0.001	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 01_-	BH9A	1/01/2001	water	-	0.001	-	0.001	-	-	0.036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 01_-	BH9A	1/04/2001	water	-	0.001	-	0.001	-	-	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 01_-	BH9A	1/07/2001	water	-	0.001	-	0.001	-	-	0.072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 02_-	BH9A	1/01/2002	water	-	0.003	-	0.001	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 02_-	BH9A	1/04/2002	water	-	<0.001	-	0.001	-	-	0.045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 02_-	BH9A	1/07/2002	water	-	<0.001	-	<0.001	-	-	0.045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 02_-	BH9A	1/10/2002	water	-	<0.001	-	<0.001	-	-	0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 03_-	BH9A	1/01/2003	water	-	<0.001	-	<0.001	-	-	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 03_-	BH9A	1/04/2003	water	-	0.002	-	0.001	-	-	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 03_-	BH9A	1/07/2003	water	-	0.001	-	0.001	-	-	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 03_-	BH9A	1/10/2003	water	-	0.001	-	0.001	-	-	0.021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 04_-	BH9A	1/01/2004	water	-	0.001	-	0.002	-	-	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 04_-	BH9A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 04_-	BH9A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 04_-	BH9A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 05_-	BH9A	1/01/2005	water	-	0.001	-	0.001	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 05_-	BH9A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 05_-	BH9A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 07_-	BH9A	1/01/2007	water	0.001	<0.001	0.23	<0.001	0.359	<0.0001	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9B_01 Jul 05_-	BH9B	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9B_01 Oct 06_-	BH9B	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9B_01 Jan 07_-	BH9B	1/01/2007	water	-	<0.001	-	<0.001	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9B_01 Apr 07_-	BH9B	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_17 Apr 13_-	BH9C	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_09 Jul 13_-	BH9C	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_29 Oct 13_-	BH9C	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_28 Jan 14_-	BH9C	28/01/2014	water	<0.001	<0.001	-	<0.001	0.065		0.006	<1	<1	<1	<2	<1	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH9C_16 Apr 14_-	BH9C	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_07 Jul 14_-	BH9C	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_15 Oct 14_-	BH9C	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_20 Jan 15_-	BH9C	20/01/2015	water	<0.001	0.003	-	<0.001	0.32		0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH9C_22 Apr 15_-	BH9C	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_21 Jul 15_-	BH9C	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_20 Oct 15_-	BH9C	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_20 Jan 16_-	BH9C	20/01/2016	water	<0.001	<0.001	-	<0.001	0.47		0.002	<1	<1	<1	<1	-	<1	-	<10	<10	<100	<100	<10	<10	-	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	<0.2	<0.2
BH9C_14 Apr 16_-	BH9C	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_13 Jul 16_-	BH9C	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_18 Oct 16_-	BH9C	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_19 Jan 17_-	BH9C	19/01/2017	water	<0.001	<0.001	-	<0.001	0.22	<0.00005	0.002	<10	<10	<10	<10	-	-	<20	<100	<50	<100	<100	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH9C_02 Jul 19_-	BH9C	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_24 Oct 19_-	BH9C	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_13 Jan 20_-	BH9C	13/01/2020	water	<0.001	0.018	-	<0.001	0.046	<0.00005	0.076	<1	<1	<1	<1	-	-	<2	<10	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	-	<0.2	-	<0.2
BH9C_23 Apr 20_-	BH9C	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Statistical Summary

Number of Results	106	630	1	632	106	106	632	89	89	89	89	23	22	44	66	43	43	43	68	68	46	68	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	2	105	22	105
Number of Detects	23	462	1	411	86	1	601	0	1	0	0	0	0	0	0	4	3	0	0	8	7	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0
Minimum Concentration	<0.001	<0.001	0.23	<0.001	<0.001	<0.00005	<0.001	<1	<1	<1	<1	<1	<1	<2	<10	<10	<100	<100	<10	<10	<100	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<50	3	<0.2	<0.2	<0.2
Minimum Detect	0.001	0.001	0.23	0.001	0.006	0.00005	0.001	ND	2	ND	ND	ND	ND	ND	ND	65	170	ND	ND	53	120	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	3	ND	ND	ND
Maximum Concentration	0.022	0.028	0.23	0.028	2.5	<0.0005	206	<10	<10	<10	<10	<5	<1	<20	<100	280	490	<100	<20	150	300	<100	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	2	<1	<1	<2	<50	8	<0.2	<0.2	<0.2
Maximum Detect	0.022	0.028	0.23	0.028	2.5	0.00005	206	ND	2	ND	ND	ND	ND	ND	ND	280	490	ND	ND	150	300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND	ND	ND	ND	8	ND	ND	ND
Average Concentration	0.0012	0.0019		0.0011	0.2	0.00015	0.35	0.6	0.62	0.61	0.71	0.72	0.5	1.2	5.7	27	67	50	5.3	26	70	49	0.5	0.5	0.5	0.5	0.54	0.5	0.5	0.5	0.5	0.5	0.5	0.52	0.5	0.5	1	25		0.1	0.1	0.1
Median Concentration	0.0005	0.001	0.23	0.001	0.0375	0.00025	0.018	0.5	0.5	0.5	0.5	0.5	0.5	1	5	25	50	50	5	25	50	50	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	1	25	5.5	0.1	0.1	0.1
Standard Deviation	0.003	0.0028		0.0017	0.39	0.00011	8.2	0.56	0.58	0.56	0.58	0.58	0	1.4	5.5	48	74	0	1.2	24	52	5.9	0	0	0	0	0.27	0	0	0	0	0	0	0.15	0	0	0	0		0	0	0

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	Metals							BTEXN							TRH - NEPM 2013				TRH - NEPM 1999				PAHs - standard 16														PAHs - extended	Phenols - total				
	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Xylene (m)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(b)&(k)fluoranthene	Phenolics Total	Phenols	4,4'-DDE	a-BHC	Aldrin
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																										
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																										
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)		0.0014		0.0034	1.9	0.0006	0.008	950	180	80	350			75											0.4		0.2				1.4			16	2							
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.0014																																									0.001
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.001	0.0013		0.0044		0.0004	0.015	700	180	80				75													0.2				1.4			70	2							
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)					0.08						350																															0.003

Sample ID	Location Code	Date	Matrix Type																																									
Number of Guideline Exceedances				23	198	0	20	46	60	469	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105	0	105	0	0	0	0	0	0	0	0	0	0	0	0	0	105
Number of Guideline Exceedances(Detects Only)				23	198	0	20	46	0	469	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments
#1:calculated from % Saturation
#2:assumed same as NH4
#3:Measured as NH3-N at pH 8
#4:(pH >6.5)
#5:In absence of total As guideline, As (V) guideline has been adopted.
#6:Guideline for Cr (VI) adopted
#7:Ammonia as total ammonia, measured as [NH3-N] at pH 8.
#8:In absence of total Cr guideline, Cr (VI) guideline has been adopted.
#9:Freshwater DGV adopted (insufficient marine toxicity data)

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																			OP Pesticides									Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
AB01_01 Jul 01_-	AB01	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Oct 01_-	AB01	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Jan 02_-	AB01	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Apr 02_-	AB01	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Jul 02_-	AB01	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Apr 03_-	AB01	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Jul 04_-	AB01	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AB01_01 Jan 05_-	AB01	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jun 94_-	BH10	1/06/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Sep 94_-	BH10	1/09/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Dec 94_-	BH10	1/12/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Mar 95_-	BH10	1/03/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jun 95_-	BH10	1/06/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Sep 95_-	BH10	1/09/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 96_-	BH10	1/01/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 96_-	BH10	1/04/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 96_-	BH10	1/07/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 96_-	BH10	1/10/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 97_-	BH10	1/01/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 97_-	BH10	1/04/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 97_-	BH10	1/07/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 97_-	BH10	1/10/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 98_-	BH10	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 98_-	BH10	1/04/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 98_-	BH10	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 98_-	BH10	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 99_-	BH10	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Mar 99_-	BH10	1/03/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 99_-	BH10	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 99_-	BH10	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 00_-	BH10	1/01/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 00_-	BH10	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 00_-	BH10	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 00_-	BH10	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 01_-	BH10	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 01_-	BH10	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 01_-	BH10	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 01_-	BH10	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 02_-	BH10	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 02_-	BH10	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 02_-	BH10	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 02_-	BH10	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 03_-	BH10	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Apr 03_-	BH10	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jul 03_-	BH10	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Oct 03_-	BH10	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_01 Jan 04_-	BH10	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_29 Jul 14_-	BH10	29/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_15 Oct 14_-	BH10	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_20 Jan 15_-	BH10	20/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	<0.2
BH10_22 Apr 15_-	BH10	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_21 Jul 15_-	BH10	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_20 Oct 15_-	BH10	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_20 Jan 16_-	BH10	20/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH10_14 Apr 16_-	BH10	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_13 Jul 16_-	BH10	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10_18 Oct 16_-	BH10	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jul 01_-	BH10A	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Oct 01_-	BH10A	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jan 02_-	BH10A	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Apr 02_-	BH10A	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jul 02_-	BH10A	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Oct 02_-	BH10A	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																		OP Pesticides								Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
BH10A_01 Jan 03_-	BH10A	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Apr 03_-	BH10A	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jul 03_-	BH10A	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Oct 03_-	BH10A	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jan 04_-	BH10A	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Apr 04_-	BH10A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jul 04_-	BH10A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Oct 04_-	BH10A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jan 05_-	BH10A	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Apr 05_-	BH10A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jul 05_-	BH10A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Oct 05_-	BH10A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jan 06_-	BH10A	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Apr 06_-	BH10A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jul 06_-	BH10A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Oct 06_-	BH10A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Jan 07_-	BH10A	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10A_01 Apr 07_-	BH10A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_12 Apr 17_-	BH10B	12/04/2017	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_05 Jul 17_-	BH10B	5/07/2017	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_09 Oct 17_-	BH10B	9/10/2017	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_15 Jan 18_-	BH10B	15/01/2018	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH10B_23 Apr 18_-	BH10B	23/04/2018	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_09 Jul 18_-	BH10B	9/07/2018	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_08 Oct 18_-	BH10B	8/10/2018	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_22 Jan 19_-	BH10B	22/01/2019	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH10B_09 Apr 19_-	BH10B	9/04/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_02 Jul 19_-	BH10B	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_24 Oct 19_-	BH10B	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10B_15 Jan 20_-	BH10B	15/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH10B_22 Apr 20_-	BH10B	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jun 94_-	BH11	1/06/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Sep 94_-	BH11	1/09/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Dec 94_-	BH11	1/12/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Mar 95_-	BH11	1/03/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jun 95_-	BH11	1/06/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Sep 95_-	BH11	1/09/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 96_-	BH11	1/01/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 96_-	BH11	1/04/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 96_-	BH11	1/07/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 96_-	BH11	1/10/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 97_-	BH11	1/01/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 97_-	BH11	1/04/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 97_-	BH11	1/07/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 97_-	BH11	1/10/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 98_-	BH11	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 98_-	BH11	1/04/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 98_-	BH11	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 98_-	BH11	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Nov 98_-	BH11	1/11/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 99_-	BH11	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Mar 99_-	BH11	1/03/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 99_-	BH11	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 99_-	BH11	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 00_-	BH11	1/01/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 00_-	BH11	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 00_-	BH11	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 00_-	BH11	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 01_-	BH11	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 01_-	BH11	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 01_-	BH11	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 01_-	BH11	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 02_-	BH11	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																			OP Pesticides								Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
BH11_01 Apr 02_-	BH11	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 02_-	BH11	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 02_-	BH11	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 03_-	BH11	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 03_-	BH11	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 03_-	BH11	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 03_-	BH11	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 04_-	BH11	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 04_-	BH11	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 04_-	BH11	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 05_-	BH11	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 05_-	BH11	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 05_-	BH11	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 06_-	BH11	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jul 06_-	BH11	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Oct 06_-	BH11	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Jan 07_-	BH11	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11_01 Apr 07_-	BH11	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_01 Jan 06_-	BH11A	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_16 Apr 13_-	BH11A	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_09 Jul 13_-	BH11A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_29 Oct 13_-	BH11A	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_28 Jan 14_-	BH11A	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH11A_16 Apr 14_-	BH11A	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_16 Apr 14_-2	BH11A	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_09 Jul 14_-	BH11A	9/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_16 Oct 14_-	BH11A	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_21 Jan 15_-	BH11A	21/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	<0.2
BH11A_23 Apr 15_-	BH11A	23/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_21 Jul 15_-	BH11A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_21 Oct 15_-	BH11A	21/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_21 Jan 16_-	BH11A	21/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH11A_19 Apr 16_-	BH11A	19/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_13 Jul 16_-	BH11A	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_18 Oct 16_-	BH11A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_19 Jan 17_-	BH11A	19/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH11A_25 Jan 17_-	BH11A	25/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH11A_02 Jul 19_-	BH11A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_25 Oct 19_-	BH11A	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11A_14 Jan 20_-	BH11A	14/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH11A_22 Apr 20_-	BH11A	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Sep 94_-	BH12	1/09/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Dec 94_-	BH12	1/12/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Mar 95_-	BH12	1/03/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jun 95_-	BH12	1/06/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Sep 95_-	BH12	1/09/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jan 96_-	BH12	1/01/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Apr 96_-	BH12	1/04/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jul 96_-	BH12	1/07/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Oct 96_-	BH12	1/10/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jan 97_-	BH12	1/01/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Apr 97_-	BH12	1/04/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jul 97_-	BH12	1/07/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Oct 97_-	BH12	1/10/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jan 98_-	BH12	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Apr 98_-	BH12	1/04/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jul 98_-	BH12	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Oct 98_-	BH12	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jan 99_-	BH12	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Mar 99_-	BH12	1/03/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Jul 99_-	BH12	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12_01 Oct 99_-	BH12	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 00_-	BH12A	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

				OC Pesticides																			OP Pesticides								Chlorinated Hydrocarbons	SVOCs
				b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
				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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)									0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)										0.01											0.005											
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)											0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)									0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			
Sample ID	**Location Code**	**Date**	**Matrix Type**																													
BH12A_01 Jul 00_-	BH12A	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 00_-	BH12A	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 01_-	BH12A	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 01_-	BH12A	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jul 01_-	BH12A	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 01_-	BH12A	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 02_-	BH12A	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 02_-	BH12A	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jul 02_-	BH12A	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 02_-	BH12A	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 03_-	BH12A	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 03_-	BH12A	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jul 03_-	BH12A	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 03_-	BH12A	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 04_-	BH12A	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 04_-	BH12A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jul 04_-	BH12A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 04_-	BH12A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 05_-	BH12A	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 05_-	BH12A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jul 05_-	BH12A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 05_-	BH12A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 06_-	BH12A	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 06_-	BH12A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jul 06_-	BH12A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Oct 06_-	BH12A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Jan 07_-	BH12A	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_01 Apr 07_-	BH12A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_17 Apr 13_-	BH12A	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_09 Jul 13_-	BH12A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_29 Oct 13_-	BH12A	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_28 Jan 14_-	BH12A	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH12A_14 Apr 14_-	BH12A	14/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_07 Jul 14_-	BH12A	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_15 Oct 14_-	BH12A	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_21 Jan 15_-	BH12A	21/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	-	<0.2
BH12A_23 Apr 15_-	BH12A	23/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_21 Jul 15_-	BH12A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_20 Oct 15_-	BH12A	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_21 Jan 16_-	BH12A	21/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH12A_14 Apr 16_-	BH12A	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_21 Jul 16_-	BH12A	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_18 Oct 16_-	BH12A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_19 Jan 17_-	BH12A	19/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH12A_03 Jul 19_-	BH12A	3/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_25 Oct 19_-	BH12A	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12A_13 Jan 20_-	BH12A	13/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH12A_23 Apr 20_-	BH12A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Dec 94_-	BH13	1/12/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Mar 95_-	BH13	1/03/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jun 95_-	BH13	1/06/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Sep 95_-	BH13	1/09/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jan 96_-	BH13	1/01/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Apr 96_-	BH13	1/04/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jul 96_-	BH13	1/07/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Oct 96_-	BH13	1/10/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jan 97_-	BH13	1/01/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Apr 97_-	BH13	1/04/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jul 97_-	BH13	1/07/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Oct 97_-	BH13	1/10/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jan 98_-	BH13	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Apr 98_-	BH13	1/04/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jul 98_-	BH13	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																			OP Pesticides									Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
BH13_01 Oct 98_-	BH13	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jan 99_-	BH13	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Mar 99_-	BH13	1/03/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jul 99_-	BH13	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Oct 99_-	BH13	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13_01 Jan 00_-	BH13	1/01/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 00_-	BH13A	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 00_-	BH13A	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 00_-	BH13A	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 01_-	BH13A	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 01_-	BH13A	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 01_-	BH13A	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 01_-	BH13A	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 02_-	BH13A	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 02_-	BH13A	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 02_-	BH13A	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 02_-	BH13A	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 03_-	BH13A	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 03_-	BH13A	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 03_-	BH13A	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 03_-	BH13A	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 04_-	BH13A	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 04_-	BH13A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 04_-	BH13A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 04_-	BH13A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 05_-	BH13A	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 05_-	BH13A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 05_-	BH13A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 05_-	BH13A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 06_-	BH13A	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 06_-	BH13A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jul 06_-	BH13A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Oct 06_-	BH13A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Jan 07_-	BH13A	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_01 Apr 07_-	BH13A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_17 Apr 13_-	BH13A	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_09 Jul 13_-	BH13A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_29 Oct 13_-	BH13A	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_28 Jan 14_-	BH13A	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH13A_14 Apr 14_-	BH13A	14/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_07 Jul 14_-	BH13A	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_15 Oct 14_-	BH13A	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_27 Apr 15_-	BH13A	27/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_21 Jul 15_-	BH13A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_20 Oct 15_-	BH13A	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_21 Jan 16_-	BH13A	21/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH13A_19 Apr 16_-	BH13A	19/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_21 Jul 16_-	BH13A	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_18 Oct 16_-	BH13A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_03 Jul 19_-	BH13A	3/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_25 Oct 19_-	BH13A	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13A_13 Jan 20_-	BH13A	13/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH13A_23 Apr 20_-	BH13A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 97_-	BH14	1/01/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 97_-	BH14	1/04/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 97_-	BH14	1/07/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 97_-	BH14	1/10/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 98_-	BH14	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 98_-	BH14	1/04/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 98_-	BH14	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 98_-	BH14	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 99_-	BH14	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Mar 99_-	BH14	1/03/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																			OP Pesticides									Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
BH14_01 Jul 99_-	BH14	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 99_-	BH14	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 00_-	BH14	1/01/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 00_-	BH14	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 00_-	BH14	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 00_-	BH14	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 01_-	BH14	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 01_-	BH14	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 01_-	BH14	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 01_-	BH14	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 02_-	BH14	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 02_-	BH14	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 02_-	BH14	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 02_-	BH14	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 03_-	BH14	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 03_-	BH14	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 03_-	BH14	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 03_-	BH14	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 04_-	BH14	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 04_-	BH14	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 04_-	BH14	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 04_-	BH14	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 05_-	BH14	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 05_-	BH14	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jun 05_-	BH14	1/06/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 05_-	BH14	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 06_-	BH14	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 06_-	BH14	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jul 06_-	BH14	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Oct 06_-	BH14	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Jan 07_-	BH14	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_01 Apr 07_-	BH14	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_16 Apr 13_-	BH14	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_22 Apr 15_-	BH14	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_22 Jul 15_-	BH14	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_20 Oct 15_-	BH14	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14_20 Jan 16_-	BH14	20/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-
BH14A_29 Jul 14_-	BH14A	29/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14A_29 Oct 14_-	BH14A	29/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14A_20 Jan 15_-	BH14A	20/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	<0.2
BH14A_14 Apr 16_-	BH14A	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14A_13 Jul 16_-	BH14A	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14A_19 Jan 17_-	BH14A	19/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
BH14A_02 Jul 19_-	BH14A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14A_24 Oct 19_-	BH14A	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14A_27 Apr 20_-	BH14A	27/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 97_-	BH15	1/01/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 97_-	BH15	1/04/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 97_-	BH15	1/07/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 97_-	BH15	1/10/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 98_-	BH15	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 98_-	BH15	1/04/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 98_-	BH15	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 98_-	BH15	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 99_-	BH15	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Mar 99_-	BH15	1/03/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 99_-	BH15	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 99_-	BH15	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 00_-	BH15	1/01/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 00_-	BH15	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 00_-	BH15	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 00_-	BH15	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 01_-	BH15	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																			OP Pesticides								Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
BH15_01 Apr 01_-	BH15	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jun 01_-	BH15	1/06/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 01_-	BH15	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 02_-	BH15	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 02_-	BH15	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 02_-	BH15	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 02_-	BH15	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 03_-	BH15	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 03_-	BH15	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 03_-	BH15	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 03_-	BH15	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 04_-	BH15	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 04_-	BH15	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 04_-	BH15	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 04_-	BH15	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 05_-	BH15	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 05_-	BH15	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jun 05_-	BH15	1/06/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 05_-	BH15	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Feb 06_-	BH15	1/02/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 06_-	BH15	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jul 06_-	BH15	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Oct 06_-	BH15	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Jan 07_-	BH15	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_01 Apr 07_-	BH15	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_16 Apr 13_-	BH15	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_09 Jul 13_-	BH15	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_29 Oct 13_-	BH15	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_28 Jan 14_-	BH15	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH15_16 Apr 14_-	BH15	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_07 Jul 14_-	BH15	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_07 Jul 14_-2	BH15	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_16 Oct 14_-	BH15	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_20 Jan 15_-	BH15	20/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	<0.2
BH15_22 Apr 15_-	BH15	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_22 Jul 15_-	BH15	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_20 Oct 15_-	BH15	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_20 Jan 16_-	BH15	20/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH15_14 Apr 16_-	BH15	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_13 Jul 16_-	BH15	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_18 Oct 16_-	BH15	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_25 Jan 17_-	BH15	25/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH15_02 Jul 19_-	BH15	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_24 Oct 19_-	BH15	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15_14 Jan 20_-	BH15	14/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH15_22 Apr 20_-	BH15	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 00_-	BH16	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jul 00_-	BH16	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 00_-	BH16	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 01_-	BH16	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 01_-	BH16	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jun 01_-	BH16	1/06/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 01_-	BH16	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 02_-	BH16	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 02_-	BH16	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jul 02_-	BH16	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 02_-	BH16	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 03_-	BH16	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 03_-	BH16	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jun 03_-	BH16	1/06/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 03_-	BH16	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 04_-	BH16	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 04_-	BH16	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																			OP Pesticides								Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
BH16_01 Jul 04_-	BH16	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 04_-	BH16	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 05_-	BH16	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 05_-	BH16	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jul 05_-	BH16	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 05_-	BH16	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 06_-	BH16	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 06_-	BH16	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jul 06_-	BH16	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Oct 06_-	BH16	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Jan 07_-	BH16	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_01 Apr 07_-	BH16	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_16 Apr 13_-	BH16	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_22 Jul 13_-	BH16	22/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_29 Oct 13_-	BH16	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_28 Jan 14_-	BH16	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH16_16 Apr 14_-	BH16	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_09 Jul 14_-	BH16	9/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_16 Oct 14_-	BH16	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_20 Jan 15_-	BH16	20/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	<0.2
BH16_22 Apr 15_-	BH16	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_22 Jul 15_-	BH16	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_20 Oct 15_-	BH16	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_20 Jan 16_-	BH16	20/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH16_14 Apr 16_-	BH16	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_13 Jul 16_-	BH16	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_18 Oct 16_-	BH16	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_25 Jan 17_-	BH16	25/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH16_02 Jul 19_-	BH16	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_24 Oct 19_-	BH16	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_14 Jan 20_-	BH16	14/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH16_22 Apr 20_-	BH16	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jul 00_-	BH17	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 00_-	BH17	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 01_-	BH17	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 01_-	BH17	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jun 01_-	BH17	1/06/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 01_-	BH17	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 02_-	BH17	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 02_-	BH17	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jul 02_-	BH17	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 02_-	BH17	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 03_-	BH17	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 03_-	BH17	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jul 03_-	BH17	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 03_-	BH17	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 04_-	BH17	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 04_-	BH17	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jul 04_-	BH17	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 04_-	BH17	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 05_-	BH17	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 05_-	BH17	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jul 05_-	BH17	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 05_-	BH17	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 06_-	BH17	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 06_-	BH17	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jul 06_-	BH17	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Oct 06_-	BH17	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Jan 07_-	BH17	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_01 Apr 07_-	BH17	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_17 Apr 13_-	BH17	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_22 Jul 13_-	BH17	22/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_14 Apr 14_-	BH17	14/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																		OP Pesticides								Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
BH17_07 Jul 14_-	BH17	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_22 Apr 15_-	BH17	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_21 Jul 15_-	BH17	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_20 Oct 15_-	BH17	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_21 Jan 16_-	BH17	21/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH17_14 Apr 16_-	BH17	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_21 Jul 16_-	BH17	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_02 Jul 19_-	BH17	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_24 Oct 19_-	BH17	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17_15 Jan 20_-	BH17	15/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH17_23 Apr 20_-	BH17	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jun 01_-	BH18	1/06/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Oct 01_-	BH18	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jan 02_-	BH18	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Apr 02_-	BH18	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jun 02_-	BH18	1/06/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Oct 02_-	BH18	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jan 03_-	BH18	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Apr 03_-	BH18	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jul 03_-	BH18	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Oct 03_-	BH18	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jan 04_-	BH18	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Apr 04_-	BH18	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jul 04_-	BH18	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Oct 04_-	BH18	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jan 05_-	BH18	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Apr 05_-	BH18	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jul 05_-	BH18	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Oct 05_-	BH18	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jan 06_-	BH18	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Apr 06_-	BH18	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jul 06_-	BH18	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Oct 06_-	BH18	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Jan 07_-	BH18	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_01 Apr 07_-	BH18	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_16 Apr 13_-	BH18	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_30 Oct 13_-	BH18	30/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_28 Jan 14_-	BH18	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH18_16 Apr 14_-	BH18	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_29 Oct 14_-	BH18	29/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_21 Jan 15_-	BH18	21/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	-	<0.2
BH18_23 Apr 15_-	BH18	23/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_21 Jul 15_-	BH18	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_21 Oct 15_-	BH18	21/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_21 Jan 16_-	BH18	21/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH18_19 Apr 16_-	BH18	19/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_18 Oct 16_-	BH18	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_19 Jan 17_-	BH18	19/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH18_03 Jul 19_-	BH18	3/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_25 Oct 19_-	BH18	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18_13 Jan 20_-	BH18	13/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH18_23 Apr 20_-	BH18	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_01 Jul 06_-	BH19	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_01 Oct 06_-	BH19	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19 _01 Jan 07_-	BH19	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	-
BH19_01 Jan 07_-	BH19	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_01 Apr 07_-	BH19	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_16 Apr 13_-	BH19	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_09 Jul 13_-	BH19	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_29 Oct 13_-	BH19	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_28 Jan 14_-	BH19	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH19_16 Apr 14_-	BH19	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_07 Jul 14_-	BH19	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																		OP Pesticides								Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
BH19_29 Jul 14_-	BH19	29/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_16 Oct 14_-	BH19	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_20 Jan 15_-	BH19	20/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	<0.2
BH19_22 Apr 15_-	BH19	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_21 Jul 15_-	BH19	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_20 Oct 15_-	BH19	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_20 Jan 16_-	BH19	20/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH19_14 Apr 16_-	BH19	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_13 Jul 16_-	BH19	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_18 Oct 16_-	BH19	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19_19 Jan 17_-	BH19	19/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH19A_02 Jul 19_-	BH19A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19A_24 Oct 19_-	BH19A	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19A_15 Jan 20_-	BH19A	15/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH19A_22 Apr 20_-	BH19A	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19B_18 Nov 19_-	BH19B	18/11/2019	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH19B_15 Jan 20_-	BH19B	15/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH19B_22 Apr 20_-	BH19B	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_01 Jul 06_-	BH20	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_01 Oct 06_-	BH20	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_ 01 Jan 07_-	BH20	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	-
BH20_01 Jan 07_-	BH20	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_01 Apr 07_-	BH20	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_16 Apr 13_-	BH20	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_28 Jan 14_-	BH20	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH20_07 Jul 14_-	BH20	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_21 Jan 15_-	BH20	21/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	<0.2
BH20_27 Apr 15_-	BH20	27/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_20 Oct 15_-	BH20	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_10 Mar 16_-	BH20	10/03/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH20_19 Apr 16_-	BH20	19/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_25 Jan 17_-	BH20	25/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH20_02 Jul 19_-	BH20	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_24 Oct 19_-	BH20	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20_14 Jan 20_-	BH20	14/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH20_22 Apr 20_-	BH20	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_01 Jul 06_-	BH22	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_01 Oct 06_-	BH22	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22 _01 Jan 07_-	BH22	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	-
BH22_01 Jan 07_-	BH22	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_01 Apr 07_-	BH22	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_22 Jul 13_-	BH22	22/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_29 Oct 13_-	BH22	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_28 Jan 14_-	BH22	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH22_16 Apr 14_-	BH22	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_07 Jul 14_-	BH22	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_16 Oct 14_-	BH22	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_20 Jan 15_-	BH22	20/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	<0.2
BH22_22 Apr 15_-	BH22	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_22 Jul 15_-	BH22	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_20 Oct 15_-	BH22	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_20 Jan 16_-	BH22	20/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH22_14 Apr 16_-	BH22	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_13 Jul 16_-	BH22	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_18 Oct 16_-	BH22	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_25 Jan 17_-	BH22	25/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH22_02 Jul 19_-	BH22	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_24 Oct 19_-	BH22	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22_14 Jan 20_-	BH22	14/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH22_22 Apr 20_-	BH22	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_01 Jul 06_-	BH23	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_01 Oct 06_-	BH23	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23 _01 Jan 07_-	BH23	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																		OP Pesticides								Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
BH23_01 Jan 07_-	BH23	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_01 Apr 07_-	BH23	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_16 Apr 13_-	BH23	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_09 Jul 13_-	BH23	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_29 Oct 13_-	BH23	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_28 Jan 14_-	BH23	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH23_16 Apr 14_-	BH23	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_07 Jul 14_-	BH23	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_16 Oct 14_-	BH23	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_20 Jan 15_-	BH23	20/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH23_22 Apr 15_-	BH23	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_22 Jul 15_-	BH23	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_20 Oct 15_-	BH23	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_20 Jan 16_-	BH23	20/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH23_14 Apr 16_-	BH23	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_13 Jul 16_-	BH23	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_18 Oct 16_-	BH23	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_25 Jan 17_-	BH23	25/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH23_02 Jul 19_-	BH23	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_24 Oct 19_-	BH23	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23_15 Jan 20_-	BH23	15/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH23_22 Apr 20_-	BH23	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_01 Jul 06_-	BH24	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_01 Oct 06_-	BH24	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_01 Jan 07_-	BH24	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_01 Apr 07_-	BH24	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_16 Apr 13_-	BH24	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_29 Oct 13_-	BH24	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_28 Jan 14_-	BH24	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH24_16 Apr 14_-	BH24	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_09 Jul 14_-	BH24	9/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_16 Oct 14_-	BH24	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_21 Jan 15_-	BH24	21/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	-	<0.2
BH24_22 Apr 15_-	BH24	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_22 Jul 15_-	BH24	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_21 Oct 15_-	BH24	21/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_20 Jan 16_-	BH24	20/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH24_14 Apr 16_-	BH24	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_13 Jul 16_-	BH24	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_18 Oct 16_-	BH24	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_25 Jan 17_-	BH24	25/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH24_02 Jul 19_-	BH24	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_25 Oct 19_-	BH24	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24_14 Jan 20_-	BH24	14/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH24_23 Apr 20_-	BH24	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_17 Apr 13_-	BH25	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_09 Jul 13_-	BH25	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_28 Jan 14_-	BH25	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH25_16 Apr 14_-	BH25	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_07 Jul 14_-	BH25	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_15 Oct 14_-	BH25	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_21 Jan 15_-	BH25	21/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	-	<0.2
BH25_22 Apr 15_-	BH25	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_21 Jul 15_-	BH25	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_20 Oct 15_-	BH25	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_21 Jan 16_-	BH25	21/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH25_14 Apr 16_-	BH25	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_21 Jul 16_-	BH25	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_18 Oct 16_-	BH25	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_25 Jan 17_-	BH25	25/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH25_02 Jul 19_-	BH25	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_25 Oct 19_-	BH25	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25_13 Jan 20_-	BH25	13/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																			OP Pesticides								Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																												
BH25_23 Apr 20_-	BH25	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 00_-	BH3A	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 00_-	BH3A	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 01_-	BH3A	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 01_-	BH3A	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 01_-	BH3A	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 01_-	BH3A	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 02_-	BH3A	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 02_-	BH3A	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 02_-	BH3A	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 02_-	BH3A	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 03_-	BH3A	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 03_-	BH3A	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 03_-	BH3A	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 03_-	BH3A	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 04_-	BH3A	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 04_-	BH3A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 04_-	BH3A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 04_-	BH3A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 05_-	BH3A	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 05_-	BH3A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 05_-	BH3A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 05_-	BH3A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 06_-	BH3A	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 06_-	BH3A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jul 06_-	BH3A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Oct 06_-	BH3A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Jan 07_-	BH3A	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_01 Apr 07_-	BH3A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_16 Apr 13_-	BH3A	16/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_09 Jul 13_-	BH3A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_30 Oct 13_-	BH3A	30/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_28 Jan 14_-	BH3A	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH3A_14 Apr 14_-	BH3A	14/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_07 Jul 14_-	BH3A	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_15 Oct 14_-	BH3A	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_21 Jan 15_-	BH3A	21/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	<0.2
BH3A_22 Apr 15_-	BH3A	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_21 Jul 15_-	BH3A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_20 Oct 15_-	BH3A	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_21 Jan 16_-	BH3A	21/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH3A_14 Apr 16_-	BH3A	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_21 Jul 16_-	BH3A	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_18 Oct 16_-	BH3A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_19 Jan 17_-	BH3A	19/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH3A_02 Jul 19_-	BH3A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_24 Oct 19_-	BH3A	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3A_27 Apr 20_-	BH3A	27/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Sep 94_-	BH4	1/09/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Dec 94_-	BH4	1/12/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Mar 95_-	BH4	1/03/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Jun 95_-	BH4	1/06/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Sep 95_-	BH4	1/09/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Jan 96_-	BH4	1/01/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Apr 96_-	BH4	1/04/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Jul 96_-	BH4	1/07/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Oct 96_-	BH4	1/10/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Jan 97_-	BH4	1/01/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Apr 97_-	BH4	1/04/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Jul 97_-	BH4	1/07/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Oct 97_-	BH4	1/10/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Jan 98_-	BH4	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4_01 Apr 98_-	BH4	1/04/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																			OP Pesticides								Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
BH4A_01 Jan 98_-	BH4A	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 98_-	BH4A	1/04/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 98_-	BH4A	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 98_-	BH4A	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 99_-	BH4A	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Mar 99_-	BH4A	1/03/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 99_-	BH4A	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 99_-	BH4A	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 00_-	BH4A	1/01/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 00_-	BH4A	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 00_-	BH4A	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 00_-	BH4A	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 01_-	BH4A	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 01_-	BH4A	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 01_-	BH4A	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 01_-	BH4A	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 02_-	BH4A	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 02_-	BH4A	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 02_-	BH4A	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 02_-	BH4A	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 03_-	BH4A	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 03_-	BH4A	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 03_-	BH4A	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 03_-	BH4A	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 04_-	BH4A	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 04_-	BH4A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 04_-	BH4A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 04_-	BH4A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 05_-	BH4A	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 05_-	BH4A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 05_-	BH4A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 05_-	BH4A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 06_-	BH4A	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 06_-	BH4A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jul 06_-	BH4A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Oct 06_-	BH4A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Jan 07_-	BH4A	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_01 Apr 07_-	BH4A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_17 Apr 13_-	BH4A	17/04/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_22 Jul 13_-	BH4A	22/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_30 Oct 13_-	BH4A	30/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_28 Jan 14_-	BH4A	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
BH4A_14 Apr 14_-	BH4A	14/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_07 Jul 14_-	BH4A	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_15 Oct 14_-	BH4A	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_21 Jan 15_-	BH4A	21/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	<0.2
BH4A_27 Apr 15_-	BH4A	27/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_21 Jul 15_-	BH4A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_20 Oct 15_-	BH4A	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_20 Jan 16_-	BH4A	20/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
BH4A_14 Apr 16_-	BH4A	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_21 Jul 16_-	BH4A	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_18 Oct 16_-	BH4A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_19 Jan 17_-	BH4A	19/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
BH4A_03 Jul 19_-	BH4A	3/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_25 Oct 19_-	BH4A	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4A_13 Jan 20_-	BH4A	13/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
BH4A_23 Apr 20_-	BH4A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 00_-	BH5A	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Oct 00_-	BH5A	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 01_-	BH5A	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 01_-	BH5A	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 01_-	BH5A	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

				OC Pesticides																			OP Pesticides								Chlorinated Hydrocarbons	SVOCs
				b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
				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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)									0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)										0.01											0.005											
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)											0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)									0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			
Sample ID	**Location Code**	**Date**	**Matrix Type**																													
BH5A_01 Oct 01_-	BH5A	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 02_-	BH5A	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 02_-	BH5A	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 02_-	BH5A	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 03_-	BH5A	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 03_-	BH5A	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 03_-	BH5A	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Oct 03_-	BH5A	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 04_-	BH5A	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 04_-	BH5A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 04_-	BH5A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Oct 04_-	BH5A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 05_-	BH5A	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 05_-	BH5A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 05_-	BH5A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Oct 05_-	BH5A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 06_-	BH5A	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 06_-	BH5A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jul 06_-	BH5A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Oct 06_-	BH5A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Jan 07_-	BH5A	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_01 Apr 07_-	BH5A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_17 Apr 13_-	BH5A	17/04/2013	water	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_22 Jul 13_-	BH5A	22/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_30 Oct 13_-	BH5A	30/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_28 Jan 14_-	BH5A	28/01/2014	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH5A_14 Apr 14_-	BH5A	14/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_07 Jul 14_-	BH5A	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_15 Oct 14_-	BH5A	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_21 Jan 15_-	BH5A	21/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	<0.2
BH5A_22 Apr 15_-	BH5A	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_21 Jul 15_-	BH5A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_20 Oct 15_-	BH5A	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_21 Jan 16_-	BH5A	21/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH5A_14 Apr 16_-	BH5A	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_21 Jul 16_-	BH5A	21/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_18 Oct 16_-	BH5A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_19 Jan 17_-	BH5A	19/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH5A_02 Jul 19_-	BH5A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_24 Oct 19_-	BH5A	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5A_15 Jan 20_-	BH5A	15/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH5A_23 Apr 20_-	BH5A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jul 01_-	BH6A	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Oct 01_-	BH6A	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jan 02_-	BH6A	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Apr 02_-	BH6A	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jul 02_-	BH6A	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Oct 02_-	BH6A	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jan 03_-	BH6A	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Apr 03_-	BH6A	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jul 03_-	BH6A	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Oct 03_-	BH6A	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jan 04_-	BH6A	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Apr 04_-	BH6A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jul 04_-	BH6A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Oct 04_-	BH6A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jan 05_-	BH6A	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Apr 05_-	BH6A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A _01 Jul 05_-	BH6A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Oct 05_-	BH6A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jan 06_-	BH6A	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Apr 06_-	BH6A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jul 06_-	BH6A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																			OP Pesticides								Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
BH6A_01 Oct 06_-	BH6A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Jan 07_-	BH6A	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_01 Apr 07_-	BH6A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_17 Apr 13_-	BH6A	17/04/2013	water	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_09 Jul 13_-	BH6A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_29 Oct 13_-	BH6A	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_28 Jan 14_-	BH6A	28/01/2014	water	<0.2	<0.2	-	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
BH6A_16 Apr 14_-	BH6A	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_09 Jul 14_-	BH6A	9/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_16 Oct 14_-	BH6A	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_20 Jan 15_-	BH6A	20/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	<0.2
BH6A_27 Apr 15_-	BH6A	27/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_22 Jul 15_-	BH6A	22/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_21 Oct 15_-	BH6A	21/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_20 Jan 16_-	BH6A	20/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
BH6A_14 Apr 16_-	BH6A	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_20 Sep 16_-	BH6A	20/09/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_18 Oct 16_-	BH6A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_19 Jan 17_-	BH6A	19/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
BH6A_25 Jan 17_-	BH6A	25/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
BH6A_02 Jul 19_-	BH6A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_25 Oct 19_-	BH6A	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6A_14 Jan 20_-	BH6A	14/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
BH6A_23 Apr 20_-	BH6A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Sep 93_-	BH7	1/09/1993	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jun 94_-	BH7	1/06/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Sep 94_-	BH7	1/09/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Dec 94_-	BH7	1/12/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Mar 95_-	BH7	1/03/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jun 95_-	BH7	1/06/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Sep 95_-	BH7	1/09/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jan 96_-	BH7	1/01/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Apr 96_-	BH7	1/04/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jul 96_-	BH7	1/07/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Oct 96_-	BH7	1/10/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jan 97_-	BH7	1/01/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Apr 97_-	BH7	1/04/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jul 97_-	BH7	1/07/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Oct 97_-	BH7	1/10/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Jan 98_-	BH7	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7_01 Apr 98_-	BH7	1/04/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 98_-	BH7A	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 98_-	BH7A	1/04/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 98_-	BH7A	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 98_-	BH7A	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 99_-	BH7A	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Mar 99_-	BH7A	1/03/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 99_-	BH7A	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 99_-	BH7A	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 00_-	BH7A	1/01/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 00_-	BH7A	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 00_-	BH7A	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 00_-	BH7A	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 01_-	BH7A	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 01_-	BH7A	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 01_-	BH7A	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 01_-	BH7A	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 02_-	BH7A	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 02_-	BH7A	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 02_-	BH7A	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 02_-	BH7A	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 03_-	BH7A	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 03_-	BH7A	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

				OC Pesticides																		OP Pesticides								Chlorinated Hydrocarbons	SVOCs
				b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
				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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																															
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																															
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)									0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)										0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)											0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)									0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			
Sample ID	**Location Code**	**Date**	**Matrix Type**																												
BH7A_01 Jul 03_-	BH7A	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 03_-	BH7A	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 04_-	BH7A	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 04_-	BH7A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 04_-	BH7A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 04_-	BH7A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 05_-	BH7A	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 05_-	BH7A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 05_-	BH7A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 05_-	BH7A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 06_-	BH7A	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 06_-	BH7A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jul 06_-	BH7A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Oct 06_-	BH7A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Jan 07_-	BH7A	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_01 Apr 07_-	BH7A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_17 Apr 13_-	BH7A	17/04/2013	water	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_09 Jul 13_-	BH7A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_29 Oct 13_-	BH7A	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_28 Jan 14_-	BH7A	28/01/2014	water	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH7A_16 Apr 14_-	BH7A	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_09 Jul 14_-	BH7A	9/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_16 Oct 14_-	BH7A	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_21 Jan 15_-	BH7A	21/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	-	<0.2
BH7A_23 Apr 15_-	BH7A	23/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_21 Jul 15_-	BH7A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_21 Oct 15_-	BH7A	21/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_21 Jan 16_-	BH7A	21/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH7A_19 Apr 16_-	BH7A	19/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_13 Jul 16_-	BH7A	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_18 Oct 16_-	BH7A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_19 Jan 17_-	BH7A	19/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH7A_02 Jul 19_-	BH7A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_25 Oct 19_-	BH7A	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7A_14 Jan 20_-	BH7A	14/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH7A_23 Apr 20_-	BH7A	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Sep 93_-	BH8	1/09/1993	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Jun 94_-	BH8	1/06/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Sep 94_-	BH8	1/09/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Dec 94_-	BH8	1/12/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Mar 95_-	BH8	1/03/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Jun 95_-	BH8	1/06/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Sep 95_-	BH8	1/09/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Jan 96_-	BH8	1/01/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Apr 96_-	BH8	1/04/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Jul 96_-	BH8	1/07/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8_01 Oct 96_-	BH8	1/10/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 96_-	BH8A	1/07/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 96_-	BH8A	1/10/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 97_-	BH8A	1/01/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 97_-	BH8A	1/04/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 97_-	BH8A	1/07/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 97_-	BH8A	1/10/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 98_-	BH8A	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 98_-	BH8A	1/04/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 98_-	BH8A	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 98_-	BH8A	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 99_-	BH8A	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Mar 99_-	BH8A	1/03/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 99_-	BH8A	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 99_-	BH8A	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 00_-	BH8A	1/01/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 00_-	BH8A	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																			OP Pesticides								Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
BH8A_01 Jul 00_-	BH8A	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 00_-	BH8A	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 01_-	BH8A	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 01_-	BH8A	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 01_-	BH8A	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 01_-	BH8A	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 02_-	BH8A	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 02_-	BH8A	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 02_-	BH8A	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 02_-	BH8A	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 03_-	BH8A	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 03_-	BH8A	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 03_-	BH8A	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 03_-	BH8A	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 04_-	BH8A	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 04_-	BH8A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 04_-	BH8A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 04_-	BH8A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 05_-	BH8A	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 05_-	BH8A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 05_-	BH8A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 05_-	BH8A	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 06_-	BH8A	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 06_-	BH8A	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jul 06_-	BH8A	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Oct 06_-	BH8A	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Jan 07_-	BH8A	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_01 Apr 07_-	BH8A	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_17 Apr 13_-	BH8A	17/04/2013	water	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_09 Jul 13_-	BH8A	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_29 Oct 13_-	BH8A	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_28 Jan 14_-	BH8A	28/01/2014	water	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH8A_16 Apr 14_-	BH8A	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_09 Jul 14_-	BH8A	9/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_16 Oct 14_-	BH8A	16/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_21 Jan 15_-	BH8A	21/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	<0.2
BH8A_23 Apr 15_-	BH8A	23/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_21 Jul 15_-	BH8A	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_21 Oct 15_-	BH8A	21/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_21 Jan 16_-	BH8A	21/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH8A_19 Apr 16_-	BH8A	19/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_13 Jul 16_-	BH8A	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_18 Oct 16_-	BH8A	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_19 Jan 17_-	BH8A	19/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH8A_02 Jul 19_-	BH8A	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8A_22 Apr 20_-	BH8A	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Jun 94_-	BH9	1/06/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Sep 94_-	BH9	1/09/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Dec 94_-	BH9	1/12/1994	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Mar 95_-	BH9	1/03/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Jun 95_-	BH9	1/06/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Sep 95_-	BH9	1/09/1995	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Jan 96_-	BH9	1/01/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Apr 96_-	BH9	1/04/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9_01 Jul 96_-	BH9	1/07/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 96_-	BH9A	1/07/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 96_-	BH9A	1/10/1996	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 97_-	BH9A	1/01/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 97_-	BH9A	1/04/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 97_-	BH9A	1/07/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 97_-	BH9A	1/10/1997	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 98_-	BH9A	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 98_-	BH9A	1/04/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

				OC Pesticides																			OP Pesticides								Chlorinated Hydrocarbons	SVOCs
				b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
				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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)									0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)										0.01											0.005											
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)											0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)									0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001				
Sample ID	**Location Code**	**Date**	**Matrix Type**																													
BH9A_01 Nov 98_-	BH9A	1/11/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 99_-	BH9A	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Mar 99_-	BH9A	1/03/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 99_-	BH9A	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 99_-	BH9A	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 00_-	BH9A	1/01/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 00_-	BH9A	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 00_-	BH9A	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 00_-	BH9A	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 01_-	BH9A	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 01_-	BH9A	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 01_-	BH9A	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 02_-	BH9A	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 02_-	BH9A	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 02_-	BH9A	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 02_-	BH9A	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 03_-	BH9A	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 03_-	BH9A	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 03_-	BH9A	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 03_-	BH9A	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 04_-	BH9A	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 04_-	BH9A	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 04_-	BH9A	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Oct 04_-	BH9A	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 05_-	BH9A	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Apr 05_-	BH9A	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jul 05_-	BH9A	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A_01 Jan 07_-	BH9A	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9B_01 Jul 05_-	BH9B	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9B_01 Oct 06_-	BH9B	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9B_01 Jan 07_-	BH9B	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9B_01 Apr 07_-	BH9B	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_17 Apr 13_-	BH9C	17/04/2013	water	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_09 Jul 13_-	BH9C	9/07/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_29 Oct 13_-	BH9C	29/10/2013	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_28 Jan 14_-	BH9C	28/01/2014	water	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH9C_16 Apr 14_-	BH9C	16/04/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_07 Jul 14_-	BH9C	7/07/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_15 Oct 14_-	BH9C	15/10/2014	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_20 Jan 15_-	BH9C	20/01/2015	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	-	<0.2
BH9C_22 Apr 15_-	BH9C	22/04/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_21 Jul 15_-	BH9C	21/07/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_20 Oct 15_-	BH9C	20/10/2015	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_20 Jan 16_-	BH9C	20/01/2016	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	-
BH9C_14 Apr 16_-	BH9C	14/04/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_13 Jul 16_-	BH9C	13/07/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_18 Oct 16_-	BH9C	18/10/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_19 Jan 17_-	BH9C	19/01/2017	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH9C_02 Jul 19_-	BH9C	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_24 Oct 19_-	BH9C	24/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9C_13 Jan 20_-	BH9C	13/01/2020	water	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	-	<0.2
BH9C_23 Apr 20_-	BH9C	23/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Statistical Summary																																
Number of Results				105	105	106	105	105	105	105	83	105	22	105	105	105	105	105	105	105	105	85	85	85	85	85	85	85	85	4	83
Number of Detects				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5	<0.2
Minimum Detect				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5	<0.2
Maximum Detect				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.5	0.1
Median Concentration				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.5	0.1
Standard Deviation				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix B Table B2 - Historical groundwater results - ecological assessment criteria

	OC Pesticides																			OP Pesticides								Chlorinated Hydrocarbons	SVOCs
	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Chlorobenzene	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)						0.01		0.2				0.02		0.2	0.09		0.1			0.01		0.01	0.15		0.2		55	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)							0.01											0.005										
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.01				0.008					0.1			0.009							55	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)						0.0004	0.01[#9]							0.007	0.0004			0.004				0.01	0.15		0.001			

Sample ID	Location Code	Date	Matrix Type																											
Number of Guideline Exceedances				0	0	0	0	0	105	105	83	0	0	0	105	0	105	105	0	105	105	0	85	0	85	85	0	85	0	0	0
Number of Guideline Exceedances(Detects Only)				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments
#1:calculated from % Saturation
#2:assumed same as NH4
#3:Measured as NH3-N at pH 8
#4:(pH >6.5)
#5:In absence of total As guideline, As (V) guideline has been adopted.
#6:Guideline for Cr (VI) adopted
#7:Ammonia as total ammonia, measured as [NH3-N] at pH 8.
#8:In absence of total Cr guideline, Cr (VI) guideline has been adopted.
#9:Freshwater DGV adopted (insufficient marine toxicity data)

	Soluble Major Ions										Field Parameters						Inorganics					Unassigned		Acidity & Alkalinity			Major Ions							Nutrients							Organic Indicators		
	Arsenic (soluble) (Filtered)	Barium (soluble) (Filtered)	Cadmium (soluble) (Filtered)	Chromium (III+VI) (soluble) (Filtered)	Cobalt (soluble) (Filtered)	Copper (soluble) (Filtered)	Lead (soluble) (Filtered)	Mercury (soluble) (Filtered)	Nickel (soluble) (Filtered)	Zinc (soluble) (Filtered)	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	chlordane-alpha	Dissolved Organic Carbon (Filtered)	Alkalinity (Hydroxide as CaCO3)	Alkalinity (total as CaCO3)	Alkalinity (total)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Phosphate	Phosphorus (Total)	Total Organic Carbon	Aluminium	Aluminium (Filtered)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mbTOC	pH Units	µS/cm	mg/L	mV	°C	pH Units	mg/L	mg/L	mg/L	mg/L	µg/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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADWG 2011 Aesthetic (v3.5 updated 2018)												6.5-8.5					6.5-8.5	600												180	250	250		0.411								0.2	0.2
ADWG 2011 Health (v3.5 updated 2018)																																500[#2]	1.5		11.29[#3]	0.91[#4]		50					
NHMRC Recreational Guidelines 2008 - Health																																5000[#2]	15		112.9[#3]	9.1[#5]		500					
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																																										
2-4m																																										
4-8m																																										
>8m																																										
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand																																										
2-4m																																										
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NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand																																										
2-4m																																										
4-8m																																										
>8m																																										

| SampleCode | Location_Code | Sampled_Date_Time | Matrix_Type | | | | | | | | | | | | | | | | | | |

	Soluble Major Ions										Field Parameters						Inorganics					Unassigned		Acidity & Alkalinity			Major Ions							Nutrients							Organic Indicators		
	Arsenic (soluble) (Filtered)	Barium (soluble) (Filtered)	Cadmium (soluble) (Filtered)	Chromium (III+VI) (soluble) (Filtered)	Cobalt (soluble) (Filtered)	Copper (soluble) (Filtered)	Lead (soluble) (Filtered)	Mercury (soluble) (Filtered)	Nickel (soluble) (Filtered)	Zinc (soluble) (Filtered)	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	chlordane-alpha	Dissolved Organic Carbon (Filtered)	Alkalinity (Hydroxide as CaCO3)	Alkalinity (total as CaCO3)	Alkalinity (total)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Phosphate	Phosphorus (Total)	Total Organic Carbon	Aluminium	Aluminium (Filtered)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mbTOC	pH Units	µS/cm	mg/L	mV	°C	pH Units	mg/L	mg/L	mg/L	mg/L	µg/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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADWG 2011 Aesthetic (v3.5 updated 2018)												6.5-8.5					6.5-8.5	600												180	250	250		0.411								0.2	0.2
ADWG 2011 Health (v3.5 updated 2018)																																500[#2]	1.5		11.29[#3]	0.91[#4]		50					
NHMRC Recreational Guidelines 2008 - Health																																5000[#2]	15		112.9[#3]	9.1[#5]		500					
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																																										
2-4m																																										
4-8m																																										
>8m																																										
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand																																										
2-4m																																										
4-8m																																										
>8m																																										
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand																																										
2-4m																																										
4-8m																																										
>8m																																										

SampleCode Location_Code Sampled_Date_Time Matrix_Type

#1:Natural concentrations generally <0.01 mg/L
#2:Not specifically guideline value: >500mg/L can have purgative effects
#3:Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427
#4:Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).
#5:Guideline value calculated by dividing Nitrite (as Nitrite) value (30 mg/L) by molecular weight (3.2967033).
#6:Not limiting: Derived water HSL exceeds water solubility limit
#7:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

	Metals											BTEXN						TRH - NEPM 2013					TRH - NEPM 1999				PAHs - standard 16													PAHs - extended			SVOCs							
	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)	Cobalt	Copper	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene (m)	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz[a]anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Benzo(b+j+k)fluoranthene	Benzo(b)&(k)fluoranthene	Dibenzo(a,h)pyrene	Hexachlorocyclohexane	4,4'-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (gamma)
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ADWG 2011 Aesthetic (v3.5 updated 2018)							1		0.1		3[#1]		25	3																																					
ADWG 2011 Health (v3.5 updated 2018)	0.01	2	0.002		0.05		2	0.01	0.5	0.001		1	800	300																	0.01																			
NHMRC Recreational Guidelines 2008 - Health	0.1	20	0.02		0.5		20	0.1	5	0.01		10	8000	3000																	0.1																			
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																																																		
2-4m												**NL[#6]**	**NL[#6]**	**NL[#6]**				**NL[#6]**																					**NL[#6]**															
4-8m												**NL[#6]**	**NL[#6]**	**NL[#6]**				**NL[#6]**																					**NL[#6]**															
>8m												**NL[#6]**	**NL[#6]**	**NL[#6]**				**NL[#6]**																					**NL[#6]**															
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand																																																		
2-4m												*NL[#6]*	*NL[#6]*	*NL[#6]*				*NL[#6]*																					*NL[#6]*															
4-8m												*NL[#6]*	*NL[#6]*	*NL[#6]*				*NL[#6]*																					*NL[#6]*															
>8m												*NL[#6]*	*NL[#6]*	*NL[#6]*				*NL[#6]*																					*NL[#6]*															
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand																																																		
2-4m												5000	NL[#6]	NL[#6]				6000[#7]																					NL[#6]															
4-8m												5000	NL[#6]	NL[#6]				6000[#7]																					NL[#6]															
>8m												5000	NL[#6]	NL[#6]				7000[#7]																					NL[#6]															

| SampleCode | Location_Code | Sampled_Date_Time | Matrix_Type | | | | | | | | | | | | | | | | | | |

	Metals											BTEXN						TRH - NEPM 2013					TRH - NEPM 1999				PAHs - standard 16														PAHs - extended			SVOCs							
	Arsenic	Barium	Cadmium	Chromium (III+VI)	Chromium (hexavalent)	Cobalt	Copper	Lead	Manganese	Mercury	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene (m)	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	Acenaphthene	Acenaphthylene	Anthracene	Benz[a]anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Benzo(b+j+k)fluoranthene	Benzo(b)&(k)fluoranthene	Dibenzo(a,h)pyrene	Hexachlorocyclohexane	4,4'-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (gamma)
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ADWG 2011 Aesthetic (v3.5 updated 2018)							1		0.1		3[#1]		25	3																																						
ADWG 2011 Health (v3.5 updated 2018)	0.01	2	0.002		0.05		2	0.01	0.5	0.001		1	800	300																	0.01																				
NHMRC Recreational Guidelines 2008 - Health	0.1	20	0.02		0.5		20	0.1	5	0.01		10	8000	3000																	0.1																				
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																																																		
2-4m												**NL[#6]**	**NL[#6]**	**NL[#6]**				**NL[#6]**																							**NL[#6]**														
4-8m												**NL[#6]**	**NL[#6]**	**NL[#6]**				**NL[#6]**																							**NL[#6]**														
>8m												**NL[#6]**	**NL[#6]**	**NL[#6]**				**NL[#6]**																							**NL[#6]**														
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand																																																		
2-4m												*NL[#6]*	*NL[#6]*	*NL[#6]*				*NL[#6]*																							*NL[#6]*														
4-8m												*NL[#6]*	*NL[#6]*	*NL[#6]*				*NL[#6]*																							*NL[#6]*														
>8m												*NL[#6]*	*NL[#6]*	*NL[#6]*				*NL[#6]*																							*NL[#6]*														
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand																																																		
2-4m												5000	NL[#6]	NL[#6]				6000[#7]																							NL[#6]														
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>8m												5000	NL[#6]	NL[#6]				7000[#7]																							NL[#6]														

SampleCode	Location_Code	Sampled_Date_Time	Matrix_Type

#1:Natural concentrations generally <0.01 mg/L
#2:Not specifically guideline value: >500mg/L can have purgative effects
#3:Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by
#4:Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by
#5:Guideline value calculated by dividing Nitrite (as Nitrite) value (30 mg/L) by n
#6:Not limiting: Derived water HSL exceeds water solubility limit
#7:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 frac

Appendix B Table B3 - Historical leachate results - human health assessment criteria

	OC Pesticides																		OP Pesticides											TPH		OLD PAH Calcs	Phenols - total
	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDE	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Azinphos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Malathion	Parathion	Ronnel	C6-C36 Fraction (Sum of Total) - Lab calc	Manganese (soluble) (Filtered)	PAH (Sum of Total)	Phenolics Total
	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
ADWG 2011 Aesthetic (v3.5 updated 2018)																																
ADWG 2011 Health (v3.5 updated 2018)				9			20						10	0.3			300	30	10	10		4	7	4	7	70	20						
NHMRC Recreational Guidelines 2008 - Health				90			200						100	3			3000	300	100	100		40	70	40	70	700	200						
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																																
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SampleCode	Location_Code	Sampled_Date_Time	Matrix_Type																																
LB01_01 Jan 02_-	LB01	1/01/2002	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 02_-	LB01	1/04/2002	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 02_-	LB01	1/07/2002	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 02_-	LB01	1/10/2002	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jan 03_-	LB01	1/01/2003	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 03_-	LB01	1/04/2003	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 03_-	LB01	1/07/2003	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 03_-	LB01	1/10/2003	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jan 04_-	LB01	1/01/2004	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 04_-	LB01	1/04/2004	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 05_-	LB01	1/04/2005	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 May 05_-	LB01	1/05/2005	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 05_-	LB01	1/07/2005	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 05_-	LB01	1/10/2005	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Feb 06_-	LB01	1/02/2006	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 06_-	LB01	1/04/2006	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 06_-	LB01	1/07/2006	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 06_-	LB01	1/10/2006	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jan 07_-	LB01	1/01/2007	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 07_-	LB01	1/04/2007	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_02 Jul 19_-	LB02	2/07/2019	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_25 Oct 19_-	LB02	25/10/2019	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_13 Jan 20_-	LB02	13/01/2020	Leachate	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	-	-	-	<50
LB02_22 Apr 20_-	LB02	22/04/2020	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LD002_21 Jan 15_-	LD002	21/01/2015	Leachate	-	<0.2	-	-	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	91	-	-	-	<50
LD002_25 Jan 17_-	LD002	25/01/2017	Leachate	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	-	-	-	<50
LW01_20 Dec 16_-	LW01	20/12/2016	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3260	-	-	-
LW01_11 Jan 17_-	LW01	11/01/2017	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2320	-	-	-
LW02_20 Dec 16_-	LW02	20/12/2016	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2900	-	-	-
LW02_11 Jan 17_-	LW02	11/01/2017	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2990	-	-	-
LW03_20 Dec 16_-	LW03	20/12/2016	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4250	-	-	-
LW03_11 Jan 17_-	LW03	11/01/2017	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2490	-	-	-
LW04_20 Dec 16_-	LW04	20/12/2016	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2750	-	-	-
LW04_11 Jan 17_-	LW04	11/01/2017	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3040	-	-	-
LW05_20 Dec 16_-	LW05	20/12/2016	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5030	-	2.4	-
LW05_11 Jan 17_-	LW05	11/01/2017	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3560	-	-	-
LW06_20 Dec 16_-	LW06	20/12/2016	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21,520	-	7.9	-
LW06_11 Jan 17_-	LW06	11/01/2017	Leachate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13,750	-	-	-

Statistical Summary

Number of Results	2	3	2	2	1	3	2	3	1	3	3	3	3	3	3	3	3	1	3	3	2	3	3	3	3	1	1	3	12	1	2	3
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	1	2	0
Minimum Concentration	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	2320	91	2.4	<50
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2320	91	2.4	ND
Maximum Concentration	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<200	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	21520	91	7.9	<50
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	21520	91	7.9	ND
Average Concentration		0.1				0.1		0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1		33	0.1	0.1	0.1			0.1	5655			25
Median Concentration	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	3150	91	5.15	25
Standard Deviation		0				0		0		0	0	0	0	0	0	0	0		0	0		58	0	0	0			0	5884			0
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments

Appendix B Table B3 - Historical leachate results - human health assessment criteria

	OC Pesticides																	OP Pesticides											TPH		OLD PAH Calcs	Phenols - total
	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDE	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Azinphos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Malathion	Parathion	Ronnel	C6-C36 Fraction (Sum of Total) - Lab calc	Manganese (soluble) (Filtered)	PAH (Sum of Total)	Phenolics Total
	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
ADWG 2011 Aesthetic (v3.5 updated 2018)																																
ADWG 2011 Health (v3.5 updated 2018)				9			20						10	0.3			300	30	10	10		4	7	4	7	70	20					
NHMRC Recreational Guidelines 2008 - Health				90			200						100	3			3000	300	100	100		40	70	40	70	700	200					
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																																
2-4m																																
4-8m																																
>8m																																
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand																																
2-4m																																
4-8m																																
>8m																																
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand																																
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SampleCode	Location_Code	Sampled_Date_Time	Matrix_Type

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#3:Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by
#4:Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by
#5:Guideline value calculated by dividing Nitrite (as Nitrite) value (30 mg/L) by n
#6:Not limiting: Derived water HSL exceeds water solubility limit
#7:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 frac

Appendix B Table B4 - Historical leachate results - ecological assessment criteria

		Field data	Field Parameters					Inorganics			Acidity & Alkalinity					Major Ions									Nutrients							Organic Indicators	
		Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (Hydroxide as CaCO3)	Alkalinity (total as CaCO3)	Alkalinity (total)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Phosphate	Phosphorus (Total)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon
		m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	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	mg/L	meq/L	meq/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine			*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*															*0.015* [#2]						*0.03*		
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs			**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**															**0.01** [#2]						**0.01**		
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																									0.9 [#3]								
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																	
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																									0.91 [#7]								
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																	
Sample ID	**Location Code**	**Date**	**Matrix Type**																														
LB01_01 Jan 02_ -	LB01	1/01/2002	water	-	7.1	**3800**	-	-	-	-	2200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***25.2***	-	-	31	0.01	-	-	85	-
LB01_01 Apr 02_ -	LB01	1/04/2002	water	-	7.3	**2900**	-	-	-	-	2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***22***	-	-	28	<0.01	-	-	88	-
LB01_01 Jul 02_-	LB01	1/07/2002	water	-	7.5	**2900**	-	-	-	-	2200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***24.9***	-	-	28	<0.01	-	-	94	-
LB01_01 Oct 02_ -	LB01	1/10/2002	water	-	7.4	**3400**	-	-	-	-	2300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***32.9***	-	-	33	0.01	-	-	94	-
LB01_01 Jan 03_ -	LB01	1/01/2003	water	-	7.57	**3000**	-	-	-	-	2400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***33***	-	-	34	0.16	-	-	100	-
LB01_01 Apr 03_ -	LB01	1/04/2003	water	-	7.41	**3280**	-	-	-	-	2450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***10.7***	-	-	35.1	0.01	-	-	126	-
LB01_01 Jul 03_ -	LB01	1/07/2003	water	-	7.55	**3340**	-	-	-	-	2490	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***31.6***	-	-	27.2	0.01	-	-	116	-
LB01_01 Oct 03_ -	LB01	1/10/2003	water	-	7.51	**3370**	-	-	-	-	2340	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***21.4***	-	-	25.4	0.02	-	-	100	-
LB01_01 Jan 04_ -	LB01	1/01/2004	water	-	7.83	**3240**	-	-	-	-	2210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***26.3***	-	-	30.8	0.01	-	-	103	-
LB01_01 Apr 04_ -	LB01	1/04/2004	water	-	-	**3640**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***31.1***	-	-	-	0.07	-	-	-	-
LB01_01 Apr 05_ -	LB01	1/04/2005	water	-	-	**3320**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.015	-	-	-	-
LB01_01 May 05_ -	LB01	1/05/2005	water	-	*6.98*	-	-	-	-	-	2220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***45.2***	-	-	43.9	0.01	-	-	70	-
LB01_01 Jul 05_ -	LB01	1/07/2005	water	-	-	**3080**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.021	-	-	-	-
LB01_01 Oct 05_ -	LB01	1/10/2005	water	-	-	**2650**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-
LB01_01 Feb 06_ -	LB01	1/02/2006	water	-	7.01	-	-	-	-	-	2420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***25.7***	-	-	-	0.019	-	-	155	-
LB01_01 Apr 06_ -	LB01	1/04/2006	water	-	-	**3430**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.012	-	-	-	-
LB01_01 Jul 06_ -	LB01	1/07/2006	water	-	-	**3130**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-
LB01_01 Oct 06_ -	LB01	1/10/2006	water	-	-	**4830**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-
LB01_01 Jan 07_ -	LB01	1/01/2007	water	-	7.2	-	-	-	-	-	2910	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***60.4***	-	-	-	0.011	-	-	164	-
LB01_01 Apr 07_ -	LB01	1/04/2007	water	-	-	**4380**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.017	0.013	-	-	-	-	-	-
LB02_02 Jul 19_-	LB02	2/07/2019	water	17.8	7.14	**2974**	***6.09***	-61.1	21.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_25 Oct 19_ -	LB02	25/10/2019	water	17.5	*6.96*	**3918**	***3.01***	-9.5	24.6	-	-	-	1900	<5	-	-	-	170	74	150	430	310	27	0.2	-	-	***160***	-	-	-	-	-	-	-	-
LB02_13 Jan 20_ -	LB02	13/01/2020	water	15.74	7.38	**4712**	***5***	-159.7	26.1	7.2	2200	***110***	2100	<5	-	-	-	140	76	140	420	370	19	0.2	-	-	***300***	<0.005	<0.005	-	-	-	-	-	180
LB02_22 Apr 20_ -	LB02	22/04/2020	water	15.26	7.09	**5240**	***0.8***	-103.6	25.5	-	-	-	2200	<5	-	-	-	130	77	130	450	380	1	0.2	-	-	***300***	-	-	-	-	-	-	-	-
LD002_21 Jan 15_ -	LD002	21/01/2015	water	-	7.03	**3.9**	***0.81***	-112	28.5	7.4	2500	-	1900	<5	<5	-	1900	130	87	180	600	570	15	0.15	-	-	***230***	<0.01	0.005	-	-	-	-	-	130
LD002_25 Jan 17_ -	LD002	25/01/2017	water	15.64	7.04	**5320**	***0.21***	-136	27.2	7.6	2600	***1400***	2400	<5	-	-	-	240	81	170	610	520	26	0.1	-	-	***220***	0.04	<0.005	-	-	-	***0.4***	-	210
Lot 1124_01 Jan 98_ -	Lot 1124	1/01/1998	water	-	-	-	-	-	-	-	474	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	9.9	0.09	-	-	21	-
Lot 1124_01 Jul 98_ -	Lot 1124	1/07/1998	water	-	-	-	-	-	-	-	444	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.5	0.43	-	-	7	-
Lot 1124_01 Oct 98_ -	Lot 1124	1/10/1998	water	-	-	-	-	-	-	-	412	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	0.4	0.48	-	-	8	-
Lot 1124_01 Jan 99_ -	Lot 1124	1/01/1999	water	-	***8.5***	**754**	-	-	-	-	432	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.3	0.08	-	-	6	-
Lot 1124_01 Jul 99_ -	Lot 1124	1/07/1999	water	-	**8.3**	-	-	-	-	-	390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	0.15	-	-	7	-
Lot 1124_01 Oct 99_ -	Lot 1124	1/10/1999	water	-	**8.4**	-	-	-	-	-	394	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.5	0.12	-	-	8	-
Lot 1124_01 Apr 00_ -	Lot 1124	1/04/2000	water	-	7.1	**690**	-	-	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	0.9	0.09	-	-	9	-
Lot 1124_01 Jul 00_ -	Lot 1124	1/07/2000	water	-	7.6	**670**	-	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	1.2	0.13	-	-	6	-
Lot 1124_01 Oct 00_ -	Lot 1124	1/10/2000	water	-	7.7	**690**	-	-	-	-	430	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.8	0.1	-	-	6	-
Lot 1124_01 Jan 01_ -	Lot 1124	1/01/2001	water	-	***8.5***	**680**	-	-	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.3	<0.01	-	-	8	-
Lot 1124_01 Apr 01_ -	Lot 1124	1/04/2001	water	-	**8.3**	**680**	-	-	-	-	450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	0.5	0.01	-	-	6	-
Lot 1124_01 Jul 01_ -	Lot 1124	1/07/2001	water	-	**8.1**	**680**	-	-	-	-	390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.4	0.05	-	-	6	-
Lot 1124_01 Oct 01_ -	Lot 1124	1/10/2001	water	-	**8.2**	**650**	-	-	-	-	390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.4	0.02	-	-	5	-
Lot 1124_01 Jan 02_ -	Lot 1124	1/01/2002	water	-	**8.3**	**730**	-	-	-	-	430	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.5	<0.01	-	-	5	-
Lot 1124_01 Apr 02_ -	Lot 1124	1/04/2002	water	-	**8.2**	**650**	-	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.3	<0.01	-	-	6	-
Lot 1124_01 Jul 02_ -	Lot 1124	1/07/2002	water	-	**8.1**	**620**	-	-	-	-	370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.3	0.12	-	-	3	-
Lot 1124_01 Oct 02_ -	Lot 1124	1/10/2002	water	-	**8.4**	**670**	-	-	-	-	390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	0.4	0.11	-	-	4	-
Lot 1124_01 Jan 03_ -	Lot 1124	1/01/2003	water	-	**8.14**	**620**	-	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	0.4	0.03	-	-	6	-
Lot 1124_01 Apr 03_ -	Lot 1124	1/04/2003	water	-	**8.17**	**738**	-	-	-	-	452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.3	<0.01	-	-	14	-
Lot 1124_01 Jul 03_ -	Lot 1124	1/07/2003	water	-	**8.08**	**660**	-	-	-	-	390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.2	0.39	-	-	7	-
Lot 1124_01 Oct 03_ -	Lot 1124	1/10/2003	water	-	**8.16**	**681**	-	-	-	-	510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	0.3	0.46	-	-	7	-
Lot 1124_01 Jan 04_ -	Lot 1124	1/01/2004	water	-	**8.4**	**726**	-	-	-	-	460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	0.5	0.36	-	-	11	-
Lot 1124_01 Apr 04_ -	Lot 1124	1/04/2004	water	-	**8.18**	-	-	-	-	-	384	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	-	0.43	-	-	7	-
Lot 1124_01 Jul 04_ -	Lot 1124	1/07/2004	water	-	**8.09**	-	-	-	-	-	466	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	0.35	-	-	<1	-
Lot 1124_01 Oct 04_ -	Lot 1124	1/10/2004	water	-	**8.11**	-	-	-	-	-	496	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.15***	-	-	-	0.33	-	-	9	-
Lot 1124_01 Jan 05_ -	Lot 1124	1/01/2005	water	-	**8.27**	-	-	-	-	-	542	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.298***	-	-	-	0.205	-	-	7	-

Appendix B Table B4 - Historical leachate results - ecological assessment criteria

	Field data	Field Parameters					Inorganics			Acidity & Alkalinity					Major Ions									Nutrients							Organic Indicators	
	Standing Water Level	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field) (Filtered)	Redox (Field)	Temperature (Field)	pH (Lab)	Total Dissolved Solids (Filtered)	Total Suspended Solids	Bicarbonate ion (HCO3-)	Carbonate ion	Alkalinity (Hydroxide as CaCO3)	Alkalinity (total as CaCO3)	Alkalinity (total)	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Phosphate	Phosphorus (Total)	Dissolved Organic Carbon (Filtered)	Total Organic Carbon
	m bTOC	pH units	µS/cm	mg/L	mV	°C	pH units	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	mg/L	meq/L	meq/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine		*7-8.5*		*6.61-9.09* [#1]			*7-8.5*		*0.5*															*0.015* [#2]						*0.03*		
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs		**6.5-8**	**20-30**	**7.44-9.09** [#1]			**6.5-8**		**5**															**0.01** [#2]						**0.01**		
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)																								0.9 [#3]								
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																								0.91 [#7]								
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																

Sample ID	Location Code	Date	Matrix Type																													
Lot 1124_01 Apr 05_-	Lot 1124	1/04/2005	water	-	7.95	-	-	-	-	-	446	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.071***	-	-	-	0.107	-	-	6	-
Lot 1124_01 Jul 05_-	Lot 1124	1/07/2005	water	-	**8.25**	-	-	-	-	-	460	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.034***	-	-	-	0.291	-	-	7	-
Lot 1124_01 Oct 05_-	Lot 1124	1/10/2005	water	-	***8.61***	-	-	-	-	-	492	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.042***	-	-	-	0.093	-	-	4	-
Lot 1124_01 Jan 06_-	Lot 1124	1/01/2006	water	-	**8.28**	-	-	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.041***	-	-	-	<0.01	-	-	6	-
Lot 1124_01 Apr 06_-	Lot 1124	1/04/2006	water	-	**8.12**	-	-	-	-	-	506	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.095***	-	-	-	0.01	-	-	7	-
Lot 1124_01 Jul 06_-	Lot 1124	1/07/2006	water	-	**8.15**	-	-	-	-	-	494	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.021***	-	-	-	<0.01	-	-	9	-
Lot 1124_01 Oct 06_-	Lot 1124	1/10/2006	water	-	**8.1**	-	-	-	-	-	508	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.011**	-	-	-	0.013	-	-	7	-
Lot 1124_01 Jan 07_-	Lot 1124	1/01/2007	water	-	***8.5***	-	-	-	-	-	532	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	0.064	-	-	6	-
Lot 1124_01 Apr 07_-	Lot 1124	1/04/2007	water	-	7.98	-	-	-	-	-	580	-	-	-	114	-	80	17	6	56	92.3	164	-	7.98	8.3	***0.094***	<0.01	<0.01	-	-	-	-	8	-
LW01_20 Dec 16_-	LW01	20/12/2016	water	-	*6.85*	**4061**	***0.6***	-138.1	29.9	-	2100	***46***	2000	<5	<5	2000	-	210	75	140	300	360	40	0.2	-	-	***190***	<0.005	<0.005	-	-	0.12	-	-	130
LW01_11 Jan 17_-	LW01	11/01/2017	water	-	*6.76*	**4270**	***0.83***	-128	31.6	-	2000	***67***	1500	<5	<5	1500	-	230	70	110	350	330	190	0.2	-	-	***130***	<0.005	<0.005	-	-	0.13	-	-	130
LW02_20 Dec 16_-	LW02	20/12/2016	water	-	*6.88*	**5834**	***0.14***	-124.9	26.5	-	3100	***61***	2400	<5	<5	2400	-	150	79	180	590	1000	33	0.2	-	-	***350***	<0.01	<0.01	-	-	0.11	-	-	200
LW02_11 Jan 17_-	LW02	11/01/2017	water	-	*6.8*	**6340**	***1.63***	-126	28.8	-	2900	***72***	2200	<5	<5	2200	-	170	78	190	610	750	36	0.2	-	-	***310***	<0.05	<0.05	-	-	0.12	-	-	200
LW03_20 Dec 16_-	LW03	20/12/2016	water	-	*6.74*	**4518**	***1.22***	-272.4	24.5	-	2400	***27***	2200	<5	<5	2200	-	230	92	140	320	420	30	0.2	-	-	***260***	<0.05	<0.05	-	-	0.12	-	-	160
LW03_11 Jan 17_-	LW03	11/01/2017	water	-	*6.76*	**4590**	***0.28***	-291	28.1	-	2500	***49***	2100	<5	<5	2100	-	210	80	130	380	430	47	0.1	-	-	***200***	<0.005	<0.005	-	-	0.19	-	-	150
LW04_20 Dec 16_-	LW04	20/12/2016	water	-	*6.85*	**4703**	***0.33***	-154	22.2	-	2800	***39***	2400	<5	<5	2400	-	270	88	140	520	510	9	0.2	-	-	***220***	<0.05	<0.05	-	-	0.085	-	-	190
LW04_11 Jan 17_-	LW04	11/01/2017	water	-	*6.84*	**4890**	***0.13***	-216	26	-	2600	***130***	2200	<5	<5	2200	-	290	93	130	570	590	59	0.2	-	-	***150***	<0.005	<0.005	-	-	0.12	-	-	210
LW05_20 Dec 16_-	LW05	20/12/2016	water	-	*6.92*	**5541**	***1.12***	-228.6	26.3	-	1800		2400	<5	<5	2400	-	130	50	94	290	380	18	0.2	-	-	***410***	<0.05	<0.05	-	-	0.093	-	-	170
LW05_11 Jan 17_-	LW05	11/01/2017	water	-	*6.94*	**5320**	***0.08***	-332	30.4	-	2200	***18***	2300	<5	<5	2300	-	110	43	91	330	410	23	0.2	-	-	***460***	<0.05	<0.05	-	-	0.14	-	-	160
LW06_20 Dec 16_-	LW06	20/12/2016	water	-	7.06	**11,200**	***1.26***	-288.9	32.2	-	3700	***580***	4300	<5	<5	4300	-	110	82	230	740	940	18	0.4	-	-	***780***	<0.05	<0.05	-	-	1	-	-	470
LW06_11 Jan 17_-	LW06	11/01/2017	water	-	7.13	**9710**	***0.05***	-324	37.8	-	4100	***1000***	4000	<5	<5	4000	-	110	86	190	730	910	47	0.3	-	-	***830***	<0.05	<0.05	-	-	0.77	-	-	600

Statistical Summary

Number of Results	5	62	52	18	18	18	3	62	14	17	17	13	13	1	18	18	18	18	18	18	17	1	1	65	17	17	31	53	12	1	47	15
Number of Detects	5	62	52	18	18	18	3	62	13	17	0	0	13	1	18	18	18	18	18	18	17	1	1	47	2	2	31	43	12	1	46	15
Minimum Concentration	15.26	6.74	3.9	0.05	-332	21.4	7.2	370	<5	1500	<5	<5	114	1900	80	17	6	56	92.3	1	0.1	7.98	8.3	<0.01	<0.005	<0.005	0.2	<0.01	0.085	0.4	<1	130
Minimum Detect	15.26	6.74	3.9	0.05	ND	21.4	7.2	370	18	1500	ND	ND	114	1900	80	17	6	56	92.3	1	0.1	7.98	8.3	0.01	0.017	0.005	0.2	0.01	0.085	0.4	3	130
Maximum Concentration	17.8	8.61	11200	6.09	0	37.8	7.6	4100	1400	4300	<5	<5	4300	1900	290	93	230	740	1000	190	0.4	7.98	8.3	830	<0.05	<0.05	43.9	0.48	1	0.4	164	600
Maximum Detect	17.8	8.61	11200	6.09	ND	37.8	7.6	4100	1400	4300	ND	ND	4300	1900	290	93	230	740	1000	190	0.4	7.98	8.3	830	0.04	0.013	43.9	0.48	1	0.4	164	600
Average Concentration	16	7.7	3124	1.3	-178	28	7.4	1344	257	2382	2.5	2.5	2316		173	74	141	461	515	45	0.2			91	0.015	0.013	11	0.1	0.25		33	219
Median Concentration	15.74	7.65	3260	0.805	-146.05	26.85	7.4	515	64	2200	2.5	2.5	2200	1900	160	78.5	140	440	425	28.5	0.2	7.98	8.3	0.095	0.017	0.005	0.5	0.021	0.12	0.4	7	180
Standard Deviation	1.2	0.6	2336	1.7	93	3.9	0.2	1080	431	706	0	0	1020		62	19	49	176	242	50	0.067			173	0.012	0.011	15	0.14	0.3		47	133
Number of Guideline Exceedances	0	39	52	18	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	0	0	0	0	0	1	0	0
Number of Guideline Exceedances(Detects Only)	0	39	52	18	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	0	0	0	0	0	1	0	0

Env Stds Comments

#1:calculated from % Saturation
#2:assumed same as NH4
#3:Measured as NH3-N at pH 8
#4:(pH >6.5)
#5:In absence of total As guideline, As (V) guideline has been adopted.
#6:Guideline for Cr (VI) adopted
#7:Ammonia as total ammonia, measured as [NH3-N] at pH 8.
#8:In absence of total Cr guideline, Cr (VI) guideline has been adopted.
#9:Freshwater DGV adopted (insufficient marine toxicity data)
#10:There were limited marine data, and a marine low reliability DGV of 0.05 µg/L was adopted from the freshwater DGV.

Appendix B Table B4 - Historical leachate results - ecological assessment criteria

							Metals																			BTEXN						
							Aluminium	Aluminium (Filtered)	Arsenic	Arsenic (Filtered)	Barium	Barium (Filtered)	Cadmium	Cadmium (Filtered)	Chromium (III+VI)	Chromium (III+VI) (Filtered)	Chromium (hexavalent)	Cobalt	Cobalt (Filtered)	Copper	Copper (Filtered)	Lead	Lead (Filtered)	Manganese	Mercury	Mercury (Filtered)	Nickel (Filtered)	Zinc	Zinc (Filtered)	Manganese (soluble) (Filtered)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene (m)	Naphthalene (BTEXN suite)
							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	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																			
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																			
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)							0.055[#4]	0.055[#4]	0.013[#5]	0.013[#5]			0.0002	0.0002	0.001[#6]	0.001[#6]	0.001			0.0014	0.0014	0.0034	0.0034	1.9	0.0006	0.0006	0.011	0.008	0.008		950	180	80	350		75	16
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																		0.0014	0.0014																
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)							0.0055	0.0055	0.0044[#8]	0.0044[#8]	0.0044	0.001	0.001	0.0013	0.0013	0.0044	0.0044			0.0004	0.0004	0.07	0.015	0.015		700	180	80			75	70
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																								0.08								350			
Sample ID	**Location Code**	**Date**	**Matrix Type**																																
LB01_01 Jan 02_-	LB01	1/01/2002	water	-	-	0.007	-	-	-	-	0.008	-	-	-	-	0.003	-	0.001	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 02_-	LB01	1/04/2002	water	-	-	0.008	-	-	-	-	0.008	-	-	-	-	0.002	-	<0.001	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 02_-	LB01	1/07/2002	water	-	-	0.007	-	-	-	-	0.009	-	-	-	-	0.002	-	<0.001	-	-	-	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 02_-	LB01	1/10/2002	water	-	-	0.005	-	-	-	-	0.011	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.028	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jan 03_-	LB01	1/01/2003	water	-	-	0.009	-	-	-	-	0.016	-	-	-	-	0.004	-	<0.001	-	-	-	-	-	0.053	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 03_-	LB01	1/04/2003	water	-	-	0.001	-	-	-	-	0.003	-	-	-	-	0.003	-	0.001	-	-	-	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 03_-	LB01	1/07/2003	water	-	-	0.002	-	-	-	-	0.005	-	-	-	-	0.003	-	0.001	-	-	-	-	-	0.026	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 03_-	LB01	1/10/2003	water	-	-	0.002	-	-	-	-	0.002	-	-	-	-	0.002	-	0.001	-	-	-	-	-	0.025	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jan 04_-	LB01	1/01/2004	water	-	-	0.001	-	-	-	-	0.005	-	-	-	-	0.001	-	0.001	-	-	-	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 04_-	LB01	1/04/2004	water	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 05_-	LB01	1/04/2005	water	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 May 05_-	LB01	1/05/2005	water	-	-	0.002	-	-	-	-	-	-	-	-	-	0.002	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 05_-	LB01	1/07/2005	water	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 05_-	LB01	1/10/2005	water	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Feb 06_-	LB01	1/02/2006	water	-	-	0.005	-	-	-	-	<0.005	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 06_-	LB01	1/04/2006	water	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 06_-	LB01	1/07/2006	water	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 06_-	LB01	1/10/2006	water	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jan 07_-	LB01	1/01/2007	water	-	-	0.002	-	-	-	-	<0.01	-	-	-	-	0.002	-	<0.001	-	-	-	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 07_-	LB01	1/04/2007	water	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_02 Jul 19_-	LB02	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_25 Oct 19_-	LB02	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_13 Jan 20_-	LB02	13/01/2020	water	0.01	-	0.002	-	0.7	-	<0.0001	-	0.013	-	<0.05	0.004	-	<0.001	-	<0.001	-	-	-	0.078	<0.00005	-	-	0.001	-	-	<1	<1	<1	<1	-	<2	-
LB02_22 Apr 20_-	LB02	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LD002_21 Jan 15_-	LD002	21/01/2015	water	-	0.01	-	0.004	-	0.49	-	<0.0001	-	0.022	<0.05	-	0.005	-	<0.001	-	<0.001	-	-	<0.00005	-	-	0.005	0.091	11	1	<1	<1	<2	-	-
LD002_25 Jan 17_-	LD002	25/01/2017	water	0.02	-	0.003	-	0.58	-	<0.0001	-	0.019	-	<0.05	0.004	-	<0.001	-	<0.001	-	0.088	<0.00005	-	-	-	0.011	-	-	7	<1	<1	-	-	<2	-
Lot 1124_01 Jan 98_-	Lot 1124	1/01/1998	water	-	-	0.002	-	-	-	-	<0.001	-	-	-	-	0.002	-	<0.001	-	-	-	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 98_-	Lot 1124	1/07/1998	water	-	-	0.006	-	-	-	-	<0.001	-	-	-	-	<0.001	-	0.002	-	-	-	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 98_-	Lot 1124	1/10/1998	water	-	-	<0.001	-	-	-	-	<0.001	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.018	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 99_-	Lot 1124	1/01/1999	water	-	-	0.008	-	-	-	-	<0.001	-	-	-	-	0.003	-	<0.001	-	-	-	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 99_-	Lot 1124	1/07/1999	water	-	-	0.009	-	-	-	-	0.002	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 99_-	Lot 1124	1/10/1999	water	-	-	0.008	-	-	-	-	0.001	-	-	-	-	0.007	-	<0.001	-	-	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 00_-	Lot 1124	1/04/2000	water	-	-	0.009	-	-	-	-	0.003	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 00_-	Lot 1124	1/07/2000	water	-	-	0.01	-	-	-	-	0.002	-	-	-	-	0.002	-	0.003	-	-	-	-	-	0.017	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 00_-	Lot 1124	1/10/2000	water	-	-	0.007	-	-	-	-	0.001	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	<0.002	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 01_-	Lot 1124	1/01/2001	water	-	-	0.009	-	-	-	-	0.005	-	-	-	-	0.002	-	<0.001	-	-	-	-	-	0.017	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 01_-	Lot 1124	1/04/2001	water	-	-	0.009	-	-	-	-	<0.001	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 01_-	Lot 1124	1/07/2001	water	-	-	0.008	-	-	-	-	0.002	-	-	-	-	0.002	-	<0.001	-	-	-	-	-	0.034	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 01_-	Lot 1124	1/10/2001	water	-	-	0.004	-	-	-	-	<0.001	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.019	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 02_-	Lot 1124	1/01/2002	water	-	-	<0.001	-	-	-	-	<0.001	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.021	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 02_-	Lot 1124	1/04/2002	water	-	-	0.003	-	-	-	-	<0.001	-	-	-	-	<0.001	-	<0.001	-	-	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 02_-	Lot 1124	1/07/2002	water	-	-	0.005	-	-	-	-	<0.001	-	-	-	-	<0.001	-	<0.001	-	-	-	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 02_-	Lot 1124	1/10/2002	water	-	-	0.005	-	-	-	-	0.002	-	-	-	-	0.002	-	<0.001	-	-	-	-	-	0.037	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 03_-	Lot 1124	1/01/2003	water	-	-	0.005	-	-	-	-	<0.001	-	-	-	-	0.002	-	<0.001	-	-	-	-	-	0.042	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 03_-	Lot 1124	1/04/2003	water	-	-	0.006	-	-	-	-	<0.001	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 03_-	Lot 1124	1/07/2003	water	-	-	0.005	-	-	-	-	<0.001	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 03_-	Lot 1124	1/10/2003	water	-	-	0.006	-	-	-	-	<0.001	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.042	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 04_-	Lot 1124	1/01/2004	water	-	-	0.003	-	-	-	-	0.001	-	-	-	-	0.002	-	<0.001	-	-	-	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 04_-	Lot 1124	1/04/2004	water	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 04_-	Lot 1124	1/07/2004	water	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 04_-	Lot 1124	1/10/2004	water	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 05_-	Lot 1124	1/01/2005	water	-	-	0.03	-	-	-	-	<0.01	-	-	-	-	<0.01	-	<0.01	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B4 - Historical leachate results - ecological assessment criteria

	Metals																								BTEXN						
	Aluminium	Aluminium (Filtered)	Arsenic	Arsenic (Filtered)	Barium	Barium (Filtered)	Cadmium	Cadmium (Filtered)	Chromium (III+VI)	Chromium (III+VI) (Filtered)	Chromium (hexavalent)	Cobalt	Cobalt (Filtered)	Copper	Copper (Filtered)	Lead	Lead (Filtered)	Manganese	Mercury	Mercury (Filtered)	Nickel (Filtered)	Zinc	Zinc (Filtered)	Manganese (soluble) (Filtered)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene (m)	Naphthalene (BTEXN suite)
	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	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																															
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																															
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)	0.055[#4]	0.055[#4]	0.013[#5]	0.013[#5]			0.0002	0.0002	0.001[#6]	0.001[#6]	0.001			0.0014	0.0014	0.0034	0.0034	1.9	0.0006	0.0006	0.011	0.008	0.008		950	180	80	350		75	16
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)												0.0014	0.0014																		
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)							0.0055	0.0055	0.0044[#8]	0.0044[#8]	0.0044	0.001	0.001	0.0013	0.0013	0.0044	0.0044		0.0004	0.0004	0.07	0.015	0.015		700	180	80			75	70
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																		0.08										350			
Sample ID	**Location Code**	**Date**	**Matrix Type**																													
Lot 1124_01 Apr 05_ -	Lot 1124	1/04/2005	water	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 05_ -	Lot 1124	1/07/2005	water	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 05_ -	Lot 1124	1/10/2005	water	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 06_ -	Lot 1124	1/01/2006	water	-	-	0.004	-	-	-	-	<0.001	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.007	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 06_ -	Lot 1124	1/04/2006	water	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 06_ -	Lot 1124	1/07/2006	water	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 06_ -	Lot 1124	1/10/2006	water	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 07_ -	Lot 1124	1/01/2007	water	-	-	0.002	-	-	-	-	<0.001	-	-	-	-	0.001	-	<0.001	-	-	-	-	-	0.005	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 07_ -	Lot 1124	1/04/2007	water	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW01_20 Dec 16_ -	LW01	20/12/2016	water	-	-	-	0.001	-	-	-	<0.0001	-	0.005	-	-	-	-	<0.001	-	<0.001	-	-	<0.00005	0.005	-	<0.001	-	<1	<1	<1	<1	<2	-	<1
LW01_11 Jan 17_ -	LW01	11/01/2017	water	-	-	-	0.002	-	-	-	<0.0001	-	0.004	-	-	-	-	<0.001	-	<0.001	-	-	<0.00005	0.009	-	0.003	-	<10	<10	<10	<10	<20	-	<10
LW02_20 Dec 16_ -	LW02	20/12/2016	water	-	-	-	0.003	-	-	-	<0.0001	-	0.006	-	-	-	-	<0.001	-	<0.001	-	-	<0.00005	0.015	-	0.004	-	<1	<1	<1	<1	<2	-	<1
LW02_11 Jan 17_ -	LW02	11/01/2017	water	-	-	-	0.003	-	-	-	<0.0001	-	0.007	-	-	-	-	<0.001	-	<0.001	-	-	<0.00005	0.021	-	0.005	-	<10	<10	<10	<10	<20	-	<10
LW03_20 Dec 16_ -	LW03	20/12/2016	water	-	-	-	0.001	-	-	-	<0.0001	-	0.008	-	-	-	-	<0.001	-	<0.001	-	-	<0.00005	0.003	-	<0.001	-	<10	<10	<10	<10	<20	-	<10
LW03_11 Jan 17_ -	LW03	11/01/2017	water	-	-	-	0.001	-	-	-	<0.0001	-	0.007	-	-	-	-	<0.001	-	<0.001	-	-	<0.00005	0.002	-	0.002	-	<10	<10	<10	<10	<20	-	<10
LW04_20 Dec 16_ -	LW04	20/12/2016	water	-	-	-	0.004	-	-	-	<0.0001	-	0.009	-	-	-	-	<0.001	-	<0.001	-	-	<0.00005	0.003	-	<0.001	-	<10	<10	<10	<10	<20	-	<10
LW04_11 Jan 17_ -	LW04	11/01/2017	water	-	-	-	0.005	-	-	-	<0.0001	-	0.009	-	-	-	-	<0.001	-	<0.001	-	-	<0.00005	0.004	-	0.002	-	<10	<10	<10	<10	<20	-	<10
LW05_20 Dec 16_ -	LW05	20/12/2016	water	-	-	-	0.008	-	-	-	<0.0001	-	0.019	-	-	-	-	<0.001	-	<0.001	-	-	<0.00005	0.003	-	<0.001	-	<10	<10	<10	<10	<20	-	<10
LW05_11 Jan 17_ -	LW05	11/01/2017	water	-	-	-	0.01	-	-	-	<0.0001	-	0.019	-	-	-	-	<0.001	-	<0.001	-	-	<0.00005	0.003	-	0.002	-	24	<10	<10	<10	<20	-	<10
LW06_20 Dec 16_ -	LW06	20/12/2016	water	-	-	-	0.027	-	-	-	<0.0001	-	0.085	-	-	-	-	<0.001	-	<0.001	-	-	<0.00005	0.03	-	0.002	-	<10	<10	<10	<10	<20	-	<10
LW06_11 Jan 17_ -	LW06	11/01/2017	water	-	-	-	0.032	-	-	-	<0.0001	-	0.098	-	-	-	-	<0.001	-	<0.001	-	-	<0.00005	0.024	-	0.005	-	<10	<10	10	<10	<20	-	<10
Statistical Summary																																
Number of Results			2	1	57	13	2	1	2	13	38	13	3	2	1	39	13	39	13	2	2	13	12	38	13	1	15	15	15	14	13	2	12
Number of Detects			2	1	55	13	2	1	0	0	20	13	0	2	1	33	0	8	0	2	0	0	12	37	9	1	3	1	1	0	0	0	0
Minimum Concentration			0.01	0.01	<0.001	0.001	0.58	0.49	<0.0001	<0.0001	<0.001	0.004	<0.05	0.004	0.005	<0.001	<0.001	<0.001	<0.001	0.078	<0.00005	<0.00005	0.002	0.001	<0.001	0.091	<1	<1	<1	<1	<2	<2	<1
Minimum Detect			0.01	0.01	0.001	0.001	0.58	0.49	ND	ND	0.001	0.004	ND	0.004	0.005	0.001	ND	0.001	ND	0.078	ND	ND	0.002	0.001	0.002	0.091	7	1	10	ND	ND	ND	ND
Maximum Concentration			0.02	0.01	0.03	0.032	0.7	0.49	<0.0001	<0.0001	0.019	0.098	<0.05	0.004	0.005	<0.01	<0.001	<0.01	<0.001	0.088	<0.00005	<0.00005	0.03	0.053	0.005	0.091	24	<10	10	<10	<20	<2	<10
Maximum Detect			0.02	0.01	0.03	0.032	0.7	0.49	ND	ND	0.019	0.098	ND	0.004	0.005	0.007	ND	0.003	ND	0.088	ND	ND	0.03	0.053	0.005	0.091	24	1	10	ND	ND	ND	ND
Average Concentration					0.0052	0.0078				0.00005	0.0036	0.023	0.025			0.0018	0.0005	0.00079	0.0005			0.000025	0.01	0.017	0.0025		5.9	3.5	3.8	3.7	7.9		4.3
Median Concentration			0.015	0.01	0.005	0.004	0.64	0.49	0.00005	0.00005	0.002	0.009	0.025	0.004	0.005	0.001	0.0005	0.0005	0.0005	0.083	0.000025	0.000025	0.0045	0.011	0.002	0.091	5	5	5	5	10	1	5
Standard Deviation					0.0044	0.01				0	0.0046	0.031	0			0.0013	0	0.00084	0			0	0.0098	0.013	0.0018		5.7	2.2	2.7	2.1	3.9		1.8
Number of Guideline Exceedances			0	0	1	2	0	0	0	0	23	13	3	2	1	19	0	1	0	1	0	0	4	28	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)			0	0	1	2	0	0	0	0	20	13	0	2	1	18	0	0	0	1	0	0	4	28	0	0	0	0	0	0	0	0	0

Env Stds Comments

#1:calculated from % Saturation
#2:assumed same as NH4
#3:Measured as NH3-N at pH 8
#4:(pH >6.5)
#5:In absence of total As guideline, As (V) guideline has been adopted.
#6:Guideline for Cr (VI) adopted
#7:Ammonia as total ammonia, measured as [NH3-N] at pH 8.
#8:In absence of total Cr guideline, Cr (VI) guideline has been adopted.
#9:Freshwater DGV adopted (insufficient marine toxicity data)
#10:There were limited marine data, and a marine low reliability DGV of 0.05 µg/L was adopted from the freshwater DGV.

Appendix B Table B4 - Historical leachate results - ecological assessment criteria

	TRH - NEPM 2013						TRH - NEPM 1999					PAHs - standard 16														PAHs - extended			Phenols - total
	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C6-C36 Fraction (Sum of Total) - Lab calc	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Benzo(b+j+k)fluoranthene	Benzo(b)&(k)fluoranthene	Dibenzo(a,h)pyrene	Phenolics Total
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																															
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																															
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)														0.4		0.2				1.4			16	2						
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																															
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																0.2				1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																															
Sample ID	**Location Code**	**Date**	**Matrix Type**																													
LB01_01 Jan 02_-	LB01	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 02_-	LB01	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 02_-	LB01	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 02_-	LB01	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jan 03_-	LB01	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 03_-	LB01	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 03_-	LB01	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 03_-	LB01	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jan 04_-	LB01	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 04_-	LB01	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 05_-	LB01	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 May 05_-	LB01	1/05/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 05_-	LB01	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 05_-	LB01	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Feb 06_-	LB01	1/02/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 06_-	LB01	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 06_-	LB01	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 06_-	LB01	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jan 07_-	LB01	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 07_-	LB01	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_02 Jul 19_-	LB02	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_25 Oct 19_-	LB02	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_13 Jan 20_-	LB02	13/01/2020	water	-	<10	-	-	-	-	<10	600	4300	220	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	-	<50
LB02_22 Apr 20_-	LB02	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LD002_21 Jan 15_-	LD002	21/01/2015	water	49	61	-	1600	5200	<100	51	1000	5800	130	-	<1	<1	<1	<1	<1	<1	<1	-	<1	<1	<1	2	<1	<1	-	<5	<2	-	<1	<50
LD002_25 Jan 17_-	LD002	25/01/2017	water	-	23	-	1100	3000	<100	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	5	<1	<1	-	-	-	<2	-	<50
Lot 1124_01 Jan 98_-	Lot 1124	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 98_-	Lot 1124	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 98_-	Lot 1124	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 99_-	Lot 1124	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 99_-	Lot 1124	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 99_-	Lot 1124	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 00_-	Lot 1124	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 00_-	Lot 1124	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 00_-	Lot 1124	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 01_-	Lot 1124	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 01_-	Lot 1124	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 01_-	Lot 1124	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 01_-	Lot 1124	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 02_-	Lot 1124	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 02_-	Lot 1124	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 02_-	Lot 1124	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 02_-	Lot 1124	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 03_-	Lot 1124	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 03_-	Lot 1124	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 03_-	Lot 1124	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 03_-	Lot 1124	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 04_-	Lot 1124	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 04_-	Lot 1124	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 04_-	Lot 1124	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 04_-	Lot 1124	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 05_-	Lot 1124	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B4 - Historical leachate results - ecological assessment criteria

	TRH - NEPM 2013						TRH - NEPM 1999					PAHs - standard 16															PAHs - extended			Phenols - total
	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C6-C36 Fraction (Sum of Total) - Lab calc	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Benzo(b+j+k)fluoranthene	Benzo(b)&(k)fluoranthene	Dibenzo(a,h)pyrene	Phenolics Total
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																														
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																														
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)														0.4		0.2				1.4			16	2						
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																														
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																0.2				1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																														

Sample ID	Location Code	Date	Matrix Type																															
Lot 1124_01 Apr 05_-	Lot 1124	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 05_-	Lot 1124	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 05_-	Lot 1124	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 06_-	Lot 1124	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 06_-	Lot 1124	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 06_-	Lot 1124	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 06_-	Lot 1124	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 07_-	Lot 1124	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 07_-	Lot 1124	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW01_20 Dec 16_-	LW01	20/12/2016	water	<10	<10	480	480	1800	<100	<10	210	2000	<100	3260	<1	-	-	-	<1	-	-	-	<1	-	-	-	<1	<1	-	-	-	-	-	-	-
LW01_11 Jan 17_-	LW01	11/01/2017	water	-	<100	660	660	2400	<100	<100	310	2700	150	2320	<1	-	-	-	<1	-	-	-	<1	-	-	-	<1	<1	-	-	-	-	-	-	-
LW02_20 Dec 16_-	LW02	20/12/2016	water	<10	<10	740	740	2200	<100	<10	380	2500	<100	2900	<1	-	-	-	<1	-	-	-	<1	-	-	-	<1	<1	-	-	-	-	-	-	-
LW02_11 Jan 17_-	LW02	11/01/2017	water	-	<100	720	720	2000	<100	<100	400	2300	<100	2990	<1	-	-	-	<1	-	-	-	<1	-	-	-	<1	<1	-	-	-	-	-	-	-
LW03_20 Dec 16_-	LW03	20/12/2016	water	-	<100	-	460	1900	<100	<100	190	2100	<100	4250	<1	-	-	-	<1	-	-	-	<1	-	-	-	<1	<1	-	-	-	-	-	-	-
LW03_11 Jan 17_-	LW03	11/01/2017	water	-	<100	850	850	3200	<100	<100	450	3500	200	2490	<1	-	-	-	<1	-	-	-	<1	-	-	-	<1	<1	-	-	-	-	-	-	-
LW04_20 Dec 16_-	LW04	20/12/2016	water	-	<100	-	680	2200	120	<100	340	2400	200	2750	<1	-	-	-	<1	-	-	-	<1	-	-	-	<1	<1	-	-	-	-	-	-	-
LW04_11 Jan 17_-	LW04	11/01/2017	water	-	<100	650	650	1900	120	<100	360	2100	190	3040	<1	-	-	-	<1	-	-	-	<1	-	-	-	<1	<1	-	-	-	-	-	-	-
LW05_20 Dec 16_-	LW05	20/12/2016	water	-	<100	-	670	2700	<100	<100	360	2900	200	5030	<1	-	-	-	<1	-	-	-	<1	-	-	-	2	<1	-	2.4	-	-	-	-	-
LW05_11 Jan 17_-	LW05	11/01/2017	water	-	<100	1000	1000	3700	<100	<100	740	3900	290	3560	<1	-	-	-	<1	-	-	-	<1	-	-	-	<1	<1	-	-	-	-	-	-	-
LW06_20 Dec 16_-	LW06	20/12/2016	water	-	<100	-	3000	10,000	220	<100	2100	1100	550	21,520	<1	-	-	-	<1	-	-	-	<1	-	-	-	8	<1	-	7.9	-	-	-	-	-
LW06_11 Jan 17_-	LW06	11/01/2017	water	-	<100	4600	4600	16,000	220	<100	3500	17,000	920	13,750	<1	-	-	-	<1	-	-	-	<1	-	-	-	<1	<1	-	-	-	-	-	-	-

Statistical Summary

Number of Results	3	15	8	14	14	14	14	14	14	14	12	15	3	3	3	15	3	3	2	15	3	3	15	15	3	2	1	1	2	1	3
Number of Detects	1	2	8	14	14	4	1	14	14	10	12	0	0	0	0	0	0	0	0	0	0	0	4	0	0	2	0	0	0	0	0
Minimum Concentration	<10	<10	480	460	1800	<100	<10	190	1100	<100	2320	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.4	<5	<2	<2	<1	<50
Minimum Detect	49	23	480	460	1800	120	51	190	1100	130	2320	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND	ND	2.4	ND	ND	ND	ND	ND
Maximum Concentration	49	<100	4600	4600	16000	220	<100	3500	17000	920	21520	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	8	<1	<1	7.9	<5	<2	<2	<1	<50
Maximum Detect	49	61	4600	4600	16000	220	51	3500	17000	920	21520	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8	ND	ND	7.9	ND	ND	ND	ND	ND
Average Concentration	20	40	1213	1229	4157	84	40	781	3900	232	5655	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5	1.5	0.5	0.5						25
Median Concentration	5	50	730	730	2550	50	50	390	2600	195	3150	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	5.15	2.5	1	1	0.5	25
Standard Deviation	25	20	1377	1169	4031	63	19	923	3949	237	5884	0	0	0	0	0	0	0		0	0	0	2.2	0	0						0
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments

#1:calculated from % Saturation
#2:assumed same as NH4
#3:Measured as NH3-N at pH 8
#4:(pH >6.5)
#5:In absence of total As guideline, As (V) guideline has been adopted.
#6:Guideline for Cr (VI) adopted
#7:Ammonia as total ammonia, measured as [NH3-N] at pH 8.
#8:In absence of total Cr guideline, Cr (VI) guideline has been adopted.
#9:Freshwater DGV adopted (insufficient marine toxicity data)
#10:There were limited marine data, and a marine low reliability DGV of 0.05 µg/L was adopted from the freshwater DGV.

Appendix B Table B4 - Historical leachate results - ecological assessment criteria

	OC Pesticides																								OP Pesticides										SVOCs
	chlordane-alpha	4,4'-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (gamma)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDE	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	gBHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Azinphos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Malathion	Parathion	Ronnel	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																			
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																			
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)											0.01			0.2				0.02		0.2	0.09		0.1		0.02		0.01		0.01	0.15		0.2	0.05	0.004		
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)				0.001									0.01											0.005												
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)														0.01				0.008					0.1				0.009									
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)				0.003							0.0004		0.01[#9]							0.007	0.0004			0.004	0.01				0.01	0.15		0.001	0.05[#10]	0.004		

Sample ID	Location Code	Date	Matrix Type																																	
LB01_01 Jan 02_-	LB01	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 02_-	LB01	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 02_-	LB01	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 02_-	LB01	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jan 03_-	LB01	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 03_-	LB01	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 03_-	LB01	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 03_-	LB01	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jan 04_-	LB01	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 04_-	LB01	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 05_-	LB01	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 May 05_-	LB01	1/05/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 05_-	LB01	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 05_-	LB01	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Feb 06_-	LB01	1/02/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 06_-	LB01	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jul 06_-	LB01	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Oct 06_-	LB01	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Jan 07_-	LB01	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB01_01 Apr 07_-	LB01	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_02 Jul 19_-	LB02	2/07/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_25 Oct 19_-	LB02	25/10/2019	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LB02_13 Jan 20_-	LB02	13/01/2020	water	-	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	-	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		-	-	<0.2	<0.2
LB02_22 Apr 20_-	LB02	22/04/2020	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LD002_21 Jan 15_-	LD002	21/01/2015	water	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	-	-	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<200	<0.2	<0.2		<0.2	<0.2	<0.2	-
LD002_25 Jan 17_-	LD002	25/01/2017	water	-	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	-	<0.2		<0.2	-	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		-	-	<0.2	<0.2
Lot 1124_01 Jan 98_-	Lot 1124	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 98_-	Lot 1124	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 98_-	Lot 1124	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 99_-	Lot 1124	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 99_-	Lot 1124	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 99_-	Lot 1124	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 00_-	Lot 1124	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 00_-	Lot 1124	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 00_-	Lot 1124	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 01_-	Lot 1124	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 01_-	Lot 1124	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 01_-	Lot 1124	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 01_-	Lot 1124	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 02_-	Lot 1124	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 02_-	Lot 1124	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 02_-	Lot 1124	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 02_-	Lot 1124	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 03_-	Lot 1124	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 03_-	Lot 1124	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 03_-	Lot 1124	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 03_-	Lot 1124	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 04_-	Lot 1124	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 04_-	Lot 1124	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 04_-	Lot 1124	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 04_-	Lot 1124	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 05_-	Lot 1124	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B4 - Historical leachate results - ecological assessment criteria

	OC Pesticides																								OP Pesticides											SVOCs
	chlordane-alpha	4,4'-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (gamma)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDE	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Azinphos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Malathion	Parathion	Ronnel	Hexachlorocyclohexane
	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
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																			
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																			
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)											0.01			0.2				0.02		0.2	0.09		0.1		0.02		0.01		0.01	0.15		0.2	0.05	0.004		
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)				0.001									0.01											0.005												
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)														0.01				0.008					0.1				0.009									
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)				0.003							0.0004		0.01[#9]							0.007	0.0004			0.004	0.01				0.01	0.15		0.001	0.05[#10]	0.004		

Sample ID	Location Code	Date	Matrix Type																																		
Lot 1124_01 Apr 05_-	Lot 1124	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 05_-	Lot 1124	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 05_-	Lot 1124	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 06_-	Lot 1124	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 06_-	Lot 1124	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 06_-	Lot 1124	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 06_-	Lot 1124	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 07_-	Lot 1124	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 07_-	Lot 1124	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW01_20 Dec 16_-	LW01	20/12/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW01_11 Jan 17_-	LW01	11/01/2017	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW02_20 Dec 16_-	LW02	20/12/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW02_11 Jan 17_-	LW02	11/01/2017	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW03_20 Dec 16_-	LW03	20/12/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW03_11 Jan 17_-	LW03	11/01/2017	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW04_20 Dec 16_-	LW04	20/12/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW04_11 Jan 17_-	LW04	11/01/2017	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW05_20 Dec 16_-	LW05	20/12/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW05_11 Jan 17_-	LW05	11/01/2017	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW06_20 Dec 16_-	LW06	20/12/2016	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LW06_11 Jan 17_-	LW06	11/01/2017	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Statistical Summary

Number of Results	1	2	1	3	3	2	1	2	3	2	2	1	3	2	3	1	3	3	3	3	3	3	3	3	1	3	3	2	3	3	3	3	1	1	3	2
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<200	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration				0.1	0.1				0.1				0.1		0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1		33	0.1	0.1	0.1			0.1	
Median Concentration	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Standard Deviation				0	0				0				0		0		0	0	0	0	0	0	0	0		0	0		58	0	0	0			0	
Number of Guideline Exceedances	0	0	0	3	0	0	0	0	0	0	2	0	3	2	0	0	0	3	0	3	3	0	3	3	1	0	3	0	3	3	0	3	1	1	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments

#1:calculated from % Saturation
#2:assumed same as NH4
#3:Measured as NH3-N at pH 8
#4:(pH >6.5)
#5:In absence of total As guideline, As (V) guideline has been adopted.
#6:Guideline for Cr (VI) adopted
#7:Ammonia as total ammonia, measured as [NH3-N] at pH 8.
#8:In absence of total Cr guideline, Cr (VI) guideline has been adopted.
#9:Freshwater DGV adopted (insufficient marine toxicity data)
#10:There were limited marine data, and a marine low reliability DGV of 0.05 µg/L was adopted from the freshwater DGV.

	Field parameters		Inorganics						Unassigned	dity & Alkalir		Major Ions									Nutrients							Organic Indicators	Metals											
	pH (Field)	Electrical conductivity (field)	pH (Lab)	Total Dissolved Solids	Total Dissolved Solids (Filtered)	Total Suspended Solids	COD	Cyanide (Total)	Dissolved Organic Carbon (Filtered)	Alkalinity (total as CaCO3)	Hardness as CaCO3	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Phosphorus (Total)	BOD	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Tin	Zinc
	pH Units	µS/cm	pH Units	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	mg/L	mg/L	meq/L	meq/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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL			0.1	10		1	25	0.005			5	0.5	0.5	0.5	0.5	1	5	0.5			0.01	0.02	0.02	0.05	0.2	0.2		0.01	5	0.001	0.0002	0.001	0.001	0.001	0.0001	0.005	0.001	0.001	0.005	0.005	0.005
ADWG 2011 Aesthetic (v3.5 updated 2018)	6.5-8.5		6.5-8.5	600	600						200					180	250	250			0.411												1							3[#1]
ADWG 2011 Health (v3.5 updated 2018)								0.08										500[#2]	1.5			11.29[#3]	0.91[#4]				50			0.01	0.002		2	0.01	0.001	0.05	0.02	0.01	0.1		
NHMRC Recreational Guidelines 2008 - Health								0.8										5000[#2]	15			112.9[#3]	9.1[#5]				500			0.1	0.02		20	0.1	0.01	0.5	0.2	0.1	1		
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																																								
2-4m																																								
4-8m																																								
>8m																																								
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand																																								
2-4m																																								
4-8m																																								
>8m																																								
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand																																								
2-4m																																								
4-8m																																								
>8m																																								

SampleCode	Location_Code	Sampled_Date	Matrix_Type																																					
CRP_01 Jan 98_-	CRP	1/01/1998	Surface water	-	-	-	-	880	-	-	-	18	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.7	0.11	-	-	0.005	-	<0.001	0.003	<0.001	-	-	-	-	-	-	0.005
CRP_01 Jul 98_-	CRP	1/07/1998	Surface water	-	-	-	-	496	-	-	-	9	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	0.6	1.9	-	-	0.002	-	<0.001	0.004	0.001	-	-	-	-	-	-	0.004
CRP_01 Oct 98_-	CRP	1/10/1998	Surface water	-	-	-	-	1670	-	-	-	67	-	-	-	-	-	-	-	-	-	-	2.62	-	-	-	-	6.5	0.02	-	-	<0.01	-	0.003	0.006	0.002	-	-	-	-	-	-	0.009
CRP_01 Jan 99_-	CRP	1/01/1999	Surface water	8	1650	-	-	1050	-	-	-	37	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	2.2	0.01	-	-	0.007	-	<0.001	0.004	<0.001	-	-	-	-	-	-	0.011
CRP_01 Jul 99_-	CRP	1/07/1999	Surface water	9.4	-	-	-	681	-	-	-	10	-	-	-	-	-	-	-	-	-	-	0.11	-	-	-	-	1	0.98	-	-	0.002	-	0.014	0.011	<0.001	-	-	-	-	-	-	0.003
CRP_01 Oct 99_-	CRP	1/10/1999	Surface water	8	-	-	-	622	-	-	-	14	-	-	-	-	-	-	-	-	-	-	0.07	-	-	-	-	1.6	0.02	-	-	0.007	-	0.005	0.003	<0.001	-	-	-	-	-	-	0.023
CRP_01 Apr 00_-	CRP	1/04/2000	Surface water	7.1	970	-	-	640	-	-	-	9	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	1	0.02	-	-	0.01	-	0.004	0.001	<0.001	-	-	-	-	-	-	0.007
CRP_01 Jul 00_-	CRP	1/07/2000	Surface water	7.9	1000	-	-	610	-	-	-	12	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1	0.08	-	-	0.007	-	0.003	0.002	<0.001	-	-	-	-	-	-	0.008
CRP_01 Oct 00_-	CRP	1/10/2000	Surface water	7.4	930	-	-	540	-	-	-	12	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.2	0.01	-	-	0.006	-	0.002	0.001	<0.001	-	-	-	-	-	-	0.002
CRP_01 Jan 01_-	CRP	1/01/2001	Surface water	8	950	-	-	580	-	-	-	15	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.8	<0.01	-	-	0.009	-	0.003	0.001	<0.001	-	-	-	-	-	-	0.007
CRP_01 Apr 01_-	CRP	1/04/2001	Surface water	8.1	830	-	-	550	-	-	-	11	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.9	<0.01	-	-	0.009	-	0.001	0.003	<0.001	-	-	-	-	-	-	0.014
FRP_01 Jan 98_-	FRP	1/01/1998	Surface water	-	-	-	-	472	-	-	-	10	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.6	0.16	-	-	0.002	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.003
FRP_01 Jul 98_-	FRP	1/07/1998	Surface water	-	-	-	-	378	-	-	-	9	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.6	<0.01	-	-	0.001	-	<0.001	0.002	0.002	-	-	-	-	-	-	0.005
FRP_01 Oct 98_-	FRP	1/10/1998	Surface water	-	-	-	-	508	-	-	-	17	-	-	-	-	-	-	-	-	-	-	2.21	-	-	-	-	4.1	25	-	-	<0.001	-	0.001	0.004	<0.001	-	-	-	-	-	-	0.02
FRP_01 Jan 99_-	FRP	1/01/1999	Surface water	8.7	797	-	-	513	-	-	-	51	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.3	<0.01	-	-	0.003	-	0.002	0.003	<0.001	-	-	-	-	-	-	0.012
FRP_01 Jul 99_-	FRP	1/07/1999	Surface water	7.8	-	-	-	805	-	-	-	9	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.8	0.04	-	-	0.002	-	0.003	0.002	<0.001	-	-	-	-	-	-	0.006
FRP_01 Oct 99_-	FRP	1/10/1999	Surface water	8.3	-	-	-	583	-	-	-	12	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.7	0.03	-	-	0.007	-	0.004	0.008	<0.001	-	-	-	-	-	-	0.006
FRP_01 Jan 00_-	FRP	1/01/2000	Surface water	7.9	680	-	-	410	-	-	-	14	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.4	-	-	-	0.002	-	0.001	<0.001	<0.001	-	-	-	-	-	-	0.008
FRP_01 Apr 00_-	FRP	1/04/2000	Surface water	7.5	880	-	-	510	-	-	-	16	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.8	<0.01	-	-	0.004	-	0.004	0.003	<0.001	-	-	-	-	-	-	0.048
FRP_01 Jul 00_-	FRP	1/07/2000	Surface water	8.3	910	-	-	510	-	-	-	15	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.6	<0.01	-	-	0.003	-	0.002	0.001	<0.001	-	-	-	-	-	-	0.012
FRP_01 Oct 00_-	FRP	1/10/2000	Surface water	8.1	870	-	-	460	-	-	-	19	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.6	<0.01	-	-	0.003	-	0.003	<0.001	<0.001	-	-	-	-	-	-	<0.002
FRP_01 Jan 01_-	FRP	1/01/2001	Surface water	7.8	1000	-	-	600	-	-	-	26	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	1.8	0.05	-	-	0.005	-	0.005	0.002	<0.001	-	-	-	-	-	-	0.023
FRP_01 Apr 01_-	FRP	1/04/2001	Surface water	8.7	920	-	-	560	-	-	-	20	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	2	<0.01	-	-	0.004	-	0.001	0.002	<0.001	-	-	-	-	-	-	0.008
FRP_01 Jul 01_-	FRP	1/07/2001	Surface water	7.6	900	-	-	510	-	-	-	14	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1	<0.01	-	-	0.002	-	0.002	0.002	<0.001	-	-	-	-	-	-	0.044
FRP_01 Oct 01_-	FRP	1/10/2001	Surface water	7.5	770	-	-	420	-	-	-	14	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1	<0.01	-	-	0.002	-	<0.001	<0.001	<0.001	-	-	-	-	-	-	0.032
FRP_01 Jan 02_-	FRP	1/01/2002	Surface water	7.4	940	-	-	540	-	-	-	19	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	1.4	<0.01	-	-	<0.001	-	<0.001	<0.001	<0.001	-	-	-	-	-	-	0.01
FRP_01 Apr 02_-	FRP	1/04/2002	Surface water	7.8	740	-	-	460	-	-	-	10	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.8	<0.01	-	-	0.003	-	<0.001	<0.001	<0.001	-	-	-	-	-	-	0.271
FRP_01 Jul 02_-	FRP	1/07/2002	Surface water	7.9	730	-	-	440	-	-	-	6	-	-	-	-	-	-	-	-	-	-	0.06	-	-	-	-	0.5	0.02	-	-	0.001	-	<0.001	<0.001	<0.001	-	-	-	-	-	-	0.011
FRP_01 Oct 02_-	FRP	1/10/2002	Surface water	8.1	750	-	-	420	-	-	-	9	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	1	0.04	-	-	0.002	-	0.001	<0.001	<0.001	-	-	-	-	-	-	0.031
FRP_01 Jan 03_-	FRP	1/01/2003	Surface water	8.25	710	-	-	430	-	-	-	30	-	-	-	-	-	-	-	-	-	-	0.05	-	-	-	-	0.7	0.06	-	-	0.003	-	<0.001	0.002	<0.001	-	-	-	-	-	-	0.055
FRP_01 Apr 03_-	FRP	1/04/2003	Surface water	8.32	1010	-	-	584	-	-	-	27	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	1.3	<0.01	-	-	0.003	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.012
FRP_01 Jul 03_-	FRP	1/07/2003	Surface water	7.87	840	-	-	568	-	-	-	10	-	-	-	-	-	-	-	-	-	-	0.04	-	-	-	-	2.4	0.34	-	-	0.002	-	<0.001	0.005	0.001	-	-	-	-	-	-	0.011
FRP_01 Oct 03_-	FRP	1/10/2003	Surface water	8.25	654	-	-	482	-	-	-	13	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.3	<0.01	-	-	0.002	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.015
FRP_01 Jan 04_-	FRP	1/01/2004	Surface water	9.09	606	-	-	396	-	-	-	21	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	1.9	<0.01	-	-	0.002	-	0.001	<0.001	<0.001	-	-	-	-	-	-	0.008
FRP_01 Apr 04_-	FRP	1/04/2004	Surface water	7.86	-	-	-	400	-	-	-	16	-	-	-	-	-	-	-	-	-	-	0.33	-	-	-	-	-	<0.01	-	-	0.002	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 04_-	FRP	1/07/2004	Surface water	8.39	-	-	-	408	-	-	-	14	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	-	0.02	-	-	0.001	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 04_-	FRP	1/10/2004	Surface water	8.13	-	-	-	386	-	-	-	16	-	-	-	-	-	-	-	-	-	-	0.12	-	-	-	-	-	<0.01	-	-	0.001	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 05_-	FRP	1/01/2005	Surface water	7.84	-	-	-	524	-	-	-	8	-	-	-	-	-	-	-	-	-	-	0.175	-	-	-	-	-	<0.01	-	-	0.04	-	<0.01	<0.01	<0.01	-	-	-	-	-	-	0.02
FRP_01 Apr 05_-	FRP	1/04/2005	Surface water	8.15	-	-	-	492	-	-	-	21	-	-	-	-	-	-	-	-	-	-	0.086	-	-	-	-	-	0.01	-	-	<0.001	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 05_-	FRP	1/07/2005	Surface water	8.49	-	-	-	484	-	-	-	14	-	-	-	-	-	-	-	-	-	-	0.074	-	-	-	-	-	<0.01	-	-	<0.001	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 05_-	FRP	1/10/2005	Surface water	8.49	-	-	-	470	-	-	-	15	-	-	-	-	-	-	-	-	-	-	0.086	-	-	-	-	-	<0.01	-	-	<0.001	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 06_-	FRP	1/01/2006	Surface water	8.03	-	-	-	572	-	-	-	24	-	-	-	-	-	-	-	-	-	-	0.118	-	-	-	-	-	0.058	-	-	0.001	-	<0.001	0.002	<0.001	-	-	-	-	-	-	0.031
FRP_01 Apr 06_-	FRP	1/04/2006	Surface water	7.51	-	-	-	712	-	-	-	26	-	-	-	-	-	-	-	-	-	-	0.074	-	-	-	-	-	<0.01	-	-	0.001	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 06_-	FRP	1/07/2006	Surface water	7.7	-	-	-	590	-	-	-	20	-	-	-	-	-	-	-	-	-	-	0.027	-	-	-	-	-	<0.01	-	-	<0.001	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 06_-	FRP	1/10/2006	Surface water	7.66	-	-	-	528	-	-	-	16	-	-	-	-	-	-	-	-	-	-	0.015	-	-	-	-	-	<0.01	-	-	<0.001	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 07_-	FRP	1/01/2007	Surface water	7.69	-	-	-	608	-	-	-	26	-	-	-	-	-	-	-	-	-	-	0.011	-	-	-	-	-	0.013	-	-	<0.001	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.014
FRP_01 Apr 07_-	FRP	1/04/2007	Surface water	7.6	-	-	-	642	-	-	-	27	300	-	67	25	11	125	186	48	-	11.2	12.2	0.08	0.021	<0.01	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 98_-	Lot 1124	1/01/1998	Surface water	-	-	-	-	474	-	-	-	21	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	9.9	0.09	-	-	0.002	-	<0.001	0.002	<0.001	-	-	-	-	-	-	0.008
Lot 1124_01 Jul 98_-	Lot 1124	1/07/1998	Surface water	-	-	-	-	444	-	-	-	7	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.5	0.43	-	-	0.006	-	<0.001	<0.001	0.002	-	-	-	-	-	-	0.002
Lot 1124_01 Oct 98_-	Lot 1124	1/10/1998	Surface water	-	-	-	-	412	-	-	-	8	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	0.4	0.48	-	-	<0.001	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.018
Lot 1124_01 Jan 99_-	Lot 1124	1/01/1999	Surface water	8.5	754	-	-	432	-	-	-	6	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.3	0.08	-	-	0.008	-	<0.001	0.003	<0.001	-	-	-	-	-	-	0.029
Lot 1124_01 Jul 99_-	Lot 1124	1/07/1999	Surface water	8.3	-	-	-	390	-	-	-	7	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	0.15	-	-	0.009	-	0.002	0.001	<0.001	-	-	-	-	-	-	0.007
Lot 1124_01 Oct 99_-	Lot 1124	1/10/1999	Surface water	8.4	-	-	-	394	-	-	-	8	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.5	0.12	-	-	0.008	-	0.001	0.007	<0.001	-	-	-	-	-	-	0.005
Lot 1124_01 Apr 00_-	Lot 1124	1/04/2000	Surface water	7.1	690	-	-	420	-	-	-	9	-	-	-	-	-	-	-	-	-	-	0.04	-	-	-	-	0.9	0.09	-	-	0.009	-	0.003	0.001	<0.001	-	-	-	-	-	-	0.007
Lot 1124_01 Jul 00_-	Lot 1124	1/07/2000	Surface water	7.6	670	-	-	400	-	-	-	6	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.2	0.13	-	-	0.01	-	0.002	0.002	0.003	-	-	-	-	-	-	0.017

	Field parameters		Inorganics						Unassigned	dity & Alkalir		Major Ions										Nutrients							Organic Indicators	Metals												
	pH (Field)	Electrical conductivity (field)	pH (Lab)	Total Dissolved Solids	Total Dissolved Solids (Filtered)	Total Suspended Solids	COD	Cyanide (Total)	Dissolved Organic Carbon (Filtered)	Alkalinity (total as CaCO3)	Hardness as CaCO3	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Phosphorus (Total)	BOD	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Tin	Zinc
	pH Units	µS/cm	pH Units	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	mg/L	mg/L	meq/L	meq/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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL			0.1	10		1	25	0.005			5	0.5	0.5	0.5	0.5	1	5	0.5			0.01	0.02	0.02	0.05	0.2	0.2		0.01	5	0.001	0.0002	0.001	0.001	0.001	0.0001	0.005	0.001	0.001	0.005	0.005	0.005
ADWG 2011 Aesthetic (v3.5 updated 2018)	6.5-8.5		6.5-8.5	600	600						200				180	250	250				0.411												1								3[#1]
ADWG 2011 Health (v3.5 updated 2018)								0.08									500[#2]	1.5				11.29[#3]	0.91[#4]				50			0.01	0.002		2	0.01	0.001	0.05	0.02	0.01	0.1		
NHMRC Recreational Guidelines 2008 - Health								0.8									5000[#2]	15				112.9[#3]	9.1[#5]				500			0.1	0.02		20	0.1	0.01	0.5	0.2	0.1	1		
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																																								
2-4m																																								
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NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand																																								
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NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand																																								
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SampleCode	Location_Code	Sampled_Date	Matrix_Type																																						
Lot 1124_01 Oct 00_-	Lot 1124	1/10/2000	Surface water	7.7	690	-	-	430	-	-	-	6	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.8	0.1	-	-	0.007	-	0.001	0.001	<0.001	-	-	-	-	-	-	<0.002
Lot 1124_01 Jan 01_-	Lot 1124	1/01/2001	Surface water	8.5	680	-	-	420	-	-	-	8	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.3	<0.01	-	-	0.009	-	0.005	0.002	<0.001	-	-	-	-	-	-	0.017
Lot 1124_01 Apr 01_-	Lot 1124	1/04/2001	Surface water	8.3	680	-	-	450	-	-	-	6	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	0.5	0.01	-	-	0.009	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.004
Lot 1124_01 Jul 01_-	Lot 1124	1/07/2001	Surface water	8.1	680	-	-	390	-	-	-	6	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.4	0.05	-	-	0.008	-	0.002	0.002	<0.001	-	-	-	-	-	-	0.034
Lot 1124_01 Oct 01_-	Lot 1124	1/10/2001	Surface water	8.2	650	-	-	390	-	-	-	5	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.4	0.02	-	-	0.004	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.019
Lot 1124_01 Jan 02_-	Lot 1124	1/01/2002	Surface water	8.3	730	-	-	430	-	-	-	5	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.5	<0.01	-	-	<0.001	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.021
Lot 1124_01 Apr 02_-	Lot 1124	1/04/2002	Surface water	8.2	650	-	-	400	-	-	-	6	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.3	<0.01	-	-	0.003	-	<0.001	<0.001	<0.001	-	-	-	-	-	-	0.005
Lot 1124_01 Jul 02_-	Lot 1124	1/07/2002	Surface water	8.1	620	-	-	370	-	-	-	3	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.3	0.12	-	-	0.005	-	<0.001	<0.001	<0.001	-	-	-	-	-	-	0.008
Lot 1124_01 Oct 02_-	Lot 1124	1/10/2002	Surface water	8.4	670	-	-	390	-	-	-	4	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	0.4	0.11	-	-	0.005	-	0.002	0.002	<0.001	-	-	-	-	-	-	0.037
Lot 1124_01 Jan 03_-	Lot 1124	1/01/2003	Surface water	8.14	620	-	-	400	-	-	-	6	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	0.4	0.03	-	-	0.005	-	<0.001	0.002	<0.001	-	-	-	-	-	-	0.042
Lot 1124_01 Apr 03_-	Lot 1124	1/04/2003	Surface water	8.17	738	-	-	452	-	-	-	14	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.3	<0.01	-	-	0.006	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.029
Lot 1124_01 Jul 03_-	Lot 1124	1/07/2003	Surface water	8.08	660	-	-	390	-	-	-	7	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.2	0.39	-	-	0.005	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.009
Lot 1124_01 Oct 03_-	Lot 1124	1/10/2003	Surface water	8.16	681	-	-	510	-	-	-	7	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	0.3	0.46	-	-	0.006	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.042
Lot 1124_01 Jan 04_-	Lot 1124	1/01/2004	Surface water	8.4	726	-	-	460	-	-	-	11	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.5	0.36	-	-	0.003	-	0.001	0.002	<0.001	-	-	-	-	-	-	0.014
Lot 1124_01 Apr 04_-	Lot 1124	1/04/2004	Surface water	8.18	-	-	-	384	-	-	-	7	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	0.43	-	-	0.007	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 04_-	Lot 1124	1/07/2004	Surface water	8.09	-	-	-	466	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	0.35	-	-	0.012	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 04_-	Lot 1124	1/10/2004	Surface water	8.11	-	-	-	496	-	-	-	9	-	-	-	-	-	-	-	-	-	-	0.15	-	-	-	-	-	0.33	-	-	0.007	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 05_-	Lot 1124	1/01/2005	Surface water	8.27	-	-	-	542	-	-	-	7	-	-	-	-	-	-	-	-	-	-	0.298	-	-	-	-	-	0.205	-	-	0.03	-	<0.01	<0.01	<0.01	-	-	-	-	-	-	0.01
Lot 1124_01 Apr 05_-	Lot 1124	1/04/2005	Surface water	7.95	-	-	-	446	-	-	-	6	-	-	-	-	-	-	-	-	-	-	0.071	-	-	-	-	-	0.107	-	-	0.01	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 05_-	Lot 1124	1/07/2005	Surface water	8.25	-	-	-	460	-	-	-	7	-	-	-	-	-	-	-	-	-	-	0.034	-	-	-	-	-	0.291	-	-	0.006	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 05_-	Lot 1124	1/10/2005	Surface water	8.61	-	-	-	492	-	-	-	4	-	-	-	-	-	-	-	-	-	-	0.042	-	-	-	-	-	0.093	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 06_-	Lot 1124	1/01/2006	Surface water	8.28	-	-	-	520	-	-	-	6	-	-	-	-	-	-	-	-	-	-	0.041	-	-	-	-	-	<0.01	-	-	0.004	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.007
Lot 1124_01 Apr 06_-	Lot 1124	1/04/2006	Surface water	8.12	-	-	-	506	-	-	-	7	-	-	-	-	-	-	-	-	-	-	0.095	-	-	-	-	-	0.01	-	-	0.002	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 06_-	Lot 1124	1/07/2006	Surface water	8.15	-	-	-	494	-	-	-	9	-	-	-	-	-	-	-	-	-	-	0.021	-	-	-	-	-	<0.01	-	-	0.002	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 06_-	Lot 1124	1/10/2006	Surface water	8.1	-	-	-	508	-	-	-	7	-	-	-	-	-	-	-	-	-	-	0.011	-	-	-	-	-	0.013	-	-	0.002	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 07_-	Lot 1124	1/01/2007	Surface water	8.5	-	-	-	532	-	-	-	6	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	0.064	-	-	0.002	-	<0.001	0.001	<0.001	-	-	-	-	-	-	0.005
Lot 1124_01 Apr 07_-	Lot 1124	1/04/2007	Surface water	7.98	-	-	-	580	-	-	-	8	114	-	80	17	6	56	92.3	164	-	7.98	8.3	0.094	<0.01	<0.01	-	-	-	-	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-
S20-Jn21405	SW1	11/06/2020	Surface water	-	-	8	170	-	14	<25	<0.005	-	-	77	22	5.7	1.3	22	20	36	<0.5	-	-	0.05	2.1	0.03	2.2	2.6	0.4	-	0.03	<5	<0.001	<0.0002	0.002	0.007	<0.001	<0.0001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005
S20-Jn21410	SW1	11/06/2020	Surface water	-	-	7.9	150	-	10	<25	<0.005	-	-	79	22	6	1.3	22	21	35	<0.5	-	-	0.06	2.1	0.03	2.1	2.4	0.3	-	<0.01	<5	<0.001	<0.0002	0.002	0.008	<0.001	<0.0001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005
S20-Jn21406	SW2	11/06/2020	Surface water	-	-	7.9	320	-	41	<25	<0.005	-	-	180	58	8.4	4.1	33	47	98	<0.5	-	-	0.05	0.12	<0.02	0.14	0.74	0.6	-	<0.01	<5	0.002	<0.0002	0.003	0.003	0.003	<0.0001	<0.005	0.002	<0.001	<0.005	<0.005	0.006
S20-Jn21407	SW3	11/06/2020	Surface water	-	-	7.9	380	-	26	<25	<0.005	-	-	200	65	8.8	5.2	34	51	99	<0.5	-	-	0.16	0.23	0.03	0.26	1.16	0.9	-	0.01	<5	0.004	<0.0002	0.003	0.003	0.003	<0.0001	0.007	0.002	<0.001	<0.005	<0.005	0.005
S20-Jn21408	SW4	11/06/2020	Surface water	-	-	8.2	1400	-	50	270	0.007	-	-	410	95	42	60	230	340	230	<0.5	-	-	87	<1	<1	<2.5	96	96	-	0.02	<5	0.004	<0.0002	0.012	0.009	0.004	<0.0001	<0.005	0.008	<0.001	<0.005	<0.005	0.015
S20-Jn21409	SW5	11/06/2020	Surface water	-	-	7.9	270	-	42	<25	<0.005	-	-	170	58	4.6	3.1	20	28	120	<0.5	-	-	0.04	0.14	<0.02	0.14	0.74	0.6	-	0.01	<5	0.001	<0.0002	0.003	0.005	0.005	<0.0001	<0.005	0.002	<0.001	<0.005	<0.005	0.01
WWP_01 Jan 98_-	WWP	1/01/1998	Surface water	-	-	-	-	870	-	-	-	8	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.6	0.47	-	-	0.006	-	<0.001	0.005	<0.001	-	-	-	-	-	-	0.013
WWP_01 Jul 98_-	WWP	1/07/1998	Surface water	-	-	-	-	862	-	-	-	16	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	0.7	<0.01	-	-	0.005	-	<0.001	0.01	0.001	-	-	-	-	-	-	0.013
WWP_01 Oct 98_-	WWP	1/10/1998	Surface water	-	-	-	-	436	-	-	-	9	-	-	-	-	-	-	-	-	-	-	0.04	-	-	-	-	0.6	0.1	-	-	<0.001	-	<0.001	0.008	<0.001	-	-	-	-	-	-	0.025
WWP_01 Jan 99_-	WWP	1/01/1999	Surface water	8.8	887	-	-	609	-	-	-	28	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.4	<0.01	-	-	0.006	-	0.004	0.005	<0.001	-	-	-	-	-	-	0.009
WWP_01 Jul 99_-	WWP	1/07/1999	Surface water	8.2	-	-	-	603	-	-	-	9	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.5	<0.01	-	-	0.003	-	0.003	0.008	<0.001	-	-	-	-	-	-	0.01
WWP_01 Oct 99_-	WWP	1/10/1999	Surface water	8.3	-	-	-	612	-	-	-	12	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	0.9	<0.01	-	-	0.005	-	0.004	0.008	<0.001	-	-	-	-	-	-	0.005
WWP_01 Apr 00_-	WWP	1/04/2000	Surface water	7.8	1200	-	-	850	-	-	-	10	-	-	-	-	-	-	-	-	-	-	0.05	-	-	-	-	0.6	0.05	-	-	0.005	-	0.003	0.006	<0.001	-	-	-	-	-	-	0.028
WWP_01 Jul 00_-	WWP	1/07/2000	Surface water	8.1	1500	-	-	1000	-	-	-	12	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	1.6	0.09	-	-	0.004	-	0.003	0.012	<0.001	-	-	-	-	-	-	0.016
WWP_01 Oct 00_-	WWP	1/10/2000	Surface water	7.6	1700	-	-	1200	-	-	-	13	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	1.2	0.01	-	-	0.004	-	0.002	0.007	<0.001	-	-	-	-	-	-	0.004
WWP_01 Jan 01_-	WWP	1/01/2001	Surface water	7.8	1600	-	-	1100	-	-	-	19	-	-	-	-	-	-	-	-	-	-	0.07	-	-	-	-	1.2	<0.01	-	-	0.008	-	0.006	0.004	<0.001	-	-	-	-	-	-	0.008
WWP_01 Apr 01_-	WWP	1/04/2001	Surface water	8.1	1400	-	-	940	-	-	-	12	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	1.2	0.01	-	-	0.005	-	0.001	0.007	<0.001	-	-	-	-	-	-	0.021
WWP_01 Jul 01_-	WWP	1/07/2001	Surface water	7.9	780	-	-	530	-	-	-	9	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	0.7	0.03	-	-	0.002	-	0.002	0.006	<0.001	-	-	-	-	-	-	0.009
WWP_01 Oct 01_-	WWP	1/10/2001	Surface water	8.1	1200	-	-	650	-	-	-	8	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.5	<0.01	-	-	0.003	-	<0.001	0.006	<0.001	-	-	-	-	-	-	0.007
WWP_01 Jan 02_-	WWP	1/01/2002	Surface water	7.8	1900	-	-	1200	-	-	-	13	-	-	-	-	-	-	-	-	-	-	0.07	-	-	-	-	1.2	0.41	-	-	<0.001	-	<0.001	0.004	<0.001	-	-	-	-	-	-	0.009
WWP_01 Apr 02_-	WWP	1/04/2002	Surface water	8.3	870	-	-	540	-	-	-	9	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.2	0.15	-	-	0.002	-	<0.001	0.005	<0.001	-	-	-	-	-	-	0.009
WWP_01 Jul 02_-	WWP	1/07/2002	Surface water	8.1	960	-	-	740	-	-	-	8	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	0.2	-	-	0.003	-	<0.001	0.006	<0.001	-	-	-	-	-	-	0.011
WWP_01 Oct 02_-	WWP	1/10/2002	Surface water	8.1	1400	-	-	1100	-	-	-	11	-	-	-	-	-	-	-	-	-	-	0.05	-	-	-	-	1.2	0.08	-	-	0.004	-	0.002	0.005	<0.001	-	-	-	-	-	-	0.027
WWP_01 Jan 03_-	WWP	1/01/2003	Surface water	7.95	1400	-	-	950	-	-	-	12	-	-	-	-	-	-	-	-	-	-	0.14	-	-	-	-	-	0.08	-	-	0.005	-	<0.001	0.006	<0.001	-	-	-	-	-	-	0.037
WWP_01 Apr 03_-	WWP	1/04/2003	Surface water	8.08	1650	-	-	1280	-	-	-	23	-	-	-	-	-	-	-	-	-	-	0.23	-	-	-	-	1.3	0.17	-	-	0.005	-	<0.001	0.006	<0.001	-	-	-	-	-	-	0.013
WWP_01 Jul 03_-	WWP	1/07/2003	Surface water	8.05	1170	-	-	878	-	-	-	23	-	-	-	-	-	-	-	-	-	-	0.23	-	-	-	-	1.8	0.65	-	-	0.002	-	<0.001	0.008	<0.001	-	-	-	-	-	-	0.009
WWP_01 Oct 03_-	WWP	1/10/2003	Surface water	8.16	1350	-	-	740	-	-	-	16	-	-	-	-	-	-	-	-	-	-	0.06	-	-	-	-	1.1	0.19	-	-	0.003	-	<0.001	0.007	<0.001	-	-	-	-	-	-	0.023
WWP_01 Jan 04_-	WWP	1/01/2004	Surface water	8.2	1430	-	-	1110	-	-	-	20	-	-	-	-	-	-	-	-	-	-	0.05	-	-	-	-	1.3	0.02	-	-	0.005	-	0.001	0.005	<0.001	-	-	-	-	-	-	0.009
WWP_01 Apr 04_-	WWP	1/04/2004	Surface water	8.17	-	-	-	956	-	-	-	16	-	-	-	-	-	-	-	-	-	-	0.11	-	-	-	-	-	0.02	-	-	0.005	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 04_-	WWP	1/07/2004	Surface water	8.06	-	-	-	1060	-	-	-	13	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	-	-	0.09	-	-	0.003	-	-	-	-	-	-	-	-	-	-

	Field parameters		Inorganics						Unassigned	dity & Alkalir		Major Ions									Nutrients							Organic Indicators	Metals											
	pH (Field)	Electrical conductivity (field)	pH (Lab)	Total Dissolved Solids	Total Dissolved Solids (Filtered)	Total Suspended Solids	COD	Cyanide (Total)	Dissolved Organic Carbon (Filtered)	Alkalinity (total as CaCO3)	Hardness as CaCO3	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Phosphorus (Total)	BOD	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Tin	Zinc
	pH Units	µS/cm	pH Units	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	mg/L	mg/L	meq/L	meq/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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL			0.1	10		1	25	0.005			5	0.5	0.5	0.5	0.5	1	5	0.5			0.01	0.02	0.02	0.05	0.2	0.2		0.01	5	0.001	0.0002	0.001	0.001	0.001	0.0001	0.005	0.001	0.001	0.005	0.005	0.005
ADWG 2011 Aesthetic (v3.5 updated 2018)	6.5-8.5		6.5-8.5	600	600						200					180	250	250			0.411												1							3[#1]
ADWG 2011 Health (v3.5 updated 2018)								0.08										500[#2]	1.5			11.29[#3]	0.91[#4]				50			0.01	0.002		2	0.01	0.001	0.05	0.02	0.01	0.1		
NHMRC Recreational Guidelines 2008 - Health								0.8										5000[#2]	15			112.9[#3]	9.1[#5]				500			0.1	0.02		20	0.1	0.01	0.5	0.2	0.1	1		
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																																								
2-4m																																								
4-8m																																								
>8m																																								
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand																																								
2-4m																																								
4-8m																																								
>8m																																								
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand																																								
2-4m																																								
4-8m																																								
>8m																																								

SampleCode	Location_Code	Sampled_Date	Matrix_Type																																					
WWP_01 Oct 04_-_-	WWP	1/10/2004	Surface water	8.32	-	-	-	806	-	-	-	16	-	-	-	-	-	-	-	-	-	-	0.42	-	-	-	-	-	1.02	-	-	0.002	-	-	-	-	-	-	-	-	-
WWP_01 Jan 05_-_-	WWP	1/01/2005	Surface water	8.03	-	-	-	1150	-	-	-	14	-	-	-	-	-	-	-	-	-	-	0.36	-	-	-	-	-	0.041	-	-	0.02	-	<0.01	<0.01	<0.01	-	-	-	-	<0.01
WWP_01 Apr 05_-_-	WWP	1/04/2005	Surface water	8.08	-	-	-	956	-	-	-	14	-	-	-	-	-	-	-	-	-	-	0.114	-	-	-	-	-	0.148	-	-	0.003	-	-	-	-	-	-	-	-	-
WWP_01 Jul 05_-_-	WWP	1/07/2005	Surface water	8.27	-	-	-	790	-	-	-	13	-	-	-	-	-	-	-	-	-	-	0.087	-	-	-	-	-	0.993	-	-	0.002	-	-	-	-	-	-	-	-	-
WWP_01 Oct 05_-_-	WWP	1/10/2005	Surface water	8.09	-	-	-	1030	-	-	-	10	-	-	-	-	-	-	-	-	-	-	0.139	-	-	-	-	-	0.235	-	-	0.003	-	-	-	-	-	-	-	-	-
WWP_01 Jan 06_-_-	WWP	1/01/2006	Surface water	8.24	-	-	-	1070	-	-	-	17	-	-	-	-	-	-	-	-	-	-	0.046	-	-	-	-	-	<0.01	-	-	0.003	-	<0.001	0.009	<0.001	-	-	-	-	0.015
WWP_01 Apr 06_-_-	WWP	1/04/2006	Surface water	7.84	-	-	-	1140	-	-	-	16	-	-	-	-	-	-	-	-	-	-	0.235	-	-	-	-	-	0.18	-	-	0.004	-	-	-	-	-	-	-	-	-
WWP_01 Jun 06_-_-	WWP	1/06/2006	Surface water	8	-	-	-	528	-	-	-	11	-	-	-	-	-	-	-	-	-	-	0.043	-	-	-	-	-	0.485	-	-	0.002	-	-	-	-	-	-	-	-	-
WWP_01 Oct 06_-_-	WWP	1/10/2006	Surface water	8.03	-	-	-	508	-	-	-	10	-	-	-	-	-	-	-	-	-	-	0.113	-	-	-	-	-	0.117	-	-	0.002	-	-	-	-	-	-	-	-	-
WWP_01 Jan 07_-_-	WWP	1/01/2007	Surface water	8.03	-	-	-	842	-	-	-	12	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	0.048	-	-	0.005	-	<0.001	0.004	<0.001	-	-	-	-	0.017
WWP_01 Apr 07_-_-	WWP	1/04/2007	Surface water	7.78	-	-	-	968	-	-	-	17	226	-	173	17	14	94	92.5	370	-	14.5	14.8	0.145	0.017	<0.01	-	-	-	-	-	-	0.003	-	-	-	-	-	-	-	-	-

Statistical Summary

Number of Results	105	58	6	6	117	6	6	6	117	3	6	9	9	9	9	9	9	6	3	3	123	9	9	6	6	81	113	6	6	123	6	93	93	93	6	6	6	6	6	6	93
Number of Detects	105	58	6	6	117	6	1	1	116	3	6	9	9	9	9	9	9	0	3	3	79	7	3	5	6	81	77	4	0	107	0	47	79	11	0	1	6	0	0	0	88
Minimum Concentration	7.1	606	7.9	150	370	10	<25	<0.005	<1	114	77	22	4.6	1.3	20	20	35	<0.5	7.98	8.3	<0.01	<0.01	<0.01	0.14	0.74	0.2	<0.01	<0.01	<5	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.005	0.001	<0.001	<0.005	<0.005	<0.002
Minimum Detect	7.1	606	7.9	150	370	10	270	0.007	3	114	77	22	4.6	1.3	20	20	35	ND	7.98	8.3	0.01	0.017	0.03	0.14	0.74	0.2	0.01	0.01	ND	0.001	ND	0.001	0.001	0.001	ND	0.007	0.001	ND	ND	ND	0.002
Maximum Concentration	9.4	1900	8.2	1400	1670	50	270	0.007	67	300	410	173	42	60	230	340	370	<0.5	14.5	14.8	87	2.1	<1	<2.5	96	96	25	0.03	<5	0.04	<0.0002	0.014	0.012	<0.01	<0.0001	0.007	0.008	<0.001	<0.005	<0.005	0.271
Maximum Detect	9.4	1900	8.2	1400	1670	50	270	0.007	67	300	410	173	42	60	230	340	370	ND	14.5	14.8	87	2.1	0.03	2.2	96	96	25	0.03	ND	0.04	ND	0.014	0.012	0.005	ND	0.007	0.008	ND	ND	ND	0.271
Average Concentration	8.1	949	8	448	624	31	55	0.0033	13	213	186	71	15	12	71	98	133	0.25	11	12	0.8	0.58	0.069	1	17	2.3	0.36	0.013	2.5	0.0045	0.0001	0.0019	0.0035	0.00088	0.00005	0.0033	0.0027	0.0005	0.0025	0.0025	0.017
Median Concentration	8.1	855	7.9	295	528	33.5	12.5	0.0025	12	226	175	65	8.8	5.2	34	51	99	0.25	11.2	12.2	0.03	0.14	0.01	0.755	1.78	0.9	0.04	0.01	2.5	0.003	0.0001	0.001	0.003	0.0005	0.00005	0.0025	0.002	0.0005	0.0025	0.0025	0.01
Standard Deviation	0.35	330	0.12	474	252	16	105	0.0018	8.9	94	122	45	12	19	70	105	109	0	3.3	3.3	7.8	0.87	0.16	0.97	39	11	2.4	0.0098	0	0.005	0	0.0022	0.0028	0.0011	0	0.0018	0.0027	0	0	0	0.029
Number of Guideline Exceedances	9	0	0	1	42	0	0	0	0	0	2	0	0	0	1	1	1	0	0	0	4	0	1	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	9	0	0	1	42	0	0	0	0	0	2	0	0	0	1	1	1	0	0	0	4	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments

#1:Natural concentrations generally <0.01 mg/L
#2:Not specifically guideline value: >500mg/L can have purgative effects
#3:Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427
#4:Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).
#5:Guideline value calculated by dividing Nitrite (as Nitrite) value (30 mg/L) by molecular weight (3.2967033).
#6:Not limiting: Derived water HSL exceeds water solubility limit
#7:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

| | BTEXN | | | | | | TRH - NEPM 2013 | | | | | | | TRH - NEPM 1999 | | | | | PAHs - standard 16 | | | | | | | | | | | | | | | | OC Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---

| | BTEXN | | | | | | TRH - NEPM 2013 | | | | | | | TRH - NEPM 1999 | | | | | PAHs - standard 16 | | | | | | | | | | | | | | | | | OC Pesticides | | | | | | | | | | | | | | | | |

Appendix B Table B5 - Historical surface water results - human health assessment criteria

	BTEXN						TRH - NEPM 2013							TRH - NEPM 1999				
	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)
	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	1	1	1	1	2	3	20	20	50	50	100	100	100	20	50	100	100	100
ADWG 2011 Aesthetic (v3.5 updated 2018)		25	3			20												
ADWG 2011 Health (v3.5 updated 2018)	1	800	300			600												
NHMRC Recreational Guidelines 2008 - Health	10	8000	3000			6000												
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																		
2-4m	**NL[#6]**	**NL[#6]**	**NL[#6]**			**NL[#6]**	**NL[#6]**		**NL[#6]**									
4-8m	**NL[#6]**	**NL[#6]**	**NL[#6]**			**NL[#6]**	**NL[#6]**		**NL[#6]**									
>8m	**NL[#6]**	**NL[#6]**	**NL[#6]**			**NL[#6]**	**NL[#6]**		**NL[#6]**									
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand																		
2-4m	*NL[#6]*	*NL[#6]*	*NL[#6]*			*NL[#6]*	*NL[#6]*		*NL[#6]*									
4-8m	*NL[#6]*	*NL[#6]*	*NL[#6]*			*NL[#6]*	*NL[#6]*		*NL[#6]*									
>8m	*NL[#6]*	*NL[#6]*	*NL[#6]*			*NL[#6]*	*NL[#6]*		*NL[#6]*									
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand																		
2-4m	5000	NL[#6]	NL[#6]			NL[#6]	6000[#7]		NL[#6]									
4-8m	5000	NL[#6]	NL[#6]			NL[#6]	6000[#7]		NL[#6]									
>8m	5000	NL[#6]	NL[#6]			NL[#6]	7000[#7]		NL[#6]									

	PAHs - standard 16																													OC Pesticides																									
	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4'-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)
	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	µg/L	µg/L	µg/L
EQL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ADWG 2011 Aesthetic (v3.5 updated 2018)																																					
ADWG 2011 Health (v3.5 updated 2018)					0.01												0.01						0.3		2			9									10
NHMRC Recreational Guidelines 2008 - Health					0.1																		3		20			90									100
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand																																					
2-4m														**NL[#6]**																							
4-8m														**NL[#6]**																							
>8m														**NL[#6]**																							
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand																																					
2-4m														*NL[#6]*																							
4-8m														*NL[#6]*																							
>8m														*NL[#6]*																							
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand																																					
2-4m														NL[#6]																							
4-8m														NL[#6]																							
>8m														NL[#6]																							

| SampleCode | Location_Code | Sampled_Date | Matrix_Type | | | | | | | | | | | | | | | | | | |

						PCBs							
	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
	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	0.1	0.1	0.1	0.1	10	1	1	1	1	1	1	1	1
ADWG 2011 Aesthetic (v3.5 updated 2018)													
ADWG 2011 Health (v3.5 updated 2018)	0.3			300									
NHMRC Recreational Guidelines 2008 - Health	3			3000									
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand													
2-4m													
4-8m													
>8m													
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand													
2-4m													
4-8m													
>8m													
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand													
2-4m													
4-8m													
>8m													

SampleCode	Location_Code	Sampled_Date	Matrix_Type													
CRP_01 Jan 98_-	CRP	1/01/1998	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jul 98_-	CRP	1/07/1998	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Oct 98_-	CRP	1/10/1998	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jan 99_-	CRP	1/01/1999	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jul 99_-	CRP	1/07/1999	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Oct 99_-	CRP	1/10/1999	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Apr 00_-	CRP	1/04/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jul 00_-	CRP	1/07/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Oct 00_-	CRP	1/10/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jan 01_-	CRP	1/01/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Apr 01_-	CRP	1/04/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 98_-	FRP	1/01/1998	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 98_-	FRP	1/07/1998	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 98_-	FRP	1/10/1998	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 99_-	FRP	1/01/1999	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 99_-	FRP	1/07/1999	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 99_-	FRP	1/10/1999	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 00_-	FRP	1/01/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 00_-	FRP	1/04/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 00_-	FRP	1/07/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 00_-	FRP	1/10/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 01_-	FRP	1/01/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 01_-	FRP	1/04/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 01_-	FRP	1/07/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 01_-	FRP	1/10/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 02_-	FRP	1/01/2002	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 02_-	FRP	1/04/2002	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 02_-	FRP	1/07/2002	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 02_-	FRP	1/10/2002	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 03_-	FRP	1/01/2003	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 03_-	FRP	1/04/2003	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 03_-	FRP	1/07/2003	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 03_-	FRP	1/10/2003	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 04_-	FRP	1/01/2004	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 04_-	FRP	1/04/2004	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 04_-	FRP	1/07/2004	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 04_-	FRP	1/10/2004	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 05_-	FRP	1/01/2005	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 05_-	FRP	1/04/2005	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 05_-	FRP	1/07/2005	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 05_-	FRP	1/10/2005	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 06_-	FRP	1/01/2006	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 06_-	FRP	1/04/2006	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 06_-	FRP	1/07/2006	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 06_-	FRP	1/10/2006	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 07_-	FRP	1/01/2007	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 07_-	FRP	1/04/2007	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 98_-	Lot 1124	1/01/1998	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 98_-	Lot 1124	1/07/1998	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 98_-	Lot 1124	1/10/1998	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 99_-	Lot 1124	1/01/1999	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 99_-	Lot 1124	1/07/1999	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 99_-	Lot 1124	1/10/1999	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 00_-	Lot 1124	1/04/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 00_-	Lot 1124	1/07/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-

						PCBs							
	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
	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	0.1	0.1	0.1	0.1	10	1	1	1	1	1	1	1	1
ADWG 2011 Aesthetic (v3.5 updated 2018)													
ADWG 2011 Health (v3.5 updated 2018)	0.3			300									
NHMRC Recreational Guidelines 2008 - Health	3			3000									
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand													
2-4m													
4-8m													
>8m													
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand													
2-4m													
4-8m													
>8m													
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand													
2-4m													
4-8m													
>8m													
SampleCode	**Location_Code**	**Sampled_Date**	**Matrix_Type**												
Lot 1124_01 Oct 00_-	Lot 1124	1/10/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 01_-	Lot 1124	1/01/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 01_-	Lot 1124	1/04/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 01_-	Lot 1124	1/07/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 01_-	Lot 1124	1/10/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 02_-	Lot 1124	1/01/2002	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 02_-	Lot 1124	1/04/2002	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 02_-	Lot 1124	1/07/2002	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 02_-	Lot 1124	1/10/2002	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 03_-	Lot 1124	1/01/2003	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 03_-	Lot 1124	1/04/2003	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 03_-	Lot 1124	1/07/2003	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 03_-	Lot 1124	1/10/2003	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 04_-	Lot 1124	1/01/2004	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 04_-	Lot 1124	1/04/2004	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 04_-	Lot 1124	1/07/2004	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 04_-	Lot 1124	1/10/2004	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 05_-	Lot 1124	1/01/2005	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 05_-	Lot 1124	1/04/2005	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 05_-	Lot 1124	1/07/2005	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 05_-	Lot 1124	1/10/2005	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 06_-	Lot 1124	1/01/2006	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 06_-	Lot 1124	1/04/2006	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 06_-	Lot 1124	1/07/2006	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 06_-	Lot 1124	1/10/2006	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 07_-	Lot 1124	1/01/2007	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 07_-	Lot 1124	1/04/2007	Surface water	-	-	-	-	-	-	-	-	-	-	-	-
S20-Jn21405	SW1	11/06/2020	Surface water	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
S20-Jn21410	SW1	11/06/2020	Surface water	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
S20-Jn21406	SW2	11/06/2020	Surface water	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
S20-Jn21407	SW3	11/06/2020	Surface water	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
S20-Jn21408	SW4	11/06/2020	Surface water	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
S20-Jn21409	SW5	11/06/2020	Surface water	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
WWP_01 Jan 98_-	WWP	1/01/1998	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 98_-	WWP	1/07/1998	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 98_-	WWP	1/10/1998	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 99_-	WWP	1/01/1999	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 99_-	WWP	1/07/1999	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 99_-	WWP	1/10/1999	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 00_-	WWP	1/04/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 00_-	WWP	1/07/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 00_-	WWP	1/10/2000	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 01_-	WWP	1/01/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 01_-	WWP	1/04/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 01_-	WWP	1/07/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 01_-	WWP	1/10/2001	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 02_-	WWP	1/01/2002	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 02_-	WWP	1/04/2002	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 02_-	WWP	1/07/2002	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 02_-	WWP	1/10/2002	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 03_-	WWP	1/01/2003	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 03_-	WWP	1/04/2003	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 03_-	WWP	1/07/2003	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 03_-	WWP	1/10/2003	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 04_-	WWP	1/01/2004	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 04_-	WWP	1/04/2004	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 04_-	WWP	1/07/2004	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-

						PCBs							
	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
	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	0.1	0.1	0.1	0.1	10	1	1	1	1	1	1	1	1
ADWG 2011 Aesthetic (v3.5 updated 2018)													
ADWG 2011 Health (v3.5 updated 2018)	0.3			300									
NHMRC Recreational Guidelines 2008 - Health	3			3000									
CRC CARE 2011 GW HSL for vap.int Intrusive Maint. - Sand													
2-4m													
4-8m													
>8m													
NEPM 2013 Table 1A(4) HSL C Rec GW for Vapour Intrusion, Sand													
2-4m													
4-8m													
>8m													
NEPM 2013 Table 1A(4) HSL D Comm/Ind GW for Vapour Intrusion, Sand													
2-4m													
4-8m													
>8m													

SampleCode	Location_Code	Sampled_Date	Matrix_Type													
WWP_01 Oct 04_-	WWP	1/10/2004	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 05_-	WWP	1/01/2005	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 05_-	WWP	1/04/2005	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 05_-	WWP	1/07/2005	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 05_-	WWP	1/10/2005	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 06_-	WWP	1/01/2006	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 06_-	WWP	1/04/2006	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jun 06_-	WWP	1/06/2006	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 06_-	WWP	1/10/2006	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 07_-	WWP	1/01/2007	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 07_-	WWP	1/04/2007	Surface water	-	-	-	-	-	-	-	-	-	-	-	-	-

Statistical Summary

Number of Results	6	6	6	6	6	6	6	6	6	6	6	6	6
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	0.05	0.05	0.05	0.05	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Median Concentration	0.05	0.05	0.05	0.05	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Standard Deviation	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments

#1:Natural concentrations generally <0.01 mg/L
#2:Not specifically guideline value: >500mg/L can have purgative effects
#3:Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427
#4:Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molec
#5:Guideline value calculated by dividing Nitrite (as Nitrite) value (30 mg/L) by molec
#6:Not limiting: Derived water HSL exceeds water solubility limit
#7:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

Appendix B Table B6 - Historical surface water results - ecological assessment criteria

	Field Parameters		Inorganics					Cyanide	Acidity & Alkalinity		Major Ions									Nutrients								Organic Indicators		Metals						
	pH (Field)	Electrical conductivity (field)	pH (Lab)	Total Dissolved Solids	Total Dissolved Solids (Filtered)	Total Suspended Solids	COD	Cyanide (Total)	Alkalinity (total as CaCO3)	Hardness as CaCO3	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Phosphorus (Total)	BOD	Dissolved Organic Carbon (Filtered)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Molybdenum
	pH units	µS/cm	pH units	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	mg/L	meq/L	meq/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	mg/L	mg/L	mg/L	mg/L
LOR			0.1	10		1	25	0.005		5	0.5	0.5	0.5	0.5	1	5	0.5			0.01	0.02	0.02	0.05	0.2	0.2		0.01	5		0.001	0.0002	0.001	0.001	0.001	0.0001	0.005
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine	*7-8.5*		*7-8.5*			*0.5*														*0.015*[#1]			*0.015*	*0.3*			*0.03*							
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs	**6.5-8**	**20-30**	**6.5-8**			**5**														**0.01**[#1]			**0.01**	**0.35**			**0.01**							
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)								0.007[#2]												0.9[#3]									0.013[#4]	0.0002	0.001[#5]	0.0014	0.0034	0.0006	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																		0.034
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.004[#2]												0.91[#6]										0.0055	0.0044[#7]	0.0013	0.0044	0.0004	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																			

Sample ID	Location Code	Date	Matrix Type																																	
CRP_01 Jan 98_-	CRP	1/01/1998	water	-	-	-	-	880	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.7	0.11	-	-	18	0.005	-	<0.001	0.003	<0.001	-	-
CRP_01 Jul 98_-	CRP	1/07/1998	water	-	-	-	-	496	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	-	0.6	1.9	-	-	9	0.002	-	<0.001	0.004	0.001	-	-
CRP_01 Oct 98_-	CRP	1/10/1998	water	-	-	-	-	1670	-	-	-	-	-	-	-	-	-	-	-	-	***2.62***	-	-	-	-	6.5	0.02	-	-	67	<0.01	-	0.003	0.006	0.002	-	-
CRP_01 Jan 99_-	CRP	1/01/1999	water	**8**	**1650**	-	-	1050	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	-	-	2.2	0.01	-	-	37	0.007	-	<0.001	0.004	<0.001	-	-
CRP_01 Jul 99_-	CRP	1/07/1999	water	***9.4***	-	-	-	681	-	-	-	-	-	-	-	-	-	-	-	-	***0.11***	-	-	-	-	1	0.98	-	-	10	0.002	-	0.014	0.011	<0.001	-	-
CRP_01 Oct 99_-	CRP	1/10/1999	water	**8**	-	-	-	622	-	-	-	-	-	-	-	-	-	-	-	-	***0.07***	-	-	-	-	1.6	0.02	-	-	14	0.007	-	0.005	0.003	<0.001	-	-
CRP_01 Apr 00_-	CRP	1/04/2000	water	7.1	**970**	-	-	640	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	-	-	1	0.02	-	-	9	0.01	-	0.004	0.001	<0.001	-	-
CRP_01 Jul 00_-	CRP	1/07/2000	water	7.9	**1000**	-	-	610	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1	0.08	-	-	12	0.007	-	0.003	0.002	<0.001	-	-
CRP_01 Oct 00_-	CRP	1/10/2000	water	7.4	**930**	-	-	540	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.2	0.01	-	-	12	0.006	-	0.002	0.001	<0.001	-	-
CRP_01 Jan 01_-	CRP	1/01/2001	water	**8**	**950**	-	-	580	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.8	<0.01	-	-	15	0.009	-	0.003	0.001	<0.001	-	-
CRP_01 Apr 01_-	CRP	1/04/2001	water	**8.1**	**830**	-	-	550	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.9	<0.01	-	-	11	0.009	-	0.001	0.003	<0.001	-	-
FRP_01 Jan 98_-	FRP	1/01/1998	water	-	-	-	-	472	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.6	0.16	-	-	10	0.002	-	<0.001	0.001	<0.001	-	-
FRP_01 Jul 98_-	FRP	1/07/1998	water	-	-	-	-	378	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.6	<0.01	-	-	9	0.001	-	<0.001	0.002	0.002	-	-
FRP_01 Oct 98_-	FRP	1/10/1998	water	-	-	-	-	508	-	-	-	-	-	-	-	-	-	-	-	-	***2.21***	-	-	-	-	4.1	25	-	-	17	<0.001	-	0.001	0.004	<0.001	-	-
FRP_01 Jan 99_-	FRP	1/01/1999	water	***8.7***	**797**	-	-	513	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.3	<0.01	-	-	51	0.003	-	0.002	0.003	<0.001	-	-
FRP_01 Jul 99_-	FRP	1/07/1999	water	7.8	-	-	-	805	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.8	0.04	-	-	9	0.002	-	0.003	0.002	<0.001	-	-
FRP_01 Oct 99_-	FRP	1/10/1999	water	**8.3**	-	-	-	583	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.7	0.03	-	-	12	0.007	-	0.004	0.008	<0.001	-	-
FRP_01 Jan 00_-	FRP	1/01/2000	water	7.9	**680**	-	-	410	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.4	-	-	-	14	0.002	-	0.001	<0.001	<0.001	-	-
FRP_01 Apr 00_-	FRP	1/04/2000	water	7.5	**880**	-	-	510	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.8	<0.01	-	-	16	0.004	-	0.004	0.003	<0.001	-	-
FRP_01 Jul 00_-	FRP	1/07/2000	water	**8.3**	**910**	-	-	510	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.6	<0.01	-	-	15	0.003	-	0.002	0.001	<0.001	-	-
FRP_01 Oct 00_-	FRP	1/10/2000	water	**8.1**	**870**	-	-	460	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.6	<0.01	-	-	19	0.003	-	0.003	<0.001	<0.001	-	-
FRP_01 Jan 01_-	FRP	1/01/2001	water	7.8	**1000**	-	-	600	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	-	1.8	0.05	-	-	26	0.005	-	0.005	0.002	<0.001	-	-
FRP_01 Apr 01_-	FRP	1/04/2001	water	***8.7***	**920**	-	-	560	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	2	<0.01	-	-	20	0.004	-	0.001	0.002	<0.001	-	-
FRP_01 Jul 01_-	FRP	1/07/2001	water	7.6	**900**	-	-	510	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1	<0.01	-	-	14	0.002	-	0.002	0.002	<0.001	-	-
FRP_01 Oct 01_-	FRP	1/10/2001	water	7.5	**770**	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1	<0.01	-	-	14	0.002	-	<0.001	<0.001	<0.001	-	-
FRP_01 Jan 02_-	FRP	1/01/2002	water	7.4	**940**	-	-	540	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	-	1.4	<0.01	-	-	19	<0.001	-	<0.001	<0.001	<0.001	-	-
FRP_01 Apr 02_-	FRP	1/04/2002	water	7.8	**740**	-	-	460	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.8	<0.01	-	-	10	0.003	-	<0.001	<0.001	<0.001	-	-
FRP_01 Jul 02_-	FRP	1/07/2002	water	7.9	**730**	-	-	440	-	-	-	-	-	-	-	-	-	-	-	-	***0.06***	-	-	-	-	0.5	0.02	-	-	6	0.001	-	<0.001	<0.001	<0.001	-	-
FRP_01 Oct 02_-	FRP	1/10/2002	water	**8.1**	**750**	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	-	1	0.04	-	-	9	0.002	-	0.001	<0.001	<0.001	-	-
FRP_01 Jan 03_-	FRP	1/01/2003	water	**8.25**	**710**	-	-	430	-	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	-	-	0.7	0.06	-	-	30	0.003	-	<0.001	0.002	<0.001	-	-
FRP_01 Apr 03_-	FRP	1/04/2003	water	**8.32**	**1010**	-	-	584	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	-	1.3	<0.01	-	-	27	0.003	-	<0.001	0.001	<0.001	-	-
FRP_01 Jul 03_-	FRP	1/07/2003	water	7.87	**840**	-	-	568	-	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	-	-	2.4	0.34	-	-	10	0.002	-	<0.001	0.005	0.001	-	-
FRP_01 Oct 03_-	FRP	1/10/2003	water	**8.25**	**654**	-	-	482	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.3	<0.01	-	-	13	0.002	-	<0.001	0.001	<0.001	-	-
FRP_01 Jan 04_-	FRP	1/01/2004	water	***9.09***	**606**	-	-	396	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	-	-	1.9	<0.01	-	-	21	0.002	-	0.001	<0.001	<0.001	-	-
FRP_01 Apr 04_-	FRP	1/04/2004	water	7.86	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	***0.33***	-	-	-	-	-	<0.01	-	-	16	0.002	-	-	-	-	-	-
FRP_01 Jul 04_-	FRP	1/07/2004	water	**8.39**	-	-	-	408	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	-	-	-	0.02	-	-	14	0.001	-	-	-	-	-	-
FRP_01 Oct 04_-	FRP	1/10/2004	water	**8.13**	-	-	-	386	-	-	-	-	-	-	-	-	-	-	-	-	***0.12***	-	-	-	-	-	<0.01	-	-	16	0.001	-	-	-	-	-	-
FRP_01 Jan 05_-	FRP	1/01/2005	water	7.84	-	-	-	524	-	-	-	-	-	-	-	-	-	-	-	-	***0.175***	-	-	-	-	-	<0.01	-	-	8	0.04	-	<0.01	<0.01	<0.01	-	-
FRP_01 Apr 05_-	FRP	1/04/2005	water	**8.15**	-	-	-	492	-	-	-	-	-	-	-	-	-	-	-	-	***0.086***	-	-	-	-	-	0.01	-	-	21	<0.001	-	-	-	-	-	-
FRP_01 Jul 05_-	FRP	1/07/2005	water	**8.49**	-	-	-	484	-	-	-	-	-	-	-	-	-	-	-	-	***0.074***	-	-	-	-	-	<0.01	-	-	14	<0.001	-	-	-	-	-	-
FRP_01 Oct 05_-	FRP	1/10/2005	water	**8.49**	-	-	-	470	-	-	-	-	-	-	-	-	-	-	-	-	***0.086***	-	-	-	-	-	<0.01	-	-	15	<0.001	-	-	-	-	-	-
FRP_01 Jan 06_-	FRP	1/01/2006	water	**8.03**	-	-	-	572	-	-	-	-	-	-	-	-	-	-	-	-	***0.118***	-	-	-	-	-	0.058	-	-	24	0.001	-	<0.001	0.002	<0.001	-	-
FRP_01 Apr 06_-	FRP	1/04/2006	water	7.51	-	-	-	712	-	-	-	-	-	-	-	-	-	-	-	-	***0.074***	-	-	-	-	-	<0.01	-	-	26	0.001	-	-	-	-	-	-
FRP_01 Jul 06_-	FRP	1/07/2006	water	7.7	-	-	-	590	-	-	-	-	-	-	-	-	-	-	-	-	***0.027***	-	-	-	-	-	<0.01	-	-	20	<0.001	-	-	-	-	-	-
FRP_01 Oct 06_-	FRP	1/10/2006	water	7.66	-	-	-	528	-	-	-	-	-	-	-	-	-	-	-	-	***0.015***	-	-	-	-	-	<0.01	-	-	16	<0.001	-	-	-	-	-	-
FRP_01 Jan 07_-	FRP	1/01/2007	water	7.69	-	-	-	608	-	-	-	-	-	-	-	-	-	-	-	-	**0.011**	-	-	-	-	-	0.013	-	-	26	<0.001	-	<0.001	0.001	<0.001	-	-
FRP_01 Apr 07_-	FRP	1/04/2007	water	7.6	-	-	-	642	-	-	-	300	-	67	25	11	125	186	48	-	11.2	12.2	***0.08***	0.021	<0.01	-	-	-	-	-	-	27	<0.001	-	-	-	-	-	-
Lot 1124_01 Jan 98_-	Lot 1124	1/01/1998	water	-	-	-	-	474	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	9.9	0.09	-	-	21	0.002	-	<0.001	0.002	<0.001	-	-
Lot 1124_01 Jul 98_-	Lot 1124	1/07/1998	water	-	-	-	-	444	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.5	0.43	-	-	7	0.006	-	<0.001	<0.001	0.002	-	-
Lot 1124_01 Oct 98_-	Lot 1124	1/10/1998	water	-	-	-	-	412	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	-	-	0.4	0.48	-	-	8	<0.001	-	<0.001	0.001	<0.001	-	-
Lot 1124_01 Jan 99_-	Lot 1124	1/01/1999	water	***8.5***	**754**	-	-	432	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.3	0.08	-	-	6	0.008	-	<0.001	0.003	<0.001	-	-
Lot 1124_01 Jul 99_-	Lot 1124	1/07/1999	water	**8.3**	-	-	-	390	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	0.15	-	-	7	0.009	-	0.002	0.001	<0.001	-	-
Lot 1124_01 Oct 99_-	Lot 1124	1/10/1999	water	**8.4**	-	-	-	394	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.5	0.12	-	-	8	0.008	-	0.001	0.007	<0.001	-	-
Lot 1124_01 Apr 00_-	Lot 1124	1/04/2000	water	7.1	**690**	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	-	-	0.9	0.09	-	-	9	0.009	-	0.003	0.001	<0.001	-	-
Lot 1124_01 Jul 00_-	Lot 1124	1/07/2000	water	7.6	**670**	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.2	0.13	-	-	6	0.01	-	0.002	0.002	0.003	-	-
Lot 1124_01 Oct 00_-	Lot 1124	1/10/2000	water	7.7	**690**	-	-	430	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.8	0.1	-	-	6	0.007	-	0.001	0.001	<0.001	-	-
Lot 1124_01 Jan 01_-	Lot 1124	1/01/2001	water	***8.5***	**680**	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.3	<0.01	-	-	8	0.009	-	0.005	0.002	<0.001	-	-
Lot 1124_01 Apr 01_-	Lot 1124	1/04/2001	water	**8.3**	**680**	-	-	450	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	-	-	0.5	0.01	-	-	6	0.009	-	<0.001	0.001	<0.001	-	-
Lot 1124_01 Jul 01_-	Lot 1124	1/07/2001	water	**8.1**	**680**	-	-	390	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.4	0.05	-	-	6	0.008	-	0.002	0.002	<0.001	-	-
Lot 1124_01 Oct 01_-	Lot 1124	1/10/2001	water	**8.2**	**650**	-	-	390	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.4	0.02	-	-	5	0.004	-	<0.001	0.001	<0.001	-	-
Lot 1124_01 Jan 02_-	Lot 1124	1/01/2002	water	**8.3**	**730**	-	-	430	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.5	<0.01	-	-	5	<0.001	-	<0.001	0.001	<0.001	-	-

	Field Parameters		Inorganics					Cyanide	Acidity & Alkalinity		Major Ions										Nutrients							Organic Indicators		Metals						
	pH (Field)	Electrical conductivity (field)	pH (Lab)	Total Dissolved Solids	Total Dissolved Solids (Filtered)	Total Suspended Solids	COD	Cyanide (Total)	Alkalinity (total as CaCO3)	Hardness as CaCO3	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Phosphorus (Total)	BOD	Dissolved Organic Carbon (Filtered)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Molybdenum
	pH units	µS/cm	pH units	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	mg/L	meq/L	meq/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	mg/L	mg/L	mg/L	mg/L
LOR			0.1	10		1	25	0.005		5	0.5	0.5	0.5	0.5	1	5	0.5			0.01	0.02	0.02	0.05	0.2	0.2		0.01	5		0.001	0.0002	0.001	0.001	0.001	0.0001	0.005
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine	*7-8.5*		*7-8.5*			*0.5*														*0.015*[#1]			*0.015*	*0.3*			*0.03*							
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs	**6.5-8**	**20-30**	**6.5-8**			**5**														**0.01**[#1]			**0.01**	**0.35**			**0.01**							
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)								0.007[#2]												0.9[#3]									0.013[#4]	0.0002	0.001[#5]	0.0014	0.0034	0.0006	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																			0.034
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.004[#2]												0.91[#6]										0.0055	0.0044[#7]	0.0013	0.0044	0.0004	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																			
Sample ID	**Location Code**	**Date**	**Matrix Type**																																	
Lot 1124_01 Apr 02_-_	Lot 1124	1/04/2002	water	**8.2**	**650**	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.3	<0.01	-	-	6	0.003	-	<0.001	<0.001	<0.001	-	-
Lot 1124_01 Jul 02_-_	Lot 1124	1/07/2002	water	**8.1**	**620**	-	-	370	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.3	0.12	-	-	3	0.005	-	<0.001	<0.001	<0.001	-	-
Lot 1124_01 Oct 02_-_	Lot 1124	1/10/2002	water	**8.4**	**670**	-	-	390	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	-	0.4	0.11	-	-	4	0.005	-	0.002	0.002	<0.001	-	-
Lot 1124_01 Jan 03_-_	Lot 1124	1/01/2003	water	**8.14**	**620**	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	-	-	0.4	0.03	-	-	6	0.005	-	<0.001	0.002	<0.001	-	-
Lot 1124_01 Apr 03_-_	Lot 1124	1/04/2003	water	**8.17**	**738**	-	-	452	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.3	<0.01	-	-	14	0.006	-	<0.001	0.001	<0.001	-	-
Lot 1124_01 Jul 03_-_	Lot 1124	1/07/2003	water	**8.08**	**660**	-	-	390	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.2	0.39	-	-	7	0.005	-	<0.001	0.001	<0.001	-	-
Lot 1124_01 Oct 03_-_	Lot 1124	1/10/2003	water	**8.16**	**681**	-	-	510	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	-	-	0.3	0.46	-	-	7	0.006	-	<0.001	0.001	<0.001	-	-
Lot 1124_01 Jan 04_-_	Lot 1124	1/01/2004	water	**8.4**	**726**	-	-	460	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.5	0.36	-	-	11	0.003	-	0.001	0.002	<0.001	-	-
Lot 1124_01 Apr 04_-_	Lot 1124	1/04/2004	water	**8.18**	-	-	-	384	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	-	-	-	0.43	-	-	7	0.007	-	-	-	-	-	-
Lot 1124_01 Jul 04_-_	Lot 1124	1/07/2004	water	**8.09**	-	-	-	466	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	0.35	-	-	<1	0.012	-	-	-	-	-	-
Lot 1124_01 Oct 04_-_	Lot 1124	1/10/2004	water	**8.11**	-	-	-	496	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.15***	-	-	-	-	-	0.33	-	-	9	0.007	-	-	-	-	-	-
Lot 1124_01 Jan 05_-_	Lot 1124	1/01/2005	water	**8.27**	-	-	-	542	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.298***	-	-	-	-	-	0.205	-	-	7	0.03	-	<0.01	<0.01	<0.01	-	-
Lot 1124_01 Apr 05_-_	Lot 1124	1/04/2005	water	7.95	-	-	-	446	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.071***	-	-	-	-	-	0.107	-	-	6	0.01	-	-	-	-	-	-
Lot 1124_01 Jul 05_-_	Lot 1124	1/07/2005	water	**8.25**	-	-	-	460	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.034***	-	-	-	-	-	0.291	-	-	7	0.006	-	-	-	-	-	-
Lot 1124_01 Oct 05_-_	Lot 1124	1/10/2005	water	***8.61***	-	-	-	492	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.042***	-	-	-	-	-	0.093	-	-	4	0.005	-	-	-	-	-	-
Lot 1124_01 Jan 06_-_	Lot 1124	1/01/2006	water	**8.28**	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.041***	-	-	-	-	-	<0.01	-	-	6	0.004	-	<0.001	0.001	<0.001	-	-
Lot 1124_01 Apr 06_-_	Lot 1124	1/04/2006	water	**8.12**	-	-	-	506	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.095***	-	-	-	-	-	0.01	-	-	7	0.002	-	-	-	-	-	-
Lot 1124_01 Jul 06_-_	Lot 1124	1/07/2006	water	**8.15**	-	-	-	494	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.021***	-	-	-	-	-	<0.01	-	-	9	0.002	-	-	-	-	-	-
Lot 1124_01 Oct 06_-_	Lot 1124	1/10/2006	water	**8.1**	-	-	-	508	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.011**	-	-	-	-	-	0.013	-	-	7	0.002	-	-	-	-	-	-
Lot 1124_01 Jan 07_-_	Lot 1124	1/01/2007	water	***8.5***	-	-	-	532	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	0.064	-	-	6	0.002	-	<0.001	0.001	<0.001	-	-
Lot 1124_01 Apr 07_-_	Lot 1124	1/04/2007	water	7.98	-	-	-	580	-	-	114	-	80	17	6	56	92.3	164	-	7.98	8.3	***0.094***	<0.01	<0.01	-	-	-	-	-	-	8	0.002	-	-	-	-	-	-
S20-Jn21405	SW1	11/06/2020	water	-	-	**8**	170	-	***14***	<25		-	77	22	5.7	1.3	22	20	36	<0.5	-	-	***0.05***	2.1	0.03	***2.2***	***2.6***	0.4	-	***0.03***	<5	-	<0.001	<0.0002	0.002	0.007	<0.001	<0.0001	<0.005
S20-Jn21410	SW1	11/06/2020	water	-	-	7.9	150	-	***10***	<25		-	79	22	6	1.3	22	21	35	<0.5	-	-	***0.06***	2.1	0.03	***2.1***	***2.4***	0.3	-	<0.01	<5	-	<0.001	<0.0002	0.002	0.008	<0.001	<0.0001	<0.005
S20-Jn21406	SW2	11/06/2020	water	-	-	7.9	320	-	***41***	<25		-	180	58	8.4	4.1	33	47	98	<0.5	-	-	***0.05***	0.12	<0.02	***0.14***	***0.74***	0.6	-	<0.01	<5	-	0.002	<0.0002	0.003	0.003	<0.001	<0.0001	<0.005
S20-Jn21407	SW3	11/06/2020	water	-	-	7.9	380	-	***26***	<25		-	200	65	8.8	5.2	34	51	99	<0.5	-	-	***0.16***	0.23	0.03	***0.26***	***1.16***	0.9	-	**0.01**	<5	-	0.004	<0.0002	0.003	0.003	0.003	<0.0001	0.007
S20-Jn21408	SW4	11/06/2020	water	-	-	**8.2**	1400	-	***50***	270	0.007	-	410	95	42	60	230	340	230	<0.5	-	-	***87***	<1	<1		***96***	96	-	**0.02**	<5	-	0.004	<0.0002	0.012	0.009	0.004	<0.0001	<0.005
S20-Jn21409	SW5	11/06/2020	water	-	-	7.9	270	-	***42***	<25		-	170	58	4.6	3.1	20	28	120	<0.5	-	-	***0.04***	0.14	<0.02	***0.14***	***0.74***	0.6	-	**0.01**	<5	-	0.001	<0.0002	0.003	0.005	0.005	<0.0001	<0.005
WWP_01 Jan 98_-_	WWP	1/01/1998	water	-	-	-	-	870	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.6	0.47	-	-	8	0.006	-	<0.001	0.005	<0.001	-	-
WWP_01 Jul 98_-_	WWP	1/07/1998	water	-	-	-	-	862	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.01**	-	-	-	-	0.7	<0.01	-	-	16	0.005	-	<0.001	0.01	0.001	-	-
WWP_01 Oct 98_-_	WWP	1/10/1998	water	-	-	-	-	436	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.04***	-	-	-	-	0.6	0.1	-	-	9	<0.001	-	<0.001	0.008	<0.001	-	-
WWP_01 Jan 99_-_	WWP	1/01/1999	water	***8.8***	**887**	-	-	609	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.4	<0.01	-	-	28	0.006	-	0.004	0.005	<0.001	-	-
WWP_01 Jul 99_-_	WWP	1/07/1999	water	**8.2**	-	-	-	603	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.5	<0.01	-	-	9	0.003	-	0.003	0.008	<0.001	-	-
WWP_01 Oct 99_-_	WWP	1/10/1999	water	**8.3**	-	-	-	612	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.1***	-	-	-	-	0.9	<0.01	-	-	12	0.005	-	0.004	0.008	<0.001	-	-
WWP_01 Apr 00_-_	WWP	1/04/2000	water	7.8	**1200**	-	-	850	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	-	-	0.6	0.05	-	-	10	0.005	-	0.003	0.006	<0.001	-	-
WWP_01 Jul 00_-_	WWP	1/07/2000	water	**8.1**	**1500**	-	-	1000	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	-	-	1.6	0.09	-	-	12	0.004	-	0.003	0.012	<0.001	-	-
WWP_01 Oct 00_-_	WWP	1/10/2000	water	7.6	**1700**	-	-	1200	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.02***	-	-	-	-	1.2	0.01	-	-	13	0.004	-	0.002	0.007	<0.001	-	-
WWP_01 Jan 01_-_	WWP	1/01/2001	water	7.8	**1600**	-	-	1100	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.07***	-	-	-	-	1.2	<0.01	-	-	19	0.008	-	0.006	0.004	<0.001	-	-
WWP_01 Apr 01_-_	WWP	1/04/2001	water	**8.1**	**1400**	-	-	940	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	-	-	1.2	0.01	-	-	12	0.005	-	0.001	0.007	<0.001	-	-
WWP_01 Jul 01_-_	WWP	1/07/2001	water	7.9	**780**	-	-	530	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.03***	-	-	-	-	0.7	0.03	-	-	9	0.002	-	0.002	0.006	<0.001	-	-
WWP_01 Oct 01_-_	WWP	1/10/2001	water	**8.1**	**1200**	-	-	650	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	0.5	<0.01	-	-	8	0.003	-	<0.001	0.006	<0.001	-	-
WWP_01 Jan 02_-_	WWP	1/01/2002	water	7.8	**1900**	-	-	1200	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.07***	-	-	-	-	1.2	0.41	-	-	13	<0.001	-	<0.001	0.004	<0.001	-	-
WWP_01 Apr 02_-_	WWP	1/04/2002	water	**8.3**	**870**	-	-	540	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	1.2	0.15	-	-	9	0.002	-	<0.001	0.005	<0.001	-	-
WWP_01 Jul 02_-_	WWP	1/07/2002	water	**8.1**	**960**	-	-	740	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	0.2	-	-	8	0.003	-	<0.001	0.006	<0.001	-	-
WWP_01 Oct 02_-_	WWP	1/10/2002	water	**8.1**	**1400**	-	-	1100	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	-	-	1.2	0.08	-	-	11	0.004	-	0.002	0.005	<0.001	-	-
WWP_01 Jan 03_-_	WWP	1/01/2003	water	7.95	**1400**	-	-	950	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.14***	-	-	-	-	-	0.08	-	-	12	0.005	-	<0.001	0.006	<0.001	-	-
WWP_01 Apr 03_-_	WWP	1/04/2003	water	**8.08**	**1650**	-	-	1280	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.23***	-	-	-	-	1.3	0.17	-	-	23	0.005	-	<0.001	0.006	<0.001	-	-
WWP_01 Jul 03_-_	WWP	1/07/2003	water	**8.05**	**1170**	-	-	878	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.23***	-	-	-	-	1.8	0.65	-	-	23	0.002	-	<0.001	0.008	<0.001	-	-
WWP_01 Oct 03_-_	WWP	1/10/2003	water	**8.16**	**1350**	-	-	740	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.06***	-	-	-	-	1.1	0.19	-	-	16	0.003	-	<0.001	0.007	<0.001	-	-
WWP_01 Jan 04_-_	WWP	1/01/2004	water	**8.2**	**1430**	-	-	1110	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.05***	-	-	-	-	1.3	0.02	-	-	20	0.005	-	0.001	0.005	<0.001	-	-
WWP_01 Apr 04_-_	WWP	1/04/2004	water	**8.17**	-	-	-	956	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.11***	-	-	-	-	-	0.02	-	-	16	0.005	-	-	-	-	-	-
WWP_01 Jul 04_-_	WWP	1/07/2004	water	**8.06**	-	-	-	1060	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.08***	-	-	-	-	-	0.09	-	-	13	0.003	-	-	-	-	-	-
WWP_01 Oct 04_-_	WWP	1/10/2004	water	**8.32**	-	-	-	806	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.42***	-	-	-	-	-	1.02	-	-	16	0.002	-	-	-	-	-	-
WWP_01 Jan 05_-_	WWP	1/01/2005	water	**8.03**	-	-	-	1150	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.36***	-	-	-	-	-	0.041	-	-	14	0.02	-	<0.01	<0.01	<0.01	-	-
WWP_01 Apr 05_-_	WWP	1/04/2005	water	**8.08**	-	-	-	956	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.114***	-	-	-	-	-	0.148	-	-	14	0.003	-	-	-	-	-	-
WWP_01 Jul 05_-_	WWP	1/07/2005	water	**8.27**	-	-	-	790	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.087***	-	-	-	-	-	0.993	-	-	13	0.002	-	-	-	-	-	-
WWP_01 Oct 05_-_	WWP	1/10/2005	water	**8.09**	-	-	-	1030	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.139***	-	-	-	-	-	0.235	-	-	10	0.003	-	-	-	-	-	-
WWP_01 Jan 06_-_	WWP	1/01/2006	water	**8.24**	-	-	-	1070	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.046***	-	-	-	-	-	<0.01	-	-	17	0.003	-	<0.001	0.009	<0.001	-	-
WWP_01 Apr 06_-_	WWP	1/04/2006	water	7.84	-	-	-	1140	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.235***	-	-	-	-	-	0.18	-	-	16	0.004	-	-	-	-	-	-
WWP_01 Jun 06_-_	WWP	1/06/2006	water	**8**	-	-	-	528	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.043***	-	-	-	-	-	0.485	-	-	11	0.002	-	-	-	-	-	-
WWP_01 Oct 06_-_	WWP	1/10/2006	water	**8.03**	-	-	-	508	-	-	-	-	-	-	-	-	-	-	-	-	-	***0.113***	-	-	-	-	-	0.117	-	-	10	0.002	-	-	-	-	-	-

Appendix B Table B6 - Historical surface water results - ecological assessment criteria

	Field Parameters		Inorganics					Cyanide	Acidity & Alkalinity		Major Ions									Nutrients								Organic Indicators		Metals						
	pH (Field)	Electrical conductivity (field)	pH (Lab)	Total Dissolved Solids	Total Dissolved Solids (Filtered)	Total Suspended Solids	COD	Cyanide (Total)	Alkalinity (total as CaCO3)	Hardness as CaCO3	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Cations Total	Anions Total	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Nitrate (as NO3-)	Phosphorus (Total)	BOD	Dissolved Organic Carbon (Filtered)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Molybdenum
	pH units	µS/cm	pH units	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	mg/L	meq/L	meq/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	mg/L	mg/L	mg/L	mg/L	mg/L
LOR			0.1	10		1	25	0.005		5	0.5	0.5	0.5	0.5	1	5	0.5			0.01	0.02	0.02	0.05	0.2	0.2		0.01	5		0.001	0.0002	0.001	0.001	0.001	0.0001	0.005
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine	*7-8.5*		*7-8.5*			*0.5*														*0.015*[#1]			*0.015*	*0.3*			*0.03*								
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs	**6.5-8**	**20-30**	**6.5-8**			**5**														**0.01**[#1]			**0.01**	**0.35**			**0.01**								
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)								0.007[#2]												0.9[#3]									0.013[#4]	0.0002	0.001[#5]	0.0014	0.0034	0.0006	
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																			0.034
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)								0.004[#2]												0.91[#6]										0.0055	0.0044[#7]	0.0013	0.0044	0.0004	
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)																																			

Sample ID	Location Code	Date	Matrix Type																																	
WWP_01 Jan 07_-	WWP	1/01/2007	water	**8.03**	-	-	-	842	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	0.048	-	-	12	0.005	-	<0.001	0.004	<0.001	-	-
WWP_01 Apr 07_-	WWP	1/04/2007	water	7.78	-	-	-	968	-	-	-	226	-	173	17	14	94	92.5	370	-	14.5	14.8	***0.145***	0.017	<0.01	-	-	-	-	-	-	17	0.003	-	-	-	-	-	-

Statistical Summary

Number of Results	105	58	6	6	117	6	6	6	3	6	9	9	9	9	9	9	6	3	3	123	9	9	6	6	81	113	6	6	117	123	6	93	93	6	6
Number of Detects	105	58	6	6	117	6	1	1	3	6	9	9	9	9	9	9	0	3	3	79	7	3	5	6	81	77	4	0	116	107	0	47	79	11	0	1
Minimum Concentration	7.1	606	7.9	150	370	10	<25	<0.005	114	77	22	4.6	1.3	20	20	35	<0.5	7.98	8.3	<0.01	<0.01	<0.01	0.14	0.74	0.2	<0.01	<0.01	<5	<1	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.005
Minimum Detect	7.1	606	7.9	150	370	10	270	0.007	114	77	22	4.6	1.3	20	20	35	ND	7.98	8.3	0.01	0.017	0.03	0.14	0.74	0.2	0.01	0.01	ND	3	0.001	ND	0.001	0.001	0.001	ND	0.007
Maximum Concentration	9.4	1900	8.2	1400	1670	50	270	0.007	300	410	173	42	60	230	340	370	<0.5	14.5	14.8	87	2.1	<1	<2.5	96	96	25	0.03	<5	67	0.04	<0.0002	0.014	0.012	<0.01	<0.0001	0.007
Maximum Detect	9.4	1900	8.2	1400	1670	50	270	0.007	300	410	173	42	60	230	340	370	ND	14.5	14.8	87	2.1	0.03	2.2	96	96	25	0.03	ND	67	0.04	ND	0.014	0.012	0.005	ND	0.007
Average Concentration	8.1	949	8	448	624	31	55	0.0033	213	186	71	15	12	71	98	133	0.25	11	12	0.8	0.58	0.069	1	17	2.3	0.36	0.013	2.5	13	0.0045	0.0001	0.0019	0.0035	0.00088	0.00005	0.0033
Median Concentration	8.1	855	7.9	295	528	33.5	12.5	0.0025	226	175	65	8.8	5.2	34	51	99	0.25	11.2	12.2	0.03	0.14	0.01	0.755	1.78	0.9	0.04	0.01	2.5	12	0.003	0.0001	0.001	0.003	0.0005	0.00005	0.0025
Standard Deviation	0.35	330	0.12	474	252	16	105	0.0018	94	122	45	12	19	70	105	109	0	3.3	3.3	7.8	0.87	0.16	0.97	39	11	2.4	0.0098	0	8.9	0.005	0	0.0022	0.0028	0.0011	0	0.0018
Number of Guideline Exceedances	#VALUE!	######	#VALUE!	#####	#####	#####	#####	#VALUE!	#VALUE!	#VALUE!	#####	#####	#####	#####	#####	#####	#####	#####	#####	#VALUE!	#####	#####	#####	#####	#####	#####	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Number of Guideline Exceedances(Detects Only)	#VALUE!	######	#VALUE!	#####	#####	#####	#####	#VALUE!	#VALUE!	#VALUE!	#####	#####	#####	#####	#####	#####	#####	#####	#####	#VALUE!	#####	#####	#####	#####	#####	#####	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!

Env Stds Comments

#1:assumed same as NH4
#2:Cyanide as un-ionised HCN, measured as [CN].
#3:Measured as NH3-N at pH 8
#4:In absence of total As guideline, As (V) guideline has been adopted.
#5:Guideline for Cr (VI) adopted
#6:Ammonia as total ammonia, measured as [NH3-N] at pH 8.
#7:In absence of total Cr guideline, Cr (VI) guideline has been adopted.
#8:Freshwater DGV adopted (insufficient marine toxicity data)

	Metals					BTEXN							TRH - NEPM 2013							TRH - NEPM 1999					PAHs - standard 16													PAHs - standard 16					
	Nickel	Selenium	Silver	Tin	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN suite)	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo[b+j]fluoranthene	Benzo(k)Fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4'-DDE	a-BHC
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR	0.001	0.001	0.005	0.005	0.005	1	1	1	1	2	3	10	20	20	50	50	100	100	100	20	50	100	100	100	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.1	0.1
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)	0.011	0.011	0.00005		0.008	950	180	80	350			16															0.4		0.2						1.4			16	2						
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																												
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.07		0.0014		0.015	700	180	80				70																	0.2						1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)									350																																			

Sample ID	Location Code	Date	Matrix Type																																											
CRP_01 Jan 98_-	CRP	1/01/1998	water	-	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jul 98_-	CRP	1/07/1998	water	-	-	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Oct 98_-	CRP	1/10/1998	water	-	-	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jan 99_-	CRP	1/01/1999	water	-	-	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jul 99_-	CRP	1/07/1999	water	-	-	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Oct 99_-	CRP	1/10/1999	water	-	-	-	-	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Apr 00_-	CRP	1/04/2000	water	-	-	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jul 00_-	CRP	1/07/2000	water	-	-	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Oct 00_-	CRP	1/10/2000	water	-	-	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jan 01_-	CRP	1/01/2001	water	-	-	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Apr 01_-	CRP	1/04/2001	water	-	-	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 98_-	FRP	1/01/1998	water	-	-	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 98_-	FRP	1/07/1998	water	-	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 98_-	FRP	1/10/1998	water	-	-	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 99_-	FRP	1/01/1999	water	-	-	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 99_-	FRP	1/07/1999	water	-	-	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 99_-	FRP	1/10/1999	water	-	-	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 00_-	FRP	1/01/2000	water	-	-	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 00_-	FRP	1/04/2000	water	-	-	-	-	0.048	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 00_-	FRP	1/07/2000	water	-	-	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 00_-	FRP	1/10/2000	water	-	-	-	-	<0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 01_-	FRP	1/01/2001	water	-	-	-	-	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 01_-	FRP	1/04/2001	water	-	-	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 01_-	FRP	1/07/2001	water	-	-	-	-	0.044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 01_-	FRP	1/10/2001	water	-	-	-	-	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 02_-	FRP	1/01/2002	water	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 02_-	FRP	1/04/2002	water	-	-	-	-	0.271	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 02_-	FRP	1/07/2002	water	-	-	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 02_-	FRP	1/10/2002	water	-	-	-	-	0.031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 03_-	FRP	1/01/2003	water	-	-	-	-	0.055	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 03_-	FRP	1/04/2003	water	-	-	-	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 03_-	FRP	1/07/2003	water	-	-	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 03_-	FRP	1/10/2003	water	-	-	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 04_-	FRP	1/01/2004	water	-	-	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 04_-	FRP	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 04_-	FRP	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 04_-	FRP	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 05_-	FRP	1/01/2005	water	-	-	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 05_-	FRP	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 05_-	FRP	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 05_-	FRP	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 06_-	FRP	1/01/2006	water	-	-	-	-	0.031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 06_-	FRP	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 06_-	FRP	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 06_-	FRP	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 07_-	FRP	1/01/2007	water	-	-	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 07_-	FRP	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 98_-	Lot 1124	1/01/1998	water	-	-	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 98_-	Lot 1124	1/07/1998	water	-	-	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 98_-	Lot 1124	1/10/1998	water	-	-	-	-	0.018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 99_-	Lot 1124	1/01/1999	water	-	-	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 99_-	Lot 1124	1/07/1999	water	-	-	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 99_-	Lot 1124	1/10/1999	water	-	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 00_-	Lot 1124	1/04/2000	water	-	-	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 00_-	Lot 1124	1/07/2000	water	-	-	-	-	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 00_-	Lot 1124	1/10/2000	water	-	-	-	-	<0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 01_-	Lot 1124	1/01/2001	water	-	-	-	-	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 01_-	Lot 1124	1/04/2001	water	-	-	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 01_-	Lot 1124	1/07/2001	water	-	-	-	-	0.034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 01_-	Lot 1124	1/10/2001	water	-	-	-	-	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 02_-	Lot 1124	1/01/2002	water	-	-	-	-	0.021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B6 - Historical surface water results - ecological assessment criteria

	Metals					BTEXN							TRH - NEPM 2013							TRH - NEPM 1999					PAHs - standard 16														PAHs - standard 16					
	Nickel	Selenium	Silver	Tin	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN suite)	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo[b+j]fluoranthene	Benzo[k]fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4'-DDE	a-BHC
	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	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
LOR	0.001	0.001	0.005	0.005	0.005	1	1	1	1	2	3	10	20	20	50	50	100	100	100	20	50	100	100	100	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.1	0.1
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																													
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																													
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)	0.011	0.011	0.00005		0.008	950	180	80	350			16															0.4		0.2						1.4			16	2						
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																													
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.07		0.0014		0.015	700	180	80				70																	0.2						1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)									350																																				

Sample ID	Location Code	Date	Matrix Type																																														
Lot 1124_01 Apr 02_-	Lot 1124	1/04/2002	water	-	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 02_-	Lot 1124	1/07/2002	water	-	-	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 02_-	Lot 1124	1/10/2002	water	-	-	-	-	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 03_-	Lot 1124	1/01/2003	water	-	-	-	-	0.042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 03_-	Lot 1124	1/04/2003	water	-	-	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 03_-	Lot 1124	1/07/2003	water	-	-	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 03_-	Lot 1124	1/10/2003	water	-	-	-	-	0.042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 04_-	Lot 1124	1/01/2004	water	-	-	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 04_-	Lot 1124	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 04_-	Lot 1124	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 04_-	Lot 1124	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 05_-	Lot 1124	1/01/2005	water	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 05_-	Lot 1124	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 05_-	Lot 1124	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 05_-	Lot 1124	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 06_-	Lot 1124	1/01/2006	water	-	-	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 06_-	Lot 1124	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 06_-	Lot 1124	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 06_-	Lot 1124	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 07_-	Lot 1124	1/01/2007	water	-	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 07_-	Lot 1124	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S20-Jn21405	SW1	11/06/2020	water	0.001	<0.001	<0.005	<0.005	<0.005	<1	<1	<1	<1	<2	<3	<10	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1
S20-Jn21410	SW1	11/06/2020	water	0.001	<0.001	<0.005	<0.005	<0.005	<1	<1	<1	<1	<2	<3	<10	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1
S20-Jn21406	SW2	11/06/2020	water	0.002	<0.001	<0.005	<0.005	0.006	<1	<1	<1	<1	<2	<3	<10	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1
S20-Jn21407	SW3	11/06/2020	water	0.002	<0.001	<0.005	<0.005	0.005	<1	<1	<1	<1	<2	<3	<10	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1
S20-Jn21408	SW4	11/06/2020	water	0.008	<0.001	<0.005	<0.005	0.015	<1	<1	<1	<1	<2	<3	<10	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1
S20-Jn21409	SW5	11/06/2020	water	0.002	<0.001	<0.005	<0.005	0.01	<1	<1	<1	<1	<2	<3	<10	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1
WWP_01 Jan 98_-	WWP	1/01/1998	water	-	-	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 98_-	WWP	1/07/1998	water	-	-	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 98_-	WWP	1/10/1998	water	-	-	-	-	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 99_-	WWP	1/01/1999	water	-	-	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 99_-	WWP	1/07/1999	water	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 99_-	WWP	1/10/1999	water	-	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 00_-	WWP	1/04/2000	water	-	-	-	-	0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 00_-	WWP	1/07/2000	water	-	-	-	-	0.016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 00_-	WWP	1/10/2000	water	-	-	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 01_-	WWP	1/01/2001	water	-	-	-	-	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 01_-	WWP	1/04/2001	water	-	-	-	-	0.021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 01_-	WWP	1/07/2001	water	-	-	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 01_-	WWP	1/10/2001	water	-	-	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 02_-	WWP	1/01/2002	water	-	-	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 02_-	WWP	1/04/2002	water	-	-	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 02_-	WWP	1/07/2002	water	-	-	-	-	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 02_-	WWP	1/10/2002	water	-	-	-	-	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 03_-	WWP	1/01/2003	water	-	-	-	-	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 03_-	WWP	1/04/2003	water	-	-	-	-	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 03_-	WWP	1/07/2003	water	-	-	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 03_-	WWP	1/10/2003	water	-	-	-	-	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 04_-	WWP	1/01/2004	water	-	-	-	-	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 04_-	WWP	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 04_-	WWP	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 04_-	WWP	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 05_-	WWP	1/01/2005	water	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 05_-	WWP	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 05_-	WWP	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 05_-	WWP	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 06_-	WWP	1/01/2006	water	-	-	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 06_-	WWP	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jun 06_-	WWP	1/06/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 06_-	WWP	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B6 - Historical surface water results - ecological assessment criteria

	Metals					BTEXN							TRH - NEPM 2013							TRH - NEPM 1999					PAHs - standard 16														PAHs - standard 16					
	Nickel	Selenium	Silver	Tin	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN suite)	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo[b+j]fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4'-DDE	a-BHC
	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR	0.001	0.001	0.005	0.005	0.005	1	1	1	1	2	3	10	20	20	50	50	100	100	100	20	50	100	100	100	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.1	0.1
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																																												
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																																												
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)	0.011	0.011	0.00005		0.008	950	180	80	350			16															0.4		0.2						1.4			16	2						
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)																																												
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)	0.07		0.0014		0.015	700	180	80				70																	0.2						1.4			70	2						
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)									350																																			

| Sample ID | Location Code | Date | Matrix Type | | | | | | | | | | | | | | | | | | |

Appendix B Table B6 - Historical surface water results - ecological assessment criteria

	OC Pesticides																					PCBs							
	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
	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
LOR	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	1	1	1	1	1	1	1	1
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																													
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																													
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)				0.08			0.01						0.02			0.2	0.09		0.1		0.2				0.6		0.03		
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.001								0.01											0.005									
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)													0.008						0.1										
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)	0.003			0.001			0.0004		0.01[#8]							0.007	0.0004			0.004	0.0006				0.3		0.01		

Sample ID	Location Code	Date	Matrix Type																												
CRP_01 Jan 98_-	CRP	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jul 98_-	CRP	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Oct 98_-	CRP	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jan 99_-	CRP	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jul 99_-	CRP	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Oct 99_-	CRP	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Apr 00_-	CRP	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jul 00_-	CRP	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Oct 00_-	CRP	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Jan 01_-	CRP	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRP_01 Apr 01_-	CRP	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 98_-	FRP	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 98_-	FRP	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 98_-	FRP	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 99_-	FRP	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 99_-	FRP	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 99_-	FRP	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 00_-	FRP	1/01/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 00_-	FRP	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 00_-	FRP	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 00_-	FRP	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 01_-	FRP	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 01_-	FRP	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 01_-	FRP	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 01_-	FRP	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 02_-	FRP	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 02_-	FRP	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 02_-	FRP	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 02_-	FRP	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 03_-	FRP	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 03_-	FRP	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 03_-	FRP	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 03_-	FRP	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 04_-	FRP	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 04_-	FRP	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 04_-	FRP	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 04_-	FRP	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 05_-	FRP	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 05_-	FRP	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 05_-	FRP	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 05_-	FRP	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 06_-	FRP	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 06_-	FRP	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jul 06_-	FRP	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Oct 06_-	FRP	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Jan 07_-	FRP	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRP_01 Apr 07_-	FRP	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 98_-	Lot 1124	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 98_-	Lot 1124	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 98_-	Lot 1124	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 99_-	Lot 1124	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 99_-	Lot 1124	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 99_-	Lot 1124	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 00_-	Lot 1124	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 00_-	Lot 1124	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 00_-	Lot 1124	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 01_-	Lot 1124	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 01_-	Lot 1124	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 01_-	Lot 1124	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 01_-	Lot 1124	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 02_-	Lot 1124	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B6 - Historical surface water results - ecological assessment criteria

				OC Pesticides																				PCBs							
				Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
				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
LOR				0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	1	1	1	1	1	1	1	1
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																															
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																															
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)							0.08			0.01						0.02			0.2	0.09		0.1		0.2				0.6		0.03		
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)				0.001								0.01											0.005								
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)																0.008						0.1										
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)				0.003			0.001			0.0004		0.01[#8]							0.007	0.0004			0.004	0.0006				0.3		0.01		
Sample ID	**Location Code**	**Date**	**Matrix Type**																													
Lot 1124_01 Apr 02_-	Lot 1124	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 02_-	Lot 1124	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 02_-	Lot 1124	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 03_-	Lot 1124	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 03_-	Lot 1124	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 03_-	Lot 1124	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 03_-	Lot 1124	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 04_-	Lot 1124	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 04_-	Lot 1124	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 04_-	Lot 1124	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 04_-	Lot 1124	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 05_-	Lot 1124	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 05_-	Lot 1124	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 05_-	Lot 1124	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 05_-	Lot 1124	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 06_-	Lot 1124	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 06_-	Lot 1124	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jul 06_-	Lot 1124	1/07/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Oct 06_-	Lot 1124	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Jan 07_-	Lot 1124	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 1124_01 Apr 07_-	Lot 1124	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S20-Jn21405	SW1	11/06/2020	water	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
S20-Jn21410	SW1	11/06/2020	water	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
S20-Jn21406	SW2	11/06/2020	water	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
S20-Jn21407	SW3	11/06/2020	water	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
S20-Jn21408	SW4	11/06/2020	water	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
S20-Jn21409	SW5	11/06/2020	water	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
WWP_01 Jan 98_-	WWP	1/01/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 98_-	WWP	1/07/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 98_-	WWP	1/10/1998	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 99_-	WWP	1/01/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 99_-	WWP	1/07/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 99_-	WWP	1/10/1999	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 00_-	WWP	1/04/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 00_-	WWP	1/07/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 00_-	WWP	1/10/2000	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 01_-	WWP	1/01/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 01_-	WWP	1/04/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 01_-	WWP	1/07/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 01_-	WWP	1/10/2001	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 02_-	WWP	1/01/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 02_-	WWP	1/04/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 02_-	WWP	1/07/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 02_-	WWP	1/10/2002	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 03_-	WWP	1/01/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 03_-	WWP	1/04/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 03_-	WWP	1/07/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 03_-	WWP	1/10/2003	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 04_-	WWP	1/01/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 04_-	WWP	1/04/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 04_-	WWP	1/07/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 04_-	WWP	1/10/2004	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 05_-	WWP	1/01/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 05_-	WWP	1/04/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jul 05_-	WWP	1/07/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 05_-	WWP	1/10/2005	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jan 06_-	WWP	1/01/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 06_-	WWP	1/04/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Jun 06_-	WWP	1/06/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Oct 06_-	WWP	1/10/2006	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B Table B6 - Historical surface water results - ecological assessment criteria

	OC Pesticides																					PCBs							
	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
	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
LOR	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	1	1	1	1	1	1	1	1
ANZECC 2000 South-east Australia (table 3.3.2) Estuarine																													
ANZECC 2000 South-east Australia (table 3.3.2) Freshwater lakes and reservoirs																													
ANZG (2018) - FW - 95% species protection (updated 15/10/2019)				0.08			0.01						0.02			0.2	0.09		0.1		0.2				0.6		0.03		
ANZG (2018) - FW - Unknown species protection (updated 15/10/2019)	0.001								0.01											0.005									
ANZG (2018) - MW - 95% species protection (updated 15/10/2019)													0.008						0.1										
ANZG (2018) - MW - Unknown species protection (updated 15/10/2019)	0.003			0.001			0.0004		0.01[#8]							0.007	0.0004			0.004	0.0006				0.3		0.01		
Sample ID	**Location Code**	**Date**	**Matrix Type**																											
WWP_01 Jan 07_-	WWP	1/01/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWP_01 Apr 07_-	WWP	1/04/2007	water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Statistical Summary																													
Number of Results	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<1	<1	<1	<1	<1	<1
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	0.05	0.05	0.05	0.5	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	0.05	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Median Concentration	0.05	0.05	0.05	0.5	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	0.05	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Standard Deviation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances	######	######	######	######	######	######	########	######	########	######	######	######	######	######	######	######	########	######	######	######	########	####	####	####	####	####	####	####	####
Number of Guideline Exceedances(Detects Only)	######	######	######	######	######	######	########	######	########	######	######	######	######	######	######	######	########	######	######	######	########	####	####	####	####	####	####	####	####

Env Stds Comments

#1:assumed same as NH4
#2:Cyanide as un-ionised HCN, measured as [CN].
#3:Measured as NH3-N at pH 8
#4:In absence of total As guideline, As (V) guideline has been adopted.
#5:Guideline for Cr (VI) adopted
#6:Ammonia as total ammonia, measured as [NH3-N] at pH 8.
#7:In absence of total Cr guideline, Cr (VI) guideline has been adopted.
#8:Freshwater DGV adopted (insufficient marine toxicity data)

Appendix B
Table B7
Historical Soil Analytical Results (Recovered fines and Aggregates)

				Field parameters		Organic Indicators	Metals								TRH - NEPM 199		PAHs - standard 16
				Tot +ve report Chlordane	pH (Field)	Electrical conductivity (field)	Total Organic Carbon	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	C6-C9 Fraction	C10-C36 (Sum of Total)	Benzo(a)pyrene
				mg/kg	pH Units	µS/cm	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NEPM 2013 Conservative EIL-Urban Residential- Public Open Space																		
0-2m								**100**		**190**[#1]	**560**[#8]	**1100**		**30**[#1]	**230**[#7]			
NEPM 2013 EIL-Commercial/Industrial																		
0-2m								*160*		*310*[#1]	*830*[#8]	*1800*		*55*[#1]	*360*[#7]			
NEPM 2013 Table 1A(1) HIL C Rec								300[#2]	90	300[#3]	17000	600[#4]	80[#5]	1200	30000			
NEPM 2013 Table 1A(1) HIL D Comm/Ind								3000[#6]	900	3600[#3]	240000	1500[#4]	730[#5]	6000	400000			
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																		
0-2m																		1.4
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																		
0-2m																		0.7
SampleCode	**Field_ID**	**Location_Code**	**Sampled_Date_Time**															
Soil AG_01 Apr 19_-	010419-JP-AG	Soil AG	1/04/2019	-	-	290	-	<4	<0.4	6	23	59	<0.1	4	38	-	-	-
Soil AG_02 Dec 19_-	021219-JS-AG	Soil AG	2/12/2019	-	-	530	-	-	-	16	64	120	-	-	120	-	-	-
Soil AG_02 Mar 20_-	020320-JS-AG	Soil AG	2/03/2020	-	-	240	-	<4	<0.4	8	10	34	<0.1	9	55	-	-	-
Soil AG_03 Feb 20_-	AG-3/02/20	Soil AG	3/02/2020	-	-	120	-	4	1	9	10	34	<0.1	4	150	-	-	-
Soil AG_03 Jun 19_-	030619-JP-AG	Soil AG	3/06/2019	-	-	640	-	<4	<0.4	18	16	28	<0.1	11	38	-	-	-
Soil AG_04 Mar 19_-	040319-JP-AG	Soil AG	4/03/2019	-	-	790	-	<4	<0.4	9	22	49	<0.1	4	38	-	-	-
Soil AG_04 May 20_-	040520-BR-AG	Soil AG	4/05/2020	-	-	170	-	<4	<0.4	10	9	31	<0.1	6	62	-	-	-
Soil AG_04 Nov 19_-	041119-LP-AG	Soil AG	4/11/2019	-	-	820	-	4	<0.4	12	27	36	0.1	3	64	-	-	-
Soil AG_05 Aug 19_-	050819-JP-AG	Soil AG	5/08/2019	-	-	360	-	4	<0.4	48	28	48	<0.1	**35**	100	-	-	-
Soil AG_06 Apr 20_-	060420-BR-AG	Soil AG	6/04/2020	-	-	220	-	<4	<0.4	5	8	23	<0.1	3	41	-	-	-
Soil AG_06 Jan 20_-	060120-JS-AG	Soil AG	6/01/2020	-	-	250	-	5	<0.4	9	32	44	0.1	22	77	-	-	-
Soil AG_06 May 19_-	060519-JP-AG	Soil AG	6/05/2019	-	-	670	-	4	<0.4	8	20	66	0.1	5	73	-	-	-
Soil AG_08 Apr 19_-	080419-JP-AG	Soil AG	8/04/2019	-	-	370	-	4	<0.4	6	18	15	<0.1	2	42	-	-	-
Soil AG_08 Oct 19_-	081019-LP-AG	Soil AG	8/10/2019	-	-	1400	-	5	<0.4	12	19	44	<0.1	6	57	-	-	-
Soil AG_09 Dec 19_-	091219-LP-AG	Soil AG	9/12/2019	-	-	160	-	<4	<0.4	3	3	9	<0.1	2	27	-	-	-
Soil AG_11 Mar 19_-	110319-JP-AG	Soil AG	11/03/2019	-	-	310	-	<4	<0.4	5	8	20	<0.1	1	22	-	-	-
Soil AG_11 May 20_-	110520-LP-AG	Soil AG	11/05/2020	-	-	330	-	5	<0.4	12	12	23	<0.1	4	51	-	-	-
Soil AG_11 Nov 19_-	111119-JS-RF	Soil AG	11/11/2019	-	-	160	-	5	<0.4	3	39	24	0.1	3	86	-	-	-
Soil AG_12 Aug 19_-	120819-JP-AG	Soil AG	12/08/2019	-	-	150	-	7	<0.4	10	19	12	<0.1	6	34	-	-	-
Soil AG_13 Jan 20_-	130120-LP-AG	Soil AG	13/01/2020	-	-	800	-	<4	<0.4	2	<1	4	<0.1	<1	8	-	-	-
Soil AG_14 Oct 19_-	141019_LP_AG	Soil AG	14/10/2019	-	-	410	-	4	<0.4	15	9	24	<0.1	4	95	-	-	-
Soil AG_15 Apr 19_-	150419-JP-AG	Soil AG	15/04/2019	-	-	450	-	<4	<0.4	2	2	7	<0.1	<1	5	-	-	-
Soil AG_15 Jul 19_-	150719-JP-AG	Soil AG	15/07/2019	-	-	500	-	<4	<0.4	6	8	13	<0.1	5	27	-	-	-
Soil AG_16 Dec 19_-	161219-JS-AG	Soil AG	16/12/2019	-	-	110	-	5	<0.4	25	21	58	0.2	2	40	-	-	-
Soil AG_16 Mar 20_-	AG-JS-160320	Soil AG	16/03/2020	-	-	820	-	<4	<0.4	5	15	26	<0.1	3	48	-	-	-
Soil AG_17 Feb 20_-	AG	Soil AG	17/02/2020	-	-	1400	-	<4	<0.4	4	5	14	<0.1	2	31	-	-	-
Soil AG_18 Feb 19_-	180218-JP-AG1	Soil AG	18/02/2019	-	-	460	-	<4	<0.4	22	22	36	<0.1	17	40	-	-	-
Soil AG_18 Mar 19_-	180319-JP-AG	Soil AG	18/03/2019	-	-	940	-	<4	<0.4	5	8	25	<0.1	3	51	-	-	-
Soil AG_18 May 20_-	180520-LP-AG	Soil AG	18/05/2020	-	-	200	-	5	<0.4	16	21	40	<0.1	7	220	-	-	-
Soil AG_18 Nov 19_-	181119-LP-RF	Soil AG	18/11/2019	-	-	350	-	<4	<0.4	15	6	3	<0.1	10	14	-	-	-
Soil AG_20 Apr 20_-	200420-LP-AG	Soil AG	20/04/2020	-	-	170	-	5	<0.4	12	18	27	<0.1	5	73	-	-	-
Soil AG_20 Jan 20_-	200120-LP-AG	Soil AG	20/01/2020	-	-	610	-	<4	<0.4	9	17	51	<0.1	4	65	-	-	-
Soil AG_20 May 19_-	200519-JP-AG1	Soil AG	20/05/2019	-	-	440	-	<4	<0.4	9	25	100	0.1	4	64	-	-	-
Soil AG_21 Oct 19_-	211019-LP-AG	Soil AG	21/10/2019	-	-	150	-	<4	<0.4	5	2	5	<0.1	<1	2	-	-	-
Soil AG_22 Jul 19_-	220719-JP-AG	Soil AG	22/07/2019	-	-	360	-	5	<0.4	11	29	66	0.1	9	150	-	-	-
Soil AG_23 Sep 19_-	230919-JS-AG	Soil AG	23/09/2019	-	-	900	-	<4	<0.4	10	2	5	<0.1	2	2	-	-	-
Soil AG_24 Feb 20_-	AG_24/02/20	Soil AG	24/02/2020	-	-	2000	-	5	<0.4	12	10	22	<0.1	2	46	-	-	-
Soil AG_25 Feb 19_-	250219-JP-AG1	Soil AG	25/02/2019	-	-	690	-	<4	<0.4	5	20	76	0.1	3	39	-	-	-
Soil AG_25 May 20_-	250520-BR-AG	Soil AG	25/05/2020	-	-	88	-	<4	<0.4	10	39	28	<0.1	7	30	-	-	-
Soil AG_25 Nov 19_-	251119-JS-AG	Soil AG	25/11/2019	-	-	450	-	9	<0.4	26	32	77	0.2	11	210	-	-	-
Soil AG_26 Aug 19_-	260819-BR-AG	Soil AG	26/08/2019	-	-	510	-	<4	<0.4	7	14	21	<0.1	2	25	-	-	-
Soil AG_26 Mar 19_-	260319-JP-AG	Soil AG	26/03/2019	-	-	350	-	<4	<0.4	4	37	48	<0.1	3	37	-	-	-
Soil AG_27 Apr 20_-	270420-LP-AG	Soil AG	27/04/2020	-	-	150	-	6	<0.4	14	21	56	<0.1	7	91	-	-	-
Soil AG_27 May 19_-	270519-JP-AG	Soil AG	27/05/2019	-	-	1100	-	<4	<0.4	8	15	40	<0.1	4	59	-	-	-
Soil AG_28 Jan 20_-	AG_28/01/20	Soil AG	28/01/2020	-	-	220	-	6	<0.4	13	19	38	0.1	5	56	-	-	-
Soil AG_28 Oct 19_-	281019-LP-AG	Soil AG	28/10/2019	-	-	180	-	<4	<0.4	3	6	29	<0.1	2	61	-	-	-
Soil AG_30 Mar 20_-	300320-BR-AG	Soil AG	30/03/2020	-	-	140	-	7	0.8	8	44	51	0.1	4	180	-	-	-
Soil AG_30 Sep 19_-	300919-JS/LP-Ag	Soil AG	30/09/2019	-	-	1800	-	<4	<0.4	7	31	40	<0.1	10	86	-	-	-
Soil RF_01 Apr 19_-	010419-JP-RF	Soil RF	1/04/2019	-	8.4	1000	-	-	-	10	24	84	-	-	100	-	-	-
Soil RF_02 Dec 19_-	021219-JS-RF	Soil RF	2/12/2019	-	8.4	1100	-	-	-	17	26	91	-	-	130	-	-	-
Soil RF_02 Mar 20_-	020320-JS-RF	Soil RF	2/03/2020	2.2	8.2	9	0.89	10	<0.4	10	28	96	<0.1	5	200	-	-	0.2
Soil RF_02 Sep 19_-	020919-BR-RF	Soil RF	2/09/2019	-	7.9	1200	-	-	-	24	36	37	-	-	91	-	-	-
Soil RF_03 Feb 20_-	RF-3/02/20	Soil RF	3/02/2020	30	8.2	1000	0.86	5	<0.4	11	26	75	0.2	7	91	-	140	2.6
Soil RF_04 Feb 19_-	040219-JJ-RF1	Soil RF	4/02/2019	-	8.2	1400	-	-	-	10	32	110	-	-	99	-	-	-
Soil RF_04 Mar 19_-	040319-JP-RF	Soil RF	4/03/2019	-	8.9	1400	-	-	-	11	46	99	-	-	75	-	-	-
Soil RF_04 Nov 19_-	04112019-LP-RF	Soil RF	4/11/2019	-	8.2	1800	-	-	-	14	43	140	-	-	**270**	-	-	-
Soil RF_06 Apr 20_-	060420-BR-RF	Soil RF	6/04/2020	-	8.4	1200	-	-	-	11	50	64	-	-	120	-	-	-
Soil RF_06 Jan 20_-	060120-JS-RF	Soil RF	6/01/2020	26	8.3	1200	0.65	<4	<0.4	13	32	88	0.2	6	110	-	310	2.6
Soil RF_08 Apr 19_-	080419-JP-RF1	Soil RF	8/04/2019	2.8	7.7	1500	0.55	<4	<0.4	7	16	39	<0.1	4	66	-	-	0.2
Soil RF_08 May 19_-	060519-JP-RFU	Soil RF	8/05/2019	4	8.3	1500	0.52	<4	<0.4	8	24	51	0.1	7	77	-	-	0.4
Soil RF_08 Oct 19_-	081019-LP-RF	Soil RF	8/10/2019	7.2	7.6	1100	1.5	6	<0.4	21	28	81	0.1	11	110	-	-	0.71
Soil RF_09 Dec 19_-	091219-LP-RF	Soil RF	9/12/2019	14	8.2	1300	1	5	<0.4	49	58	77	0.2	6	100	-	-	1.4
Soil RF_09 Mar 20_-	090320-JS-RF	Soil RF	9/03/2020	-	8.1	1400	-	-	-	10	32	110	-	-	**230**	-	-	-
Soil RF_09 Sep 19_-	090919-BR-RF	Soil RF	9/09/2019	14	8.6	1300	0.88	<4	<0.4	21	24	56	0.1	8	87	-	350	1.4
Soil RF_10 Feb 20_-	RF_10/02/2020	Soil RF	10/02/2020	-	8.3	1200	-	-	-	20	48	120	-	-	**290**	-	-	-
Soil RF_11 Feb 19_-	110219-JP-RF1	Soil RF	11/02/2019	21	8.5	1400	0.53	<4	<0.4	4	35	120	3.4	5	90	<25	<250	1.9
Soil RF_11 Mar 19_-	110319-JP-RF1 & 180319-JP-RF3	Soil RF	11/03/2019	8.6	8.7	940	0.68	<4	<0.4	7	26	55	0.1	3	51	-	-	0.65
Soil RF_11 Nov 19_-	111119-JS-RF	Soil RF	11/11/2019	4.7	8	670	1.1	<4	<0.4	15	34	47	<0.1	8	57	-	-	0.5
Soil RF_12 Aug 19_-	120819-JP-RF	Soil RF	12/08/2019	8.9	8.4	630	1.9	6	<0.4	20	25	41	<0.1	14	63	-	<330	1
Soil RF_13 Jan 20_-	130120-LP-RF	Soil RF	13/01/2020	-	8.4	170	-	-	-	10	22	65	-	-	75	-	-	-
Soil RF_13 May 19_-	130519-JP-RF	Soil RF	13/05/2019	-	8.2	1200	-	-	-	10	27	170	-	-	120	-	-	-
Soil RF_14 Apr 20_-	140420-LP-RF	Soil RF	14/04/2020	2.3	8.2	2200	1.7	9	<0.4	12	26	67	0.1	5	130	-	360	0.2
Soil RF_14 Oct 19_-	141019_LP_RF	Soil RF	14/10/2019	-	8.1	550	-	-	-	5	11	40	-	-	36	-	-	-
Soil RF_15 Apr 19_-	150419-JP-RF	Soil RF	15/04/2019	-	8.3	1800	-	-	-	8	14	35	-	-	44	-	-	-
Soil RF_16 Dec 19_-	161219-JS-RF	Soil RF	16/12/2019	-	8.4	830	-	-	-	9	28	110	-	-	130	-	-	-
Soil RF_16 Mar 20_-	RF-JS-160320	Soil RF	16/03/2020	3.4	9.8	1500	1	6	<0.4	15	39	68	0.2	7	140	-	-	0.4
Soil RF_18 Feb 19_-	180218-JP-RF	Soil RF	18/02/2019	-	7.7	2100	-	-	-	9	25	87	-	-	65	-	-	-
Soil RF_18 Mar 19_-	180319-JP-RF1	Soil RF	18/03/2019	-	8.9	980	-	-	-	7	22	65	-	-	75	-	-	-
Soil RF_18 May 20_-	180520-LP-RF	Soil RF	18/05/2020	2.2	8.1	1900	1	<4	<0.4	13	28	53	<0.1	7	130	-	-	0.2
Soil RF_18 Nov 19_-	181119-LP-RF	Soil RF	18/11/2019	-	8.3	2100	-	-	-	15	44	75	-	-	150	-	-	-
Soil RF_20 Apr 20_-	200420-LP-RF	Soil RF	20/04/2020	-	8.2	1400	-	-	-	12	18	36	-	-	100	-	-	-
Soil RF_20 Jan 20_-	200120-LP-RF	Soil RF	20/01/2020	10	7.9	1900	1	7	<0.4	13	26	70	0.2	6	110	-	110	1
Soil RF_20 May 19_-	200519-JP-RF	Soil RF	20/05/2019	6.7	8.5	490	0.62	<4	<0.4	7	27	140	1.5	4	93	-	<250	0.59
Soil RF_20 Sep 19_-	160919-JS-RF	Soil RF	20/09/2019	-	8.8	800	-	-	-	150	24	40	-	-	73	-	-	-
Soil RF_23 Apr 20_-	230420-LP-RF	Soil RF	23/04/2020	-	8.3	1400	-	-	-	15	23	50	-	-	130	-	-	-
Soil RF_23 Mar 20_-	230320-LP-RF	Soil RF	23/03/2020	-	8.1	1800	-	-	-	11	35	92	-	-	**230**	-	-	-
Soil RF_23 Sep 19_-	230919-JS-RF	Soil RF	23/09/2019	28	9.9	910	1	5	<0.4	13	25	59	<0.1	11	68	-	240	2.9
Soil RF_25 Feb 19_-	250219-JP-RF & 040319-JP-RF-Pb	Soil RF	25/02/2019	6	8.6	970	0.66	<4	<0.4	8	49	100	0.4	6	67	<25	<250	0.53
Soil RF_25 May 20_-	250520-BR-RF	Soil RF	25/05/2020	-	8.8	660	-	-	-	10	19	68	-	-	56	-	-	-
Soil RF_25 Nov 19_-	251119-JS-RF	Soil RF	25/11/2019	10	8.2	900	1.1	9	<0.4	22	28	64	0.1	6	120	-	110	0.88
Soil RF_26 Mar 19_-	260319-JP-RF	Soil RF	26/03/2019	4.6	8.6	340	0.34	<4	<0.4	6	20	55	<0.1	3	39	-	-	0.4
Soil RF_28 Jan 20_-	RF_28/01/20	Soil RF	28/01/2020	-	8.3	1100	-	-	-	16	23	85	-	-	90	-	-	-
Soil RF_28 Oct 19_-	281019_LP_RF	Soil RF	28/10/2019	-	8.2	2400	-	-	-	17	120	72	-	-	210	-	-	-
Soil RF_30 Mar 20_-	300320-BR-RF	Soil RF	30/03/2020	11	8	1600	1.1	6	0.5	15	30	66	<0.1	8	130	-	-	0.8
Soil RF_30 Sep 19_-	300919-JS/LP-RF	Soil RF	30/09/2019	4.2	8.8	640	0.71	<4	<0.4	7	20	55	<0.1	5	62	-	110	0.52

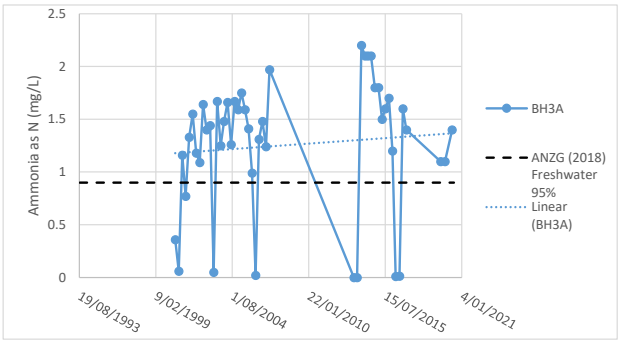
		Field parameters		Organic Indicators	Metals								TRH - NEPM 199		PAHs - standard 16
	Tot +ve report Chlordane	pH (Field)	Electrical conductivity (field)	Total Organic Carbon	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	C6-C9 Fraction	C10-C36 (Sum of Total)	Benzo(a)pyrene
	mg/kg	pH Units	µS/cm	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NEPM 2013 Conservative EIL-Urban Residential- Public Open Space															
0-2m					**100**		**190**[#1]	**560**[#8]	**1100**		**30**[#1]	**230**[#7]			
NEPM 2013 EIL-Commercial/Industrial															
0-2m					*160*		*310*[#1]	*830*[#8]	*1800*		*55*[#1]	*360*[#7]			
NEPM 2013 Table 1A(1) HIL C Rec					300[#2]	90	300[#3]	17000	600[#4]	80[#5]	1200	30000			
NEPM 2013 Table 1A(1) HIL D Comm/Ind					3000[#6]	900	3600[#3]	240000	1500[#4]	730[#5]	6000	400000			
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil															
0-2m															1.4
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil															
0-2m															0.7
SampleCode Field_ID Location_Code Sampled_Date_Time															
Statistical Summary															
Number of Results	23	47	95	23	70	70	95	95	95	70	70	95	2	12	23
Number of Detects	23	47	95	23	31	3	95	94	95	25	67	95	0	8	23
Minimum Concentration	2.2	7.6	9	0.34	<4	<0.4	2	<1	3	<0.1	<1	2	<25	110	0.2
Minimum Detect	2.2	7.6	9	0.34	4	0.5	2	2	3	0.1	1	2	ND	110	0.2
Maximum Concentration	30	9.9	2400	1.9	10	1	150	120	170	3.4	35	290	<25	360	2.9
Maximum Detect	30	9.9	2400	1.9	10	1	150	120	170	3.4	35	290	ND	360	2.9
Average Concentration	10	8.4	859	0.93	3.7	0.22	13	25	56	0.15	6	86		189	0.96
Median Concentration	7.2	8.3	800	0.89	2	0.2	10	24	51	0.05	5	73	12.5	132.5	0.65
Standard Deviation	8.5	0.43	595	0.38	2.2	0.12	16	16	34	0.43	5.1	59		98	0.81
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	1	4	0	0	11
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	1	4	0	0	11

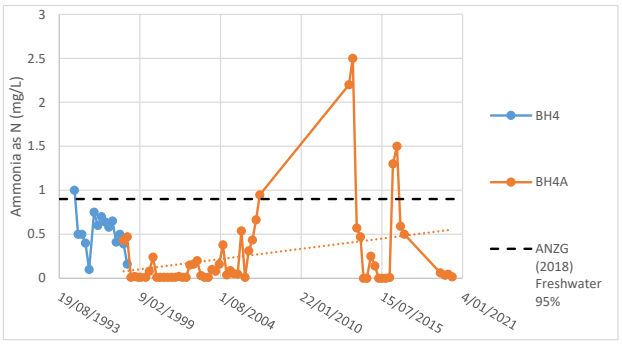
Env Stds Comments

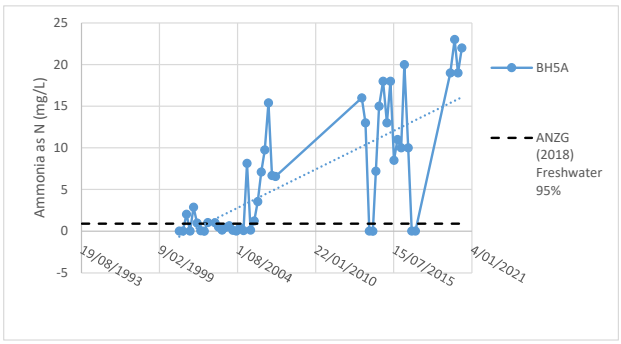
#1:Develop site specific based on CEC, pH, clay content, state and traffic volume
#2:Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Shedule B7).
#3:In the absence of a guideline value for total chromium, chromium VI value adopted
#4:Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability should be considered where appropriate.
#5:Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental mercury is present, or suspected to be present.
#6:Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Schedule B7).
#7:Based on a pH value of 7.5 and conservative CEC value.
#8.Based on a pH value of 7.5

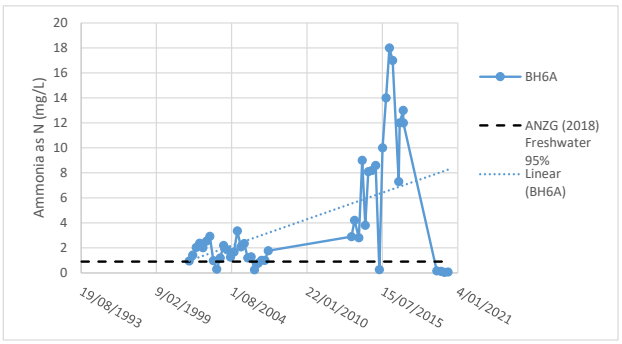
Appendix C – Ammonia plots

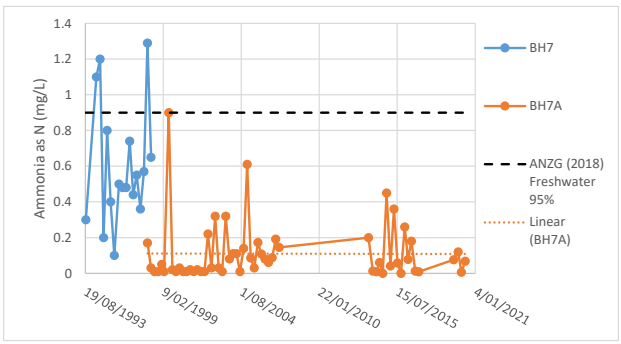
Appendix C
Ammonia Time Series Plots

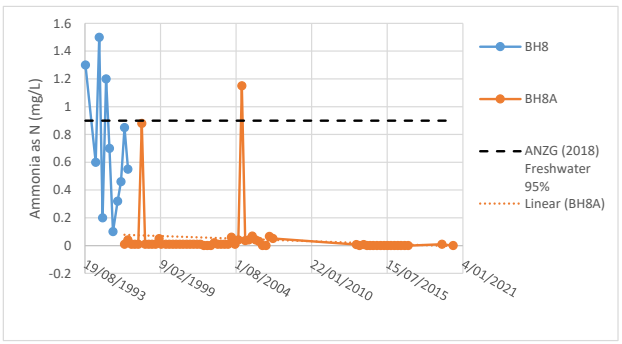


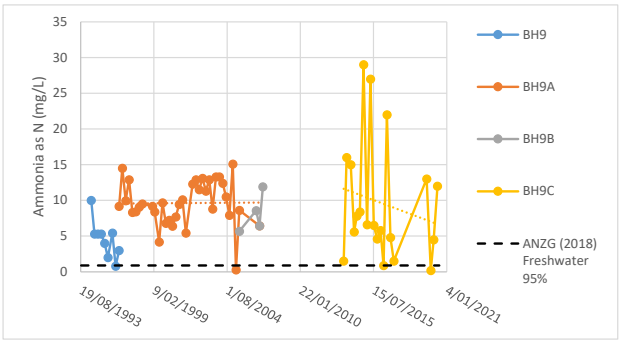


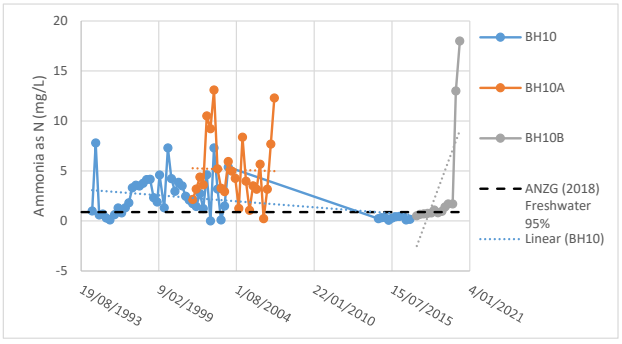


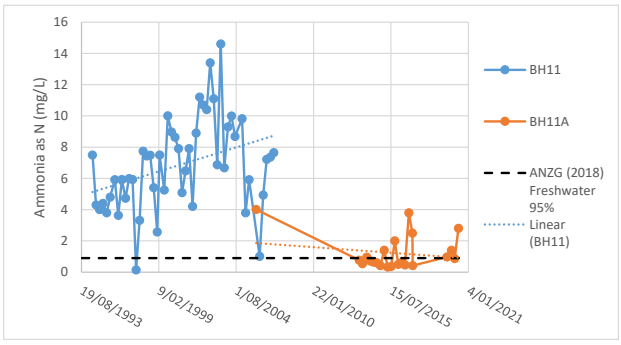


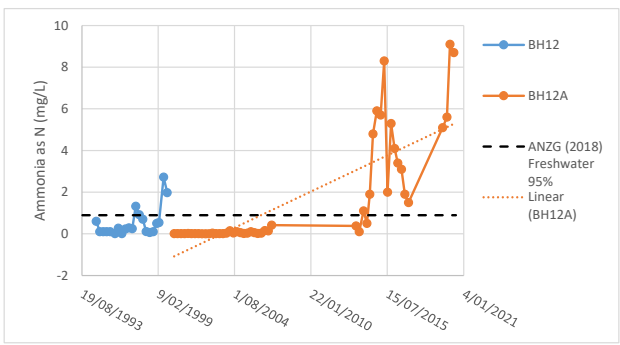




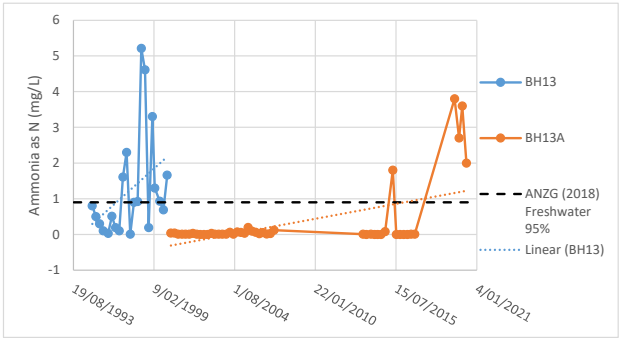


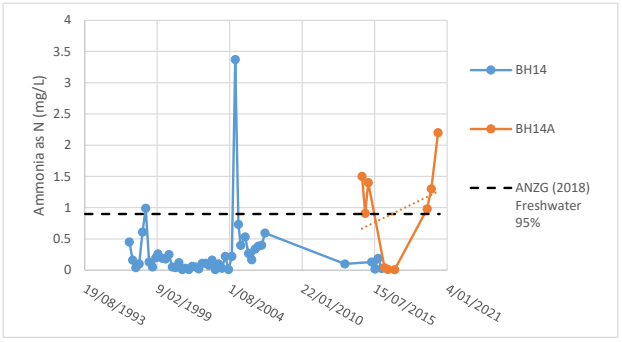


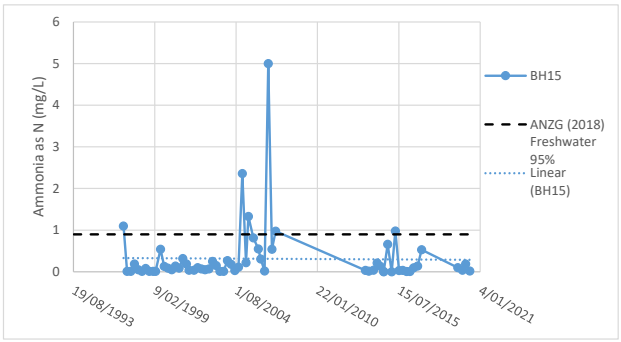


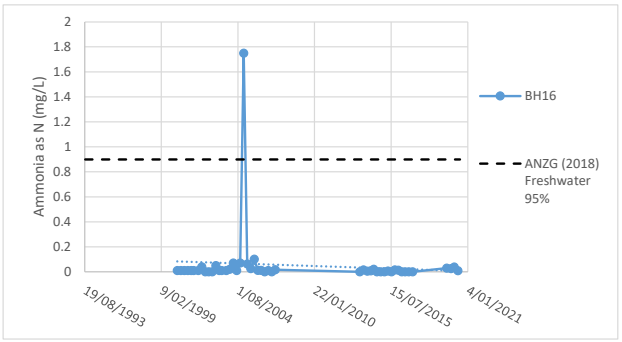


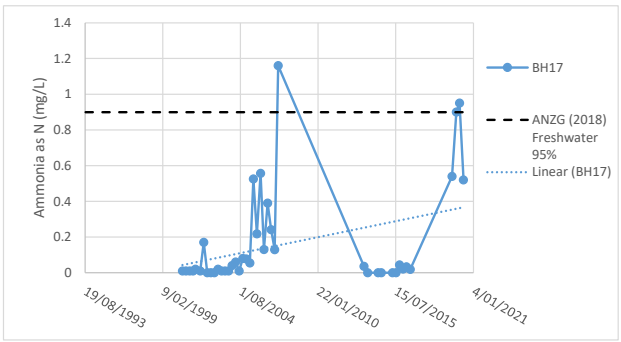
Appendix C
Ammonia Time Series Plots

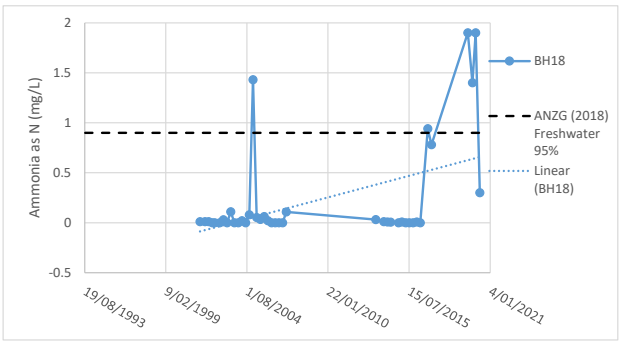


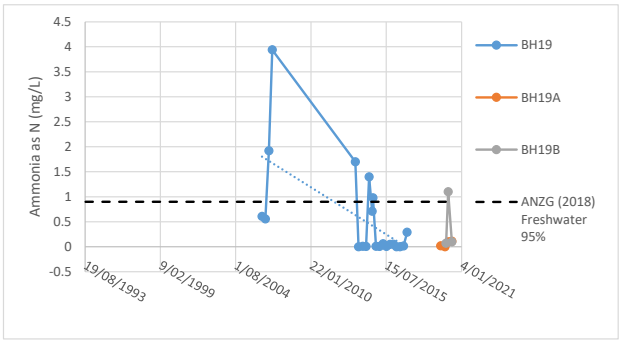


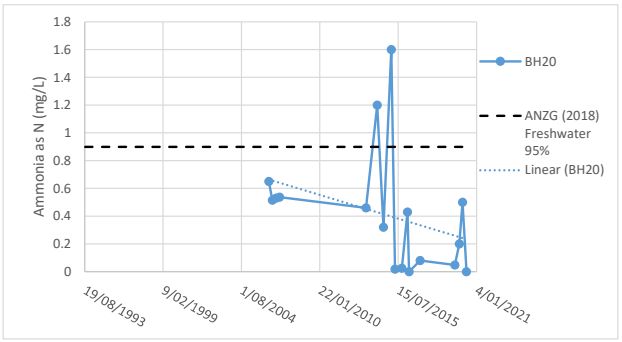


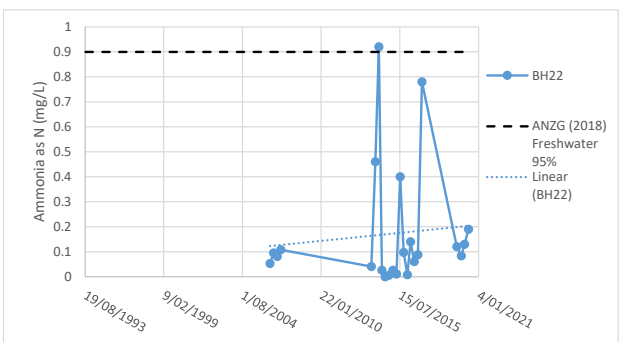


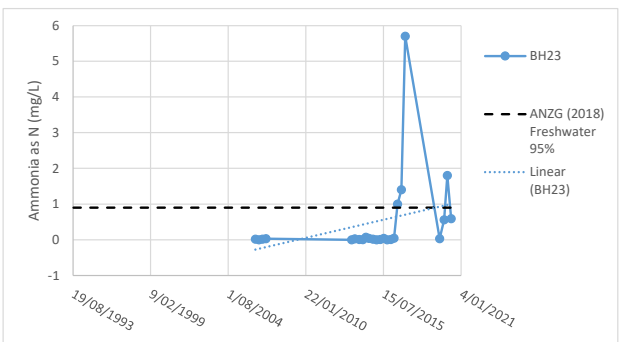




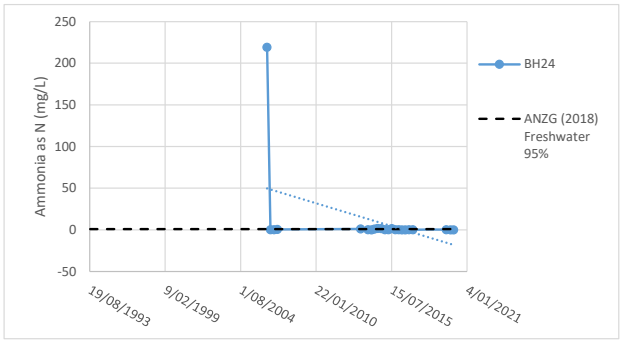


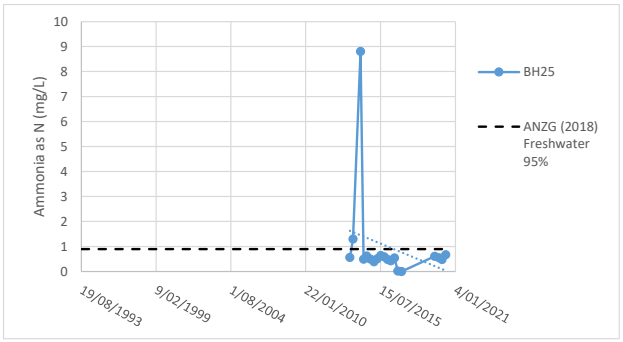


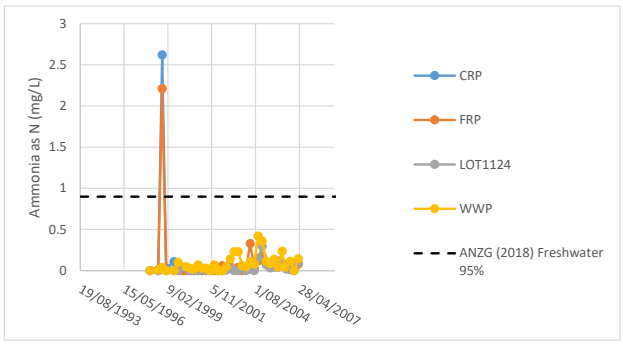


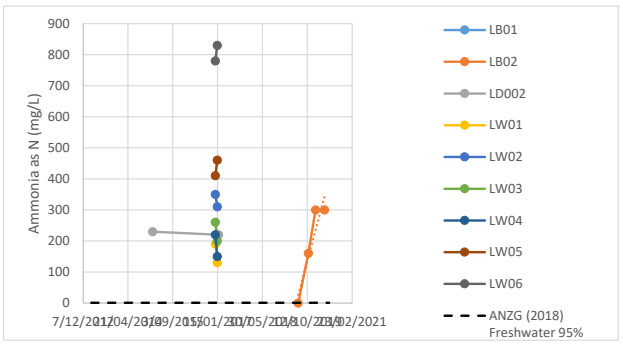


Appendix C
Ammonia Time Series Plots

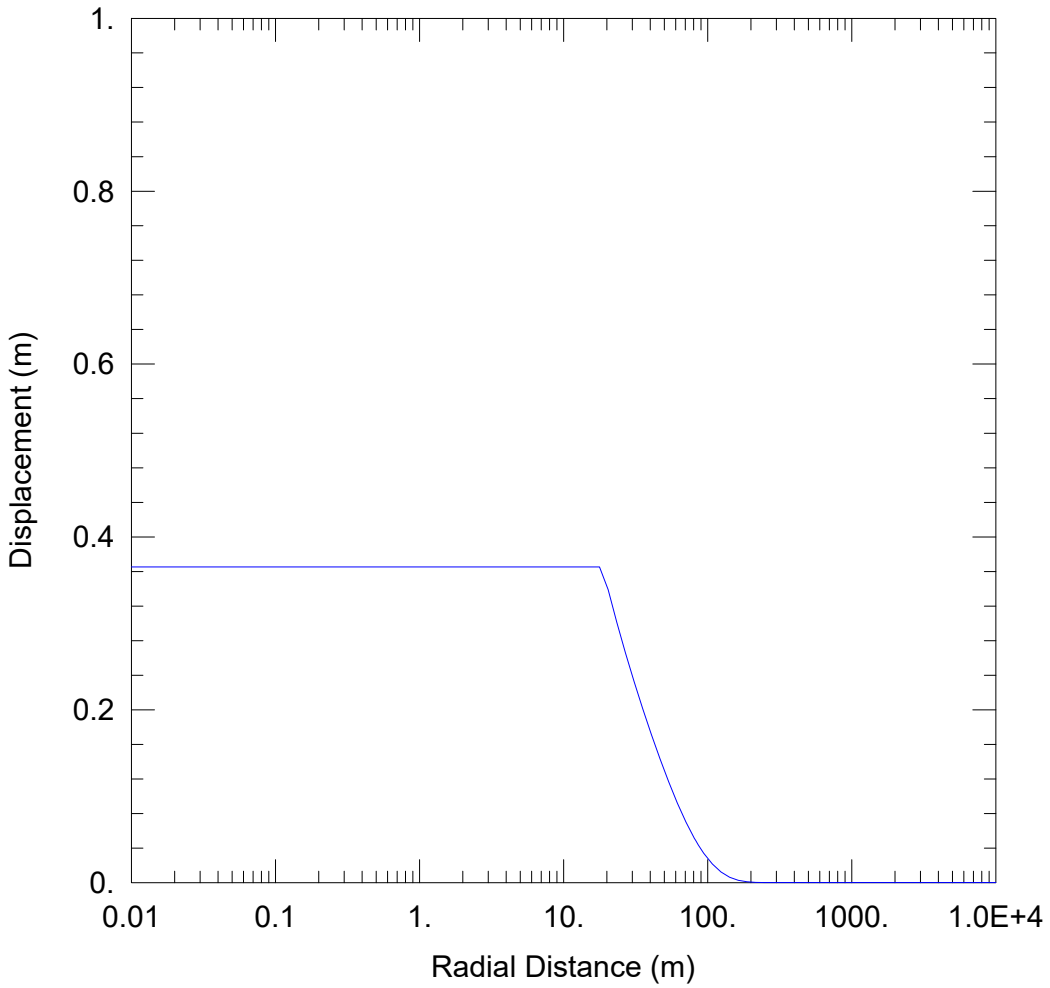








Appendix D – Groundwater Abstraction Theoretical Pumping Test results



WELL TEST ANALYSIS

Data Set: G:\21\12529041\Tech\Groundwater\WAL info\Infiltration Pond_9 days.aqt
Date: 10/29/20 Time: 16:58:06

PROJECT INFORMATION

Company: GHD
Client: Breen
Project: 2112529041
Location: Kurnell

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
New Well	0	0

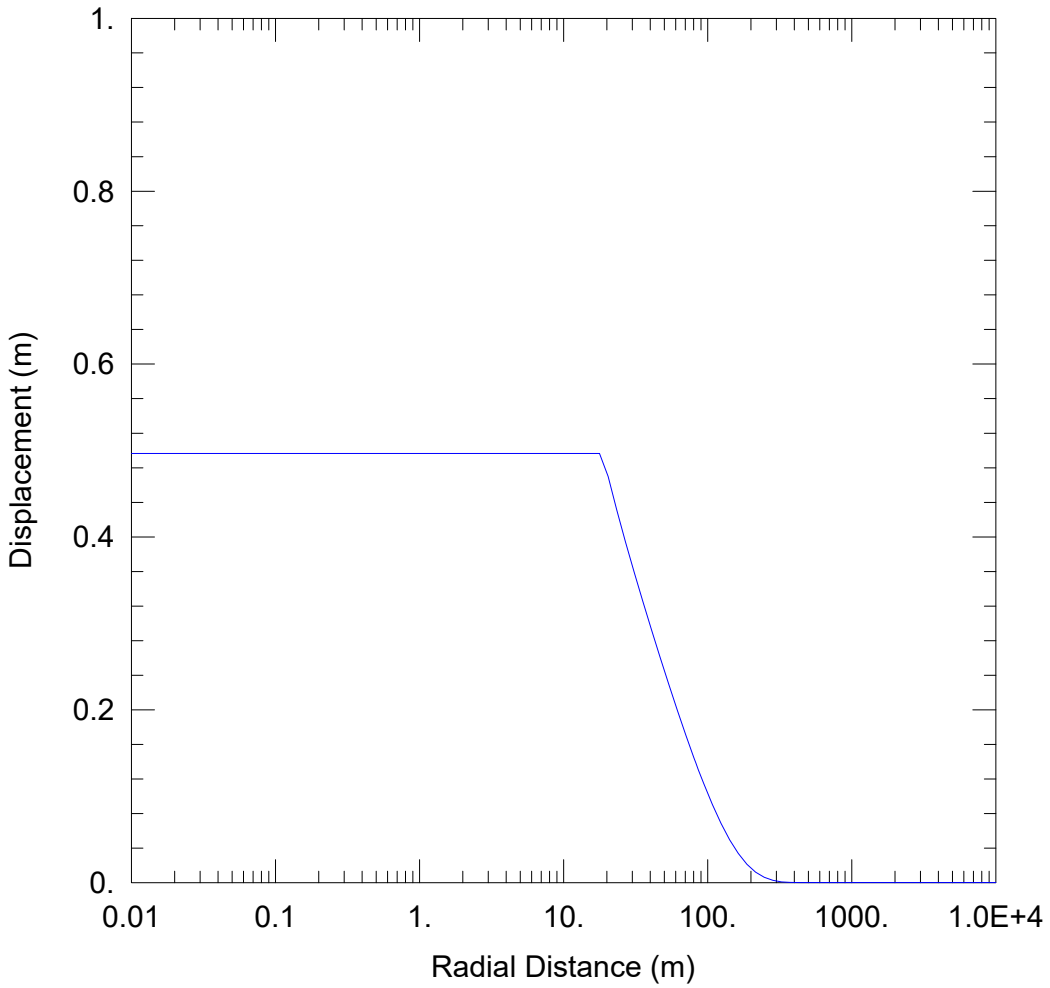
Observation Wells

Well Name	X (m)	Y (m)
New Well	0	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Theis/Hantush

T = 85.4 m^2/day
S = 0.3
Kz/Kr = 1.
b = 20. m



WELL TEST ANALYSIS

Data Set: G:\21\12529041\Tech\Groundwater\WAL info\Infiltration Pond_27 days.aqt
Date: 10/29/20 Time: 16:59:09

PROJECT INFORMATION

Company: GHD
Client: Breen
Project: 2112529041
Location: Kurnell

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
New Well	0	0

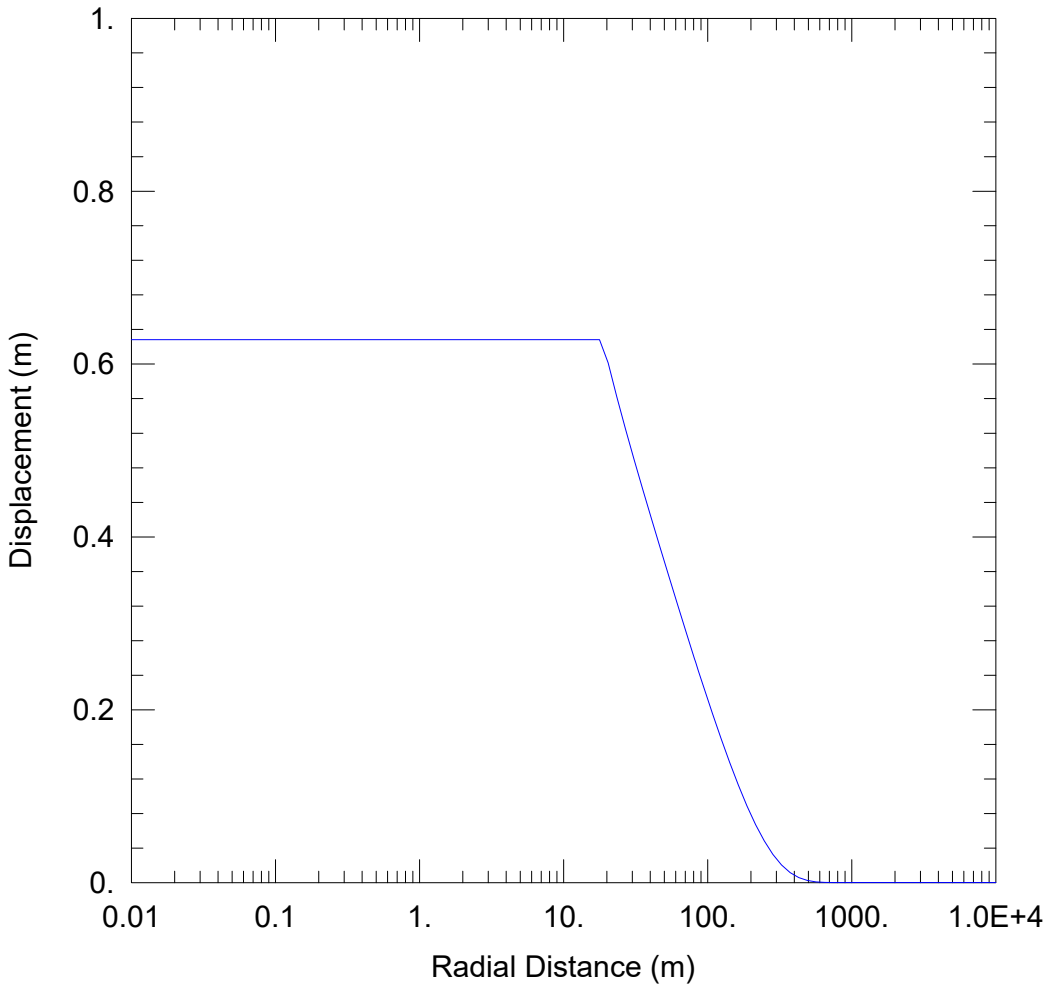
Observation Wells

Well Name	X (m)	Y (m)
New Well	0	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Theis/Hantush

T = 85.4 m^2/day
S = 0.3
Kz/Kr = 1.
b = 20. m



WELL TEST ANALYSIS

Data Set: G:\21\12529041\Tech\Groundwater\WAL info\Infiltration Pond_80 days.aqt
Date: 10/29/20 Time: 17:01:36

PROJECT INFORMATION

Company: GHD
Client: Breen
Project: 2112529041
Location: Kurnell

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
New Well	0	0

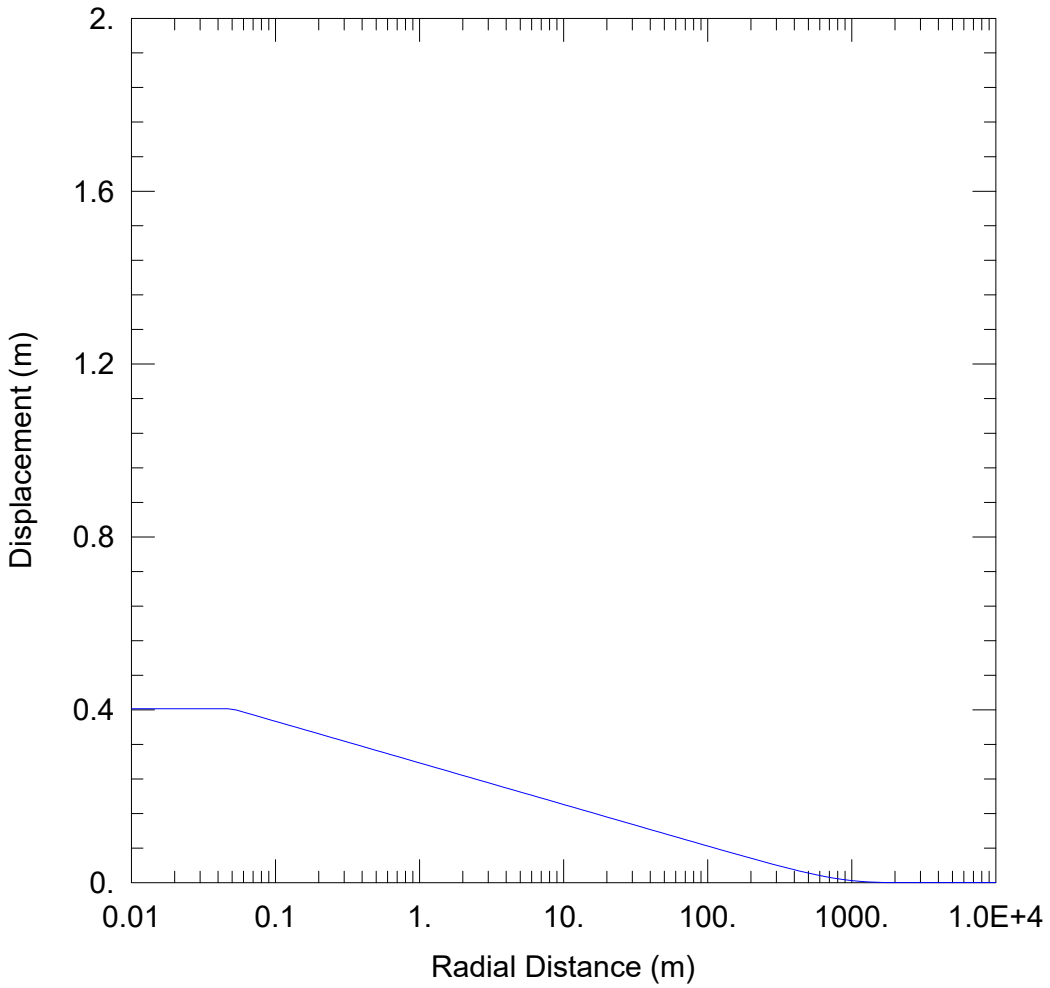
Observation Wells

Well Name	X (m)	Y (m)
New Well	0	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Theis/Hantush

T = 85.4 m^2/day
S = 0.3
Kz/Kr = 1.
b = 20. m



WELL TEST ANALYSIS

Data Set: G:\21\12529041\Tech\Groundwater\WAL info\pumping wel_Best case.aqt
Date: 10/29/20 Time: 17:07:05

PROJECT INFORMATION

Company: GHD
Client: Breen
Project: 2112529041
Location: Kurnell

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Abstraction well	0	0

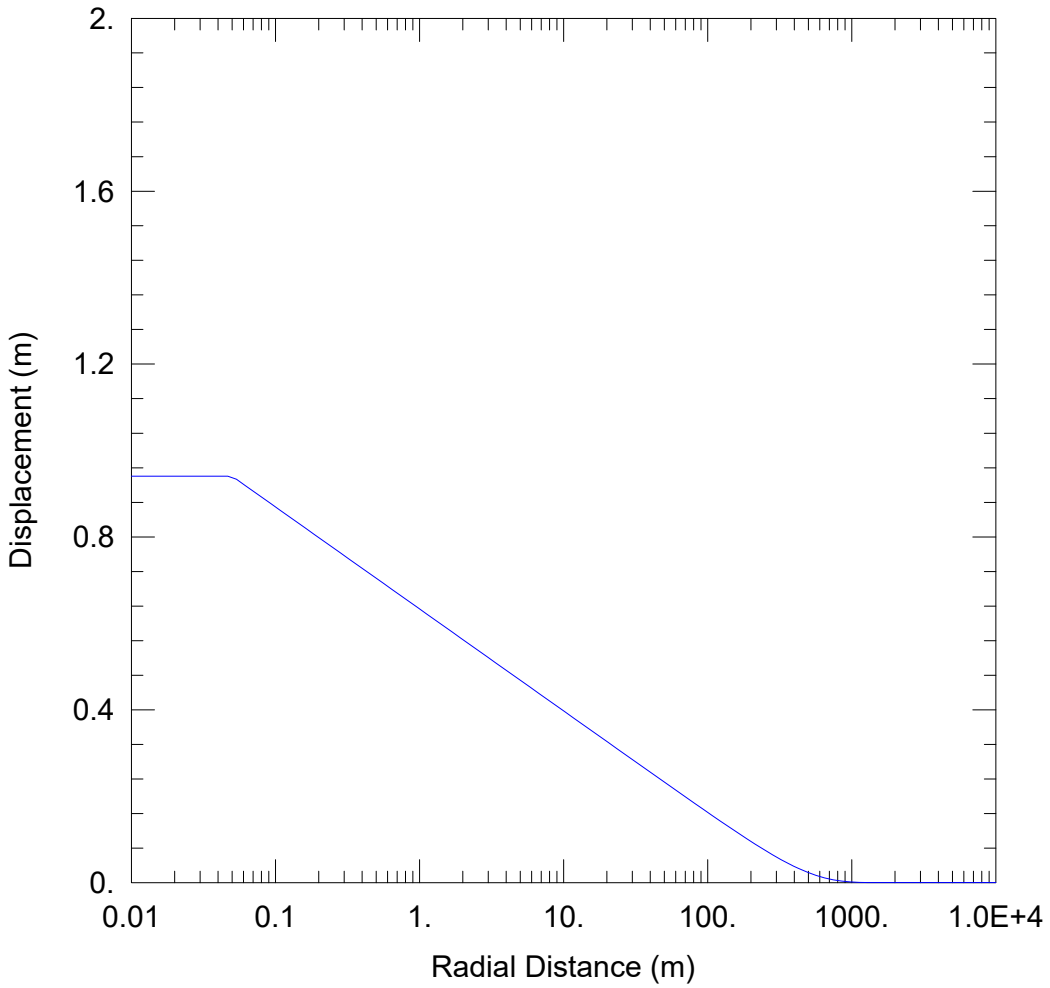
Observation Wells

Well Name	X (m)	Y (m)
▫ Abstraction well	0	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Theis/Hantush

T = 209.4 m^2/day
S = 0.3
Kz/Kr = 1.
b = 20. m



WELL TEST ANALYSIS

Data Set: G:\21\12529041\Tech\Groundwater\WAL info\pumping wel_Worst case.aqt
Date: 10/29/20 Time: 17:02:26

PROJECT INFORMATION

Company: GHD
Client: Breen
Project: 2112529041
Location: Kurnell

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Abstraction well	0	0

Observation Wells

Well Name	X (m)	Y (m)
▫ Abstraction well	0	0

SOLUTION

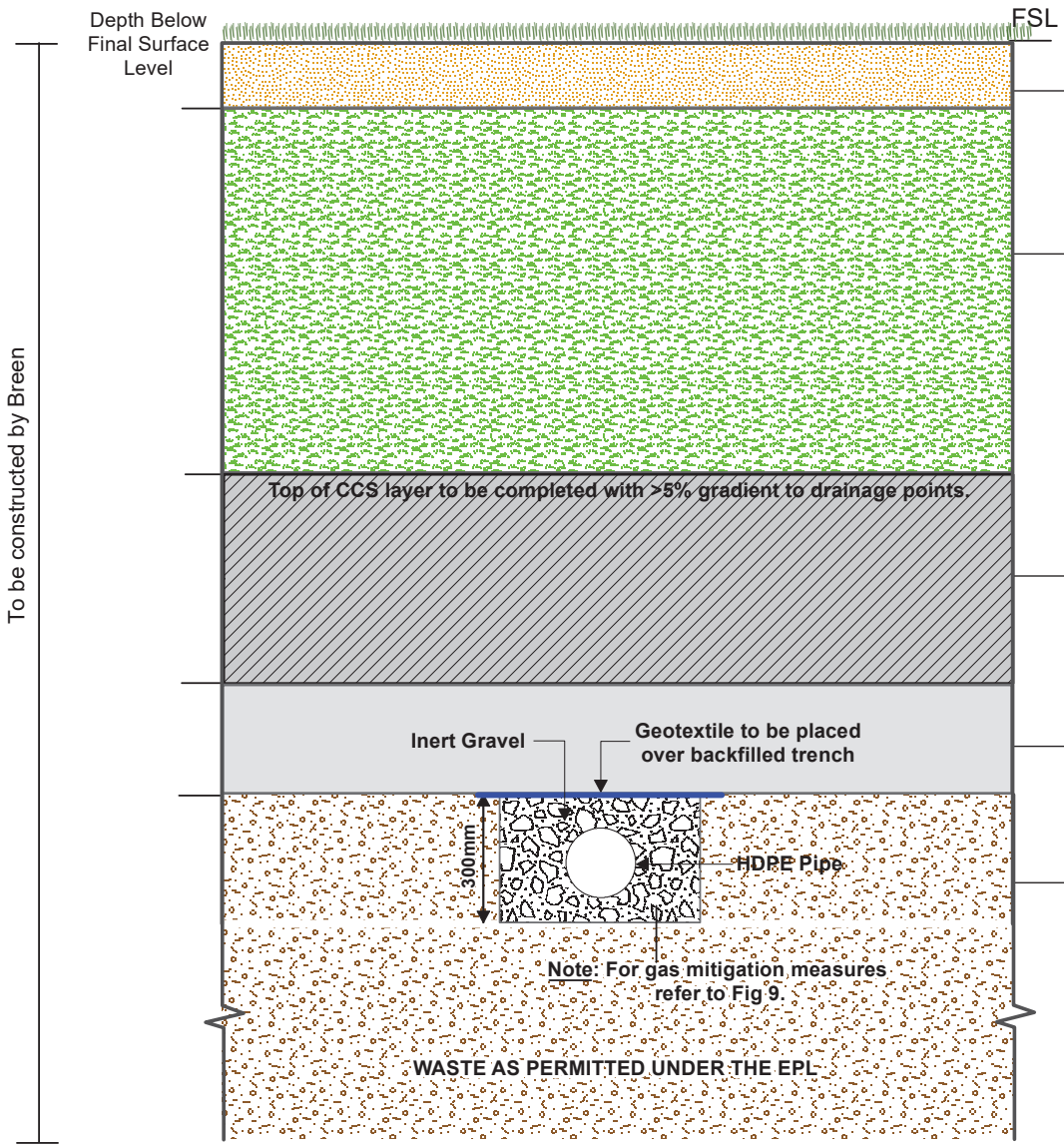
Aquifer Model: Unconfined
Solution Method: Theis/Hantush

T = 85.4 m^2/day
S = 0.3
Kz/Kr = 1.
b = 20. m

Appendix E – Capping Design Drawings (CES, 2020a)

Notes:

1. Capping system to be progressively constructed in discrete manageable sections so that cap is promptly constructed and vegetation quickly established.
2. Spacing of gas mitigation measures to be determined following field testing. Gas mitigation measures will be omitted in areas where methane levels < 500 parts per million (v/v).
3. Uncompleted sections of clay capping are to be covered with plastic sheeting at the end of each working day during extended storm periods and periods of hot dry weather to maintain moisture levels within the specification.
4. Clay capping layer may be replaced with alternative sealing layer approved by the NSW EPA.
5. Following placement, contour banks or earthen bunds should be constructed along the finished slopes to ensure erosion resistance during revegetation, moisture retention and aeration of soil. Construction of banks should not penetrate > 100mm into revegetation layer.
6. Erosion and weed control measures to be implemented during construction of the cap.
7. The boundaries of differing capping types must be keyed into each other to provide a gradual transition.
8. Surface shall be revegetated with species indigenous to the Kurnell Peninsula as specified in the VPA.



TOPSOIL

Min. 200mm topsoil.

REVEGETATION LAYER (RL)

Min. 800mm approved recycled soil material (e.g. recycled soil, compost, clay, crushed rock, sand). To be compacted by track walking across slope prior to placement of topsoil.

COMPACTED CLAY SEAL (CCS)

Min. 600mm clay capping material. To be placed in 200mm layers and compacted to min density ratio of 98% Standard compaction as determined by AS1289.5.11, CCS to have permeability k<10 -9 m/s. Moisture content of fill to be in the range of Optimum Moisture Content (OMC) to OMC +2% or as suitable to achieve adequate compaction and permeability of requirements.

SEAL BEARING LAYER (SBL)

Min. 300mm VENM/other compactable fill material, permitted under the EPL. Fill to be placed in near horizontal layers of max 250mm loose thickness. Compaction to min density ratio of 95% standard compaction as determined by AS1289.5.11 and/or by test rolling to AS3798-2007. Areas which are assesed to deform exccessively under test rolling shall be rectified and re-presented.

COMPACTED WASTE

VENM/other compactable fill material permitted under the EPL to 1.7m below FSL if required. Fill to be placed in near horizontal layers of max 500mm loose thickness. Compaction to min density ratio of 95% based on Standard Compaction as determined by AS1289.5.11. Alternative methods of achieving the compaction requirements such as dynamic compaction by impact rolling with associated verification testing may be considered subject to the approval of and confirmation by the Geotechnical Practitioner.

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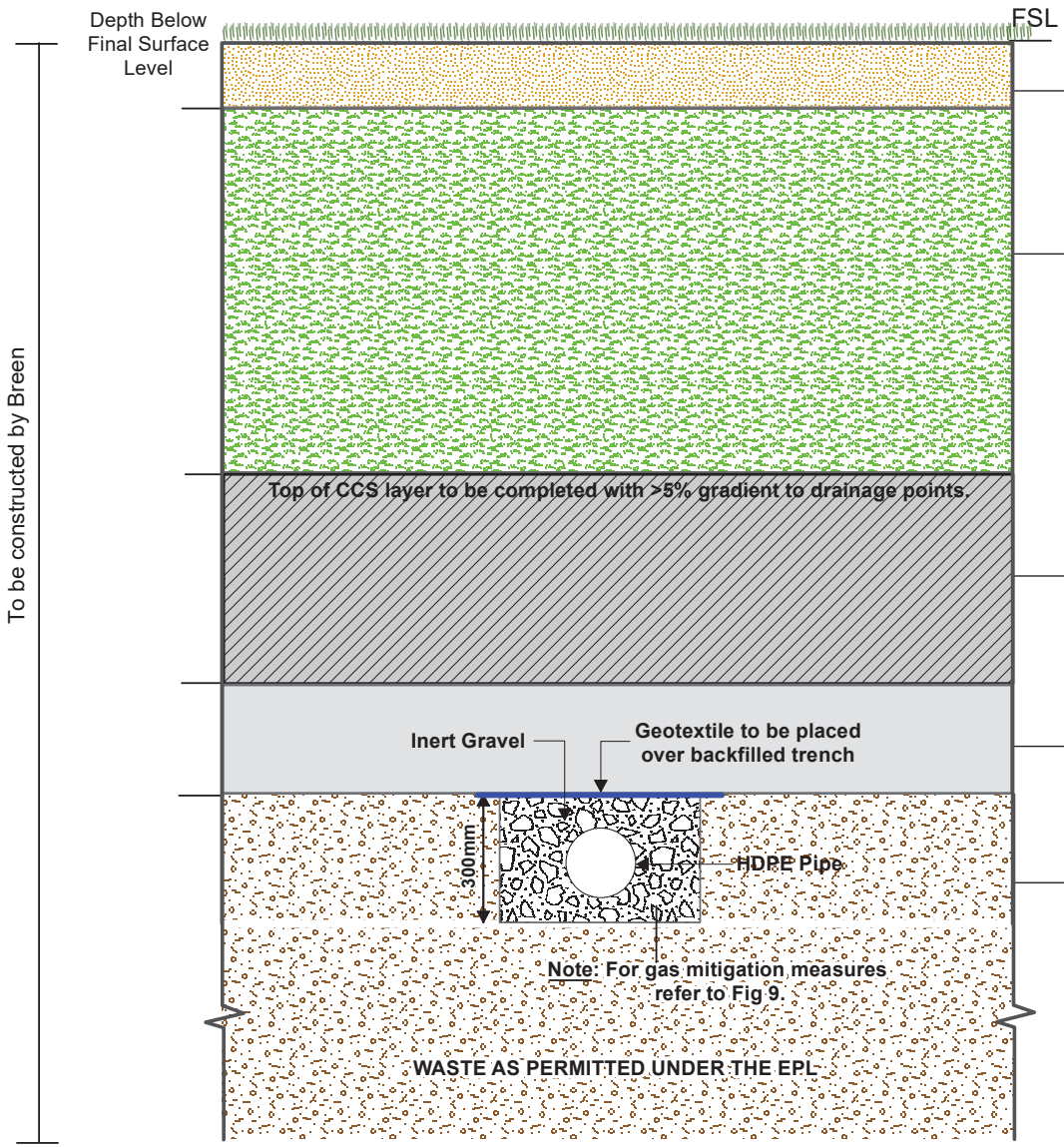
Title

Figure 4: Capping Design - Open Space Lots 1122 and 1123

CES Project ID:	Date:
CES070607-KLF	13/10/2020
Prepared By:	Checked By:
B, Ren	I. Wong

Notes:

1. Capping system to be progressively constructed in discrete manageable sections so that cap is promptly constructed and vegetation quickly established.
2. Spacing of gas mitigation measures to be determined following field testing. Gas mitigation measures will be omitted in areas where methane levels < 500 parts per million (v/v).
3. Uncompleted sections of clay capping are to be covered with plastic sheeting at the end of each working day during extended storm periods and periods of hot dry weather to maintain moisture levels within the specification.
4. Clay capping layer may be replaced with alternative sealing layer approved by the NSW EPA.
5. Following placement, contour banks or earthen bunds should be constructed along the finished slopes to ensure erosion resistance during revegetation, moisture retention and aeration of soil. Construction of banks should not penetrate > 100mm into revegetation layer.
6. Erosion and weed control measures to be implemented during construction of the cap.
7. The boundaries of differing capping types must be keyed into each other to provide a gradual transition.
8. Surface shall be revegetated with species indigenous to the Kurnell Peninsula as specified in the VPA.



TOPSOIL

Min. 200mm topsoil.

REVEGETATION LAYER (RL)

Min. 800mm approved recycled soil material (e.g. recycled soil, compost, clay, crushed rock, sand). To be compacted by track walking across slope prior to placement of topsoil.

COMPACTED CLAY SEAL (CCS)

Min. 600mm clay capping material. To be placed in 200mm layers and compacted to min density ratio of 98% Standard compaction as determined by AS1289.5.11, CCS to have permeability k<10 -9 m/s. Moisture content of fill to be in the range of Optimum Moisture Content (OMC) to OMC +2% or as suitable to achieve adequate compaction and permeability of requirements.

SEAL BEARING LAYER (SBL)

Min. 300mm VENM/other compactable fill material, permitted under the EPL. Fill to be placed in near horizontal layers of max 250mm loose thickness. Compaction to min density ratio of 95% standard compaction as determined by AS1289.5.11 and/or by test rolling to AS3798-2007. Areas which are assesed to deform exccessively under test rolling shall be rectified and re-presented.

WELL COMPACTED GENERAL SOLID WASTE (NON PUTRESCIBLE) OR VENM

Well compacted general solid waste (non putrescible) or VENM as permitted under the EPL.

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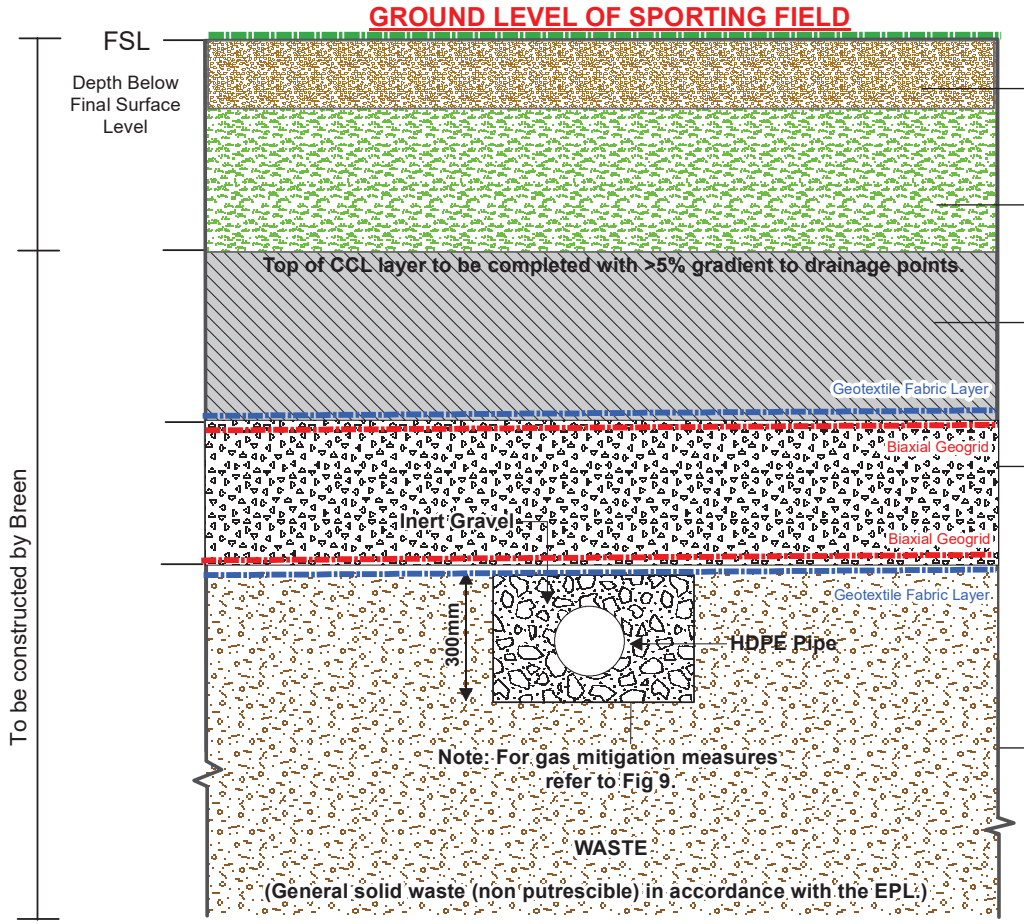
Title

Figure 5: Capping Design - Open Space Lot 5 and Lot 6

CES Project ID:	Date:
CES070607-KLF	13/10/2020
Prepared By:	Checked By:
B, Ren	I. Wong

Notes:

1. Capping system to be progressively constructed in discrete manageable sections so that cap is promptly constructed and vegetation quickly established.
2. Spacing of gas mitigation measures to be determined following field testing. Gas mitigation measures will be omitted in areas where methane levels < 500 parts per million (v/v).
3. Uncompleted sections of clay capping are to be covered with plastic sheeting at the end of each working day during extended storm periods and periods of hot dry weather to maintain moisture levels within the specification.
4. Clay capping layer may be replaced with alternative sealing layer approved by the NSW EPA.
5. Following placement, contour banks or earthen bunds should be constructed along the finished slopes to ensure erosion resistance during revegetation, moisture retention and aeration of soil. Construction of banks should not penetrate > 100mm into revegetation layer.
6. Alternative methods of achieving the compaction requirements such as dynamic compaction by impact rolling with associated verification testing may be considered subject to approval of and confirmation by the geotechnical practioner.
7. Erosion and weed control measures to be implemented during construction of the cap.
8. Adequate drainage to be provided for playing fields.
9 The boundaries of differing capping types must be keyed into each other to provide a gradual transition..
10. Construction quality assurance testing to be in accordance with the requirements of Schedule 4 of the VPA.



TURF ROOT ZONE (TRZ) - AS SPECIFIED IN THE VPA

Min. 225mm Sandy Soil (<30% particle size <0.25mm and <30% particle size >0.5mm) and 75mm finely cultivated compost to AS4454 that is mixed and tested offsite. Testing of soil is to be undertaken in accordance with the specifications within the VPA.

REVEGETATION LAYER (RVL) - AS SPECIFIED IN THE VPA.

Min. 775mm highly cultivated VENM. Compaction to min density ratio of 90% based on Standard Compaction as determined by AS1289.5.11 tested by a NATA accredited laboratory. Testing of soil is to be undertaken in accordance with the specifications in the VPA.

COMPACTED CLAY LAYER (CCL)

Min. 600 mm clay capping material. Compaction to min density ratio of 98% Standard compaction as determined by AS1289.5.11 tested by a NATA accredited laboratory. CCL to have permeability k<10 -9m/s. Moisture content of fill to be in the range of Optimum Moisture Content (OMC) to OMC +2% or as suitable to achieve adequate compaction and permeability requirements.

BRIDGING LAYER (BL)

Min. 500mm crushed recycled brick/concrete (max particle size 40mm) reinforced with 2 layers of Tensar SS30 (or equivalent) biaxial geogrid and 2 layers of Bidim A34 (or equivalent) geofabric as a separation layer above and below the bridging layer.

WELL COMPACTED GENERAL SOLID WASTE (NON PUTRESCIBLE) OR VENM

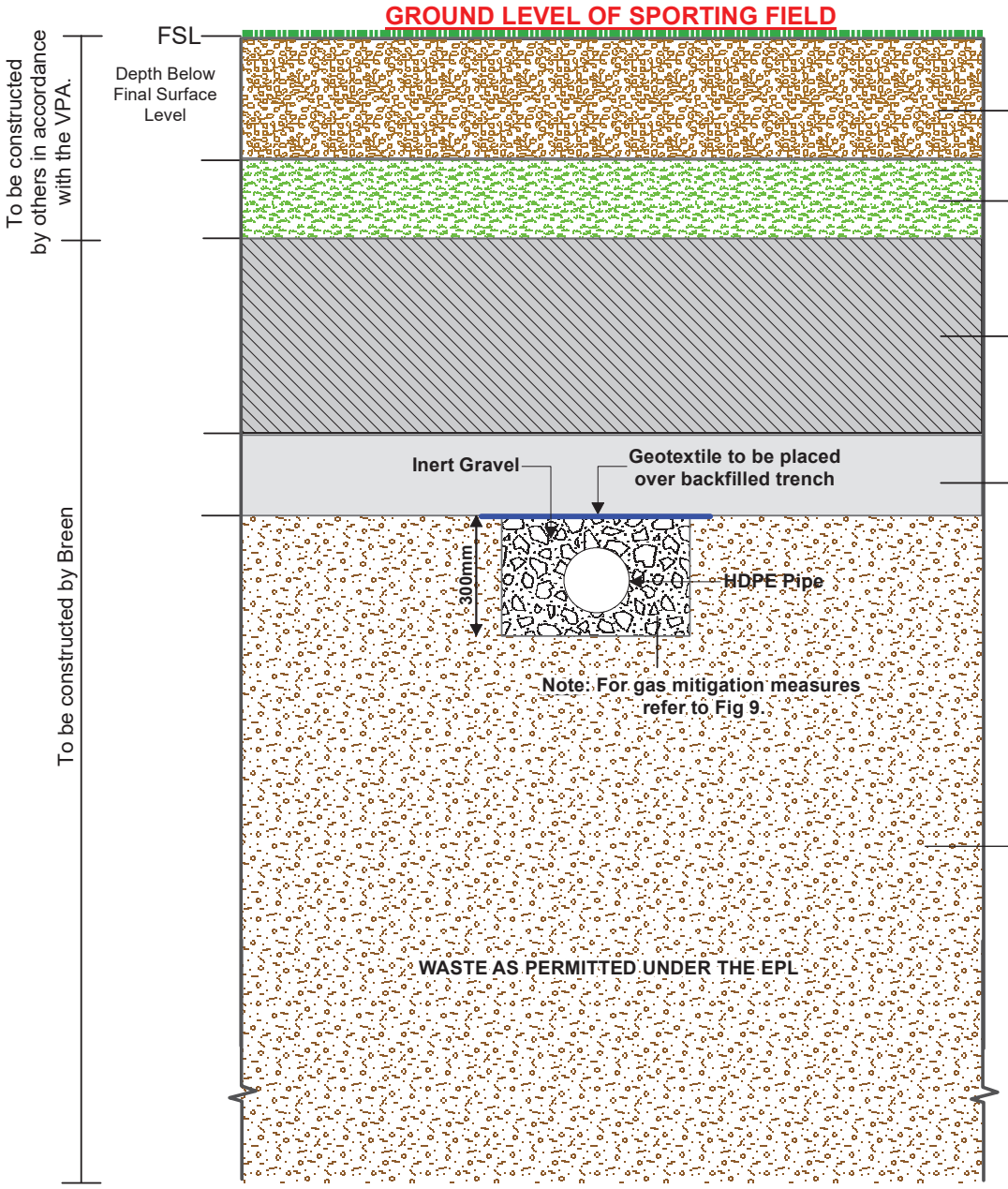
Well compacted general solid waste (non putrescible) or VENM as permitted under the EPL.

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Title

Figure 6: Capping Design - Sporting Fields 9 and 10

CES Project ID:	Date:
CES070607-KLF	13/10/2020
Prepared By: B.Ren	Checked By; I.Wong



Notes:

1. Capping system to be progressively constructed in discrete manageable sections so that cap is promptly constructed and vegetation quickly established.
2. Spacing of gas mitigation measures to be determined following field testing. Gas mitigation measures will be omitted in areas where methane levels < 500 parts per million (v/v).
3. Uncompleted sections of clay capping are to be covered with plastic sheeting at the end of each working day during extended storm periods and periods of hot dry weather to maintain moisture levels within specification.
4. Clay capping layer may be replaced with alternative sealing layer approved by the NSW EPA.
5. Following placement, contour banks or earthen bunds should be constructed along the slopes to ensure erosion resistance during revegetation, moisture retention and aeration of soil. Construction of banks should not penetrate > 100mm into revegetation layer.
6. Erosion and weed control measures to be implemented during construction of the cap.
7. Adequate drainage to be provided for playing fields.
8. The boundaries of differing capping types must be keyed into each other to provide a gradual transition.
9. Construction quality assurance testing to be in accordance with the requirements of Schedule 4 of the VPA.

TURF ROOT ZONE (TRZ) - AS SPECIFIED IN THE VPA

Min. 225mm Sandy Soil (<30% particle size <0.25mm and <30% particle size >0.5mm) and 75mm finely cultivated compost to AS4454 that is mixed and tested offsite. Testing of soil is to be undertaken in accordance with the specifications within the VPA.

REVEGETATION LAYER (RVL) - AS SPECIFIED IN THE VPA

Min.775mm highly cultivated VENM. Compaction to min density ratio of 90% based on Standard Compaction as determined by AS1289.5.11 tested by a NATA accredited laboratory. Testing of soil is to be undertaken in accordance with the specifications within the VPA.

COMPACTED CLAY SEAL (CCS)

Min. 600mm clay capping material. To be placed in 200mm layers and compaction to min density ratio of 98% Standard compaction as determined by AS1289.5.11 tested by a NATA accredited laboratory. CCS to have permeability k<10 -9m/s. Moisture content of fill to be in the range of Optimum Moisture Content (OMC) to OMC +2% or as suitable to achieve adequate compaction and permeability requirements.

SEAL BEARING LAYER (SBL)

Min. 300mm VENM/other compactable fill material permitted under the EPL. Fill to be placed in near horizontal layers of max. 250mm loose thickness. Compaction to min. density ratio of 95% based on Standard compaction as determined by AS1289.5.11 tested by a NATA accredited laboratory. Alternative methods of achieving the compaction requirements such as dynamic compaction by impact rolling with associated verification testing may be considered subject to the approval of and confirmation by the Geotechnical Practitioner.

COMPACTED WASTE

VENM/other compactable fill material permitted under the EPL to 1.2m below FSL if required. Fill to be placed in near horizontal layers of max 500mm loose thickness. Compaction to min density ratio of 95% based on Standard Compaction as determined by AS1289.5.11 tested by a NATA accredited laboratory. Alternative methods of achieving the compaction requirements such as dynamic compaction by impact rolling with associated verification testing may be considered subject to the approval of and confirmation by the Geotechnical Practitioner.

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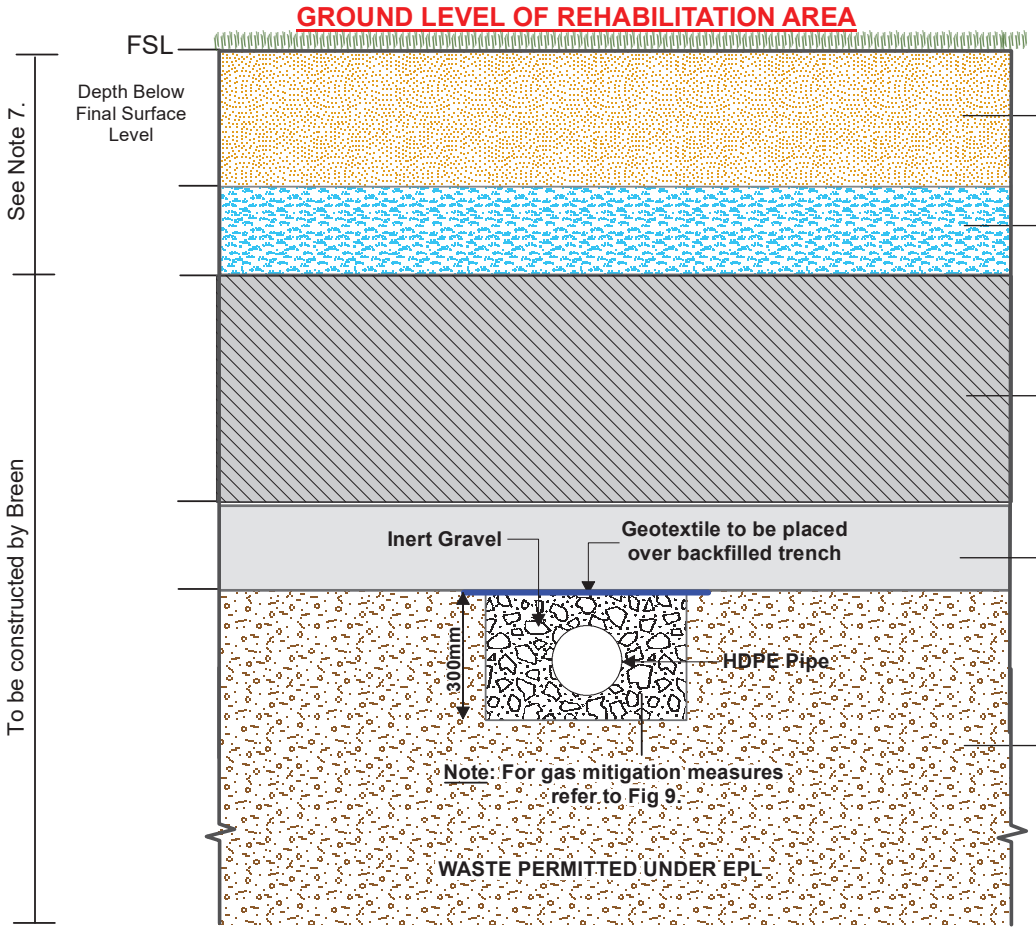
Title

Figure 7: Capping Design - Sporting Fields 2, 3, 6, 7 and 8 Areas Not Excised From the EPL

CES Project ID:	Date:
CES070607-KLF	13/10/2020
Prepared By: B. Ren	Checked By; I. Wong

Notes:

1. Capping system to be progressively constructed in discrete manageable sections so that cap is promptly constructed and vegetation quickly established.
2. Spacing of gas mitigation measures to be determined following field testing. Gas mitigation measures will be omitted in areas where methane levels < 500 parts per million (v/v).
3. Uncompleted sections of clay capping are to be covered with plastic sheeting at the end of each working day and during extended storm periods and periods of hot dry weather to maintain moisture levels within the specification.
4. Clay capping layer may be replaced with alternative sealing layer approved by the NSW EPA.
5. Following placement, contour banks, or earthen bunds should be constructed along the finished slopes to ensure erosion resistance during revegetation, moisture retention and aeration of soil. Construction of banks should not penetrate > 100mm into revegetation layer.
6. Erosion and weed control measures will be implemented during construction of the cap.
7. The boundaries of differing capping types must be keyed into each other to provide a gradual transition.
8. US, SM and dedicated access road to fields 6, 7 & 8 to be constructed by Breen. Other roads & carparks to be constructed by others in



UPPER STRATUM (US)/ROADS AND CARPARKS AS SPECIFIED IN THE VPA

US is min. 200mm medium textured soil high in composted organic matter, to consist of a blend of crushed sandstone, topsoil and composted organic matter. To be free of any foreign materials including brick, tiles, road base, concrete, plastic, timber, glass or metal. To be free of weed seed and propagules. The finished upper soil surface is to be covered in a layer of mulch to reduce erosion, maintain moisture and prevent the establishment of weeds. Testing of soil is to be undertaken in accordance with the VPA. Roads and carparks to be constructed in accordance with VPA Schedule 4 Cl. 2.1 and 2.2.

SUBGRADE MATERIAL (SM) - AS SPECIFIED IN THE VPA

Min.800mm coarse subgrade material low in organic matter. To consist of VENM/other compactable fill material permitted under the EPL (max 150mm particle size). Compact fill to min. density ratio of 95% standard compaction as determined by AS1289.5.11 and/or by test rolling to AS3798-2007.

COMPACTED CLAY SEAL (CCS)

Min. 600mm clay capping material. To be placed in 200mm layers and compacted to min density ratio of 98% Standard compaction as determined by AS1289.5.11. CCS to have permeability k<10 -9m/s. Moisture content of fill to be in the range of Optimum Moisture Content (OMC) to OMC +2% or as suitable to achieve adequate compaction and permeability requirements.

SEAL BEARING LAYER (SBL)

Min. 300mm VENM/other compactable fill material. Fill to be placed in near horizontal layers of max 250mm loose thickness. Compaction to min density ratio of 95% standard compaction as determined by AS1289.5.11 and/or by test rolling to AS3798-2007. Areas which are assesed to deform exccessively under test rolling shall be rectified and re-presented.

COMPACTED WASTE

VENM/other compactable fill material permitted under the EPL to 1.2m below FSL if required. Fill to be placed in near horizontal layers of max 500mm loose thickness. Compaction to min density ratio of 95% based on Standard Compaction as determined by AS1289.5.11. Alternative methods of achieving the compaction requirements such as dynamic compaction by impact rolling with associated verification testing may be considered subject to the approval of and confirmation by the Geotechnical Practitioner.

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Title

Figure 8: Capping Design - Landscape Rehabilitation Areas Areas Not Excised From the EPL

CES Project ID:	Date:
CES070607-KLF	13/10/2020
Prepared By: B. Ren	Checked By: I. Wong

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Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
Rev 0	Nicole Rosen	Stefan Charteris		David Gamble		30/10/2020
Rev 1	Nicole Rosen	Stefan Charteris		David Gamble		18/11/2020
Rev 2	Nicole Rosen	Stefan Charteris		David Gamble		10/03/2021
Rev 3	Nicole Rosen	David Gamble		David Gamble		8/4/2021
Rev 4	Nicole Rosen	David Gamble		David Gamble		12/4/2021

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